





### Take your time

In all probability, things are the same for you as they are for many of us in our industry. **The demands on our business are constantly growing**, the level of complexity rises by the day and more and more challenges seem to lie in wait for us with ever-increasing frequency. As a result, when it comes to creating **tailor-made solutions** for new construction and renovation **based on the specific needs of our customers**, time is often in short supply.

But in this day and age, that is where the real opportunities lie. By offering new concepts for building automation systems, energy efficiency and the use of renewable energies, we are able to make the **day-to-day tasks of our customers safer and more comfortable** while also ensuring our business continues to develop dynamically. Hager employs more than 800 developers, who are constantly working on these solutions all around the world. In other words: we take our time to make **truly ground-breaking innovations** and intelligent technologies which are **just as quick to install as they are easy to use**. And of course, we also continue to provide you with all of the reliable products and safe solutions we have been long known for here at Hager.

We have been doing this **for around 60 years**. And we are only as successful as we are at what we do because of the trust you continue to place in us. I would like to take this opportunity to **express our warmest thanks** to you for this continued trust in us – and to recommend that you take a good look at our new catalogue, which serves as a **practical tool for electrical engineering**.

Please do take the time to consult the catalogue every now and again. It provides a **handy overview** of all of the solutions we use not only to save you a lot of time and effort, but also to **constantly tap into new sales potential**.

**Hager is always on your side** – as it has been for six decades and will continue to be in the electrifying future that lies ahead of us.

We at Hager look forward to **shaping this time with you**.

Best wishes,



Daniel Hager  
CEO of Hager Group

Consumer Units

Enclosures

Commercial Distribution

Protection Devices

Modular Devices

Tebis KNX Building Automation System

Sollysta Wiring Accessories

Junction Boxes & Ceiling Accessories

Klik Lighting Connection System

Numerical Index



Design Range | Weather Proof Skeleton Units



Mini Gamma | Vector II | Volta  
Vega | Enclosures | Orion Plus



A Boards | Invicta 3 | Fuse Combination Switches  
Pluggable Meters



MCBs | RCCBs | RCBOs | HRC Fuse Carriers  
Motor Starters | Earth Fault Relays |  MCCBs



Switch Disconnectors | Relays | Contactors  
Time Switches | Delay Timers | Transformers | Meters



Room Controllers | Input Products | Output Products  
Push Buttons & Remote Controls



White Moulded | Decorative | Grid | IP66

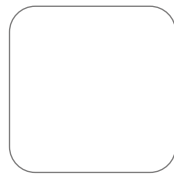
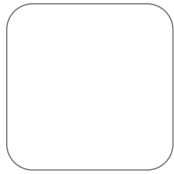


Downlighter Junction Box | Maintenance Free Junction Box  
Lampholders | Safety Pendant Sets



4 Pin | 7 Pin





# The specialist for electrical installations

Since 1955 Hager is the specialist for electrical installations in residential and commercial sectors, as a standard you can receive everything from one source: systems and solutions with high quality, reliability and ease of installation.

## New ideas for the customers' benefit

Together with customers from industry and the electrical trade, Hager Group is working on future topics such as electro-mobility, Ambient Assisted Living, where building automation facilitates the everyday life of the elderly and individuals who require care, and on the networking

of energy-efficient housing, which will provide greater comfort while requiring less energy consumption. The link between many of these technologies will be the distribution board, the product with which the company achieved its growth.

## A leading group

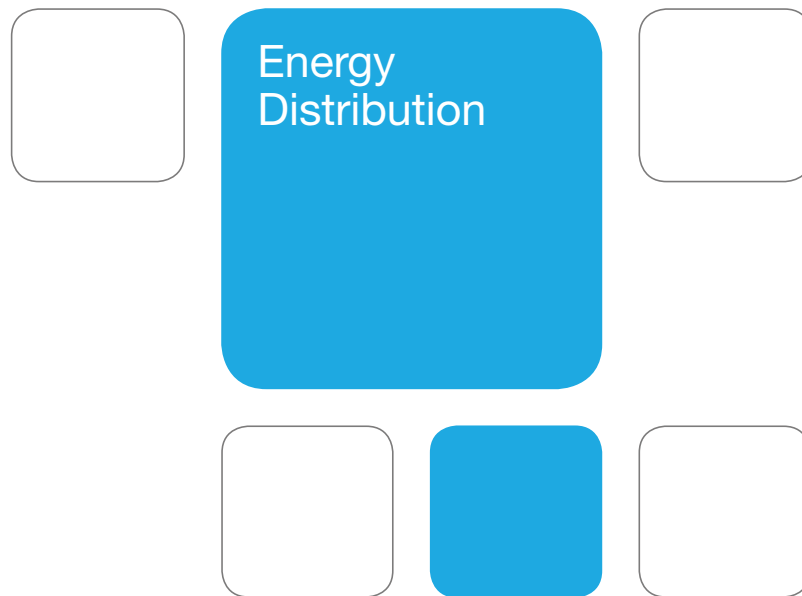
The Hager brand represents the core business of Hager Group.

The company was founded in 1955 by Hermann Hager and Dr. Oswald Hager together with their father Peter and today remains an independent business, owned and run by members of the Hager family, with its head office in Blieskastel, Germany. The organisation of the company as a European Company (Societas Europaea, SE) underlines both its cultural diversity and its European roots. Hager Group is, though, a worldwide business venture: 11,400 employees and generates a turnover of around 1.6 billion euros (2013).

Highly innovative achievements provide a market edge with more than 830 employees working in R&D. With more than 5% of turnover reinvested in R&D, Hager Group filed a total of 1513 patents to date.

Components and solutions are produced in 22 production sites around the globe and customers in more than 80 countries all over the world trust in them.

Safe distribution of  
energy, concentration  
of communication  
technology.



# A clear structure - Hager's range of products

Hager has divided its extensive range of products into three areas of application, each marked with a different colour, to help you finding the right product and solution for your individual needs.

As the leading specialist in the field of electrical installations residential and commercial buildings, the Hager brand provides you with everything from one source: systems and solutions – highest quality, reliable and easy to install.

Switching with  
style, smart building  
automation.



**To learn more about our systems and solutions, please  
get in touch.**

**Sales Service Centre**

Call our Sales Services Centre for  
all your national sales enquiries.

**01952 675612**

[sales@hager.co.uk](mailto:sales@hager.co.uk)

**Sales Faxline**

**01952 675645**

**Technical Service Centre**

Technical Engineers offer both national  
and local support.

**01952 675689**

[technical@hager.co.uk](mailto:technical@hager.co.uk)

**Technical Faxline**

**01952 675557**

**Hager Online**

Visit our website for up to date news  
on Hager and for general brand  
information.

[www.hager.co.uk](http://www.hager.co.uk)

**Northern Ireland**

**028 9077 3310**  
[www.hager.ie](http://www.hager.ie)

[www.hager.co.uk](http://www.hager.co.uk)

# Touching and inspiring

In its early days electricity was primarily associated with wonder. And Hager strives to make a decisive contribution to this. Using innovative technology and clear-cut design, the company has given energy a 'face' – one which is pleasant to look at and easy to understand – distinctive on the one hand, multifaceted on the other. Hager design not only embodies the functionality of our products but also our company's character while taking into account that external attributes are ever more important. Today people increasingly engage with their household technical systems, giving us good reason to reciprocate and touch you with our technology – aesthetically, haptically and emotionally.



*"Everything you see and touch highlights the notion of ease and quality."*

Daniel Hager

Erwin Van Handenhoven  
Design Director of Hager Group



### Strategic design management

Over the last six decades Hager's product range has grown rapidly. Moving on from specialising in meter panel systems, we have advanced to become a provider of entire electro-technical solutions for intelligent residential and commercial buildings. Whereas in the past it sufficed to design a small number of key products emphasizing functionality, today it is necessary to create an extensive realm of heterogeneous products. To reach this objective Hager relies on strategic design management – a design vocabulary containing many 'facial expressions', but also characterised by a distinct fundamental attitude.

### Holistic design

This stance is not only reflected in the product itself but also shapes all related processes. When making the first drafts we already consider how a product will be manufactured, operated and eventually disposed of. Eco-design and eco-production assist us in employing all resources as intelligently as possible and in avoiding waste right from the start. This also holds true for our eco-friendly packaging design where we exclusively use recycled fibres which neither contain chemical bleaching agents nor composite materials that are difficult to separate.

### The face behind the design

Hager's product design unmistakably bears the hallmarks of Erwin Van Handenhoven who has been Hager Group's Design Director since July 2013. The prolific cooperation between the renowned industry designer and Hager started in 2000. Beside the actual product design, part of Erwin's mission is shaping the future and in doing so, decisively and influentially advancing the evolution of the electro-technical industry. This has led to numerous product highlights that live up to tomorrow's design requirements in a very characteristic way. Many of them are to be found in the new Hager catalogue.

Have fun making some new discoveries!



# Sustainability at Hager Group: E3



Nobody knows what tomorrow will bring.

That is why at Hager Group we have chosen to anticipate risks and seize our opportunities proactively. We invest in our employees and their training, in energy efficiency and future technologies, in fair trade relations and we work actively to continuously improve our eco-balance sheet. We may be giving up more profit in the short term, but we are convinced that this is the way to achieve lasting success.

*“As a family-owned company,  
it is in our nature to remain sustainable!”*

Daniel Hager



We have translated this vision of sustainable development into a structured approach that we called E3.

## E for ethics:

the way we behave with our employees, our partners and all stakeholders. We want to provide safe and healthy working conditions, equal opportunities and career development to all our employees and promote ethical behaviour.



## E for environment:

we act with respect for the planet, to help preserve it. We optimise our resources by avoiding the use of hazardous substances and limiting the amount of harmful emissions and waste.

## E for energy:

40% of global energy production is used inside buildings, a significant proportion of it in the form of electricity. Energy management is Hager Group's speciality. We want to create value in a responsible way, shared with our suppliers, customers and other stakeholders. This includes, in particular all the solutions and services we offer our customers for safe, efficient and intelligent use of energy in buildings.



**For detailed information about E3, visit  
[www.hagergroup.com](http://www.hagergroup.com)**

# A service geared to your on site needs

From pre-assembled standard distribution units to bespoke composite TP&N boards, and plug in distribution boards Hager can provide the solution and we will deliver to site to an agreed deadline and to specification. All the power of an experienced design engineering team and an ISO 9001:2008 manufacturing plant is just a telephone call away.

As client requirements become more sophisticated, demands on electrical installation designs have increased. Many electrical distribution solutions require something that cannot be purchased off the shelf.

Whether it is an unusual configuration or simply speed on site that is an issue, Hager's engineered solutions supplies the answer. This Engineered Solutions service puts the power of our design engineers at your fingertips. You give us the specification and we will deliver what you need with the peace of mind of factory assured quality to ISO 9001:2008.

## **Metering**

The Hager lighting and power meter board is a compact solution to meet the demands of energy metering within non-dwelling buildings. The standard power and lighting board is available in this catalogue and comes in two variants to meet the majority of applications.

However for special applications we also offer our full-engineered solutions design and build service. This service can also provide additional features such as data logging and web connectivity for remote meter reading.



1

**Pre-assembled standard distribution board**

Factory assembly of standard distribution boards with standard incoming and outgoing devices. Providing the installer with all of the products factory assembled and ready for cabling.

2

**Engineered Consumer Units**

Factory assembly of non-standard consumer units, special configurations in standard enclosures or metal DIN rail enclosures. Providing an exact product that meets the requirements of your particular installation needs.

Pluggable and metered consumer units are also an option. With pluggable consumer units circuit breakers are wired to sockets fitted into the enclosure enabling final circuit cabling to be simply plugged in.

3

**Bespoke composite system**

Factory prepared distribution boards ready for assembly on site with apertures pre-cut to allow cable access between the various enclosures, combining Panelboards and TP&N boards into bespoke composite panels.

Standard metal distribution boards designed to accommodate customer specified OEM equipment.



## Engineered solutions

To learn more about our engineered solutions offer, please contact us:

**Technical Service Centre**

Call our Technical Services Centre for all your national sales enquiries.

**01952 675600**

[estimation@hager.co.uk](mailto:estimation@hager.co.uk)

**Technical Service Centre Faxline**

**01952 675557**



# Consumer Units

## The ultimate range

Our range of consumer units have been developed through years of indepth customer research, design and development. In this catalogue you will find our Design range of Amendment 3 compliant consumer units which have been specifically developed to meet the latest regulations along with our current range of insulated consumer units.



Design Range	1.2
<hr/>	
Insulated Consumer Units	1.14

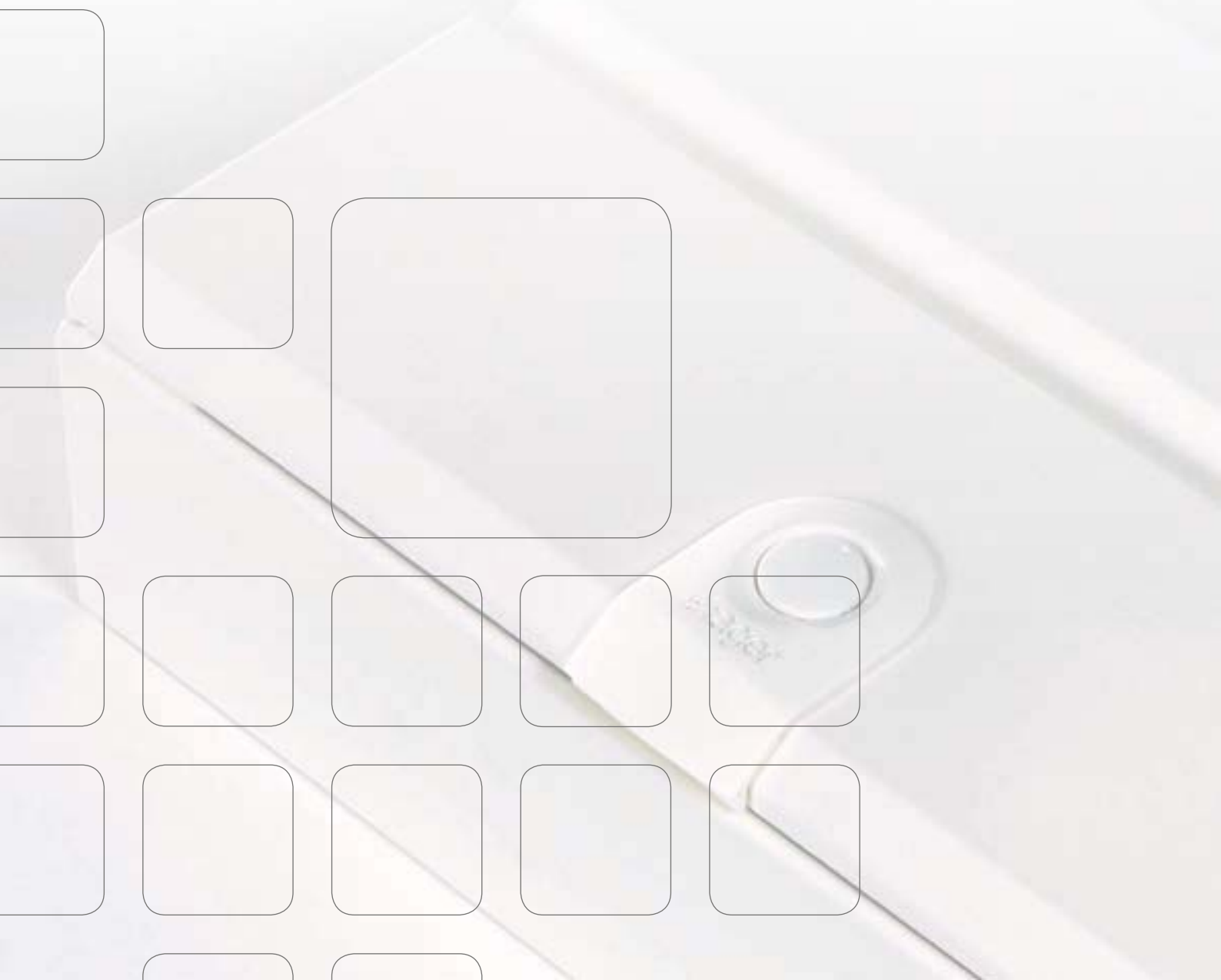
# Design Range

## Amendment 3 compliant consumer units

The Amendment 3 compliant Hager Design range features solutions suitable for installations where the consumer unit will be on show and where they are hidden away.

Through in-depth customer research and extensive testing we have developed a number of consumer units to allow compliance with Amendment 3. Incorporating numerous features and benefits for the ease of installation has resulted in ranges aimed at meeting the requirements of differing customer groups.

Our Design range is always expanding and evolving, and as such the most up to date list of products can be found on our website, [www.hager.co.uk/design](http://www.hager.co.uk/design).



Design 30	1.4
Design 30 Dual Row	1.6
Design 30 Garage Boards	1.7
Design 10	1.8
Design 10 Flush	1.11
Design 10 Dual Row	1.10
Accessories	1.12



VM206

### Switch Disconnecter

Metal switch disconnecter incomer enclosures, single row from 2 to 20 outgoing ways.

Enclosures come supplied with a full metal DIN rail, 63A or 100A switch disconnecter incomer and full complement of earth and neutral terminals along with marking labels, busbar,

instructions, rear cable protector plate and meter tail clamp.

Recommended for use with TT systems when utilising RCBO on outgoing circuits.

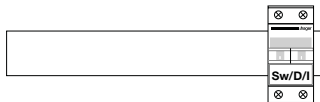
Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12  
For dimensions see page 1.20

All boards contain rear cable entry, boards with knockouts also contain top & bottom knockouts - see page 1.20.

#### Description

Description	Size	Cat ref.	Cat ref. with knockouts
2 Way 63A Switch Disconnecter Incomer	2	<b>VM202</b>	<b>VM202K</b>
6 Way 63A Switch Disconnecter Incomer	3	<b>VM206</b>	<b>VM206K</b>
6 Way 100A Switch Disconnecter Incomer	3	<b>VM106</b>	<b>VM106K</b>
10 Way 100A Switch Disconnecter Incomer	4	<b>VM110</b>	<b>VM110K</b>
14 Way 100A Switch Disconnecter Incomer	5	<b>VM114</b>	<b>VM114K</b>
20 Way 100A Switch Disconnecter Incomer	7	<b>VM120</b>	<b>VM120K</b>



### RCCB Incomer



VM310H

Metal RCCB incomer enclosures, single row from 2 to 14 outgoing ways.

Enclosures come supplied with a full metal DIN rail, 40A, 63A or 100A 30mA RCCB incomer and full complement of earth

and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.

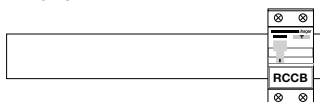
Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12  
For dimensions see page 1.20

All boards contain rear cable entry, boards with knockouts also contain top & bottom knockouts - see page 1.20.

#### Description

Description	Size	Cat ref.	Cat ref. with knockouts
2 Way 40A 30mA RCCB Incomer	2	<b>VM402H</b>	<b>VM402HK</b>
6 Way 63A 30mA RCCB Incomer	3	<b>VM406H</b>	<b>VM406HK</b>
6 Way 100A 30mA RCCB Incomer	3	<b>VM306H</b>	<b>VM306HK</b>
10 Way 63A 30mA RCCB Incomer	4	<b>VM410H</b>	<b>VM410HK</b>
10 Way 100A 30mA RCCB Incomer	4	<b>VM310H</b>	<b>VM310HK</b>
14 Way 100A 30mA RCCB Incomer	5	<b>VM314H</b>	<b>VM314HK</b>



VM712TG

### Time Delayed RCCB Incomer

Metal RCCB incomer enclosures, single row 12 outgoing ways.

Enclosures come supplied with a full metal DIN rail 100A 100mA time delayed and 63A 30mA RCCB incomers and full complement of earth and neutral terminals along with marking

labels, busbar, instructions, rear cable protector plate and meter tail clamp.

Recommended for use with TT systems.

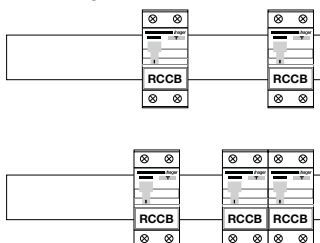
Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12  
For dimensions see page 1.20

All boards contain rear cable entry, boards with knockouts also contain top & bottom knockouts - see page 1.20.

#### Description

Description	Size	Cat ref.	Cat ref. with knockouts
12 Way Configurable 100A 100mA Time Delay RCCB 63A 30mA RCCB	5	<b>VM712TG</b>	<b>VM712TGK</b>
12 Way 100A 100mA Time Delay RCCB 2*63A 30mA RCCB	6	<b>VM766TG</b>	<b>VM766TGK</b>







## Split Load

Metal split load and configurable enclosures, single row from 6 to 16 outgoing ways.

Enclosures come supplied with a full metal DIN rail and 2 RCCBs and full complement of earth

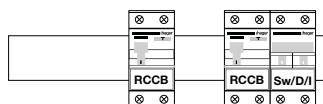
and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12  
For dimensions see page 1.20

All boards contain rear cable entry, boards with knockouts also contain top & bottom knockouts - see page 1.20.

VM716C



Description	Size	Cat ref.	Cat ref. with knockouts
6 Way Split Load 3+3 100A Switch 2x63A 30mA RCCB	4	<b>VM733H</b>	<b>VM733HK</b>
10 Way Split Load 5+5 100A Switch 2x63A 30mA RCCB	5	<b>VM755H</b>	<b>VM755HK</b>
12 Way Split Load 6+6 100A Switch 2x63A 30mA RCCB	6	<b>VM766H</b>	<b>VM766HK</b>
10 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VM710C</b>	<b>VM710CK</b>
16 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VM716C</b>	<b>VM716CK</b>
10 Way Split Load 5+5 100A Switch 2x80A 30mA RCCB	5	<b>VM855H</b>	<b>VM855HK</b>
12 Way Split Load 6+6 100A Switch 2x80A 30mA RCCB	6	<b>VM866H</b>	<b>VM866HK</b>
10 Way Split Load Configurable 100A Switch 2x 80A 30mA RCCB	5	<b>VM810C</b>	<b>VM810CK</b>
16 Way Split Load Configurable 100A Switch 2x80A 30mA RCCB	7	<b>VM816C</b>	<b>VM816CK</b>



## High Integrity

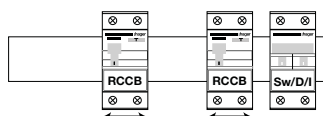
Metal split load and configurable enclosures with ability to protect selected circuits with RCBOs and remainder of circuits split accross two RCCBs. Single row from 10 to 16 outgoing ways.

Enclosures come supplied with a full metal DIN rail and 2 RCCBs and full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).  
For accessories see page 1.12  
For dimensions see page 1.20

All boards contain rear cable entry, boards with knockouts also contain top & bottom knockouts see page 1.20.

VM878R



Description	Size	Cat ref.	Cat ref. with knockouts
10 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VM710CU</b>	<b>VM710CUK</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VM716CU</b>	<b>VM716CUK</b>
10 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	5	<b>VM810CU</b>	<b>VM810CUK</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	7	<b>VM816CU</b>	<b>VM816CUK</b>
10 Way High Integrity 5+4+1 100A Switch 2x 63A 30mA RCCB + 6A RCBO	5	<b>VM754R</b>	<b>VM754RK</b>
16 Way High Integrity Split Load 7+8+1 100A Switch 2x 63A 30mA RCCB + 1x RCBO	7	<b>VM778R</b>	<b>VM778RK</b>
10 Way High Integrity 5+4+1 100A Switch 2x 80A 30mA RCCB + 6A RCBO	5	<b>VM854R</b>	<b>VM854RK</b>
16 Way High Integrity Split Load 7+8+1 100A Switch 2x 80A 30mA RCCB + 1x RCBO	7	<b>VM878R</b>	<b>VM878RK</b>
14 Way Split Load 6+6+2 100A Switch 2x 80A 30mA RCCB plus 1x 40A 30mA RCCB	7	<b>VM8662</b>	<b>VM8662K</b>



## Multi Tariff

Metal switch disconnecter incomer enclosures, single row, 12 or 18 outgoing ways.

Enclosures come supplied with a full metal DIN rail, multiple switch disconnecter incomers and full complement of earth and neutral

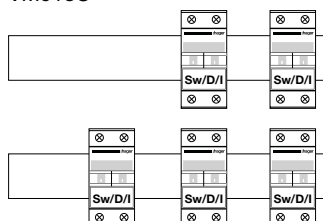
terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12  
For dimensions see page 1.20

All boards contain rear cable entry, boards with knockouts also contain top & bottom knockouts - see page 1.20.

VM918C



Description	Size	Cat ref.	Cat ref. with knockouts
18 Way Twin Tariff Configurable 2x100A Switch	7	<b>VM918C</b>	<b>VM918CK</b>
12 Way Multi Tariff 6+5+1 2x100A 1x63A Switch	6	<b>VM9651</b>	<b>VM9651K</b>



VM11010

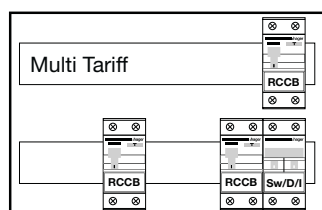
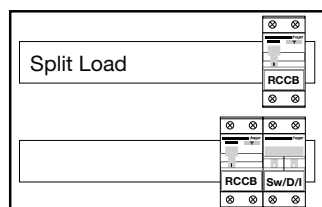
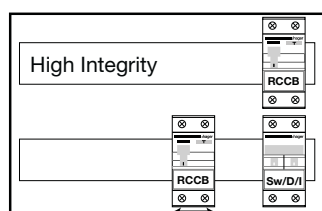
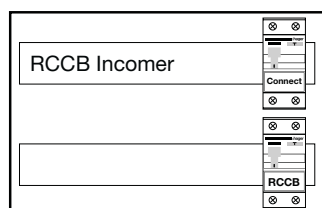
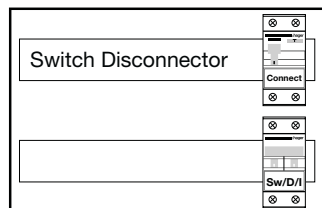
## Design 30 Dual Row Consumer Unit

Conforms to  
BS EN 61439-3 Including Annex  
ZB (16kA Rating)

Enclosures come supplied with  
a full metal DIN rail, earth and  
neutral connections along with  
incoming device(s), busbar, cable  
protector plate, grommet strip,  
cable clamp, marking labels and  
instructions

Knockouts (where applicable)  
located top, bottom and rear of  
base - See page 1.21.

For dimensions see page 1.21.



### Switch Disconnector - Dual Row

	Size	Cat ref.	Cat Ref. with Knockouts
6+6 Way 100A Switch Disconnector	3	<b>VM10606</b>	<b>VM10606K</b>
10+10 Way 100A Switch Disconnector	4	<b>VM11010</b>	<b>VM11010K</b>
14+14 Way 100A Switch Disconnector	5	<b>VM11414</b>	<b>VM11414K</b>
20+20 Way 100A Switch Disconnector	7	<b>VM12020</b>	<b>VM12020K</b>

### RCCB Incomer - Dual Row

6+6 Way 100A 30mA RCCB Incomer	3	<b>VM30606H</b>	<b>VM30606HK</b>
--------------------------------	---	-----------------	------------------

### Split Load - Dual Row

8+10W 100A Switch 2x63A 30mA RCCB	4	<b>VM70810H</b>	<b>VM70810HK</b>
12+14W 100A Switch 2x63A 30mA RCCB	5	<b>VM71214H</b>	<b>VM71214HK</b>
18+20W 100A Switch 2x63A 30mA RCCB	7	<b>VM71820H</b>	<b>VM71820HK</b>
4+6 Way 100A Switch 2x63A 30mA RCCB	3	<b>VM746H</b>	<b>VM746HK</b>
8+10W 100A Switch 2x80A 30mA RCCB	4	<b>VM80810H</b>	<b>VM80810HK</b>
12+14W 100A Switch 2x80A 30mA RCCB	5	<b>VM81214H</b>	<b>VM81214HK</b>
18+20W 100A Switch 2x80A 30mA RCCB	7	<b>VM81820H</b>	<b>VM81820HK</b>
4+6 Way 100A Switch 2x80A 30mA RCCB	3	<b>VM846H</b>	<b>VM846HK</b>

### High Integrity - Dual Row

HI Configurable 8+10 Way 100A Switch 2x63A	4	<b>VM70810CU</b>	<b>VM70810CUK</b>
HI Configurable 12+14 Way 100A Switch 2x63A	5	<b>VM71214CU</b>	<b>VM71214CUK</b>
HI Configurable 18+20 Way 100A Switch 2x63A	7	<b>VM71820CU</b>	<b>VM71820CUK</b>
HI Configurable 8+10 Way 100A Switch 2x80A	4	<b>VM80810CU</b>	<b>VM80810CUK</b>
HI Configurable 12+14 Way 100A Switch 2x80A	5	<b>VM81214CU</b>	<b>VM81214CUK</b>
HI Configurable 18+20 Way 100A Switch 2x80A	7	<b>VM81820CU</b>	<b>VM81820CUK</b>

### Multi Tariff - Dual Row

10 Way Split Load 5+5 100A Switch 2x63A RCCB 1x63A RCCB Incomer 14 Ways	4	<b>VM755714H</b>	<b>VM755714HK</b>
--	---	------------------	-------------------



VM24H

**Garage Board**

Enclosure comes complete with 40A 30mA RCCB Incomer, 32A MCB and 6A MCB, earth & neutral connections, busbar, cable protector plate, grommet strip, marking labels & instructions.

Knockouts (where applicable) are located top, bottom & rear of base - See page 1.20.

Cable clamp supplied to secure incoming meter tails.

For dimensions see page 1.20.

Garage Board	Size	Cat ref.	Cat Ref. with Knockouts
2 Way 40A 30mA RCCB with 1x32A & 1x6A MCB	2	<b>VM24H</b>	<b>VM24HK</b>



VML206

**Switch Disconnecter Incomer**

Metal switch disconnecter incomer enclosures, single row from 2 to 20 outgoing ways.

Enclosures come supplied with a full metal DIN rail, 63A or 100A switch disconnecter incomer and full complement of earth and neutral terminals along with marking labels, busbar and instructions.

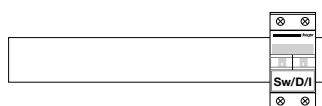
Recommended for use with TT systems when utilising RCBO on outgoing circuits.

Hager also recommend the use of cable clamp (**VA10MT**) for use on TT systems. Available as accessory.

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12.  
For dimensions see page 1.20.

All Design 10 boards contain top, bottom & rear knockouts - see page 1.20.



Description	Size	Cat ref.
2 Way 63A Switch Disconnecter Incomer	2	<b>VML202</b>
6 Way 63A Switch Disconnecter Incomer	3	<b>VML206</b>
6 Way 100A Switch Disconnecter Incomer	3	<b>VML106</b>
10 Way 100A Switch Disconnecter Incomer	4	<b>VML110</b>
14 Way 100A Switch Disconnecter Incomer	5	<b>VML114</b>
20 Way 100A Switch Disconnecter Incomer	7	<b>VML120</b>



VML310H

**RCCB Incomer**

Metal RCCB incomer enclosures, single row from 2 to 14 outgoing ways.

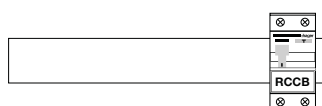
Enclosures come supplied with a full metal DIN rail, 40A, 63A or 100A 30mA RCCB incomer

and full complement of earth and neutral terminals along with marking labels, busbar and instructions.

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12.  
For dimensions see page 1.20.

All Design 10 boards contain top, bottom & rear knockouts - see page 1.20.



Description	Size	Cat ref.
2 Way 40A 30mA RCCB Incomer	2	<b>VML402H</b>
6 Way 63A 30mA RCCB Incomer	3	<b>VML406H</b>
6 Way 100A 30mA RCCB Incomer	3	<b>VML306H</b>
10 Way 63A 30mA RCCB Incomer	4	<b>VML410H</b>
10 Way 100A 30mA RCCB Incomer	4	<b>VML310H</b>
14 Way 100A 30mA RCCB Incomer	5	<b>VML314H</b>



VML712TG

**Time Delayed RCCB Incomer**

Metal RCCB incomer enclosures, single row 12 outgoing ways.

Enclosures come supplied with a full metal DIN rail 100A 100mA time delayed and 63A 30mA RCCB incomers and full complement of earth and neutral terminals along with marking

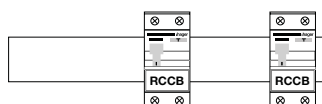
labels, busbar, meter tail clamp and instructions.

Recommended for use with TT systems.

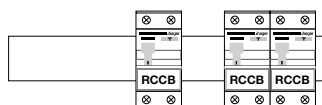
Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

For accessories see page 1.12.  
For dimensions see page 1.20.

All Design 10 boards contain top, bottom & rear knockouts - see page 1.20.



Description	Size	Cat ref.
12 Way Configurable 100A 100mA Time Delay RCCB 63A 30mA RCCB	5	<b>VML712TG</b>
12 Way 100A 100mA Time Delay RCCB 2x63A 30mA RCCB	6	<b>VML766TG</b>





## Split Load

Metal split load and configurable enclosures, single row from 6 to 16 outgoing ways.

and neutral terminals along with marking labels, busbar and instructions.

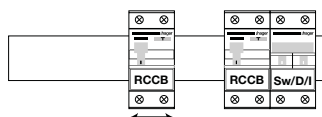
For accessories see page 1.12.  
For dimensions see page 1.20.

Enclosures come supplied with a full metal DIN rail and 2 RCCBs and full complement of earth

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

All Design 10 boards contain top, bottom & rear knockouts - see page 1.20.

VML716C



Description	Size	Cat ref.
6 Way Split Load 3+3 100A Switch 2x63A 30mA RCCB	4	<b>VML733H</b>
10 Way Split Load 5+5 100A Switch 2x63A 30mA RCCB	5	<b>VML755H</b>
12 Way Split Load 6+6 100A Switch 2x63A 30mA RCCB	6	<b>VML766H</b>
10 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VML710C</b>
16 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VML716C</b>
10 Way Split Load 5+5 100A Switch 2x80A 30mA RCCB	5	<b>VML855H</b>
12 Way Split Load 6+6 100A Switch 2x80A 30mA RCCB	6	<b>VML866H</b>
10 Way Split Load Configurable 100A Switch 2x80A 30mA RCCB	5	<b>VML810C</b>
16 Way Split Load Configurable 100A Switch 2x80A 30mA RCCB	7	<b>VML816C</b>



## High Integrity

Metal split load and configurable enclosures with ability to protect selected circuits with RCBOs and remainder of circuits split across two RCCBs. Single row from 10 to 16 outgoing ways.

full metal DIN rail and 2 RCCBs and full complement of earth and neutral terminals along with marking labels, busbar and instructions.

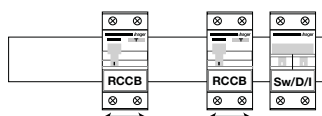
For accessories see page 1.12.  
For dimensions see page 1.20.

Enclosures come supplied with a

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

All Design 10 boards contain top, bottom & rear knockouts - see page 1.20.

VML878R



Description	Size	Cat ref.
10 Way High Integrity Split Load Configurable 100A Switch 2x63A 30mA RCCB	5	<b>VML710CU</b>
12 Way High Integrity Split Load Configurable 100A Switch 2x63A 30mA RCCB	6	<b>VML712CU</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x63A 30mA RCCB	7	<b>VML716CU</b>
10 Way High Integrity Split Load Configurable 100A Switch 2x80A 30mA RCCB	5	<b>VML810CU</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x80A 30mA RCCB	7	<b>VML816CU</b>
10 Way High Integrity 5+4+1 100A Switch 2x63A 30mA RCCB + 6A RCBO	5	<b>VML754R</b>
16 Way High Integrity 7+8+1 100A Switch 2x63A 30mA RCCB + 6A RCBO	7	<b>VML778R</b>
10 Way High Integrity 5+4+1 100A Switch 2x80A 30mA RCCB + 6A RCBO	5	<b>VML854R</b>
16 Way High Integrity 7+8+1 100A Switch 2x80A 30mA RCCB + 6A RCBO	7	<b>VML878R</b>
14 Way Split Load 6+6+2 100A Switch 2x80A 30mA RCCB + 40A 30mA RCCB	7	<b>VML8662</b>



## Multi Tariff

Metal switch disconnector incomer enclosures, single row, 12 or 18 outgoing ways.

complement of earth and neutral terminals along with marking labels, busbar and instructions.

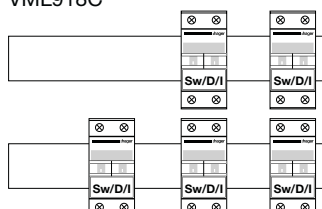
For accessories see page 1.12.  
For dimensions see page 1.20.

Enclosures come supplied with a full metal DIN rail, multiple switch disconnector incomers and full

Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).

All Design 10 boards contain top, bottom & rear knockouts - see page 1.20.

VML918C



Description	Size	Cat ref.
18 Way Twin Tariff Configurable 2x100A Switch	7	<b>VML918C</b>
12 Way Multi Tariff 6+5+1 2x100A 1x63A Switch	6	<b>VML9651</b>



VML11010

### Design 10 Dual Row Consumer Unit

Conforms to BS EN 61439-3 Including Annex ZB (16kA Rating).

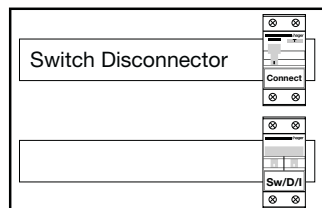
Enclosures come supplied with a full metal DIN rail, earth and neutral connections along with incoming device(s), busbar, marking labels and instructions.

For dimensions see page 1.21.

Knockouts located top, bottom and rear of base - See page 1.21.

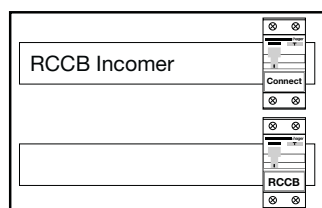
#### Switch Disconnecter - Dual Row

	Size	Cat ref.
6+6 Way 100A Switch Disconnecter	3	<b>VML10606</b>
10+10 Way 100A Switch Disconnecter	4	<b>VML11010</b>
14+14 Way 100A Switch Disconnecter	5	<b>VML11414</b>
20+20 Way 100A Switch Disconnecter	7	<b>VML12020</b>



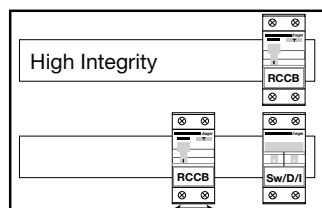
#### RCCB Incomer - Dual Row

6+6 Way 100A 30mA RCCB Incomer	3	<b>VML30606H</b>
--------------------------------	---	------------------



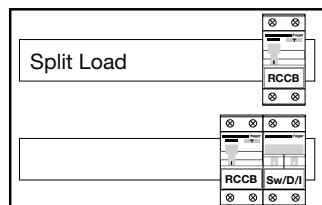
#### Split Load - Dual Row

4+6 Way 100A Switch 2x63A 30mA RCCB	3	<b>VML746H</b>
8+10W 100A Switch 2x63A 30mA RCCB	4	<b>VML70810H</b>
12+14W 100A Switch 2x63A 30mA RCCB	5	<b>VML71214H</b>
18+20W 100A Switch 2x63A 30mA RCCB	7	<b>VML71820H</b>
4+6 Way 100A Switch 2x80A 30mA RCCB	3	<b>VML846H</b>
8+10W 100A Switch 2x80A 30mA RCCB	4	<b>VML80810H</b>
12+14W 100A Switch 2x80A 30mA RCCB	5	<b>VML81214H</b>
18+20W 100A Switch 2x80A 30mA RCCB	7	<b>VML81820H</b>



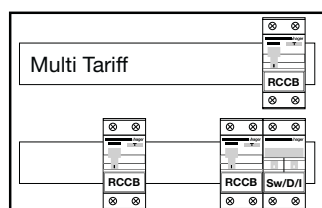
#### High Integrity - Dual Row

HI Configurable 8+10 Way 100A Switch 2x63A	4	<b>VML70810CU</b>
HI Configurable 12+14 Way 100A Switch 2x63A	5	<b>VML71214CU</b>
HI Configurable 18+20 Way 100A Switch 2x63A	7	<b>VML71820CU</b>
HI Configurable 8+10 Way 100A Switch 2x80A	4	<b>VML80810CU</b>
HI Configurable 12+14 Way 100A Switch 2x80A	5	<b>VML81214CU</b>
HI Configurable 18+20 Way 100A Switch 2x80A	7	<b>VML81820CU</b>



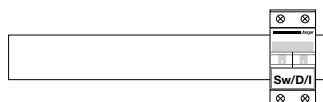
#### Multi Tariff - Dual Row

10 Way Split Load 5+5 100A Switch 2x63A RCCB 1x63A RCCB Incomer 14 Ways	4	<b>VML755714H</b>
--	---	-------------------

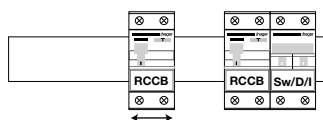




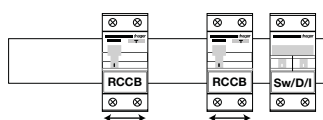
VMLF110



Switch Disconnector



Split Load



High Integrity

### Design 10 Flush Consumer Unit

Conforms to BS EN 61439-3 Including Annex ZB (16kA Rating).

Enclosures come supplied with a full metal DIN rail, earth and neutral connections along with incoming device(s), busbar,

grommet strip, rear cable entry plate, cable clamp, marking labels and instructions.

Knockouts located top, bottom and rear of base - see page 1.21.

For dimensions see page 1.21.

Min depth in wall 72mm.

#### Switch Disconnector Incomer

	Size	Cat ref.
10 Way Flush 100A Switch Disconnector Incomer	4	<b>VMLF110</b>
14 Way Flush 100A Switch Disconnector Incomer	5	<b>VMLF114</b>
20 Way Flush 100A Switch Disconnector Incomer	7	<b>VMLF120</b>

#### Split Load

10 Way Flush 100A Switch 2x63A 30mA RCCB	5	<b>VMLF710C</b>
12 Way Flush 100A Switch 2x63A 30mA RCCB	6	<b>VMLF712C</b>
16 Way Flush 100A Switch 2x63A 30mA RCCB	7	<b>VMLF716C</b>
10 Way Flush 100A Switch 2x80A 30mA RCCB	5	<b>VMLF810C</b>
12 Way Flush 100A Switch 2x80A 30mA RCCB	6	<b>VMLF812C</b>
16 Way Flush 100A Switch 2x80A 30mA RCCB	7	<b>VMLF816C</b>

#### High Integrity

10 Way Flush High Integrity 100A Switch 2x63A 30mA RCCB	5	<b>VMLF710CU</b>
12 Way Flush High Integrity 100A Switch 2x63A 30mA RCCB	6	<b>VMLF712CU</b>
16 Way Flush High Integrity 100A Switch 2x63A 30mA RCCB	7	<b>VMLF716CU</b>
10 Way Flush High Integrity 100A Switch 2x80A 30mA RCCB	5	<b>VMLF810CU</b>
12 Way Flush High Integrity 100A Switch 2x80A 30mA RCCB	6	<b>VMLF812CU</b>
16 Way Flush High Integrity 100A Switch 2x80A 30mA RCCB	7	<b>VMLF816CU</b>



VML24H

### Garage Board

Enclosure comes complete with 40A 30mA RCCB Incomer, 32A MCB and 6A MCB, earth & neutral connections, busbar, grommet strip, marking labels & Instructions.

Knockouts (where applicable) are located top, bottom & rear of base - See page 1.21.

Cable protector plate for rear knockouts is available as an

accessory. **(VM02CE)**

For dimensions see page 1.21.

#### Garage Board

	Size	Cat ref.
2 Way 40A 30mA RCCB with 1x32A & 1x6A MCB	2	<b>VML24H</b>





VM02CE

**Cable Protector Plate**

Provides a safe and smooth entry for cables into the rear of the consumer unit.

Designed to fit into the aperture left by the removal of a rear knockout on the Design 10 or Design 30 Consumer Unit. (Included as standard with the Design 30 board)

**VM01CE:** Simply insert protector plate and bend over tabs inside board.

**VM02CE:** Break away sections as required and simply push into place.

Description	Quantity	Cat ref.
Cable Protector Plate (Metal)	1	<b>VM01CE</b>
Cable Protector Plate (Insulated)	5	<b>VM02CE</b>



VA10MT

**Cable Clamp**

Secures supply cables on entry to main incoming device, eliminating any movement of the cables being transmitted to the terminals.

Simply insert supply cables through clamp into incoming device & secure with fixing provided.

(Included as standard with the Design 30 board)

Description	Cat ref.
Cable Clamp for Meter Tails	<b>VA10MT</b>



VMHBL

**Health & Safety Lock**

Provides the ability to lock the consumer unit during the installation process.

Can only be used with Design 30 Consumer Units.

Description	Cat ref.
Health & Safety Padlock Bracket	<b>VMHBL</b>
Padlock	<b>JK25A</b>



VMLOCK

**Key Lock**

Allows door to be lockable. Simply remove the centre of the lock surround and the knockout behind, and fit lock.

Can only be used with Design 30 Consumer Units.

Description	Cat ref.
Design 30 Door Locking Kit	<b>VMLOCK</b>

**Grommets & Grommet Strip**

Grommets for protecting against sharp edges on knockouts

Description	Quantity	Cat ref.
Grommet strip 5 metres	1 Strip	<b>VM05GS</b>
38mm open grommet for use with VMLF* back boxes	10	<b>VMGROM</b>





VAN00



JK01B



VAB08

**Other Accessories**

Description	Quantity	Cat ref.
1 Module busbar blank	25	<b>JK01B</b>
Surge protection kit	1	<b>VA02SPD</b>
Neutral link	1	<b>VAN00</b>
Dual tariff link kit	1	<b>VAK0D</b>
Split load link kit	1	<b>VAK0S</b>
Triple tariff link kit	1	<b>VAK0T</b>
8 Module busbar	1	<b>VAB08</b>
12 Module busbar	1	<b>VAB12</b>
16 Module busbar	1	<b>VAB16</b>
21 Module busbar	1	<b>VAB21</b>
Terminal bar support clips	5	<b>VAT00</b>
Terminal bar 2 way	1	<b>VAT02</b>
Terminal bar 3 way	1	<b>VAT03</b>
Terminal bar 4 way	1	<b>VAT04</b>
Terminal bar 5 way	1	<b>VAT05</b>
Terminal bar 6 way	1	<b>VAT06</b>
Terminal bar 7 way	1	<b>VAT07</b>
Terminal bar 8 way	1	<b>VAT08</b>
Terminal bar 9 way	1	<b>VAT09</b>
Terminal bar 10 way	1	<b>VAT10</b>
Terminal bar 11 way	1	<b>VAT11</b>
Terminal bar 12 way	1	<b>VAT12</b>
Terminal bar 13 way	1	<b>VAT13</b>
Terminal bar 14 way	1	<b>VAT14</b>
Terminal bar 15 way	1	<b>VAT15</b>
Terminal bar 16 way	1	<b>VAT16</b>
Terminal bar 17 way	1	<b>VAT17</b>
Terminal bar 18 way	1	<b>VAT18</b>
Terminal bar 19 way	1	<b>VAT19</b>
Terminal bar 20 way	1	<b>VAT20</b>
Terminal bar 21 way	1	<b>VAT21</b>
Terminal bar 22 way	1	<b>VAT22</b>
Terminal bar 23 way	1	<b>VAT23</b>
Terminal bar 24 way	1	<b>VAT24</b>
Label pack	1	<b>VAP00</b>

# Insulated Units

## Packed with features, the benefit's all yours.

The Hager consumer unit has been developed to accommodate the Building regulations Part M, for integration into the home environment, with great aesthetic design, and plain and glazed door options available.

Through indepth customer research we have incorporated a number of features and benefits for installers, which have resulted in the creation of a range of easy to use, high quality and reliable consumer units.

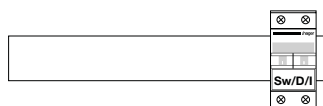
The range enables full compliance with Amendment 1 of BS 7671 and comes in three standard enclosure types, insulated & hybrid surface mounted and the hybrid flush fit.



Insulated Consumer Units	1.16
Insulated, Hybrid & Skeleton	1.17
Accessories	1.18
Garage Units & IP55 Weather Proof	1.19



VC206



### Switch Disconnecter Incomer - Insulated

Insulated and metal enclosures complete with switch disconnecter incomer, 1 row from 1 to 20 outgoing ways.

Surface mounted enclosures, with a rigid chassis, complete with a 63 Amp or 100 Amp Switch Disconnecter.

Supplied with marking labels, busbar and instructions.

Options:  
• Keylock  
• Plain or glazed door

Complies with BS EN 61439-3 Annex ZB (16kA rating).

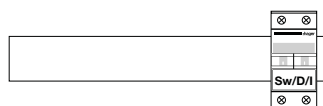
For complete accessories list see page 1.18.

For insulated consumer unit dimensions see page 1.22.

Description	Enclosure size	Cat ref. Plain door	Cat ref. Glazed door
2 Way 63A Switch Disconnecter Incomer	1	<b>VC202</b>	-
6 Way 100A Switch Disconnecter Incomer	3	<b>VC106</b>	<b>VC106G</b>
10 Way 100A Switch Disconnecter Incomer	4	<b>VC110</b>	<b>VC110G</b>
14 Way 100A Switch Disconnecter Incomer	5	<b>VC114</b>	<b>VC114G</b>
20 Way 100A Switch Disconnecter Incomer	6	<b>VC120</b>	<b>VC120G</b>



VC404H



### RCCB Incomer - Insulated

Insulated and metal enclosures complete with RCCB incomer, 1 row from 1 to 18 outgoing ways.

Surface mounted enclosures, with a rigid chassis, housing a 40A, 63A, 100A 30mA RCCB.

Supplied with marking labels, busbar and instructions.

Options:  
• Keylock  
• Plain or glazed door

Complies with BS EN 61439-3 Annex ZB (16kA rating).

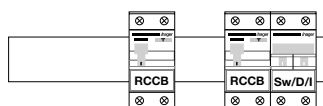
For complete accessories list see page 1.18.

For insulated consumer unit dimensions see page 1.22.

Description	Enclosure size	Cat ref. Plain door
2 Way 40A 30mA RCCB incomer	1	<b>VC402H</b>
6 Way 63A 30mA RCCB incomer	3	<b>VC406H</b>
8 Way 63A 30mA RCCB incomer	4	<b>VC408H</b>
8 Way 100A 30mA RCCB incomer	4	<b>VC308H</b>
14 Way 100A 30mA RCCB incomer	5	<b>VC314H</b>



VC816C



### 100A Switch plus Twin RCCB - Insulated

Insulated and metal, split load and configurable enclosures, 1 row from 6-16 outgoing ways.

Surface and Flush mounted enclosures, with a rigid chassis, housing a Switch Disconnecter and 2 RCCB's.

Options:  
• Keylock  
• Plain or glazed door

Complies with BS EN 61439-3 Annex ZB (16kA rating).

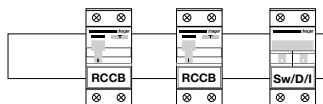
For complete accessories list see page 1.18.

For insulated consumer unit dimensions see page 1.22.

Description	Enclosure size	Cat ref. Plain door
6 Way 3+3 100A Switch 2 x 63A 30mA RCCB	4	<b>VC733H1</b>
10 Way 5+5 100A Switch 2 x 63A 30mA RCCB	5	<b>VC755H1</b>



VC816CU



## 100A Switch plus Twin RCCB with Unprotected Ways - Insulated

Insulated and metal enclosures, 1 row from 10 to 18 outgoing ways.

Surface and Flush mounted enclosures, with a rigid chassis, housing a Switch Disconnector, Twin RCCB and space for RCBOs.

Supplied with marking labels, configurable busbar and instructions.

Options:

- Keylock
- Plain or glazed door

Complies with BS EN 61439-3 Annex ZB (16kA rating).

For complete accessories list see page 1.18.

For insulated consumer unit dimensions see page 1.22.

Hybrid = metal back box with insulated cover.

Description	Enclosure size	Cat ref. Plain door
10 Way Configurable 100A Switch 2 x 63A 30mA RCCB	5	<b>VC710CU</b>
16 Way Configurable 100A Switch 2 x 63A 30mA RCCB	6	<b>VC716CU</b>
16 Way Configurable 100A Switch 2 x 80A 30mA RCCB	6	<b>VC816CU</b>



VH918C



## Twin and Multi Tariff - Hybrid (Metal back, plastic cover)

Insulated and metal enclosures 1 row from 12 to 18 outgoing ways.

Surface mounted enclosures, with a rigid chassis, housing a Twin 2 x 100A or 2 x 100A + 63A Switch Disconnector.

Supplied with marking labels, busbar and instructions.

- Options:
- Keylock

Complies with BS EN 61439-3 and (Annex ZB 16kA conditional)

For complete accessories list see page 1.18.

Hybrid = metal back box with insulated cover.

For hybrid consumer unit dimensions see page 1.22.

Description	Enclosure size	Cat ref. Plain door
18 Way Twin Tariff Configurable 2 x 100A Switch	6	<b>VH918C</b>



VS710C

## Skeleton Units

Skeleton consumer units are designed typically for use in installations in areas with pre-determined space available e.g. Metering cupboards in Local Authority accommodation.

Complies with BS EN 61439-3 and Annex ZB.

For complete accessories list see page 1.18.

Description	Cat ref. Plain door
12 Way 100A Switch Incomer	<b>VS112</b>
10 Way Configurable 100A Switch 1 x 63A 30mA RCCB	<b>VS710C</b>
12 Way Configurable 100A Switch 1 x 63A 30mA RCCB	<b>VS712C</b>
10 Way 5+4+1 100A Switch 2 x 63A 30mA RCCB 1 x Switch Fed Way for RCBO or MCB (to feed smoke detector for example)	<b>VS754U</b>
10 Way 5+4+1 100A Switch 2 x 80A 30mA RCCB 1 x Switch Fed Way for RCBO or MCB (to feed smoke detector for example)	<b>VS854U</b>

The Hager consumer unit has been designed to be the most versatile consumer unit available on the market today.

The accessories below can be used to customise standard consumer units and enclosures to almost any configuration.



VAN00



VAM00



JK01B



VAB08

Description	Pack qty	Cat ref. Plain	Cat ref. Glazed
1 Module busbar blank	25	<b>JK01B</b>	
100 Amp terminal block (MCB profile) fits directly onto busbar (cable capacity 50mm <sup>2</sup> )	1	<b>KRN190</b>	
Surge protection kit	1	<b>VA02SPD</b>	
100A Main Switch	1	<b>SPN290</b>	
Neutral link	1	<b>VAN00</b>	
Door Locking kit	1	<b>VAL00</b>	
Incoming tail connection kit	1	<b>VAM00</b>	
Dual tariff link kit	1	<b>VAK0D</b>	
Split load link kit	1	<b>VAK0S</b>	
Triple tariff link kit	1	<b>VAK0T</b>	
8 Module busbar	1	<b>VAB08</b>	
12 Module busbar	1	<b>VAB12</b>	
16 Module busbar	1	<b>VAB16</b>	
21 Module busbar	1	<b>VAB21</b>	
14 Way SP&SN insulated busbar	1	<b>VAB14N</b>	
Terminal bar support clips	5	<b>VAT00</b>	
Terminal bar 2 way	1	<b>VAT02</b>	
Terminal bar 3 way	1	<b>VAT03</b>	
Terminal bar 4 way	1	<b>VAT04</b>	
Terminal bar 5 way	1	<b>VAT05</b>	
Terminal bar 6 way	1	<b>VAT06</b>	
Terminal bar 7 way	1	<b>VAT07</b>	
Terminal bar 8 way	1	<b>VAT08</b>	
Terminal bar 9 way	1	<b>VAT09</b>	
Terminal bar 10 way	1	<b>VAT10</b>	
Terminal bar 11 way	1	<b>VAT11</b>	
Terminal bar 12 way	1	<b>VAT12</b>	
Terminal bar 13 way	1	<b>VAT13</b>	
Terminal bar 14 way	1	<b>VAT14</b>	
Terminal bar 15 way	1	<b>VAT15</b>	
Terminal bar 16 way	1	<b>VAT16</b>	
Terminal bar 17 way	1	<b>VAT17</b>	
Terminal bar 18 way	1	<b>VAT18</b>	
Terminal bar 19 way	1	<b>VAT19</b>	
Terminal bar 20 way	1	<b>VAT20</b>	
Terminal bar 21 way	1	<b>VAT21</b>	
Terminal bar 22 way	1	<b>VAT22</b>	
Terminal bar 23 way	1	<b>VAT23</b>	
Terminal bar 24 way	1	<b>VAT24</b>	
Label pack	1	<b>VAP00</b>	
Seal strip size 3 - 8 module	2	<b>VAR3S</b>	
Seal strip size 4 - 12 module	2	<b>VAR4S</b>	
Seal strip size 5 - 16 module	2	<b>VAR5S</b>	
Seal strip size 6 - 22 module	2	<b>VAR6S</b>	

Our range of garage units comply with BS EN 61439-3 Annex ZB and are available as IP40 and IP55.

Garage units come pre-configured with 32A MCB and 6A MCB for power and lighting.

The weather proof range of consumer units designed to BS EN 61439-3 including Annex ZB.

Rated at IP55 protected against low pressure water splashing from all directions.

For Garage Unit & IP55 Weather Proof dimensions see page 1.23.



GD24H

## Garage Unit

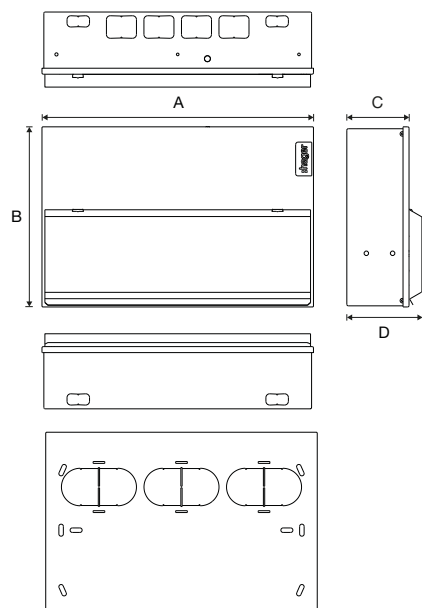
Description	Cat ref.
2 Way 40A RCCB with 32A MCB and 6A MCB, IP55	<b>VE24H</b>
2 Way 40A RCCB with 32A MCB and 6A MCB, IP40	<b>GD24H</b>



VW110G

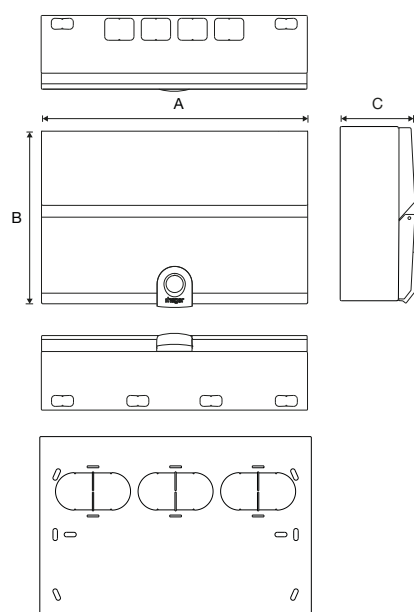
## IP55 Weather Proof

Description	Cat ref.
10 Way 100A Switch Incomer IP55	<b>VW110G</b>
10 Way 100A 30mA RCCB Incomer IP55	<b>VW310G</b>
20 Way Split Load 100A Switch 80A 30mA RCCB IP55	<b>VW620G</b>



## Design 10

Dimensions (mm)	Enclosure Size					
	2	3	4	5	6	7
A	155	227	299	370	406	478
B	246	246	246	246	246	246
C	83	83	83	83	83	83
D	100	100	100	100	100	100
Number of Knockouts						
<input type="checkbox"/> Top Face 30 x 15 (mm)	2	2	2	2	2	2
<input type="checkbox"/> Top Face 40 x 30 (mm)	0	2	4	4	6	6
<input type="checkbox"/> Back 100 x 50 (mm)	1	1	1	3	3	3
<input type="checkbox"/> Bottom Face 30 x 15 (mm)	2	3	4	4	5	5

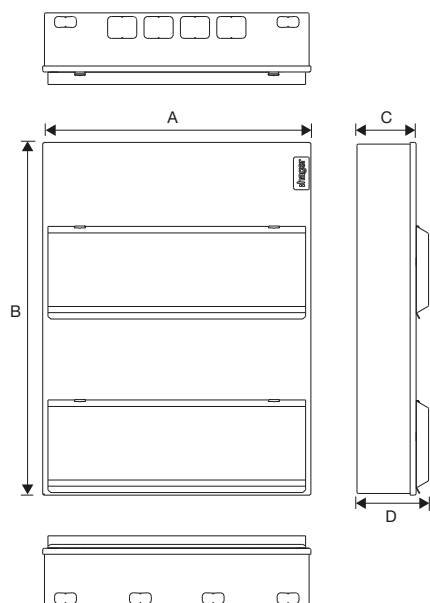


## Design 30

Dimensions (mm)	Enclosure Size					
	2	3	4	5	6	7
A	149	221	293	364	400	472
B	240	240	240	240	240	240
C	102.5	102.5	102.5	102.5	102.5	102.5
Number of Knockouts						
<input type="checkbox"/> Top Face 30 x 15 (mm)	2	2	2	2	2	2
<input type="checkbox"/> Top Face 40 x 30 (mm)	0	2	4	4	6	6
<input type="checkbox"/> Back 100 x 50 (mm)	1	1	1	3	3	3
<input type="checkbox"/> Bottom Face 30 x 15 (mm)	2	3	4	4	5	5

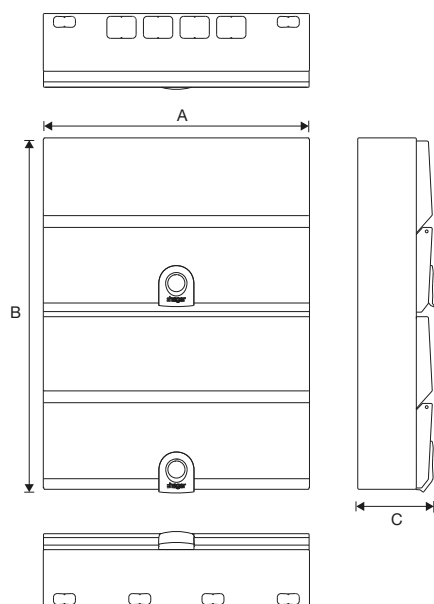


### Dual Row Design 10



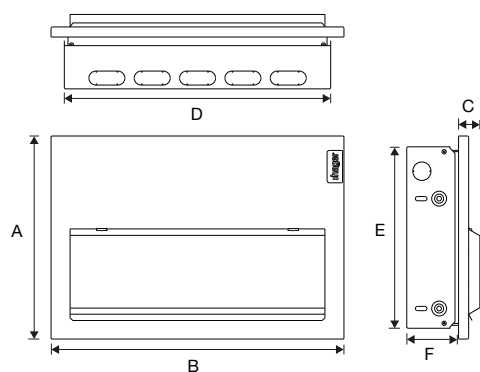
Dimensions (mm)	Enclosure Size				
	3	4	5	6	7
A	227	299	370	406	478
B	486	486	486	486	486
C	83	83	83	83	83
D	100	100	100	100	100
Number of Knockouts					
<input type="checkbox"/> Top Face 30 x 15 (mm)	2	2	2	2	2
<input type="checkbox"/> Top Face 40 x 30 (mm)	2	4	4	6	6
<input type="checkbox"/> Back 100 x 50 (mm)	2	2	6	6	6
<input type="checkbox"/> Bottom Face 30 x 15 (mm)	3	4	4	5	5

### Dual Row Design 30

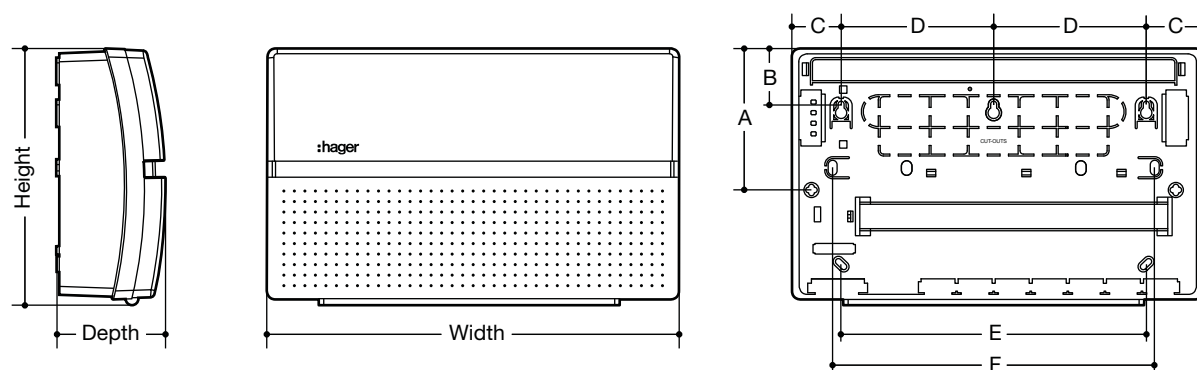


Dimensions (mm)	Enclosure Size				
	3	4	5	6	7
A	221	293	364	400	472
B	480	480	480	480	480
C	102.5	102.5	102.5	102.5	102.5
Number of Knockouts					
<input type="checkbox"/> Top Face 30 x 15 (mm)	2	2	2	2	2
<input type="checkbox"/> Top Face 40 x 30 (mm)	2	4	4	6	6
<input type="checkbox"/> Back 100 x 50 (mm)	2	2	6	6	6
<input type="checkbox"/> Bottom Face 30 x 15 (mm)	3	4	4	5	5

### Flush Design 10

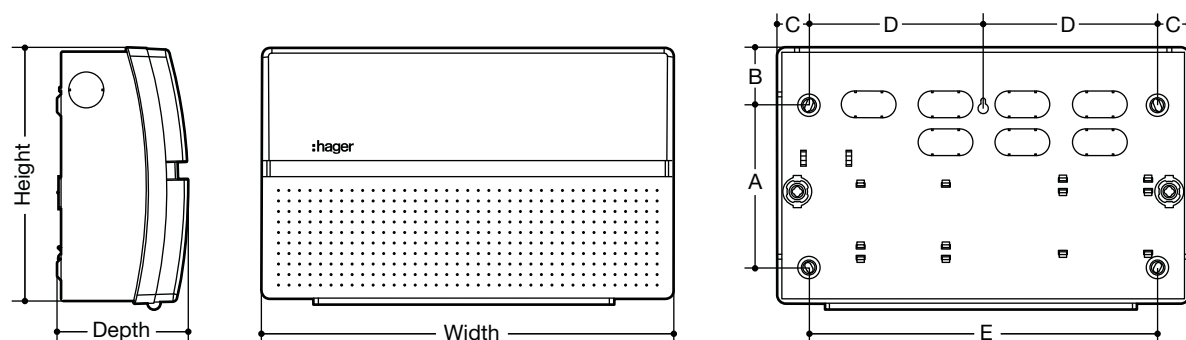


Dimensions (mm)	Enclosure Size			
	4	5	6	7
A	282	282	282	282
B	335	407	443	515
C	32	32	32	32
D	298	370	406	478
E	252	252	252	252
F	72	72	72	72
Number of Knockouts				
<input type="checkbox"/> Top Face 50 x 20 (mm)	4	5	6	7
<input type="checkbox"/> Bottom Face 50 x 20 (mm)	4	5	6	7
<input type="checkbox"/> Back 100 x 50 (mm)	2	2	2	3
<input type="checkbox"/> Left Face 20.8 (mm)	1	1	1	1



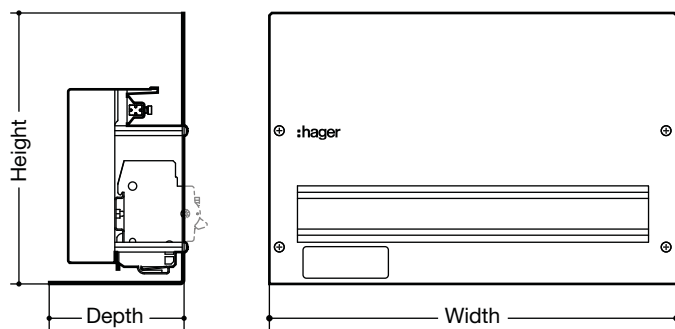
## Insulated Enclosures

Enclosure Size	Dimensions (mm)			Fixing Centres (mm)					
	Width	Height	Depth	A	B	C	D	E	F
VC201	110	180	94	-	-	-	-	-	-
VC202	110	180	94	-	-	-	-	-	-
3	240	245	105	115	50	45	72	145	160
4	310	245	105	115	50	45	107	215	230
5	380	245	105	115	50	45	143	285	302
6	490	245	105	115	50	45	195	395	410



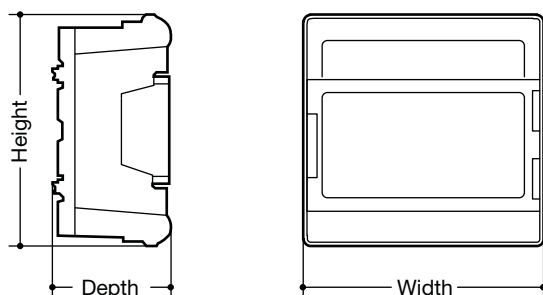
## Hybrid Enclosures

Enclosure Size	Dimensions (mm)			Fixing Centres (mm)				
	Width	Height	Depth	A	B	C	D	E
VH201	168	193	124	-	-	-	-	-
VH202	168	193	124	-	-	-	-	-
2	220	230	110	165	32	55	N/A	163
3	240	245	120	150	55	30	89	178
4	310	245	120	150	55	30	125	250
5	380	245	120	150	55	30	160	320
6	490	245	120	150	55	30	214	429



## Skeleton (Mantel)



Dimensions (mm)			
Width	Height	Depth	Fixing Centres (mm)
331	221	74	320



## Garage Units & IP55 Weather Proof

	Dimensions (mm)		
	Width	Height	Depth
VE24H	180	110	82
GD24H	168	193	113
VW110G	310	302	151
VW310G	310	302	151
VW620G	310	427	151

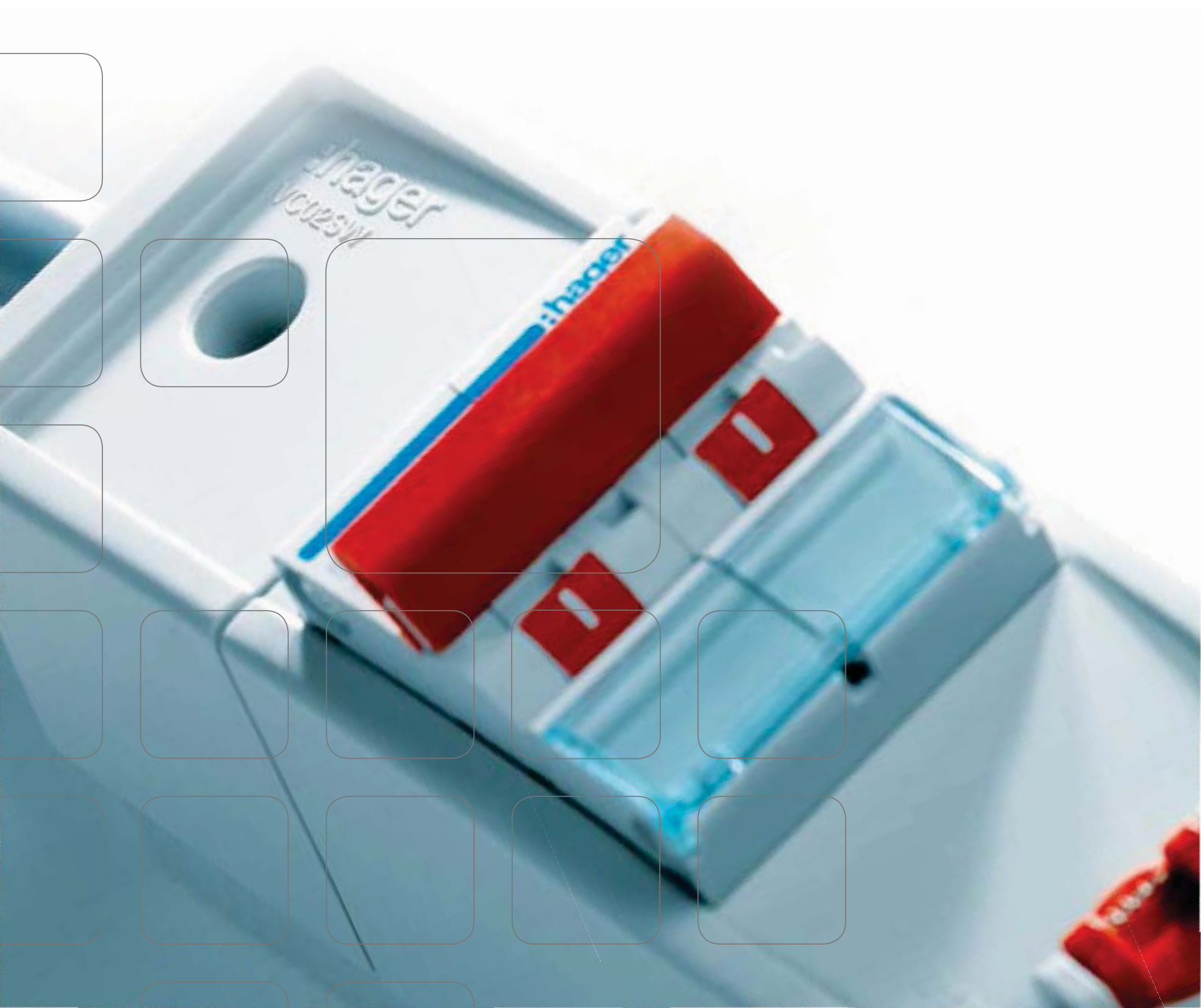
## Torque Settings

			Cables >1.5mm² Tightening torque (N.m)		Cables ≤1.5mm² Tightening torque (N.m)		Cable Stripping (mm)
	Pz No.	(mm)	Single Cable	Multi Cables	Single Cable	Multi Cable	
Consumer unit terminals							
Earth and neutral terminal bars	2	6.5	2	2	1.5	1.5	10
Isolation							
SB switch disconnectors	2	6.5	3.6	3.6	3.6	3.6	15
Circuit protection							
MTN MCB	2	6.5	2.8	2.8	2.8	2.8	13
NBN/NCN/NDN MCB	2	6.5	2.8	2.8	2.8	2.8	13
RCBO	2	5.5	2.1	2.1	2.1	2.1	13
RCCB	2	5.5	2.8	2.8	2.8	2.8	13

# Enclosures

## The latest generation

Hager enclosures are available in many sizes ranging from the 2 to 10 modules insulated Mini Gamma, 3 to 36 module IP55 Weather Proof, Volta II Flush and Vector II multi row enclosures plus the Metal and GRP range of IP65 Orion Plus enclosures.



DIN Rail Enclosures	2.3
Mini Gamma Enclosures	2.4
Vector II Weather Proof Enclosures & Accessories	2.6
Vega Surface Mounting Enclosures & Accessories	2.7
Volta II Flush Mounting Enclosures & Accessories	2.8
Enclosures and Accessories	2.9
Meter Box Switch	2.9
Orion Plus Metal IP65 Enclosures & Accessories	2.10
Orion Plus GRP IP65 Enclosures & Accessories	2.11
Orion Plus Accessories	2.12
Brass Terminals $\leq 60A$	2.13
Rail Mounted Terminals	2.14
Insulated Busbars - Prong	2.15
Insulated Busbars - Fork	2.16



VML004

## DIN Rail Enclosure

Metal DIN rail enclosures, 1 row from 4 to 22 outgoing ways.

terminals along with marking labels and instructions.

For dimensions see page 2.17.

Enclosures come supplied with a full metal DIN rail and full complement of earth and neutral

Conforms to BS EN 62208.

Description	Size	Cat ref.
4 Module DIN Rail Enclosure	2	<b>VML004</b>
8 Module DIN Rail Enclosure	3	<b>VML008</b>
12 Module DIN Rail Enclosure	4	<b>VML012</b>
16 Module DIN Rail Enclosure	5	<b>VML016</b>
18 Module DIN Rail Enclosure	6	<b>VML018</b>
22 Module DIN Rail Enclosure	7	<b>VML022</b>



VM004

## DIN Rail Enclosure

Metal DIN rail enclosures, 1 row from 4 to 22 outgoing ways.

terminals along with marking labels.

Conforms to BS EN 62208.  
Optional Health & Safety Lock & keylock available.

Enclosures come supplied with a full metal DIN rail and full complement of earth and neutral

For dimensions see page 2.17.

Description	Size	Cat ref.	Cat ref. with knockouts
4 Module DIN Rail Enclosure	2	<b>VM004</b>	<b>VM004K</b>
8 Module DIN Rail Enclosure	3	<b>VM008</b>	<b>VM008K</b>
12 Module DIN Rail Enclosure	4	<b>VM012</b>	<b>VM012K</b>
16 Module DIN Rail Enclosure	5	<b>VM016</b>	<b>VM016K</b>
18 Module DIN Rail Enclosure	6	<b>VM018</b>	<b>VM018K</b>
22 Module DIN Rail Enclosure	7	<b>VM022</b>	<b>VM022K</b>



VC008G

## DIN Rail - Insulated

Insulated and metal DIN rail enclosures, 1 row from 4 to 22 modules.

Surface mounted enclosures, with a rigid chassis, housing a DIN rail.

Supplied with marking labels and instructions.

Options:

- Keylock
- Plain or glazed door

Complies with BS EN 62208.

For dimensions see page 2.18.

Description	Enclosures size	Cat ref. Plain door	Cat ref. Glazed door
8 Module DIN Rail Enclosure	3	<b>VC008</b>	<b>VC008G</b>
12 Module DIN Rail Enclosure	4	<b>VC012</b>	<b>VC012G</b>
16 Module DIN Rail Enclosure	5	<b>VC016</b>	<b>VC016G</b>
22 Module DIN Rail Enclosure	6	<b>VC022</b>	<b>VC022G</b>



VH012

## DIN Rail - Hybrid (Metal back, plastic cover)

Insulated and metal DIN rail enclosures, 1 row from 4 to 22 modules.

Surface mounted enclosures, with a rigid chassis, housing a DIN rail.

Supplied with marking labels and instructions.

Options:

- Keylock
- Plain or glazed door

Complies with BS EN 62208.

For dimensions see page 2.18.

Description	Enclosure size	Cat ref. Plain door	Cat ref. Glazed door
4 Module DIN Rail Enclosure	2	<b>VH004</b>	-
8 Module DIN Rail Enclosure	3	<b>VH008</b>	<b>VH008G</b>
12 Module DIN Rail Enclosure	4	<b>VH012</b>	<b>VH012G</b>
16 Module DIN Rail Enclosure	5	<b>VH016</b>	<b>VH016G</b>
22 Module DIN Rail Enclosure	6	<b>VH022</b>	<b>VH022G</b>

Insulated enclosures 1 row from 2 to 10 modules.

Surface mounted enclosures, with a rigid, chassis, housing a DIN rail.

Supplied with Earth terminals (except GD102E), marking labels and sealing grommets to maintain Class II.

- Options (see page 2.5):
- Keylock
  - Plain or transparent door
  - Terminals and terminal supports

For dimensions see page 2.19.



GD102E



GD106E

## Mini Gamma

Description	Cat ref.
2 Modules compatible with WAGO type 273 connector block (not supplied).	<b>GD102E</b>
4 Modules E: 2 x 16 + 2 x 10mm <sup>2</sup> (capacity to fit an additional 4 hole terminal bar on existing support)	<b>GD104E</b>
6 Modules E: 2 x 16 + 2 x 10mm <sup>2</sup> (capacity to fit an additional two 4 hole terminal bars or one 7 hole terminal bar on existing support)	<b>GD106E</b>
8 Modules E: 3 x 16 + 4 x 10mm <sup>2</sup> (capacity to fit an additional two 4 hole terminal bars or one 7 hole terminal bar on existing support)	<b>GD108E</b>
10 Modules E: 3 x 16 + 4 x 10mm <sup>2</sup> (capacity to fit an additional three 4 hole terminal bars or two 7 hole terminal bars on existing support)	<b>GD110E</b>





GP108P

**Mini Gamma Plain Doors**

Plain door with integrated handle (use of door increases IP rating to IP40)

For Cat ref.	Cat ref.
GD102E	<b>GP102P</b>
GD104E	<b>GP104P</b>
GD106E	<b>GP106P</b>
GD108E	<b>GP108P</b>
GD110E	<b>GP110P</b>



GP110T

**Mini Gamma Transparent Doors**

Transparent door with integrated handle (use of door increases IP rating to IP40)

For Cat ref.	Cat ref.
GD102E	<b>GP102T</b>
GD104E	<b>GP104T</b>
GD106E	<b>GP106T</b>
GD108E	<b>GP108T</b>
GD110E	<b>GP110T</b>



GZ108ES

**Terminal Support**  
(no terminals)

For Cat ref.	Cat ref.
GD104E	<b>GZ104S</b>
GD106E	<b>GZ106S</b>
GD108E	<b>GZ108S</b>
GD110E	<b>GZ110S</b>



GZ04E

**Terminals (63A Rating)**

Cable capacity	Neutral (blue) Cat ref.	Earth (green) Cat ref.
2 x 16mm <sup>2</sup> + 2 x 10mm <sup>2</sup>	<b>GZ04N</b>	<b>GZ04E</b>
3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup>	<b>GZ07N</b>	<b>GZ07E</b>



VZ313

**Keylock**

Description	Cat ref.
Keylock for plain or transparent door	<b>VZ313</b>

**Enclosure with door**

1 row for 3, 6, 10 and 12 modules  
 2 row for 24 modules  
 3 row for 36 modules  
 Adjustable depth DIN rail (except VE103U).

Supplied with sealing plugs to re-instate IP rating after fixing.  
 Front cover sealing.

**Door operation**

3-10 modules - vertical hinging retained in open position at 90°  
 12-36 modules - horizontal hinging.

Hinging reversible (left or right).

Colour: RAL 7035 (light grey).

**Wiring ducts** 12 - 36 module enclosures/mini wiring channels left and right ensures conductors are neatly dressed.

**IP 55:** AC 400V.  
 insulation class: class II

For dimensions see page 2.19.



VE212U

**Vector II Enclosures**

Description	Moulded blanks (In front cover)	Cat ref.
1 row, 3 modules N: 1 x 25 + 3 x 16, E: 1 x 25 + 5 x 16	2 x 1/2	<b>VE103U</b>
1 row, 6 modules N: 1 x 25 + 5 x 16, E: 1 x 25 + 7 x 16	2 x 1	<b>VE106U</b>
1 row, 10 modules N: 1 x 25 + 9 x 16, E: 1 x 25 + 11 x 16	2 x 1	<b>VE110U</b>
1 row, 12 modules N: 1 x 25 + 10 x 16, E: 1 x 25 + 13 x 16		<b>VE112U</b>
2 rows, 24 modules N: 1 x 25 + 16 x 16, E: 1 x 25 + 16 x 16		<b>VE212U</b>
3 rows, 36 modules N: 1 x 25 + 19 x 16, E: 1 x 25 + 19 x 16		<b>VE312U</b>



VZ428

**Terminal Support Assembly**

Description	Cat ref.
3 x (3 x 16mm <sup>2</sup> + 2 x 10mm <sup>2</sup> ) 270mm wide N: 1 x (5 x 16mm <sup>2</sup> + 6 x 10mm <sup>2</sup> ) In: 63A To fit 12 module wide enclosure only Note: VZ744 Supports required	<b>VZ428</b>



VZ403

**Earth and Neutral for Single Phase Connection Assembly**

Description	Cat ref.
2 x (3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup> ) 270mm wide In: 63A To fit 12 module wide enclosure only Note: VZ744 Supports required	<b>VZ403</b>



VZ311

**Key Lock**

Description	Cat ref.
For all enclosures with 2 keys	<b>VZ311</b>



VZ744

**Sliding Support**

Description	Cat ref.
1 Set = 2 Supports for fixing of additional terminal supports in bottom part of enclosure (VE112U and above)	<b>VZ744</b>

## IP40 surface mounting enclosures

with transparent or plain doors;  
1-3 rows 18 to 54 modules.  
63A max. total load.

Enclosures are of an insulating material coloured white RAL 9016.

The enclosures feature a removable chassis with DIN rails for ease of installation.

Top and bottom cable entry plates are removable and interchangeable. The door is also reversible with an integral flush handle.

## Options

- Door lock

Note: Not suitable for single module RCBO's.

For dimensions see page 2.20.



VB18B

## Vega Enclosures

Description	Quick connect earth terminals	Cat ref. Plain door	Cat ref. Glazed door
1 row, 18 modules	4 x 25mm <sup>2</sup> , 14 x 4mm <sup>2</sup>	<b>VB18B</b>	<b>VB18R</b>
2 rows, 36 modules	7 x 25mm <sup>2</sup> , 25 x 4mm <sup>2</sup>	<b>VB36B</b>	<b>VB36R</b>
3 rows, 54 modules	10 x 25mm <sup>2</sup> , 34 x 4mm <sup>2</sup>	<b>VB54B</b>	<b>VB54R</b>



VZ708



VZ707

## Vega Accessories

Description	Pack qty	Cat ref.
Key lock for Vega Enclosures	1	<b>VZ310</b>
Connection Assembly 63A 2 x (3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup> )	1	<b>VZ708</b>
Connection Assembly 63A 2 x (3 x 16mm <sup>2</sup> + 2 x 10mm <sup>2</sup> )	1	<b>VZ709</b>
Coupling pieces for joining two enclosures	1	<b>VZ703</b>
Replacement cable entry plates with circular cut outs	10	<b>VZ706</b>
Replacement cable entry plates with rectangular cut outs	10	<b>VZ707</b>
Blanking clips 1/2 module (8.7mm)	50	<b>P031F</b>
Blanking clips 1 module (17.5mm)	50	<b>P032F</b>
Blanking clips 18 module	10	<b>JP015</b>



KN14E



KN10N



KN99E

## Quick Connect Terminals

Description	Length (mm)	No. Quick Connect Terminals 4mm <sup>2</sup>	No. Screw Terminals 25mm <sup>2</sup>	Cat ref. Neutral	Cat ref. Earth
6 Connection Terminal Block	30	5	1	<b>KN06N</b>	<b>KN06E</b>
10 Connection Terminal Block	45	8	2	<b>KN10N</b>	<b>KN10E</b>
14 Connection Terminal Block	60	11	3	<b>KN14N</b>	<b>KN14E</b>
18 Connection Terminal Block	75	13	5	<b>KN18N</b>	<b>KN18E</b>
22 Connection Terminal Block	90	16	6	<b>KN22N</b>	<b>KN22E</b>
26 Connection Terminal Block	105	19	7	<b>KN26N</b>	<b>KN26E</b>
Pack of 10 Terminal Interconnectors	-	-	-	<b>KN99N</b>	<b>KN99E</b>

**IP30 Flush mounting enclosures with doors**  
1-4 rows  
12-48 modules  
63A max total load

- Enclosure manufactured from insulated material
- Frame and door manufactured from metal
- Reversible door

- Delivered with earth block, blanking clips and circuit identification labelling
  - Integrated spirit level
- Note: Not suitable for single module RCBO's

For dimensions see page 2.20.



VU48EP

## Volta II Enclosures

Description	Quick connect earth terminals	Cat ref.
1 Row 12 Modules	3 x 25mm <sup>2</sup> + 11 x 4mm <sup>2</sup>	<b>VU12EP</b>
2 Rows 24 Modules	5 x 25mm <sup>2</sup> + 17 x 4mm <sup>2</sup>	<b>VU24EP</b>
3 Rows 36 Modules	6 x 25mm <sup>2</sup> + 20 x 4mm <sup>2</sup>	<b>VU36EP</b>
4 Rows 48 Modules	8 x 25mm <sup>2</sup> + 28 x 4mm <sup>2</sup>	<b>VU48EP</b>



VZ403

## Volta II Accessories

Description	Characteristics	Cat ref.
Key lock	Supplied with 2 keys replaces original catch	<b>VZ302N</b>
Connection assembly single phase 63A	2 x (3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup> ) 270mm wide	<b>VZ403</b>
Connection assembly 63A	2 x (3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup> ) 1 x (4 x 16mm <sup>2</sup> + 7 x 10mm <sup>2</sup> ) 270mm wide	<b>VZ428</b>
Mounting kit for partition walls Comprising: • 4 support clamps • 4 screws	For mounting flush enclosures in partition walls	<b>VZ405N</b>



KN14E



KN10N



KN99E

## Quick Connect Terminals

Description	Length (mm)	Nº. Quick Connect Terminals 4mm <sup>2</sup>	Nº. Screw Terminals 25mm <sup>2</sup>	Cat ref. Neutral	Cat ref. Earth
6 Connection Terminal Block	30	5	1	<b>KN06N</b>	<b>KN06E</b>
10 Connection Terminal Block	45	8	2	<b>KN10N</b>	<b>KN10E</b>
14 Connection Terminal Block	60	11	3	<b>KN14N</b>	<b>KN14E</b>
18 Connection Terminal Block	75	13	5	<b>KN18N</b>	<b>KN18E</b>
22 Connection Terminal Block	90	16	6	<b>KN22N</b>	<b>KN22E</b>
26 Connection Terminal Block	105	19	7	<b>KN26N</b>	<b>KN26E</b>
Pack of 10 Terminal Interconnectors	-	-	-	<b>KN99N</b>	<b>KN99E</b>

**1 row boxes 1-5 modules**

This range is ideally suited for the installation of individual modular devices. (RCCBs, MCBs, RCBO's, Switch Disconnectors etc).

The range is available without door, with plain door or with glazed door.

Where larger cables need to be accommodated for switch disconnectors etc extra cabling space is provided in the extended height versions.

All boxes from 2-5 modules are fitted with an earth bar as standard and for those with doors the catch can be replaced

with the optional key locking facility.

These enclosures feature:

- Ample wiring space
- Plain or glazed doors
- Optional key lock

For dimensions see page 2.21.



IU41

**Enclosures**

Description	Cat ref. Without door	Cat ref. Plain door	Cat ref. Glazed door
1 Row 1 Module Suitable for 1 Module RCBO	<b>IU41</b>	-	-
1 Row 2 Modules	<b>IU2</b>	<b>IU2/D</b>	<b>IU2/GD</b>
1 Row 2 Modules Extended Height	<b>IU42*</b>	<b>IU42/D*</b>	-
1 Row 3 Modules	<b>IU3</b>	<b>IU3/D</b>	-
1 Row 4 Modules	<b>IU4</b>	<b>IU4/D</b>	-
1 Row 4 Modules Extended Height	<b>IU44*</b>	<b>IU44/D*</b>	<b>IU44/GD*</b>
1 Row 5 Modules Extended Height	<b>IU45*</b>	-	-

Note: Recommended maximum cable capacity

\* extended height = 35mm<sup>2</sup> all other references = 6mm<sup>2</sup>

**Accessories**

Description	Cat ref.
Keylock with 2 keys suitable for all enclosures fitted with door - IU enclosure	<b>IKL1</b>

## Meter Box Switch

VC02SW is an enclosed switch disconnecter suitable for meter box applications where an isolating switch between the electricity meter and consumer unit is required.

It benefits from twin cable clamps which have been additionally proven to secure insulated and sheathed meter tails with conductor sizes

ranging from 16-35mm<sup>2</sup>. This unique feature greatly reduces the strain on the switch terminals reducing the likelihood of loose electrical connections.

The anti-tamper screw cap is a unique feature of VC02SW, allowing the supply authority to simply secure the main cover in place following installation. The device can also be locked

in the open/off position with the appropriate Hager accessory.

VC02SW conforms with BS EN 60947-3:2009+A1:2012 which facilitates the installation to comply with BS 7671 IET Wiring Regulations, in particular guidance given in table 53.4.

For dimensions see page 2.21.



VC02SW

Description	Cat ref.
Meter Box Switch	<b>VC02SW</b>

**Enclosures with plain door**  
steel colour RAL 7035  
insulation class : I

**IP 65** / door closed  
according to BS EN 60529  
1.5mm thick sheet steel for  
body and door

These enclosures feature:

- 2 removable gland plates for cable entry on top and bottom
- Earth studs on both body and door
- Door easily removable
- Plain door equipped with one or two locks with triangular 8mm bit centres, located out of the sealed area

**Options:**

- Key lock
- Wall fixing brackets
- Mounting plate
- Equipment kits for modular devices

For full dimensions see page 2.22.



FL110A

## Orion Plus Metal Enclosures

Dimensions Height x Width x Depth (mm)	No. of locks	Cat ref. Plain door	Cat ref. Glazed door
300 x 250 x 160	1	<b>FL102A</b>	-
350 x 300 x 160	1	<b>FL104A</b>	<b>FL154A</b>
350 x 300 x 200	1	<b>FL105A</b>	<b>FL155A</b>
500 x 300 x 200	1	<b>FL110A</b>	<b>FL160A</b>
500 x 400 x 200	1	<b>FL112A</b>	<b>FL162A</b>
650 x 400 x 200	2	<b>FL117A</b>	<b>FL167A</b>
650 x 400 x 250	2	<b>FL118A</b>	<b>FL168A</b>
650 x 500 x 250	2	<b>FL120A</b>	<b>FL170A</b>
800 x 600 x 300	2	<b>FL124A</b>	<b>FL174A</b>
950 x 600 x 300	2	<b>FL126A</b>	<b>FL176A</b>
950 x 800 x 300	2	<b>FL128A</b>	<b>FL178A</b>



FL96Z



FL80Z



FL95Z

## Orion Plus Metal Enclosure Accessories

Description	Cat ref.
Key lock to be mounted on the triangular lock	<b>FL96Z</b>
1 set of 2 key locks with male square 8mm, with 1 key	<b>FL80Z</b>
Key lock for FL201B	<b>FL94Z</b>
1 set of 2 locks doublebars 3mm with 1 key	<b>FL95Z</b>
Metallic wall fixing brackets with screws (set of 4)	<b>FL85Z</b>
Kit for earth connection (for metal enclosures)	<b>FL874A</b>
Orion Plus spray paint kit (RAL7035)	<b>FL672Z</b>



FL85Z



FL874A

**Enclosure with plain door**

Made of glass reinforced polyester (GRP)  
 Colour : RAL 7035  
 FL 201B : RAL 7032  
 Body made out of one piece up to height 800mm

IP 65 / door closed BS EN 60529  
 insulation class : II

These enclosures feature :

- Plain door equipped with one or two locks with triangular 8mm centres, located out of the sealed area, gasket directly moulded on the door
- Studs in the back of the enclosure for mounting plate fastening

Options:

- Key lock
- Wall fixing brackets
- Mounting plate
- Equipment kits for modular devices.

For full dimensions see page 2.23.



FL216B

**Orion Plus GRP Enclosures**

Dimensions Height x Width x Depth (mm)	No. of locks	Cat ref. Plain door	Cat ref. Glazed door
350 x 300 x 160	1	<b>FL204B</b>	<b>FL254B</b>
500 x 300 x 200	2	<b>FL209B</b>	<b>FL259B</b>
500 x 400 x 200	2	<b>FL213B</b>	<b>FL263B</b>
650 x 400 x 200	2	<b>FL216B</b>	<b>FL266B</b>
650 x 500 x 250	2	<b>FL221B</b>	<b>FL271B</b>
800 x 600 x 300	2	<b>FL229B</b>	<b>FL279B</b>
1200 x 850 x 300	1	<b>FL327B</b>	<b>FL527B</b>

<sup>1</sup> FL201B made of polycarbonate



FL96Z

**Orion Plus GRP Enclosure Accessories**

Description	Cat ref.
Key lock to be mounted on the triangular lock, supplied with 2 keys no 427 for h ≤ 800	<b>FL96Z</b>
Key lock to be mounted on the triangular lock, supplied with 2 keys no 427 for h ≤ 1150	<b>FL98Z</b>
Replacement lock 1 set of 2 locks with male square 8mm with 1 key	<b>FL81Z</b>
Replacement lock 1 set of locks double-bar 3mm with 1 key	<b>FL97Z</b>
Plastic wall fixing brackets delivered with fixing screws M 6x12 on enclosure set of 4 pieces	<b>FL863Z</b>
Depth adjustment slide for enclosures 300mm	<b>FL672E</b>



FL81Z



FL97Z



FL863Z



FL408A

### Orion Plus GRP Enclosure Plain Mounting Plates

Steel sheet 2mm thickness, aluminium zinc. Fixed directly to the back of the enclosure or on the sides allowing the in-depth setting (fitting with slides FL450A). For dimensions see page 2.23.

For enclosures	Dimensions Height x Width (mm)	Cat ref.
FL201B	300 x 250	<b>FL41G</b>
FL102A, FL152A	300 x 250	<b>FL402A</b>
FL104A, FL105A, FL204B, FL154A, FL155A, FL254B	350 x 300	<b>FL404A</b>
FL110A, FL209B, FL160A, FL259B	500 x 300	<b>FL407A</b>
FL112A, FL213B, FL162A, FL263B	500 x 400	<b>FL408A</b>
FL117A, FL118A, FL216B, FL167A, FL168A, FL266B	650 x 400	<b>FL412A</b>
FL120A, FL221B, FL170A, FL271B	650 x 500	<b>FL413A</b>
FL124A, FL229B, FL174A, FL279B	800 x 600	<b>FL415A</b>
FL126A, FL176A	900 x 600	<b>FL416A</b>
FL128A, FL178A	950 x 800	<b>FL417A</b>
FL327B, FL527B	1150 x 850	<b>FL522E</b>



FL981A

### Equipment Kits for Modular Chassis

#### On Chassis

Only for FL980A and FL981A, composed of:

- DIN rails (slide length 44mm) assembled on chassis and adjustable in depth (of front plates with slide).

#### On Vertical Rail

Composed of:

- 2 vertical rail, DIN rail (slide length 44mm).
- Front plates with slit.
- A cross-rail allowing the assembly of bars on base and slides).

For enclosures	Rows (modules)	Cat ref.
FL102A, FL104A, FL204B, FL254B	2 rows (24)	<b>FL979A</b>
FL110A, FL209B, FL160A, FL259B	3 rows (36)	<b>FL981A</b>
FL112A, FL213B, FL162A, FL162A, FL263B	3 rows (48)	<b>FL992A</b>
FL117A, FL118A, FL216B, FL167A, FL168A, FL266B	4 rows (64)	<b>FL993A</b>
FL120A, FL221B, FL170A, FL271B	4 rows (88)	<b>FL994A</b>
FL124A, FL229B, FL174A, FL279B	5 rows (130)	<b>FL996A</b>
FL126A, FL176A	6 rows (156)	<b>FL997A</b>
FL128A, FL178A	6 rows (222)	<b>FL998A</b>



FL992A





**Description**

To prewire incoming & outgoing circuits in distribution boards.

**Colour Code**

Neutral = Blue  
Earth = Green / Yellow  
Phase = Beige

Phase	Rated Current	Neutral	Rated Current
<b>KXA02LH</b>	24A	<b>KXA02NH</b>	24A
<b>KXA04LH</b>	32A	<b>KXA04NH</b>	32A
<b>KXA06LH</b>	41A	<b>KXA06NH</b>	41A
<b>KXA10L</b>	57A	<b>KXA10N</b>	57A
<b>KXA16L</b>	76A	<b>KXA16N</b>	76A
<b>KXA35L</b>	125A	<b>KXA35N</b>	125A
<b>KXB70LH</b>	192A	<b>KXB70NH</b>	179A

**Feed through Rail Mounted Terminals**

Nominal	Min-Max	Rated Voltage	Phase Cat ref.	Neutral Cat ref.	Earth Cat ref.
2.5mm <sup>2</sup>	(0.5mm <sup>2</sup> - 4mm <sup>2</sup> )	800V	<b>KXA02LH</b>	<b>KXA02NH</b>	<b>KXA02E</b>
4mm <sup>2</sup>	(0.5mm <sup>2</sup> - 6mm <sup>2</sup> )	800V	<b>KXA04LH</b>	<b>KXA04NH</b>	<b>KXB04E</b>
6mm <sup>2</sup>	(0.5mm <sup>2</sup> - 10mm <sup>2</sup> )	800V	<b>KXA06LH</b>	<b>KXA06NH</b>	<b>KXB06E</b>
10mm <sup>2</sup>	(1.5mm <sup>2</sup> - 16mm <sup>2</sup> )	400V	<b>KXA10L</b>	<b>KXA10N</b>	<b>KXA10E</b>
16mm <sup>2</sup>	(1.5mm <sup>2</sup> - 25mm <sup>2</sup> )	400V	<b>KXA16L</b>	<b>KXA16N</b>	<b>KXA16E</b>
35mm <sup>2</sup>	(6mm <sup>2</sup> - 50mm <sup>2</sup> )	400V	<b>KXA35L</b>	<b>KXA35N</b>	<b>KXB35E</b>
70mm <sup>2</sup>	(16mm <sup>2</sup> - 95mm <sup>2</sup> )	800V	<b>KXB70LH</b>	<b>KXB70NH</b>	<b>KXB70E</b>

**End Plates Beige**

Description	Width in mm	Cat ref.
For KXA02LH & KXA04LH	1.5	<b>KWE01G</b>
For KXA10L & KXA16L	-	<b>KWE04G</b>
For KXA35L	1.5	<b>KWE03G</b>

**End Stops**

Description	Width in mm	Cat ref.
Insulated material	8.5	<b>KWB01</b>



K037

**Connection Blocks in ≤ 125A Single Pole**

Description	Width in mm	Cat ref.
Incoming 2 x 25mm <sup>2</sup> , Outgoing 4 x 16mm <sup>2</sup>	2.5	<b>K018</b>
Incoming 2 x 35mm <sup>2</sup> , Outgoing 4 x 25mm <sup>2</sup>	2.5	<b>K037</b>



KB163P

## Insulated Single Pole Busbars - Prong

Description	Cat ref.
63A 13 Modules Single Pole Brown Insulation (Phase)	<b>KB163P</b>
63A 13 Modules Single Pole Blue Insulation (Neutral)	<b>KB163N</b>
100A 24 Modules Single Pole	<b>K171UK</b>
Endcaps for Single Pole Busbars	<b>KZ021</b>



KB263C

## Insulated Double Pole Busbars - Prong

Description	Cat ref.
63A 24 Modules Double Pole	<b>KB263C</b>
80A 56 Modules Double Pole	<b>KB280B</b>
10 Endcaps for Double Pole Busbars	<b>KZ023A</b>



KB363C

## Insulated Triple Pole Busbars - Prong

Description	Cat ref.
63A 24 Modules Triple Pole	<b>KB363C</b>
80A 57 Modules Triple Pole	<b>KB380B</b>
10 Endcaps for Triple Pole Busbars	<b>KZ023A</b>

## Insulated Four Pole Busbars - Prong

Description	Cat ref.
63A 24 Modules Four Pole	<b>KB463C</b>
80A 56 Modules Four Pole	<b>KB480B</b>
Endcaps for Four Pole Busbars	<b>KZ024</b>



KF50SB

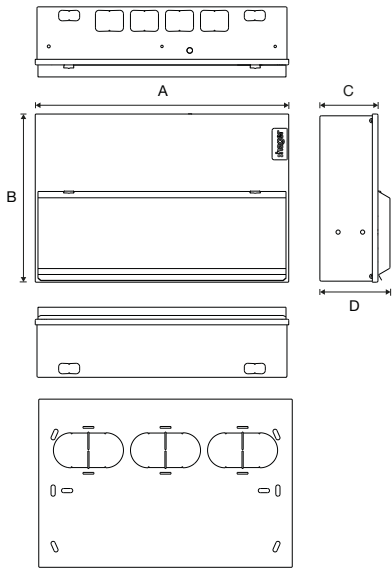


KF83D

## Cable Connectors

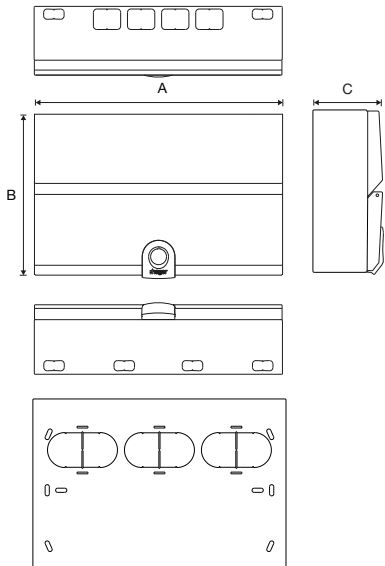
Description	Cat ref.
Connection terminal - Cable connection up to 50mm <sup>2</sup> Direct busbar connection 160A/ 690V	<b>KF50SB</b>
Prong Type Connection from the Top for Cables 25mm <sup>2</sup>	<b>KF81A</b>
Prong Type Connection from the Top for Cables 16mm <sup>2</sup>	<b>KF82A</b>
Prong Type Connection from the Side for Cables 35mm <sup>2</sup>	<b>KF83D</b>
Fork Type Connection from the Side for Cables 25mm <sup>2</sup>	<b>KF84A</b>





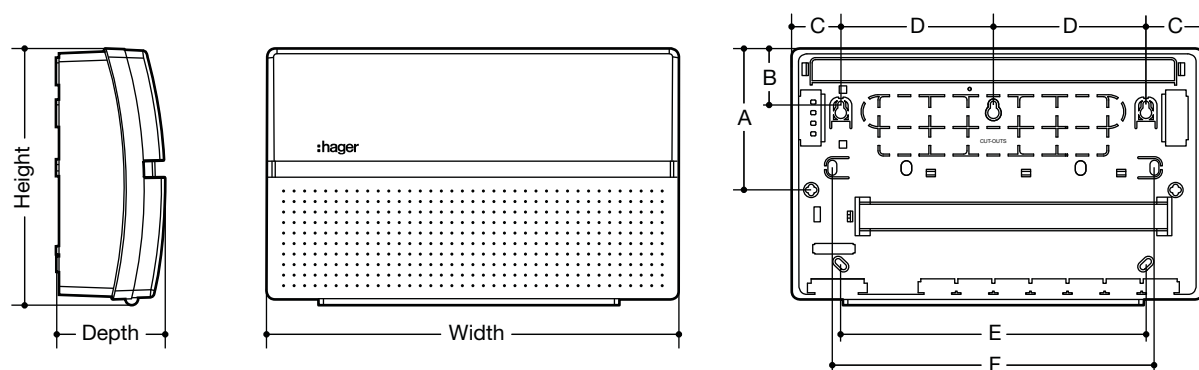
Design 10

Dimensions (mm)	Enclosure Size					
	2	3	4	5	6	7
A	147	219	290	362	398	470
B	240	240	240	240	240	240
C	83	83	83	83	83	83
D	100	100	100	100	100	100



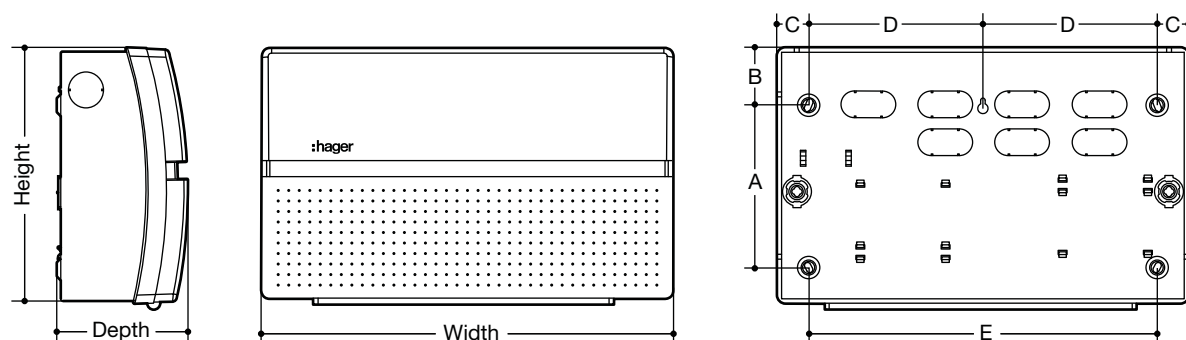
Design 30

Dimensions (mm)	Enclosure Size					
	2	3	4	5	6	7
A	168	220	290	360	400	480
B	240	240	240	240	240	240
C	102	102	102	102	102	102



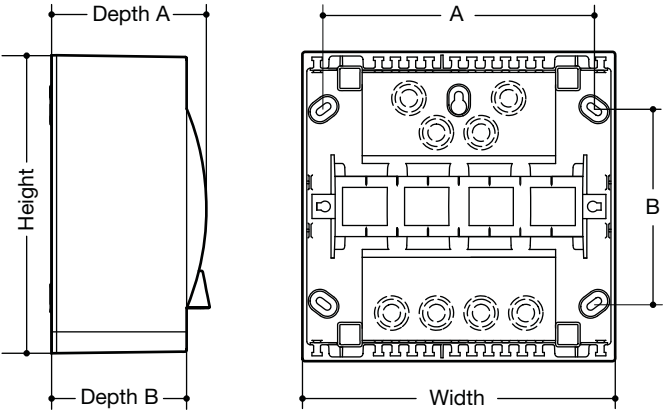
## Insulated Enclosures

Enclosure Size	Dimensions (mm)			Fixing Centres (mm)					
	Width	Height	Depth	A	B	C	D	E	F
VC201	110	180	94	-	-	-	-	-	-
VC202	110	180	94	-	-	-	-	-	-
3	240	245	105	115	50	45	72	145	160
4	310	245	105	115	50	45	107	215	230
5	380	245	105	115	50	45	143	285	302
6	490	245	105	115	50	45	195	395	410



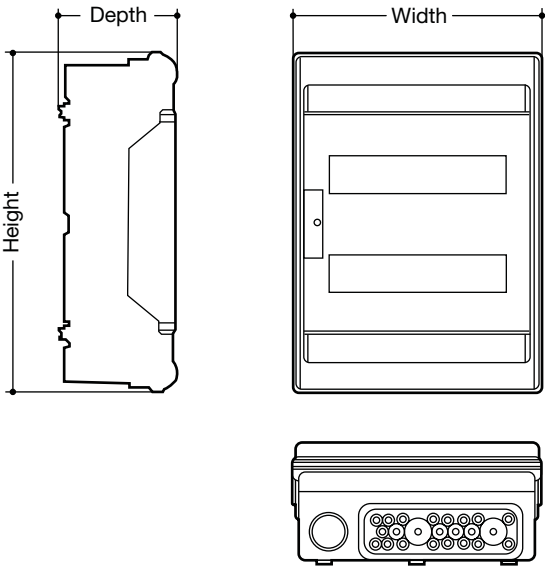
## Hybrid Enclosures

Enclosure Size	Dimensions (mm)			Fixing Centres (mm)				
	Width	Height	Depth	A	B	C	D	E
VH201	168	193	124	-	-	-	-	-
VH202	168	193	124	-	-	-	-	-
2	220	230	110	165	32	55	N/A	163
3	240	245	120	150	55	30	89	178
4	310	245	120	150	55	30	125	250
5	380	245	120	150	55	30	160	320
6	490	245	120	150	55	30	214	429



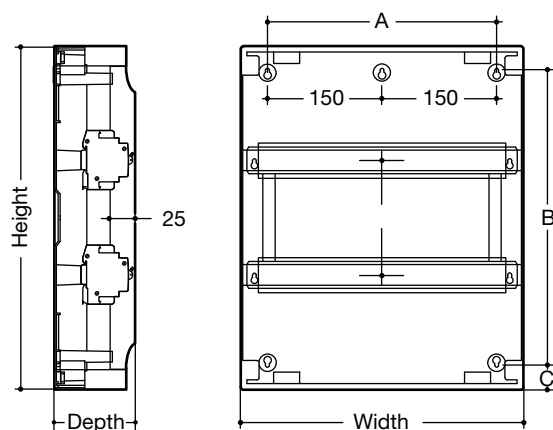
Mini Gamma

	Dimensions (mm)				Fixing Centres	
	Width	Height	Depth A	Depth B	A	B
GD102E	55	160	94	82	N/A	N/A
GD104E	110	180	94	82	86	114
GD106E	146	180	94	82	122	114
GD108E	182	180	94	82	159	114
GD110E	218	180	94	82	195	114



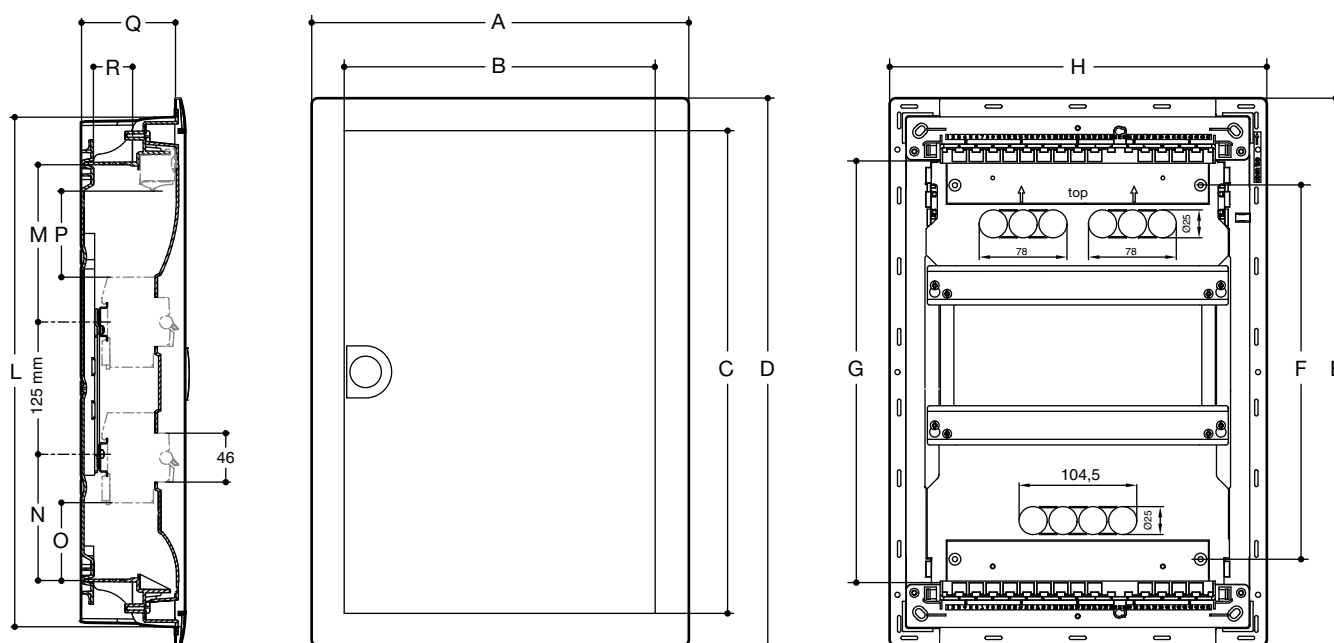
Vector II Weatherproof Enclosures

	Dimensions (mm)		
	Width	Height	Depth
VE103U	110	175	93
VE106U	164	190	113
VE110U	236	210	114
VE112U	310	302	151
VE212U	310	427	151
VE312U	310	552	151



## Vega Enclosures

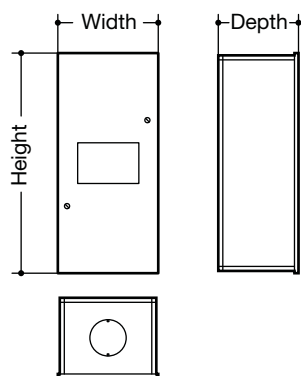
	Dimensions (mm)			A	B	C
	Width	Height	Depth			
<b>VB18B</b>	370	300	145	300	236	32
<b>VB18R</b>	370	300	145	300	236	32
<b>VB36B</b>	370	450	145	300	386	32
<b>VB36R</b>	370	450	145	300	386	32
<b>VB54B</b>	370	600	145	300	536	32
<b>VB54R</b>	370	600	145	300	536	32



## Volta II Enclosures

	Dimensions (mm)														
	A	B	C	D	E	F	G	H	L	M	N	O	P	Q	R
<b>VU12EP</b>	348	288	296.5	356.5	335	185	224	330	321	130	104	56	64	89	40
<b>VU24EP</b>	348	288	445.5	505.5	484	334	373	330	470	144	114	66	79	89	40
<b>VU36EP</b>	348	288	570.5	630.5	609	459	498	330	595	144	114	66	79	89	40
<b>VU48EP</b>	348	288	695.5	755.5	734	584	623	330	720	144	114	66	79	89	40





## Enclosures and Switch Fuses

	Dimensions (mm)			Connection	Knockouts
	Width	Height	Depth		
IU41	50	152	61.5	Earth only	2 x 20mm
IU2	80	152	61.5	Earth only	2 x 20mm
IU3		152	61.5	Earth only	2 x 20mm
IU2/D		152	87.5	Earth only	2 x 20mm
IU2/GD		152	87.5	Earth only	2 x 20mm
IU3/D		152	87.5	Earth only	2 x 20mm
IU42	115	312	61.5	Earth only	2 x 20mm
IU42/D		312	100	Earth only	2 x 20mm
IU4	115	187	61.5	Earth only	2 x 25mm
IU4/D		187	87.5	Earth only	2 x 25mm
IU44	125	312	73.5	Earth only	None
IU45		312	73.5	Earth only	None
IU44/D		312	99.5	Earth only	None
IU44/GD		312	99.5	Earth only	None

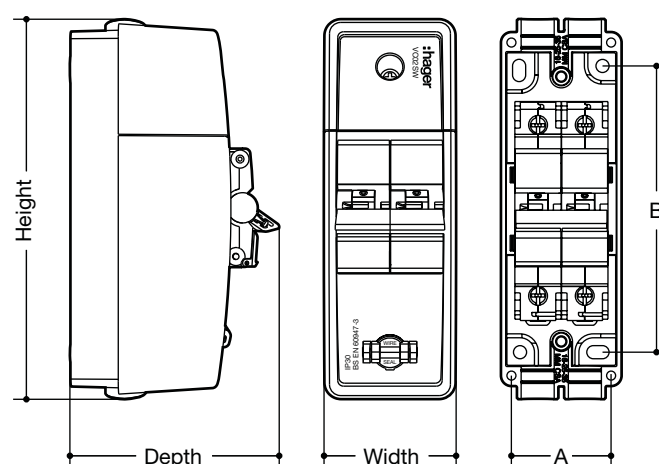
## Meter Box Switch

VC02SW is an Enclosed Switch Disconnecter suitable for Meter Box Applications where an isolating switch between the electricity meter and consumer unit is required.

The twin cable clamps have been additionally proven to secure insulated and sheathed meter tails with conductor sizes ranging from 16-35mm<sup>2</sup>. This greatly reduces the strain on the switch terminals reducing the likelihood of loose electrical connections.

The anti-tamper screw cap is another unique feature of VC02SW, which allows the supply authority to simply secure the main cover in place following installation. The device can also be locked in the open/off position with the appropriate Hager accessory.

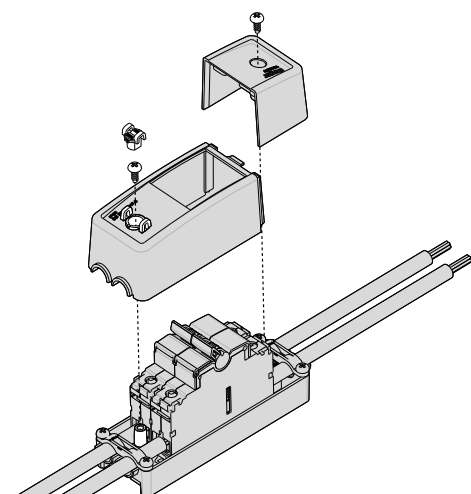
VC02SW conforms with BS EN 60947-3:2009+A1:2012 which facilitates the installation to comply with BS 7671 IET Wiring Regulations, in particular guidance given in table 53.4.



## Meter Box Switch Dimensions

	Dimensions (mm)			Fixing Centres (mm)	
	Width	Height	Depth	A	B
VC02SW	50	145	78.5	31	109

## Installation



VC02SW (BS EN 60947-3:2009+A1:2012)

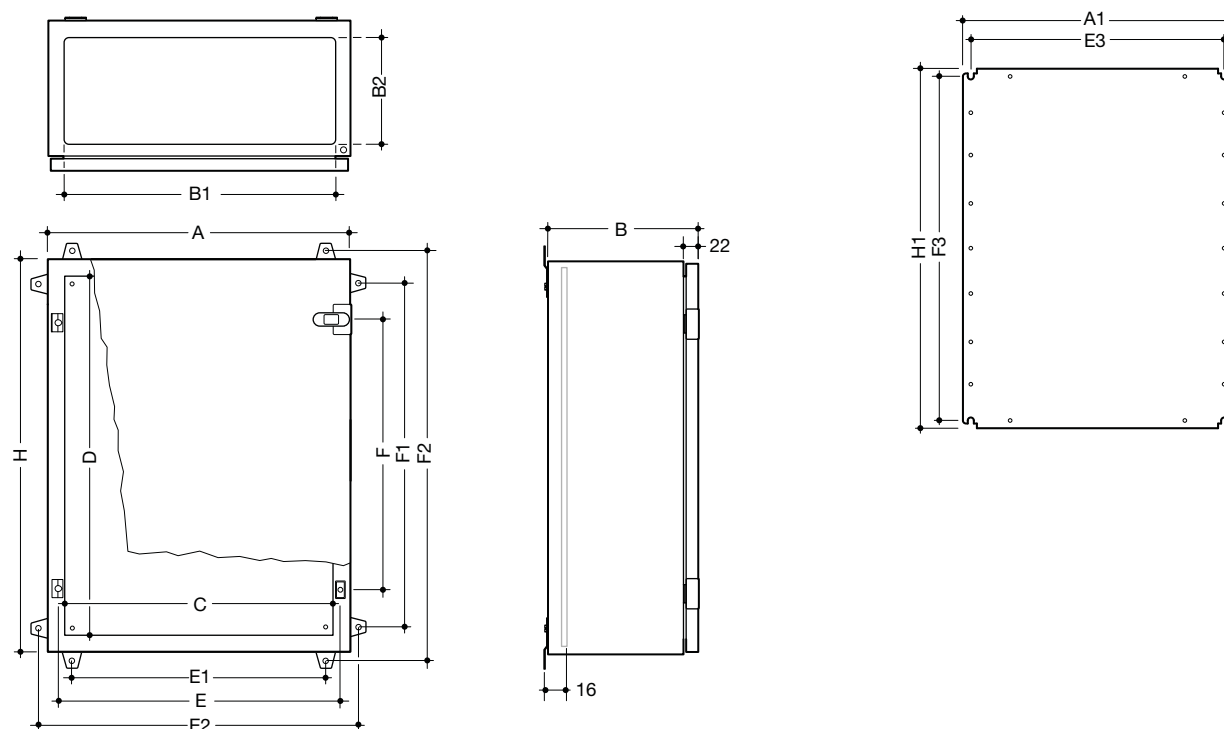
Comes complete with three part enclosure comprising of base, supply authority cover and end installer cover.

Factory fitted SBR290, 100A switch.

2 x Cable clamps: subjected to additional pull force tests for use with 16/25/35mm<sup>2</sup> insulated and sheathed meter tail cables.

6 x M4x10mm PZ2 self tapping plastite screws.

1 x Anti-tamper screw cap (supply authority use). (Hager wire seal available separately: MZN176).

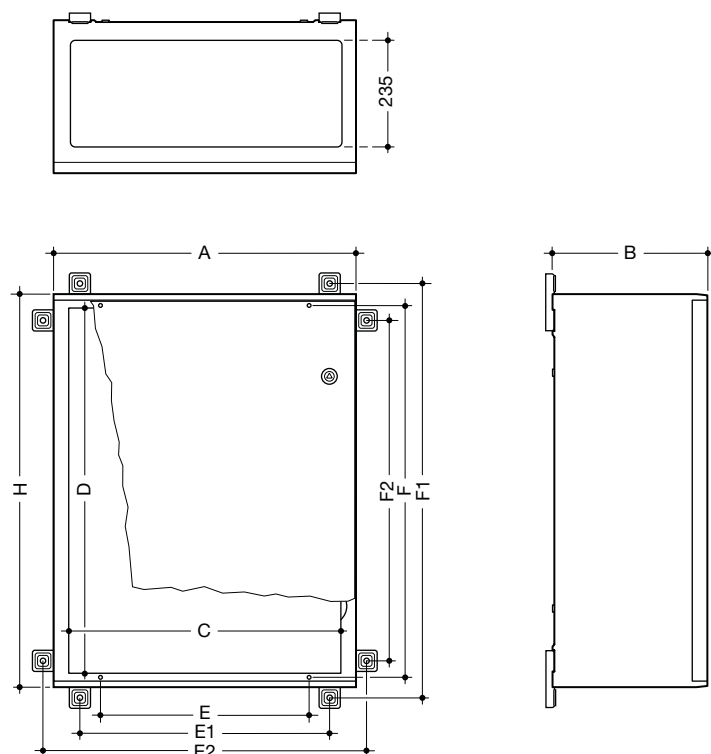


### Metal Enclosures Dimensions

References	Rows	Dimensions (mm)							Outside Fixing				Inside Fixing	
		A	H	B	B1	B2	C	D	E1	E2	F1	F2	E	F
FL102A	-	250	300	160	195	80	200	250	210	320	220	332	169	208
FL104A	2	300	350	160	245	80	250	300	260	370	272	382	219	258
FL105A	2	300	350	200	245	120	250	300	260	370	272	382	219	258
FL110A	3	300	500	200	245	120	250	450	260	370	422	532	219	408
FL112A	3	400	500	200	345	120	350	450	360	470	422	532	319	408
FL117A	4	400	650	200	345	120	350	600	360	470	572	682	319	558
FL118A	4	400	650	250	345	170	350	600	360	470	572	682	319	558
FL120A	4	500	650	250	445	170	450	600	460	570	572	682	419	558
FL124A	5	600	800	300	545	220	550	750	560	670	722	832	519	708
FL126A	6	600	950	300	545	220	550	900	560	670	872	982	519	858
FL128A	6	800	950	300	745	220	750	900	760	870	872	982	719	858

### Mounting Plate Dimensions



Full plates	For enclosures	Plate dimensions (mm)		Fixing plates	
		A1	H1	E3	F3
FL402A	FL102A	193	280	169	208
FL404A	FL104A, FL105A, FL204B	243	330	219	258
FL407A	FL110A, FL209B	243	480	219	258
FL408A	FL112A, FL213B	343	480	219	408
FL412A	FL117A, FL118A, FL216B	343	630	319	408
FL413A	FL120A, FL221B	443	630	319	558
FL415A	FL123A, FL124A, FL229B	543	780	319	558
FL416A	FL125A, FL126A	543	930	419	558
FL417A	FL127A, FL128A	743	930	419	558
FL522E	FL327B, FL527B	693	1080	719	858



### GRP Enclosure Dimensions

References	Rows	Dimensions (mm)						Inside Fixing		Outside Fixing		
		A	H	B	C	D	E	F	E1	E2	F1	F2
FL201B	1	250	300	160	-	-	-	-	-	-	-	-
FL204B	2	300	350	160	250	300	219	258	339	339	269	389
FL209B	3	300	500	200	250	450	219	408	339	339	419	539
FL213B	3	400	500	200	350	450	319	408	439	439	419	539
FL216B	4	400	650	200	350	600	319	558	439	439	569	689
FL221B	4	500	650	250	450	600	419	558	539	539	569	689
FL229B	5	600	800	300	550	750	519	708	639	639	719	839
FL327B	-	850	1200	300	750	1050	-	-	-	-	-	-

### Torque Settings

			Cables >1.5mm <sup>2</sup> Tightening torque (N.m)		Cables ≤1.5mm <sup>2</sup> Tightening torque (N.m)		Cable Stripping (mm)
	Pz No.	(mm)	Single Cable	Multi Cables	Single Cable	Multi Cable	
Consumer unit terminals							
Earth and neutral terminal bars	2	6.5	2	2	1.5	1.5	10
Isolation							
SB switch disconnectors	2	6.5	3.6	3.6	3.6	3.6	15
Circuit protection							
MTN MCB	2	6.5	2.8	2.8	2.8	2.8	13
NBN/NCN/NDN MCB	2	6.5	2.8	2.8	2.8	2.8	13
RCBO	2	5.5	2.1	2.1	2.1	2.1	13
RCCB	2	5.5	2.8	2.8	2.8	2.8	13

# Commercial distribution

## The complete service offering

Our range of commercial electrical distribution assemblies cover A & B boards through to Panelboards and Metering solutions.

To support this range, we also offer enclosed fuse combination switches, enclosed switch disconnectors and enclosed MCCBs.



A Boards	3.2
Invicta 3 Type B Boards	3.8
Invicta 3 Panelboards	3.22
Enclosed Switchgear	3.32

# A Boards

## The complete service offering

Single phase electrical distribution assemblies for commercial applications. Including our range of A boards styled on our Invicta range of TP&N boards ensuring seamless suiting between all the Invicta ranges.



SP&N Distribution Boards	3.4
<hr/>	
SP&N Distribution Boards & DIN Rail Enclosures	3.5
<hr/>	
Invicta 3 A Boards SP&N Distribution Boards	3.6

### SP&N distribution boards

SP&N distribution boards are available from 4-28 outgoing ways. The range comes with a choice of either 100A 2P switch disconnector, 63A 30mA 2P RCCB or 100A 30mA 2P RCCB, or a range of split load versions.

### Cable Sizes

100A 50mm<sup>2</sup>  
63A 25mm<sup>2</sup>

The range has the following features:

- Ample wiring space, with provision to accept RCBO's

- Full complement of earth and neutral terminal bars to accept up to 16mm<sup>2</sup> cable
- Accepts most consumer unit accessories
- Suitable for cable entry/exit on all sides and back

### Construction

Manufactured from 0.9mm CR4 cold reduced mild steel, phosphate pretreated and powder coated to 00A01 BS 4800.

Complies with BS EN 61439-3 Annex ZB.

### DIN Rail Enclosures

One, two or three row 8-66 modules enclosures, fitted with DIN rails to accept any combination of Hager modular devices from the simplest switch and MCB arrangements to the more sophisticated control and protection system.

These enclosures feature:

- Ample wiring space
- Full complement of earth and neutral bars fitted as standard
- Significant knockout provision
- Plain doors only
- Optional key lock

Complies with BS EN 62208.

For A Board dimensions see page 3.39.



JK104

### 100A Switch Disconnector Incomer

Description	Cat ref.
4 Way 100A Switch Disconnector Incomer	<b>JK104</b>
6 Way 100A Switch Disconnector Incomer	<b>JK106</b>
10 Way 100A Switch Disconnector Incomer	<b>JK110</b>
14 Way 100A Switch Disconnector Incomer	<b>JK114</b>
20 Way 100A Switch Disconnector Incomer	<b>JK120</b>
28 Way 100A Switch Disconnector Incomer	<b>JK128</b>



JK404H

### 63A 30mA RCCB Incomer

Description	Cat ref.
4 Way 63A 30mA RCCB Incomer	<b>JK404H</b>
6 Way 63A 30mA RCCB Incomer	<b>JK406H</b>
10 Way 63A 30mA RCCB Incomer	<b>JK410H</b>
14 Way 63A 30mA RCCB Incomer	<b>JK414H</b>
20 Way 63A 30mA RCCB Incomer	<b>JK420H</b>



JK304H

### 100A 30mA RCCB Incomer

Description	Cat ref.
4 Way 100A 30mA RCCB Incomer	<b>JK304H</b>
6 Way 100A 30mA RCCB Incomer	<b>JK306H</b>
10 Way 100A 30mA RCCB Incomer	<b>JK310H</b>
14 Way 100A 30mA RCCB Incomer	<b>JK314H</b>
20 Way 100A 30mA RCCB Incomer	<b>JK320H</b>
28 Way 100A 30mA RCCB Incomer	<b>JK328H</b>



#### 100A Switch Disconnecter and 63A 30mA RCCB

Description	Cat ref.
6 Way Split Load Configurable 100A Switch 63A 30mA RCCB	<b>JK706C</b>
10 Way Split Load Configurable 100A Switch 63A 30mA RCCB	<b>JK710C</b>
14 Way Split Load Configurable 100A Switch 63A 30mA RCCB	<b>JK714C</b>

#### 100A Switch Disconnecter and 100A 30mA RCCB

Description	Cat ref.
28 Way Split Load 14+14 100A Switch 100A 30mA RCCB	<b>JK527H</b>

#### DIN Rail Enclosures

Description	Cat ref. Plain door
1 Row 8 Module	<b>JK008</b>
1 Row 12 Module	<b>JK012</b>
1 Row 16 Module	<b>JK016</b>
1 Row 22 Module	<b>JK022</b>
2 Row 24 Modules (2 x 12)	<b>JK024</b>
2 Row 32 Modules (2 x 16)	<b>JK032</b>
2 Row 44 Modules (2 x 22)	<b>JK044</b>
3 Row 66 Modules (3 x 22)	<b>JK066</b>

**Invicta 3 SP&N distribution boards**

Boards are available with 14 & 29 outgoing ways. The range comes with a 100A 2P switch disconnector to accept 50mm<sup>2</sup> cable.

Complies with BS EN 61439-3 Annex ZB.

The range has the following features:

- Ample wiring space, with provision to accept RCBO's
- Full complement of earth and neutral terminal bars to accept up to 16mm<sup>2</sup> cable
- Accepts most consumer unit accessories
- Suitable for cable entry/exit on all sides and back

Enclosures are available with plain or glazed doors.

For A Board dimensions see page 3.39



**100A Switch Disconnector Incomer**

Description	Cat ref.	Cat ref.
	Plain Door	Glazed Door
1 Row, 14 Way	<b>JK114A</b>	<b>JK114AG</b>
2 Row, 29 Way	<b>JK129A</b>	<b>JK129AG</b>

JK114AG



Commercial  
Distribution



#### Hager on YouTube

Take a look at our YouTube video page for a range of videos showcasing how-to videos, instructional & informative videos and videos demonstrating the features and benefits of many of our products. Subscribe to stay up to date with all the latest content.

For further information visit [www.youtube.com/hageruk](http://www.youtube.com/hageruk) or [www.hager.co.uk/youtube](http://www.hager.co.uk/youtube)

:hager

# Invicta 3 Type B Boards

## 125A and 250A boards with multiple incomer choices

Our Invicta 3 type B distribution board is the solution for modern commercial installations. The Invicta 3 range includes both 125A and 250A boards with multiple incomer choices.

Our IP65 TP&N distribution boards are suitable for three phase applications where a high IP rating is required.



125A Incoming 63A Outgoing	3.10
125A Meter Packs	3.11
125A Dual Metered Boards & Data Logger	3.12
250A Incoming 63A Outgoing	3.14
250A Meter Packs & Dual Meter Incomer Kits	3.15
125A & 250A DIN Extension Boxes	3.16
125A & 250A Cable Spreader Boxes	3.17
125A & 250A Side DIN Boxes	3.18
125A & 250A Side Extension Boxes	3.19
125A & 250A Accessories & Spares	3.20
IP65 TP&N Distribution Boards	3.21

# Invicta 3 Type B Distribution Boards 125A Incoming 63A Outgoing



## Invicta 3 125A TP&N Distribution Boards

Surface mounted steel enclosures.

Enclosure degree of protection: IP3X

Enclosures are available with plain or glazed doors.

Fully shrouded copper busbar, rated 25kA short circuit conditional current.

Supplied without incoming and outgoing devices.

A Hager incomer kit must be used.

**Incoming cable sizes**  
125A & 100A 50mm<sup>2</sup>  
63A 25mm<sup>2</sup>

Complies with BS EN 61439-3 Annex ZB.

For dimensions see page 3.41

For a full list of protection devices see section 4 of this catalogue (Protection Devices).



JK106BG

### Invicta 3 (125A Incoming 63A Outgoing)

Description	Cat ref. Plain door	Cat ref. Glazed door
4 Triple Pole Ways	<b>JK104B</b> <sup>1</sup>	<b>JK104BG</b> <sup>1</sup>
6 Triple Pole Ways	<b>JK106B</b> <sup>1</sup>	<b>JK106BG</b> <sup>1</sup>
8 Triple Pole Ways	<b>JK108B</b> <sup>1</sup>	<b>JK108BG</b> <sup>1</sup>
12 Triple Pole Ways	<b>JK112B</b>	<b>JK112BG</b>
16 Triple Pole Ways	<b>JK116B</b>	<b>JK116BG</b>
18 Triple Pole Ways	<b>JK118B</b>	<b>JK118BG</b>
24 Triple Pole Ways	<b>JK124B</b>	<b>JK124BG</b>

<sup>1</sup> A JK101SE is required to provide additional incoming cable space, see page 3.17.



JK106BA3

### Invicta 3 - Amendment 3 Compliant (125A Incoming 63A Outgoing)

Full metal cover & door to comply with BS EN 61439-3 including annex ZB.

Description	Cat ref.
4 Triple Pole Ways	<b>JK104BA3</b>
6 Triple Pole Ways	<b>JK106BA3</b>
8 Triple Pole Ways	<b>JK108BA3</b>
12 Triple Pole Ways	<b>JK112BA3</b>
16 Triple Pole Ways	<b>JK116BA3</b>
18 Triple Pole Ways	<b>JK118BA3</b>
24 Triple Pole Ways	<b>JK124BA3</b>
16 Module DIN Rail Box	<b>JK116EA3</b>

<sup>1</sup> A JK101SE is required to provide additional incoming cable space, see page 3.17.



JK11003S

### 125A Incomer Kits (note: these incomer kits will only fit the 125A board(s))

Description	Cat ref.
3 Pole 100A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11003S</b>
4 Pole 100A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11004S</b>
3 Pole 125A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11253S</b>
4 Pole 125A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11254S</b>
4 Pole 63A Contactor Incomer Kit includes Switch Disconnecter (fits below distribution board, 300mm high)	<b>JK10634C</b> <sup>2</sup>
4 Pole 100A Contactor Incomer Kit includes Switch Disconnecter (fits below distribution board, 450mm high)	<b>JK11004C</b> <sup>2</sup>
125A Direct Connection Kit (fits within distribution board)	<b>JK11254D</b>
4 Pole 63A 30mA RCCB Incomer Kit (fits within distribution board)	<b>JK10634RH</b>
4 Pole 100A 30mA RCCB Incomer Kit (fits within distribution board)	<b>JK11004RH</b>
4 Pole 100A 300mA RCCB Incomer Kit (fits within distribution board)	<b>JK11004RL</b>
4 Pole 100A 300mA Time Delayed RCCB Incomer Kit (fits within distribution board)	<b>JK11004RLD</b>
4 Pole 100A 100mA RCCB Incomer Kit (fits within distribution board)	<b>JK11004RM</b>
4 Pole 100A 100mA Time Delayed RCCB Incomer Kit (fits within distribution board)	<b>JK11004RMD</b>
125A 4 pole Changeover Incomer Kit	<b>JK11254CO</b> <sup>2</sup>

<sup>2</sup> A 300 / 450mm space is required below the board for fitting, see page 3.44 for dimensions.



JK140MJ

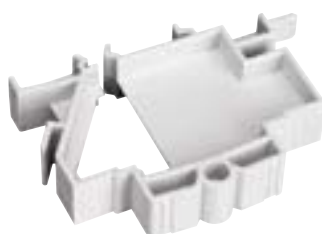
### 125A Meter Packs (note: these meter packs will only fit the 125A board(s))

These kits fit into the main distribution board. (When fitting a meter pack to a JK104B(G) & JK106B(G), a JK101SE is required to provide additional incoming cable space).

For sub billing metering applications please contact our Technical Service Centre on 01952 675 689.

Each meter pack contains: Meter, 3 Pole CT Block, 3 x Fuses & Carriers on DIN rail, Wiring Loom, Incoming Shroud, Instructions (including torque settings for electrical connections).

Description	Cat ref.
Digital Multifunction Meter Pack Pulsed	<b>JK140MP</b>
Digital Multifunction Meter Pack ModBus	<b>JK140MJ</b>
kWh Meter Pack Pulsed	<b>JK142BA</b>
Multifunction Meter Pack 125A Pulsed & Modbus Pluggable Output	<b>JK140PM</b>



JK01B



JK222PK

### Invicta 3 125A & 250A Accessories

Description	125A Accessories Cat ref.	250A Accessories Cat ref.
Door Locking Kit	<b>JK222PK</b>	<b>JK222PK</b>
Spare Label Pack - All sizes (one pack)	<b>JKLABELPACK</b>	<b>JKLABELPACK</b>
Single Phasing Kit	<b>JK125BSP</b>	<b>JK250BSP</b>
Single Pole Busbar Blank	<b>JK01B</b>	<b>JK01B</b>
JK1/2 Horizontal or Vertical Mechanical Connection Kit	<b>JK100HK</b>	<b>JK100HK</b>
Brass Gland Plate - 2.0mm	<b>JK1PLATEB</b>	<b>JK2PLATEB</b>
100A Top Tap Off Kit	<b>JK100TAP</b>	<b>JK100TAP</b>
Triple pole earth bar kit high integrity - 2 x 15 connections	<b>JK030BEB</b>	<b>JK030BEB</b>
Document clip	<b>JK01DC</b>	<b>JK01DC</b>



The lighting and power meter board is a compact solution to meet the demands of energy metering within non-dwelling buildings.

The metered boards are supplied with meters that offer a pulsed or modbus output.

**Cable size**  
50mm<sup>2</sup>

The board is provided with the 125A incomer pre-fitted helping to save on installation time.

For metered board dimensions see page 3.45.



JKD1812B

### 125A Dual Metered Boards

Description	Cat ref. Pulsed	Cat ref. Modbus
Composite Split Lighting / Power Metered Board 4 / 6	<b>JKD146B</b>	<b>JKD146BM</b>
Composite Split Lighting / Power Metered Board 6 / 8	<b>JKD168B</b>	<b>JKD168BM</b>
Composite Split Lighting / Power Metered Board 4 / 16	<b>JKD1416B</b>	<b>JKD1416BM</b>
Composite Split Lighting / Power Metered Board 8 / 12	<b>JKD1812B</b>	<b>JKD1812BM</b>



JK107DL

### Data Logger

#### Description

ULog allows collection of data from up to 8 pulsed output meters allowing data to be analysed by a remote PC (.csv file output into spreadsheets / database).

#### Cat ref.

**JK107DL**

- Instant access and data logging plus 1 temperature input.
- Up to 8 pulsed inputs (CP1 - CP8).
- Transfer data via Ethernet, RS232/485.
- Logs up to 100 days of data from every 1 to 60 second intervals.
- DIN or direct fixing.
- 2 part terminals for easy connection.
- Works seamlessly on an Intranet with a fixed IP address.



Each fully assembled\* meter pack contains:  
1 x Incoming 125A switch to accept up to 50mm<sup>2</sup> cable, lug connection, 2x Meters, CT blocks plus all necessary connections.

\* distribution boards supplied separately to be assembled on site.

For dual meter incomer kit dimensions see page 3.44.



JKD125BMP (shown fitted with 2x JK108BG distribution boards (not included))

**Dual 125A Meter Incomer Kits** (note: these dual meter incomer kits will only fit the 125A board(s))

Description	Cat ref.
Dual kWh Meter Pack 125A Incomer Pulsed	<b>JKD125BKWP</b>
Dual Multifunction Meter Pack 125A Incomer Pulsed	<b>JKD125BMP</b>
Dual Multifunction Meter Pack 125A Incomer ModBus	<b>JKD125BMM</b>

### Invicta 3 250A TP&N Distribution Boards

Surface mounted steel enclosures.

Enclosure degree of protection: IP3X

Enclosures are available with plain or glazed doors.

Fully shrouded copper busbar, rated 25kA short circuit conditional current.

Supplied without incoming and outgoing devices. A Hager incoming kit must be used.

Complies with BS EN 61439-3 Annex ZB.

For dimensions see page 3.41.

For a full list of protection devices see section 4 of this catalogue (Protection Devices).



JK208BG

### Invicta 3 (250A Incoming 63A Outgoing)

Description	Cat ref. Plain door	Cat ref. Glazed door
8 Triple Pole Ways	<b>JK208B</b>	<b>JK208BG</b>
12 Triple Pole Ways	<b>JK212B</b>	<b>JK212BG</b>
16 Triple Pole Ways	<b>JK216B</b>	<b>JK216BG</b>
18 Triple Pole Ways	<b>JK218B</b>	<b>JK218BG</b>
24 Triple Pole Ways	<b>JK224B</b>	<b>JK224BG</b>



JK216BA3

### Invicta 3 Amendment 3 Compliant (250A Incoming 63A Outgoing)

Full metal cover & door to comply with BS EN 61439-3 including annex ZB.

Description	Cat ref.
8 Triple Pole Ways	<b>JK208BA3</b>
12 Triple Pole Ways	<b>JK212BA3</b>
16 Triple Pole Ways	<b>JK216BA3</b>
18 Triple Pole Ways	<b>JK218BA3</b>
24 Triple Pole Ways	<b>JK224BA3</b>
16 Module DIN Rail Box	<b>JK216EA3</b>
16 Module DIN Rail Box	<b>JK232EA3</b>

### 250A Incomer Kits (note: these incomer kits will only fit the 250A board(s))

Description	Cat ref.
3 Pole 250A MCCB Incomer Kit (fits within distribution board)	<b>JK22503M</b>
4 Pole 250A MCCB Incomer Kit (fits within distribution board)	<b>JK22504M</b>
3 Pole 250A Switch Disconnect Incomer Kit (fits within distribution board)	<b>JK22503S</b>
4 Pole 250A Switch Disconnect Incomer Kit (fits within distribution board)	<b>JK22504MCS</b>
4 Pole 250A Direct Connection Kit (fits within distribution board)	<b>JK22504D</b>
4 Pole 160A Contactor Incomer Kit includes Switch Disconnect (fits below distribution board, 450mm high) <sup>1</sup>	<b>JK21604C</b> <sup>1</sup>
3 Pole 125A MCCB Incomer Kit (fits within distribution board)	<b>JK21253M</b>
4 Pole 125A MCCB Incomer Kit (fits within distribution board)	<b>JK21254M</b>

<sup>1</sup> A 450mm space is required below the board for fitting, see page 3.41 for dimensions

### 250A Meter Packs (note: these incomer kits will only fit the 250A board(s))

These kits fit into the main distribution board.

Each meter pack contains:  
Meter, 3 Pole CT Block, 3 x Fuses & Carriers on DIN rail, Wiring Loom, Incoming

Shroud, Instructions (including torque settings for electrical connections).

Description	Cat ref.
Digital Multifunction Meter Pack Pulsed	<b>JK240MP</b>
Digital Multifunction Meter Pack ModBus	<b>JK240MJ</b>
kWh Meter Pack Pulsed	<b>JK242BA</b>
Multifunction Meter Pack 250A Pulsed & Modbus Pluggable Output	<b>JK240PM</b>



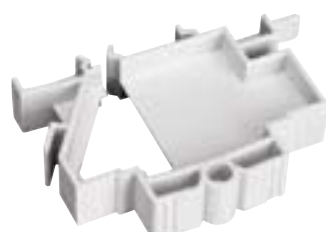
JKD250BMP (shown fitted with 2x JK208BG distribution boards (not included))

### Dual Meter 250A Incomer Kits (note: these dual meter incomer kits will only fit the 250A board(s))

Each meter pack contains:  
1 x Incoming 250A switch to accept up to 120mm<sup>2</sup> cable

with lug connection, 2 x Meters, CT blocks plus all necessary connections

Description	Cat ref.
Dual kWh Meter Pack 250A Incomer Pulsed	<b>JKD250BKWP</b>
Dual Multifunction Meter Pack 250A Incomer Pulsed	<b>JKD250BMP</b>
Dual Multifunction Meter Pack 250A Incomer ModBus	<b>JKD250BMM</b>



JK01B



JK222PK

### Invicta 3 125A & 250A Accessories

Description	125A Accessories Cat ref.	250A Accessories Cat ref.
Door Locking Kit	<b>JK222PK</b>	<b>JK222PK</b>
Spare Label Pack - All sizes (one pack)	<b>JKLABELPACK</b>	<b>JKLABELPACK</b>
Single Phasing Kit	<b>JK125BSP</b>	<b>JK250BSP</b>
Single Pole Busbar Blank	<b>JK01B</b>	<b>JK01B</b>
JK1/2 Horizontal or Vertical Mechanical Connection Kit	<b>JK100HK</b>	<b>JK100HK</b>
Brass Gland Plate - 2.0mm	<b>JK1PLATEB</b>	<b>JK2PLATEB</b>
100A Top Tap Off Kit	<b>JK100TAP</b>	<b>JK100TAP</b>
Triple pole earth bar kit high integrity - 2 x 15 connections	<b>JK030BEB</b>	<b>JK030BEB</b>
Document clip	<b>JK01DC</b>	<b>JK01DC</b>

Extension boxes have plain or glazed doors and DIN rail chassis for mounting modular devices.

Complies with BS EN 62208.

Full width enclosure provided with 16 modular ways per row.

For dimensions see page 3.42.



JK116EG

## DIN Extension Boxes for 125A Primary Boards

Description	Number of Rows	Number of DIN Module Ways	Cat ref. Plain door	Cat ref. Glazed door
125A DIN Extension Box	1	16	<b>JK116E</b>	<b>JK116EG</b>
125A DIN Extension Box	2	32	<b>JK132E</b>	<b>JK132EG</b>



JK216E

## DIN Extension Boxes for 250A Primary Boards

Description	Number of Rows	Number of DIN Module Ways	Cat ref. Plain door	Cat ref. Glazed door
250A DIN Extension Box	1	16	<b>JK216E</b>	<b>JK216EG</b>
250A DIN Extension Box	2	32	<b>JK232E</b>	<b>JK232EG</b>

Cable spreader boxes are used for additional cabling space therefore do not require doors. If doors are desired optional door kits are available.

Complies with BS EN 62208

For dimensions see page 3.42.

**Cable Spreader Boxes for 125A & 250A Primary Boards**



JK101SE

Description	125A Cat ref.	250A Cat ref.
Small Cable Spreader Box *	<b>JK101SE</b>	<b>JK201SE</b>
Large Cable Spreader Box *	<b>JK102LE</b>	<b>JK202LE</b>

\* no door included (see below for door kit).



JK101DK

**Optional Door Kits for Cable Spreader Boxes** (above)

Description	125A Cat ref.	250A Cat ref.
Small Cable Spreader Box Door Kit	<b>JK101DK</b>	<b>JK101DK</b>
Large Cable Spreader Box Door Kit	<b>JK102DK</b>	<b>JK102DK</b>

Side extension boxes provide a new concept for distribution boards to allow DIN rail mounted modular devices.

Complies with BS EN 62208.

They can be horizontally or vertically attached to distribution boards.

\* All Side DIN Boxes supplied with 2x removable gland plates.

For dimensions see page 3.41.



JK104BDFG

## Side DIN Boxes for 125A Primary Boards

Description	Number of Rows	Number of DIN Module Ways	Cat ref. Glazed door
32 Way Side DIN Box for JK104B	2	32	<b>JK104BDFG</b>
32 Way Side DIN Box for JK106B	2	32	<b>JK106BDFG</b>
48 Way Side DIN Box for JK108B	3	48	<b>JK108BDFG</b>
64 Way Side DIN Box for JK112B	4	64	<b>JK112BDFG</b>
80 Way Side DIN Box for JK116B	5	80	<b>JK116BDFG</b>



JK208BDFG

## Side DIN Boxes for 250A Primary Boards

Description	Number of Rows	Number of DIN Module Ways	Cat ref. Glazed door
80 Way Side DIN Box for JK208B	5	80	<b>JK208BDFG</b>
80 Way Side DIN Box for JK212B	5	80	<b>JK212BDFG</b>
96 Way Side DIN Box for JK216B	6	96	<b>JK216BDFG</b>
112 Way Side DIN Box for JK218B	7	112	<b>JK218BDFG</b>
128 Way Side DIN Box for JK224B	8	128	<b>JK224BDFG</b>

Side extension boxes provide a new concept for distribution boards to allow cable ways to be fitted on site.

These are available in either half or full distribution board width.

Can be used with Invicta 3 Panelboards JN & JF.

All Side Extension Boxes supplied with 2x removable gland plates.

Complies with BS EN 62208.

For dimensions see page 3.43.



JK104BSF

## Side Extension Boxes for 125A Primary Boards

Description	Cat ref. Plain door
4 Way Side Extension Box for JK104B Full Width	<b>JK104BSF</b>
6 Way Side Extension Box for JK106B Full Width	<b>JK106BSF</b>
8 Way Side Extension Box for JK108B Full Width	<b>JK108BSF</b>
12 Way Side Extension Box for JK112B Full Width	<b>JK112BSF</b>
16 Way Side Extension Box for JK116B Full Width	<b>JK116BSF</b>

## Side Extension Boxes for 250A Primary Boards

Description	Cat ref. Plain door
8 Way Side Extension Box for JK208B Full Width	<b>JK208BSF</b>
12 Way Side Extension Box for JK212B Full Width	<b>JK212BSF</b>
16 Way Side Extension Box for JK216B Full Width	<b>JK216BSF</b>
18 Way Side Extension Box for JK218B Full Width	<b>JK218BSF</b>
24 Way Side Extension Box for JK224B Full Width	<b>JK224BSF</b>



JK104BSH

## Half Width Side Extension Boxes for 125/250A Primary Boards

Doors are not available.

Description	Cat ref. 125A	Cat ref. 250A
4 Way Half Width Extension Box	<b>JK104BSH</b>	-
6 Way Half Width Extension Box	<b>JK106BSH</b>	-
8 Way Half Width Extension Box	<b>JK108BSH</b>	<b>JK208BSH</b>
12 Way Half Width Extension Box	<b>JK112BSH</b>	<b>JK212BSH</b>
16 Way Half Width Extension Box	<b>JK116BSH</b>	<b>JK216BSH</b>
18 Way Half Width Extension Box	-	<b>JK218BSH</b>
24 Way Half Width Extension Box	-	<b>JK224BSH</b>
Small Half Width Filler Box	<b>JK101BSH</b>	<b>JK201BSH</b>



JK01B



JK222PK

## Invicta 3 125A & 250A Accessories

Description	125A Accessories Cat ref.	250A Accessories Cat ref.
Door Locking Kit	<b>JK222PK</b>	<b>JK222PK</b>
Spare Label Pack - All sizes (one pack)	<b>JKLABELPACK</b>	<b>JKLABELPACK</b>
Single Phasing Kit	<b>JK125BSP</b>	<b>JK250BSP</b>
Single Pole Busbar Blank	<b>JK01B</b>	<b>JK01B</b>
JK1/2 Horizontal or Vertical Mechanical Connection Kit	<b>JK100HK</b>	<b>JK100HK</b>
Brass Gland Plate - 2.0mm	<b>JK1PLATEB</b>	<b>JK2PLATEB</b>
100A Top Tap Off Kit	<b>JK100TAP</b>	<b>JK100TAP</b>
Triple pole earth bar kit high integrity - 2 x 15 connections	<b>JK030BEB</b>	<b>JK030BEB</b>
Document clip	<b>JK01DC</b>	<b>JK01DC</b>
Neutral connecting block 100A	<b>KRN190</b>	<b>KRN190</b>
JK1/2 Neutral Clear Shroud	<b>JK1/NEUTRALSHROUD</b>	<b>JK1/NEUTRALSHROUD</b>
JK1/2 Busbar Stack Top Shroud	<b>JK1/2TOPSHROUD</b>	<b>JK1/2TOPSHROUD</b>
JK1/2 Main Incomer Shroud	<b>JK1/INCOMSHROUD</b>	<b>JK2/INCOMSHROUD</b>
Spare Gland Plate including Drill Markings - 1.2mm	<b>JK1PLATEM</b>	<b>JK2PLATEM</b>



JK06TK

## Invicta 3 125A & 250A Trunking Kits and Spares

Each trunking kit contains a trunking channel, lid, lid joining brackets, connecting brackets and end caps.

Description	100mm 4" * Cat ref.	150mm 6" Cat ref.
Trunking Kit for Invicta 3 TP&N	<b>JK04TK</b>	<b>JK06TK</b>
Spare Trunking Channel	<b>JK04TC</b>	<b>JK06TC</b>
Spare Lid	<b>JK04TL</b>	<b>JK06TL</b>
Spare End Cap	<b>JK04TE</b>	<b>JK06TE</b>
Spare Connecting Bracket	<b>JK04TJ</b>	<b>JK06TJ</b>
Spare Trunking Lid Joining Bracket	<b>JK04TP</b>	<b>JK06TP</b>

\*4" trunking not suitable for JKD Power & Lighting Boards



IP65 TP&N distribution boards are suitable for three phase applications where a high IP rating is required. The distribution boards are available with either a steel or GRP enclosure.

Incoming devices are supplied separately, and with a choice of 10 primary distribution boards up to 100 TP&N configurations are possible.

Available up to 125A direct connection with outgoing distribution through 4, 6, 8, 12 or 16 ways, rated for MCBs from 0.5A to 63A.

Complies with BS EN 61439-3 Annex ZB.



JK106BD

### IP65 Distribution Boards - Metal

Rated at 125A max - Not designed for outdoor use.

Ways	Dimensions (mm) (HxWxD)	Cat ref.
4	800 x 600 x 300	<b>JK104BD</b>
6	800 x 600 x 300	<b>JK106BD</b>
8	800 x 600 x 300	<b>JK108BD</b>
12	950 x 600 x 300	<b>JK112BD</b>
16	950 x 600 x 300	<b>JK116BD</b>



JK106BF

### IP65 Distribution Boards - Insulated

Rated at 125A max

Ways	Dimensions (mm) (HxWxD)	Cat ref.
4	800 x 600 x 300	<b>JK104BF</b>
6	800 x 600 x 300	<b>JK106BF</b>
8	800 x 600 x 300	<b>JK108BF</b>
12	1150 x 850 x 300	<b>JK112BF</b>
16	1150 x 850 x 300	<b>JK116BF</b>



JK11003S

### 125A Incomer Kits

Description	Cat ref.
3 Pole 100A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11003S</b>
4 Pole 100A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11004S</b>
3 Pole 125A Switch Disconnecter Incomer Kit (fits within distribution board)	<b>JK11253S</b>
125A Direct Connection Kit (fits within distribution board)	<b>JK11254D</b>
4 Pole 63A 30mA RCCB Incomer Kit (fits within distribution board)	<b>JK10634RH</b>
4 Pole 100A 30mA RCCB Incomer Kit (fits within distribution board)	<b>JK11004RH</b>
4 Pole 100A 300mA RCCB Incomer Kit (fits within distribution board)	<b>JK11004RL</b>
4 Pole 100A 300mA Time Delayed RCCB Incomer Kit (fits within distribution board)	<b>JK11004RLD</b>
4 Pole 100A 100mA RCCB Incomer Kit (fits within distribution board)	<b>JK11004RM</b>
4 Pole 100A 100mA Time Delayed RCCB Incomer Kit (fits within distribution board)	<b>JK11004RMD</b>

### IP65 Distribution Boards Accessories

Description	Cat ref.
Label Pack	<b>JK11003S</b>
SP kit 125BSP	<b>JK11004S</b>
JK01B	<b>JK11253S</b>
KRN190	<b>JK11254D</b>

# Invicta 3 Panelboards

## Meeting your needs for distribution

The last few years have seen a major change in the design and installation of commercial electrical distribution systems. The panelboard is at the heart of such a system, whether acting as the main incoming board or as part of the sub distribution. Modern electrical distribution systems have more RCD protection, more metering and more control devices. Panelboards have to offer a flexible solution to help meet these needs.

The Invicta 3 panelboard range includes 250A, 400A, 630A & 800A panelboards with new MCCB incomers. Pre-wired meter packs allow installers to fit metering into the board. All the internal wiring is included. Installation is fast and simple, thanks to a number of features. There is generous space where it is needed for cable bending radii at the top, bottom and sides of the board and twin and earth neutral bars allow easy identification of earth and neutral conductors with the corresponding line conductors.



250A Incoming 125A Outgoing	3.24
DIN Extension Boxes, Cable Spreader Boxes & Accessories	3.25
400A Incoming 125A Outgoing	3.26
DIN Extension Boxes, Cable Spreader Boxes & Accessories	3.27
630A / 800A Incoming 125 / 250A Outgoing	3.28
DIN Extension Boxes, Cable Spreader Boxes	3.29
800A Incoming 125 / 250A Outgoing	3.30
Meter Enclosures for JF Panelboards	3.31

# Invicta 3 Panelboard System (250A Rated)

## 250A Incoming 125A Outgoing



### Options

Key lock, meter pack, DIN rail, extension box, spreader box.

### Construction

Enclosures manufactured from 1.2mm DC01M cold reduced mild steel, phosphate pretreated and powder coated to 00A01 BS4800.

### Specification

Complies with BS EN 61439-2. Enclosure degree of protection: IP3X

Internal separation Form 3A.

4, 6, 8, 12, 16 Triple Pole outgoing ways.

### Cable Capacity Incomers

3 and 4 pole incomers. Cable capacity 150mm<sup>2</sup> max lug width 25mm. Direct connection kit. M8 bolt. (Larger cables can be connected by using extended connections, see page 4.38 MCCB section).

### Outgoers

1 & 3 pole MCCB 70mm<sup>2</sup> flexible. 1 & 3 pole MCCB 95mm<sup>2</sup> solid.

### Busbar Ratings

Busbar rated current 250A continuous. Busbar rated short-time withstand current 25kA for 1s direct connected (unconditional).

Each JN board is available with side cable entries to enable the fitting of the JN meter enclosures. Just add a 'CE' suffix.

suffix. e.g. JN204BCE

### Outgoing MCCBs

Adjustable thermal options on TP

Form 3B type 2 is achieved using the outgoing terminal shield (see MCCB accessories 4.34).

For accessories see page 3.25. For dimensions see page 3.45.

For a full list of protection devices see section 4 of this catalogue (Protection Devices).



JN204BG

### Invicta 3 Panelboards (250A Incoming 125A Outgoing)

Comprises of enclosure, pan assembly, twin neutral and earth bar.

Supplied without incoming kit (one of the incomer kits listed below must be used). Note: when selecting JN meter

enclosures, add a 'CE' suffix to the below references, e.g. JN208BCE

Description	Cat ref. Plain door	Cat ref. Glazed door
4 Way	<b>JN204B</b>	<b>JN204BG</b>
6 Way	<b>JN206B</b>	<b>JN206BG</b>
8 Way	<b>JN208B</b>	<b>JN208BG</b>
12 Way	<b>JN212B</b>	<b>JN212BG</b>
16 Way	<b>JN216B</b>	<b>JN216BG</b>

### Incomer Kits

For other options contact our Technical Service Centre on 01952 675689

Description	Cat ref.
3 Pole 250A MCCB Incomer Kit (Adj. Thermal 0.63, 0.8, 1) 40kA (Magnetic 5, 7, 9, 11 x I <sub>n</sub> )	<b>JN223BM</b>
4 Pole 250A MCCB Incomer Kit (Adj. Thermal 0.63, 0.8, 1) 40kA (Magnetic 5, 7, 9, 11 x I <sub>n</sub> )	<b>JN224BM</b>
3 Pole 250A Non-Auto MCCB Incomer Kit	<b>JN223BS</b>
4 Pole 250A Non-Auto MCCB Incomer Kit	<b>JN224BS</b>
250A Direct Connection Kit	<b>JN224BD</b>



JN11004SM

### Side Meter Enclosure (blanking plates not included)

Note: when selecting JN meter enclosures, add a 'CE' suffix to

the panel board references, e.g. JN208BCE. These come with

pre-cut side cable entries.

Suitable for board type	Spaces for Meters	Cat ref.
4 Way JN Board	2 x DIN 96 Cut-Outs	<b>JN9502SM</b>
6/8 Way JN Board	4 x DIN 96 Cut-Outs	<b>JN11004SM</b>
12 Way JN Board	6 x DIN 96 Cut-Outs	<b>JN12506SM</b>
16 Way JN Board	8 x DIN 96 Cut-Outs	<b>JN15508SM</b>

### Top/Bottom Meter Enclosure



JN3003TM

Description	Spaces for Meters	Cat ref.
300mm Enclosure	3 x DIN 96 Cut-Outs	<b>JN3003TM</b>
450mm Enclosure	6 x DIN 96 Cut-Outs	<b>JN4506TM</b>
Blanking Plate		<b>JF96BP</b>

### Corner Filler Enclosures

Description	Cat ref.
300mm Corner Filler Side Enclosure JN	<b>JN300CF</b>
450mm Corner Filler Side Enclosure JN	<b>JN450CF</b>

DIN Extensions Boxes have plain or glazed doors and DIN rail chassis.

Cable spreader boxes are used for additional cabling space therefore do not require doors. If doors are desired optional door kits are available.

For dimensions see page 3.47.

JK2 side extension boxes can be used with this range see page 3.19.



JN201BE

### DIN Extension Boxes

Supplied with DIN Rail and without gland plate (JN2PLATE)

Description	Cat ref. Plain door	Cat ref. Glazed door
1 Row 26 Mod (300mm Height)	<b>JN201BE</b>	<b>JN201BEG</b>
2 Row 52 Mod (450mm Height)	<b>JN203BE</b>	<b>JN203BEG</b>



JN205BE

### Cable Spreader Box

Supplied without gland plates (JN2PLATE)

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JN205BE</b>
Large (450mm Height) (Door not included)	<b>JN206BE</b>
Small Cable Spreader Box Door Kit	<b>JN205DK</b>
Large Cable Spreader Box Door Kit	<b>JN206DK</b>



JN201BA

### Meter Pack 250A

Comprises of a digital multi function meter, 3 x control circuit fuse carriers, wiring harness and CTs. The meter pack fits directly into the main panelboard.

Description	Cat ref.
Digital Multifunction Meter Pack Pulsed	<b>JN201BA</b>
Digital Multifunction Meter Pack ModBus	<b>JN201MJ</b>
Multifunction Meter Pack 250A Pulsed & Modbus Pluggable Output	<b>JN201PM</b>



JN001BP

### Accessories

Description	Cat ref.
Touch Up Paint 30ml	<b>JF95A</b>
Allen Key Set	<b>JF296A</b>
Gland Plate for Invicta 3 (250A)	<b>JN2PLATE</b>
Key lock with one key	<b>JK222PK</b>
x125 Frame Blank (3x blanks required per triple pole way)	<b>JN001BP</b>
Multi Padlock Plate (for integral toggle lock) fits to toggle for up to 3 padlocks max ø8mm	<b>HXA039H</b>
Neutral Barrier Kit	<b>JN201NS</b>

# Invicta 3 Panelboard System (400A Rated) 400A Incoming 125A Outgoing



## Options

Key lock, meter pack, DIN rail, extension box, spreader box.

## Construction

Enclosures manufactured from 1.2/1.5mm DC01M cold reduced mild steel, phosphate pretreated and powder coated to 00A01 BS4800.

## Specification

Complies with BS EN 61439-2.  
Enclosure degree of protection: IP3X

## Internal separation

Form 3A  
6, 8, 12, 16, 18 Triple Pole outgoing ways.

Form 3B type 2 is achieved using the outgoing terminal shield (see MCCB accessories on page 4.42).

## Cable Capacity Incomers

3 and 4 pole incomers.  
Cable capacity 240mm<sup>2</sup>  
M12 bolt.  
Direct connection kit.  
M10 hexagonal bolt.

## Cable Capacity Outgoers

1 & 3 pole MCCB 70mm<sup>2</sup> flexible.  
1 & 3 pole MCCB 95mm<sup>2</sup> solid.

## Busbar Ratings

Busbar rated current:  
400A continuous  
Busbar rated short-time  
withstand current 35kA for 1s  
direct connected (unconditional)

## Outgoing MCCBs

Adjustable thermal options on TP

Form 3B type 2 is achieved using the outgoing terminal shield (see MCCB accessories in section 4).

For accessories see page 3.27.  
For dimensions see page 3.48.



JF406B

## Invicta 3 Panelboards (400A Incoming 125A Outgoing)

Comprises of enclosure, pan assembly, neutral bar and earth bar.  
Supplied without incoming kit (one of the incomer kits listed below must be used).

Description	Cat ref. Plain door	Cat ref. Glazed door
6 Way	<b>JF406B</b>	<b>JF406BG</b>
8 Way	<b>JF408B</b>	<b>JF408BG</b>
12 Way	<b>JF412B</b>	<b>JF412BG</b>
16 Way	<b>JF416B</b>	<b>JF416BG</b>
18 Way	<b>JF418B</b>	<b>JF418BG</b>

## Incomer Kits

Description	Cat ref.
3 Pole 400A MCCB Incomer Kit 50kA Electronic LSI MCCB, I <sub>r</sub> adjustable 0.4 – 1.0 x I <sub>n</sub>	<b>JF443BM</b>
4 Pole 400A MCCB Incomer Kit 50kA Electronic LSI MCCB, I <sub>r</sub> adjustable 0.4 – 1.0 x I <sub>n</sub>	<b>JF444BM</b>
3 Pole 400A Switch Disconnect (Non-Auto MCCB) Incomer Kit	<b>JF443BS</b>
4 Pole 400A Switch Disconnect (Non-Auto MCCB) Incomer Kit	<b>JF444BS</b>
400A Direct Connection Kit	<b>JF444BD</b>

For other options contact our Technical Service Centre on 01952 675689

DIN Extension Boxes have plain or glazed doors and DIN rail chassis.

For dimensions see page 3.48.

Cable spreader boxes are used for additional cabling space therefore do not require doors. If doors are desired optional door kits are available.



JF801E

### DIN Extension Boxes (to fit JF4 & JF8 boards)

Supplied with DIN Rail and without gland plate (JFPLATE)

Description	Cat ref. Plain door	Cat ref. Glazed door
1 Row 34 Mod (300mm Height)	<b>JF801E</b>	<b>JF801EG</b>
2 Row 68 Mod (450mm Height)	<b>JF803E</b>	<b>JF803EG</b>

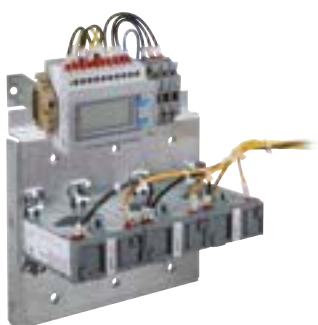


JF805E

### Cable Spreader Box (to fit JF4 & JF8 boards)

Supplied without gland plate (JFPLATE)

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JF805E</b>
Large (450mm Height) (Door not included)	<b>JF806E</b>
Small Cable Spreader Box Door Kit	<b>JF805DK</b>
Large Cable Spreader Box Door Kit	<b>JF806DK</b>



JF403BA

### Meter Pack 400A

These meter packs fit directly into the main panelboard. Suitable for single incoming cable.

Description	Cat ref.
Digital Multifunction Meter Pack Pulsed	<b>JF403BA</b>
Digital Multifunction Meter Pack ModBus	<b>JF403MJ</b>
Multifunction Meter Pack 400A Pulsed & Modbus Pluggable Output	<b>JF403PM</b>

### Accessories

Description	Cat ref.
Locking Kit for Incoming Device (All Ratings)	<b>HXD039H</b>
Allen Key Set	<b>JF296A</b>
Gland Plate for Invicta 3 400A Range	<b>JFPLATE</b>
Key lock with one key	<b>JK222PK</b>
x125 Frame 1 pole blank (3x blanks required per triple pole)	<b>JN001BP</b>
Outgoer Locking Kit (fits to toggle for up to 3 padlocks max ø 8mm <sup>2</sup> )	<b>HXA039H</b>
Terminal cover x160 1P long	<b>HYA029H</b>
Terminal cover x160 3P long	<b>HYA012H</b>

For a full list of protection devices & accessories see section 4 of this catalogue (Protection Devices).



# Invicta 3 Panelboard System (630A / 800A Rated) 630A / 800A Incoming 125 / 250A Outgoing



## Construction

Enclosure manufactured from 1.2/1.5mm DC01M cold reduced mild steel, phosphate pretreated and powder coated to 00A01 BS4800.

Removable gland plates are provided top and bottom for ease of installation.

The removal of the gland plates and cable spreader also allows the mounting of DIN rail extension boxes and meter packs.

## Specification

Complies with BS EN 61439-2.  
Enclosure degree of protection: IP3X  
Internal separation.  
Form 3A.  
8, 12, 18 TP outgoing ways.  
Form 3B type 2 is achieved using the outgoing terminal shield (see

MCCB accessories in Section 4.

## Incomers

Switch Disconnecter 630A/800A.  
MCCB 400A/630A.  
Direct connection 800A.  
M12 hexagonal bolt.

## Busbar Ratings

Busbar rated current: 800A  
Busbar rated short time withstand current 35kA for 1x direct connection (unconditional).

## Outgoing MCCBs

Single pole up to 125A - 70mm<sup>2</sup> flexible.  
Single pole up to 125A - 95mm<sup>2</sup> solid.  
Triple pole up to 250A -150mm<sup>2</sup> flexible.

Incomers Cable capacity  
400A - 2 x 240mm<sup>2</sup>  
630A - 2 x 240mm<sup>2</sup> / 2 x 300mm<sup>2</sup>

For dimensions see page 3.48.



JF608B

### Invicta 3 Panelboards (630A / 800A Incoming, 125A Outgoing)

Description	Cat ref. Plain door	Cat ref. Glazed door
8 Way	<b>JF608B</b> <sup>1</sup>	<b>JF608BG</b> <sup>1</sup>
12 Way	<b>JF812B</b>	<b>JF812BG</b>
18 Way	<b>JF818B</b>	<b>JF818BG</b>

<sup>1</sup> Max allowed incomer of 630A on this panelboard



JF60204B

### Invicta 3 Panelboards (630A / 800A Incoming, 125A / 250A Outgoing)

These boards will accept a range of MCCB frame sizes:

- 125A frame: 16-125A SP/TP
- 250A frame: 80-250A TP only

Description	Cat ref. Plain door	Cat ref. Glazed door
6 Way (2 x 250A ① + 4 x 125A ②)	<b>JF60204B</b> <sup>2</sup>	<b>JF60204BG</b> <sup>2</sup>
8 Way (2 x 250A ① + 6 x 125A ②)	<b>JF80206B</b>	<b>JF80206BG</b>
8 Way (4 x 250A ① + 4 x 125A ②)	<b>JF80404B</b>	<b>JF80404BG</b>
12 Way (2 x 250A ① + 10 x 125A ②)	<b>JF80210B</b>	<b>JF80210BG</b>
12 Way (4 x 250A ① + 8 x 125A ②)	<b>JF80408B</b>	<b>JF80408BG</b>
18 Way (4 x 250A ① + 14 x 125A ②)	<b>JF80414B</b>	<b>JF80414BG</b>
18 Way (6 x 250A ① + 12 x 125A ②)	<b>JF80612B</b>	<b>JF80612BG</b>

<sup>2</sup> Max allowed incomer of 630A on this panelboard

## Incomer Kits

Description	Cat ref.
4 Pole 400A Load Break Switch 25kA	<b>JF844BSW</b> <sup>3</sup>
4 Pole 630A Load Break Switch 25kA	<b>JF864BSW</b> <sup>3</sup>
4 Pole 800A Load Break Switch *Select the required 800A rated panelboard 50kA (e.g. JF80206BG) and add the suffix 800LBS e.g. JF80206BG800LBS	<b>*800LBS</b>
800A Direct Connection Kit 4 Pole	<b>JF884BD</b> <sup>3</sup>
3 Pole 400A MCCB Incomer Kit 50kA	<b>JF843BM</b>
Electronic LSI MCCB, Ir adjustable 0.4 – 1.0 x In	
4 Pole 400A MCCB Incomer Kit	<b>JF844BM</b>
Electronic LSI MCCB, Ir adjustable 0.4 – 1.0 x In	
3 Pole 630A MCCB Incomer Kit 50kA	<b>JF863BM</b>
Electronic LSI MCCB, Ir adjustable 0.4 – 1.0 x In	
4 Pole 630A MCCB Incomer Kit 50kA	<b>JF864BM</b>
Electronic LSI MCCB, Ir adjustable 0.4 – 1.0 x In	

<sup>3</sup> A 300mm cable spreader box recommended (see page 3.29).



DIN Extension Boxes have plain or glazed doors and DIN rail chassis.

For dimensions see page 3.48.

Cable spreader boxes are used for additional cabling space therefore do not require doors. If doors are desired optional door kits are available.



JF801E

## DIN Extension Boxes (to fit JF4 & JF8 boards)

Supplied with DIN Rail and without gland plate JFPLATE.

Description	Cat ref. Plain door	Cat ref. Glazed door
1 Row 34 Mod (300mm Height)	<b>JF801E</b>	<b>JF801EG</b>
2 Row 68 Mod (450mm Height)	<b>JF803E</b>	<b>JF803EG</b>



JF805E

## Cable Spreader Box (to fit JF4 & JF8 boards)

Supplied without gland plate JFPLATE.

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JF805E</b>
Large (450mm Height) (Door not included)	<b>JF806E</b>
Small Cable Spreader Box Door Kit	<b>JF805DK</b>
Large Cable Spreader Box Door Kit	<b>JF806DK</b>



JF803BA

## Meter Pack 800A

These meter packs fit directly into the main panelboard. Spreader box required to mount CT's.

Description	Cat ref.
Digital Multifunction Meter Pack Pulsed	<b>JF803BA</b>
Digital Multifunction Meter Pack ModBus	<b>JF803MJ</b>
Multifunction Meter Pack 800A Pulsed & Modbus Pluggable Output	<b>JF803PM</b>

# Invicta 3 Panelboard system (800A MCCB) 800A Incoming 125 / 250A Outgoing



The Hager range of 800A panel boards has been designed to complement our Invicta 3 distribution system.

The 800A MCCB incomer board is designed specifically for applications where an adjustable 800A MCCB incomer device is required.

## Construction

The enclosure is manufactured from 1.2/1.5mm DC01M cold reduced mild steel, phosphate treated and powder coated to 00A01 BS4800.

Busbar Rated current: 800A  
35kA for 1 sec.

Removable gland plates are provided top and bottom for ease of installation"

## Specification

Complies with BS EN 61439-2  
Enclosures degree of protection: IP3X  
Internal Separation: Form 3A  
Form 3B type 2 is achieved using the outgoing terminal shield (see MCCB accessories on page 4.42).

## Cable Capacity

Outgoing devices  
125A frame (16 - 125A)  
Flexible: min 6mm<sup>2</sup>, max 70mm<sup>2</sup>  
Rigid: min 6mm<sup>2</sup>, max 95mm<sup>2</sup>

250A frame (100 - 250A)  
Lug connection: max width 25mm, M8.

Incomers Cable capacity  
400A – 2 x 240mm<sup>2</sup>  
630A – 2 x 240mm<sup>2</sup> / 2 x 300mm<sup>2</sup>  
Lug connection bar width 44mm  
2 x M12 holes

For dimensions see page 3.49.

For a full list of protection devices see section 4 of this catalogue (Protection Devices).

## Invicta 3 Panelboards (800A Incoming 125A Outgoing)

Max. 125A outgoing devices

Description	Cat ref. Plain door	Cat ref. Glazed door
12 Way	<b>JHF812B</b>	<b>JHF812BG</b>
18 Way	<b>JHF818B</b>	<b>JHF818BG</b>



JHF80408B

## Invicta 3 Panelboards (800A Incoming 125A / 250A Outgoing)

These boards will accept two MCCB frame sizes  
125A frame: 16 - 125A  
250A frame: 100 - 250A

Description	Cat ref. Plain door	Cat ref. Glazed door
8 Way (2 x 250A ① + 6 x 125A ②)	<b>JHF80206B</b>	<b>JHF80206BG</b>
8 Way (4 x 250A ① + 4 x 125A ②)	<b>JHF80404B</b>	<b>JHF80404BG</b>
12 Way (2 x 250A ① + 10 x 125A ②)	<b>JHF80210B</b>	<b>JHF80210BG</b>
12 Way (4 x 250A ① + 8 x 125A ②)	<b>JHF80408B</b>	<b>JHF80408BG</b>
18 Way (4 x 250A ① + 14 x 125A ②)	<b>JHF80414B</b>	<b>JHF80414BG</b>
18 Way (6 x 250A ① + 12 x 125A ②)	<b>JHF80612B</b>	<b>JHF80612BG</b>

## Incomer Kits

Description	Cat ref. Plain door
800A 3 Pole MCCB Incomer Auto 50kA	<b>JHF883BM</b>
800A 4 Pole MCCB Incomer Auto 50kA	<b>JHF884BM</b>

## Accessories

Description	Cat ref.
Locking Kit for MCCB Incoming Device (All Ratings)	<b>HXD039H</b>
Allen Key Set	<b>JF296A</b>
End Plate for Invicta 3 800A Range	<b>JFPLATE</b>
Key lock with one key	<b>JK222PK</b>
x125 Frame 1 pole blank (3x blanks required per triple pole)	<b>JN001BP</b>
x250 Frame 3 pole blank (1x blank required per triple pole)	<b>JF003BP</b>
Outgoer Locking Kit (fits to toggle for up to 3 padlocks max ø 8mm <sup>2</sup> )	<b>HXA039H</b>



JN001BP

For a full list of protection devices see section 4 of this catalogue (Protection Devices).

When selecting outgoing metering, the panelboard metering system is easily configured by selecting a side, top or combination that matches the panelboard.

(e.g. for the JF406 board, you can select a JF12504SM side mounted meter enclosure that can house 4 JFM01 panel mounted meters). When using both side and top/bottom meter enclosures, corner filler enclosures are available.

For enclosure dimensions see page 3.50.

Please contact us for any non-standard requirements or assembly.

For our full range of pluggable meters see page 5.25.



JF12504SM

## Side meter enclosures (Blanking plates not included)

Suitable for board type:	Spaces for Meters	Cat ref.
6/8 Way JF Board	4 x Din 96 Cut-Outs	<b>JF12504SM</b>
12 Way JF Board	6 x Din 96 Cut-Outs	<b>JF14006SM</b>
16 Way JF Board	8 x Din 96 Cut-Outs	<b>JF15508SM</b>
18 Way JF Board	9 x Din 96 Cut-Outs	<b>JF17009SM</b>
Blanking Plate DIN 96		<b>JF96BP</b>



JF4508TM

## Top/Bottom Meter Enclosures

Description	Spaces for Meters	Cat ref.
300mm Enclosure	4 x DIN 96 Cut-Outs	<b>JF3004TM</b>
450mm Enclosure	8 x DIN 96 Cut-Outs	<b>JF4508TM</b>
Blanking Plate DIN 96		<b>JF96BP</b>



JF450CF

## Corner Filler Enclosures

Description	Cat ref.
300mm Corner Filler Side Enclosure	<b>JF300CF</b>
450mm Corner Filler Side Enclosure	<b>JF450CF</b>

# Enclosed Switchgear

The Hager range of switch disconnectors has been designed to complement the FCS, TPN and panelboard ranges by providing individual protection and control of individual circuits up to 800A.

The enclosures have been designed to provide adequate cabling space without the need for additional cable spreader boxes.



Fuse Combination Switches 20 - 800A	3.34
Switch Disconnectors 20-800A	3.36
IP65 Switch Disconnectors AC	3.37
Enclosed MCCBs & Switch Fuses	3.38

### Description

The Hager range of fuse combination switches provides individual protection and control of circuits.

The enclosures up to 100A have been designed to provide adequate cabling space without the need for additional cable spreader boxes.

Operation of the device is through a door mounted rotary handle which is mechanically interlocked to prevent access to live conductors when the switch is in the on position. The handle is padlockable in the off position.

All versions will accept standard BS 88 fuse links and can be converted to switch disconnecter by fitting copper links.

### Utilisation category

AC22B - 630 - 800A  
AC23A - 20 - 630A

### Product features

Complies with:  
BS EN 60947-3  
IP31.

**Note:** Maximum rated fuse links are fitted in all fuse combination switches.

### Cable Capacity

20A	=	16mm <sup>2</sup>
32A	=	16mm <sup>2</sup>
63A	=	25mm <sup>2</sup>
100A	=	95mm <sup>2</sup>
125A	=	95mm <sup>2</sup>
160A	=	95mm <sup>2</sup>
200A	=	240mm <sup>2</sup>
250A	=	240mm <sup>2</sup>
315A	=	240mm <sup>2</sup>
400A	=	240mm <sup>2</sup>
630A	=	2 x 300mm <sup>2</sup>
800A	=	2 x 300mm <sup>2</sup>

For dimensions see page 3.51.

For technical information see page 3.52.



JFD206U

### Fuse Combination Switches Single Pole and Switched Neutral

Description	Cat ref.	Cat ref. Cable extension boxes if required
20A Fuse Combination Switch SP&SN	<b>JFB202U</b>	-
32A Fuse Combination Switch SP&SN	<b>JFB203U</b>	-
63A Fuse Combination Switch SP&SN	<b>JFD206U</b>	-
100A Fuse Combination Switch SP&SN	<b>JFE210U</b>	<b>JZA701</b>

### Fuse Combination Switches Triple Pole and Neutral

Description	Cat ref.	Cat ref. Cable extension boxes if required
20A Fuse Combination Switch TP&N	<b>JFB302U</b>	-
32A Fuse Combination Switch TP&N	<b>JFB303U</b>	-
63A Fuse Combination Switch TP&N	<b>JFD306U</b>	-
100A Fuse Combination Switch TP&N	<b>JFE310U</b>	<b>JZA701</b>
125A Fuse Combination Switch TP&N	<b>JFG312U</b>	<b>JZA701</b>
160A Fuse Combination Switch TP&N	<b>JFG316U</b>	<b>JZA701</b>
200A Fuse Combination Switch TP&N	<b>JFG320U</b>	<b>JZA701</b>
250A Fuse Combination Switch TP&N	<b>JFG325U</b>	<b>JZA701</b>
315A Fuse Combination Switch TP&N	<b>JFH331U</b>	<b>JZA702</b>
400A Fuse Combination Switch TP&N	<b>JFH340U</b>	<b>JZA702</b>
630A Fuse Combination Switch TP&N	<b>JFI363U</b>	<b>JZA703</b>
800A Fuse Combination Switch TP&N	<b>JFI380U</b>	<b>JZA703</b>



JFG416U

## Fuse Combination Switches Triple Pole and Switched Neutral

Description	Cat ref.	Cat ref. Cable extension boxes if required
20A Fuse Combination Switch TP&SN	<b>JFB402U</b>	-
32A Fuse Combination Switch TP&SN	<b>JFB403U</b>	-
63A Fuse Combination Switch TP&SN	<b>JFD406U</b>	-
100A Fuse Combination Switch TP&SN	<b>JFE410U</b>	<b>JZA701</b>
125A Fuse Combination Switch TP&SN	<b>JFG412U</b>	<b>JZA701</b>
160A Fuse Combination Switch TP&SN	<b>JFG416U</b>	<b>JZA701</b>
200A Fuse Combination Switch TP&SN	<b>JFG420U</b>	<b>JZA701</b>
250A Fuse Combination Switch TP&SN	<b>JFG425U</b>	<b>JZA701</b>
315A Fuse Combination Switch TP&SN	<b>JFH431U</b>	<b>JZA702</b>
400A Fuse Combination Switch TP&SN	<b>JFH440U</b>	<b>JZA702</b>
630A Fuse Combination Switch TP&SN	<b>JFI463U</b>	<b>JZA703</b>
800A Fuse Combination Switch TP&SN	<b>JFI480U</b>	<b>JZA703</b>

## Copper Links

For conversion to isolating switches

Description	Cat ref.
63A	<b>JC60L</b>
100A	<b>JC10L</b>
125 / 200A	<b>JC20L</b>
315 / 400A	<b>JC40L</b>
630A	<b>JC63L</b>



IU44-11

## Switch Fuses

For dimensions see page 3.53

Description	Cat ref.
4 Module Metal Unit 1 x 100A Isolator, AC22A Connection capacity: 50mm <sup>2</sup> rigid conductor, 35mm <sup>2</sup> flexible conductor, 1 x 63A Fuse	<b>IU4-16</b>
4 Module Metal Unit 1 x 100A Isolator, AC22A Connection capacity: 50mm <sup>2</sup> rigid conductor, 35mm <sup>2</sup> flexible conductor, 1 x 80A Fuse	<b>IU44-18</b>
4 Module Metal Unit 1 x 100A Isolator, AC22A Connection capacity: 50mm <sup>2</sup> rigid conductor, 35mm <sup>2</sup> flexible conductor, 1 x 100A Fuse	<b>IU44-11</b>

## Amendment 3 Compliant Switch Fuses

For dimensions see page 3.53

Full metal construction to  
comply with BS EN 61439-3

Description	Cat ref.
4 Module Metal Unit 1 x 100A Isolator, AC22A Connection capacity: 50mm <sup>2</sup> rigid conductor, 35mm <sup>2</sup> flexible conductor, 1 x 63A Fuse	<b>IU44-16-D</b>
4 Module Metal Unit 1 x 100A Isolator, AC22A Connection capacity: 50mm <sup>2</sup> rigid conductor, 35mm <sup>2</sup> flexible conductor, 1 x 80A Fuse	<b>IU44-18-D</b>
4 Module Metal Unit 1 x 100A Isolator, AC22A Connection capacity: 50mm <sup>2</sup> rigid conductor, 35mm <sup>2</sup> flexible conductor, 1 x 100A Fuse	<b>IU44-11-D</b>

## Description

The Hager range of switch disconnector has been designed to provide individual protection and control of circuits up to 800A.

The enclosures have been designed to provide adequate cabling space without the need for additional cable spreader boxes.

Operation of the device is through a door mounted rotary handle which is mechanically interlocked to prevent access to live conductors when the switch is in the on position. The handle is padlockable in the off position.

## Utilisation category

AC-21  
AC-22

## Product features

Complies with:  
BS EN 60947-3  
IP31.

## Cable Capacity

20A	=	16mm <sup>2</sup>
32A	=	16mm <sup>2</sup>
63A	=	50mm <sup>2</sup>
100A	=	50mm <sup>2</sup>
125A	=	50mm <sup>2</sup>
160A	=	95mm <sup>2</sup>
200A	=	95mm <sup>2</sup>
250A	=	150mm <sup>2</sup>
315A	=	185mm <sup>2</sup>
400A	=	240mm <sup>2</sup>
630A	=	2 x 300mm <sup>2</sup>
800A	=	2 x 300mm <sup>2</sup>

For technical information see page 3.57.

## Switch Disconnectors TP&N

Rating	Cat ref.	Cat ref. Cable extension boxes if required
160A	<b>JAC316</b>	<b>JZA700</b>
200A	<b>JAE320</b>	<b>JZA701</b>
250A	<b>JAE325</b>	<b>JZA701</b>
315A	<b>JAG331</b>	<b>JZA701</b>
400A	<b>JAG340</b>	<b>JZA701</b>
630A	<b>JAH363</b>	<b>JZA702</b>
800A	<b>JAH380</b>	<b>JZA702</b>



JAB402B

## Switch Disconnectors TP&SN

Rating	Cat ref.	Cat ref. Cable extension boxes if required
20A	<b>JAB402B</b>	-
32A	<b>JAB403B</b>	-
63A	<b>JAB406B</b>	-
100A	<b>JAB410B</b>	-
125A	<b>JAC412B</b>	-
160A	<b>JAC416</b>	<b>JZA700</b>
200A	<b>JAE420</b>	<b>JZA701</b>
250A	<b>JAE425</b>	<b>JZA701</b>
315A	<b>JAG431</b>	<b>JZA701</b>
400A	<b>JAG440</b>	<b>JZA701</b>
630A	<b>JAH463</b>	<b>JZA702</b>
800A	<b>JAH480</b>	<b>JZA702</b>



**Description**

The Hager range of switch disconnectors suites with the existing commercial offer, giving a range of enclosed switch disconnectors to IP65 for individual isolation.

The devices are padlockable in three positions and offer plenty of cabling space. Clip on auxiliary contacts can be fitted retrospectively.

**Product features**

Complies with: BS EN 60947-3 IP65 to BS EN 60529

**Range:**

TPN 10, 16, 25, 40, 63 & 80A

**Utilisation category**

AC-21  
AC-22

**Cable Capacity**

20 - 40A = 16mm<sup>2</sup>  
63 - 100A = 35mm<sup>2</sup>

For technical information see page 3.57.



JG01S

**IP65 Switch Disconnectors Triple Pole and Neutral**

In AC 21	In AC 22	Cat ref.
20A	10A	<b>JG00S</b>
25A	16A	<b>JG01S</b>
40A	25A	<b>JG02S</b>
63A	40A	<b>JG03S</b>
80A	63A	<b>JG04S</b>
100A	80A	<b>JG05S</b>

**Auxiliary Changeover Contacts**

Description	Cat ref.
1 NO / 1 NC	<b>JG10A</b>
3 NO / 2 NC	<b>JG20A</b>

## IP65 Switch Disconnectors DC

**Description**

These DC switches are used in applications such as photovoltaic installations where they isolate the incoming side of the inverter.

They are supplied in grey with a black handle so that it is easy to distinguish them from the yellow/red AC switches used on the outgoing side of the inverter.

**Product Features**

Complies with: BS EN 60947-3 IP65 to BS EN 60529

An interlock ensures that the cover cannot be removed in both the ON and PADLOCKED OFF positions.

**Cable Capacity**

20 - 40A = 16mm<sup>2</sup>  
63 - 100A = 35mm<sup>2</sup>



JG440DC

**DC Switches**

Rating	Utilisation Category	Cat ref.
12A at 500V DC-21B, 10A at 600V DC-21B 8A at 800V DC-21B, 6A at 440V DC-22B	DC-21B	<b>JG416DC</b>
16A at 500V DC-21B, 12A at 600V DC-21B 10A at 800V DC-21B, 6A at 440V DC-22B	DC-21B DC-22B	<b>JG425DC</b>
20A at 500V DC-21B, 16A at 600V DC-21B 12A at 800V DC-21B, 16A at 440V DC-22B	DC-21B DC-22B	<b>JG440DC</b>

The Hager range of enclosed MCCBs has been designed for individual circuit protection.

The devices are mounted in IP31 enclosures, with cable knock outs top and bottom.

Both single and triple pole devices are equipped with fully rated neutral links.

4 Pole versions are available and 4 pole plus RCCB add-on are available.

## Construction MCCB

Single pole 63 - 125A (3 ratings)  
Triple pole 63 - 125A (3 ratings)  
Four pole 63 - 125A (3 ratings)

## MCCB-RCCB

Four pole + RCCB 63A & 100A (2 ratings)

## Non-Auto MCCB

Triple pole 125A  
Four pole 125A

## Specification

Complies with BS EN 61439-2

## Cable Capacity

63 - 125A  
Flexible: min 6mm<sup>2</sup>, max 70mm<sup>2</sup>  
Rigid: min 6mm<sup>2</sup>, max 95mm<sup>2</sup>

RCCB add-on adjustable from 0.03A, 0.1A, 0.3A, 1A, 3A, 6A

Time delay - Instantaneous, 60ms, 150ms, 300ms, 500ms, 1s

For Enclosed MCCB technical details and dimensions see page 3.56.

For Switch Fuse dimensions see page 3.53.



JG31BM

## Enclosed MCCBs Single Pole and Neutral

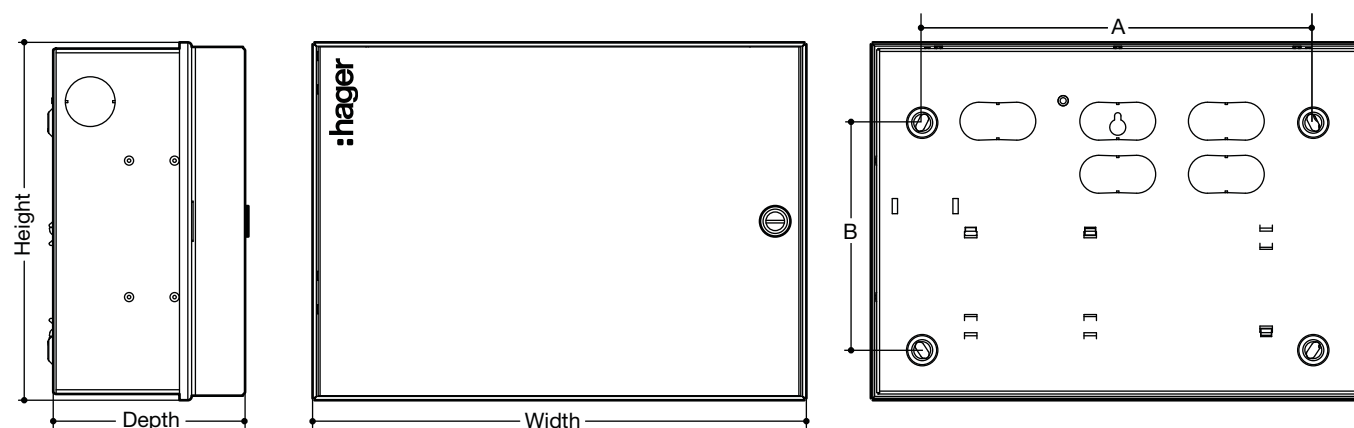
$I_n$ A	$I_{cu}$	Cat ref.
63A	18kA	<b>JG25BM</b>
100A	18kA	<b>JG28BM</b>
125A	18kA	<b>JG31BM</b>

## Enclosed MCCBs Triple Pole and Neutral

$I_n$ A	$I_{cu}$	Cat ref.
63A (40A-50A 63A)	18kA	<b>JG26BM</b>
100A (63A-80A-100A)	18kA	<b>JG29BM</b>
125A (80A-100-125A)	18kA	<b>JG32BM</b>
125A	Non-Auto	<b>JG34BS</b>

## Enclosed MCCBs Four Pole

$I_n$ A	$I_{cu}$	Cat ref.
63A (40A-50A 63A)	18kA	<b>JG27BM</b>
63A (40A-50A 63A) + RCCB add-on	18kA	<b>JG27BR</b>
100A (63A-80A-100A)	18kA	<b>JG30BM</b>
100A (63A-80A-100A) +RCCB add-on	18kA	<b>JG30BR</b>
125A (80A-100-125A)	18kA	<b>JG33BM</b>
125A	Non-Auto	<b>JG35BS</b>

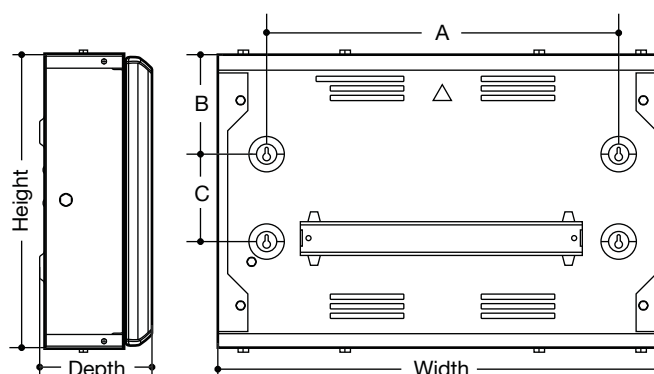


**SP&N A Boards**

Modules	Dimensions			Fixing Centres		Knockout Size	N° of Knockouts				
	Width	Height	Depth	A	B		Top	Bottom	Left	Right	Back
8	254	236	125	186	150	ø 20	3	3	-	-	-
						ø 32	1	1	1	1	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	3
12	326	236	125	258	150	ø 20	6	6	-	-	-
						ø 32	1	1	1	1	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	5
16	398	236	125	330	150	ø 20	8	8	-	-	-
						ø 32	1	1	1	1	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	7
22	505	236	125	437	150	ø 20	11	11	-	-	-
						ø 32	1	1	1	1	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	9
2 x 12	326	472	125	258	388	ø 20	6	6	-	-	-
						ø 32	1	1	2	2	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	6
2 x 16	398	472	125	330	388	ø 20	8	8	-	-	-
						ø 32	1	1	2	2	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	8
2 x 22	505	472	125	437	388	ø 20	11	11	-	-	-
						ø 32	1	1	2	2	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	10
3 x 22	505	708	125	437	624	ø 20	11	11	-	-	-
						ø 32	1	1	3	3	-
						ø 25	1	1	-	-	-
						25 x 50	-	-	-	-	15



**Invicta 3 SP&N A Boards**

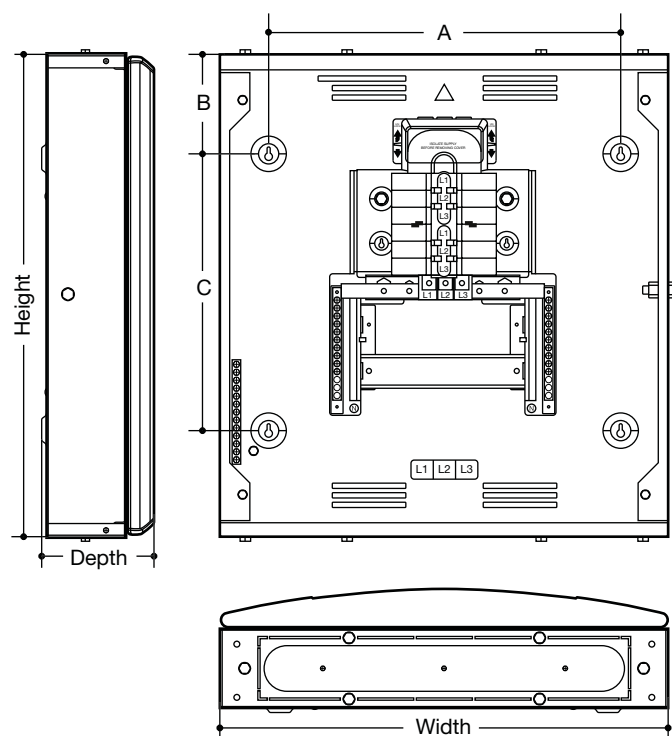
	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK114A/AG	300	465	107.7	350	35	228
JK129A/AG	450	465	107.7	330	35	378



Characteristics	JK1**	JK2**
Standards	Designed, manufactured and tested to BS EN 61439-3	Designed, manufactured and tested to BS EN 61439-3
Busbar Current Rating	125A	250A
Busbar Type	Fully shrouded copper	Fully shrouded copper
Busbar Rating	25kA Conditional	25kA Conditional
Incoming	100A Switch	250A MCS
	125A Switch	250A MCCB
	63A contactor AC3	160A contactor AC3
	100A contactor AC3	
	Direct connection	Direct connection
	RCCB incomers	
Outgoing Ways	4, 6, 8, 12, 16, 18, 24 Triple pole outgoing ways	8, 12, 16, 18, 24 Triple pole outgoing ways
Outgoing Protection	Type B MCB (6A to 63A, 1P & 3P) Type C, D MCB, (0.5A to 63A, 1P & 3P) 1Mod and 2Mod RCBO	Type B MCB (6A to 63A, 1P & 3P) Type C, D MCB, (0.5A to 63A, 1P & 3P) 1Mod and 2Mod RCBO
Voltage Rating in AC	230 / 415V	230 / 415V
IP Protection	IP3X to BS EN 60529	IP3X to BS EN 60529
Enclosure Body Type	Steel	Steel
Enclosure Paint Type	Powder Coat Grey White BS4800 00A01	Powder Coat Grey White BS4800 00A01
Cable Entry	Obround protected cable entry points	Obround protected cable entry points
<b>Terminal Connection Capacity</b>		
Incoming Line Terminal	50mm <sup>2</sup>	120mm <sup>2</sup>
Incoming Earth Terminal	M8 stud	M8 stud
Incoming Neutral Terminal	50mm <sup>2</sup> cage or M6 stud	M8 Stud
Outgoing Earth Terminals	16mm <sup>2</sup>	16mm <sup>2</sup>
Outgoing Neutral Terminals	16mm <sup>2</sup>	16mm <sup>2</sup>
Enclosure Earth Stud	M8	M8
<b>Installation</b>		
Mounting	4 x key hole fixing holes plus central top key hole for one fixing hanging / levelling Surface Wall Mount	4 x key hole fixing holes plus central top key hole for one fixing hanging / levelling Surface Wall Mount
Gland Plate	Top and bottom removable	Top and bottom removable
Integrated Locking System	Coin lock as standard, key lock as accessory	Coin lock as standard, key lock as accessory

#### Torque Settings

			Cables >1.5mm² Tightening torque (N.m)		Cables ≤1.5mm² Tightening torque (N.m)		Cable Stripping (mm)
	Pz No.	(mm)	Single Cable	Multi Cables	Single Cable	Multi Cable	
Consumer unit terminals							
Earth and neutral terminal bars	2	6.5	2	2	1.5	1.5	10
Isolation							
SB switch disconnectors	2	6.5	3.6	3.6	3.6	3.6	15
Circuit protection							
MTN MCB	2	6.5	2.8	2.8	2.8	2.8	13
NBN/NCN/NDN MCB	2	6.5	2.8	2.8	2.8	2.8	13
RCBO	2	5.5	2.1	2.1	2.1	2.1	13
RCCB	2	5.5	2.8	2.8	2.8	2.8	13



## 125A Primary Boards

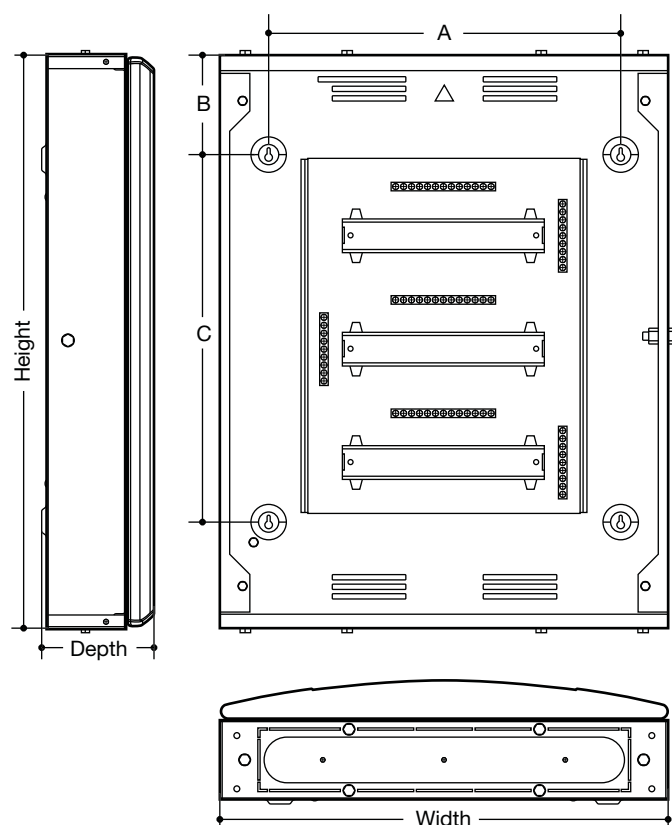
	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK104B/BG	500	465	132.5	365	100	300
JK106B/BG	550	465	132.5	365	100	350
JK108B/BG	625	465	132.5	365	100	425
JK112B/BG	850	465	132.5	365	100	650
JK116B/BG	950	465	132.5	365	100	750
JK118B/BG	1100	465	132.5	365	100	900
JK124B/BG	1250	465	132.5	365	100	1050

## 250A Primary Boards

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK208B/BG	950	465	165.5	365	100	750
JK212B/BG	1100	465	165.5	365	100	900
JK216B/BG	1250	465	165.5	365	100	1050
JK218B/BG	1400	465	165.5	365	100	1200
JK224B/BG	1550	465	165.5	365	100	1350

## Contactor Incomers

	Dimensions (mm)		
	Height	Width	Depth
JK10634C	300	465	165.5
JK11004C	450	465	234.5
JK21604C	450	465	234.5

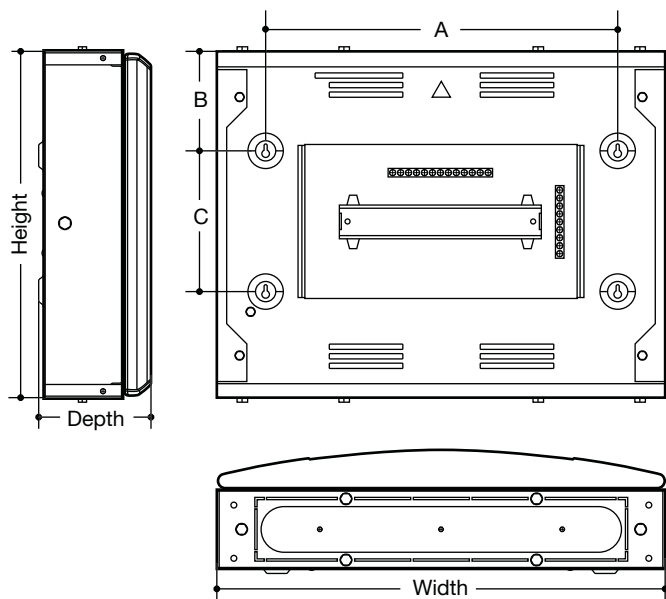


## 125A Side DIN Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK104BDFG	500	465	132.5	365	100	300
JK106BDFG	550	465	132.5	365	100	350
JK108BDFG	625	465	132.5	365	100	425
JK112BDFG	850	465	132.5	365	100	650
JK116BDFG	950	465	132.5	365	100	750

## 250A Side DIN Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK208BDFG	950	465	165.5	365	100	750
JK212BDFG	1100	465	165.5	365	100	900
JK216BDFG	1250	465	165.5	365	100	1050
JK218BDFG	1400	465	165.5	365	100	1200
JK224BDFG	1550	465	165.5	365	100	1350

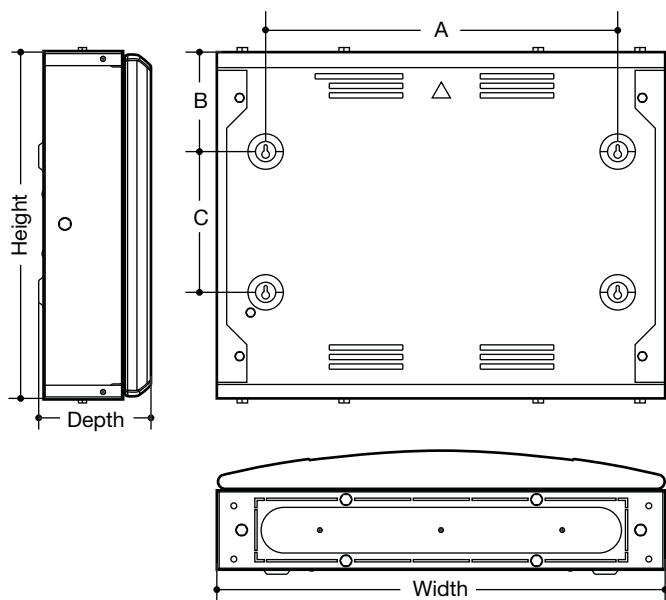


## 125A DIN Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK116E/EG	300	465	132.5	365	150	-
JK132E/EG	450	465	132.5	365	80	290

## 250A DIN Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK216E/EG	300	465	165.5	365	150	-
JK232E/EG	450	465	165.5	365	80	290

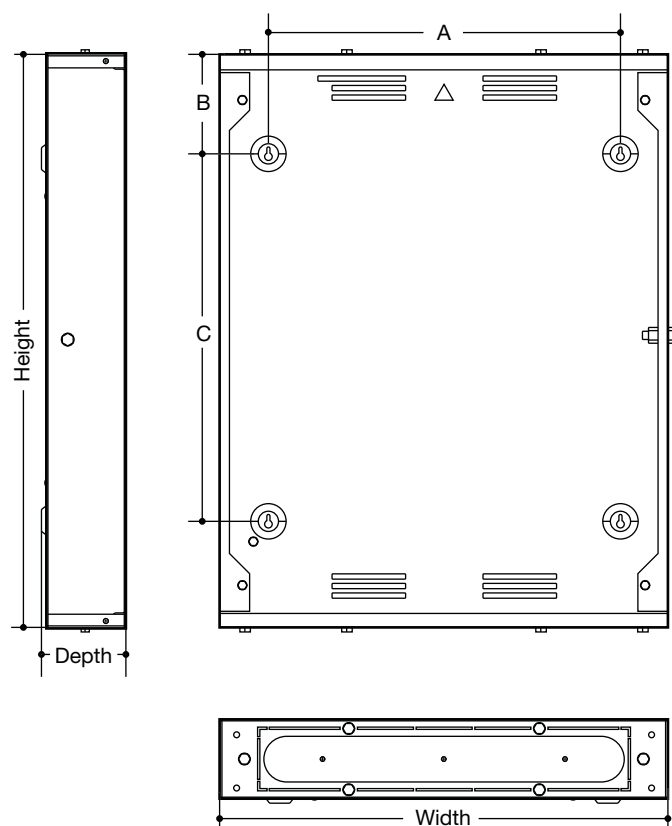


## 125A Cable Spreader Boxes

	Dimensions (mm)				Fixing Centres (mm)		
	Height	Width	Depth without door	Depth with optional door	A	B	C
JK101SE	300	465	91.5	132.5	365	150	-
JK102LE	450	465	91.5	132.5	365	80	290

## 250A Cable Spreader Boxes

	Dimensions (mm)				Fixing Centres (mm)		
	Height	Width	Depth without door	Depth with optional door	A	B	C
JK201SE	300	465	124.5	165.5	365	150	-
JK202LE	450	465	124.5	165.5	365	80	290



## 125A Side Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK104BSF	500	465	91.5	365	100	300
JK106BSF	550	465	91.5	365	100	350
JK108BSF	625	465	91.5	365	100	425
JK112BSF	850	465	91.5	365	100	650
JK116BSF	950	465	91.5	365	100	750

## 250A Side Extension Boxes

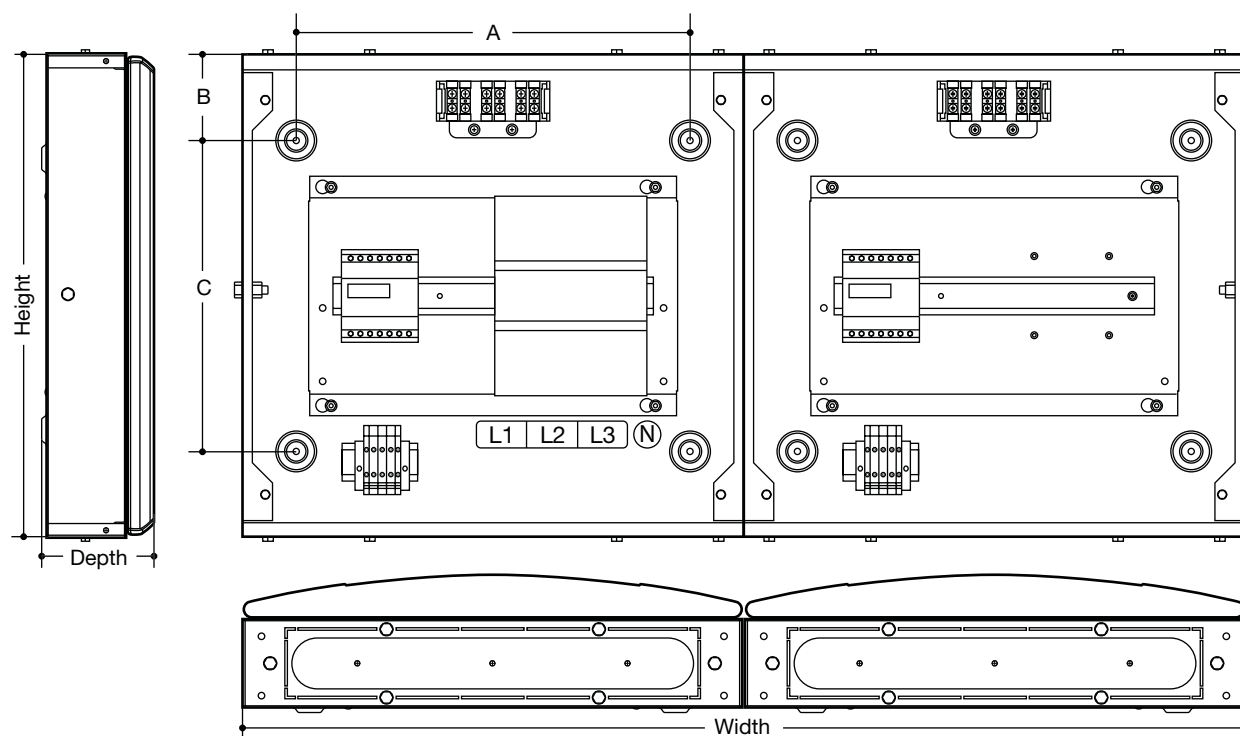
	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK208BSF	950	465	124.5	365	100	750
JK212BSF	1100	465	124.5	365	100	900
JK216BSF	1250	465	124.5	365	100	1050
JK218BSF	1400	465	124.5	365	100	1200
JK224BSF	1550	465	124.5	365	100	1350

## 125A Half Width Side Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK104BSH	500	232.5	91.5	170	100	300
JK106BSH	550	232.5	91.5	170	100	350
JK108BSH	625	232.5	91.5	170	100	425
JK112BSH	850	232.5	91.5	170	100	650
JK116BSH	950	232.5	91.5	170	100	750

## 250A Half Width Side Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK208BSH	950	232.5	124.5	170	100	750
JK212BSH	1100	232.5	124.5	170	100	900
JK216BSH	1250	232.5	124.5	170	100	1050
JK218BSH	1400	232.5	124.5	170	100	1200
JK224BSH	1550	232.5	124.5	170	100	1350



## 125A Dual Meter Incomer Kits

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JKD125BKWP	450	930	132.5	365	80	290
JKD125BKWM	450	930	132.5	365	80	290
JKD125BMP	450	930	132.5	365	80	290
JKD125BMM	450	930	132.5	365	80	290

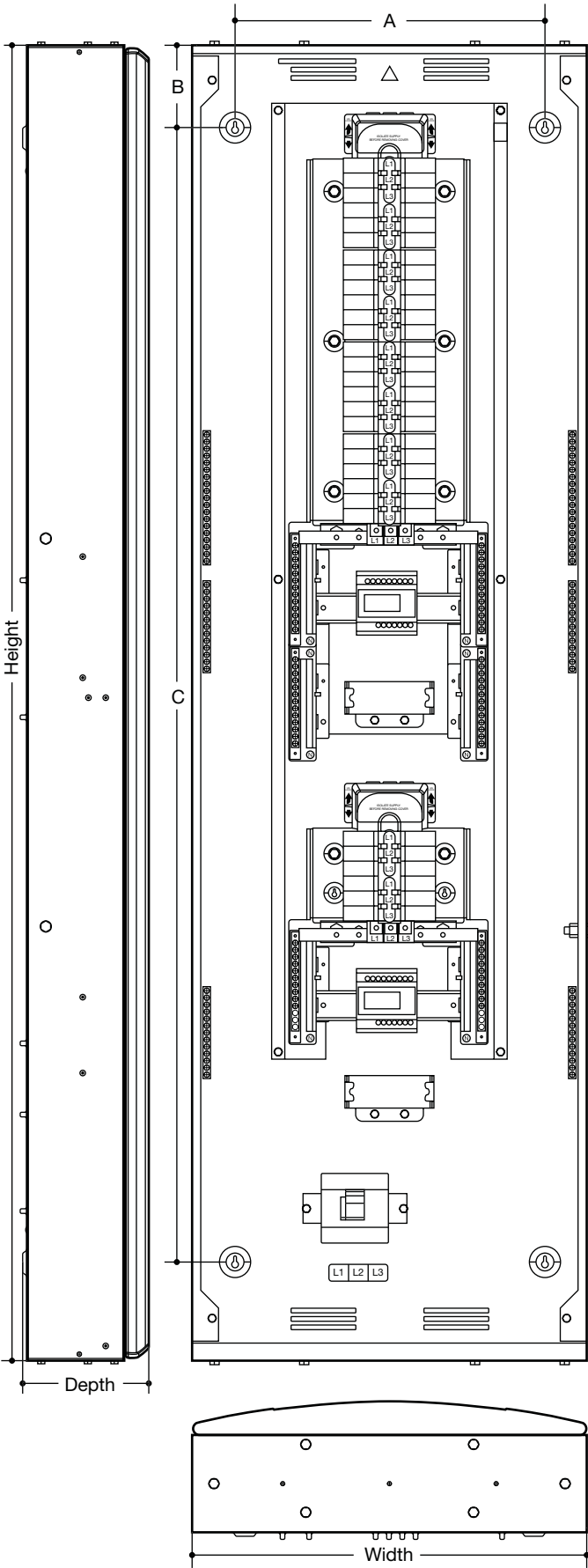
## 250A Dual Meter Incomer Kits

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JKD250BKWP	625	930	165.5	365	100	425
JKD250BKWM	625	930	165.5	365	100	425
JKD250BMP	625	930	165.5	365	100	425
JKD250BMM	625	930	165.5	365	100	425



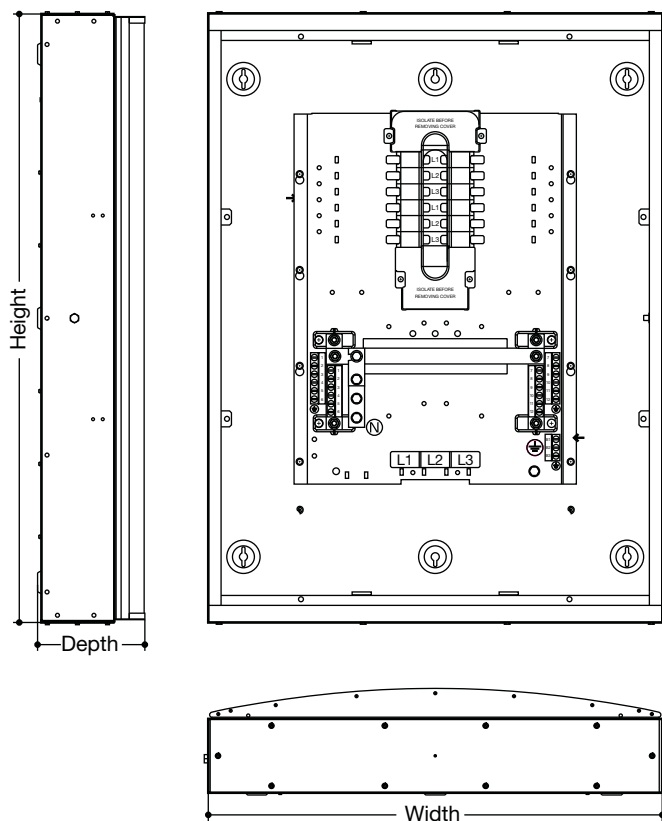
125A Rated Metered Boards

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JKD146B/M	1250	465	165.5	365	100	1050
JKDS168B/M	1400	465	165.5	365	100	1200
JKD1416B/M	1550	465	165.5	365	100	1350
JKD1812B/M	1550	465	165.5	365	100	1350



Commercial  
Distribution

Characteristics	250A	400A	630 / 800A	800A
Series	JN2**	JF4**	JF6**/JF8**	JHF8**
Busbar current rating	250A	400A	800A	800A (for 800A MCCB only)
Busbar type	Type B Fully Shrouded Copper			
Busbar rated short-time withstand current	25kA for 1 sec	35kA for 1 sec	35kA for 1 sec	35kA for 1 sec
Internal separation	Form 3A			
Incoming	Up to 250A MCCB, MCS	Up to 400A MCCB, MCS	Up to 630A MCCB, 800A LBS	800A MCCB
Outgoing	16 - 125A max.	16 - 125A max.	16 - 125A 100A - 250A	16 - 125A 100A - 250A
Voltage rating in AC	415V	415V	415V	415V
IP Protection	IP3X			
Enclosure body type	Steel			
Enclosure paint type	Powder coat Grey white BS 4800 00A01			
Cable entry	Via Gland Plates			
Terminal Connection capacity				
Incoming earth terminal	M8	M10	M10	M10
Incoming neutral terminal	M8	M12	M12	M12
Outgoing earth terminals	Up to 50mm²	Up to 50mm²	Up to 50mm²	Up to 50mm²
Outgoing neutral terminals	Up to 50mm²	Up to 50mm²	16A - 125A: Up to 50mm² 100A - 250A: M8 Stud	16A - 125A: Up to 50mm² 100A - 250A: M8 Stud
Enclosure earth stud	M8	M10	M10	M10
Installation				
Mounting	Surface (Wall)			



## Primary Boards

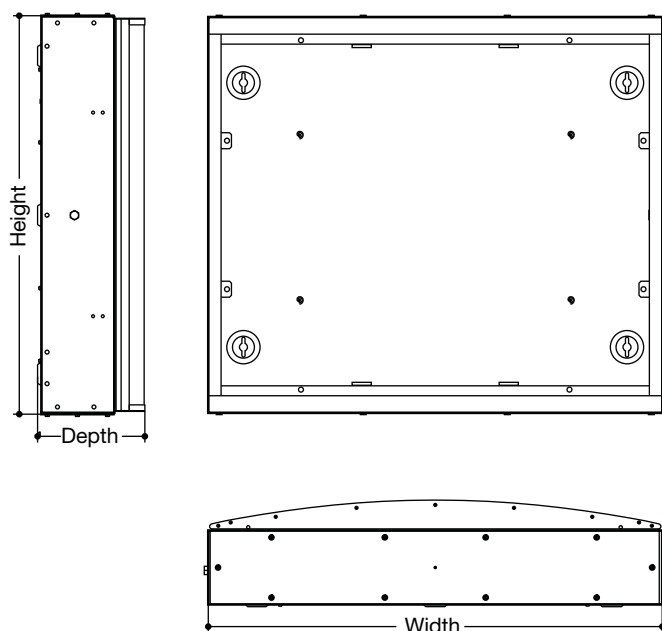
	Dimensions (mm)		
	Height	Width	Depth
JN204B/G	950	710	160
JN206B/G	1100	710	160
JN208B/G	1100	710	160
JN212B/G	1250	710	160
JN216B/G	1550	710	160

## Terminals

Neutral	Earth	Bond
2 x 6 x 50mm	2 x 6 x 50mm	1 x 3 x 50mm
2 x 9 x 50mm	2 x 9 x 50mm	1 x 3 x 50mm
2 x 12 x 50mm	2 x 12 x 50mm	1 x 3 x 50mm
2 x 18 x 50mm	2 x 18 x 50mm	1 x 3 x 50mm
2 x 24 x 50mm	2 x 24 x 50mm	1 x 3 x 50mm

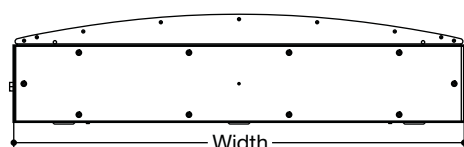
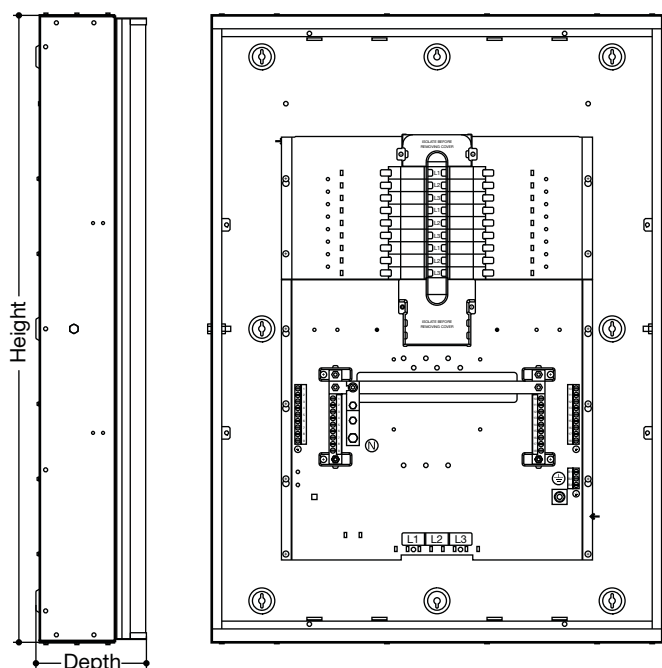
Cables outgoing ways:  
25 - 50mm<sup>2</sup> CSA Flex  
25 - 70mm<sup>2</sup> CSA Solid

MCCB Connections    250A M8  
Earth                    250A M8  
Neutral                  250A M8



## Extension Boxes

	Dimensions (mm)		
	Height	Width	Depth
JN201BE/G	300	710	160
JN203BE/G	450	710	160
JN205BE	300	710	125
JN206BE	450	710	125



## Primary Boards

	Dimensions (mm)		
	Height	Width	Depth
JF406B/G	1250	900	220
JF408B/G	1250	900	220
JF412B/G	1400	900	220
JF416B/G	1550	900	220
JF418B/G	1700	900	220
JF808B/G	1250	900	220
JF812B/G	1400	900	220
JF818B/G	1700	900	220
JF60204B/G	1250	900	220
JF80206B/G	1250	900	220
JF80404B/G	1250	900	220
JF80210B/G	1400	900	220
JF80408B/G	1400	900	220
JF80414B/G	1700	900	220
JF80612B/G	1700	900	220

## Terminals

Neutral		Earth	Bond
2 x 9 x 50mm		2 x 9 x 50mm	1 x 3 x 50
2 x 12 x 50mm		2 x 12 x 50mm	1 x 3 x 50
2 x 18 x 50mm		2 x 18 x 50mm	1 x 3 x 50
2 x 24 x 50mm		2 x 24 x 50mm	1 x 3 x 50
2 x 12 x 50mm		2 x 12 x 50mm	1 x 3 x 50
2 x 18 x 50mm		2 x 18 x 50mm	1 x 3 x 50
2 x 27 x 50mm		2 x 27 x 50mm	1 x 3 x 50
2 x 6 x 50mm	2 x M8 Bolt	2 x 9 x 50mm	1 x 3 x 50
2 x 9 x 50mm	2 x M8 Bolt	2 x 12 x 50mm	1 x 3 x 50
2 x 6 x 50mm	4 x M8 Bolt	2 x 12 x 50mm	1 x 3 x 50
2 x 15 x 50mm	2 x M8 Bolt	2 x 18 x 50mm	1 x 3 x 50
2 x 12 x 50mm	4 x M8 Bolt	2 x 18 x 50mm	1 x 3 x 50
2 x 21 x 50mm	4 x M8 Bolt	2 x 27 x 50mm	1 x 3 x 50
2 x 18 x 50mm	6 x M8 Bolt	2 x 27 x 50mm	1 x 3 x 50

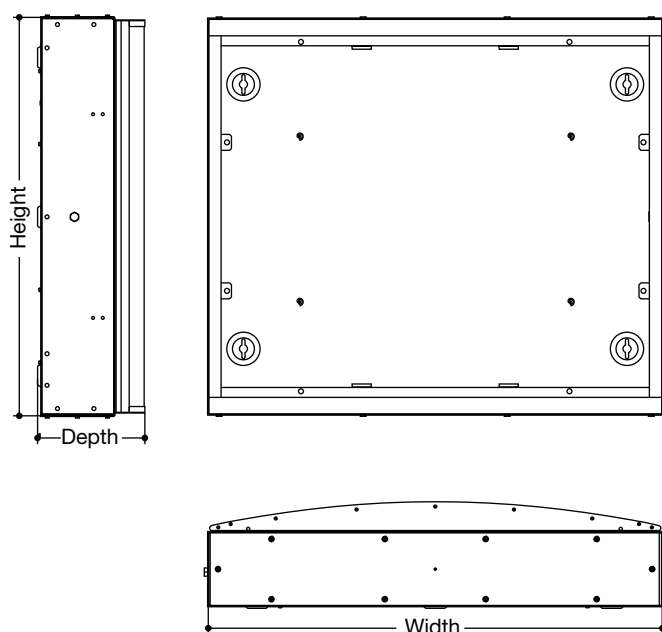
Cables outgoing ways:  
25 - 50mm<sup>2</sup> CSA Flex  
25 - 70mm<sup>2</sup> CSA Solid

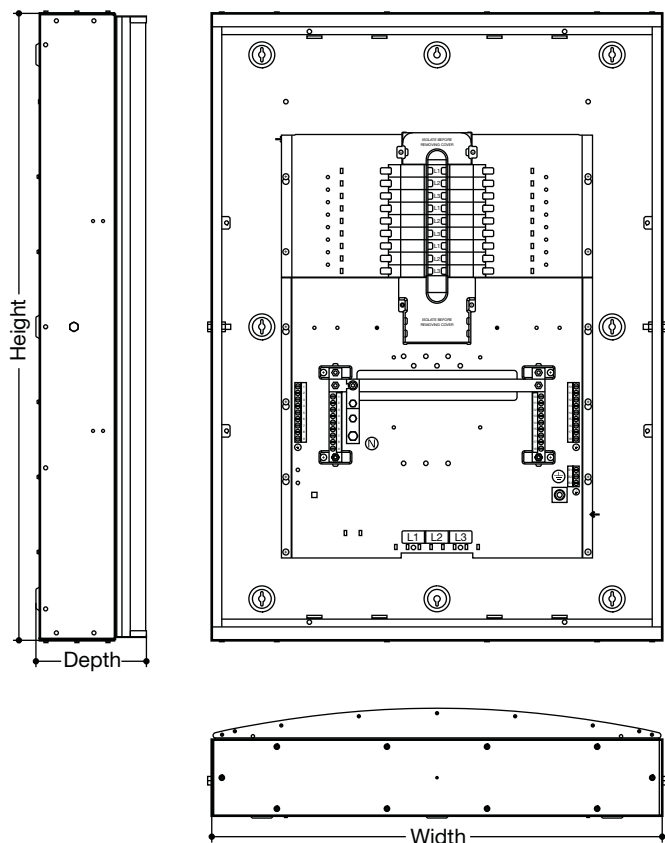
MCCB Connections 400A M10  
630A M12

Earth 400A M10  
630A M10

## Extension Boxes

	Dimensions (mm)		
	Height	Width	Depth
JF801E/G	300	900	220
JF803E/G	450	900	220
JF805E	300	900	158
JF806E	450	900	158

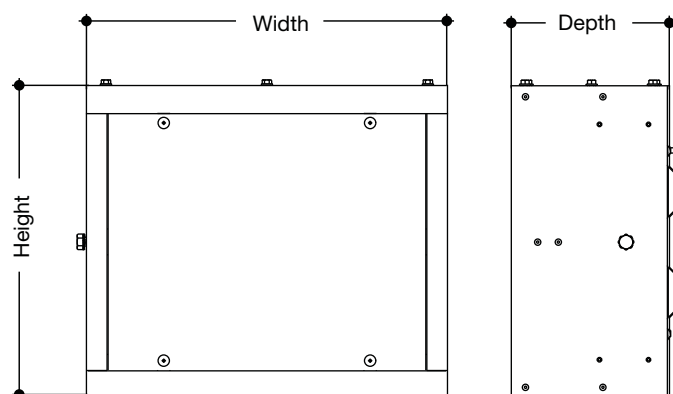




Primary Boards

	Dimensions (mm)		
	Height	Width	Depth
JHF812B/G	2050	900	220
JHF818B/G	2200	900	220
JHF80206B/G	1900	900	220
JHF80404B/G	1900	900	220
JHF80210B/G	2050	900	220
JHF80408B/G	2050	900	220
JHF80414B/G	2200	900	220
JHF80612B/G	2200	900	220

Commercial  
Distribution

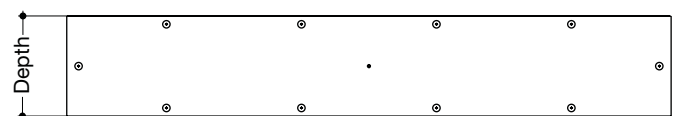
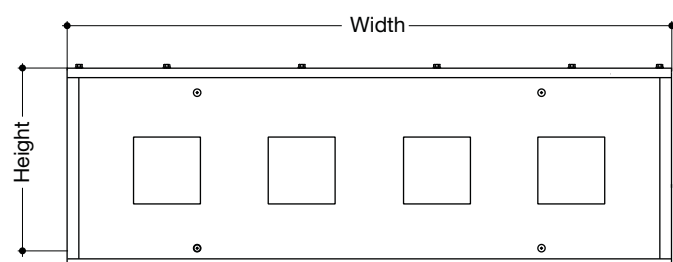


## Corner Filler Enclosures

	Dimensions (mm)		
	Width	Height	Depth
<b>JF300CF</b>	350	300	160
<b>JF450CF</b>	350	450	160

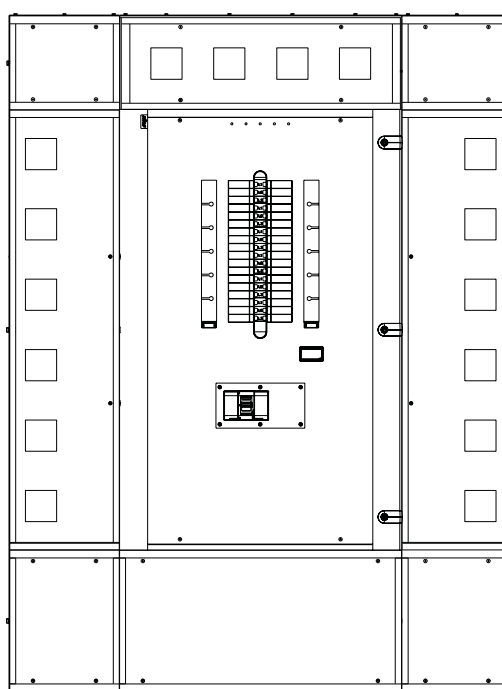
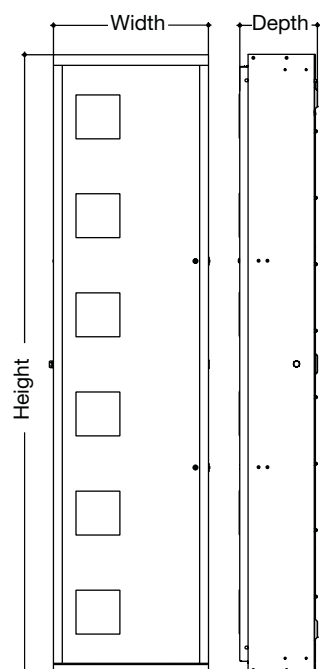
## Top/Bottom Enclosures

	Dimensions (mm)		
	Width	Height	Depth
<b>JF3004TM</b>	900	300	160
<b>JF4508TM</b>	900	450	160



## Side Enclosures

	Dimensions (mm)		
	Width	Height	Depth
<b>JF12504SM</b>	350	1250	160
<b>JF14006SM</b>	350	1400	160
<b>JF15508SM</b>	350	1550	160
<b>JF17009SM</b>	350	1700	160



### Fuse Combination Switches

All dimensions are in mm and exclude the handle.  
Add 45mm to the depth to allow for the handle (110mm for 630 / 800A)

SPSN	Description	Dimensions (mm)		
		Width	Height	Depth
JFB202U	20A SPSN	200	250	150
JFB203U	32A SPSN	200	250	150
JFD206U	63A SPSN	300	325	150
JFE210U	100A SPSN	375	400	200

TPN	Description	Dimensions (mm)		
		Width	Height	Depth
JFB302U	20A TPN	200	250	150
JFB303U	32A TPN	200	250	150
JFD306U	63A TPN	300	325	150
JFE310U	100A TPN	375	400	200
JFG312U	125A TPN	375	500	200
JFG316U	160A TPN	375	500	200
JFG320U	200A TPN	375	500	200
JFG325U	250A TPN	375	500	200
JFH331U	315A TPN	500	650	300
JFH340U	400A TPN	500	650	300
JFI363U	630A TPN	600	800	350
JFI380U	800A TPN	600	800	350

TPSN	Description	Dimensions (mm)		
		Width	Height	Depth
JFB402U	20A TPSN	200	250	150
JFB403U	32A TPSN	200	250	150
JFD406U	63A TPSN	300	325	150
JFE410U	100A TPSN	375	400	200
JFG412U	125A TPSN	375	500	200
JFG416U	160A TPSN	375	500	200
JFG420U	200A TPSN	375	500	200
JFG425U	250A TPSN	375	500	200
JFH431U	315A TPSN	500	650	300
JFH440U	400A TPSN	500	650	300
JFI463U	630A TPSN	600	800	350
JFI480U	800A TPSN	600	800	350

### Cable Extension Boxes for Fuse Combination Switches

	Rating	Dimensions (mm)		
		Width	Height	Depth
JZA701	125 / 250A	375	200	200
JZA702	315 / 400A	500	250	300
JZA703	630 / 800A	600	300	350

### Switch Disconnectors

All dimensions are in mm and exclude the handle.

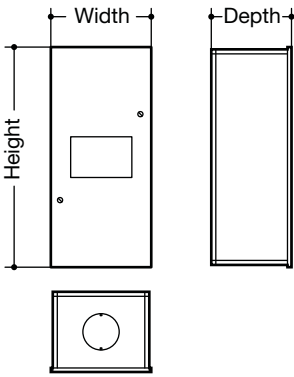
3 Pole	Description	Dimensions (mm)			
		Width	Height	Depth	Handle Depth
JAC316	160A TPN	250	300	150	195
JAЕ320	200A TPN	375	400	200	245
JAЕ325	250A TPN	375	400	200	245
JAG331	315A TPN	375	500	200	245
JAG340	400A TPN	375	500	200	245
JAH363	630A TPN	500	650	300	345
JAH380	800A TPN	500	650	300	345

4 Pole	Description	Dimensions (mm)			
		Width	Height	Depth	Handle Depth
JAB402B	20A TPSN	175	232	65	78
JAB403B	32A TPSN	175	232	65	78
JAB406B	63A TPSN	175	232	65	81
JAB410B	100A TPSN	200	300	80	97
JAC412B	125A TPSN	200	300	80	97
JAC416	160A TPSN	250	300	150	195
JAЕ420	200A TPSN	375	400	200	245
JAЕ425	250A TPSN	375	400	200	245
JAG431	315A TPSN	375	500	200	245
JAG440	400A TPSN	375	500	200	245
JAH463	630A TPSN	500	650	300	345
JAH480	800A TPSN	500	650	300	345

Thermal current I <sub>th</sub> (40°C)	20A	32A	63A	100A	125A	160A	200A
Fuse size: BS	A1	A1	A2-A3	A4	B1-B2	B1-B2	B1-B3
<b>Rated insulated voltage</b>							
U <sub>i</sub> (V)	800	800	800	800	800	800	800
Impulse voltages U <sub>imp</sub>	8000 8000	8000 8000	8000 8000	8000 8000	8000 8000	12000 12000	-
Operational current I <sub>e</sub> (A)	A B	A B	A B	A B	A B	A B	A B
415V ac AC-22A/AC-23B	20 20	32 32	63 63	100 100	125 125	160 160	200 200
Motor power (kW) 400V ac	9	15	30	51	63	80	100
Reactive power 400V ac (kVAR)	15	45	25	45	55	60	75
<b>Overload capacity</b>							
Short-circuit with fuses (kA Rms)	50	50	50	50	50	50	50
Fuse rating (A) BS 88	20	32	63	100	125	160	200
<b>Making &amp; Breaking Capacity</b>							
Breaking capacity 400V AC-23B (A Rms)	160	256	500	800	1000	1280	1600
Making capacity 400V AC-23B (A Rms)	200	320	630	1000	1250	1600	2000
Withstand mechanical (number of operations)	20,000	20,000	10,000	10,000	10,000	10,000	10,000
Tightening torque	2	2	6	9	9	9	20
<b>Connection (mm<sup>2</sup>)</b>							
Minimum Cu cable section	2.5	2.5	10	25	35	50	70
Maximum Cu cable section	16	16	25	95	95	95	240
Fuse types	NIT20	NIT32	TIS63	TCP100	TF125	TF160	TF200

Thermal current I <sub>th</sub> (40°C)	250A	315A	400A	630A	800A
Fuse size: BS	B1-B3	B1-B4	B1-B4	C1-C2	C1-C2-C3
Rated insulated voltage U <sub>i</sub> (V)	800	800	800	1000	1000
Impulse voltages U <sub>imp</sub>	-	-	-	-	-
Operational current I <sub>e</sub> (A)					
A = Frequent operation	A	A	A	A	A
B = Infrequent operation	B	B	B	B	B
415V ac AC-22A/AC-23B	250 250	315 315	400 400	630 630	800 800
Motor power (kW) 400V ac	-	160 160	220 220	355 355	-
Reactive power 400V ac (kVAR)	-	125	150	2 x 125	-
<b>Overload capacity</b>					
Short-circuit with fuses (kA Rms)	50	50	50	50	50
Fuse rating (A) BS 88	250	315	400	630	800
<b>Making &amp; Breaking Capacity</b>					
Breaking capacity 400V AC-23B (A R.M.S)	2000	2520	3200	-	-
Making capacity 400V AC-23B (A R.M.S)	2500	3150	4000	-	-
Withstand mechanical (number of operations)	10,000	10,000	10,000	8000	8000
Tightening torque (Nm)	-	20	20	40	40
<b>Connection (mm<sup>2</sup>)</b>					
Minimum Cu cable section	70	185	185	2 x 150	2 x 150
Maximum Cu cable section	240	240	240	2 x 300	2 x 300
Fuse types	TKF250	TKF315	TMF400	TTM630	TLM800





Switch Fuses

	Dimensions (mm)				Connection	Knockouts
	Width	Height	Depth	Depth with Door		
IU4-16	115	187	61.5	-	Earth only	2 x 25mm
IU44-18	125	312	73.5	-	Earth only	None
IU44-11	125	312	73.5	-	Earth only	None
IU4-16-D	125	312	74	96	Earth only	None
IU4-18-D	125	312	74	96	Earth only	None
IU4-11-D	125	312	74	96	Earth only	None

## IP65 Enclosed Isolating Switch

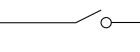
All dimensions are in mm and exclude the handle.  
Add 27mm to the depth to allow for the handle on 10-25A products.  
Add 32mm to the depth to allow for the handle on 40-80A products.

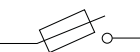
	Description	Dimensions (mm)		
		Width	Height	Depth
JG00S	10A TPN	100	136	74
JG01S	16A TPN	100	136	105
JG02S	25A TPN	100	136	105
JG03S	40A TPN	136	201	105
JG04S	63A TPN	136	201	118
JG05S	80A TPN	136	201	118

Enclosed thermal current $I_{the}$	16	25	40	63	80
Rated insulation voltage $U_i$ (V)	690	690	690	690	690
Rated thermal current $I_{the}$ (A)	25	40	63	80	100
<b>Rated operational current</b>					
AC21 400V $I_e$ (A)	25	40	63	80	100
AC22 400V	16	25	40	63	100
AC22 400V cos phi 0.65	16	20	32	63	100
AC23 400V	16	20	32	63	100
AC23 400V cos phi 0.35	16	15	25	40	63
<b>Rated operational power</b>					
AC23 230V (kW)	4	5.5	7.5	11	15
AC23 400V	7.5	11	15	22	30
<b>Rated fused short circuit current</b>					
Back-up fuse (A)	63	63	63	80	100
R.M.S value $I_k$ (kA)	50	50	50	50	50
Peak value (kA)	5.4	6.6	7.2	8.3	8.7
Rated short circuit making capacity ( $I_{cm}$ ) (kA) 690V	2.5	2.5	2.5	3.3	3.3
Rated short time withstand current ( $I_{cw}$ ) (kA) 690V (1s)	1	1.1	1.6	1.7	2.3
<b>Rated breaking capacity <math>I_{cn}</math> (A) AC23</b>					
400V cos phi 0.35	250	270	320	480	504
Electrical endurance (number of operations)	3000	3000	3000	3000	-
Mechanical endurance (number of operations)	50,000	50,000	50,000	50,000	-
Terminals mm <sup>2</sup>	1.5 - 16	1.5 - 16	1.5 - 16	2.5 - 35	2.3 - 35
Max. thermal torque (Nm)	1.8	1.8	1.8	2.5	2.5

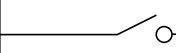
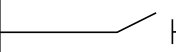
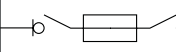



## Fuse - Combination Units - BS EN 60947-3

Many people are attracted to fuse-combination units by their simplicity in application and their reliability in operation. They are particularly useful for use on very high prospective fault level systems where the high energy limiting characteristic of the HRC fuse can be effectively utilised. In the past fuse-combination units came in two forms:

**Switch Fuse**  A switch in which one or more poles have a fuse in series.

**Fuse Switch**  A switch in which one or more poles have a fuse carrier/link which forms the moving contact.

The definitions of these two basic types of fuse combination units have now been extended to include units suitable for making, breaking and isolation and units which are only suitable for providing isolation for maintenance work.

Definition	Symbol	Function
Switch Fuse		Making and breaking current
Disconnecter Fuse		Isolating
Switch Disconnecter Fuse		Making, breaking and isolating
Fuse Switch		Making and breaking current
Fuse Disconnecter		Isolating
Fuse Switch Disconnecter		Making, breaking and isolating

However, in order to keep the selection of fuse-combination units as simple as possible, Hager offer a range of high performance double break switch-fuses, which also satisfy the isolating requirement of the British standard. These are correctly shown as and defined as a Fuse Combination Switch.

**Switch disconnectors - BS EN 60947-3.** A range of switch disconnectors (isolators) are available for use on lower current ratings from 20A to 125A, these switches are rated at AC-22 and provide a cost effective alternative to the fuse combination switch especially where the utilisation category AC-23 is not required. ie; mixed resistive and inductive loads. These may be used at AC-23 providing they are derated in accordance with Table 9 page 3.53.

## Utilisation categories

Utilisation categories are not new but they are important because they help the designer or specifier identify the correct unit for a particular application.

The designation of the utilisation category is made up of three parts:

1. The prefix AC or DC, which indicates the nature of the current.
2. The two digit number, which indicates the type of application the unit is suitable for:
  - 20 Connecting and disconnecting under no-load.
  - 21 Switching of resistive loads.
  - 22 Switching of mixed resistive and inductive loads.
  - 23 Switching of highly inductive loads.
3. The suffix A or B, which indicates whether the unit is suitable for frequent or infrequent operation.
  - A Frequent operation
  - B infrequent operation.

For example a fuse-combination unit feeding a 400V AC circuit of mixed resistive and inductive loads which would need to be operated frequently would require a minimum utilisation category of AC-22A.

If the load was highly inductive, i.e. motor loads, then the minimum utilisation category would be AC-23A.

Generally, category AC-23 does not cover the switching of capacitors. Usually this is the subject of agreement between manufacturer and user.

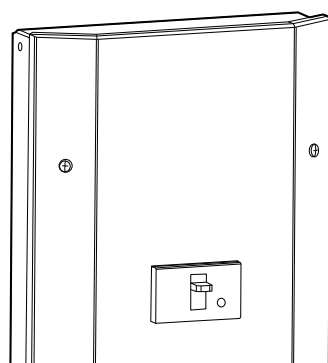
## Motor Power Circuit Protection

Fuse-combination units can be used very effectively for motor power circuit protection, the energy limiting HRC fuse offering very good protection to its associated starter. Category AC-23A should be specified for this duty. Special motor circuit protection fuse links are available which eliminate the need to fit a larger bodied fuse just to take care of the starting current of the motor.

The protection of motor power circuits should not be confused with the direct switching of a single motor. If a fuse-combination unit is required to perform this function then it must comply with the requirements of Appendix A of BS EN 60947-3 which makes provision for different utilisation categories for this application.

**Enclosed MCCB (63A - 125A)**

Characteristics	
Series	JG**
MCCB	63A to 125A MCCB
MCCB + RCCB Add on block	63A & 100A
Voltage rating in AC	240 / 415 V
IP Protection	IP3X
Enclosure body type	Steel
Enclosure paint type	Powder coat Grey white BS 4800 00A01
Terminal Connection capacity	
maximum terminal capacity	95mm <sup>2</sup>
Enclosure earth stud	M8
Installation	
Mounting	Wall



	Dimensions (mm)			Fixing centres	
	Height	Depth	Width	D	E
<b>JG25BM</b>	420	106	200	100	249
<b>JG26BM</b>	420	106	200	100	249
<b>JG27BM</b>	420	106	200	100	249
<b>JG27BR</b>	420	106	300	200	249
<b>JG28BM</b>	420	106	200	100	249
<b>JG29BM</b>	420	106	200	100	249
<b>JG30BM</b>	420	106	200	100	249
<b>JG31BM</b>	420	106	200	100	249
<b>JG32BM</b>	420	106	200	100	249
<b>JG33BM</b>	420	106	200	100	249
<b>JG30BR</b>	420	106	300	200	249
<b>JG34BS</b>	420	106	200	100	249
<b>JG35BS</b>	420	106	200	100	249

Enclosed thermal current $I_{the}$	20	32	63	100	125	160	200	250	315	400	630	800
Rated insulation voltage $U_i$ (V)	800	800	800	800	800	800	800	800	800	800	1000	1000
Rated thermal current $I_{the}$ (A)	20	32	63	100	125	160	200	250	315	400	630	800
<b>Rated operational current</b>												
AC21A 500VAC	20	32	63	100	125	160	160	250	250	250	630	800
AC22A	20	32	63	100	125	125	125	250	250	250	500	800
AC21A 690VAC	20	32	63	100	125	160	160	200	200	200	500	800
AC22A	20	32	63	100	125	125	125	125	125	125	315	800
<b>Overload capacity</b>												
Icw rated short time withstand value (kA/s)	1.26	1.26	1.5	1.5	7	7	7	9	9	9	13	26
R.M.S value (kA)	0.16	0.256	0.504	0.64	1	1.28	1.28	2	2	2	5.04	6.4
Peak withstand value (kA)	-	-	-	-	20	20	18	30	23	23	45	55
Rated short circuit making capacity (kA)	1.8	1.8	2.1	2.1	11.9	11.9	11.9	15.3	15.3	15.3	26	54.6
Rated impulse withstand voltage $U_{imp}$ (kV)	8	8	8	8	8	8	8	8	8	8	12	12
Mechanical endurance (number of operations)	100,000	100,000	100,000	100,000	10,000	10,000	10,000	10,000	10,000	10,000	5,000	5,000
Maximum cable size	16	16	50	50	50	95	95	150	185	240	2 x 300	2 x 300
Tightening torque (Nm)	2	2	4	4	9	9	9	20	20	20	20	-

Product Reference	JAB402B	JAB403B	JAB406B	JAB410B	JAC412B
Thermal Current In	20A	32A	63A	100A	125A
Switch	3PSN	3PSN	3PSN	3PSN	3PSN
Rated Insulation Voltage $U_i$	800V	800V	800V	800V	800V
Rated Impulse Voltage $U_{imp}$	8kV	8kV	8kV	8kV	8kV
<b>Dimensions</b>					
Height (mm)	232	232	232	232	300
Width (mm)	175	175	175	175	200
Depth (mm)	81	81	81	81	83
<b>Operational Current <math>I_e</math> (A)</b>					
415V AC - AC21A / AC21B	20/20	32/32	63/63	100/100	125/125
415V AC - AC22A / AC22B	20/20	32/32	63/63	100/100	125/125
415V AC - AC23A / AC23B	20/20	32/32	63/63	100/100	125/125
500V AC - AC21A / AC21B	20/20	32/32	63/63	100/100	125/125
500V AC - AC22A / AC22B	20/20	32/32	63/63	100/100	125/125
500V AC - AC23A / AC23B	20/20	25/25	63/63	80/80	100/100
690V AC - AC21A / AC21B	20/20	32/32	63/63	100/100	125/125
690V AC - AC22A / AC22B	20/20	32/32	40/63	80/100	100/126
690V AC - AC23A / AC23B	20/20	25/25	40/40	63/63	63/63
<b>Operational Power in AC-23 (kW)</b>					
At 415V AC	9	15	30	45	55
At 500V AC	9	15	30	45	55
At 690V AC	11	15	30	45	55
<b>Overload Capacity</b>					
Fuse rating	20	32	63	100	125
Fused Icc	50	50	50	25	25
Icw	2.5 / 0.3s	2.5 / 0.3s	3.0 / 0.3s	5.0 / 0.3s	5.0 / 0.3s
Ipk	6	6	9	12	12
<b>Cable Connection</b>					
Max Cu cable CSA mm <sup>2</sup>	16	16	35	70	70

# Protection devices

## The complete solution

We offer a wide range of protection devices, such as miniature circuit breakers, auxiliaries and accessories, RCCB add-on blocks, single pole and switched neutral devices, 2 and 4 pole RCCB's, RCCB auxiliaries, RCBO's, HRC fuse carriers, motor starters, earth fault relays, surge protection devices and the new **h3** range of moulded case circuit breakers.



Miniature Circuit Breakers	4.2
NBN, NCN, NDN 10kA MCBs	4.5
RCCB Add-on Blocks for MCB Devices	4.6
One Module Add-on Block	4.7
MCBs - 80 - 125A C & D Curve	4.8
RCCB Add-on Blocks Type AC for MCB Devices	4.13
Single Pole & Switched Neutral (SPSN) Devices	4.14
2 & 4 Pole RCCBs	4.15
RCCB Auxiliaries	4.17
RCBO	4.18
RCBO - Single Pole & Switched Neutral	4.20
HRC Fuse Carriers - BS 1361	4.21
HRC Fuse Carriers - BS 88	4.22
Motor Starters	4.23
Earth Fault Relays	4.25
Surge Protection Devices and Kit	4.29
MCCBs	4.31

**Description**

Protection and control of circuits against overloads and short circuits.

- For domestic installations

**Technical data**

Type B tripping characteristics complies with BS EN 60898.  
Breaking capacity: 6kA  
Voltage rating: 230 - 400V  
Current rating: 6 - 63A  
Trip free mechanism

**Connection capacity**

Rigid conductor 25mm<sup>2</sup>  
Flexible conductor 16mm<sup>2</sup>



MTN163

**Single Pole MCBs 6kA Type B**

	Rating	Width (17.5mm)	Cat ref.
	6A	1 Mod	<b>MTN106</b>
	10A	1 Mod	<b>MTN110</b>
	16A	1 Mod	<b>MTN116</b>
	20A	1 Mod	<b>MTN120</b>
	25A	1 Mod	<b>MTN125</b>
	32A	1 Mod	<b>MTN132</b>
	40A	1 Mod	<b>MTN140</b>
	50A	1 Mod	<b>MTN150</b>
	63A	1 Mod	<b>MTN163</b>



### Description

- These MCBs allow you to ensure
- Protection against short circuits
  - Protection against overload current
  - Control
  - Isolation
  - Trip free mechanism

### Isolation

The state of isolation is clearly indicated by the "OFF" mechanical position on the toggle with the green colour.

Will accept accessories, see page 4.5.

### Connection capacity

- 25mm<sup>2</sup> flexible conductor
- 35mm<sup>2</sup> rigid conductor

Complies with:

- BS EN 60898 (10kA)
- BS EN 60947-2 (15kA)



NCN116A

### Single Pole MCBs



Rating	Width (17.5mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
0.5A	1 Mod	-	<b>NCN100A</b>	<b>NDN100A</b>
1A	1 Mod	-	<b>NCN101A</b>	<b>NDN101A</b>
2A	1 Mod	-	<b>NCN102A</b>	<b>NDN102A</b>
3A	1 Mod	-	<b>NCN103A</b>	<b>NDN103A</b>
4A	1 Mod	-	<b>NCN104A</b>	<b>NDN104A</b>
6A	1 Mod	<b>NBN106A</b>	<b>NCN106A</b>	<b>NDN106A</b>
10A	1 Mod	<b>NBN110A</b>	<b>NCN110A</b>	<b>NDN110A</b>
16A	1 Mod	<b>NBN116A</b>	<b>NCN116A</b>	<b>NDN116A</b>
20A	1 Mod	<b>NBN120A</b>	<b>NCN120A</b>	<b>NDN120A</b>
25A	1 Mod	<b>NBN125A</b>	<b>NCN125A</b>	<b>NDN125A</b>
32A	1 Mod	<b>NBN132A</b>	<b>NCN132A</b>	<b>NDN132A</b>
40A	1 Mod	<b>NBN140A</b>	<b>NCN140A</b>	<b>NDN140A</b>
50A	1 Mod	<b>NBN150A</b>	<b>NCN150A</b>	<b>NDN150A</b>
63A	1 Mod	<b>NBN163A</b>	<b>NCN163A</b>	<b>NDN163A</b>



NCN216A

### Double Pole MCBs



Rating	Width (35mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
0.5A	2 Mod	-	<b>NCN200A</b>	<b>NDN200A</b>
1A	2 Mod	-	<b>NCN201A</b>	<b>NDN201A</b>
2A	2 Mod	-	<b>NCN202A</b>	<b>NDN202A</b>
3A	2 Mod	-	<b>NCN203A</b>	-
4A	2 Mod	-	<b>NCN204A</b>	<b>NDN204A</b>
6A	2 Mod	<b>NBN206A</b>	<b>NCN206A</b>	<b>NDN206A</b>
10A	2 Mod	<b>NBN210A</b>	<b>NCN210A</b>	<b>NDN210A</b>
16A	2 Mod	<b>NBN216A</b>	<b>NCN216A</b>	<b>NDN216A</b>
20A	2 Mod	<b>NBN220A</b>	<b>NCN220A</b>	<b>NDN220A</b>
25A	2 Mod	<b>NBN225A</b>	<b>NCN225A</b>	<b>NDN225A</b>
32A	2 Mod	<b>NBN232A</b>	<b>NCN232A</b>	<b>NDN232A</b>
40A	2 Mod	<b>NBN240A</b>	<b>NCN240A</b>	<b>NDN240A</b>
50A	2 Mod	<b>NBN250A</b>	<b>NCN250A</b>	<b>NDN250A</b>
63A	2 Mod	<b>NBN263A</b>	<b>NCN263A</b>	<b>NDN263A</b>

### Description

- These MCBs allow you to ensure
- Protection of circuits against short circuits
  - Protection of circuits against overload current
  - Control
  - Isolation

### Isolation

The state of isolation is clearly indicated by the "OFF" mechanical position on the toggle with the green colour.

Will accept accessories, see page 4.5.

### Connection capacity

- 25mm<sup>2</sup> flexible conductor
- 35mm<sup>2</sup> rigid conductor

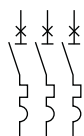
Complies with:

- BS EN 60898 (10kA)
- BS EN 60947-2 (15kA)



NCN316A

### Triple Pole MCBs

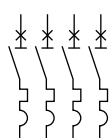


Rating	Width (52.5mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
0.5A	3 Mod	-	<b>NCN300A</b>	<b>NDN300A</b>
1A	3 Mod	-	<b>NCN301A</b>	<b>NDN301A</b>
2A	3 Mod	-	<b>NCN302A</b>	<b>NDN302A</b>
3A	3 Mod	-	<b>NCN303A</b>	<b>NDN303A</b>
4A	3 Mod	-	<b>NCN304A</b>	<b>NDN304A</b>
6A	3 Mod	<b>NBN306A</b>	<b>NCN306A</b>	<b>NDN306A</b>
10A	3 Mod	<b>NBN310A</b>	<b>NCN310A</b>	<b>NDN310A</b>
16A	3 Mod	<b>NBN316A</b>	<b>NCN316A</b>	<b>NDN316A</b>
20A	3 Mod	<b>NBN320A</b>	<b>NCN320A</b>	<b>NDN320A</b>
25A	3 Mod	<b>NBN325A</b>	<b>NCN325A</b>	<b>NDN325A</b>
32A	3 Mod	<b>NBN332A</b>	<b>NCN332A</b>	<b>NDN332A</b>
40A	3 Mod	<b>NBN340A</b>	<b>NCN340A</b>	<b>NDN340A</b>
50A	3 Mod	<b>NBN350A</b>	<b>NCN350A</b>	<b>NDN350A</b>
63A	3 Mod	<b>NBN363A</b>	<b>NCN363A</b>	<b>NDN363A</b>



NCN416A

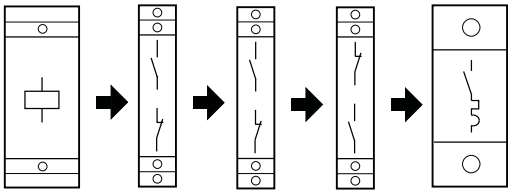
### Four Pole MCBs



Rating	Width (70mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
0.5A	4 Mod	-	<b>NCN400A</b>	<b>NDN400A</b>
1A	4 Mod	-	<b>NCN401A</b>	<b>NDN401A</b>
2A	4 Mod	-	<b>NCN402A</b>	<b>NDN402A</b>
3A	4 Mod	-	<b>NCN403A</b>	<b>NDN403A</b>
4A	4 Mod	-	<b>NCN404A</b>	<b>NDN404A</b>
6A	4 Mod	<b>NBN406A</b>	<b>NCN406A</b>	<b>NDN406A</b>
10A	4 Mod	<b>NBN410A</b>	<b>NCN410A</b>	<b>NDN410A</b>
16A	4 Mod	<b>NBN416A</b>	<b>NCN416A</b>	<b>NDN416A</b>
20A	4 Mod	<b>NBN420A</b>	<b>NCN420A</b>	<b>NDN420A</b>
25A	4 Mod	<b>NBN425A</b>	<b>NCN425A</b>	<b>NDN425A</b>
32A	4 Mod	<b>NBN432A</b>	<b>NCN432A</b>	<b>NDN432A</b>
40A	4 Mod	<b>NBN440A</b>	<b>NCN440A</b>	<b>NDN440A</b>
50A	4 Mod	<b>NBN450A</b>	<b>NCN450A</b>	<b>NDN450A</b>
63A	4 Mod	<b>NBN463A</b>	<b>NCN463A</b>	<b>NDN463A</b>

All auxiliaries are common to both single and multi-pole 10kA circuit breakers and RCCBs.

Connection capacity  
4mm<sup>2</sup> flexible  
6mm<sup>2</sup> rigid



MZ203 to + MZ201 + MZ201 + MZ202 + MCB  
MZ206 MZ201 MZ201 MZ201



MZ201

### Auxiliary Contacts 5A - 230V~

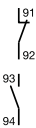
Description	Width (8.75mm)	Cat Ref.
1NO + 1NC Allows remote indication of main contact status	½ Mod	<b>MZ201</b>



MZ202

### Auxiliary Contacts and Alarm Indiction

Description	Width (8.75mm)	Cat Ref.
Allows indication of whether and alarm indication MCB has been turned off or tripped	½ Mod	<b>MZ202</b>



MZ204

### Shunt Trip

Allows remote tripping of the associated device. Operation of the coil is indicated by a flag on the product fascia.

Description	Width (17.5mm)	Cat Ref.
230V - 415Vac 110V - 130Vdc	1 Mod	<b>MZ203</b>
24 - 48Vac 12 - 48Vdc	1 Mod	<b>MZ204</b>



MZ206

### Under Voltage Release

Allows MCB to be closed only when voltage is above 85% of  $U_n$ . MCB will automatically trip when voltage falls to between 70-35% of  $U_n$ . Operation of the coil is indicated by a flag on the product fascia.

Description	Width (17.5mm)	Cat Ref.
230Vac	1 Mod	<b>MZ206</b>
48Vdc	1 Mod	<b>MZ205</b>



### Description

These products provide earth fault protection when associated with the 10kA (types NBN, NCN, NDN) range of MCBs.

They are designed to be fitted to the right hand side of 2 and 4 pole MCBs and the completed unit provides protection against:

- Overload
- Short circuit
- Earth faults

### Technical Data

3 Non-Adjustable sensitivities  
30, 100 & 300mA  
nominal voltage 230 - 400V  
protection against nuisance tripping.

2 pole = 2 Modules  
4 pole = 3 Modules

BS EN 61009 Appendix G

Selective (time delay) versions are available in 100mA & 300mA.

### Connection Capacity

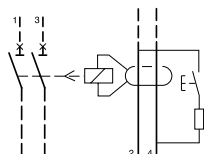
- 16mm<sup>2</sup> Flexible
- 25mm<sup>2</sup> Rigid

All devices have a test facility.



BD264

### Double Pole RCCB Add-On Blocks

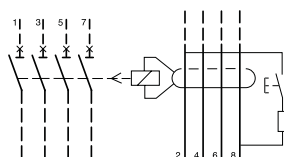


Sensitivity I <sub>Δn</sub>	I <sub>n</sub> /A	Width (35mm)	Cat ref.
30mA	63A	2 Mod	<b>BD264</b>
100mA	63A	2 Mod	<b>BE264</b>
300mA	63A	2 Mod	<b>BF264</b>
Time Delayed  100mA	63A	2 Mod	<b>BN264</b>
Time Delayed  300mA	63A	2 Mod	<b>BP264</b>



BD464

### Four Pole RCCB Add-On Blocks



Sensitivity I <sub>Δn</sub>	I <sub>n</sub> /A	Width (52.5mm)	Cat ref.
30mA	63A	3 Mod	<b>BD464</b>
100mA	63A	3 Mod	<b>BE464</b>
300mA	63A	3 Mod	<b>BF464</b>
Time Delayed  100mA	63A	3 Mod	<b>BN464</b>
Time Delayed  300mA	63A	3 Mod	<b>BP464</b>

**Description**

This combination provides the protective characteristics of both devices, thereby protecting the entire circuit. This results in a significant reduction of time, & cost required.

The one module Add-on Block (AOB) can be used in combination with any Hager 3P 10kA MCB up to 63A.  
  
Requires the use of the adjacent outgoing way.

The 'Type A' Add-On Block gives the added protection against any 'pulsating DC component' generating from such loads as; PCs, motor speed controllers, power tools etc.

One module Add-On Block + MCB combinations suit all Hager distribution boards.

BS EN 61009-1 Appendix G.

For technical details see page 4.67.

For MCB's see page 4.2 - 4.3



BD163T

**One Module Add-on Block**  
3 Phase earth leakage protection  
Up to 63A

Sensitivity $I_{\Delta n}$	$I_n/A$	Width (70mm)	Cat ref.
30mA	63A	4 Mod	<b>BD163T</b>
100mA	63A	4 Mod	<b>BE163T</b>
300mA	63A	4 Mod	<b>BF163T</b>

### Thermal Magnetic Circuit Breakers Curves C & D I<sub>n</sub> 80 to 125 A

These circuit breakers are intended for the protection of the circuits against overloads and short circuits.

### HMC C Curve

15 kA  
(BS EN 60898 Part 1)  
15 kA for 80 - 100 - 125 A:  
BS EN 60947-2  
Width 1.5 mod/pole

### HMD D Curve

15 kA  
(BS EN 60898 Part 1)  
15 kA for 80 - 100 - 125 A:  
BS EN 60947-2  
Width 1.5 mod/pole

### HMF C Curve

10 kA  
(BS EN 60898 Part 1)  
10kA for 80 - 100 - 125A:  
BS EN 60947-2  
width 1.5 mod/pole

These circuit breakers are equipped with reinforced screw cages.

A label holder is integrated under the toggle to ensure the location of the product.

The "OFF" position is clearly shown by a green indicator below the toggle.

Suitable for isolation (according to BS EN 60947-2) the isolation of the circuit breakers is indicated by a green indicator on the toggle.

These circuit breakers have quick closing : fast and simultaneous closing of the contacts, independent of the handling speed.

This increases the life of the circuit breaker whatever the type of load.

### Nominal Voltage

230/415 V~  
Calibration setting : 30 °C  
(BS EN 60898 Part 1)  
Insulation voltage : 500 V

### Options

- Auxiliary**
  - To visualise the state ON or OFF of the circuit breaker,
  - To ON/OFF remotely the circuit breaker
- Locking mechanism
- Terminal covers and phase separators
- RCD add-on blocks

### Series HMC, HMD, HMF

- Mounting capability: bistable DIN-rail latches (2 positions) upstream and downstream facilitate the mounting of the circuit breakers on the DIN-rail.
- These circuit breakers are equipped with push terminals to feed an auxiliary low voltage circuit (indicating lights, auxiliary control...) Max. current 6A  
Max. cable csa - 6 mm²

### Lockable Toggle

MCB can be locked in "Off" position by the integrated locking facility on the toggle. This lock allows to insert a 2.5-3.5mm plastic cable tie where you can fit a warning card if necessary and allows a safer working environment for all personnel.

### RCD Add-On Blocks

Simple, quick, adjustable and fixed

1. Assembly
2. Connection
3. Locking

The assembly of the add-on block is carried out very quickly and easily. Simple and fast : it is a Hager innovation. Add-on blocks 125A are available in fixed version and adjustable version.

Model	Icc / Curve	Accessories	Fast-on Connection	Tightening Comp. System	Lockable	Front Product Labelling
HMF	10kA / C	Yes	No	No	Yes	Yes
HMC, HMD	15kA / C, D	Yes	Yes	Yes	Yes	Yes

### Curves C

10 kA BS EN 60898-1  
10 kA BS EN 60947-2

### Use

Commercial and industrial applications.

### KEMA

Approved according to BS EN 60898-1.

### $I_n$ 80 to 125A

### Tripping Curves

"C" magnetic setting between 5 to 10  $I_n$ .

### Connection Capacity

- 35mm<sup>2</sup> flexible wire (50mm<sup>2</sup> possible with some cable pin lugs)
- 70mm<sup>2</sup> rigid wire



HMF199T

### Single Pole MCBs 10kA C Curve

Rating	Width (26.25mm)	Cat ref.
80A	1 ½ Mod	<b>HMF180T</b>
100A	1 ½ Mod	<b>HMF190T</b>
125A	1 ½ Mod	<b>HMF199T</b>



HMF299T

### Double Pole MCBs 10kA C Curve

Rating	Width (52.5mm)	Cat ref.
80A	3 Mod	<b>HMF280T</b>
100A	3 Mod	<b>HMF290T</b>
125A	3 Mod	<b>HMF299T</b>



HMF399T

### Triple Pole MCBs 10kA C Curve

Rating	Width (75.75mm)	Cat ref.
80A	4 ½ Mod	<b>HMF380T</b>
100A	4 ½ Mod	<b>HMF390T</b>
125A	4 ½ Mod	<b>HMF399T</b>



HMF499T

### Four Pole MCBs 10kA C Curve

Rating	Width (105mm)	Cat ref.
80A	6 Mod	<b>HMF480T</b>
100A	6 Mod	<b>HMF490T</b>
125A	6 Mod	<b>HMF499T</b>

### Curves C

15 kA BS EN 60898-1  
15 kA BS EN 60947-2

### Use

Commercial and industrial applications.

### KEMA

Approved according to BS EN 60898-1.

### $I_n$ 80 to 125A

### Tripping Curves

"C" magnetic setting between 5 to 10  $I_n$ .

### Connection Capacity

- 35mm<sup>2</sup> flexible wire (50mm<sup>2</sup> possible with some cable pin lugs)
- 70mm<sup>2</sup> rigid wire



HMC199T

### Single Pole MCBs 15kA C Curve

Rating	Width (26.25mm)	Cat ref.
80A	1 ½ Mod	<b>HMC180T</b>
100A	1 ½ Mod	<b>HMC190T</b>
125A	1 ½ Mod	<b>HMC199T</b>



HMC299T

### Double Pole MCBs 15kA C Curve

Rating	Width (52.5mm)	Cat ref.
80A	3 Mod	<b>HMC280T</b>
100A	3 Mod	<b>HMC290T</b>
125A	3 Mod	<b>HMC299T</b>



HMC399T

### Triple Pole MCBs 15kA C Curve

Rating	Width (78.75mm)	Cat ref.
80A	4 ½ Mod	<b>HMC380T</b>
100A	4 ½ Mod	<b>HMC390T</b>
125A	4 ½ Mod	<b>HMC399T</b>



HMC499T

### Four Pole MCBs 15kA C Curve

Rating	Width (105mm)	Cat ref.
80A	6 Mod	<b>HMC480T</b>
100A	6 Mod	<b>HMC490T</b>
125A	6 Mod	<b>HMC499T</b>



### Curves D

15 kA BS EN 60898-1  
15 kA BS EN 60947-2

### Use

Commercial and industrial applications.

### KEMA

Approved according to BS EN 60898-1

### $I_n$ 80 to 125A

### Tripping Curves

"D" magnetic setting between 10 to 20  $I_n$ .

### Connection Capacity

- 35mm<sup>2</sup> flexible wire (50mm<sup>2</sup> possible with some cable pin lugs)
- 70mm<sup>2</sup> rigid wire



HMD199T

### Single Pole MCBs 15kA D Curve

Rating	Width (26.25mm)	Cat ref.
80A	1 ½ Mod	<b>HMD180T</b>
100A	1 ½ Mod	<b>HMD190T</b>
125A	1 ½ Mod	<b>HMD199T</b>



HMD299T

### Double Pole MCBs 15kA D Curve

Rating	Width (52.5mm)	Cat ref.
80A	3 Mod	<b>HMD280T</b>
100A	3 Mod	<b>HMD290T</b>
125A	3 Mod	<b>HMD299T</b>



HMD399T

### Triple Pole MCBs 15kA D Curve

Rating	Width (78.75mm)	Cat ref.
80A	4 ½ Mod	<b>HMD380T</b>
100A	4 ½ Mod	<b>HMD390T</b>
125A	4 ½ Mod	<b>HMD399T</b>



HMD499T

### Four Pole MCBs 15kA D Curve

Rating	Width (105mm)	Cat ref.
80A	6 Mod	<b>HMD480T</b>
100A	6 Mod	<b>HMD490T</b>
125A	6 Mod	<b>HMD499T</b>



MZN130

## Terminal Covers Screw Cap

### Description

To cover connection terminals and screws of circuit breaker.  
The screw covers can be sealed.

### Cat ref.

**MZN130**



MZN131

## Phase Separator

### Description

1 Set of 3 Phase Separators

### Cat ref.

**MZN131**

## Fixed

- High sensitivity 30 mA Instantaneous
- Low sensitivity 300 mA Instantaneous

## Adjustable

- Sensitivity  $I_{\Delta n}$  0.3-0.5 - 1A
- Delay  $\Delta t$  0 - 60 - 150 ms

This “circuit breaker + block” ensures, in addition to the overload and short circuit protection, the protection of the installations against the insulation defects (300mA and 1A) and the protection of the people against direct contact (30mA) and indirect contact (300mA).

## Adjustable Blocks

The setting is done by actuating the thumb wheel on the front face. The setting thumb wheels are protected by a transparent sealable cover.

## Disassembly

The bistable latch (2 positions) facilitate the assembly or disassembly by the bottom of the “circuit breaker + block.”

These RCD add-on blocks exist in version AC.

The earth fault is indicated when the handle is in lower position (yellow colour). Test button for earth fault check.

## Connection Capacity

- 35mm<sup>2</sup> flexible connection (50° possible with some terminals),
- 70mm<sup>2</sup> rigid connection.

Assembly and disassembly facilitated by the drawer assembly system. The terminal cover is dependent of the add-on block. It is provided with keying systems avoiding the omission of terminal tightening downstream of the circuit breaker.

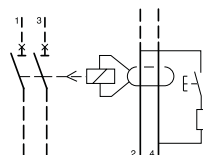
Nominal voltage: -15 +10 %  
2 Poles: 230V  
three and four pole: 230 / 400V  
test button: 230 / 400V.

In conformity with the requirements of the Appendix G of the BS EN 61009-1.  
In conformity with the requirements of standard BS EN 60947-2.



BTC280E

## Double Pole RCD Add-On Blocks

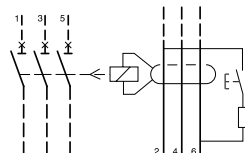


Sensitivity Fixed / Adjustable $I_{\Delta n}$	$I_n/A$	Width (105mm)	Cat ref.
Fixed 30mA	125A	6 Mod	<b>BDC280E</b>
Adjustable 0.3-0.5-1A Time Delayed $\Delta t$ 0-60-150ms	125A	6 Mod	<b>BTC280E</b>



BDC380E

## Triple Pole RCD Add-On Blocks

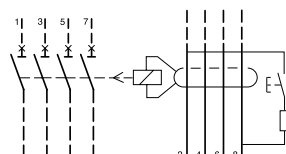


Sensitivity Fixed / Adjustable $I_{\Delta n}$	$I_n/A$	Width (105mm)	Cat ref.
Fixed 30mA	125A	6 Mod	<b>BDC380E</b>
Adjustable 0.3-0.5-1A Time Delayed $\Delta t$ 0-60-150ms	125A	6 Mod	<b>BTC380E</b>



BDC480E

## Four Pole RCD Add-On Blocks



Sensitivity Fixed / Adjustable $I_{\Delta n}$	$I_n/A$	Width (105mm)	Cat ref.
Fixed 30mA	125A	6 Mod	<b>BDC480E</b>
Fixed 300mA	125A	6 Mod	<b>BFC480E</b>
Adjustable 0.3-0.5-1A Time Delayed $\Delta t$ 0-60-150ms	125A	6 Mod	<b>BTC480E</b>

## Description

Protection and control of circuits against overloads and short circuits.

## Technical Data

Type C tripping characteristics  
Complies with BS EN 60898  
Calibration temperature 30°C  
Breaking capacity - 6kA  
Voltage rating - 230VAC

## Connection Capacity

Rigid 16mm<sup>2</sup>  
Flexible 10mm<sup>2</sup>

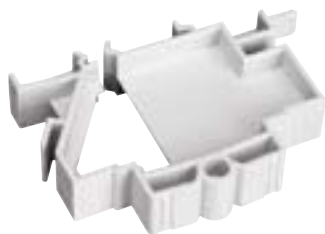
Locking kit = MZN175



MLN710A

## Single Pole and Switched Neutral MCB

Rating	Width (17.5mm)	Cat ref.
6A	1 Mod	<b>MLN706A</b>
10A	1 Mod	<b>MLN710A</b>
16A	1 Mod	<b>MLN716A</b>
20A	1 Mod	<b>MLN720A</b>
32A	1 Mod	<b>MLN732A</b>
40A	1 Mod	<b>MLN740A</b>



JK01B

## Single Module Blank

### Description

Shrouds busbar and blanks spare ways

### Cat ref.

**JK01B**

To open a circuit automatically in the event an earth fault between line and earth, and/or neutral and earth. A wide range of current ratings and sensitivities are available.

Suitable for domestic, commercial and industrial applications.

#### Technical Data

Complies with BS EN 61008, IEC1008

#### Sensitivities (Fixed)

10, 30, 100, 300mA & 100 and 300mA time delayed.

#### Terminal capacities

16-63A Rigid 25mm<sup>2</sup>  
Flexible 16mm<sup>2</sup>  
80&100A Rigid 50mm<sup>2</sup>  
Flexible 35mm<sup>2</sup>

#### Features

Positive contact indication is provided by the rectangular flag indicator  
Red = Closed  
Green = Open  
Indication of trip is provided by the oval flag indicator  
Yellow = Tripped

All RCCBs have trip free mechanisms and can be padlocked either on or off with the use of a MZN175.

#### Operating Voltage

2P 127-230Vac  
4P 230-400Vac

#### Width

2P - 35mm  
4P - 70mm

### 2 Pole RCCB Sensitivity 10mA

Sensitivity type AC	Current rating	Cat ref.
10mA	16A	<b>CCC216U</b>



CDC225U

### 2 & 4 Pole RCCBs Sensitivity 30mA

Sensitivity type AC	Current rating	2 Pole Cat ref.	4 Pole Cat ref.
30mA	25A	<b>CDC225U</b>	<b>CDC425U</b>
30mA	40A	<b>CDC240U</b>	<b>CDC440U</b>
30mA	63A	<b>CDC263U</b>	<b>CDC463U</b>
30mA	80A	<b>CD280U</b>	<b>CD480U</b>
30mA	100A	<b>CD284U</b>	<b>CD484U</b>

### 2 & 4 Pole RCCBs Sensitivity 100mA

Sensitivity type AC	Current rating	2 Pole Cat ref.	4 Pole Cat ref.
100mA	25A	<b>CEC225U</b>	<b>CEC425U</b>
100mA	40A	<b>CEC240U</b>	<b>CEC440U</b>
100mA	63A	<b>CEC263U</b>	<b>CEC463U</b>
100mA	80A	<b>CE280U</b>	<b>CE480U</b>
100mA	100A	<b>CE284U</b>	<b>CE484U</b>



CFC425U

### 2 & 4 Pole RCCBs Sensitivity 300mA

Sensitivity type AC	Current rating	2 Pole Cat ref.	4 Pole Cat ref.
300mA	25A	<b>CFC225U</b>	<b>CFC425U</b>
300mA	40A	<b>CFC240U</b>	<b>CFC440U</b>
300mA	63A	<b>CFC263U</b>	<b>CFC463U</b>
300mA	80A	<b>CF280U</b>	<b>CF480U</b>
300mA	100A	<b>CF284U</b>	<b>CF484U</b>

To open a circuit automatically in the event an earth fault between line and earth, and/or neutral and earth. A wide range of current ratings and sensitivities are available. Suitable for domestic, commercial and industrial applications.

**Technical Data**  
Complies with BS EN 61008, IEC1008

**Sensitivities (Fixed)**  
10, 30, 100, 300mA & 100 and 300mA time delayed.

**Terminal capacities**  
16-63A Rigid 25mm<sup>2</sup>  
Flexible 16mm<sup>2</sup>  
80&100A Rigid 50mm<sup>2</sup>  
Flexible 35mm<sup>2</sup>

**Features**  
Positive contact indication is provided by the rectangular flag indicator  
Red = Closed  
Green = Open  
Indication of trip is provided by the oval flag indicator  
Yellow = Tripped

All RCCBs have trip free mechanisms and can be padlocked either on or off.

**Operating Voltage**  
2P 127-230Vac  
4P 230-400Vac

**Width**  
2P - 35mm  
4P - 70mm



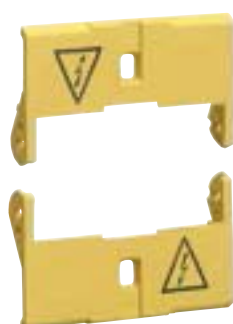
CP284U

## Time Delayed AC Sensitive

Sensitivity type AC	Current rating	2 Pole Cat ref.	4 Pole Cat ref.
100mA	100A	<b>CN284U</b>	<b>CN484U</b>
300mA	100A	<b>CP284U</b>	<b>CP484U</b>

## Type A DC Sensitive

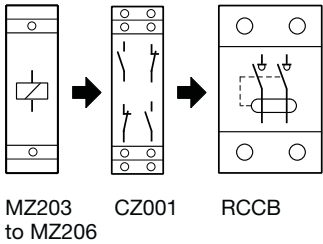
Sensitivity type AC	Current rating	2 Pole Cat ref.	4 Pole Cat ref.
10mA	16A	<b>CCA216U</b>	-
30mA	25A	<b>CDA225U</b>	<b>CDA425U</b>
30mA	40A	<b>CDA240U</b>	<b>CDA440U</b>
30mA	63A	<b>CDA263U</b>	<b>CDA463U</b>



CZN006

## Terminal Covers

Current rating	2 Pole Cat ref.	4 Pole Cat ref.
16 - 63A	<b>CZN005</b>	<b>CZN006</b>
80 - 100A	<b>CZ007</b>	<b>CZ008</b>



CZ001

**Auxiliary Interface**

Indicates the position of the associated RCCB on, off or tripped. Also acts as RCCB interface with standard MCB auxiliaries MZ203-MZ206.

Description	Width (17.5mm)	Cat ref.
2 NO / 2NC 6A AC1 230V	1 Mod	<b>CZ001</b>



MZ203

**Shunt Trip**

Allows remote tripping of the associated device. Operation of the coil is indicated by a flag on the product fascia.

Description	Width (17.5mm)	Cat ref.
230Vac - 400Vac 110V - 130Vdc	1 Mod	<b>MZ203</b>
24 - 48Vac 12 - 48Vdc	1 Mod	<b>MZ204</b>



MZ206

**Under Voltage Release**

Allows RCCB to be closed, only when voltage is above 85% of  $U_n$ . RCCB will automatically trip when voltage falls to between 70-35% of  $U_n$  (230V). Operation of the release is indicated by a flag on the product fascia.

Description	Width (17.5mm)	Cat ref.
230Vac	1 Mod	<b>MZ206</b>
48Vac	1 Mod	<b>MZ205</b>

Compact protection devices which combine the overcurrent functions of an MCB with the earth fault functions of an RCCB in a single unit.

## Technical Data

Insulated DIN clip  
Complies with IEC 61009-1, IEC 61009-2-2, EN 61009-1  
Sensitivity (fixed): 30mA  
Breaking capacity: 6kA  
Flying neutral lead: 200mm

## Terminal Capacities

25mm<sup>2</sup> rigid  
16mm<sup>2</sup> flexible

## Application

1 module devices provide a compact solution for installation in consumer units.

These devices are 1pole & solid neutral.

## Operating Voltage

230V (AC) +10%/-15% 50Hz

Locking kit = MZN175



ADN120

### Sensitivity 30mA (6kA) Type B, AC Sensitive

Current rating	Width (17.5mm)	Cat ref.
6A	1 Mod	<b>ADN106</b>
10A	1 Mod	<b>ADN110</b>
16A	1 Mod	<b>ADN116</b>
20A	1 Mod	<b>ADN120</b>
32A	1 Mod	<b>ADN132</b>
40A	1 Mod	<b>ADN140</b>
45A	1 Mod	<b>ADN145</b>
50A	1 Mod	<b>ADN150</b>



ADA156U

### Sensitivity 30mA (10kA) Type C, DC Sensitive

Current rating	Width (17.5mm)	Cat ref.
6A	1 Mod	<b>ADA156U</b>
10A	1 Mod	<b>ADA160U</b>
16A	1 Mod	<b>ADA166U</b>
20A	1 Mod	<b>ADA170U</b>
32A	1 Mod	<b>ADA182U</b>



Compact protection devices which combine the overcurrent functions of an MCB with the earth fault functions of an RCCB in a single unit. A range of sensitivity and current ratings are available for use in commercial and industrial applications.

## Technical Data

Insulated DIN clip  
Complies with IEC 61009-1, IEC 61009-2-2, EN 61009-1  
Sensitivities (fixed)  
10mA, 30mA & 100mA  
Breaking capacity: 10kA  
Flying neutral lead: 700mm

## Terminal Capacities

25mm<sup>2</sup> rigid  
16mm<sup>2</sup> flexible

## Application

1 module devices provide a compact solution for installation in consumer units and Invicta 3 distribution boards.

These devices are single pole & solid neutral.

## Operating Voltage

230V (AC) +10%/-15% 50Hz

Locking kit = MZN175



ACB125

### Sensitivity 10mA (10kA) Type B & C, AC Sensitive

Current rating	Width (17.5mm)	Type B Cat ref.	Type C Cat ref.
6A	1 Mod	<b>ACB106</b>	<b>ACC106</b>
16A	1 Mod	<b>ACB116</b>	<b>ACC116</b>
25A	1 Mod	<b>ACB125</b>	<b>ACC125</b>
32A	1 Mod	<b>ACB132</b>	<b>ACC132</b>



ADB106

### Sensitivity 30mA (10kA) Type B & C, AC Sensitive

Current rating	Width (17.5mm)	Type B Cat ref.	Type C Cat ref.
6A	1 Mod	<b>ADB106</b>	<b>ADC106</b>
10A	1 Mod	<b>ADB110</b>	<b>ADC110</b>
16A	1 Mod	<b>ADB116</b>	<b>ADC116</b>
20A	1 Mod	<b>ADB120</b>	<b>ADC120</b>
25A	1 Mod	<b>ADB125</b>	<b>ADC125</b>
32A	1 Mod	<b>ADB132</b>	<b>ADC132</b>
40A	1 Mod	<b>ADB140</b>	<b>ADC140</b>
45A	1 Mod	<b>ADB145</b>	<b>ADC145</b>
50A	1 Mod	<b>ADB150</b>	<b>ADC150</b>



AEC132

### Sensitivity 100mA (10kA) Type C, AC Sensitive

Current rating	Width (17.5mm)	Type C Cat ref.
10A	1 Mod	<b>AEC110</b>
16A	1 Mod	<b>AEC116</b>
20A	1 Mod	<b>AEC120</b>
25A	1 Mod	<b>AEC125</b>
32A	1 Mod	<b>AEC132</b>

Compact protection devices which provide MCB overcurrent protection and RCCB earth fault protection in a single unit. Complies with EN 61009-1.

### RCBO SPSN Type B & C 6kA

#### Technical Data

The units are available with current ratings of 6A, 10A, 16A, 20A, 25A, 32A and 40A. The device switches both the line and neutral conductors. All ratings have 30mA earth fault protection. The units feature indicators which show whether tripping is due to an overcurrent or earth fault.

Breaking capacity  
6kA

**Operating Voltage**  
230V (AC) +10%/-15% 50Hz.

Mechanical life  
20,000 operations

**Connection Capacity**  
Rigid conductor 25mm<sup>2</sup>  
Flexible conductor 16mm<sup>2</sup>

### RCBO SPSN Type C 4.5kA

#### Technical Data

The device switches both the line and neutral conductors. All ratings have 30mA earth fault protection. The units feature indicators which show whether tripping is due to an overcurrent or earth fault.

Breaking capacity: 4.5kA

**Operating Voltage**  
230V (AC) +10%/-15% 50Hz

Mechanical life  
20,000 operations

**Connection Capacity**  
Rigid conductor 25mm<sup>2</sup>  
Flexible conductor 16mm<sup>2</sup>



ADA990U

### RCBO Single Pole and Switched Neutral Type B & C 6kA

RCBO tripping current (30mA) with flying 700mm lead for neutral connection.

Note: For use in consumer units and distribution boards only.

Current rating	Width (35mm)	Type B Cat ref.	Type C Cat ref.
6A	2 Mod	<b>ADA906U</b>	<b>ADA956U</b>
10A	2 Mod	<b>ADA910U</b>	<b>ADA960U</b>
16A	2 Mod	<b>ADA916U</b>	<b>ADA966U</b>
20A	2 Mod	<b>ADA920U</b>	<b>ADA970U</b>
25A	2 Mod	<b>ADA925U</b>	<b>ADA975U</b>
32A	2 Mod	<b>ADA932U</b>	<b>ADA982U</b>
40A	2 Mod	<b>ADA940U</b>	<b>ADA990U</b>



ADC816F

### RCBO Single Pole and Switched Neutral Type C 4.5kA

All terminal version for cable in cable out applications e.g. local protection, caravan pitches, festive illuminations, street lighting.

Note: Not for use in fixed busbar consumer units or distribution boards.

Current rating	Width (35mm)	Type C Cat ref.
6A	2 Mod	<b>ADC806F</b>
10A	2 Mod	<b>ADC810F</b>
16A	2 Mod	<b>ADC816F</b>
20A	2 Mod	<b>ADC820F</b>
25A	2 Mod	<b>ADC825F</b>
32A	2 Mod	<b>ADC832F</b>

Protection and control of circuits against overloads and short-circuits:

## Technical Data

Fuse carriers suitable for fuses which fully comply with BS HD 60269-3 (Formerly BS 88-3).

- Short-circuit rating: 16.5kA
- Colour coded ratings.

## SPSN Fuse Carriers Technical Data

Characteristics type (fuse) gF  
Breaking capacity  
10-20A 4kA  
25 & 32A - 6kA  
Voltage rating - 250VAC

## Connection Capacities

Top: 16 mm<sup>2</sup> flexible cable & busbar

## SPSN Fuse Carriers Connection Capacity

Rigid 16mm<sup>2</sup>  
Flexible 10mm<sup>2</sup>



LB113

## BS HD 60269-3 (Formerly BS 1361) Fuse Carriers

Complete with cartridge fuse. For single phase applications

Current rating	Colour	Width (17.5mm)	Cat ref.
5A 230V	White	1 Mod	<b>LB113</b>
15A 230V	Blue	1 Mod	<b>LB115</b>
20A 230v	Yellow	1 Mod	<b>LB116</b>
30A 230V	Red	1 Mod	<b>LB118</b>



L14700

## BS HD 60269-3 (Formerly BS 1361) HRC Spare Cartridge Fuses

Current rating	Colour	Cat ref.
5A (23 x 6.35 x 4.8mm)	White	<b>L15300</b>
15A (26 x 10.32 x 6.4mm)	Blue	<b>L15500</b>
20A (26 x 10.32 x 6.4mm)	Yellow	<b>L15600</b>
30A (29 x 12.7 x 8mm)	Red	<b>L15800</b>
Spare Fuse Holder up to 20A	-	<b>L14700</b>



L12401

## Single Pole and Switched Neutral Fuse Carriers

Supplied without fuse fitted

Rating	Width (17.5mm)	Cat ref.
10A	1 Mod	<b>L12401</b>
16A	1 Mod	<b>L12501</b>
20A	1 Mod	<b>L12601</b>
25A	1 Mod	<b>L12701</b>
32A	1 Mod	<b>L12801</b>



LF140

## Spare Fuse Type gF

Rating	Dimensions	Cat ref.
10A	8.5 x 23mm	<b>LF138</b>
16A	10.3 x 25.8mm	<b>LF139</b>
20A	8.5 x 31.5mm	<b>LF140</b>
25A	10.3 x 31.5mm	<b>LF141</b>
32A	10.3 x 38mm	<b>LF142</b>

Fuse carrier 32A max.  
Protection and control of circuits  
against overloads and short  
circuits in three phase circuits.

Suitable for fuses which comply  
with BS HD 60269-1 and with  
the standardised performance  
requirements for industrial fuse

links specified in BS HD 60269-2  
(formerly BS 88-2).

Rating voltage:  
415 V a.c.  
250 V d.c.

- Rated breaking capacities:  
80 kA at 415 V a.c.  
40 kA at 250 V d.c.

The LS201 HRC fuse carrier is  
suitable for the following type  
of BS HD 60269-2 (formerly BS  
88-2) cartridge fuses:  
2A – 8A: with nickel-plated or  
silver plated caps.  
10A – 32A: with silver plated  
caps only.



LS201

## BS HD 60269-2 (Formerly BS 88) Fuse Carriers

Supplied without BS HD 60269-2 fuses

Characteristics	Width (17.5mm)	Cat ref.
32A max.	1 Mod	<b>LS201</b>

## BS HD 60269-2 (Formerly BS 88) HRC Spare Cartridge Fuses

Characteristics	Cat ref.
2A (29 x 12.7 x 8mm)	<b>L17100</b>
4A (29 x 12.7 x 8mm)	<b>L17200</b>
6A (29 x 12.7 x 8mm)	<b>L17300</b>
8A (29 x 12.7 x 8mm)	<b>L17400</b>

To ensure localised control and protection of single and three phase motors.

## Technical Data

- Adjustable thermal relay
- AC3 utilisation category
- Connection capacity  
2 conductors  
max size: Flexible 1 to 4mm<sup>2</sup>  
Rigid 1.5 to 6mm<sup>2</sup>

## Options

Undervoltage release: MZ528N, MZ529N  
Auxiliary contacts: MZ520N, MZ527N  
Alarm contact: MZ527N

## Complies With

IEC 947-1, IEC 947-2  
(appropriate parts of)

Note: Please consult us for enclosure selection



MM501N

## Motor Starters

Current setting	Standard power ratings of 3 phase motors 50/60Hz (AC3 category)		Width (43.75mm)	Cat ref.
	230V (kW)	400V (kW)		
0.1 - 0.16A	-	-	-	<b>MM501N</b>
0.16 - 0.25A	-	0.06	2 ½ Mod	<b>MM502N</b>
0.25 - 0.4A	0.06	0.09	2 ½ Mod	<b>MM503N</b>
0.4 - 0.6A	0.09	0.12	2 ½ Mod	<b>MM504N</b>
0.6 - 1.0A	0.09	0.12	2 ½ Mod	<b>MM505N</b>
1.0 - 1.6A	0.25	0.55	2 ½ Mod	<b>MM506N</b>
1.6 - 2.5A	0.55	0.8	2 ½ Mod	<b>MM507N</b>
2.5 - 4A	0.8	1.5	2 ½ Mod	<b>MM508N</b>
4 - 6A	1.5	2.5	2 ½ Mod	<b>MM509N</b>
6 - 10A	2.5	4	2 ½ Mod	<b>MM510N</b>
10 - 16A	4	7.5	2 ½ Mod	<b>MM511N</b>
16 - 20A	5.5	9	2 ½ Mod	<b>MM512N</b>
20 - 25A	7.5	12.5	2 ½ Mod	<b>MM513N</b>



MZ520N

## Auxiliary Contacts

Act as an indicating device to monitor the ON or OFF position.

Characteristics	Width (8.75mm)	Cat ref.
1C + 1O 2A AC1 - 400V~	½ Mod	<b>MZ520N</b>



MZ527N

## Alarm Contact

Mounted inside the motor starter

Characteristics	Cat ref.
1C 1A AC1 - 400V~ / 2A AC1 - 230V~	<b>MZ527N</b>

To ensure localised control and protection of single and three phase motors.

**Technical Data**

- Adjustable thermal relay
- AC3 utilisation category
- Connection capacity  
2 conductors  
max size: Flexible 1 to 4mm<sup>2</sup>  
Rigid 1.5 to 6mm<sup>2</sup>

**Options**

Undervoltage release: MZ528N,  
MZ529N  
Auxiliary contacts: MZ520N,  
MZ527N  
Alarm contact: MZ527N

**Complies With**

IEC 947-1, IEC 947-2  
(appropriate parts of)

Note: Please consult us for enclosure selection



MZ528N

**Under Voltage Release**

To prevent automatic restarting of the controlled device

Characteristics	Cat ref.
230V~ 50Hz	<b>MZ528N</b>
400V~ 50Hz	<b>MZ529N</b>



MZ521N

**Surface Mounting Enclosure**

Weatherproof IP55 with a removable window

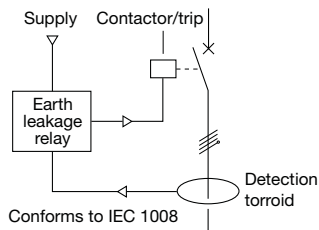
Dimensions (mm)	Cat ref.
W. 78 x H. 150 x D. 95	<b>MZ521N</b>



MZ530N

**Emergency Stop Button**

Description	Cat ref.
IP65, mounted on surface mounting enclosure MZ521N	<b>MZ530N</b>



These units ensure the protection of electrical installations. 30mA versions can provide additional protection against direct connection. This range of electronic earth fault relays provides monitoring of earth fault currents. When the fault current rises above the selected level, the output contacts of the product operate.

Depending on the relay selected, it can have either fixed or adjustable sensitivity, a time delay is also available for selectivity purposes. The relays are linked with detection torroids, 14 separate types are available, circular and rectangular in section (4.27).

### Common characteristics

- Positive safety: the relay trips in the event of a break in the relay/torroid link.
- Positive reset required after a fault is detected.
- Test button for simulation of a fault.
- Protected against nuisance tripping from transients.
- DC sensitive.
- Output: 1 C/O contact 250V~ 5/6A AC1.

- Visual display of fault by red LED.

### Specific device features

- LCD display on HR525 & HR534.
- Adjustment of sensitivity and delay (selectable).
- Extra positive safety contact (1C/O 250V~ 6A AC1).
- Display of fault current before it triggers the relay (5% to 75%).
- Extra output contact (250V 0.1A max.) to enable remote indication if fault currents over 50% of  $I_{\Delta n}$ .
- Remote test and reset (opto-coupled).

### Torroids

Circular dia. 35, 70, 105, 140, 210mm  
 Rectangular 70 x 175, 115 x 305, 150 x 350mm  
 Connection capacity  
 Relay - 1.5 to 6mm<sup>2</sup>  
 Relay - torroid link  
 2 wires, 25m max.  
 Test and remote reset link  
 3 wires, 20m max.  
 For enclosure selection, please consult us.

### Width

1 Mod - 17.5mm  
 3 Mod - 52.5mm  
 4 Mod - 70mm  
 6 Mod - 105mm



HR500



HR510



HR520

## Earth Fault Relay with Separate Detection Torroids

Designation	Characteristics	Width	Cat ref.
Earth fault relay C/O contact 5A AC1	Instant trip, fixed sensitivity $I_{\Delta n} = 30\text{mA}$	1 Mod	<b>HR500</b>
Earth fault relay C/O contact 5A AC1	Instant trip, fixed sensitivity $I_{\Delta n} = 300\text{mA}$	1 Mod	<b>HR502</b>
Earth fault relay C/O contact 6A AC1	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$ 500mA, 1A, 3A, 10A Instant trip or time delay 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 secs	3 Mod	<b>HR510</b>
Earth fault relay C/O contact 6A AC1	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$ 500mA, 1A, 3A, 10A LED optical scale Instant trip or time delay 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 secs	3 Mod	<b>HR520</b>
Earth fault relay C/O contact 6A AC1	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$ 500mA, 1A, 3A, 10A LED optical scale Instant trip or time delay 0.1 - 0.2 - 0.25 - 0.3 - 0.4 - 0.5 secs	3 Mod	<b>HR522</b>
Earth fault relay C/O contact 6A AC1	Adjustable sensitivity $I_{\Delta n} = 500\text{mA}, 1\text{A}, 3\text{A}, 5\text{A}, 10\text{A}, 20\text{A} \& 30\text{A}$ LED optical scale Instant trip or time delay 0.1 - 0.2 - 0.25 - 0.3 - 0.4 - 0.5 secs	3 Mod	<b>HR523</b>
Earth fault relay C/O contact 6A AC1 Trip / reclose input feature	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}, 500\text{mA}, 1\text{A}, 3\text{A}, 5\text{A}, 10\text{A} \& 30\text{A}$ LCD Display Instant trip or time delay 0.02 - 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 - 5 - 10 secs	3 Mod	<b>HR525</b>
Earth fault relay C/O contact 6A AC1 Solid State relay output Trip / reclose input feature	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}, 500\text{mA}, 1\text{A}, 3\text{A}, 5\text{A}, 10\text{A} \& 30\text{A}$ LCD Display Instant trip or time delay 0.02 - 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 - 5 - 10 secs	3 Mod	<b>HR534</b>



HR440

**Earth Fault Relays with Integral Torroids**

Designation	Characteristics	Width	Cat ref.
Earth fault relay with integral torroid adjustable sensitivity 25mm <sup>2</sup> max. cable size	Adjustable sensitivity $I_{\Delta n}$ - 30mA, 100mA, 300mA, 500mA, 1A & 3A Instant trip or time delay 0.1 - 0.3 - 0.5 - 0.75 - 1 secs	4 Mod	<b>HR440</b>
Earth fault relay with integral torroid adjustable sensitivity 35mm <sup>2</sup> max. cable size	Adjustable sensitivity $I_{\Delta n}$ - 30mA, 100mA, 300mA, 500mA, 1A & 3A Instant trip or time delay 0.1 - 0.3 - 0.5 - 0.75 - 1 secs	6 Mod	<b>HR441</b>



HR441





HR702

**Circular Section Torroid**

Characteristics	Cat ref.
ø 30mm	<b>HR700</b>
ø 35mm	<b>HR701</b>
ø 70mm	<b>HR702</b>
ø 105mm	<b>HR703</b>
ø 140mm	<b>HR704</b>
ø 210 mm	<b>HR705</b>



HR830

**Rectangular Section Torroid**

Dimensions	Cat ref.
70 x 175mm	<b>HR830</b>
115 x 305mm	<b>HR831</b>
150 x 350mm	<b>HR832</b>



HR820

**Rectangular Split Torroid**

Dimensions	Cat ref.
20 x 30mm	<b>HR820</b>
50 x 80mm	<b>HR821</b>
80 x 80mm	<b>HR822</b>
80 x 121mm	<b>HR823</b>
80 x 161mm	<b>HR824</b>

## Risks of Electrical Surges

Surge protective devices (SPD) assist in the protection of valuable electrical and electronic equipment against transients, originating from lightning and also from switching sources.

These transients can cause damage ranging from the premature ageing of equipment, logic failures and down time, to the complete destruction of equipment within the entire electrical installation. Products such as LCD screens, data servers and industrial equipment such PLC's are critical to business activity. Protecting this equipment may now be a necessity.

The Hager SPD range of solutions may offer protection to prevent damage to this sensitive equipment by diverting the damaging transient over-voltages. In the majority of cases this will eliminate equipment failures and reduce downtime.

The choice of a surge protective device depends upon:

- The exposure of the building to lightning transients
- The sensitivity and value of the equipment that requires protection (it is recommended that the contractor should discuss the installations requirements with the customer)
- The location and therefore the exposure level of the installation
- The equipment used within the installation and whether this equipment could generate switching transients

## BS 7671 and the AQ criteria method

Lightning discharges could contain currents of 200,000A which if struck at or near power transmission lines would generate a significant voltage transient. This voltage transient could cause significant damage to both domestic and commercial electronic equipment.

The UK regional map illustrates the likely lightning activity caused by the number of thunderstorm days across the country.

Protection against over-voltages is the subject of section 443 of BS 7671. Here the AQ criteria method is introduced which is based on the likelihood of the equipment being subjected to over-voltages caused by lightning strikes, taking account

of the probable number of lightning strikes per year.

For electrical installations in the UK, the map shows that the probable number of thunderstorm days per year in any given location is less than 25, and therefore condition AQ1 applies.

Where this is the case and for installations being supplied by overhead lines, Regulation 443.2.2 indicates that provided the impulse withstand voltage of the equipment is not less than the values given in Table 44.3 (see Table 1 for installations rated at 230 V to Earth), no additional protection by a SPD is required. However, where higher levels of equipment reliability or higher risks (e.g. fire) are expected, additional protection by an SPD against over-voltage may be required.

Similarly, for an installation having overhead lines, no additional protection against over-voltages is required if the equipment meets the minimum voltage withstand values in table 44.3.

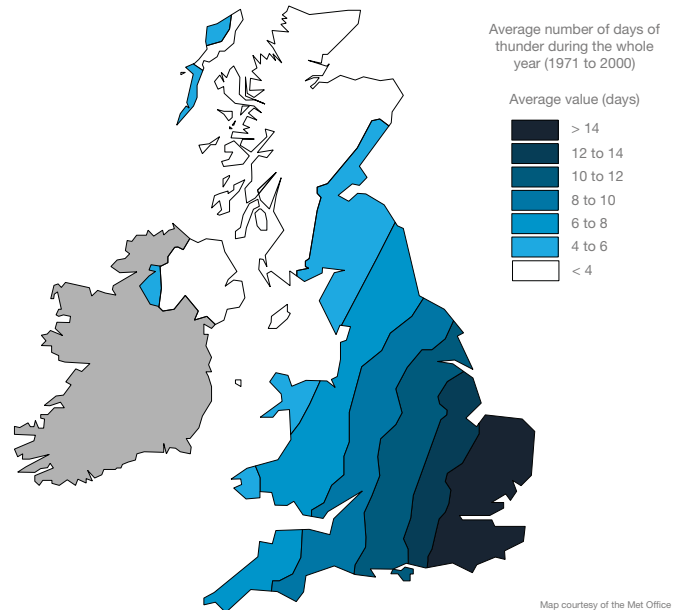
There are some words of caution in the notes to this section where it is recognised that transient over-voltages transmitted by the supply distribution system are not significantly attenuated. So an induced voltage some distance away could easily manifest itself at the electrical installation and cause potential harm to the equipment within. It is also worth considering that the AQ data is for thunderstorm days NOT lightning strikes. One storm will usually contain many lightning flashes which could lead to an over-voltage on the installation causing damage to equipment.

## Cascading

Cascading is the term used to describe the method of combining several levels of surge protection devices into the one installation.

This takes advantage of the best features of each device to improve the protection level for the equipment. Hager recommends using a high surge current capacity device to divert the bulk of the transient over-voltage at the origin of the installation.

In the case of a Class 1 & 2 device this would be either the spark gap arrester or a high current capacity MOV. Should finer protection be required, the next step is to install a Class 3 device SP202N near the terminal equipment.



Cascading increases the current diverting capacity of the SPD system whilst maintaining a low voltage (Up) to ensure the best protection for valuable equipment.

Selecting SPD of the same manufacturer or make will ensure correct co-ordination between devices.

## SPD Quick Selection Guide

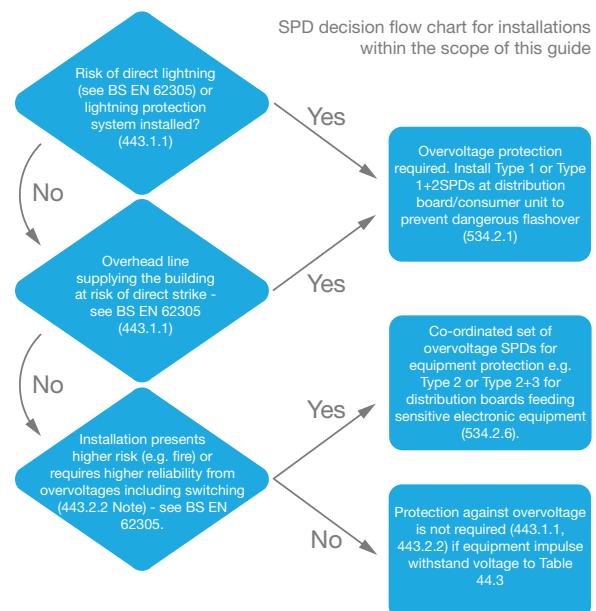
The following is a quick selection guide which may assist in choosing whether SPD's are required and the correct type of device

- Does the installation contain a lightning protection system?
- Is the installation adjacent to any tall structure, tall trees or near a hill top in a lightning prone area?

- Does the installation contain equipment where higher reliability from overvoltages is required

If the answer is YES in the above to the first two questions, it is recommended to install a Type 1+2 device. This will provide protection against surges caused by direct lightning strikes and provide protection against transient over-voltages caused by indirect lightning strikes or by switching events.

If the answer is YES to the third question then it is recommended to install Type 2 devices to provide protection against transient over-voltages caused by indirect lightning strikes or by switching events.



Note: For larger installations beyond the scope of this guide, a risk assessment method used to evaluate the need for SPDs is given in Section 443 of BS 7671:2008(2011)

SPD's protect electrical and electronic equipment against transients, originating from lightning, switching of transformers, lighting and motors

These transients can cause premature ageing of equipment, downtime, or complete destruction of electronic components and materials.

SPDs are strongly recommended on installations that are exposed to transients, to protect sensitive and expensive electrical equipment such as TV, video, washing machines, Hi-Fi, PC, alarm etc.

The choice of SPD depends on a number of criteria such as:

- The risk of lightning strikes
- The exposure of the building to transients.
- The sensitivity and value of the electrical equipment that requires protection.
- Earthing system
- Level of protection

The range of SPDs is separated into 3 types of protection:

1. Main protection - class 1  
SPDs with higher discharge current ( $I_{max}$  10/350), to evacuate as much of the transient overvoltages associated with lightning strikes
2. Main protection - class 2  
With a discharge current ( $I_{max}$  8/20), to evacuate as much of the transient overvoltage to earth as possible protection level ( $U_p \leq 1000V$ ).

3. Main protection - class 3  
To cut-down the transient surge as low as possible to protect very sensitive equipment.

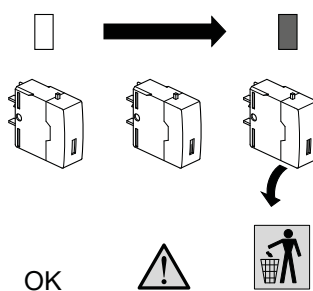
## Technical Data

Complies with IEC61643-1

## Reserve Status Indicator (R versions)



## End of Life Indicator (D versions)



Auxiliary contact for remote signalling (R versions only)



230V~ 1A  
12V ... 10mA

## Installation and Connection

The main protection SPDs are installed directly after the main incoming switch or RCCB (type S).

SPDs can be used in any supply system e.g. TNCS, TNS, TT.

Options: Replacement cartridges.

Connected in parallel to the equipment to be protected.

Protection is assured in both common and differential modes.

SPDs with Low Let Through Voltage Levels Type 3  
To protect very sensitive electronic equipment. This fine protection complements the main protection and can protect 1 or many electronic devices.

Optimal coordination is obtained when cascaded with a main protection device.

## Discharge current

$I_{max}$  8kA (8/20 wave)  
a green LED on the front face indicates the status of the SPD SP202N, connected in series with the equipment that needs to be protected (with a maximum line current of 25A). Protection is assured in both common and differential modes

## Connection Capacity

- Terminal blocks L, N & E
- Rigid conductor: 10mm<sup>2</sup>
  - Flexible conductor: 6mm<sup>2</sup>

## Replacement Cartridges

The cartridges replace the cartridge in the main SPN\* devices.

They allow simple replacement without the need to cut-off the

power supply. Cartridges are available for all discharge currents (40kA and 15kA) with and without condition indication.

A keying system exists to prevent a line cartridge being interchanged by mistake with a neutral one and visa versa neutral cartridges have a discharge current of 65kA

For technical details see page 4.55 - 4.59.

	TNS	TNC-S	TT
SPA201	✓	✓	✓
SPA401	✓	✓	✓
SPN801	✓	✓	x
SPN802	x	x	✓
SPN215D	✓	✓	✓
SPN415D	✓	✓	✓
SPN440D	✓	✓	✓
SP202N	✓	✓	✓



SPN801R

## Class 1 + 2 (Class 1 + 2 + 3 if less than 5m) (with lifetime indicator)

Poles	$I_{imp}$ kA L-N	$I_{imp}$ kA N-PE	$I_n$ L-N	$I_n$ N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat. ref.	Cat. ref. with remote contact
2	12.5	25	-	-	$\leq 1.5$	Single	35	SPA201	-
4	12.5	50	-	-	$\leq 1.5$	Three	70	SPA401	-
4	25	100	-	-	$\leq 1.5$	Three	140	SPN801	SPN801R
4	25	100	-	-	$\leq 1.5$	Three	140	SPN802	SPN802R

## Replacement Cartridges (SPN8\* range)

Dimensions

Phase replacement for SPN800, SPN800R, SPN801, SPN801R, SPN802 & SPN802R

Neutral replacement for SPN801, SPN801R, SPN802, SPN802R

Cat. ref.

SPN080

SPN080N



SPN080



SPN415D



SPN040D

## Class 2 (with lifetime indicator)

Poles	$I_{imp}$ L-N	$I_{imp}$ N-PE	$I_n$ kA L-N	$I_n$ kA N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat ref.	Cat ref. with remote contact
1	-	-	5	15	$\leq 1.2$	Single	17.5	<b>SPN115D</b>	<b>SPN115R</b>
1	-	-	5	40	$\leq 1.2$	Single	17.5	<b>SPN140D</b>	<b>SPN140R</b>
2	-	-	5	15	$\leq 1.2$	Single	35	<b>SPN215D</b>	<b>SPN215R</b>
2	-	-	15	40	$\leq 1.2$	Single	35	<b>SPN240D</b>	<b>SPN240R</b>
4	-	-	5	15	$\leq 1.5$	Three	70	<b>SPN415D</b>	<b>SPN415R</b>
4	-	-	15	40	$\leq 1.5$	Three	70	<b>SPN440D</b>	<b>SPN440R</b>

## Replacement Cartridges

Dimensions	Cat ref.
Phase replacement for SPN215D & SPN415D	<b>SPN015D</b>
Phase replacement for SPN215R & SPN 415R	<b>SPN015R</b>
Phase replacement for SPN140D, SPN240D & SPN440D	<b>SPN040D</b>
Phase replacement for SPN240R & SPN44R	<b>SPN040R</b>
Neutral replacement for SPN215D, SPN415D, SPN215R & SPN415R	<b>SPN040N</b>

## Class 3 (fine protection) (with lifetime indicator)

Poles	$I_{imp}$ L-N	$I_{imp}$ N-PE	$I_n$ kA L-N	$I_n$ kA N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat ref.	Cat ref. with remote contact
2	-	-	3	-	$\leq 1.5$	Single	35	<b>SP202N</b>	-



SP202N

## PV Applications (DC side) (with lifetime indicator)

Poles	$I_{imp}$ L-N	$I_{imp}$ N-PE	$I_n$ kA L-N	$I_n$ kA N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat ref.	Cat ref. with remote contact
3	-	-	12.5	25	$\leq 4$	-	52.5	<b>SPV325</b>	-



SPV325

## Consumer Unit Kit Type 2 SPD with SPN215D (with lifetime indicator)

Consists of: Neutral terminal bar, 3x 20mm neutral link bar 370mm, 300mm & 200mm lengths, 4mm<sup>2</sup> neutral, live & earth cables, 2 connector busbar, 4 way terminal bar, terminal bar clip, 1x Double Pole SPD's, 32A MCB

Poles	$I_{imp}$ L-N	$I_{imp}$ N-PE	$I_n$ kA L-N	$I_n$ kA N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat ref.	Cat ref. with remote contact
2	-	-	5	15	$\leq 1.2$	Single	35	<b>VA02SPD</b>	-

**Moulded case circuit breakers x160**

Thermal magnetic trip unit, 2 versions:

- Z version: fixed thermal and fixed magnetic
- U version: adjustable thermal and fixed magnetic

1P and 3P.

Access to mechanical test button on cover. Lockable cover protects MCCB settings. Integrated padlocking handle Ø 4mm,

\*160A devices should not be used

**Connection capacity**

95 mm<sup>2</sup> rigid cables  
70 mm<sup>2</sup> flexible cables  
Cage terminals  
Complies with BS EN 60947-2.

Moulded case switches comply with BS EN 60947-3.

For technical details see table on page 4.60.



HDA125Z

**Moulded Case Circuit Breakers x160 18kA**

Breaking capacity  
Icu / Ics : 18 kA  
(400/415 V AC)

Fixed thermal  
1x I<sub>n</sub>  
fixed magnetic  
> 10 x I<sub>n</sub>

Adjustable thermal  
0.63 - 0.8 - 1 x I<sub>n</sub>  
fixed magnetic  
> 10 x I<sub>n</sub>

**Moulded Case Circuit Breakers x160 18kA - Fixed Thermal**

	Ref 1P.	Ref 3P.
MCCBs x160 18kA - 16A	<b>HDA014Z</b>	<b>HDA016Z</b>
MCCBs x160 18kA - 20A	<b>HDA018Z</b>	<b>HDA020Z</b>
MCCBs x160 18kA - 25A	<b>HDA023Z</b>	<b>HDA025Z</b>
MCCBs x160 18kA - 32A	<b>HDA030Z</b>	<b>HDA032Z</b>
MCCBs x160 18kA - 40A	<b>HDA038Z</b>	<b>HDA040Z</b>
MCCBs x160 18kA - 50A	<b>HDA048Z</b>	<b>HDA050Z</b>
MCCBs x160 18kA - 63A	<b>HDA061Z</b>	<b>HDA063Z</b>
MCCBs x160 18kA - 80A	<b>HDA078Z</b>	<b>HDA080Z</b>
MCCBs x160 18kA - 100A	<b>HDA098Z</b>	<b>HDA100Z</b>
MCCBs x160 18kA - 125A	<b>HDA123Z</b>	<b>HDA125Z</b>
MCCBs x160 18kA - 160A	-	<b>HDA160Z</b>

**Moulded Case Circuit Breakers x160 18kA - Adjustable Thermal**

	Ref 1P.	Ref 3P.
MCCBs x160 18kA - 25A	-	<b>HDA025U</b>
MCCBs x160 18kA - 40A	-	<b>HDA040U</b>
MCCBs x160 18kA - 63A	-	<b>HDA063U</b>
MCCBs x160 18kA - 80A	-	<b>HDA080U</b>
MCCBs x160 18kA - 100A	-	<b>HDA100U</b>
MCCBs x160 18kA - 125A	-	<b>HDA125U</b>
MCCBs x160 18kA - 160A	-	<b>HDA160U</b>

**Moulded Case Circuit Breakers x160 25kA**

breaking capacity  
Ics : 20 kA  
Icu : 25 kA  
(400/415 V AC)

fixed thermal  
1x I<sub>n</sub>  
fixed magnetic  
> 10 x I<sub>n</sub>

adjustable thermal  
0.63 - 0.8 - 1 x I<sub>n</sub>  
fixed magnetic  
> 10 x I<sub>n</sub>

**Moulded Case Circuit Breakers x160 25kA - Fixed Thermal**

	Ref 1P.	Ref 3P.
MCCBs x160 18kA - 16A	<b>HHA014Z</b>	<b>HHA016Z</b>
MCCBs x160 18kA - 20A	<b>HHA018Z</b>	<b>HHA020Z</b>
MCCBs x160 18kA - 25A	<b>HHA023Z</b>	<b>HHA025Z</b>
MCCBs x160 18kA - 32A	<b>HHA030Z</b>	<b>HHA032Z</b>
MCCBs x160 18kA - 40A	<b>HHA038Z</b>	<b>HHA040Z</b>
MCCBs x160 18kA - 50A	<b>HHA048Z</b>	<b>HHA050Z</b>
MCCBs x160 18kA - 63A	<b>HHA061Z</b>	<b>HHA063Z</b>
MCCBs x160 18kA - 80A	<b>HHA078Z</b>	<b>HHA080Z</b>
MCCBs x160 18kA - 100A	<b>HHA098Z</b>	<b>HHA100Z</b>
MCCBs x160 18kA - 125A	<b>HHA123Z</b>	<b>HHA125Z</b>
MCCBs x160 18kA - 160A	-	<b>HHA160Z</b>

**Moulded Case Circuit Breakers x160 25kA - Adjustable Thermal**

	Ref 1P.	Ref 3P.
MCCBs x160 18kA - 25A	-	<b>HHA025U</b>
MCCBs x160 18kA - 40A	-	<b>HHA040U</b>
MCCBs x160 18kA - 63A	-	<b>HHA063U</b>
MCCBs x160 18kA - 80A	-	<b>HHA080U</b>
MCCBs x160 18kA - 100A	-	<b>HHA100U</b>
MCCBs x160 18kA - 125A	-	<b>HHA125U</b>
MCCBs x160 18kA - 160A	-	<b>HHA160U</b>

**Add-on blocks for x160 devices**

These devices are intended to be fixed on the right side of the devices.

**Type A and HI**

For pulsating residual current. High Immunity reduces the unexpected tripping when protecting equipment generating disturbances (micro-processing, electronic ballast...)  
Fixed version: 300 mA sensitivity and instantaneous tripping

Adjustable version: adjustable sensitivity and time delay.

Test button for electrical functioning check.  
Mechanical test button

LED fault indication and auxiliary output for remote indication.

(25-50%  $I_{\Delta n}$ ).

Assembly and disassembly facilitated by the drawer assembly system. The terminal cover is part of the add-on block.

**Connection capacity**

95 mm<sup>2</sup> rigid cables  
70 mm<sup>2</sup> flexible cables

Complies with BS EN 60947-2.



HBA161H

**Add-on Blocks**

**Fixed:**

$I_{\Delta n}$  300 mA  
fixed sensitivity  
instantaneous tripping

**Adjustable:**

sensitivity I  
adjustable:  
0.03 - 0.1 - 0.3 - 1 - 3 - 6A

adjustable tripping:

- instantaneous
- time delay: 0.06 - 0.15 - 0.3
- 0.5 - 1s

**Add-on Blocks - Fixed**

Add-on block - 125A

Ref 3P.

**HBA127H**

**Add-on Blocks - Adjustable**

Add-on block - 125A

**HBA125H**

Add-on Block - 160A

**HBA160H**



**Indication contacts**

- 1 changeover switch (ON/OFF): indicates the position of the MCCB "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripped.

**Coil connection**

Connection capacity:  
0.75 mm<sup>2</sup> flexible or rigid cables  
The cable capacity of the terminals is 0.5 to 1.25 mm<sup>2</sup>.

**Shunt trip**

Remote tripping of MCCBs  
Operating voltage: 0.7 to 1.1 x  $U_N$

**Under voltage release**

Enables tripping of MCCBs or moulded case switches when voltage level drop between 35 and 70% of  $U_N$ . Pick up voltage 0.85 x  $U_N$

**Direct rotary handle**

- padlockable
- equipped with front cover and handle
- fixing without any additional screw.



HXA021H

HXA024H

**Auxiliary Contacts**

Description	Ref.
1 Changeover contact (On/Off) 250V AC / 3A 125V DC / 0.4A 1 NO+ 1NC	<b>HXA021H</b>
1 Changeover alarm contact 250 V AC / 3A 125 V DC / 0.4A NO + 1 NC	<b>HXA024H</b>
Low level contact (On/Off) 125V AC NO + 1 NC	<b>HXA025H</b>
Low Level alarm contact 125 V AC NO + 1 NC	<b>HXA026H</b>

**Shunt Trips - SH**

Description	Ref.
24V DC	<b>HXA001H</b>
48V DC	<b>HXA002H</b>
100-120V AC	<b>HXA003H</b>
200-240V AC	<b>HXA004H</b>
380-450V AC	<b>HXA005H</b>



HXA014H

**Undervoltage Releases - UV**

Description	Ref.
24V DC	<b>HXA011H</b>
100-120V AC	<b>HXA013H</b>
200-240V AC	<b>HXA014H</b>
380-450V AC	<b>HXA015H</b>

**Delayed Undervoltage Releases - DUVR**

Description	Ref.
24V DC	<b>HXA051H</b>
100-120V AC	<b>HXA053H</b>
200-240V AC	<b>HXA054H</b>
380-450V AC	<b>HXA055H</b>



## Locking Device

Description	Cat ref. 1P	3P
To mount on MCCB for handle locking for 3 padlock max ø 8mm	-	<b>HXA039H</b>

HXA039H



## Extended Connections

Description	Cat ref. 1P	3P
Set of 4 straight connections	-	-
Set of 3 or 4 spreader connections	-	<b>HYA014H</b>

HYA015H

## Interphase barriers

Description	height	Cat ref. 1P	3P
Set of 3	50mm	-	-
Set of 3	97mm	-	-



HYA021H

## Terminal Covers

Description	Cat ref. 1P	3P
For extended straight connections	<b>HYA029H</b>	<b>HYA021H</b>
For extended spreader connections	-	<b>HYA023H</b>



HYA023H



**Moulded case circuit breakers x250,**

2 versions of trip unit:

- Z version: fixed, thermal and magnetic
- U version: adjustable thermal and magnetic

3P and 4P

Mechanical test button,  
lockable settings,  
integrated padlocking handle  
Ø 4mm.  
Comply with BS EN 60947-2.

**Connection:**

Palm lug max. width: 25 mm  
Connection capacity: 150 mm<sup>2</sup>  
rigid cables

Moulded case Switches comply with BSEN60947-2.

Complies with BS EN 60947-3  
AC 22/23A

**Add-on blocks for x250 devices**

These devices are intended to be fixed at the bottom of the devices.

Type A and HI  
for fault component DC pulsating current and the products with "reinforced immunity".

Adjustable sensitivity and tripping.

Test button for RCD function check.

Mechanical test button

LED or auxiliary output to signal for tripping or advance warning (25 - 50%  $I_{\Delta n}$ ).

Complies with BS EN 60947-2 Annex B when fitted to an MCCB.



HNB250Z

**Moulded Case Circuit Breakers x250 25kA**

Breaking Capacity  
 $I_{cu}$ : 25kA  
(400/415 V AC)  
 $I_{cs}$ : 20kA

Fixed thermal  
 $1 \times I_n$   
Fixed magnetic  
 $>10 \times I_n$

**Moulded Case Circuit Breakers x250 25KA - Fixed Thermal**

Ref 3P.

MCCBs x250 25kA - 100A	<b>HNB100Z</b>
MCCBs x250 25kA - 125A	<b>HNB125Z</b>
MCCBs x250 25kA - 160A	<b>HNB160Z</b>
MCCBs x250 25kA - 200A	<b>HNB200Z</b>
MCCBs x250 25kA - 250A	<b>HNB250Z</b>



HNB100H

**Moulded Case Circuit Breakers x250 40kA**

Breaking Capacity  
 $I_{cu}$ : 40 kA  
(400/415 V AC)  
 $I_{cs}$ : 20 kA

fixed thermal  
 $1 \times I_n$   
fixed magnetic  
 $\geq 10 \times I_n$

adjustable thermal  
0.63 - 0.8 -  $1 \times I_n$   
adjustable magnetic  
6 - 8 - 10 -  $13 \times I_n$  (100 - 200A)  
5 - 7 - 9 -  $11 \times I_n$  (250A)  
3P, 3 trip units  
4P,  
neutral setting: 0 or 100%

**Moulded Case Circuit Breakers x250 40KA - Fixed Thermal**

Ref 3P.

MCCBs x250 40kA - 100A	<b>HNB100Z</b>
MCCBs x250 40kA - 125A	<b>HNB125Z</b>
MCCBs x250 40kA - 160A	<b>HNB160Z</b>
MCCBs x250 40kA - 200A	<b>HNB200Z</b>
MCCBs x250 40kA - 250A	<b>HNB250Z</b>

**Moulded Case Circuit Breakers x250 40KA - Adjustable Thermal**

Ref 3P.

MCCBs x250 40kA - 100A	<b>HNB100H</b>
MCCBs x250 40kA - 125A	<b>HNB125H</b>
MCCBs x250 40kA - 160A	<b>HNB160H</b>
MCCBs x250 40kA - 200A	<b>HNB200H</b>
MCCBs x250 40kA - 250A	<b>HNB250H</b>

**Moulded Case Circuit Breakers x250**

capacity suitable for AC 22/23A

 $I_{cw}$  (1s): 3kA

Description

MCCBs x250 - 250A

Ref 3P.

**HCB250Z**

## Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB "open" or "closed".
- 1 changeover alarm contact: indicates MCCB tripping.

## Coil connection

Connection capacity:  
0.75 mm<sup>2</sup> flexible or rigid cables  
The cable capacity of the terminals is 0.5 to 1.25 mm<sup>2</sup>.

## Shunt trip

Tripping of MCCBs  
Operating voltage: 0.7 to 1.1 x U<sub>N</sub>

## Under voltage release

Allows the tripping of MCCBs or moulded case switches when voltage level drop between 35% and 70% of U<sub>N</sub>. Pick up voltage 0.85 x U<sub>N</sub>

## Direct rotary handle

- padlockable
- equipped with front cover and handle
- fixing without any additional screw.



HXA021H

HXA024H

Description	Characteristics	Cat ref.
<b>Auxiliary contacts</b> <b>AX</b> <b>AL</b>	1 changeover contact 250V AC / 3A 125V DC / 0.4A 1 NO + 1 NC	<b>HXA021H</b>
	1 changeover alarm contact 250 V AC / 3A 125 V DC / 0.4A 1 NO + 1 NC	<b>HXA024H</b>
	low level contact (ON/OFF) 125 V AC 1 NO + 1 NC	<b>HXA025H</b>
	low level alarm contact 125 V AC 1 NO + 1 NC	<b>HXA026H</b>

Description	Characteristics	3P
<b>Shunt trips</b> <b>SH</b>	24V DC	<b>HXA001H</b>
	48V DC	<b>HXA002H</b>
	100 - 120V AC	<b>HXA003H</b>
	200 - 240V AC	<b>HXA004H</b>
	380 - 450V AC	<b>HXA005H</b>



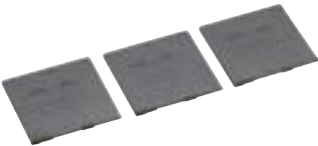
HXA014H

Description	Characteristics	3P
<b>Undervoltage releases UV</b>	24V DC	<b>HXA011H</b>
	100 - 120V AC	<b>HXA013H</b>
	200 - 240V AC	<b>HXA014H</b>
	380 - 450V AC	<b>HXA015H</b>

Description	Characteristics	3P
<b>Delayed undervoltage releases DUVR</b>	24V DC	<b>HXA051H</b>
	100 - 120V AC	<b>HXA053H</b>
	200 - 240V AC	<b>HXA054H</b>
	380 - 450V AC	<b>HXA055H</b>

Description	Characteristics	3P
<b>Locking device</b>	to mount on MCCBs for handle locking for 3 padlocks max Ø 8 mm	<b>HXA039H</b>

Description	Characteristics	Cat ref. 3P
<b>Extended connection</b>	Set of 4 pieces for straight connections	<b>HYB010H</b>
	Spreader connections	<b>HYB011H</b>



HYB022H

Description	Characteristics	Cat ref. 3P
<b>Interphase barriers</b>	Set of 3 height: 97mm	<b>HYB019H</b>



HYB022H

Description	Characteristics	Cat ref. 3P
<b>Terminal covers</b>	for extended straight connections	<b>HYB021H</b>
	for extended spreader connections	<b>HYB023H</b>

### Electrical Characteristics

	MLN	MTN	NBN	NCN	NDN	HMF*	HMC*	HMD*
Poles	SP+SN	SP	SP DP TP 4P	SP DP TP 4P	SP DP TP 4P	SP DP TP 4P		
Rated Operational Voltage U <sub>e</sub> (V)	230	230	230 / 400	230 / 400	230 / 400	230/400		
Nominal Current	6 - 40A	6 - 63A	6 - 63A	0.5 - 63A	0.5 - 63A	80 - 125A		
Breaking Capacity (I <sub>cn</sub> ) to BS EN 60898	6kA	6kA	10kA	10kA	10kA	10kA	15kA	
Breaking Capacity (I <sub>cs</sub> ) to BS EN 60898	6kA	6kA	7.5kA	7.5kA	7.5kA	7.5kA	7.5kA	
Breaking Capacity (I <sub>cu</sub> ) to BS EN 60947 Part 2	N/A	N/A	15kA	15kA	15kA	N/A	15kA	
Breaking Capacity (I <sub>cs</sub> ) to BS EN 60947 Part 2	N/A	N/A	7.5kA	7.5kA	7.5kA	N/A	7.5kA	
Rated Insulation Voltage U <sub>i</sub> (V)	500V	500V	500V	500V	500V	500V		
Rated Impulse Voltage U <sub>imp</sub> (kV)	4kV	4kV	6kV	6kV	6kV	6kV		
Electrical Endurance	10,000 cycles	10,000 cycles						
Connection of Auxiliaries	No	Yes						

Table 1

\*Din rail mount only, not for use in fixed busbar distribution boards.

### Power Loss

The power loss of MCB's is closely controlled by the standards and is calculated on the basis of the voltage drop across the main terminals measured at rated current. The power loss of hager circuit breakers is very much lower than that required by the British Standard, so in consequences run cooler and are less affected when mounted together.

The table below gives the watts loss per pole at rated current.

MCB Rated current (A)	0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63
Watts loss per pole	1.2	1.3	1.5	2.0	1.8	1.4	1.9	2.1	2.5	2.8	3.2	3.8	4.0	4.5	5.1

### For use with DC

Because of their quick make and break design and excellent arc quenching capabilities, Hager circuit breakers are suitable for DC applications.

The following parameters must be considered:

1. System voltage:  
Determined by the number of poles connected in series (see table 14)
2. Short circuit current:  
(See table 14)
3. Tripping Characteristics:  
The thermal trip remains unchanged  
the magnetic trip will become less sensitive requiring derating by  $\sqrt{2}$   
the ac value (See table 14)

No. of poles	1 pole		2 poles in series	
Range	max voltage	breaking capacity L/R=15ms	Max voltage	breaking capacity L/R=15ms
MTN	60V	6kA	125V	6kA
NCB NCN NDN	60V	10kA	125V	10kA

Table 13

Characteristic curve	B		C		D	
Magnetic strip	50Hz	dc	50Hz	dc	50Hz	dc
I <sub>rm1</sub>	3I <sub>n</sub>	4.5 I <sub>n</sub>	5I <sub>n</sub>	7.5 I <sub>n</sub>	10 I <sub>n</sub>	15 I <sub>n</sub>
I <sub>rm2</sub>	5I <sub>n</sub>	7.5 I <sub>n</sub>	10I <sub>n</sub>	15 I <sub>n</sub>	20 I <sub>n</sub>	30 I <sub>n</sub>

Table 14

## Connection

The circuit breaker can have the line/load connected to either the top or bottom terminals

## Temperature Derating

MCBs are designed and calibrated to carry their rated current and to operate within their designated thermal time/current zone at 30°C. Testing is carried out with the breaker mounted singly in a vertical plane in a controlled environment. Therefore if the circuit breaker is required to operate in conditions which differ from the reference conditions, certain factors have to be applied to the standard data.

In (A)	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
0.5	0.72	0.7	0.68	0.66	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.48	0.46	0.44	0.42	-	-
1	1.44	1.4	1.36	1.32	1.28	1.24	1.2	1.16	1.12	1.08	1.04	1	0.96	0.92	0.88	0.84	0.8	0.76
2	2.88	2.8	2.72	2.64	2.56	2.48	2.4	2.32	2.24	2.16	2.08	2	1.92	1.84	1.76	1.68	1.6	1.52
3	4.32	4.2	4.08	3.96	3.84	3.72	3.6	3.48	3.36	3.24	3.12	3	2.88	2.76	2.64	2.52	2.4	2.28
4	5.76	5.6	5.44	5.28	5.12	4.96	4.8	4.64	4.48	4.32	4.16	4	3.84	3.68	3.52	3.36	3.2	3.04
6	8.64	8.4	8.16	7.92	7.68	7.44	7.2	6.96	6.72	6.48	6.24	6	5.76	5.52	5.28	5.04	4.8	4.56
10	14.4	14	13.6	13.2	12.8	12.4	12	11.6	11.2	10.8	10.4	10	9.6	9.2	8.8	8.4	8	7.6
13	18.7	18.2	17.7	17.2	16.6	16.1	15.6	15.1	14.6	14.0	13.5	13	12.5	12.0	11.4	10.9	10.4	9.9
15	21.6	21	20.4	19.8	19.2	18.6	18	17.4	16.8	16.2	15.6	15	14.4	13.8	13.2	12.6	12	11.4
16	23.0	22.4	21.8	21.1	20.5	19.8	19.2	18.6	17.9	17.3	16.6	16	15.4	14.7	14.1	13.4	12.8	12.2
20	28.8	28	27.2	26.4	25.6	24.8	24	23.2	22.4	21.6	20.8	20	19.2	18.4	17.6	16.8	16	15.2
25	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
32	46.1	44.8	43.5	42.2	41.0	39.7	38.4	37.1	35.8	34.6	33.3	32	30.7	29.4	28.2	26.9	25.6	24.3
40	57.6	56	54.4	52.8	51.2	49.6	48	46.4	44.8	43.2	41.6	40	38.4	36.8	35.2	33.6	32	30.4
50	-	-	-	-	-	62	60	58	56	54	52	50	48	46	44	42	40	38
63	-	-	-	-	-	-	-	-	-	-	-	63	60.5	58.0	55.4	52.9	50.4	47.9

## Diversity Factor

Consideration should be given to the proximity heating effect of the breakers when fully loaded and mounted together in groups.

Adjacent circuit breakers having a load 'on' time exceeding 30 minutes or where the load not exceeding 30 minutes has an 'off' time less than the 'on' time, will need to have the rated diversity factor applied.

No. of Outgoing Circuits	Assumed Loading Factor
2 and 3	0.8
4 and 5	0.7
6 to 9 inclusive	0.6
10 and above	0.5

## Frequency

Circuit breakers are designed to operate at a frequency of 50-60Hz. Should the supply differ from this then the following factors should be applied

Thermal – unchanged

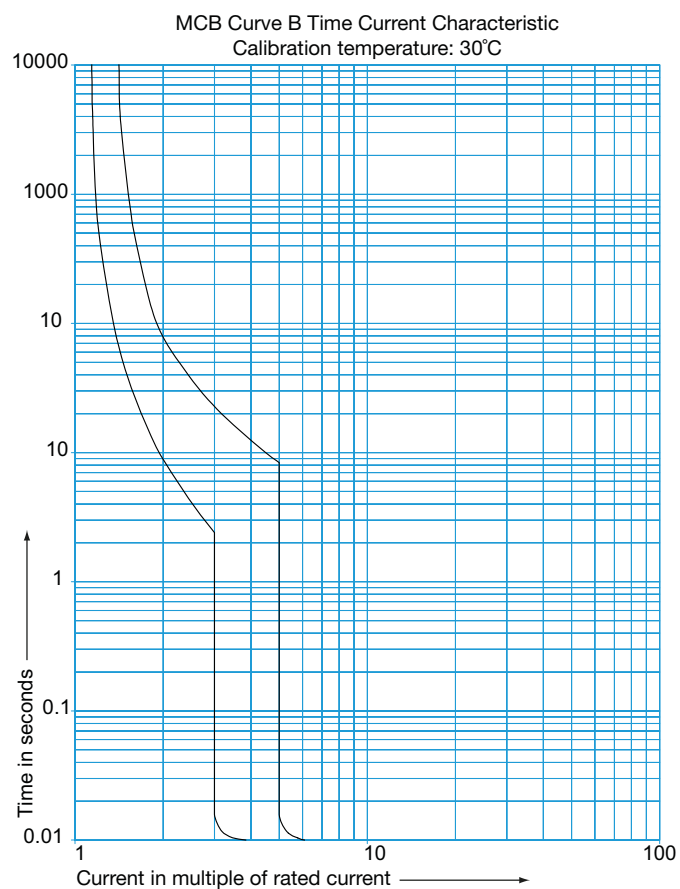
Magnetic – value multiplied by coefficient K

F (Hz)	17Hz - 60Hz	100Hz	200Hz	400Hz
K	1	1.1	1.2	1.5

Consideration should be given to the proximity heating effect of the breakers when fully loaded and mounted together in groups. (continuously & simultaneously loaded).

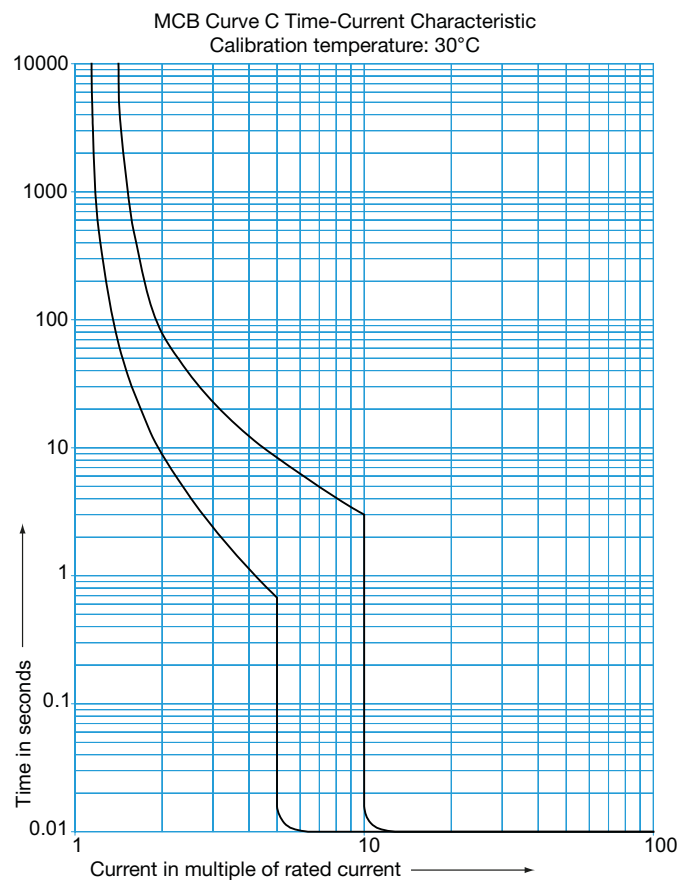
## B Curve (BS EN 60898)

MCBs: MTN rated 6 - 63A  
NBN rated 6 - 63A



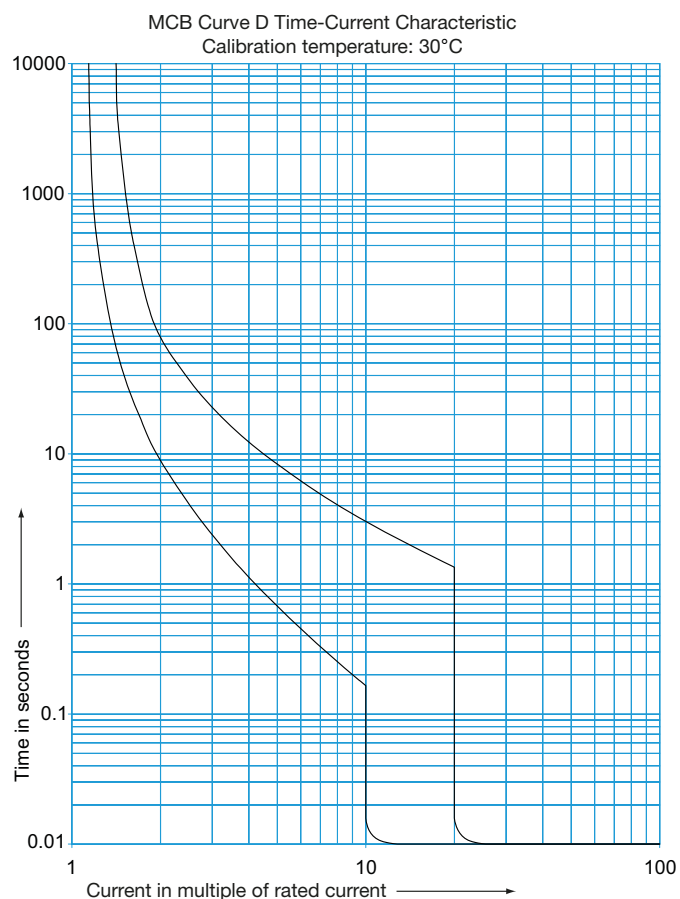
## C Curve (BS EN 60898)

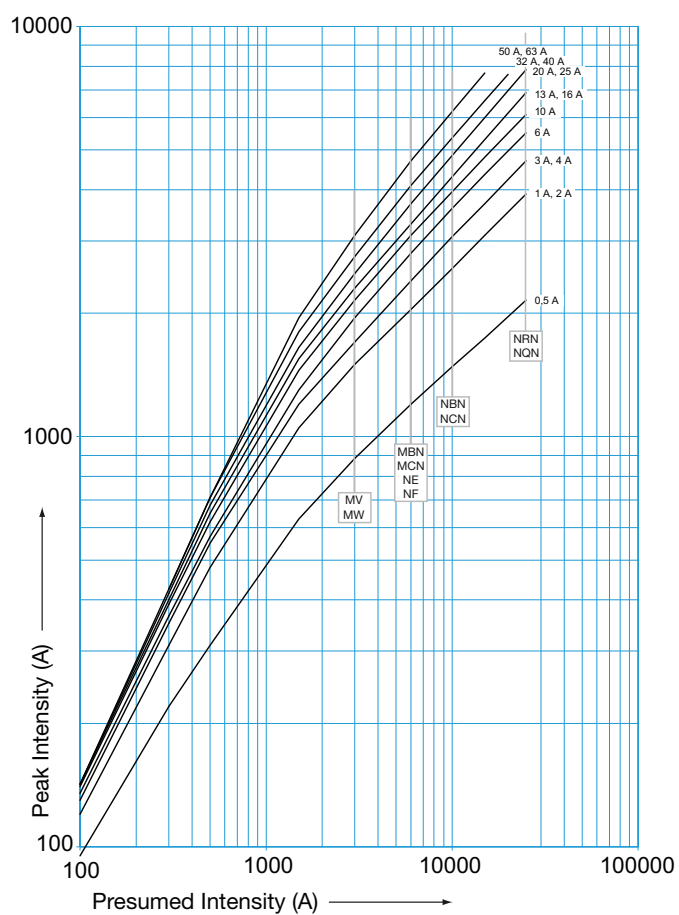
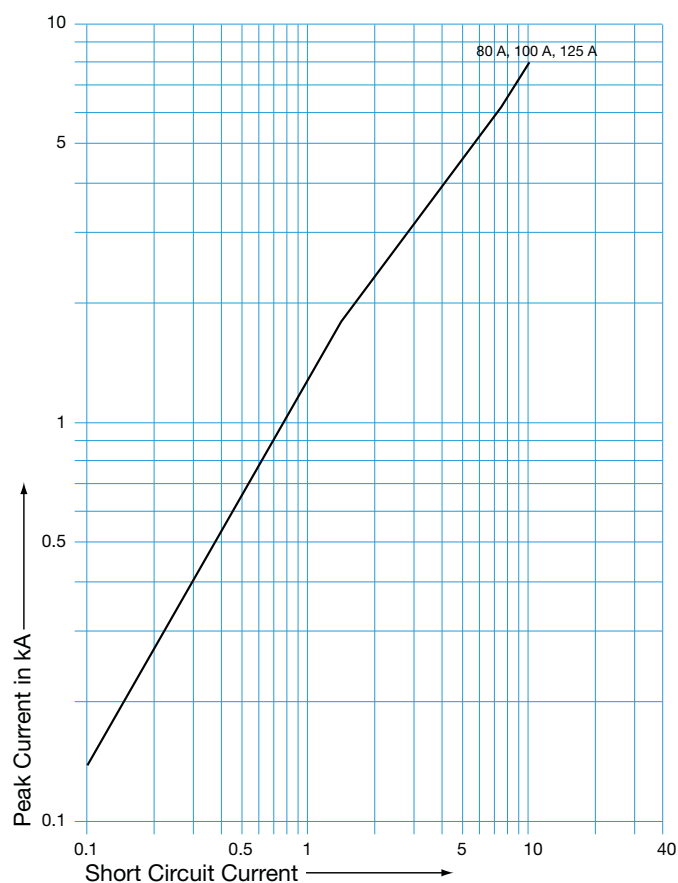
MCBs: NCN rated 0.5 - 63A  
MLN rated 2 - 32A  
NMF rated 80 - 100A



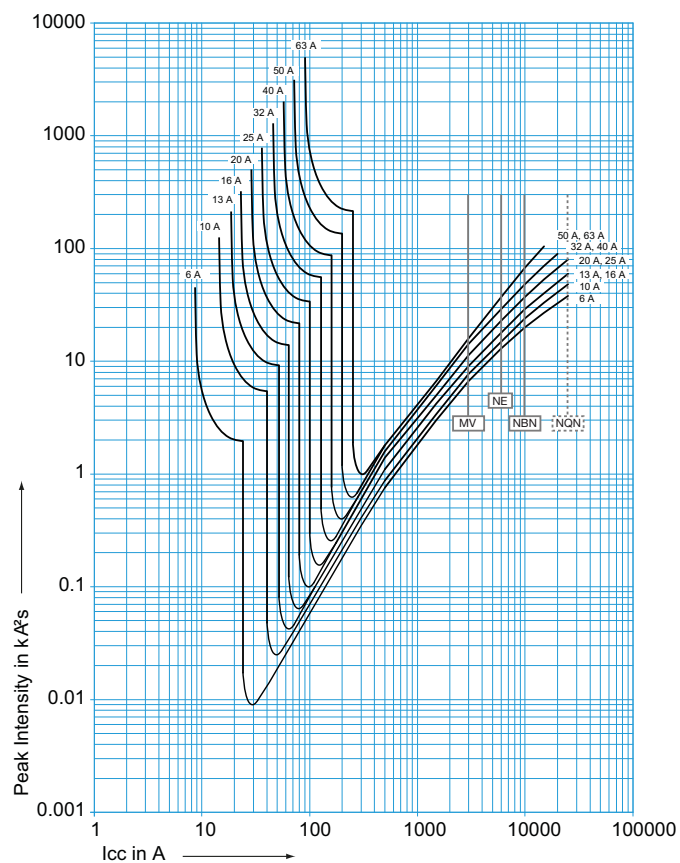
## D Curve (BS EN 60898)

MCBs: NDN rated 6 - 63A  
HMD rated 80 - 125A

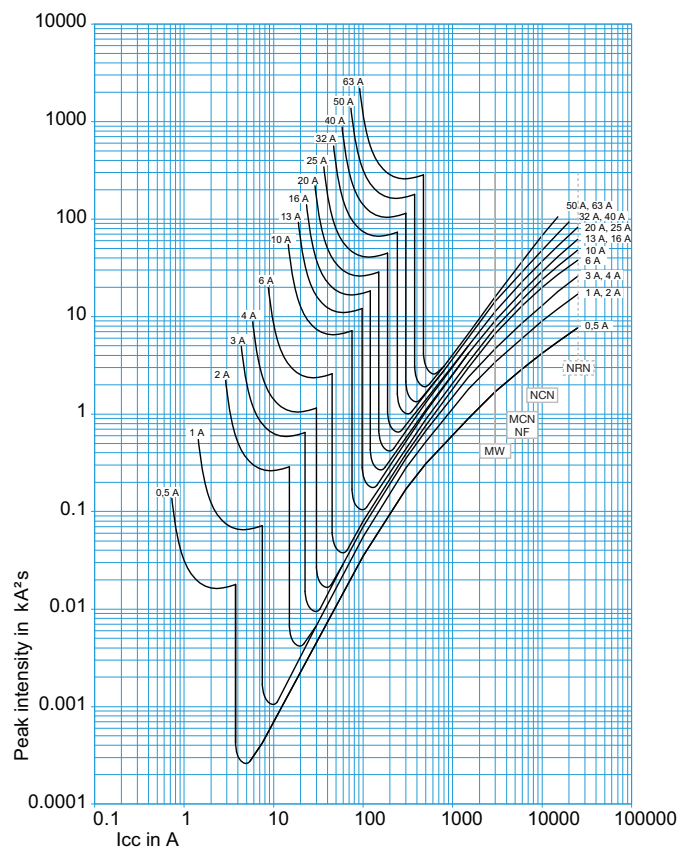




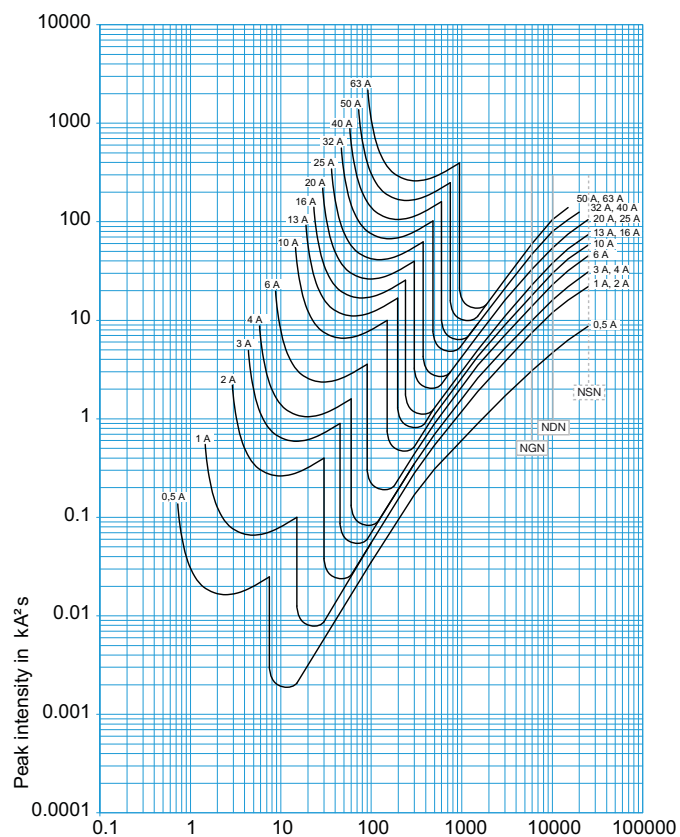
**B Curve**



**C Curve**



**D Curve**





## Functions

Tripping and indication auxiliary contacts are common to the range of multi-pole 10kA MCBs, and RCCBs. They should be mounted on the left hand side of the device.

### Auxiliary Contact MZ201 (Fig 9)

Allows remote indication of the status of the device contacts to which it is associated.

### Auxiliary Contact and Alarm Contact MZ202

This accessory has two separate functions. Like the MZ201 auxiliary contact, however the alarm contact will provide indication if the breaker trips under fault conditions.

### Wiring Diagram

MZ201 Auxiliary Contact and Alarm Contract

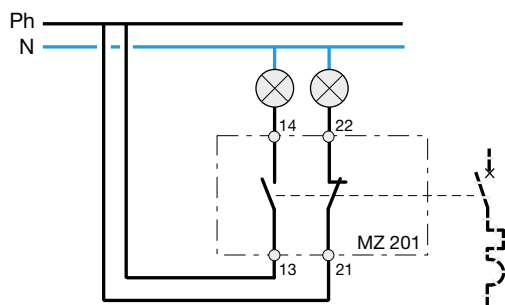


Fig. 9

### Electrical Characteristics

	MZ201/MZ206	MZ203	MZ206
	1 x O 1 x C Contact 230V ~ 6A AC-1		
		230 - 415~ 110 - 130...	230V~ 50Hz

### Grouping / Combination of Several Auxiliaries

On 2, 3 and 4 pole MCBs it is possible to associate 3 auxiliaries – 2 indication auxiliaries and 1 release auxiliary. In this case, it is important to first fix the indication auxiliary (MZ201 and MZ202) and then the release auxiliary (MZ203 and MZ206).

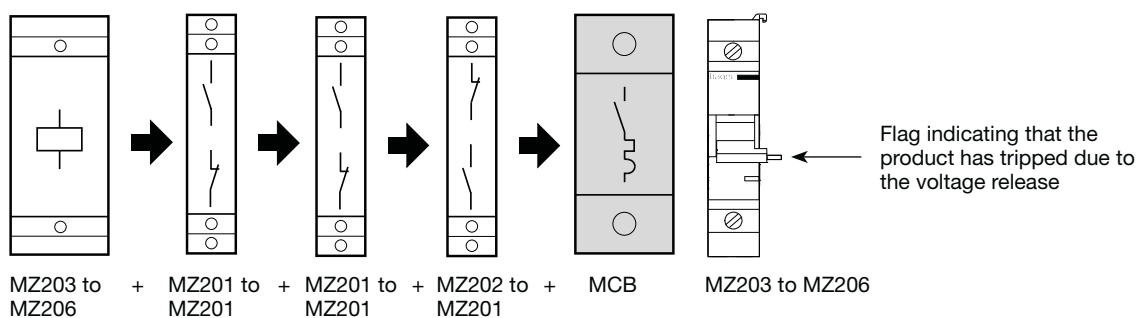


Fig. 11

### MZ203 Shunt Trip\*

Allows tripping of the device by feeding the coil. The contacts also allow for remote indication of operation.

### MZ206 Under Voltage Release\* (Fig 10)

Allows the MCB to trip when the voltage drops or by pressing a remote off switch (i.e. emergency stop).

\* Indication that the product has tripped due to the voltage release is provided by a flag on the product.

### MZ206 Under Voltage Release

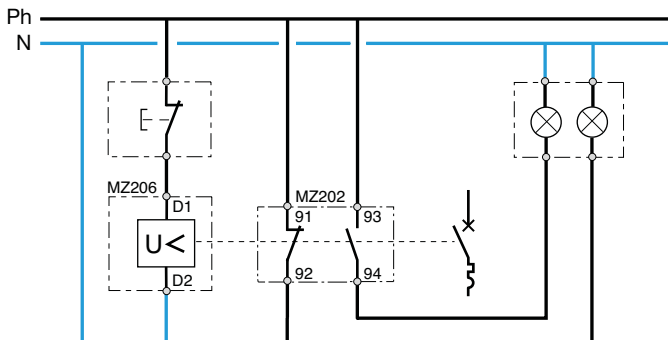


Fig. 10

### Electrical connection

By terminal fitted with fixed clamp screws wiring capacity.

Flexible : 2 x 1.5mm<sup>2</sup>

Rigid : 2 x 1.5mm<sup>2</sup>

### MZ203

Power - 8VA

tolerance : -15% of  $U_n$

### MZ206

Latching voltage is between 35 and 70% of  $U_n$  230V~

Coil consumption 3VA

**Transformer Protection**

Tables 19 & 20 show the recommended MCB's for the protection of single phase (230V) and three phase (400V) transformers.

## Single Phase 230V

Transformer Rating (VA)	Primary Current	Recommended MCB		
		NBN	NCN	NDN
50	0.22	-	1	6
100	0.43	-	2	6
200	0.87	-	3	6
250	1.09	6	4	6
300	1.30	10	4	6
400	1.74	10	6	6
500	2.17	16	10	6
750	3.26	16	10	6
1000	4.35	25	16	10
2500	10.87	63	40	20
5000	21.74	-	63	32
7500	32.60	-	-	50
10000	43.48	-	-	63

## Three Phase 400V

Transformer Rating (VA)	Primary Current	Recommended MCB		
		NBN	NCN	NDN
500	0.72	-	3	6
750	1.08	6	4	6
1000	1.44	10	6	6
2000	2.88	16	10	6
3000	4.33	25	16	10
4000	5.77	32	20	10
5000	7.21	40	25	16
7500	10.82	63	32	20
10000	14.43	-	50	25
15000	21.64	-	63	32
20000	28.86	-	-	50
25000	36.07	-	-	63

**Motor Circuit Protection**

Tables 28,29,30 and 31 give general recommendations for the selection of circuit breakers and HRC fuses for the protection of motor power circuits and are based on the assumptions shown in Table 28 for a cage motor running at approximately 1400 Rev/Min.

Motor Rating	DOL Starting Conditions	Assisted Start Conditions
Up to 0.75kW	5 x FLC for 6 secs	2.5 x FLC for 15 secs
1.1 to 7.5kW	6 x FLC for 10 secs	2.5 x FLC for 15 secs
11 to 75kW	7 x FLC for 10 secs	2.5 x FLC for 15 secs
90 to 160kW	6 x FLC for 15 secs	2.5 x FLC for 20 secs

## 1 Phase 230V DOL Starting

kW	hp	FLC A	Recommended Circuit Breaker			
			(A) NBN	(A) NCN	(A) NDN	Fuse (A)
0.18	0.25	2.8	16	10	10	10
0.25	0.33	3.2	16	10	10	16
0.37	0.5	3.5	16	10	10	16
0.55	0.75	4.8	20	16	16	16
0.75	1.0	6.2	25	20	20	20
1.1	1.5	8.7	40	25	25	25
1.5	2.0	11.8	50	32	32	32
2.2	3.0	17.5	-	50	50	40
3.0	4.0	20	-	63	63	50
3.75	5.0	24	-	-	-	63
5.5	7.5	36	-	-	-	80
7.5	10	47	-	-	-	100

## 3 Phase 400V Assisted Starting Star-Delta

kW	hp	FLC A	Recommended Circuit Breaker		
			(A) NCN	(A) NDN	HRC Fuse (A)
3	4	6.3	16	10	16
4	5.5	8.2	20	10	16
5.5	7.5	11.2	32	16	20
7.5	10	14.4	40	25	25
11	15	21	50	32	32
15	20	27	-	40	35
18.5	25	32	-	50	40
22	30	38	-	63	50
30	40	51	-	-	63
37	50	63	-	-	80
45	60	76	-	-	80
55	75	91	-	-	100
75	100	124	-	-	160
90	125	154	-	-	200
110	150	183	-	-	200
132	175	219	-	-	250
150	200	240	-	-	315
160	220	257	-	-	315

## 3 Phase 400V DOL Starting

kW	hp	FLC A	Recommended Circuit Breaker			
			(A) NBN	(A) NCN	(A) NDN	HRC Fuse (A)
0.18	0.25	0.87	-	2	-	4
0.25	0.33	1.17	-	3	-	4
0.37	0.5	1.2	-	3	-	4
0.55	0.75	1.8	-	4	-	6
0.75	1.0	2.0	10	6	6	6
1.1	1.5	2.6	16	10	6	10
1.5	2.0	3.5	16	10	10	16
2.2	3.0	4.4	20	16	16	16
3.0	4.0	6.3	25	20	20	20
4.0	5.5	8.2	32	25	25	25
5.5	7.5	11.2	50	40	40	32
7.5	10	14.4	63	50	50	40
11	15	21	-	-	-	63
15	20	27	-	-	-	80
18.5	25	32	-	-	-	80
22	30	38	-	-	-	80
30	40	51	-	-	-	100
37	50	63	-	-	-	125
45	60	76	-	-	-	125
55	75	91	-	-	-	160
75	100	124	-	-	-	200
90	125	154	-	-	-	250
110	150	183	-	-	-	315
132	175	219	-	-	-	355
150	200	240	-	-	-	355
160	220	257	-	-	-	355

"max. values (kA)"	Upstream	"Breaking capacity IEC 60898-1"	B curve									
			6	10	13	16	20	25	32	40	50	63
Downstream	I <sub>n</sub> (A)											
B Curve	6	6 & 10 & 15kA	-	0.04	0.06	0.07	0.09	0.12	0.15	0.19	0.24	0.31
	10		-	-	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
	13		-	-	-	0.07	0.09	0.11	0.15	0.18	0.23	0.30
	16		-	-	-	-	0.09	0.11	0.14	0.18	0.23	0.29
	20		-	-	-	-	-	0.11	0.14	0.18	0.22	0.28
	25		-	-	-	-	-	-	0.14	0.18	0.22	0.28
	32		-	-	-	-	-	-	-	0.17	0.21	0.27
	40		-	-	-	-	-	-	-	-	0.21	0.27
	50		-	-	-	-	-	-	-	-	-	0.26
	63		-	-	-	-	-	-	-	-	-	-
C Curve	0.5	6 & 10 & 15kA	0.05	0.13	0.21	0.30	0.45	0.71	1.32	2.99	7.52	T
	1		0.03	0.05	0.07	0.09	0.11	0.15	0.19	0.25	0.33	0.43
	2		0.03	0.05	0.07	0.09	0.11	0.14	0.19	0.25	0.32	0.41
	3		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.21	0.26	0.34
	4		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.25	0.33
	6		-	0.04	0.06	0.07	0.09	0.12	0.15	0.19	0.24	0.31
	8		-	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
	10		-	-	0.06	0.07	0.09	0.11	0.15	0.18	0.23	0.30
	13		-	-	-	0.07	0.09	0.11	0.14	0.18	0.23	0.29
	16		-	-	-	-	0.09	0.11	0.14	0.18	0.23	0.29
	20		-	-	-	-	-	0.11	0.14	0.17	0.22	0.28
	25		-	-	-	-	-	-	0.14	0.17	0.21	0.27
	32		-	-	-	-	-	-	-	0.17	0.21	0.26
	40		-	-	-	-	-	-	-	-	0.20	0.25
	50		-	-	-	-	-	-	-	-	-	0.25
	63		-	-	-	-	-	-	-	-	-	-
D Curve	0.5	6 & 10 & 15kA	0.04	0.09	0.13	0.18	0.25	0.35	0.51	1.27	T	T
	1		0.03	0.05	0.07	0.09	0.11	0.14	0.19	0.25	0.32	0.41
	2		0.03	0.05	0.07	0.09	0.11	0.15	0.19	0.25	0.33	0.43
	3		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.26	0.33
	4		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.26	0.33
	6		-	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
	10		-	-	0.06	0.07	0.09	0.11	0.15	0.18	0.23	0.30
	13		-	-	-	0.07	0.09	0.11	0.14	0.18	0.22	0.28
	16		-	-	-	-	0.09	0.11	0.14	0.17	0.22	0.28
	20		-	-	-	-	-	0.11	0.14	0.17	0.21	0.27
	25		-	-	-	-	-	-	0.13	0.16	0.21	0.26
	32		-	-	-	-	-	-	-	0.16	0.20	0.25
	40		-	-	-	-	-	-	-	-	0.20	0.25
	50		-	-	-	-	-	-	-	-	-	0.25
	63		-	-	-	-	-	-	-	-	-	-

C curve															
0.5	1	2	3	4	6	8	10	13	16	20	25	32	40	50	63
-	-	-	-	-	-	0.07	0.09	0.11	0.14	0.18	0.23	0.29	0.37	0.47	0.59
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.29	0.36	0.46	0.57
-	-	-	-	-	-	-	-	-	0.14	0.17	0.22	0.28	0.35	0.45	0.56
-	-	-	-	-	-	-	-	-	-	0.17	0.21	0.28	0.35	0.44	0.55
-	-	-	-	-	-	-	-	-	-	-	0.21	0.27	0.34	0.43	0.54
-	-	-	-	-	-	-	-	-	-	-	-	0.27	0.33	0.42	0.53
-	-	-	-	-	-	-	-	-	-	-	-	-	0.32	0.41	0.51
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40	0.51
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.48
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	0.02	0.05	0.08	0.16	0.27	0.40	0.67	1.11	2.32	5.59	T	T	T	T
-	-	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.40	0.53	0.74	1.22
-	-	-	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.39	0.51	0.72	1.13
-	-	-	-	0.03	0.05	0.07	0.09	0.12	0.15	0.19	0.25	0.32	0.41	0.52	0.67
-	-	-	-	-	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.31	0.39	0.50	0.66
-	-	-	-	-	-	0.07	0.09	0.11	0.14	0.18	0.22	0.29	0.37	0.46	0.58
-	-	-	-	-	-	-	0.08	0.11	0.14	0.17	0.22	0.29	0.36	0.46	0.57
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28	0.35	0.45	0.56
-	-	-	-	-	-	-	-	-	0.13	0.17	0.21	0.28	0.35	0.44	0.55
-	-	-	-	-	-	-	-	-	-	0.17	0.21	0.27	0.34	0.43	0.54
-	-	-	-	-	-	-	-	-	-	-	0.20	0.26	0.33	0.41	0.52
-	-	-	-	-	-	-	-	-	-	-	-	0.26	0.32	0.41	0.51
-	-	-	-	-	-	-	-	-	-	-	-	-	0.31	0.39	0.49
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	0.02	0.04	0.06	0.10	0.16	0.22	0.34	0.46	0.77	7.50	T	T	T	T
-	-	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.39	0.51	0.73	1.19
-	-	-	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.40	0.53	0.74	1.15
-	-	-	-	0.03	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.31	0.40	0.51	0.67
-	-	-	-	-	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.32	0.40	0.51	0.67
-	-	-	-	-	-	0.07	0.08	0.11	0.14	0.18	0.22	0.29	0.36	0.46	0.58
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28	0.35	0.45	0.56
-	-	-	-	-	-	-	-	-	0.13	0.17	0.21	0.27	0.34	0.43	0.54
-	-	-	-	-	-	-	-	-	-	0.16	0.21	0.26	0.33	0.42	0.53
-	-	-	-	-	-	-	-	-	-	-	0.20	0.26	0.32	0.41	0.51
-	-	-	-	-	-	-	-	-	-	-	-	0.25	0.31	0.39	0.49
-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.37	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

D curve

0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63
-	-	-	-	-	-	0.14	0.19	0.23	0.29	0.37	0.48	0.60	0.74	1.04
-	-	-	-	-	-	-	0.18	0.23	0.29	0.36	0.47	0.58	0.71	0.95
-	-	-	-	-	-	-	-	0.22	0.28	0.35	0.46	0.57	0.69	0.90
-	-	-	-	-	-	-	-	-	0.28	0.35	0.45	0.56	0.68	0.86
-	-	-	-	-	-	-	-	-	-	0.34	0.44	0.54	0.67	0.84
-	-	-	-	-	-	-	-	-	-	-	0.43	0.54	0.66	0.83
-	-	-	-	-	-	-	-	-	-	-	-	0.52	0.65	0.81
-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	0.79
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	0.05	0.11	0.18	0.37	1.11	2.70	6.17	T	T	T	T	T	T
-	-	0.03	0.05	0.06	0.10	0.18	0.24	0.31	0.40	0.53	0.76	1.26	2.91	8.59
-	-	-	0.04	0.06	0.10	0.18	0.24	0.30	0.39	0.51	0.74	1.17	2.41	6.80
-	-	-	-	0.06	0.09	0.15	0.20	0.25	0.32	0.41	0.54	0.69	0.95	1.53
-	-	-	-	-	0.09	0.15	0.20	0.24	0.31	0.39	0.52	0.67	0.92	1.42
-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.37	0.48	0.59	0.73	1.00
-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.36	0.47	0.58	0.71	0.95
-	-	-	-	-	-	-	0.18	0.22	0.28	0.35	0.46	0.57	0.71	0.94
-	-	-	-	-	-	-	-	0.22	0.28	0.35	0.45	0.56	0.69	0.89
-	-	-	-	-	-	-	-	-	0.27	0.34	0.44	0.55	0.68	0.87
-	-	-	-	-	-	-	-	-	-	0.33	0.42	0.53	0.66	0.84
-	-	-	-	-	-	-	-	-	-	-	0.42	0.52	0.64	0.80
-	-	-	-	-	-	-	-	-	-	-	-	0.50	0.63	0.79
-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	0.78
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	0.04	0.07	0.11	0.21	0.46	0.99	9.81	T	T	T	T	T	T
-	-	0.03	0.04	0.06	0.10	0.18	0.24	0.30	0.39	0.51	0.76	1.24	2.66	7.44
-	-	-	0.05	0.06	0.10	0.18	0.24	0.31	0.40	0.53	0.76	1.19	2.46	7.61
-	-	-	-	0.06	0.09	0.15	0.20	0.25	0.31	0.40	0.52	0.68	0.92	1.35
-	-	-	-	-	0.09	0.15	0.20	0.25	0.32	0.40	0.53	0.69	0.91	1.26
-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.36	0.47	0.59	0.74	1.01
-	-	-	-	-	-	-	0.18	0.22	0.28	0.35	0.46	0.57	0.71	0.94
-	-	-	-	-	-	-	-	0.21	0.27	0.34	0.44	0.55	0.68	0.89
-	-	-	-	-	-	-	-	-	0.26	0.33	0.43	0.54	0.67	0.86
-	-	-	-	-	-	-	-	-	-	0.32	0.42	0.52	0.64	0.81
-	-	-	-	-	-	-	-	-	-	-	0.40	0.49	0.63	0.80
-	-	-	-	-	-	-	-	-	-	-	-	0.48	0.61	0.78
-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	0.77
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Earth loop impedance ( $Z_s$ ) values for MCBs and MCCBs**

Below are the maximum permissible values of  $Z_s$  to obtain disconnection for compliance with BS 7671:2008 Amendment 3

$I_n$	Max Let-Through Energy ( $kA_2s$ ) at PSCC			Max $Z_s$ (ohms)	
	3kA	6kA	10kA	0.2 - 1s sec	5 sec
<b>MTN/NBN (B Curve)</b>					
6	5.9	10.5	15	7.28	7.28
10	6.5	12.2	21.5	4.37	4.37
16	8.0	17.5	30	2.73	2.73
20	8.8	19.5	34	2.19	2.19
25	10	21	38	1.75	1.75
32	11	24	42	1.37	1.37
40	12.5	29	50	1.09	1.09
50	15	34	61	0.87	0.87
63	16	38	72	0.69	0.69
<b>NCN/HM (C Curve)</b>					
0.5	0.01	0.01	0.01	43.7	62.43
1	4.0	7.0	10	21.85	31.21
2	4.0	7.0	10	10.93	15.61
3	5.0	10.0	15	7.28	10.40
4	5.9	10.5	15	5.46	7.80
6	5.9	10.5	15	3.64	5.20
10	6.5	12.2	21.5	2.19	3.12
16	8.0	17.5	30	1.37	1.95
20	8.8	19.5	34	1.09	1.56
25	10	21	38	0.87	1.25
32	11	24	42	0.68	0.98
40	12.5	29	50	0.55	0.78
50	15	34	61	0.44	0.62
63	16	38	72	0.35	0.50
80	-	-	-	1.27	0.39
100	-	-	-	0.22	0.31
125	-	-	-	0.1	0.25
<b>NDN (D Curve)</b>					
0.5	0.01	0.01	0.01	21.85	62.43
1	4.0	7.0	10	10.93	31.21
2	4.0	7.0	10	5.46	15.61
3	5.0	10.0	15	3.64	10.40
4	5.9	10.5	15	2.73	7.80
6	5.9	10.5	15	1.82	5.20
10	6.5	12.2	21.5	1.09	3.12
16	8.0	17.5	30	0.68	1.95
20	8.8	19.5	34	0.55	1.56
25	10	21	38	0.44	1.25
32	11	24	42	0.34	0.98
40	12.5	29	50	0.27	0.78
50	15	34	61	0.22	0.62
63	16	38	72	0.17	0.50
80				0.14	0.39
100				0.11	0.31
125				0.09	0.25

**Residual Current Devices**

A residual current device (RCD) is the generic term for a device which simultaneously performs the functions of detection of the residual current, comparison of this value with the rated residual operating value and opening the protected circuit when the residual current exceeds this value. These devices can take several different forms i.e. Residual Current Circuit Breaker (RCCB), Residual Current Circuit Breaker with integral Overload protection (RCBO), or a residual current device incorporated within a socket outlet or other accessory (SRCD)

Residual current circuit breakers (RCCB) protect against earth faults only and not short circuits. They are usually therefore used in conjunction with overcurrent protective devices.

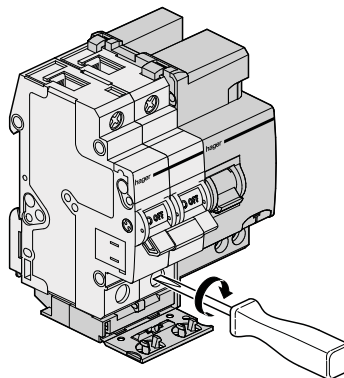
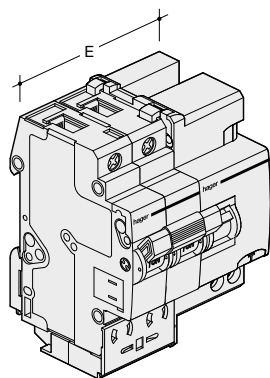
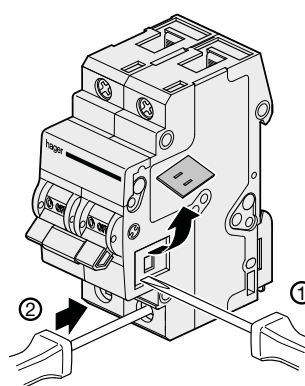
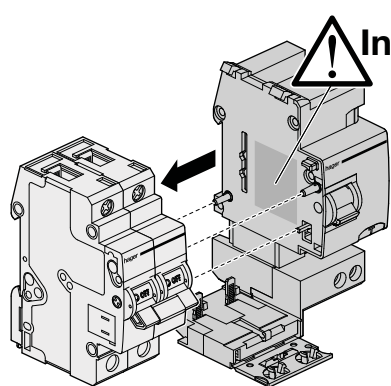
**MCB/RCCB Co-ordination**

Short circuit capacity of the RCCB only		With MCB's			
RCCB		MTN 6-63A B	NBN 6-63A B	NCN 6-63A C	NDN 6-63A D
<b>2 poles</b>					
16A	1500A	6kA	10kA	10kA	6kA
25A	1500A	6kA	10kA	10kA	6kA
40A	1500A	6kA	10kA	10kA	6kA
63A	1500A	6kA	10kA	10kA	6kA
80A	1500A	6kA	10kA	10kA	6kA
100A	1500A	6kA	10kA	10kA	6kA
<b>4 poles</b>					
16A	1500A	6kA	6kA	6kA	4.5kA
25A	1500A	6kA	6kA	6kA	4.5kA
40A	1500A	6kA	6kA	6kA	4.5kA
63A	1500A	6kA	6kA	6kA	4.5kA
80A	1500A	6kA	6kA	6kA	4.5kA
100A	1500A	6kA	6kA	6kA	4.5kA



$I_n$	≤63A	≤63A				
Sensitivity	30mA	100mA	300mA	30mA	100mA	300mA
Cat ref. (Standard)	BD264	BE264	BF264	BD464	BE464	BF464
Cat ref. (Time Delayed)	BN264	BP264		BN464	BP464	
MCB Suitability						
NBN	6-63A	6-63A	6-63A	6-63A	6-63A	6-63A
NCN	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A
NDN	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A
Width when combined with MCB	4 Module 70mm			7 Module 122.5mm		

## Mounting



	Non-Adjustable		Adjustable						
	HR500	HR502	HR510	HR520	HR522	HR523	HR525/HR534	HR440	HR441
Supply Voltage ~50/60Hz	220-240V								
Residual Voltage ~50/60Hz	500V Maximum								
Power Absorbed	3VA	5VA							
Output	Volt Free Contacts								
Contact Rating	6A / 250V AC-1								
Sensitivity IΔn	30mA	300mA	30mA / 100mA / 300mA / 500mA / 1A / 3A / 10A			500mA / 1A / 3A / 5A / 10A / 20A / 30A	30mA / 100mA / 300mA / 500mA / 1A / 3A / 5A / 10A / 30A	30mA / 100mA / 300mA / 500mA / 1A / 3A	
Instantaneous / Time Delay	Instantaneous		Instantaneous or Time Delay 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 seconds		Instantaneous or Time Delay 0.1 - 0.2 - 0.25 - 0.3 - 0.4 - 0.5 seconds		Instantaneous or Time Delay 0.02 - 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 - 5 - 10 seconds	Instantaneous or Time Delay 0.1 - 0.3s - 0.5s - 0.75s - 1s	
Torroid Withstand Capacity	50kA / 0.2s								
Distance between Torroid and Relay	50 Meter Maximum								
Relay Cable Connection <ul style="list-style-type: none"><li>• Rigid</li><li>• Flexible</li></ul>	1.5mm² to 10mm² 1mm² to 6mm²								
Torroid Cable Conection <ul style="list-style-type: none"><li>• Rigid</li><li>• Flexible</li></ul>	1.5mm² to 4mm² 1mm² to 2.5mm²								
Relay <ul style="list-style-type: none"><li>• Working Temperature</li><li>• Storage Temperature</li></ul>	-10°C to +55°C -25°C to +40°C		-5°C to +55°C -25°C to +40°C						
Torroid <ul style="list-style-type: none"><li>• Working Temperature</li><li>• Storage Temperature</li></ul>	-10°C to +70°C -40°C to +70°C		-10°C to +70°C -40°C to +70°C						

### Main Characteristics

#### "Reset" Button

When pressed, the output remains switched and return to normal is obtained by either: by pressing the "reset" clear pushbutton or cutting off the power supply. If the "reset" button is not pressed the device remains in the fault position.

#### Test Button

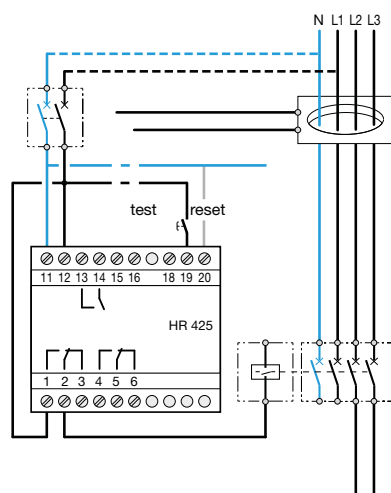
Pressing the test button allows a fault simulation which operates the relay and the output contacts. The fault level display is shown by an LED on the front of the product.

#### I $\Delta$ n Selector

Sensitivity setting: 0.03A instantaneous  
0.1A/0.3A/1A and 3A time delay

#### Time Delay Selector

Adjustable time setting - instantaneous / 0.13s / 0.3s / 1s and 3s



### Sealable Settings

A sealable cover prevents interference once the settings have been made.

#### Standard Output (1 C/O contact)

Switching to state 1 on:

- Failure of the core/relay connection
- Fault current in the monitored installation

#### Positive Safety Outlet (1 C/O contact)

Switching to state 1: Switching on the power

Switching to state 0: Failure of the core/relay connection  
fault current in the monitored installation  
failure of relay supply  
internal failure of relay

Optical scale display by 5 LEDs of the fault in % of I $\Delta$ n

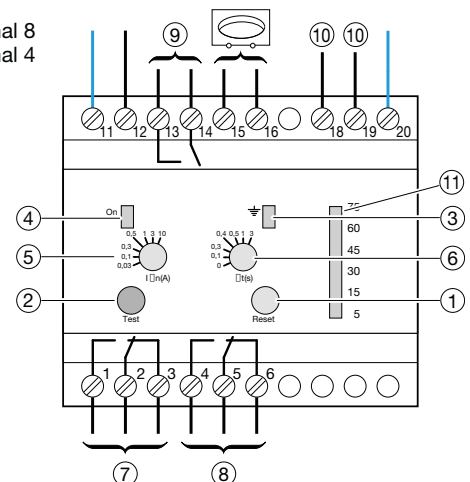
Optical scale display by (5 LEDs) of the fault in % of I $\Delta$ n

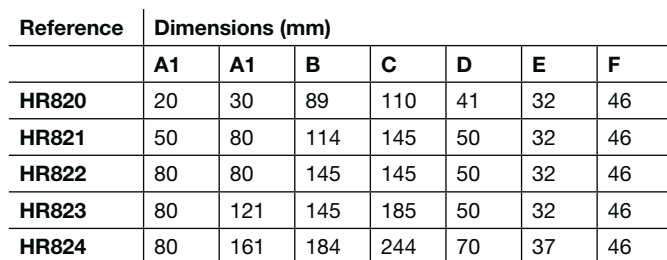
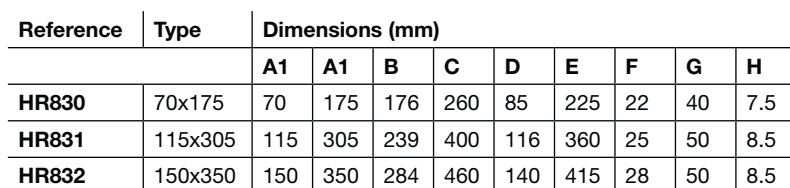
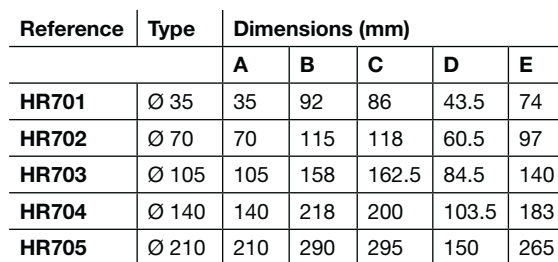
Common pin 6:

State 1 : output terminal 8



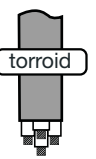

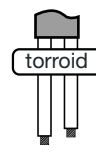


State 0 : output terminal 4

1. Reset push button
2. Test push button
3. Fault signal LED
4. Device on indicator
5. Sensitivity setting
6. Time delay setting
7. Standard output
8. Safety output
9. Prealarm output
10. Remote reset
11. Optical scale





## Mounting of Circular Torroids

Ø	Type of Torroids	With Cables						
		U 1000 R2V Single Pole	U 1000 R2V Single Pole	U 1000 R2V Multi Pole	U 1000 R2V Multi Pole	U 1000 R2V Multi Pole	H07 V - U Single Pole	H07 V - U Single Pole
								
30	HR700	4 x 16mm <sup>2</sup>	2 x 50mm <sup>2</sup>	35mm <sup>2</sup>	35mm <sup>2</sup>	50mm <sup>2</sup>	4 x 35mm <sup>2</sup>	2 x 70mm <sup>2</sup>
35	HR701	4 x 25mm <sup>2</sup>	2 x 70mm <sup>2</sup>	50mm <sup>2</sup>	35mm <sup>2</sup>	70mm <sup>2</sup>	4 x 50mm <sup>2</sup>	2 x 95mm <sup>2</sup>
70	HR702	4 x 185mm <sup>2</sup>	2 x 400mm <sup>2</sup> or 4 x 150mm <sup>2</sup>	240mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 240mm <sup>2</sup>	2 x 400 or 4 x 185mm <sup>2</sup>
105	HR703	4 x 500mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 185mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
140	HR704	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
210	HR705	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
70 x 175	HR830	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
115 x 305	HR831	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
150 x 350	HR832	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
20 x 30	HR820	4 x 16mm <sup>2</sup>	2 x 70mm <sup>2</sup>	10mm <sup>2</sup>	35mm <sup>2</sup>	16mm <sup>2</sup>	4 x 10mm <sup>2</sup>	2 x 35mm <sup>2</sup>
50 x 80	HR821	4 x 240mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 185mm <sup>2</sup>	120mm <sup>2</sup>	35mm <sup>2</sup>	150mm <sup>2</sup>	4 x 185mm <sup>2</sup>	2 x 240mm <sup>2</sup>
80 x 80	HR822	4 x 500mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 185mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
80 x 120	HR823	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
80 x 160	HR824	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>

		SPN801 / SPN801R	SPN802 / SPN802R
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12	EN 61643-11 (VDE0675-6-11) 2002-12
		L1/L2/L3/N => PE	L1/L2/L3 => N      N => PE
SPD type / class		Type 1 + Type 2 / I / B	
Type of connexion		Parallel connection	
Type of power supply system		TN-S - System	TT - System
Type of protection		Common modes	Common and differential modes
Nominal voltage	U <sub>N</sub>	230V / 400V ac	
Rated voltage	U <sub>c</sub>	255V ac	
Voltage protection level	U <sub>p</sub>	≤ 1.5kV	255V ac
TOV-voltage	U <sub>T</sub>	440V / 5s	1200V / 200ms
Rated load current	I(L)	315A	
	I(L-L)	125A	
Follow current interrupting rating	I <sub>fi</sub>	50 kA	100kA
Nominal discharge current (8/20)	I <sub>n</sub>	100kA	25kA      100kA
Impulse current (10/350)	I <sub>imp</sub>	100kA	25kA      100kA
Residual current	I <sub>PE</sub>	≤ 100mA	
Max. rating of overcurrent protection	fuse	125A gL / gG serial or 315A parallel	
	MCCB	125A serial or 160A parallel	
Short-circuit withstand capability with max. overcurrent protection	fuse	50kA ac	25kA ac
	MCCB	50kA ac	25kA ac
Response time	t <sub>A</sub>	< 100ns	
Operating temperature range		- 40°C ....+ 60°C	
Indication of SPD disconnect		Green - red on L1, L2, L3, N	
Cross sectional area	min	10mm <sup>2</sup> solid / flexible	
L1, L2, L3, PE	max	50mm <sup>2</sup> multi-stranded / 35mm <sup>2</sup> flexible	
Tightening torque for terminals		7.0 Nm	
Mounting on		35mm DIN rail in accordance with EN 60715	
Enclosure material		grey thermoplastic, UL 94V-0	
Degree of protection		IP20	
Modular width		6	8
Weight		1260 g	1272 g
Approval marking		VDE	

		SPA201	SPA401
Tested to		EN 61643-11 2002-12	
SPD type / class		Type 1 + Type 2 / Class I	
Energy-coordinated protection effect on terminal equipment		Type 1 + Type 2	
Energy-coordinated protection effect on terminal equipment $\leq 5$ m		Type 1 + Type 2 + Type 3	
Type of connexion		Parallel connection	
Type of power supply system		TT / TN system	
Type of protection		common and differential modes	
Nominal voltage	$U_N$	230V/400V ac	
Rated voltage	$U_c$	255V ac	
Voltage protection level	$U_p$	$\leq 1.5$ kV	
TOV Voltage	$U_T$	440V / 5s 1200V / 200ms	
Rated load current	$I(L)$	n/a	
	$I(L-L)$	n/a	
Follow current interrupting rating	$I_{fi}$	25kA rms 100A rms	
Nominal discharge current (8/20)	$I_n$	12.5kA 25kA	12.5kA 50kA
Impulse current (10/350)	$I_{imp}$	12.5kA 25kA	12.5kA 50kA
Max. rating of overcurrent protection	fuse	160A gL / gG	
	MCCB	n/a	160A
Short-circuit withstand capability with max. overcurrent protection	fuse	25kA rms	
	MCB	n/a	
Response time	$t_A$	$\leq 100$ ns	
Operating temperature range		- 40°C ....+ 80°C	
Indication of SPD disconnector		Green/Red flag on L and N	Green/Red flag on L1, L2, L3 and N
Cross sectional area	min	1,5mm <sup>2</sup> solid / flexible	
	max	35mm <sup>2</sup> stranded / 25mm <sup>2</sup> flexible	
Tightening torque for terminals		4 Nm	
Mounting on		35mm DIN rail in accordance with EN 60715	
Enclosure material		grey thermoplastic, UL 94V-0	
Degree of protection		IP20	
Modular width		2	4
Weight		275 g	480 g
Approval marking		KEMA	

		SPN215D/R	SPN415D/R	SPN440D/R
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12		
SPD type		Type 2 according to EN 61643-11		
SPD class		Class II according to IEC 61643-1		
Type of connexion		Parallel connection		
Maximum continuous operating voltage $U_c$	Line / Neutral	$\leq 255V$		
	Neutral/ PE	$\leq 275V$		
Voltage protection level	$U_p$	$\leq 1kV$	$\leq 1kV$	$\leq 1.2kV$
Nominal discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_n$	5kA	5kA	15kA
Max. discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_{max}$	15kA	15kA	40kA
Short-circuit withstand capability with max. overcurrent protection		10kA - 32A	10kA - 32A	20kA - 32A
Operating temperature range		- 40°C ....+ 80°C		
Indication of SPD disconnecter		Green - Yellow - Red		
Cross sectional area	min	1,5mm <sup>2</sup> solid / flexible		
	max	35mm <sup>2</sup> multi-stranded / 25mm <sup>2</sup> flexible		
Tightening torque for terminals		4.0 Nm		
Mounting on		35mm DIN rail in accordance with EN 60715		
Enclosure material		grey thermoplastic, UL 94V-0		
Degree of protection		IP20		
Modular width (DIN 43880)		2	2	4
Auiliary contact. Voltage/ nominal current (only applicable on the R suffix products)		230V/ 0.5A 12Vdc 10mA		

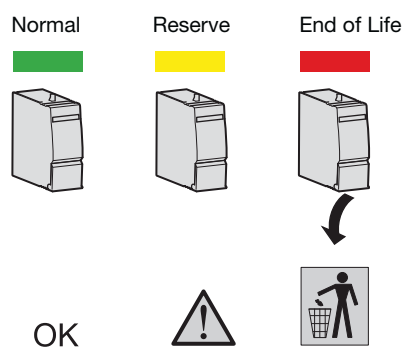
		SPV325
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12
SPD type		Type 2 according to EN 61643-11
SPD class		Class II according to IEC 61643-1
Type of connexion		Parallel connection
Maximum continuous operationg voltage	$U_{CPV}$	$\leq 1000V$
Voltage protection level	$U_p$	$\leq 4kV$
Voltage protection level for 5kA	$U_p$	$\leq 3,5kV$
Total discharge current (8/20 $\mu s$ )	$I_{total}$	40kA
Nominal discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_n$	12.5kA
Max. discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_{max}$	25kA
Short-circuit withstand capability with max. overcurrent protection	$I_{scwPV}$	50 A / 1000 V DC
Response time	$t_A$	$\leq 25ns$
Operating temperature range		- 40°C ....+ 80°C
Indication of SPD disconnecter		green - red
Cross sectional area	min	1.5mm <sup>2</sup> solid / flexible
	max	35mm <sup>2</sup> multi-stranded / 25mm <sup>2</sup> flexible
Tightening torque for terminals		4.0 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		Grey thermoplastic, UL 94V-0
Degree of protection		IP20
Installation width		3 modules, DIN 43880
Weight		316g



Characteristics		
Tested to		EN 61643-11 (VDE0675-6-11) 2007-08
SPD type / class		T3 / III
Ports		one port
Type of connection		Parallel connection
Type of power supply system		TT / TN system
Nominal voltage	$U_N$	230V ac
Rated voltage	$U_c$	255V ac
Voltage protection level (L - N)	$U_p$	$\leq 1.25kV$
Voltage protection level (L/N - PE)	$U_p$	$\leq 1.5kV$
TOV - Characteristic (L - N)	$U_T$	335V / 5s
TOV - Characteristic (L/N - PE) (I)	$U_T$	400V / 5s
TOV - Characteristic (L/N - PE) (II)	$U_T$	1200V / 200 ms
Rated load current	$I_L$	16 Aeff
Nominal discharge current (8/20)	$I_n$	3kA
Maximal discharge current (8/20)	$I_{max}$	5kA
Combination wave (1,2/50 - 8/20) (L - N)	$U_{oc}$	6 kV
Combination wave (1,2/50 - 8/20) (L/N - PE)	$U_{oc}$	10 kV
Residual current	IPE	$\leq 5\mu A$
Replacement cartridge		NO
Maximal rating of overcurrent protection	fuse	16 A gL / gG
	MCB	16A B curve
Short-circuit withstand capability with max. overcurrent protection	fuse	6kA eff ac
	MCB	1kA eff ac
Response time	$t_A$	$\leq 25ns$
Operating temperature range		- 25°C .....+ 40°C
Indication of SPD disconnector		NO
Remote signalisation contact		Green light off
Cross sectional area	min	1.5mm <sup>2</sup> solid / flexible
	max	10mm <sup>2</sup> stranded / 6mm <sup>2</sup> flexible
Tightening torque for terminals		1.2 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		Grey thermoplastic, UL 94V-2
Degree of protection		IP20
Installation width		2 modules, DIN 43880

## Reserve Indicator Light

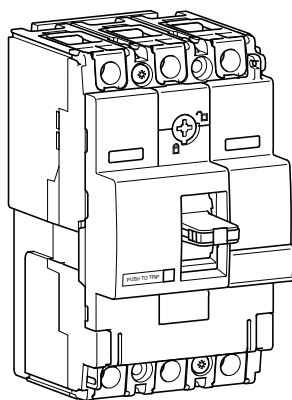
Neutral cartridges cannot be put into spares reserved for phase cartridges and visa versa.



Frame	x160				x250		
Product	MCS Switch		MCCB		MCS Switch	MCCB	
Reference	HCA	HDA	HHA	HNA	HCB	HHB	HNB
Number of poles	[No.] 3-4	1-2-3-4	1-2-3-4	3-4	3-4		
Electrical characteristics							
Rated current	I <sub>n</sub> [A]	160			250		
Current rated range	[A]	125-160	16-125 (1P), 16-160 (2, 3, 4P)		250	100-250	
Rated service voltage, (AC)	U <sub>e</sub> [V]	220-440			220-440		
Frequency	F [Hz]	50/60			50/60		
Rated insulation voltage	U <sub>i</sub> [V]	690			800		
Rated impulse withstand voltage	U <sub>imp</sub> [kV]	8			8		
Rated ultimate short-circuit breaking capacity, (I <sub>cu</sub> )							
(AC) 50-60 Hz 220/230 V	I <sub>cu</sub> [kA]	-	25	35	85	-	35 85
(AC) 50-60 Hz 380/415 V	I <sub>cu</sub> [kA]	-	18	25	40	-	25 40
(AC) 50-60 Hz 480/500/525 V	I <sub>cu</sub> [kA]	-	6	7.5	12.5	-	- 10
(AC) 50-60 Hz 660/690 V	I <sub>cu</sub> [kA]	-	-	-	6	-	- 4
(DC) 250 V - 2 poles in series	I <sub>cu</sub> [kA]	-	12.5	20	25	-	25 25
Rated service short-circuit breaking capacity, (I <sub>cs</sub> )							
(AC) 50-60 Hz 220/230 V	I <sub>cs</sub> [kA]	-	25	25	40	-	25 40
(AC) 50-60 Hz 380/415 V	I <sub>cs</sub> [kA]	-	18	20	20	-	20 20
(AC) 50-60 Hz 480/500/525 V	I <sub>cs</sub> [kA]	-	3	4	7.5	-	- 7.5
(AC) 50-60 Hz 660/690 V	I <sub>cs</sub> [kA]	-	-	-	3	-	- 2
(DC) 250 V - 2 poles in series	I <sub>cs</sub> [kA]	-	7	10	13	-	13 13
Rated short-circuit making capacity	I <sub>cm</sub> [kA]	2.8	-	-	-	6	- -
Rated short-time withstand current for 1s	I <sub>cw</sub> [kA]	2	-	-	-	3	- -
Category of use (EN 60947-2)		-	A			-	A
Calibration temperature		-	50°C			-	50°C
Derating 40°C		-	100%			-	100%
50°C		-	100%			-	100%
55°C		-	95%			-	94%
60°C		-	93%			-	91%
65°C		-	90%			-	88%
Suitability for isolation		ok			ok		
Electric endurance in number of cycles		10000			10000		
Mechanical endurance in number of operations		20000			20000		
Operating temperature		-25 to +70°C			-25 to +70°C		
Storage temperature		-35 to +70°C			-35 to +70°C		
Power loss (at I <sub>n</sub> for 3P)	[W]	39			60		
Reference standard		IEC 60947-3	IEC 60947-2		IEC 60947-3	IEC 60947-2	
Releases: switch		ok	-		ok	-	
Releases: TM (thermomagnetic)		-	ok		-	ok	
T fixed, M fixed		-	ok (1P)		-	ok	
T adjustable, M fixed		-	ok		-	-	
T adjustable, M adjustable		-	-		-	ok	
Thermal adjustment value		-	0.63 to 1 x I <sub>n</sub>		-	0.63 to 1 x I <sub>n</sub>	
Magnetic adjustment value		-	-		-	6-8-10-13 x I <sub>n</sub> (200A) 5-7-9-11 I <sub>n</sub> (250A)	
Releases: LSI (electronic)		-	-		-	-	
Long delay		-	-		-	-	
Short delay		-	-		-	-	
Time delay		-	-		-	-	
Terminations							
Standard terminal type		cage			lugs		
Maximum terminal capacity		95 mm²			185 mm² (cage)		
Terminal width	mm	-			25		
Terminal shields		ok			ok		
Cage terminal		integrated			ok		
Extended connections		ok			ok		
Rear connections		no			ok		
Dimensions							
Height	mm	130			165		
Width	1P mm	-	25	-	-		
	2P mm	-	50	-	-		
	3P mm	75			105		
	4P mm	100			140		
Depth	mm	68			68		
Weight	1P kg	-	0.29	-	-		
	2P kg	-	0.48	-	-		
	3P kg	0.715			1.3		
	4P kg	0.95			1.6		

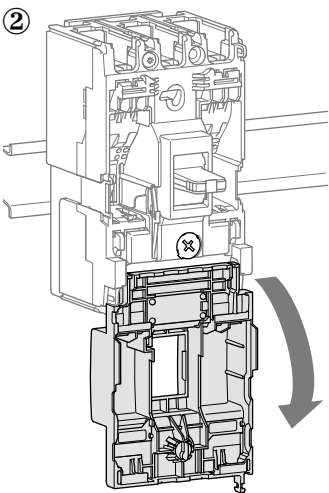
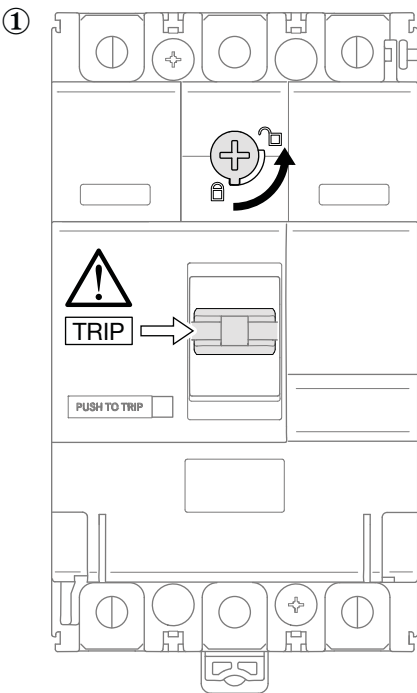
Product Frame		Add-on blocks		
		x160	x160	x250
Number of poles		3 , 4	3 , 4	4
Tripping Access		mechanical	mechanical	mechanical
Standards CEI/EN 60947-2 appendix B		✓	✓	✓
<b>Electrical Characteristics</b>				
Max rated current (40) $I_n$ A	$I_n$	125A	125 - 160A	160 - 250A
Rated service voltage $U_e$ V AC (50/60Hz)	$U_e$	240 - 415V	240 - 415V	240 - 415V
<b>Mechanical Characteristics</b>				
Top and bottom supply		✓	✓	✓
For tripping, no additional external electrical sources		✓	✓	✓
Possible operating with 2 active phases		✓	✓	✓
<b>Settings</b>				
Sensitivity $I_{\Delta n}$	$I_{\Delta n}$ (A)	300mA	0.03, 0.1, 0.3, 1, 3, 6A	0.03, 0.1, 0.3, 1, 3, 6A
Time delay $\Delta t$	$\Delta t$ (s)	inst.	inst., 0.06, 0.15, 0.3, 0.5, 1	inst., 0.06, 0.15, 0.3, 0.5, 1
Max. opening time	ms	10	10	10
Delay add-on block is not possible if $I_{\Delta n} = 30$ mA		-	✓	✓
Selective product		-	✓	✓
Mechanical test button		✓	✓	✓
Isolating test without cable removal		✓	✓	✓
Electrical test button		✓	✓	✓
Reset button		✓	✓	✓
Sealable setting button		-	✓	✓
Isolation level signaling by led 25 and 50%		-	✓	✓
$I_n$ running signalisation by led		-	✓	✓
Residual default signaling contact		✓	✓	✓
Signaling contact 50% $I_{dn}$		-	✓	✓
Anti-transient	type AC	✓	✓	✓
Pulsating DC current	type A	✓	✓	✓
High immunity	type HI	✓	✓	✓
-25°C		✓	✓	✓
<b>Accessories and connection</b>				
Steel terminal cage (x3/x4)		✓	✓	accessories
Connection by lugs		-	-	✓
Extended connections (x4)		✓	✓	✓
Spreaders (x4)		✓	✓	✓
Terminal covers (3P/4P)		-	-	✓
Interphase barriers (x3)		✓	✓	✓
Rigid cables connection capacity mm <sup>2</sup>		4 - 95	4 - 95	35 - 185
Flexible cables connection capacity mm <sup>2</sup> (with terminal)		4 - 70	4 - 70	35 - 150
Tightening torque Nm		6	6	12
Copper bar (width) in mm		-	-	25
<b>Mounting</b>				
Clips on DIN rail		✓	✓	-
Fixed on mounting plate		-	-	✓
Fixation type		side	side	bottom
Mounting by customer		✓	✓	✓
<b>Dimensions and weight</b>				
Dimensions (WxHxD) in mm Side mounted 4P	W	100	100	140
	H	165	165	107.5
	D	95	95	85
Weight	3P	1.4	1.4	-
	4P	1.55	1.55	1.2

MCCBs

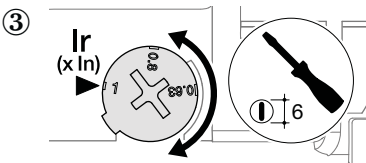


		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HDA	Icu	25 kA	18 kA
	Ics	25 kA	18 kA
HHA	Icu	35 kA	25 kA
	Ics	25 kA	20 kA
HCA	Icm	-	2.8 kA
	Icw	-	2 kA - 1s

Thermal settings



For DIN rail mounting, use HYA033H.



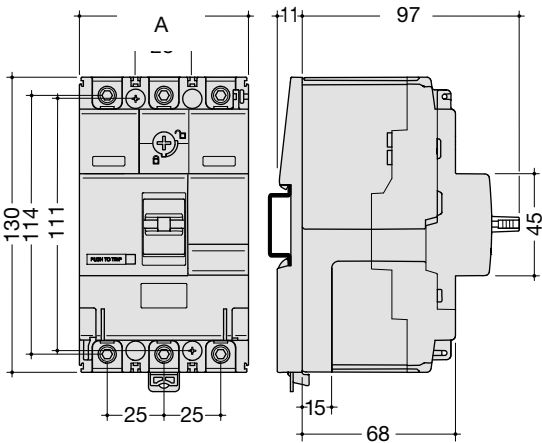
Thermal adjustment from 0.63 to 1 x  $I_n$

Magnetic adjustment fixed > 10 x  $I_n$

$I_n$	16 - 50 A	63 - 80 A	100 - 125 A	160 A
$I_{mag}$	600 A	1000 A	1500 A	1600 A

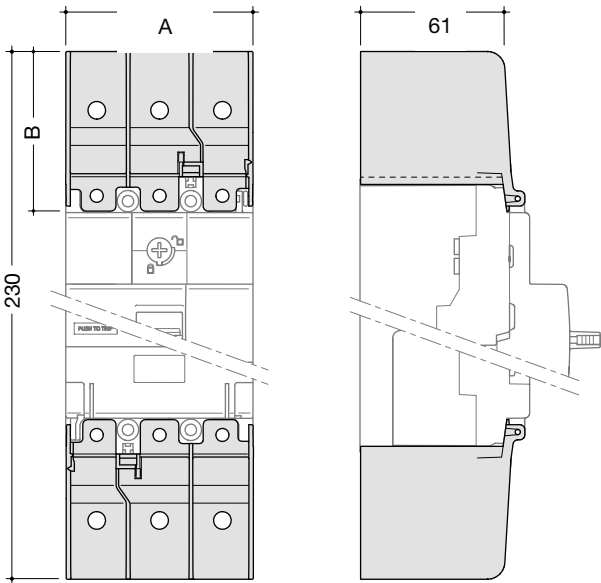
Dimensions

MCCB x160



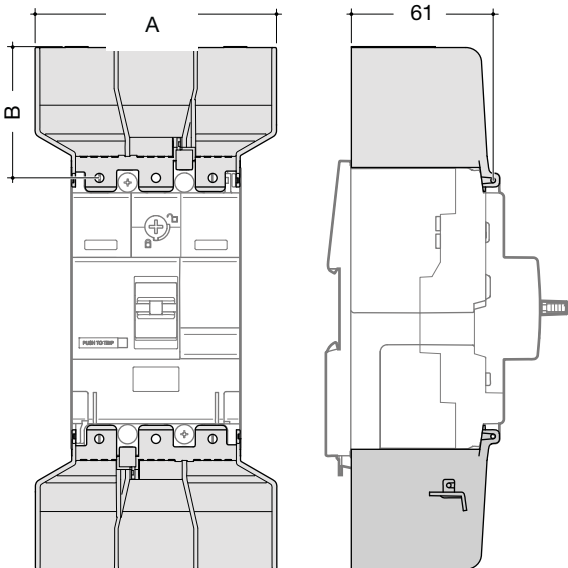
	A (mm)
1P	24.8
3P	74.5
4P	99.5

Terminal covers for extended straight connections



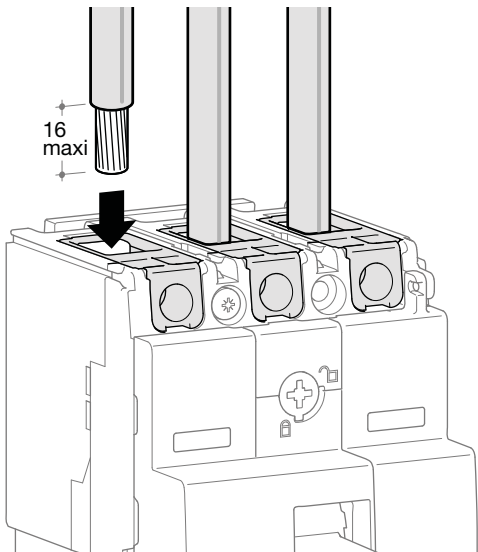
	A (mm)
1P	24.4
3P	74.5
4P	99.5

Terminal cover for extended spreader connections



	A (mm)
3P	106.5
4P	141.5

Connection with terminals



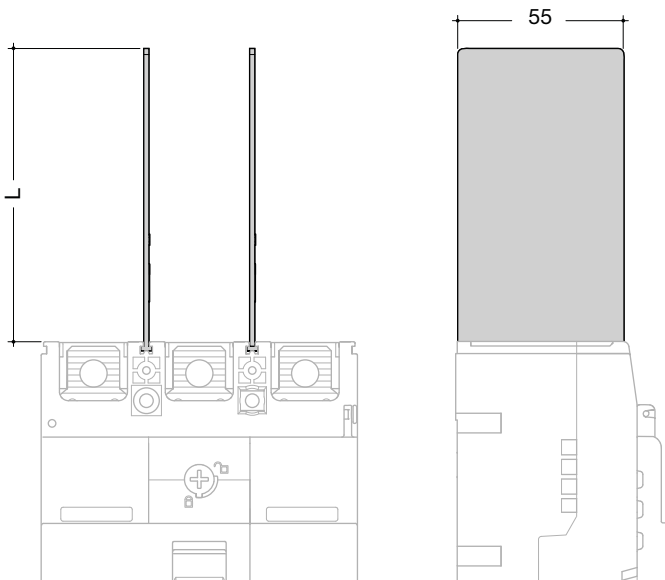
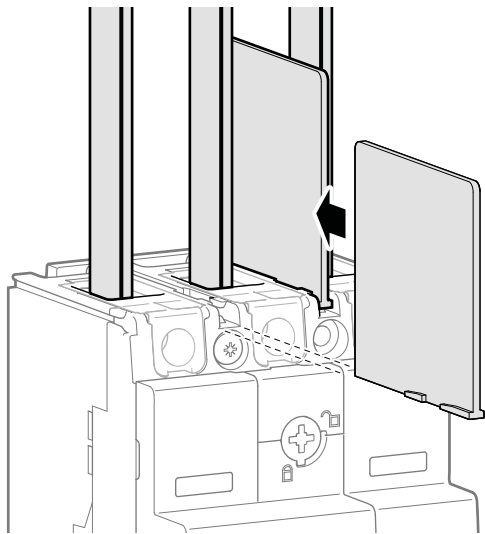
Terminals for copper conductors (standard)

	min. 6 mm <sup>2</sup>	max. 70 mm <sup>2</sup>
	min. 6 mm <sup>2</sup>	max. 95 mm <sup>2</sup>
	6 Nm	

Terminals for aluminium / copper conductors (accessory)  
HYA005H, HYA006H

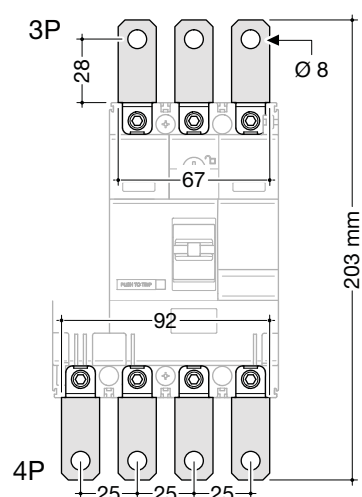
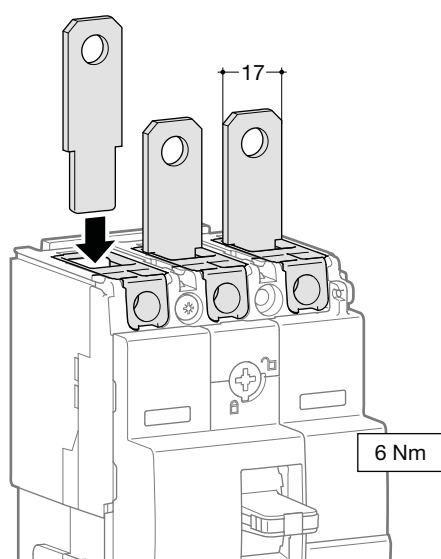
	min. 35 mm <sup>2</sup>	max. 70 mm <sup>2</sup>
	10 Nm	

Interphase barriers

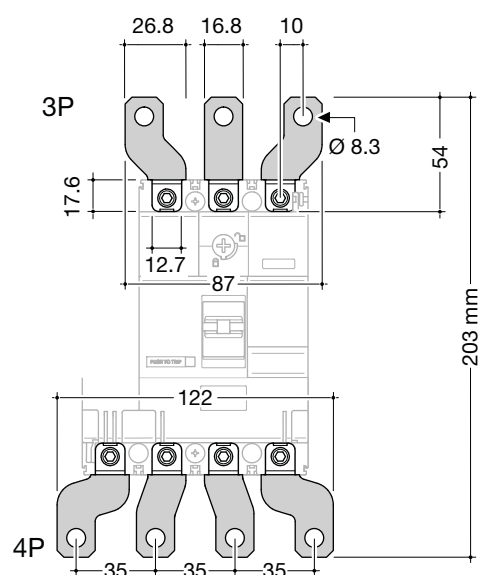
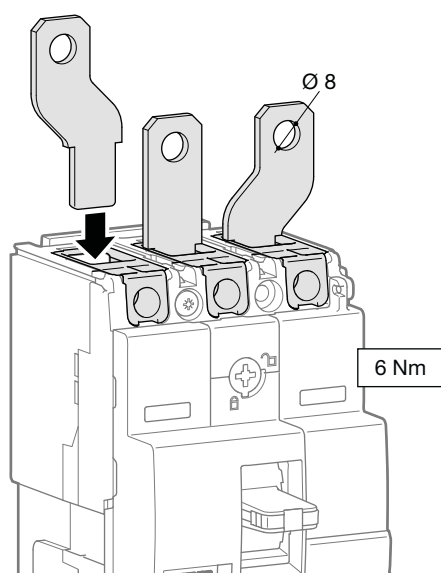


	L (mm)
<b>HYA019H</b>	50
<b>HYB019H</b>	97

## Extended straight connections

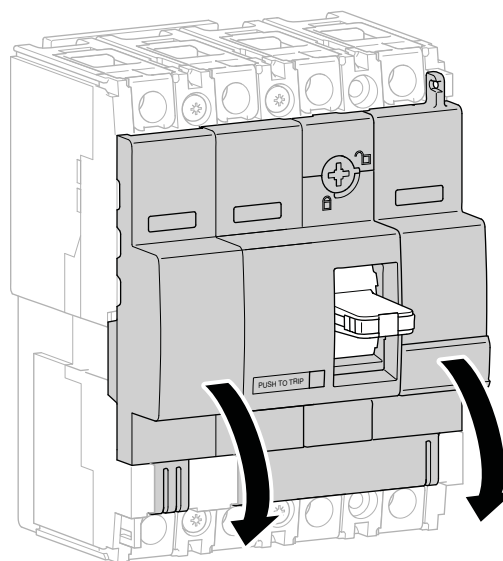
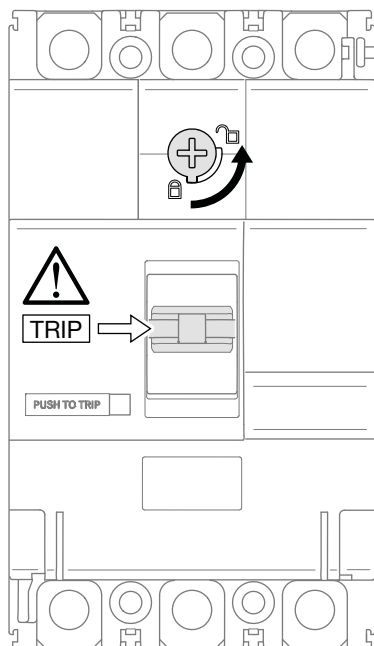


## Extended spreader connections



## Auxiliaries

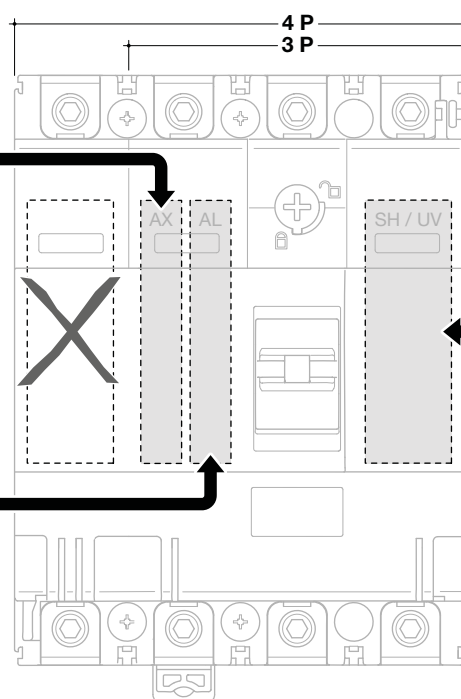
### Auxiliaries for MCCBs and moulded case switches



### Mounting combination for auxiliaries and releases

AX  
Auxiliary contact

AL  
Alarm contact

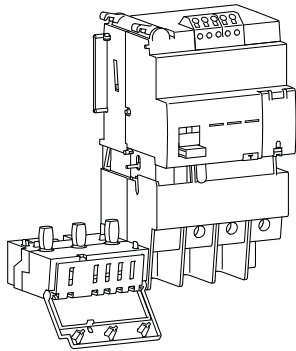


SH  
Shunt trip

UV  
Undervoltage release

DUVR  
Delayed  
undervoltage  
release





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contact.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type ). It also avoids miss tripping (HI type - High Immunity).

## Characteristics

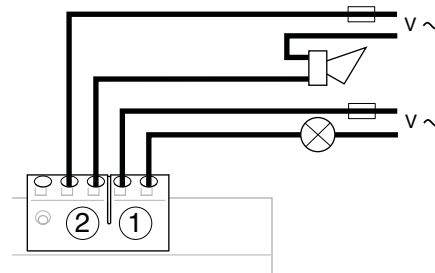
**Reset button :**  
Signals add-on block tripping and must be reset before switching on the installation.

**Test button for RCD function :**  
Checks the electrical operating of the MCCB / Add-on block association.

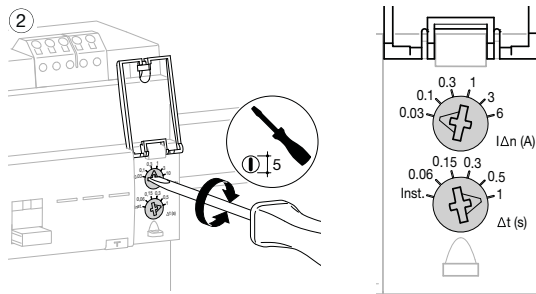
**Mechanical test button :**  
Checks the mechanical operating of the MCCB / Add-on block association.

**LED signaling residual current level in the installation:**  
25% (orange) and 50% (red)  $I_{\Delta n}$ ; green light to signal correct operating.

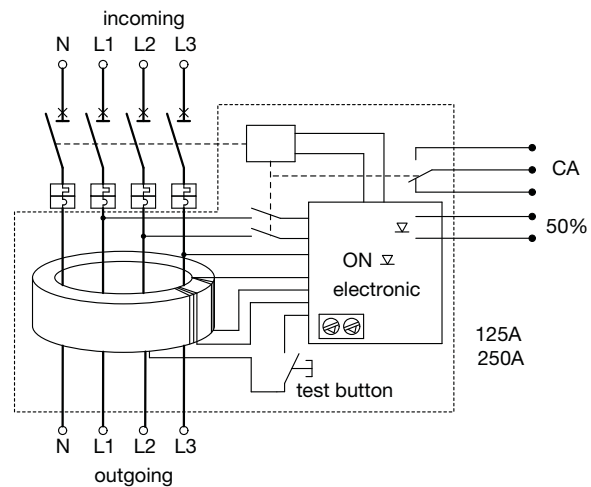
**Remote tripping and advanced warning (50%  $I_{\Delta n}$ ) signaling thanks to these contacts:**



## Earth leakage current ( $I_{\Delta n}$ ) and delay ( $\Delta t$ ) setting



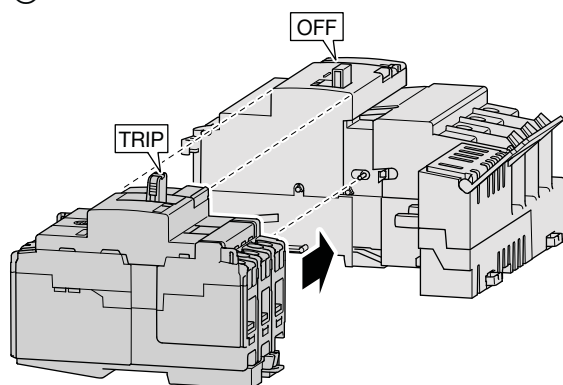
## Add-on block operating



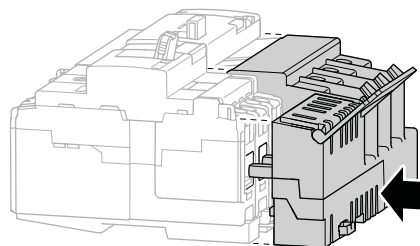
$S$ (A)	$I_{\Delta n}$ (A)						
	0.03	0.1	0.3	1	3	6	
Inst.	OK	OK	OK	OK	OK	OK	
0.06	no	OK	OK	OK	OK	OK	
0.15	no	OK	OK	OK	OK	OK	
0.3	no	OK	OK	OK	OK	OK	
0.5	no	OK	OK	OK	OK	OK	
1	no	OK	OK	OK	OK	OK	

## Add-on block mounting

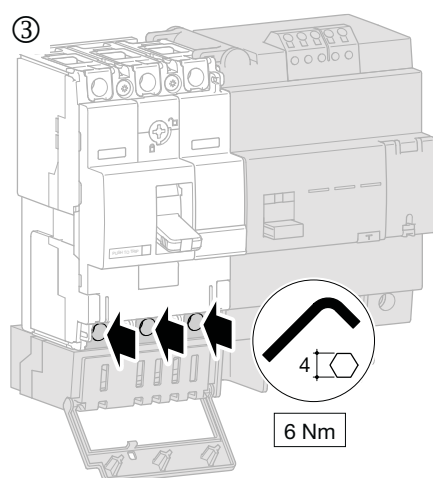
①



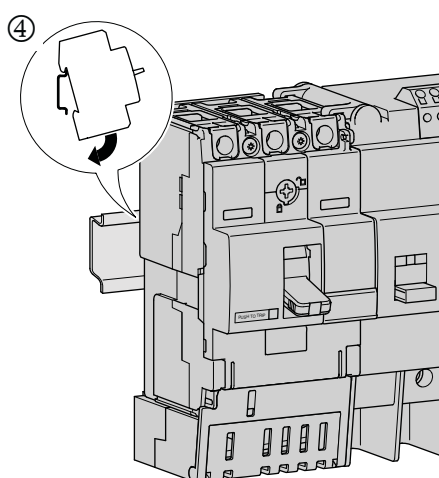
②



③



④

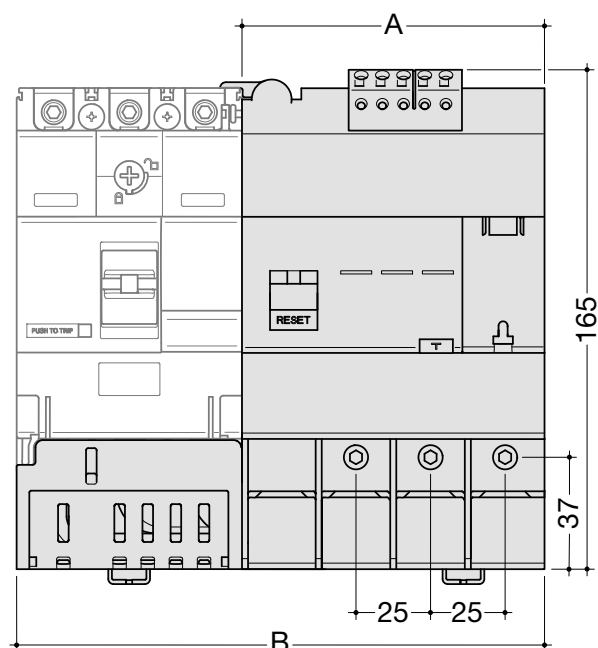


Exclusive drawer assembly system allows quick mounting and makes MCCB and add-on block association a complete monoblock unit.

Reinforced insulation connexion (class II)

System avoids the omission of terminal tightening

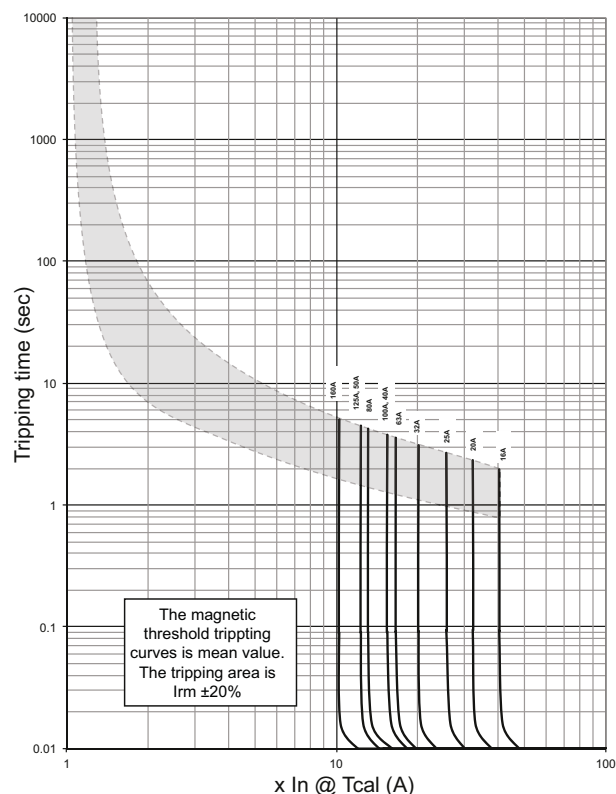
## Dimensions



	3P	4P
A (mm)	100	100
B (mm)	174.5	199.5

## Tripping curve

### MCCB x160

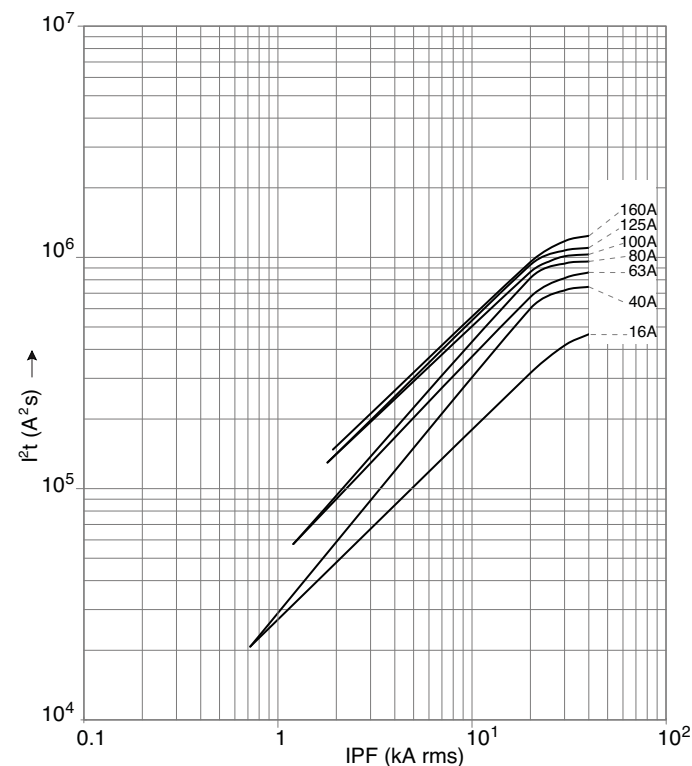


The earth fault loop impedance requirements for larger devices can be calculated by the formula given in BS7671:2008  
 $Z_s \leq 230 \times C_{min}$

Where  $I_a = I_n$  of MCCB x Mag setting x 1.2

### Thermal constraint curve at 400V (Let-through energy)

#### MCCB x160



## MCCB Disconnection Data

### Earth Fault Loop Impedance Data

Disconnection time 0.2s, 0.4s, 1s

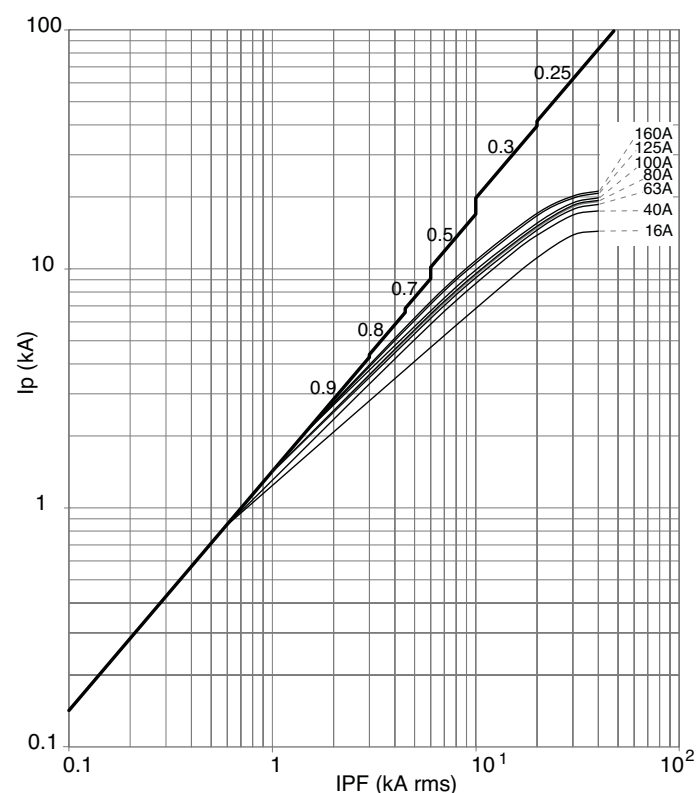
Device rating (A)	Instantaneous trip ( $xI_n$ )	Instantaneous trip (A)	add 20% tolerance ( $I_a$ )	$Z_s = (230 \times 0.95) / I_a$
16	40.3	644.8	773.8	0.28
20	32.2	644.0	773	0.28
25	25.7	643	771	0.28
32	20.13	644.2	773.0	0.28
40	15.0	600.0	720.0	0.30
50	12.0	600.0	720.0	0.30
63	16.6	1045.8	1255.0	0.17
80	13.1	1048.0	1258	0.17
100	15.4	1540.0	1848.0	0.12
126	12.3	1538	1845.0	0.12
160	10.22	1635.2	1962.2	0.11

Disconnection time 5s

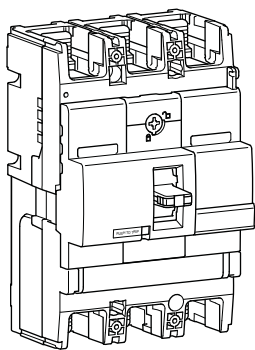
Device rating (A)	trip ( $xI_n$ )	$I_a$ (A)	$Z_s = (230 \times 0.95) / I_a$
16	10	160	1.37
20	10	200	1.09
25	10	250	0.87
32	10	320	0.68
40	10	400	0.55
50	10	500	0.44
63	10	630	0.35
80	10	800	0.27
100	10	1000	0.22
125	10	1250	0.17
160	10	1600	0.14

### Current limiting curve at 400V (Let-through peak current)

#### MCCB x160

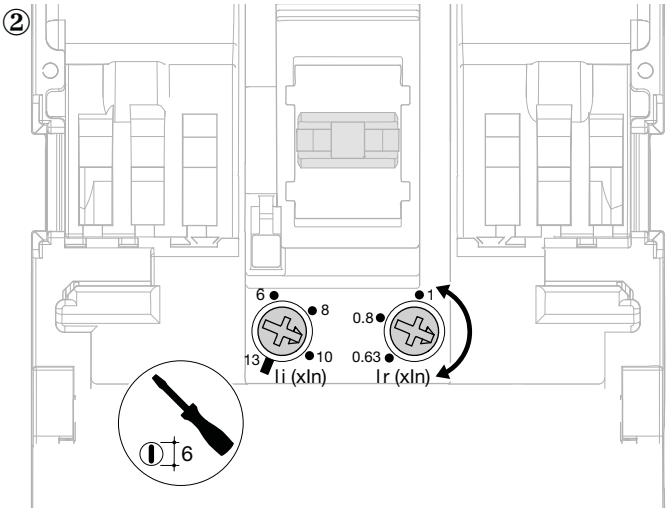
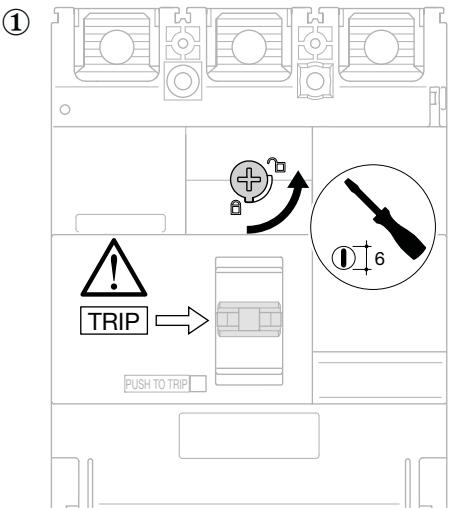


MCCBs



		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HHB	Icu	35 kA	25 kA
	Ics	25 kA	20 kA
HNB	Icu	85 kA	40 kA
	Ics	40 kA	20 kA
HCB	Icm	-	9 kA
	Icw	-	3 kA - 1s

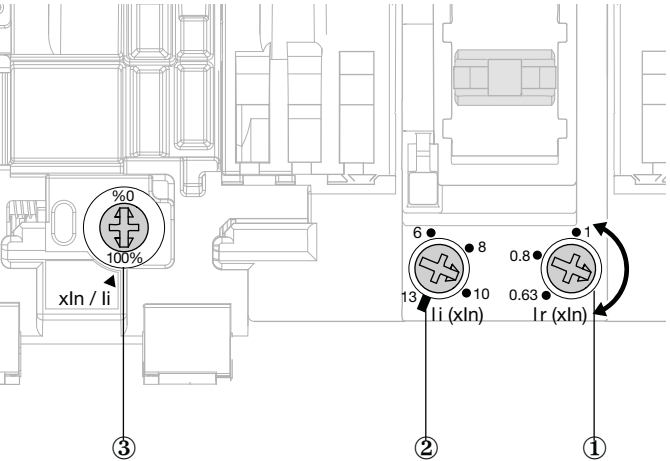
Magnetic and thermal settings



Thermal adjustment from 0.63 to 1 x I<sub>N</sub>

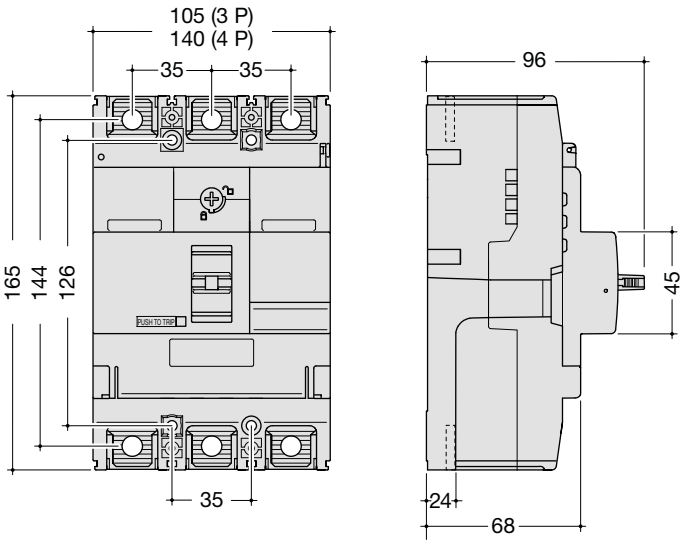
Magnetic adjustment from 6 to 13 x I<sub>N</sub> (100 - 200A)  
from 5 to 11 x I<sub>N</sub> (250A)

	100 - 200A	250A
I <sub>r</sub> (x I <sub>N</sub> ) ①	0.63 - 0.8 - 1 x I <sub>N</sub>	
I <sub>i</sub> (x I <sub>N</sub> ) ②	6 - 8 - 10 - 13 x I <sub>N</sub>	5 - 7 - 9 - 11 x I <sub>N</sub>
x I <sub>N</sub> /I <sub>i</sub> ③	0 - 100%	
	0 - 60%	

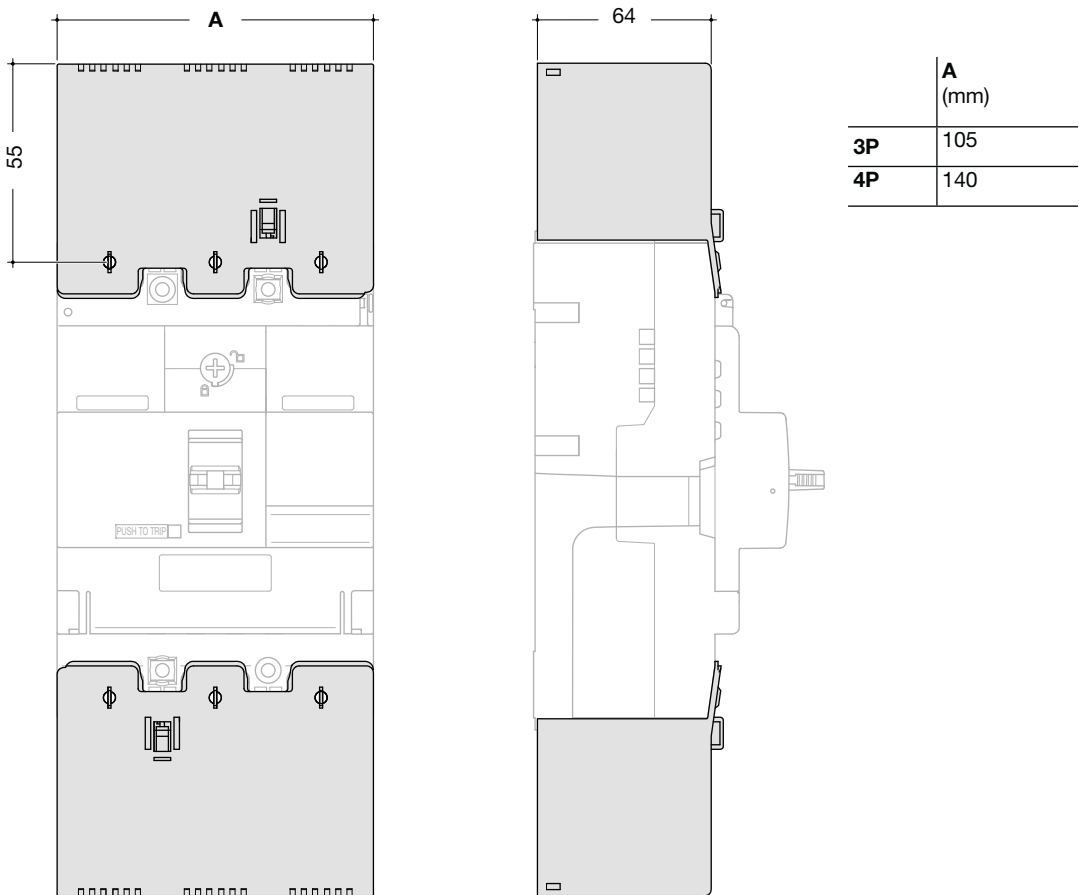


Dimensions

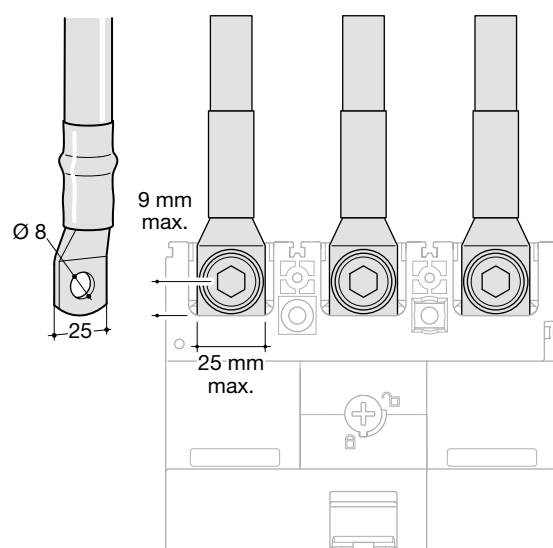
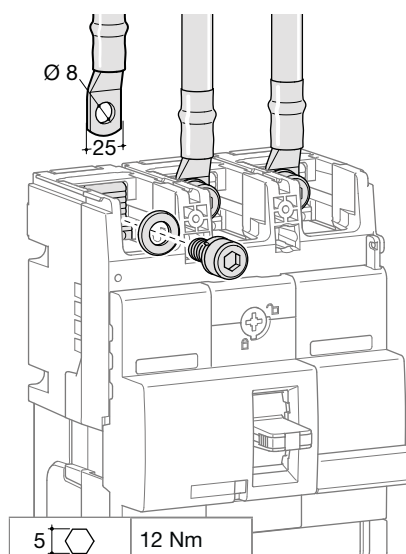
MCCB x250



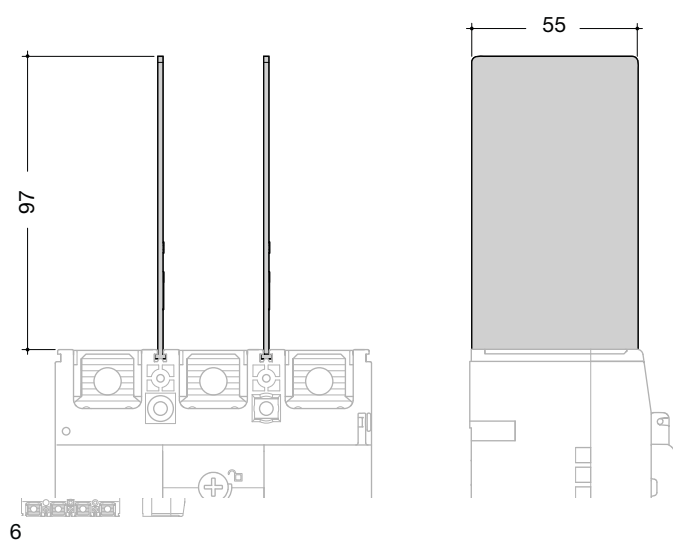
Terminal covers for extended straight connections



## Connection with end lugs

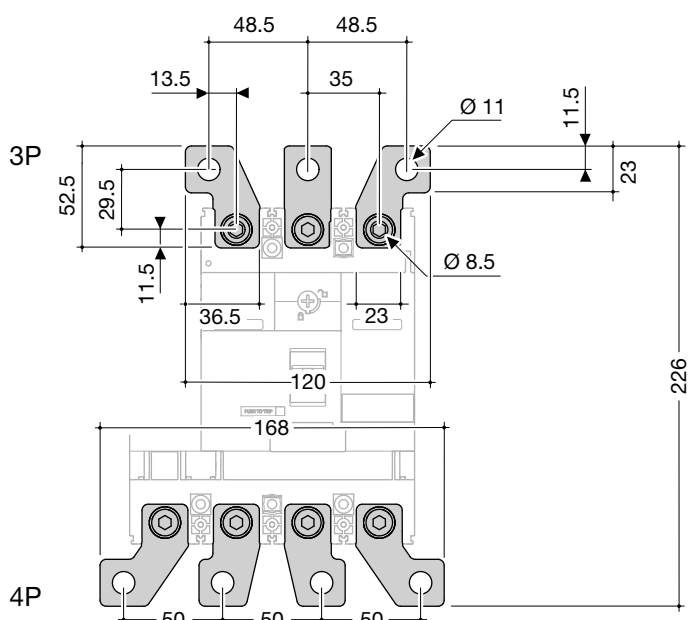
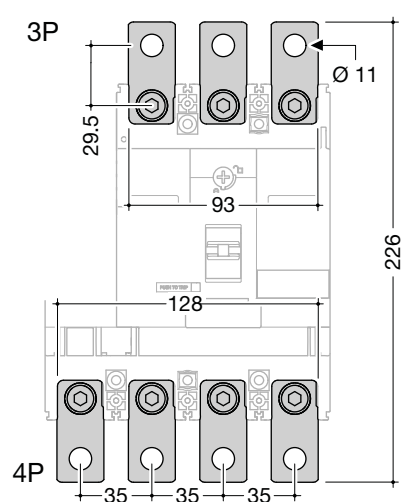
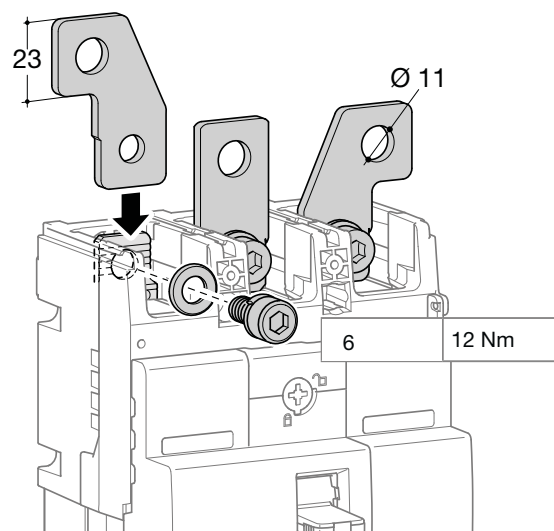
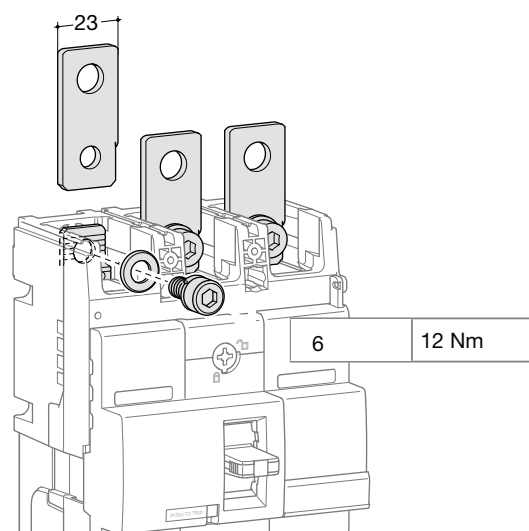


## Interphase barriers



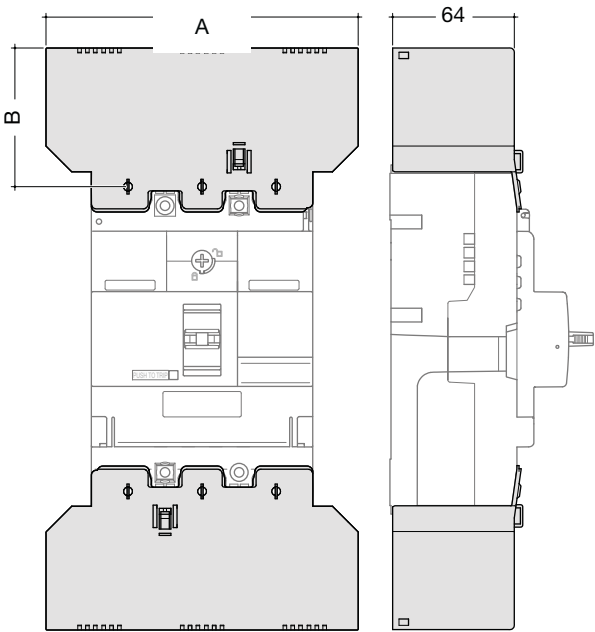
## Connection

### Extended straight and spreader connections



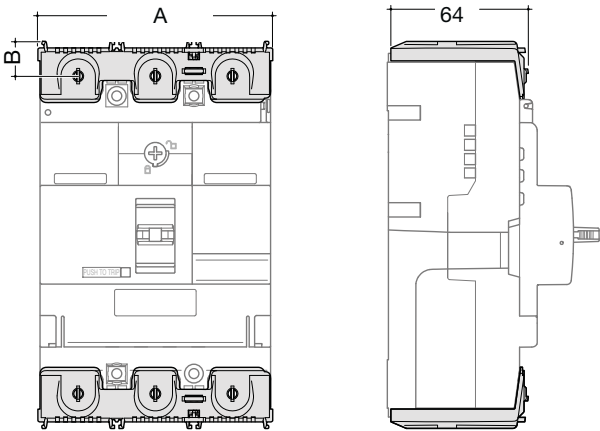
Accessories

Terminal cover for extended spreader connections



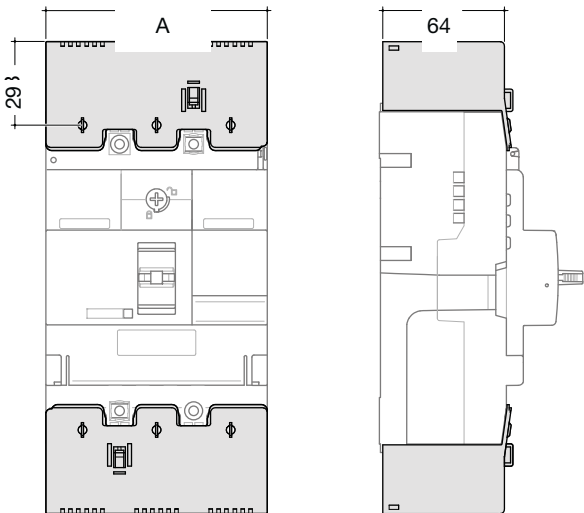
	A (mm)	B (mm)	C (mm)
<b>3P</b>	147.5	54.5	64
<b>4P</b>	196	54.5	64

Terminal cover for rear connections



	A (mm)
<b>3P</b>	105
<b>4P</b>	140

Terminal covers for collar terminals

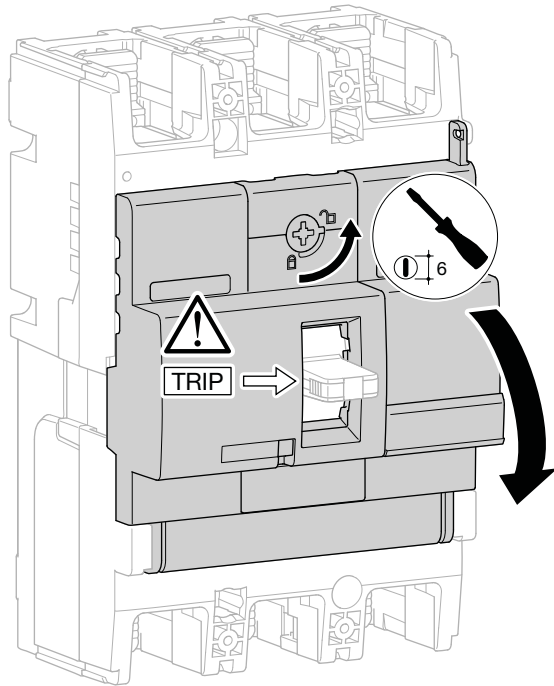


	A (mm)
<b>3P</b>	105
<b>4P</b>	140



## Auxiliaries

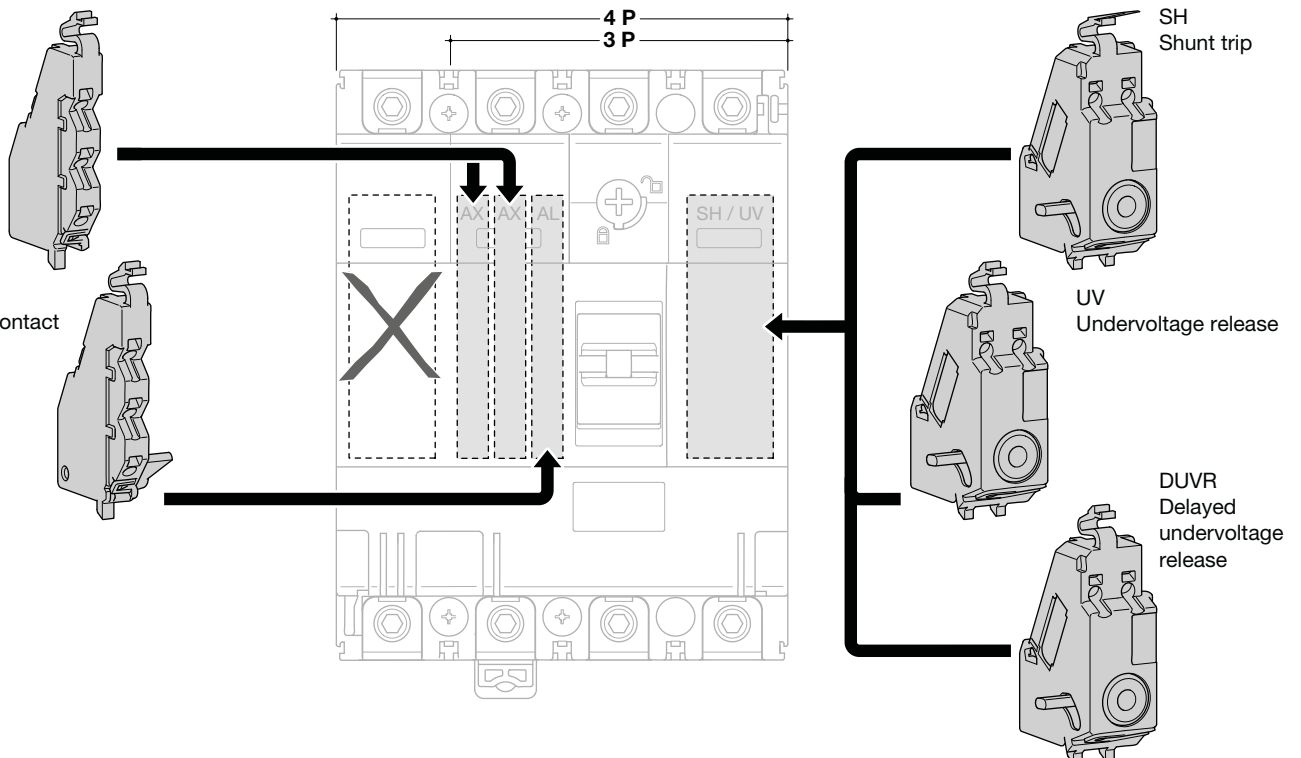
### Auxiliaries for MCCBs and moulded case switches



### Mounting combination for auxiliaries and releases

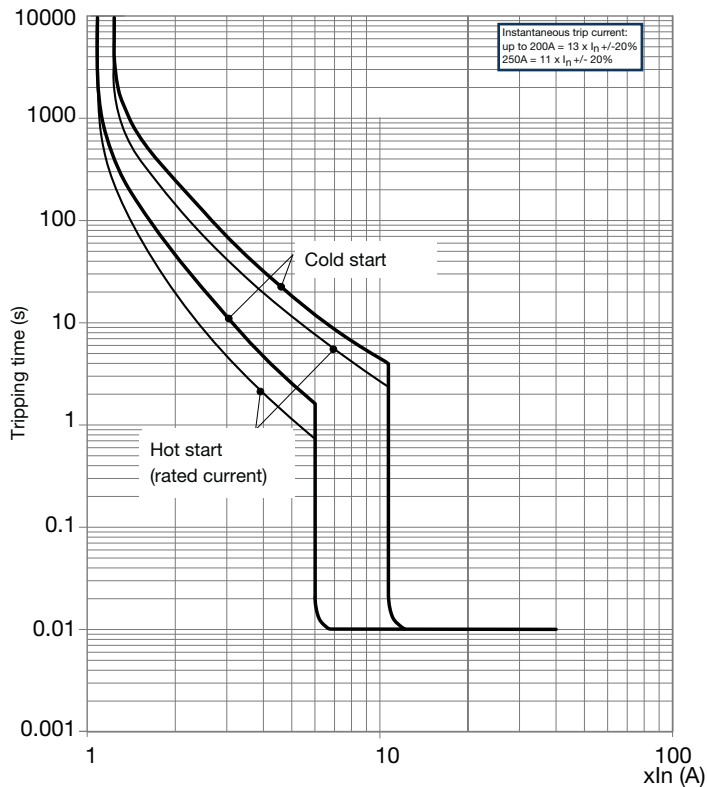
AX  
Auxiliary contact

AL  
Alarm contact



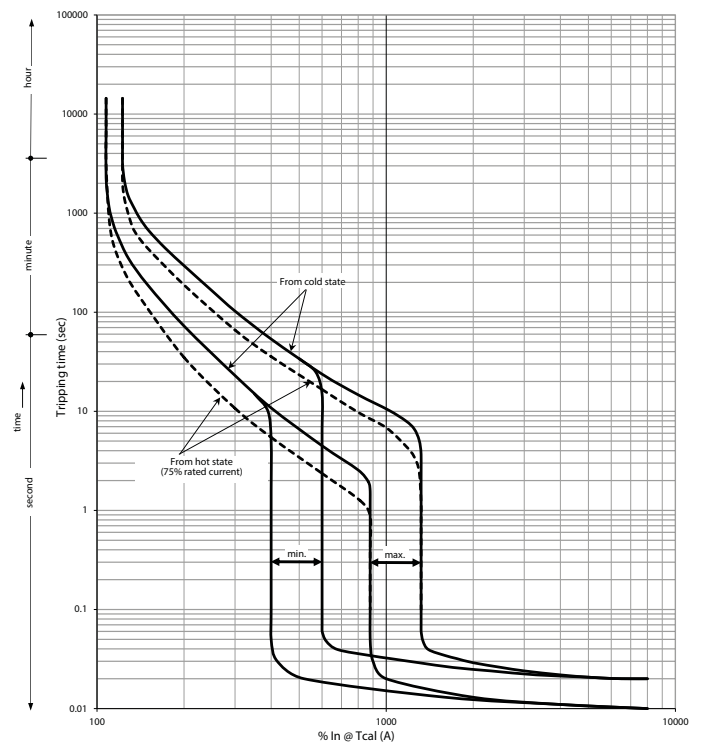
## Tripping curve

### MCCB x250



## Tripping curve

### MCCB h250 TM

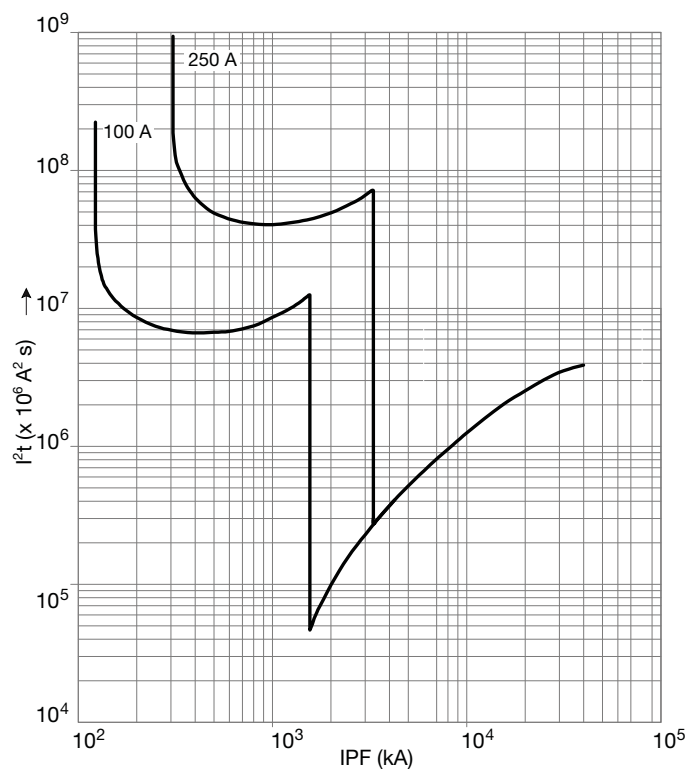


Earth fault loop impedance ( $Z_s$ ) can be calculated from the formula  
 $Z_s \leq \frac{230 \times 0.95}{I_a}$

Where  $I_a = I_n$  of MCCB x mag setting x 1.2

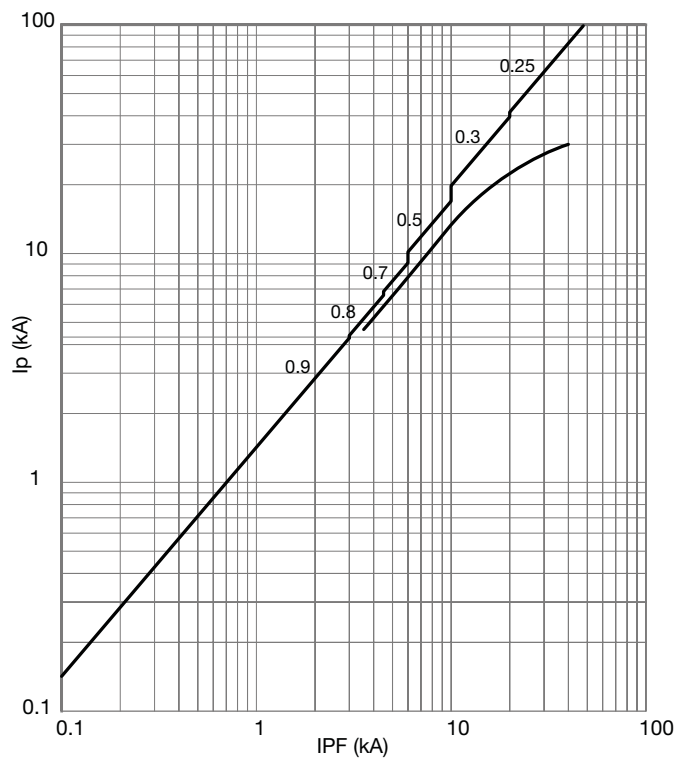
## Thermal constraint curve at 400V (Let-through energy)

### MCCB x250



## Current limiting curve at 400V (Let-through peak current)

### MCCB x250



# unique neutral loop terminal.. ..on wall switches

Protection  
Devices



Why loop neutrals at the ceiling rose when you can now safely loop at the switch?

- Reduce time spent working at height
- Terminals are easily accessible
- No need for a separate connector block
- Can reduce cable runs
- Shallowest profile to the back box
- Compliant with the 17<sup>th</sup> edition

hager



@hageruk



hageruktv

# Modular devices

## Simple energy saving solutions

Modular devices such as time switches and programmers provide selectable on-off periods during the day, week and year or a combination of all to control various electrical loads.

Simple and effective energy savings can be achieved by setting these devices so that the various loads are only switched on when they are actually needed, thereby saving unnecessary usage of energy.



Switch Disconnectors	5.2
2 Way / Centre-Off Changeover	5.3
Latching Relays	5.4
Low Noise Contactors	5.7
Electromechanical and Digital Time Switches	5.10
Light Sensitive Switch	5.14
Emergency Lighting Module	5.15
Delay Timers	5.16
Pushbuttons - Impulse & Latching	5.18
Indicator Lights	5.19
Transformers, Bells & Buzzers	5.20
Thermostats	5.21
Hours Counter	5.22
Analogue Voltmeters & Ammeters	5.23
Selector Switches for Voltmeters & Ammeters	5.24
Pluggable Mounted Metering	5.25
Essential Extras & Accessories	5.27
kWh Meters	5.29
Current Transformers (C.T)	5.31
Modular Multifunction Meters	5.32
Dimmers	5.33

Complies with BS EN 60947-3 all ratings.

In: 25 - 32A  
Shrouded cable terminal  
Connection capacity:  
16mm<sup>2</sup> rigid conductor  
10mm<sup>2</sup> flexible conductor

In 40 - 63A  
Shrouded cable terminal  
Connection capacity:  
25mm<sup>2</sup> rigid conductor  
16mm<sup>2</sup> flexible conductor

In 80 - 125A  
Shrouded cable terminal  
Connection capacity:  
50mm<sup>2</sup> rigid conductor  
35mm<sup>2</sup> flexible conductor

On position "I" in red & Off position "0" in green giving positive contact indication

1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm

For technical details see 5.34  
For accessories see page 5.5



SBN125

## Single Pole Switch Disconnector

	Characteristics	Width	Cat ref.
	1x 25A 250V	1 Mod	<b>SBN125</b>
	1x 25A 250V Indicator Light	1 Mod	<b>SBB125</b>
	1x 32A 250V	1 Mod	<b>SBN132</b>
	1x 32A 250V Indicator Light	1 Mod	<b>SBB132</b>
	1x 40A 250V	1 Mod	<b>SBN140</b>
	1x 63A 250V	1 Mod	<b>SBN163</b>
	1x 80A 250V	1 Mod	<b>SBN180</b>
	1x 100A 250V	1 Mod	<b>SBN190</b>



SBN240

## Double Pole Switch Disconnector

	Characteristics	Width	Cat ref.
	2x 25A 250V	1 Mod	<b>SBN225</b>
	2x 25A 250V Indicator Light	1 Mod	<b>SBB225</b>
	2x 32A 400V	1 Mod	<b>SBN232</b>
	2x 32A 250V Indicator Light	1 Mod	<b>SBB232</b>
	2x 40A 400V ac	2 Mod	<b>SBN240</b>
	2x 63A 400V ac	2 Mod	<b>SBN263</b>
	2x 80A 400V ac	2 Mod	<b>SBN280</b>
	2x 100A 400V ac	2 Mod	<b>SBN290</b>



SBN340

## Triple Pole Switch Disconnector

	Characteristics	Width	Cat ref.
	3x 25A 400V ac	2 Mod	<b>SBN325</b>
	3x 32A 400V ac	2 Mod	<b>SBN332</b>
	3x 40A 400V ac	3 Mod	<b>SBN340</b>
	3x 63A 400V ac	3 Mod	<b>SBN363</b>
	3x 80A 400V ac	3 Mod	<b>SBN380</b>
	3x 100A 400V ac	3 Mod	<b>SBN390</b>
	3x 125A 400V ac	3 Mod	<b>SBN399</b>



SBN440

## Four Pole Switch Disconnector

	Characteristics	Width	Cat ref.
	Switch 4x 25A 400V neutral left	2 Mod	<b>SBN425</b>
	Switch 4x 32A 400V neutral left	2 Mod	<b>SBN432</b>
	Switch 4x 40A 400V neutral left	4 Mod	<b>SBN440</b>
	Switch 4x 63A 400V neutral left	4 Mod	<b>SBN463</b>
	Switch 4x 80A 400V neutral left	4 Mod	<b>SBN480</b>
	Switch 4x 100A 400V neutral left	4 Mod	<b>SBN490</b>
	Switch 4x 125A 400V neutral left	4 Mod	<b>SBN499</b>

Complies with BS EN 60947-3

For technical details see page  
5.35



SFH125

## 2 Way Single Pole



### Characteristics

1 x 25A 1P 250V ac

### Width

1 Mod

### Cat ref.

**SFH125**



SFM125

## 1 NO x 1 NC Double Pole



### Characteristics

2 x 25A NO/NC 1P 250V ac

### Width

1 Mod

### Cat ref.

**SFM125**

## 2 Way Double Pole



### Characteristics

2 x 25A 2P 250V ac

### Width

2 Mod

### Cat ref.

**SFH225**

## Centre-Off Changeover Single Pole



### Characteristics

1 x 25A 1P 250V ac

### Width

1 Mod

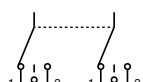
### Cat ref.

**SFT125**



SFT225

## Centre-Off Changeover Double Pole



### Characteristics

2 x 25A 2P 250V ac~

2 x 40A 2P 400V ac

2 x 63A 2P 400V ac

### Width

2 Mod

2 Mod

2 Mod

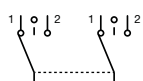
### Cat ref.

**SFT225**

**SFT240**

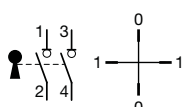
**SF263**

SFT225 / 240



SF263

## Lockable Rotary Switch On/Off (4 Positions)



### Characteristics

10A 400V ac

### Width

3 Mod

### Cat ref.

**SK606**

## Description

Latching relays - operate when impulsed by a signal voltage. The impulse can be provided via a pushbutton or pushswitch. The first pulse operates the relay and latches it to its set (opposite) state, the next operation of the

pushbutton returns the relay to its reset (original) state.

## Auxiliary Contacts (EPN050, EPN051)

Are available for remote signalling and centralised control applications and can be

easily combined with the latching relays.

Connection: 10mm<sup>2</sup> flexible  
6mm<sup>2</sup> rigid

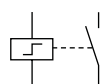
1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm

For technical details see page 5.36



EPN510

## Latching Relay 1 NO

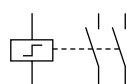


Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	<b>EPN510</b>
24V 50Hz	16A - 25V~	1 Mod	<b>EPN513</b>



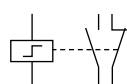
EPN520

## Latching Relay 2 NO



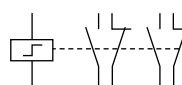
Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	<b>EPN520</b>
24V 50Hz	16A - 250V~	1 Mod	<b>EPN524</b>
12V 50Hz	16A - 250V~	1 Mod	<b>EPN521</b>

## Latching Relay 1 NC + 1 NO



Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	<b>EPN515</b>
24V 50Hz	16A - 250V~	1 Mod	<b>EPN518</b>
12V 50Hz	16A - 250V~	1 Mod	<b>EPN519</b>

## Latching Relay 2 NC + 2 NO

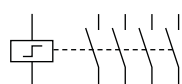


Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	2 Mod	<b>EPN525</b>
24V 50Hz	16A - 250V~	2 Mod	<b>EPN528</b>
12V 50Hz	16A - 250V~	2 Mod	<b>EPN529</b>



EPN540

## Latching Relay 4 NO



Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 400V~	2 Mod	<b>EPN540</b>
24V 50Hz	16A - 400V~	2 Mod	<b>EPN541</b>

## Auxiliary Contacts

Description	Power circuit	Width (8.75mm)	Cat ref.
Auxiliary Contact	2A - 250V~	½ Mod	<b>EPN051</b>
Auxiliary Contacts for Centralised Control	110-230V~	½ Mod	<b>EPN050</b>



## Description

To provide control of low power circuits max 16A; associated with switches, time switches etc for remote control applications. The relays will accept an

auxiliary contact for remote signalling applications (ESC080). For the command of ELV circuits use interface relays EN145 and EN146.

For the command of high power circuits (20, 40 & 63 Amps) use contactors as shown on page 5.7 - 5.9.

1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm



ERD218

### Relays 1 NC + 1 NO

Coil AC Voltage	Power circuit AC1	Width (17.5mm)	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	<b>ERC218</b>
24V 50Hz	16A - 250V~	1 Mod	<b>ERD218</b>
8/12V 50Hz	16A - 250V~	1 Mod	<b>ERL218</b>



ERC418

### Relays 2 NC + 2 NO

Coil AC Voltage	Power circuit AC1	Width (in 17.5mm)	Cat ref.
230V 50Hz	16A - 250V~	2 Mod	<b>ERC418</b>
24V 50Hz	16A - 250V~	2 Mod	<b>ERD418</b>
8/12V 50Hz	16A - 250V~	1 Mod	<b>ERL418</b>

### Auxiliaries and Accessories

Can be used with SPN\* modular switch range and relays



ESC001

Description	Power circuit AC1	Width	Cat ref.
Sealable Terminal Cover for 1 Module Contactors	-	-	<b>ESC001</b>
Sealable Terminal Cover for 2 Module Contactors	-	-	<b>ESC002</b>
Sealable Terminal Cover for 3 Module Contactors	-	-	<b>ESC003</b>
1NO + 1NC Auxiliary Contact	6A - 250V~	½ Mod	<b>ESC080</b>



ESC002



ESC080

**Description**

To interface between low voltage and extra low voltage circuits to ensure galvanic isolation to 4kV.

**Application**

Interface between fire alarm, burglar alarm and other ELV systems and main distribution circuits.

**Connection**

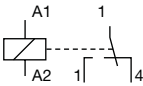
Flexible 4mm<sup>2</sup>  
Rigid 6mm<sup>2</sup>

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm



EN145

**Interface Relay ELV/LV 1 Way**



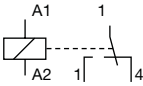
Characteristics  
Coil Voltage: 10 to 26V ac/dc  
Output: 1 Changeover Contact  
Max. 5A 230V~  
Min. 10mA 12V dc

Width	Cat ref.
1 Mod	<b>EN145</b>



EN146

**Interface Relay LV/ELV 1 Way**



Characteristics  
Coil Voltage: 230V~ 50Hz  
Output: 1 Changeover Contact  
Max. 5A 230V~  
Min. 10mA 12V dc

Width	Cat ref.
1 Mod	<b>EN146</b>

## Description

For the remote switching and control of power circuits where noise may be a concern i.e hotel bedrooms etc. (25A-63A AC1).

## Technical Data

The choice of contactor depends upon a number of parameters, e.g.

- The nature of the supply.
- The power it is switching.
- The characteristics of the load.
- The control voltage required.
- Number of operations

All contactor ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating (see technical characteristics on page 5.37).

## Options

- Contact choice
- Normally open (NO)
  - Normally closed (NC)

- 1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm

**The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is required.**



ESC225S



ESC463S

## Low Noise Contactors

Description	Coil AC voltage	Power circuit AC1	Width	Cat ref.
25A 2NO	230V 50Hz	25A - 400V~	1 Mod	<b>ESC225S</b>
40A 2NO	230V 50Hz	40A - 400V~	3 Mod	<b>ESC240S</b>
63A 2NO	230V 50Hz	63A - 400V~	3 Mod	<b>ESC263S</b>
25A 3NO	230V 50Hz	25A - 400V~	2 Mod	<b>ESC325S</b>
40A 3NO	230V 50Hz	40A - 400V~	3 Mod	<b>ESC340S</b>
25A 3NO + 1NC	230V 50Hz	25A - 400V~	2 Mod	<b>ESC428S</b>
25A 4NO	230V 50Hz	25A - 400V~	2 Mod	<b>ESC425S</b>
40A 4NO	230V 50Hz	40A - 400V~	3 Mod	<b>ESC440S</b>
63A 4NO	230V 50Hz	63A - 400V~	3 Mod	<b>ESC463S</b>
25A 4NC	230V 50Hz	25A - 400V~	2 Mod	<b>ESC426S</b>



ESC003



ESC080

## Auxiliaries and Accessories

Description	Power circuit AC1	Width	Cat ref.
Heat Dissipation Insert	-	½ Mod	<b>LZ060</b>
Sealable Terminal Cover for 1 Module Contactors	-	-	<b>ESC001</b>
Sealable Terminal Cover for 2 Module Contactors	-	-	<b>ESC002</b>
Sealable Terminal Cover for 3 Module Contactors	-	-	<b>ESC003</b>
1NO + 1NC Auxiliary Contact	6A - 250V~	½ Mod	<b>ESC080</b>

## Description

For the remote switching and control of power circuits (25A-63A AC1)

## Technical Data

The choice of contactor depends upon a number of parameters, e.g.

- The nature of the supply.
- The power it is switching.
- The characteristics of the load.
- The control voltage required.
- Number of operations

All contactor ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating (see technical characteristics on page 5.37).

**The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is required.**

## Options

Contact choice

- Normally open (NO)
- Normally closed (NC)

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm

## Auxiliary

All contactors will accept auxiliary, ESC080 contact.



ESC225



ESC425

## Standard Contactors

Description	Coil AC voltage	Power circuit AC1	Width	Cat ref.
25A 1NO	230V 50Hz	25A - 250V~	1 Mod	<b>ESC125</b>
25A 2NO	230V 50Hz	25A - 250V~	1 Mod	<b>ESC225</b>
25A 2NO Manual Override	230V 50Hz	25A - 250V~	1 Mod	<b>ERC225</b>
40A 2NO	230V 50Hz	40A - 400V~	3 Mod	<b>ESC240</b>
63A 2NO	230V 50Hz	63A - 400V~	3 Mod	<b>ESC263</b>
25A 2NO	24V 50Hz	25A - 250V~	1 Mod	<b>ESD225</b>
25A 2NO Manual Override	24V 50Hz	25A - 250V~	1 Mod	<b>ERD225</b>
40A 2NO	24V 50Hz	40A - 250V~	3 Mod	<b>ESD240</b>
25A 2NC	230V 50Hz	25A - 250V~	1 Mod	<b>ESC226</b>
25A 1NO 1NC	24V 50Hz	25A - 250V~	1 Mod	<b>ESD227</b>
25A 3NO	230V 50Hz	25A - 400V~	2 Mod	<b>ESC325</b>
25A 3NO Manual Override	230V 50Hz	25A - 400V~	3 Mod	<b>ERC326</b>
40A 3NO	230V 50Hz	40A - 400V~	3 Mod	<b>ESC340</b>
40A 3NO + 1NC	230V 50Hz	40A - 400V~	3 Mod	<b>ESC443</b>
63A 3NO + 1NC	230V 50Hz	63A - 400V~	3 Mod	<b>ESC466</b>
25A 4NO	230V 50Hz	25A - 400V~	2 Mod	<b>ESC425</b>
40A 4NO	230V 50Hz	40A - 400V~	3 Mod	<b>ESC440</b>
63A 4NO	230V 50Hz	63A - 400V~	3 Mod	<b>ESC463</b>
25A 4NO	24V 50Hz	25A - 400V~	2 Mod	<b>ESD425</b>
25A 4NC	230V 50Hz	25A - 400V~	2 Mod	<b>ESC426</b>
40A 4NC	230V 50Hz	40A - 400V~	3 Mod	<b>ESC441</b>
63A 4NC	230V 50Hz	63A - 400V~	3 Mod	<b>ESC464</b>
63A 2NC + 2NO	230V 50Hz	63A - 250V~	3 Mod	<b>ESC465</b>

## Auxiliaries and Accessories

Description	Power circuit AC1	Width	Cat ref.
Heat Dissipation Insert	-	½ Mod	<b>LZ060</b>
NO+NC Auxiliary Contact	2A - 25V~	½ Mod	<b>ESC080</b>



LZ060

## Description

Manual override facility allows temporary override, with automatic return at next coil energisation. Permanent off can also be selected. ETC225S low noise version.

## Technical Data

The choice of contactor depends upon a number of parameters, e.g.

- The nature of the supply.
- The power it is switching.
- The characteristics of the load.
- The control voltage required.
- Number of operations

All contactors ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating (see technical characteristics on page 5.37).

**The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is recommended.**

## Options

Contact choice

- Normally open (NO)
- Normally closed (NC)

## Auxiliary

All contactors will accept auxiliary, ESC080 contact.

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm



ETC225S

## 2 NO

Coil AC voltage	Power circuit AC1	Width	Cat ref.
230V 50 Hz	25A - 250V~	1 Mod	<b>ETC225S</b> <sup>1</sup>
230V 50 Hz	25A - 250V~	1 Mod	<b>ETC225</b>

<sup>1</sup> Low noise device



ETC340

## 3 NO

Coil AC voltage	Power circuit AC1	Width	Cat ref.
230V 50 Hz	20A - 400V~	2 Mod	<b>ETC325</b>
230V 50 Hz	40A - 400V~	3 Mod	<b>ETC340</b>



ETC425

## 4 NO

Coil AC voltage	Power circuit AC1	Width	Cat ref.
230V 50 Hz	20A - 400V~	2 Mod	<b>ETC425</b>
230V 50 Hz	40A - 400V~	3 Mod	<b>ETC440</b>

## Auxiliary for 25A Contactors

Power circuit AC1	Width	Cat ref.
2A - 250V~	½ Mod	<b>ESC080</b>

## Accessories

Description	Width	Cat ref.
Heat Dissipation Insert	½ Mod	<b>LZ060</b>

## Description

Electromechanical time switches  
1 and 2 channel.

For hourly, daily or weekly  
programming.

To control lighting, heating,  
ventilation, household  
appliances etc.

To save energy and to improve  
comfort.

## Technical Data

- Programming by captive  
segments

- Manual override:

For 1 module products:

- Automatic
- Permanent ON

For 3 module products:

- Automatic
- Permanent ON
- Permanent OFF

## Minimum Switching Time

- 15 min for daily dial
- 2h for weekly dial

## Connection

Tunnel terminals.

1-4mm<sup>2</sup>

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm



EH010

## 1 Channel Time Switches without Supply Failure Reserve

Quartz: Without supply failure reserve.







Characteristics	Voltage supply	Width	Cat ref.
Daily Dial, 1 Changeover contact, 16A 250V~ AC1	230V~ 50Hz	1 Mod	<b>EH010</b>
Daily Dial, 1 NO Contact, 16A 250V~ AC1	230V~ 50Hz	3 Mod	<b>EH110</b>

## 1 Channel Time Switches with Supply Failure Reserve

Quartz: With supply failure reserve 200 hours after being connected for 120 hours.

Characteristics	Voltage supply	Width	Cat ref.
Daily Dial, 1 Changeover contact, 16A 250V~ AC1	230V~ 50/60Hz	1 Mod	<b>EH011</b>
Daily Dial, 1 NO Contact, 16A 250V~ AC1	230V~ 50/60Hz	3 Mod	<b>EH111</b>
Weekly Dial, 1 NO Contact, 16A 250V~ AC1	230V~ 50/60Hz	3 Mod	<b>EH171</b>

## Selection Chart

	Electromechanical Time Clocks		Digital Time Clocks			
	1 Channel		1 Channel		2 Channels	4 Channels
						
	1 Modules	3 Modules	1 Modules	2 Modules	2 Modules	4 Modules
	EH010 EH011	EH110 EH111 EH171	EG071 EG010	EG103 EG103V EG103E	EG203 EG203E	EG493E
<b>Programming Cycle</b>	Electromechanical		Digital			
	1 Channel 1 Module	3 Modules	1 Channel 1 Modules	2 Modules	2 Channels 2 Modules	4 Channels 4 Modules
<b>24 Hours</b>	EH010 EH011	EH110 EH111	EG010			
<b>7 Days</b>		EH171	EG071	EG103 EG103V EG103E	EG203 EG203E	
<b>Annual</b>						EG493E

For the control of lighting, heating, household appliances, shop windows, signage etc., to improve comfort and to save energy.

### EG103 and EG203

(Basic Version) Product set at current time and date when delivered. Automatic change of Summer / Winter time.

### Programming Key

- To allow easy back up and re-installation of the program to allow permanent program overrides
- Programming per day or group of days
- 56 ON / OFF programme steps
- Permanent ON/OFF overrides
- Temporary ON/OFF overrides bar graph indication showing the daily profile
- Possibility of locking the keyboard with EG004

- Programming without the need to be energised

### EG103E/V and EG203E

(Evolution Versions)  
Same characteristics as EG103 and EG203 plus more:

- Holidays mode: forcing ON or OFF between two dates
- Presence simulation - random switching
- Backlit screen
- Impulse programming capability (1s to 30 min)

### Connection

EG010 / EG 071 : 0.5 to 4mm<sup>2</sup>  
EG 103 and EG 203/E :  
1 to 6mm<sup>2</sup> Flexible  
1.5 to 10mm<sup>2</sup> Rigid

### Operating Voltage

230~ 50/60 Hz  
(except EG103V  
- 12/24V AC/DC)



EG071

### 1 Channel Digital Time Switch

Not compatible with program key

Characteristics	Width	Cat ref.
Daily Cycle, 5 Adjustable pre-recorded programs 6 Switchings per day (3 on and 3 off), Output: 1 changeover contact 16A - 250V~ AC 1, 3 year reserve	1 Mod	<b>EG010</b>
Weekly Cycle, Output: 1 changeover contact, 16A - 250V~ AC 1, Capacity 20 program steps, 3 year reserve	1 Mod	<b>EG071</b>



EG103

### 1 Channel Digital Time Switch

Characteristics	Width	Cat ref.
Weekly Cycle (Basic Version), Output: 1 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	<b>EG103</b>
Weekly Cycle (Evolution Version), Output: 1 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	<b>EG103E</b>
Weekly Cycle (Evolution Version), Output: 1 changeover contact 16A - 250V~ AC 1, Operating Voltage 12/24V AC/DC, Delivered with key EG005	2 Mod	<b>EG103V</b>

### 2 Channel Digital Time Switch

Characteristics	Width	Cat ref.
Weekly Cycle (Basic Version), Output: 2 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	<b>EG203</b>
Weekly Cycle (Evolution Version), Output: 2 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	<b>EG203E</b>

### PC Interface and Software Tool

Interface between PC and key interface module with software on CD

Connection	Pack qty.	Cat ref.
USB programming software	1	<b>EG003G</b>

### Accessories

Description	Pack qty.	Cat ref.
Locking key (yellow colour) to prevent unauthorised re-programming of all EG time clocks (except EG010, EG071)	1	<b>EG004</b>
Spare programming key (grey colour) for timers EG103, EG103V, EG203, EG103E, EG203E	1	<b>EG005</b>
DIN Rail storage module for EG004 or EG005	1	<b>EG006</b>

The range offers the following features:

- Programming of the lighting interruption
- Automatic change of winter / summer time
- Astro program and expert program with individual Astro program steps
- Programming for day or group of days (same concept as

other clocks with key)

- Weekly programming
- Permanent override
- Temporary overrides

- Programming of holiday period
- Programming via the PC software and the associated interface (EG003)

For technical information see page 5.45

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm



EE180

**1 Channel Astronomical Time Switch**

Characteristics	Width	Cat ref.
Weekly Cycle, 230V~, 50Hz Changeover Contact 16A AC1, Operating reserve lithium battery 5 years, Delivered with key EG005	2 Mod	<b>EE180</b>



EE181

**2 Channel Astronomical Time Switch**

Characteristics	Width	Cat ref.
Weekly Cycle, 230V~, 50Hz 2 Changeover Contact 16A AC1, Operating reserve lithium battery 5 years, Delivered with key EG005	2 Mod	<b>EE181</b>



## 4 Channel Digital Time Switch Weekly and Annual Cycle

In commercial premises timed programming often requires the use of multi-circuit equipment with large programming capacities for a weekly or annual cycle.

### Applications

- Command of lighting circuits
- Control of heating
- Ventilation control
- Bell
- Alarm

### Functions

- Summer/winter time pre-programmed
- Delivered with time set
- External input for override (permanent, temporary, timed)
- Easy programming with words in display
- The output can be defined as ON/OFF, impulse or cycle

- 4 different cycles can be defined
- Calculates automatically all dates linked with easter.
- Holidays program
- 10 specific weekly programs
- Random mode
- Input for external mode
- Hour counter on each output
- Keyboard locking with PIN code

### Connection

Quick connect terminals  
Capacity: 0.75 to 2.5mm<sup>2</sup>

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm



EG493E

## 4 Channel Yearly Time Switch

Description

4 Channel Yearly Time Switch

Cat ref.

**EG493E**

## PC Interface and Software Tool

Interface between PC and key interface module with software on CD

Connection

USB programming software

Cat ref.

**EG003G**



EG005

## Accessories

Description

Programming key for EG493E

Cat ref.

**EG005**

## Description

A photo-electric cell measures the light level and in conjunction with the relay provides on/off control of a circuit.

This device controls lighting circuits in relation to ambient light, based on user settings.

Front cover sealability

## Applications

Street lighting, display lighting, illuminated signs etc.

## Connection

Protected cable clamps

Capacity:

Rigid: 1.5 to 10mm<sup>2</sup>

Flexible: 1 to 6mm<sup>2</sup>

On board LED shows status of changeover contact.

## Technical Data

4 position override switch allowing:

- Auto: normal operating mode
- On: permanently switched on
- Off: permanently switched off
- Test: setting mode for easy adjustment.

3 Mod = 52.5mm



EEN100

## Light Sensitive Switch

2 sensitivity ranges: 5 to 50 lux, 50 to 2000 lux

Delivered with a separate surface photo-electric cell EE003

Must be used in conjunction with a suitably rated contactor (page 5.7 - 5.8) where load conditions demand

Characteristics	Width	Cat ref.
Voltage rating: 230V~ 50/60Hz	3 Mod	<b>EEN100</b>
Outputs: 1 changeover AC 1 contact 16A AC1 - 230V~		
Maximum distance: 50m between photocell and controller		

# Light Sensitive Programmer

## Description

To control the lighting installation in relation to time and ambient light.

It is a weekly programmer associated with a light sensitive switch.

## Working Principle

The user programmes both on/off periods and a desired light level. The cell measures the light level within the on period. Depending on the light level (below or above the programmed threshold, the output will be switched on/off. 20 program steps, 1 minute switching increments

## Programming Function

Programming by keys and display on LCD screen. On/off override facility, permanent working. Display and control of the programme. Test setting for easy adjustment.

1 Mod = 17.5mm

3 Mod = 52.5mm



EE171

## Light Sensitive Programmer

2 sensitivity ranges: 5 to 50 lux, 50 to 2000 lux

Delivered with a separate surface photo-electric cell EE003

Must be used in conjunction with a suitably rated contactor (page 5.7 - 5.8) where load conditions demand

Characteristics	Width	Cat ref.
Voltage rating: 230V~ 50/60Hz	3 Mod	<b>EE171</b>
Outputs: 1 changeover AC 1 contact 16A AC1 - 230V~		
Maximum distance: 50m between photocell and controller		



EE003

## Replacement Photo Electric Cell

Mounting	For Cat ref.	Pack qty.	Cat ref.
Flush	EEN100, EE171	1	<b>EE002</b>
Surface	EEN100, EE171	1	<b>EE003</b>

**Application**  
For both residential and commercial applications

Installed in a consumer unit or distribution board, the lamp can be configured to light automatically in the event of power failure.

It can also be withdrawn from it's base, thereby acting as a mini torch with an operating duration of 1 hour 30 mins

3 Mod = 52.5mm



EE960

**Emergency Lighting Module**

Description	Width	Cat ref.
Emergency Lighting Module	3 Mod	<b>EE960</b>

## Description

To provide control of lighting circuits with automatic switch-off after a pre-set time.

Compact design with a 2 position switch permanent / timed lighting control facility.

EMN005 incorporates a pre-warning of switch OFF to improve the safety for users and a double delay function: 30 sec. to 10 min, or 1 hour by pressing the push-button more than 3 seconds.

1 Mod = 17.5mm



EMN001

## Basic Staircase Time Lag Switches

Adjustable time delay setting 30 sec. to 10 minutes

Characteristics	Width	Cat ref.
Supply voltage 230V~ 50/60Hz 16A - 250V AC1 2300W incandescent halogen and flurescent	1 Mod	<b>EMN001</b>



EMN005

## Multifunction Staircase Time Lag Switches

Basic staircase time lag switch  
Pre-warning mode  
Double delay mode 30 sec. to 10 min or 1 hour  
Double delay with pre-warning mode

Characteristics	Width	Cat ref.
Supply voltage 230V~ 50/60Hz $\mu$ 16A - 250V AC1 2300W incandescent halogen and flurescent	1 Mod	<b>EMN005</b>

# Selection Guide

	Areas of use			
	Residential	Communal / Landlords Areas	Commercial	Industrial
Communal Stairwells and Landlord Areas		EMN001 & EMN005		
External Lighting	EMN001 & EMN005			
Landlords Areas / Bathrooms	EZN002 EZN006			
Heating Overrides			EZN001 EZN006	
Shop Windows / Signage			EZN005 EZN006	
Timer Function	EZN004 EZN006			
Door Closing Mechanisms	EZN004 EZN006			
Alarm Bell			EZN004 + EZN006 EZN006	
Variation of Alarm Frequency			EZN005 EZN006	

## Description

To provide all types of automatic control i.e. lighting, ventilation, watering, machine pre-heating, automatic door and visual audible indication, cycle control etc. with automatic switch off after preset time.

## Applications

For timing and automation in domestic and commercial premises. The input signal can be via various switching devices (pushbutton, latching switch, timeclock etc.) and the timed output used to control the application.

## Technical Data

Voltage range:  
12 to 48V DC  
12 to 230V AC  
Adjustable: Time delay from 0.1s to 10hrs.  
Complies with BS EN 60669-2-1

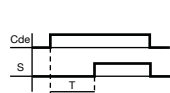
## Terminal Capacity

6mm<sup>2</sup> max flexible  
1.5 - 10mm<sup>2</sup> rigid  
1 Mod = 17.5mm



EZN001

## Delay On



Characteristics  
1 changeover contact  
10A / 230V~ AC1  
Time delay T:0.1s to 10hr

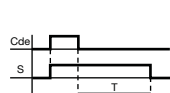
Width  
1 Mod

Cat ref.  
**EZN001**



EZN002

## Delay Off

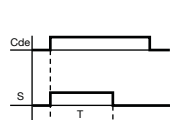


Characteristics  
1 changeover contact  
10A / 230V~ AC1  
Time delay T:0.1s to 10hr

Width  
1 Mod

Cat ref.  
**EZN002**

## Adjustable Time On

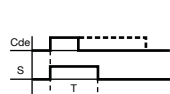


Characteristics  
1 changeover contact  
10A / 230V~ AC1  
Time delay T:0.1s to 10hr

Width  
1 Mod

Cat ref.  
**EZN003**

## Timer

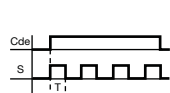


Characteristics  
1 changeover contact  
10A / 230V~ AC1  
Time delay T:0.1s to 10hr

Width  
1 Mod

Cat ref.  
**EZN004**

## Symmetrical Flasher



Characteristics  
1 changeover contact  
10A / 230V~ AC1  
Time delay T:0.1s to 10hr

Width  
1 Mod

Cat ref.  
**EZN005**



EZN006

## Multifunction

Characteristics  
1 changeover contact  
10A / 230V~ AC1  
Time delay T:0.1s to 10hr

Functions  
Delay On, Delay Off, Adjustable Time On, Adjustable Time Off, Timer, Symmetrical Flasher (On, Off)

Width  
1 Mod

Cat ref.  
**EZN006**

## Description

Pushbuttons to actuate loads either directly or via contactors etc.

## Technical Data

Modular pushbuttons

- Without light  
With grey button, red/green optional
- With light  
With red, green button

## Light Technology

LED

## Connection

Cage terminals

## Terminal Capacity

10mm<sup>2</sup> rigid conductor.  
6mm<sup>2</sup> flexible conductor.

BS EN 60947-5-1

1 Mod = 17.5mm



SVN311

## Pushbuttons (Impulse)

16A - 250V~

Without indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO	1 Mod	<b>SVN311</b>
Contacts: 2 NO	1 Mod	<b>SVN331</b>
Contacts: 2 NO, Double Pushbutton	1 Mod	<b>SVN371</b>
Contacts: 1 NC	1 Mod	<b>SVN321</b>
Contacts: 2 NC	1 Mod	<b>SVN341</b>
Contacts: 1 NO + 1 NC	1 Mod	<b>SVN351</b>
Contacts: 1 NO + 1 NC, Double Pushbutton	1 Mod	<b>SVN391</b>



SVN411

## Pushbuttons (Impulse)

16A - 250V~

With indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO : Green	1 Mod	<b>SVN411</b>
Contacts: 2 NO : Red	1 Mod	<b>SVN432</b>
Contacts: 1 NC : Red	1 Mod	<b>SVN422</b>
Contacts: 2 NC : Green	1 Mod	<b>SVN441</b>
Contacts: 1 NO + 1 NC	1 Mod	<b>SVN452</b>



SVN312

## Pushbuttons (Latching)

16A - 250V~

Without indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO	1 Mod	<b>SVN312</b>
Contacts: 2 NO	1 Mod	<b>SVN332</b>
Contacts: 1 NC	1 Mod	<b>SVN322</b>
Contacts: 2 NC	1 Mod	<b>SVN342</b>
Contacts: 1 NO + 1 NC	1 Mod	<b>SVN352</b>



SVN413

## Pushbuttons (Latching)

16A - 250V~

With indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO : Green	1 Mod	<b>SVN413</b>
Contacts: 2 NO : Green	1 Mod	<b>SVN433</b>

**Modular Indicator Lights**

Available with red, green, amber, blue, colourless lens

**Light Technology**

LED

**Options**

DIN rail mountable

**Connection**

Cage terminals

**Capacity**

10mm<sup>2</sup> rigid conductor  
6mm<sup>2</sup> flexible conductor

BS EN 62094-1

1 Mod = 17.5mm



SVN122

**Indicator Lights (230V~)**

Indicator Colour	Width	Cat ref.
Green	1 Mod	<b>SVN121</b>
Red	1 Mod	<b>SVN122</b>
Orange	1 Mod	<b>SVN123</b>
Blue	1 Mod	<b>SVN124</b>
Clear	1 Mod	<b>SVN125</b>
Red & Green (Double Indicator)	1 Mod	<b>SVN126</b>
Red (Triple Indicator)	1 Mod	<b>SVN127</b>

**Indicator Lights (12/48V)**

Indicator Colour	Width	Cat ref.
Green	1 Mod	<b>SVN131</b>
Red	1 Mod	<b>SVN132</b>

**Description**

Provide separated extra low voltage (SELV) 8, 12, 24V~.

**Technical Data**

Secondary voltages:  
8V, 12V, 24V~  
Bell transformers are short-circuit protected.  
Bells/buzzers:  
Max. continuous duty  
≤ 30 minutes.  
Cable capacities: 6mm<sup>2</sup>

**Output**

Bells: 85 dBA  
Buzzers: 78 dBA

When a bell transformer is installed in an enclosure with mains voltage equipment, 230V cable should be used on the secondary side of the transformer or extra low voltage cable should be sheathed within the enclosure.

**Note** The transformers have a higher no load voltage. The stated voltages correspond to the voltages on nominal load.

1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm  
6 Mod = 95mm



ST313

**Safety Transformers**

Characteristics	Width	Cat ref.
230V/12-24V~ 50Hz, 25VA 50/60 Hz	4 Mod	<b>ST312</b>
230V/12-24V~ 50Hz, 16VA 50/60 Hz	4 Mod	<b>ST313</b>
230V/12-24V~ 50Hz, 40VA 50/60 Hz	4 Mod	<b>ST314</b>
230V/12-24V~ 50Hz, 63VA 50/60 Hz	6 Mod	<b>ST315</b>



ST301

**Bell Transformers**

Characteristics	Width	Cat ref.
230V/8V~ 50/60 Hz, 8-12V, 4VA	2 Mod	<b>ST301</b>
230V/8-12V~ 50/60 Hz, 8-12V, 8VA	2 Mod	<b>ST303</b>
230V/8-12V~ 50/60 Hz, 8-12V, 16VA	3 Mod	<b>ST305</b>

**Bells**

Characteristics	Width	Cat ref.
8/12V~, 5VA - 0.33A	1 Mod	<b>SU212</b>
230V~, 6.5VA - 0.03A	1 Mod	<b>SU213</b>

**Buzzers**

Characteristics	Width	Cat ref.
8/12V~, 4VA - 0.33A	1 Mod	<b>SU214</b>
230V~, 6.5VA - 0.03A	1 Mod	<b>SU215</b>



**Description**

Electronic thermostats for any application requiring temperature control (from cold room to steam room).

**Applications**

EK081 fixed ambient probe for night temperature regulation.  
 EK083 used as floor probe to limit floor temperature.  
 EK083 used to control hot water

temperature (with its collar) in case of probe disconnection.

3 working modes are possible (selected by wiring):

1. Permanent off
2. Permanent on
3. Cyclic operation 1 minute in every 4.

Output status is displayed by an LED.

**EK187****Electronic Thermostat Suitable for Heating Control**

Two adjustable temperature levels are selected by external signals (operation by time switch or digital programmer).

Additionally there is an adjustable low level temperature for frost protection etc. In the event of probe disconnection the heating system is switched on one minute in every four.

3 Mod = 52.5mm

**Multi-range Thermostats**

Delivered without probe. Compatible with EK081 or EK083 probes

Characteristics	Width	Cat ref.
Voltage rating: 230V~ - 50/60 Hz Output: 1 changeover contact, 2A AC1 - 230V~ 4 ranges: -30 to 0°C, 0 to +30°C, 30 to +60°C, 60 to +90°C To associate with contactors (page 5.7 - 5.9)	3 Mod	<b>EK186</b>



EK187

**Multi-order Thermostats**

Delivered without probe. Compatible with EK081 or EK082 probes

Characteristics	Width	Cat ref.
Accuracy $\pm 0.2^\circ\text{C}$ , Voltage rating: 230V~ - 50/60 Hz Output: 1 changeover contact, 2A AC1 - 230V~ Temperature Level 1 (Comfort) Adjustable 5 - 30°C Temperature Level 2 (Night setting) Adjustable 2 - 8°C less than Level 1 setting Temperature level 3 (Frost setting) Adjustable 5 - 30°C To associate with contactors (page 5.7 - 5.9)	3 Mod	<b>EK187</b>



EK081

**Fixed Ambient Probe**

Can be associated with  
 EK186, EK187 thermostats  
 EG502 programmable thermostat

Cat ref.  
**EK081**



EK082

**Adjustable Ambient Probe**

This probe is equipped with a potentiometer for the correction of the set temperature ( $\pm 3^\circ\text{C}$ )

Can be associated with  
 EK187 thermostats  
 EG502 programmable thermostat

Cat ref.  
**EK082**



EK083

**Universal Probe (Removable Collar)**

Can be associated with  
 EK186 thermostats  
 EG502 programmable thermostat

Cat ref.  
**EK083**

## Programmable Thermostat

**Description**  
To save energy by managing the heating system according to the periods of occupation.

It is a weekly programmer associated with a 3 setting thermostat:

- "Comfort",
- "Reduced",
- "Anti-frost"

## Connection: Protected Cable Clamps

Capacity: 1.5 to 10 mm<sup>2</sup> rigid  
Capacity: 1 to 6 mm<sup>2</sup> flexible

## Thermostatic Function

- Adjustable comfort and reduced temperature
- Fixed anti-frost temperature
- Display of state of output,
- Display of selected mode,

- Push button selection of working mode:
- Automatic cycle comfort T° / reduced T°
- Permanent comfort temperature
- Permanent reduced temperature
- Permanent anti-frost temperature.

## Probes

EG502 can be associated with:

- EK081 fixed ambient probe,
- EK082 adjustable ambient probe
- EK083 universal probe (see page 5.21)

4 Mod = 70mm



EG502

## Programmable Thermostat

Delivered without probe. Compatible with EK081, EK082t or EK083 probes

Characteristics	Width	Cat ref.
Voltage rating: 230V; 50 Hz Output: 1 changeover contact, 2A – 250V; AC1 2 Temperature settings "comfort" and "reduced" adjustable + 8°C to + 28°C, Anti-frost temperature setting + 8°C (constant)	4 Mod	<b>EG502</b>

# Hours Counter

## Description

To measure the total operating time of any circuit/load non resettable

## Application Example

- Total time of plant running
- Connection in parallel with contactor coil
- Recording of lighting hours for relamping purposes

1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm



EC100

## Hours Counter

Voltage	Width	Cat ref.
230V - 50Hz	2 Mod	<b>EC100</b>

## Analogue Voltmeters

For domestic and commercial installations

- Single phase: direct connection
- Three phase: use of a voltmeter selector switch SK602 (see page 5.24).

## Frequency

50 Hz

## Connection Capacity

Rigid conductor 10mm<sup>2</sup>  
Flexible conductor 6mm<sup>2</sup>

## Analogue Ammeters

For domestic and commercial installations.

Indirect reading via current transformers: 50-100-150-250-400A

4 Mod = 70mm



SM500

## Voltmeter

Consumption	Accuracy	Width	Cat ref.
2.5VA	2%	4 Mod	<b>SM500</b>



SM050

## Ammeters

Connection via a current transformer (CT) (page 5.31)

Scale	Accuracy	Width	Cat ref.
0 - 50A	2%	4 Mod	<b>SM050</b>
0 - 100A	2%	4 Mod	<b>SM100</b>
0 - 150A	2%	4 Mod	<b>SM150</b>
0 - 250A	2%	4 Mod	<b>SM250</b>
0 - 400A	2%	4 Mod	<b>SM400</b>

# Digital Voltmeters & Ammeters

## Digital Voltmeters

SM501

For domestic and commercial installations

- Three phase: use of a voltmeter selector switch SK602

## Digital Ammeters

SM151, SM401, SM601: reading via a current transformer (see below)

4 Mod = 70mm



SM501

## Digital Voltmeter

Voltage rating: 220/230V; 50/60Hz  
Accuracy:  $\pm 1\%$   
Consumption: 4 VA

Scale	Width	Cat ref.
0 - 500V	4 Mod	<b>SM501</b>



SM401

## Digital Ammeters

Voltage rating: 220/230V; 50/60Hz  
Accuracy:  $\pm 1\%$   
Consumption: 4 VA

Description	Scale	Width	Cat ref.
Reading via CT 150/5 (SRA01505)	Scale: 0 - 150A	4 Mod	<b>SM151</b>
Reading via CT 400/5 (SRC04005)	Scale: 0 - 400A	4 Mod	<b>SM401</b>
Reading via CT 600/5 (SRC06005)	Scale: 0 - 600A	4 Mod	<b>SM601</b>

## Description

For use with Voltmeters and Ammeters.

## Applications

Complies with IEC 947-3  
BS EN 60947-3

## Terminal Capacity

1 - 6mm<sup>2</sup> Flexible  
1.5 - 10mm<sup>2</sup> Rigid

Isolating voltage 500VAC  
Nominal current 10-20A

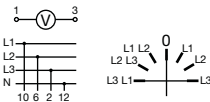
1 Mod = 17.5mm  
2 Mod = 35mm  
3 Mod = 52.5mm  
4 Mod = 70mm



SK602

## Voltmeter Selector

3 Ph&N  
3 Readings between phases  
3 Readings between phase & neutral  
Null position (no reading)



Characteristics  
20A 400Vac

Width  
3 Mod

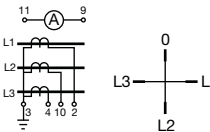
Cat ref.  
**SK602**



SK603

## Ammeter Selector

4 Positions  
Use in 3 Ph&N  
Reading by phase  
Null position (no reading)  
Should be used with Current Transformer (see page 5.31)



Characteristics  
20A 400Vac

Width  
3 Mod

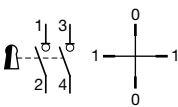
Cat ref.  
**SK603**



SK606

## Lockable Rotary Switch

On / Off (4 Positions)



Characteristics  
10A 400Vac

Width  
3 Mod

Cat ref.  
**SK606**

For pluggable meter dimensions and technical info see page 5.59-5.61.

For our full range Meter Enclosure for JF Panelboards, see page 3.31.



JKM01

DIN Rail Meters

		Cat ref.
Multi-Function Meter Pulsed/Modbus Single Input		JKM01
Multi-Function Meter Pulsed/Modbus Dual Input		JKM02
For supply cable see JF130VMF on page 5.27		
Note: No cables are supplied with these meters		



ECM01

Panel Meters

		Cat ref.
Multi-Function Meter Pulsed/Modbus DIN 96		ECM01
Note: no cables are supplied with these meters		
For Meter supply cable see JF130VMF (page 5.27)		



JFS03

3 Phase CT Splitter Box

This 3 Phase CT Splitter Box allows the separate monitoring of each phase of a three phase current transformer on individual energy meters.

Description	Cat ref.
3 Phase CT Splitter Box	JFS03



JFA03

Converter

For JKM01 & JKM02 only.

Description	Cat ref.
Standard CT to plug in adapter	JFA03



EC1260CT

## Plug-In CTs

Supplied with 1x 0.5m CT to meter cable

Description	Cat ref.
60A/330mV 3 Phase Current Transformer 80 x 75.5 x 74	<b>EC1260CT</b>
100A/330mV 3 Phase Current Transformer 80 x 75.5 x 74	<b>EC12100CT</b>
125A/330mV 3 Phase Current Transformer 80 x 75.5 x 74	<b>EC12125CT</b>
150A/330mV 3 Phase Current Transformer 80 x 75.5 x 74	<b>EC12150CT</b>
160A/330mV 3 Phase Current Transformer 80 x 75.5 x 74	<b>EC12160CT</b>
60A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC2560CT</b>
100A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC25100CT</b>
125A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC25125CT</b>
150A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC25150CT</b>
160A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC25160CT</b>
200A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC25200CT</b>
250A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC25250CT</b>
250A/330mV 3 Phase Current Transformer 80 x 105 x 66	<b>EC40250CT</b>
300A/330mV 3 Phase Current Transformer 90 x 140 x 52	<b>EC40300CT</b>
400A/330mV 3 Phase Current Transformer 90 x 140 x 52	<b>EC40400CT</b>
500A/330mV 3 Phase Current Transformer 90 x 140 x 52	<b>EC40500CT</b>
600A/330mV 3 Phase Current Transformer 90 x 140 x 52	<b>EC40600CT</b>
630A/330mV 3 Phase Current Transformer 90 x 140 x 52	<b>EC40630CT</b>
60A/330mV 3 Phase Current Transformer 68 x 90 x 74	<b>EC6060CT</b>
100A/330mV 3 Phase Current Transformer 68 x 90 x 74	<b>EC60100CT</b>
125A/330mV 3 Phase Current Transformer 68 x 90 x 74	<b>EC60125CT</b>
150A/330mV 3 Phase Current Transformer 68 x 90 x 74	<b>EC60150CT</b>
160A/330mV 3 Phase Current Transformer 68 x 90 x 74	<b>EC60160CT</b>
800A/330mV 3 Phase Current Transformer 124 x 215 x 52	<b>EC80800CT</b>
1000A/330mV 3 Phase Current Transformer 124 x 215 x 52	<b>EC801000CT</b>
1200A/330mV 3 Phase Current Transformer 124 x 215 x 52	<b>EC801200CT</b>
1250A/330mV 3 Phase Current Transformer 124 x 215 x 52	<b>EC801250CT</b>
1500A/330mV 3 Phase Current Transformer 124 x 215 x 52	<b>EC801500CT</b>
1600A/330mV 3 Phase Current Transformer 124 x 215 x 52	<b>EC801600CT</b>



PGM500

## Meter Voltage Supply Cable - Low Smoke Zero Halogen - 1mm

Description	Cat ref.
1m - Voltage Supply Cable with Fuse Carrier (For JF Meter Enclosures)	<b>JF130VMF</b>
1m - Voltage Supply Cable with Fuse Carrier (For JN Meter Enclosures)	<b>JN130VMF</b>
0.30m - Voltage Supply Cable	<b>PGM300</b>
0.50m - Voltage Supply Cable	<b>PGM500</b>
1.00m - Voltage Supply Cable	<b>PGM1000</b>
1.30m - Voltage Supply Cable	<b>PGM1300</b>
2.00m - Voltage Supply Cable	<b>PGM2000</b>
3.00m - Voltage Supply Cable	<b>PGM3000</b>

## Meter Voltage Supply Cable - PVC - 1mm

Description	Cat ref.
0.30m - Hi Flex Voltage Supply Cable	<b>PGMF300</b>
0.50m - Hi Flex Voltage Supply Cable	<b>PGMF500</b>
1.00m - Hi Flex Voltage Supply Cable	<b>PGMF1000</b>
1.30m - Hi Flex Voltage Supply Cable	<b>PGMF1300</b>
2.00m - Hi Flex Voltage Supply Cable	<b>PGMF2000</b>
3.00m - Hi Flex Voltage Supply Cable	<b>PGMF3000</b>



PGMT500

## Meter to Meter Supply Cable - Low Smoke Zero Halogen - 1mm

Description	Cat ref.
0.15m - Meter to Meter Supply Cable	<b>PGMT150</b>
0.50m - Meter to Meter Supply Cable	<b>PGMT500</b>
1.00m - Meter to Meter Supply Cable	<b>PGMT1000</b>
1.30m - Meter to Meter Supply Cable	<b>PGMT1300</b>
2.00m - Meter to Meter Supply Cable	<b>PGMT2000</b>
3.00m - Meter to Meter Supply Cable	<b>PGMT3000</b>

## Meter to Meter Supply Cable - PVC - 1mm

Description	Cat ref.
0.15m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT150</b>
0.30m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT300</b>
0.50m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT500</b>
1.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT1000</b>
1.30m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT1300</b>
2.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT2000</b>
3.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT3000</b>



PGRJ1000

**RJ45 Connection Cable**

Description	Cat ref.
0.30m - RJ45 Connector Cable 67 7003	<b>PGRJ300</b>
0.50m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ500</b>
1.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ1000</b>
1.50m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ1500</b>
2.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ2000</b>
3.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ23000</b>



PG9522FEMALE

**Supply Voltage Connector Plugs**

For those who want to make up their own power cable looms

Description	Cat ref.
Voltage IN (Male) Connector	<b>PG9523MALE</b>
Voltage OUT (Female) connector	<b>PG9522FEMALE</b>



JFT03

**CT Output and RJ45 Lead Tester**

Description	Cat ref.
CT Output and RJ45 Lead Tester	<b>JFT03</b>



## Description

Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.

MID approval for sub billing on EC154M.

## Characteristics

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy 1%
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)

- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1/ tariff 2

- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm

## Note:

Use of heat dissipation inserts (cat ref. LZ060) are recommended on each side of direct connection meters.



EC050

## Single Phase kWh Meters

Voltage 230V~ 50Hz  
Direct connection  
In = 320mA - 32A

Characteristics	Width	Cat ref.
Total counter, non resettable counter	1 Mod	<b>EC050</b>
Total counter, non resettable counter, pulsed output 1 pulse = 100Wh	1 Mod	<b>EC051</b>



EC150

## Single Phase kWh Meters - Direct 63A

Voltage 230V~ 50/60Hz  
Starting current = 40mA  
Base current = 10A  
Max current = 63A  
Max cable size = 16mm

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	3 Mod	<b>EC150</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	3 Mod	<b>EC152</b>
Energy meter with pulsed output - with MID approval	3 Mod	<b>EC154M</b>



EC154M

## Description

Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.

MID approval for sub billing on EC364M.

## Characteristics

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy 1%
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)

- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1/ tariff 2
- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm
- 7 Mod = 122.5mm

## Note:

Use of heat dissipation inserts (cat ref. LZ060) are recommended on each side of direct connection meters.



EC350

## Three Phase kWh Meters - Direct 63A

Voltage 230/400V~ 50/60Hz  
Starting current = 40mA  
Base current = 10A  
Max current = 63A  
Max cable size = 16mm

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	4 Mod	<b>EC350</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	4 Mod	<b>EC352</b>



EC364M

## Three Phase kWh Meters - Direct 100A

Voltage 230/400V~ 50/60Hz  
Starting current = 80mA  
Base current = 20A  
Max current = 100A  
Max cable size = 35mm

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	7 Mod	<b>EC360</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	7 Mod	<b>EC362</b>
Energy meter with pulsed output - with MID approval	7 Mod	<b>EC364M</b>
Energy meter with bidirectional counter	7 Mod	<b>EC365B</b>
Energy meter with KNX output	7 Mod	<b>TE360</b>



EC370

## Three Phase kWh Meters - Connection via Current Transformers

To be connected to CT with 5A on the secondary

Voltage 230/400V~ 50/60Hz  
Starting current = 10mA  
Max current on CT secondary = 6A

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	4 Mod	<b>EC370</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	4 Mod	<b>EC372</b>
Energy meter with KNX output	4 Mod	<b>TE370</b>

Current transformers are used to feed analogue and digital ammeters and kilowatt hour meters.

The current on the secondary circuit (0 - 5A) is proportional to the current on primary circuit class: 1.

For complete list of dimensions see page 5.58.

Can be mounted on copper bar or on cable. Can be mounted on DIN rail.



SRA00505

Current Transformers (C.T)

Ratio	Cat ref.
50/5	<b>SRA00505*</b>
100/5	<b>SRA01005*</b>
150/5	<b>SRA01505*</b>
200/5	<b>SRA02005*</b>
250/5	<b>SRA02505*</b>
300/5	<b>SRI03005*</b>
400/5	<b>SRC04005*</b>
600/5	<b>SRC06005*</b>
800/5	<b>SRD08005</b>
1000/5	<b>SRD10005</b>
1500/5	<b>SRD15005</b>
2000/5	<b>SRE20005</b>
DIN Rail Mounting for - * references above.	<b>SRZH01</b>

**Modular multifunction meters** dedicated to monitoring and reporting of the electrical networks (balanced or unbalanced – 1,2,3 or 4 wires). The meters are connected through a CT to the network and measure all the parameters (TRMS).

Functions		SM101E	SM101C
Current (3Ph and $I_n$ )	Inst	✓	✓
	Max	✓	✓
	THD		✓
Voltage (L-L)	Inst	✓	✓
	THD		✓
Voltage (L-N)	Inst	✓	✓
	THD		✓
Frequency (F)	Inst	✓	✓
Power (3P, 3Q, 3S)	Inst	✓	✓
Power ( $\Sigma P$ , $\Sigma Q$ , $\Sigma S$ )	Inst	✓	✓
	Max	✓	✓
Power Factor (3PF, $\Sigma PF$ )	Inst	✓	✓
Energy	+kWh		✓
	+kVar		✓
Hours counter	h	✓	✓
Internal temperature	°C		✓

### Multifunction meter SM101C

It allows communication via pulses output and/or RS485 Jbus/Modbus.

#### Features

- LCD display
- 4M DIN Rail mounting
- Wiring test

#### Standards

- IEC 61557-12
- IEC 62053-22 (class 0.5s)
- IEC 62053-23 (class 2)

**Connection** solid & stranded  
4mm<sup>2</sup> (power)  
2.5mm<sup>2</sup> (communication)



SM101E

### Multifunction Meter

Technical Characteristics	Width	Cat ref.
Multifunction Meter	4 Mod	<b>SM101E</b>
Multifunction Meter with Communication Pulsed output, RS485 Jbus/Modbus communication	4 Mod	<b>SM101C</b>



SM101C

**Description**

Hager dimmers control the lighting level of all types of lighting source: incandescent, LV halogen, ELV halogen with electronic or ferromagnetic transformer, LED ELV lamps with electronic transformer, fluorescent with electronic ballast.

The EVN 300W and 500W dimmers also allow lighting level adjustment for dimmable CFL and dimmable LED lamps.

Dimming controlled by push button:

- Start / stop by short press
- Increasing / decreasing by maintaining pressure

For technical details see page 5.70.

1 Mod = 17.5mm  
2 Mod = 35mm

**Common characteristics**

- Universal dimmers with automatic load recognition
- Softstart (progressive start) to increase the working life of lamps
- Memorisation of last dimming level
- Protection against overheating



EVN011

**Universal Dimmers 300W**

- Compatible with dimmable CFL and LED
- 3 modes for load learning: auto, advanced, expert (comfort version)
- Can replace a latching relay, with lighting level function
- Push button (line or neutral).
- Very low consumption.

Characteristics	Width	Cat ref.
Standard version	1	<b>EVN011</b>
Comfort version	1	<b>EVN012</b>

- Expert mode
- Scene by 2 short double presses on the PB (progressive switch-off, night light, 100%, no function)



EVN004

**Universal Dimmers 500W**

- Compatible CFL and LED
- 3 modes for load learning: auto, advanced, expert (comfort version)
- Very low consumption

Characteristics	Width	Cat ref.
Standard version	2	<b>EVN002</b>
Comfort version	2	<b>EVN004</b>

- Expert mode
- 100% via 2 short presses on the dim input PB
- One scene PB (scene, time-delayed scene, progressive switch-off, night light)
- Multi-voltage dim PB

### Electrical Characteristics

Family		SB							
Number of poles		1P - 2P - 3P - 4P							
Frame size		Frame size 1			Frame size 2		Frame size 3		
Thermal current I <sub>th</sub> (40°C)		16A	25A	32A	40A	63A	80A	100A	125A
Operational frequency		50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Rated insulation voltage (U <sub>i</sub> )		500 V	500 V	500 V	500 V	500 V	500 V	500 V	500 V
Rated impulse with- stand voltage U <sub>imp</sub>		3 kV	3 kV	3 kV	6 kV	6 kV	6 kV	6 kV	6 kV
Protection degree		2	2	2	3	3	3	3	3
Working temperature		-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C
Storage temperature		-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C

### Operational Currents I<sub>e</sub>

Rated voltage		Load duty category									
Single Phase	Multi Phase										
230V AC	400V AC	AC 21A	16A	25A	32A	40A	63A	80A	100A	125A	
230V AC	400V AC	AC 22B	16A	25A	32A	40A	63A	80A	100A	125A	
230V AC	400V AC	AC 22A	16A	25A	32A	40A	63A	80A	100A	125A	
230V AC	400V AC	AC 23A	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	

### Short circuit characteristic

Rated short time withstand current 1s I <sub>cw</sub> (rms)	IEC 60947-3	480A / 1sec			945A / 1 sec		1500A / 1sec		
Prospective short circuit current (rms)	EN 60669	3kA	3kA	3kA	6kA	6kA	n/a	n/a	n/a
Associated fuse links (gG)		16A	25A	32A	40A	63A	n/a	n/a	n/a

### Mechanical characteristic

Rigid cable section		16 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	25 mm <sup>2</sup>	25 mm <sup>2</sup>	50 mm <sup>2</sup>	50 mm <sup>2</sup>	50 mm <sup>2</sup>
flexible cable section		10 mm <sup>2</sup>	10 mm <sup>2</sup>	10 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	35 mm <sup>2</sup>	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Tightening torque		1.8 Nm	1.8 Nm	1.8 Nm	2.8 Nm	2.8 Nm	3.6 Nm	3.6 Nm	3.6 Nm
IP protection degree		20	20	20	20	20	20	20	20
Mechanical endurance (number of cycle)		100,000	100,000	100,000	30,000	30,000	20,000	20,000	20,000
Electrical endurance @ AC22 (number of cycles)		25,000	25,000	25,000	5,000	5,000	2,500	2,500	2,500

### Overall dimension

Width (mm)	1P	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
	2P	17.5	17.5	17.5	35	35	35	35	35
	3P	35	35	35	52.5	52.5	52.5	52.5	52.5
	4P	35	35	35	70	70	70	70	70
Height (mm)		83	83	83	83	83	83	83	83
Depth (mm)		72	72	72	72	72	72	72	72

Electrical Characteristics								
Family		SF						
Modular size		1 module			2 module			4 module
Reference		SFH125	SFM125	SFT125	SFH225	SFT225	SFT240	SF263
Thermal current I <sub>th</sub> (40°C)		25A	25A	25A	25A	25A	40A	63A
Operational frequency		50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Rated operation voltage in AC		230V						
Rated insulation voltage (U <sub>i</sub> )		440V	440V	440V	440V	440V	440V	500V
Rated impulse withstand voltage U <sub>imp</sub>		4 kV	4 kV	3 kV	6 kV	6 kV	6 kV	4 kV
Protection degree		2	2	2	3	2	2	2
Working temperature		-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C
Storage temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	
Operational Currents I <sub>e</sub>								
Rated voltage	Load duty category							
400V AC	AC 22A	25A	25A	25A	25A	25A	40A	63A
400V AC	AC 22B	25A	25A	25A	25A	25A	40A	63A
Short circuit characteristic								
Rated short time withstand current 1s I <sub>cw</sub> (rms)	IEC 60947-3	375A / 1sec					600A / 1sec	4.5kA cond.
Prospective short circuit current (rms)	EN 60669	3kA	3kA	3kA	6kA	6kA	n/a	n/a
Mechanical characteristic								
Rigid cable section		35 mm <sup>2</sup>	35 mm <sup>2</sup>	35mm <sup>2</sup>	25 mm <sup>2</sup>	25 mm <sup>2</sup>	25 mm <sup>2</sup>	25 mm <sup>2</sup>
flexible cable section		10 mm <sup>2</sup>	10 mm <sup>2</sup>	10 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>
Tightening torque		1.8 Nm	1.8 Nm	1.8 Nm	1.8 Nm	1.8 Nm	1.8 Nm	1.8 Nm
IP protection degree		20	20	20	20	20	20	20
Mechanical endurance (number of cycle)		200,000	200,000	200,000	200,000	200,000	200,000	100,000
Electrical endurance @ AC22 (number of cycles)		25,000	25,000	25,000	5,000	5,000	2,500	5,000
Overall dimension								
Width (mm)		17.5	17.5	17.5	35	35	35	71.5
Height (mm)		83	83	83	83	83	83	90
Depth (mm)		68	68	68	68	68	70	68

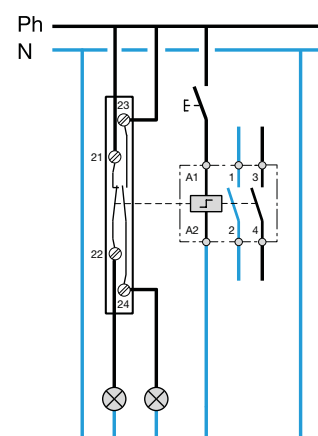
## Technical Characteristics

	EPN510 EPN515 EPN520	EPN513 EPN518 EPN524	EPN519	EPN525 EPN540	EPN528 EPN541	EPN529
Voltage	230V	24V	12V	230V	24V	12V
Start Consumption	24VA	24VA	24VA	48VA	47VA	TBC
Contact Rating AC1	-	-	16A 250V~ <sup>1</sup>	-	-	-
Electrical Endurance AC1 - 16A	150,000 Operations					
Mechanical Endurance	500,000 Operations					
Current in Open Position	8 mA					
Max Duration of Voltage Supply to Coil	1h					
Min Duration of Current Supply to Coil	0.1s					
Working Temperature	-5 to +40°C					
Storage Temperature	-40 to +80°C					
Connections						
Coil: Flexible Rigid	0.5 to 4mm <sup>2</sup> 1 to 6mm <sup>2</sup>					
Power: Flexible Rigid	1 to 6mm <sup>2</sup> 1.5 to 10mm <sup>2</sup>					

<sup>1</sup> 400~ for EPN540 and EPN541.

## Auxiliary Contacts (EPN051)

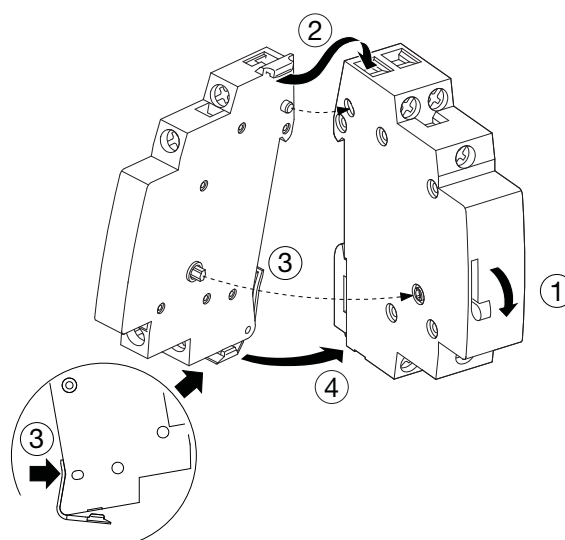
The range of latching relays have been designed for use with an auxiliary contact. The devices simply clip on the side of the relay.



## Technical Characteristics

	EPN	EPN051
<b>Voltage</b>	<sup>1</sup> 100 to 230V	-
<b>Contact Rating</b>	-	2A / 250V
<b>Imin / 230V</b>	-	15mA
<b>Connection</b>		
<b>Flexible</b>	6mm <sup>2</sup>	
<b>Rigid</b>	10mm <sup>2</sup>	

<sup>1</sup> Voltage dependant on associated relay





## Heating

The choice of the contactor depends on the mechanical endurance (number of operations) and on the electrical heating load i.e. resistive elements, infra-red element, convectors.

## Choice of Contactors

The choice of contactor is dependant upon many parameters i.e. operating voltage, size of contacts, number of operations, ambient temperature, type of load supplied etc.

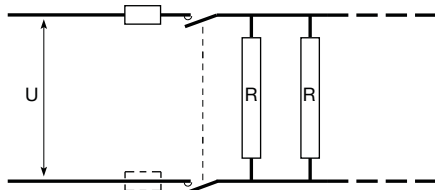
## Type of Load

Loads are categorised into various AC ratings, (AC1, AC2, AC3 etc.) and the higher the AC rating the more inductive the load becomes. All Hager contactor ratings are given at AC1, therefore they must be de-rated if used on other types of AC load.

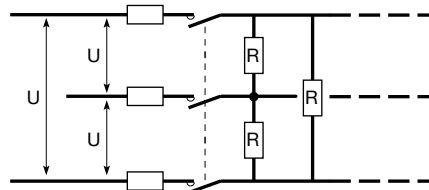
## Heat Dissipation Inserts

The ambient temperature around a contactor can affect its life expectancy, therefore, we strongly recommend that heat dissipation inserts (LZ060) are fitted between all contactors and adjacent devices.

## Single Phase



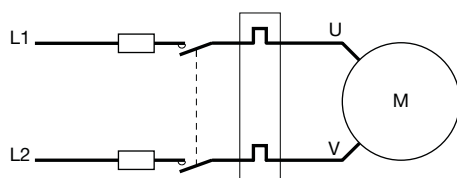
## Three Phase



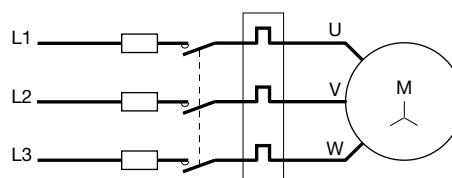
			Number of operations				
			100,000	150,000	200,000	500,000	1,000,000
Max. load in kW	230V	16A	3	2.5	1.9	0.85	0.7
		25A	4.6	4	3	1.35	1
		40A	7.3	6.3	4.7	2.2	1.6
		63A	11.6	10	7.5	3.5	2.5
	400V	16A	8.9	8	5.8	2.8	2
		25A	13.8	12	8.6	4.3	3
		40A	22	18.5	14.385	6.3	5
		63A	35	30	22.6	10.2	7.6

## Motors

### Single Phase 230V (AC3 or AC7b)



### Three Phase 400V (AC3 or AC7b)



		Choice of Contactor According to control diagram	
Maximum load in kW	Single Phase with Capacitor 230V	Three Phase (AC3 or AC7) 400V	
	0.88		2 Wires
	2.6		2 pole 25A
		2.6	2 pole 40A
		7.8	3 pole 25A
		10	3 pole 40A
			3 pole 63A

## Requirements of Use

### Influence of Working Temperature

Derating factor between 40°C and 50°C : 0.9

Example: Heating with convector

The maximum load of ESC225 is 4.6kW for 50,000 operations and for a temperature <40°C.

between 40°C and 50°C, the load is 4.6 x 0.9 i.e. 4.14kW

## Close Fitting

It is necessary to put a heat dissipation insert (reference LZ060) between each contactor.

Description			Modular contact						Auxiliary contact
Standard conformity			EN 61095						
Approvals			NF - VDE- IMQ - KEMA - RMC / CCC						
			Relay	Contact	Relay	Contact	Contact	Contact	Contact
Number of modules			1		2		3		½
Thermal current Ith (40°C)			16A	25A	16A	25A	40A	63A	6A
Rated frequency			50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Rated insulation voltage (Ui)			250V	250V	440V	440V	440V	440V	250V
Rated impulse withstand voltage (Uimp)			4kV	4kV	4kV	4kV	4kV	4kV	4kV
Protection Degree			2	2	2	2	2	2	2
Rated Operating currents and power ratings in AC									
AC-1 / AC-7a	Rated operational currents Ie		16A	16A	16A	25A	40A	63A	-
	Rated operational power	230V	3kW	4.6kW	3kW	4.6kW	7.3kW	11.6kW	-
		400V	-	-	8.9kW	13.8kW	22kW	35kW	-
AC-3 / AC-7b	Rated operational currents Ie		5.5A	8.5A	5.5A	8.5A	25A	32A	-
	Rated operational power	230V	570W	880W	570W	880W	2.6kW	3.3kW	-
		400V	-	-	1.7kW	2.6kW	7.8kW	10kW	-
AC-12	Rated operational currents Ie @ 230V		-	-	-	-	-	-	6A
AC-15	Rated operational currents Ie @ 230V		-	-	-	-	-	-	2A
Mechanical and Electrical Endurances									
Mechanical endurance		Number of operations	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Electrical endurance @ Ie AC7a (AC12 for aux contact)		Number of operations	60,000	60,000	60,000	60,000	60,000	60,000	60,000
MCB Protected short-circuit withstand									
Prospected short-circuit current		rms	1kA	3kA	1kA	3kA	3kA	3kA	1kA
Associated protection			MCB C16-6kA	MCB C25-6kA	MCB C16-6kA	MCB C25-6kA	MCB C40-10kA	MCB C63-10kA	6A 10x38 gG Fuse
Power dissipation									
Power dissipation per current path			1W	1.5W	1W	1.5W	3.2W	5W	0.4W
Magnetic system for Eco and standard contactor									
Pick-up			2.2W	2.2W	2.8W	2.8W	5W	5W	-
Coil consumption			2.2W	2.2W	2.8W	2.8W	5W	5W	-
Closing delay			25ms	25ms	25ms	25ms	25ms	25ms	-
Opening delay			15ms	15ms	15ms	15ms	20ms	20ms	-
Connection									
Main contact cable section		Rigid	1...10mm²	1...10mm²	1...10mm²	1...10mm²	4...25mm²	4...25mm²	1...6mm²
		Flexible	1...6mm²	1...6mm²	1...6mm²	1...6mm²	4...16mm²	4...16mm²	1...6mm²
Main contact connection screw		Type	M3.4	M3.4	M3.4	M3.4	M5	M5	M3.4
		Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2
		Max. tight. torque	1.2Nm	1.2Nm	1.2Nm	1.2Nm	2Nm	2Nm	1.2Nm
Coil connection cable section		Rigid	1...10mm²	1...10mm²	1...10mm²	1...10mm²	1...10mm²	1...10mm²	-
		Flexible	1...6mm²	1...6mm²	1...6mm²	1...6mm²	1...6mm²	1...6mm²	-
Coil connection screw		Type	M3.5	M3.5	M3.5	M3.5	M4	M4	-
		Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	-
		Max. tight. torque	1.2Nm	1.2Nm	1.2Nm	1.2Nm	1.5Nm	1.5Nm	-
Working temperature									
			-10°C to +50°C						
Storage temperature									
			-40°C to +80°C						

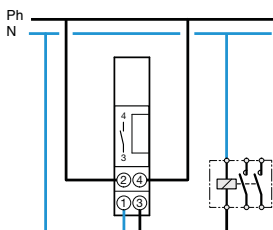
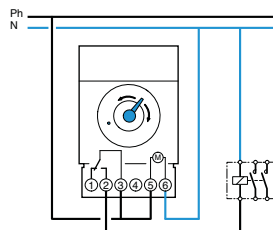
Lighting systems with electronic ballasts cause inrush current peaks. Therefore we recommend you use the chart below to determinate the maximum amount of lamps that can be connected to a Hager contactor: The chart gives the maximum amount of lamps per contact. In 2014 the performances of the contactors in combination with lights increased. The products identified on the front face with the '+' can accept a higher number of lamps. For these products, see the figures in the column with the '+' in the header.

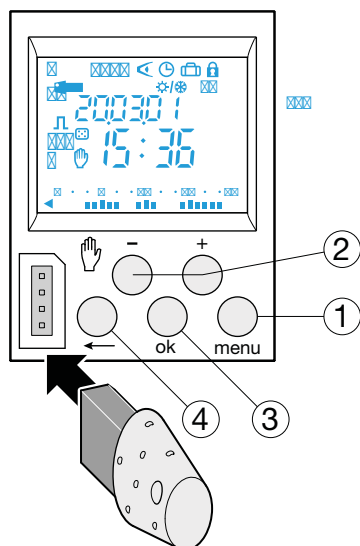
	Lamp Power	16A	25A	16A +	25A +	40A	63A
<b>Compact fluo lamps</b>							
Compact fluo lamp with external electronic ballast	5W	11	15	17	27	49	76
	7W	11	15	17	27	49	76
	9W	9	13	16	26	40	63
	11W	9	13	16	26	40	63
	15W	7	11	14	22	36	57
	18W	7	11	14	22	36	57
	20W	7	11	14	22	36	57
	23W	7	11	14	22	36	57
Compact fluo lamp with integrated electronic ballast	26W	7	11	14	22	36	57
	5W	17	27	34	54	86	135
	7W	17	27	34	54	86	135
	9W	17	27	34	54	86	135
	11W	17	27	34	54	86	135
	15W	17	27	34	54	86	135
	18W	13	20	25	40	63	100
	20W	13	20	25	40	63	100
Tungsten & halogen lamps 230V	23W	13	20	25	40	63	100
	26W	13	20	25	40	63	100
<b>Incandescent lamps</b>							
Tungsten & halogen lamps 230V	40W	32	50	36	57	76	120
	60W	21	33	28	45	67	105
	75W	17	27	24	38	63	100
	100W	13	20	17	28	41	65
	150W	8	13	11	18	29	45
	200W	6	9	8	14	22	35
	300W	4	7	6	10	15	23
	500W	2	3	3	6	9	14
	1000W	0	0	1	2	4	7
	20W	13	20	25	40	139	218
Tungsten & halogen lamps 12 ou 24V	35W	8	13	16	26	82	129
	50W	6	9	11	18	60	94
	75W	4	6	7	12	52	82
	100W	2	3	3	6	35	55
	150W	1	2	2	4	20	31
<b>LED</b>							
LED 230V with integrated electronic ballast - non dimmable	4W	17	27	34	54	86	135
	4.5W	17	27	34	54	86	135
	6W	17	27	34	54	86	135
	7W	17	27	34	54	86	135
	8W	17	27	34	54	86	135
	12W	17	27	34	54	86	135
	17W	13	20	25	40	63	101
	18W	13	20	25	40	63	101
	22W	13	20	25	40	63	101
	30W	9	14	17	28	44	70
	34W	9	14	17	28	44	70
	40W	9	14	17	28	44	70
	50W	7	11	14	22	35	55
	4W	38	60	76	120	159	250
LED 230V with integrated electronic ballast - dimmable	5.5W	38	60	76	120	159	250
	6W	38	60	76	120	159	250
	7W	38	60	76	120	159	250
	8W	38	60	76	120	159	250
	12W	38	60	76	120	159	250
	17W	28	44	56	88	118	185
	18W	28	44	56	88	118	185
	22W	28	44	56	88	118	185
	30W	20	31	39	62	82	130
	34W	20	31	39	62	82	130
	40W	20	31	39	62	82	130
	50W	16	24	30	48	65	102
LED 230V headlight with integrated electronic ballast	100W	-	-	3	5	6	9
	150W	-	-	1	3	4	6
	200W	-	-	1	2	4	6
LED 12V with separated transformer - dimmable	1W	38	60	76	120	180	220
	2.5W	38	60	76	120	180	220
	4W	38	60	76	120	180	220
	5W	38	60	76	120	180	220
	7W	38	60	76	120	160	200
	10W	38	60	76	120	160	200
	15W	28	44	56	88	160	200
<b>Fluorescent tubes</b>							
T5 single - uncompensated	15W	13	20	19	30	70	100
	18W	13	20	19	30	70	100
	20W	12	19	19	30	70	100
	36W	12	15	17	28	60	90
	40W	10	13	16	26	60	90
	42W	9	12	15	24	55	83
	58W	7	9	10	17	35	56
	65W	6	8	10	17	35	56
	80W	5	7	9	15	30	48
	115W	4	5	6	10	20	32
	140W	3	5	6	10	16	26
T5 single - parallel compensation	15W	7	11	12	20	36	57
	18W	7	11	12	20	36	57
	20W	7	11	12	20	36	57
	36W	7	11	12	20	34	53
	40W	7	11	12	20	29	45
	42W	7	11	12	20	29	45
	58W	6	10	9	15	27	42
	65W	6	10	9	15	27	42
	80W	6	10	9	15	27	42
	115W	6	10	9	15	25	39

	Lamp Power	16A	25A	16A +	25A +	40A	63A
Fluorescent tubes							
T5 double - uncompensated	2 x 18W	13	20	25	40	50	78
	2 x 20W	12	19	24	38	50	78
	2 x 36W	12	15	19	30	44	69
	2 x 40W	10	13	16	26	40	63
	2 x 42W	9	12	15	24	40	63
	2 x 58W	7	9	11	18	27	42
	2 x 65W	6	8	10	16	27	42
	2 x 80W	5	7	8	14	22	35
2 x 115W	4	5	6	10	16	25	
T5 double - serie compensation	2 x 18W	7	11	14	22	34	53
	2 x 20W	7	11	14	22	29	45
	2 x 36W	6	10	12	20	27	42
	2 x 40W	6	10	12	20	27	42
	2 x 42W	6	10	12	20	27	42
	2 x 58W	6	10	12	20	25	39
	2 x 65W	5	7	8	14	23	36
	2 x 80W	5	7	8	14	20	31
2 x 115W	4	5	6	10	17	25	
T5 single - electronic ballast	15W	7	11	14	22	36	57
	18W	7	11	14	22	36	57
	20W	7	11	14	22	36	57
	36W	7	11	14	22	34	53
	40W	7	11	14	22	29	45
	42W	7	11	14	22	29	45
	58W	6	10	12	20	27	42
	65W	6	10	12	20	27	42
	80W	6	10	12	20	27	42
	115W	6	10	12	20	25	39
T5 double - electronic ballast	2 x 18W	7	11	14	22	34	53
	2 x 20W	7	11	14	22	29	45
	2 x 36W	6	10	12	20	27	42
	2 x 40W	6	10	12	20	27	42
	2 x 42W	6	10	12	20	27	42
	2 x 58W	6	10	12	20	25	39
	2 x 65W	5	7	8	14	23	36
	2 x 80W	5	7	8	14	20	31
	2 x 115W	4	5	6	10	17	25
Discharge lamps							
High-pressure mercury-vapor lamps - without compensation	50W	9	14	17	28	32	50
	80W	6	9	11	18	24	37
	125W	3	5	6	10	18	28
	250W	2	3	3	6	10	15
	400W	1	1	1	2	6	9
	700W	0	0	0	0	4	5
	1000W	0	0	0	0	2	3
High-pressure mercury-vapor lamps - parallell compensation	50W	7	11	14	22	26	40
	80W	5	8	10	16	22	34
	125W	3	5	6	10	15	23
	250W	2	3	3	6	9	14
	400W	1	1	1	2	5	8
	700W	0	0	0	0	3	5
	1000W	0	0	0	0	2	3
Low pressure sodium lamps - without compensation	18W	8	10	8	12	17	23
	35W	4	6	7	9	14	20
	55W	3	6	7	9	14	20
	90W	2	4	5	6	9	14
	135W	1	3	3	4	6	8
	180W	1	2	2	4	6	8
	225W	1	2	2	4	6	8
Low pressure sodium lamps - parallell compensation	18W	5	7	5	8	12	24
	35W	4	6	4	7	10	23
	55W	3	5	3	5	10	19
	90W	2	3	3	4	8	16
	135W	1	2	1	2	5	7
	180W	1	2	1	2	5	6
	225W	1	2	1	2	5	6
High pressure sodium lamps - without compensation	35W	11	14	15	24	30	50
	50W	9	12	10	15	22	34
	70W	8	9	8	12	18	28
	110W	6	8	6	10	14	22
	150W	4	7	5	8	10	16
	250W	2	4	3	5	6	10
	400W	0	1	1	2	4	6
	1000W	0	1	1	1	2	3
	1000W	0	1	1	1	2	3
High pressure sodium-vapour lamps - electronic ballast or parallel compensation	35W	6	9	11	18	31	50
	50W	6	9	11	18	22	35
	70W	4	6	7	12	16	25
	110W	3	5	6	8	13	21
	150W	3	5	4	6	8	13
	250W	2	3	3	4	7	11
	400W	1	1	1	2	5	8
	1000W	0	0	0	1	2	3
	1000W	0	0	0	1	2	3
Metal halide lamps - without compensation	35W	12	24	19	30	42	55
	70W	10	15	12	17	26	36
	150W	6	7	8	12	14	20
	250W	3	5	5	8	9	14
	400W	1	2	2	4	6	9
	1000W	0	0	0	0	3	5
	1000W	0	0	0	0	3	5
Metal halide lamps - electronic ballast or parallel compensation	35W	6	10	12	18	22	39
	70W	5	8	10	13	22	39
	150W	3	5	6	8	12	22
	250W	3	5	6	7	9	16
	400W	1	1	1	2	5	7
	1000W	0	0	0	1	2	3
	1000W	0	0	0	1	2	3

## Technical Specifications

	EH011	EH010	EH111	EH110	EH171	EG103	EG103E	EG103V	EG203	EG203E	EG493E
Version	Daily	Daily	Daily	Daily	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly & Annual
Voltage Supply	230V 50/60Hz	230V 50Hz	230V 50/60Hz	230V 50Hz	230V 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz
Consumption	0.5VA	0.5VA	0.5VA	0.5VA	0.5VA	6VA	6VA	0.8VA	6VA	6VA	6VA
Output	1 NO Contact Volt Free	1 NO Contact Volt Free	1 C/O Contact Volt Free	1 C/O Contact Volt Free	1 C/O Contact Volt Free	1 Volt Free Changeover Contact	1 Volt Free Changeover Contact	1 Volt Free Changeover Contact	2 Volt Free Changeover Contacts	2 Volt Free Changeover Contacts	2 Volt Free 2 NO Changeover Contact Contacts
<b>Switching Capacity</b>											
AC 1	16A / 250V	16A / 250V	16A / 250V	16A / 250V	16A / 250V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	10A AC 1 / 250V
Inductive Load cos 0.6	4A / 250V	4A / 250V	4A / 250V	4A / 250V	2.5A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V
Incandescent Lamp	900W	900W	900W	900W	900W	2300W	2300W	2300W	2300W	2300W	1500W
Halogen Lighting 230V	-	-	-	-	-	2300W	2300W	2300W	2300W	2300W	1500W
Compensated Fluorescent Tubes (max 45µF)	-	-	-	-	-	400W	400W	400W	400W	400W	400W
Non Compensated Fluorescent Tubes Compensated in Series	-	-	-	-	-	1000W	1000W	1000W	1000W	1000W	800W
Compact Fluorescent Tubes	-	-	-	-	-	500W	500W	500W	500W	500W	400W
Minimum Current AC 1	-	-	-	-	-	100mA / 250V	100mA / 250V	-	100mA / 250V	100mA / 250V	100mA / 250V
Minimum Current DC 1	-	-	-	-	-	-	-	100mA / 12V	-	-	-
Galvanic Insulation Between Power Supply and Output	-	-	-	-	-	< 4 kV	< 4 kV	< 4 kV	< 4 kV	< 4 kV	< 4 kV
<b>Characteristics</b>											
Technology	Quartz	Quartz	Quartz	Quartz	Quartz	-	-	-	-	-	-
Dial	24hrs	24hrs	24hrs	24hrs	7 days	-	-	-	-	-	-
Minimum Switching	5min	5min	5min	5min	2h	-	-	-	-	-	-
Programming Capacity	-	-	-	-	-	56 Steps	56 Steps	56 Steps	56 Steps	56 Steps	300 Steps
Minimum Time Between 2 Steps	-	-	-	-	-	1min	1min	1min	1min	1min	1min
Working Accuracy	1sec per day	1sec per day	1sec per day	1sec per day	1sec per day	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±0.2sec / 24h
Supply Failure Reserve	200hrs	No	200hrs	No	200hrs	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 Years Lithium Battery
Reached in	120h	120h	120h	120h	120h	-	-	-	-	-	-
Manual Switch Type	On Auto On	Off Auto On	Off Auto On	Off Auto On	Off Auto On	-	-	-	-	-	-
Protection Degree	-	-	-	-	-	IP20	IP20	IP20	IP20	IP20	IP20
<b>Environment</b>											
Working Temperature	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-10°C to +45°C
Storage Temperature	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
<b>Connection</b>											
Flexible	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1 to 4mm <sup>2</sup>
Rigid	-	-	-	-	-	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1.5 to 6mm <sup>2</sup>

EH010 / EH011  
230 VM ±10% 50/60HzEH110 / EH111 / EH171  
230 VM ±10% 50/60Hz



## Keys

1. Menu Selection of operating mode
  - Auto Mode of running according to the program selected
  - Prog New for programming mode
  - Prog To modify an existing program
  - ☞ Checking of the program
  - 🕒 Modification of time, date and selection of the winter/summer time change mode.
  - 📅 Holidays
2. +/- Navigation or setting of values
  - 👉 In auto, mode, selection of overrides, waivers or random operation
3. OK To validate flashing information on display
4. ⬅ To return to the previous step

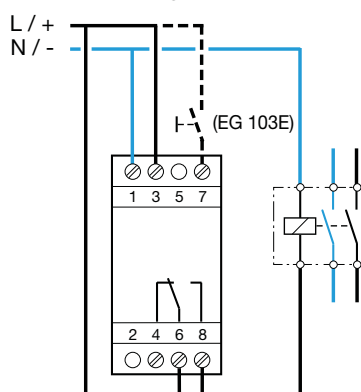
You may return into auto mode at any moment using menu.  
If no action is taken for 1 min, the switch returns to auto mode.

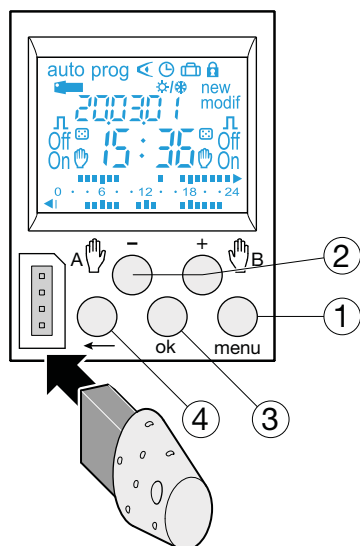
## Major Characteristics

- Product delivered with current time and date set
- Automatic change of winter / summer time ☼/🌑
- Programming key ☞
  - For permanent waivers
  - For program copy or save
- Programming for day or group of days
- 56 program steps On, Off
- Impulses ⏏ (1 sec to 30 min)\*
- Permanent overrides On or Off (👉 permanent light on)
- Temporary overrides On or Off (👉 flashing)
- Holiday mode 📅 : overrides On or Off between two dates\*
- Simulation of presence ☞ \*
- Display bar graph of daily profile
- Keyboard locking possible 🔒
- Programmable with power off
- Back lit display\*

\* Evolution models E or V only

## Connection Diagram





## Keys

- |          |   |
|----------|---|
| 1. Menu  | Selection of operating mode   |
| Auto     | Mode of running according to the program selected                               |
| Prog     | New for programming mode  |
| Prog     | To modify an existing program   |
| ⏪        | Checking of the program   |
| 🕒        | Modification of time, date and selection of the winter/summer time change mode. |
| 📅        | Holidays  |
| 2. + / - | Navigation or setting of values   |
| A 🖐      | In auto, mode, selection of overrides, waiver or random operation.              |
| B 🖐      |   |
| 3. OK    | To validate flashing information on display                                     |
| 4. ⬅     | To return to the previous step  |

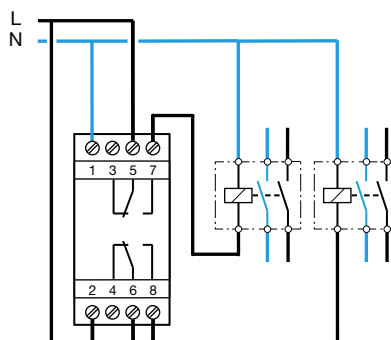
You may return into auto mode at any moment using menu.  
If no action is taken for 1 min, the switch returns to auto mode.

## Major Characteristics

- Product delivered with current time and date set
- Automatic change of winter / summer time 🕒/🕒
- Programming key ⬅
  - For permanent waivers
  - For program copy or save
- Programming for day or group of days
- 56 program steps On, Off
- Impulses ⏏ (1 sec to 30 min)\*
- Permanent overrides On or Off (🖐 permanent light on)
- Temporary overrides On or Off (🖐 flashing)
- Holiday mode 📅 : overrides On or Off between two dates\*
- Simulation of presence 🏠 \*
- Display bar graph of daily profile
- Keyboard locking possible 🔒
- Programmable with power off
- Back lit display\*

\* evolution models E only

## Connection Diagram



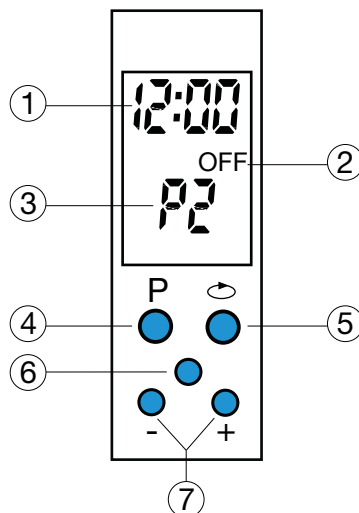
## Technical Characteristics

Electrical Characteristics	
Voltage Supply	230V $\pm 10\%$ 50/60Hz
Consumption	1VA
Output	1 Changeover contact 16A - 250V AC 1 3A - 250V cos $\phi$ = 0.6 1000W Incandescent lighting
Functional Characteristics	
Number of programs	5 Adjustable Pre-recorded Programs
Accuracy	$\pm 6$ min per year
Supply Failure Reserve	Total of 3 years
Environment	
Working Temperature	-10°C to +50°C
Storage Temperature	-10°C to +60°C
Cable Capacity	1 to 4mm <sup>2</sup>
Main Characteristics	Easy to program: 5 programs are pre-recorded. The user just has to select the program which corresponds to its use and modify time switches if necessary.

The 5 pre-registered programs are as follows

P	Prog
P0	OFF
P1	ON
P2	6.00 23.00
P3	6.00 8.00 17.00 23.00
P4	6.00 8.00 11.00 13.00 17.00 23.00

## Product Presentation



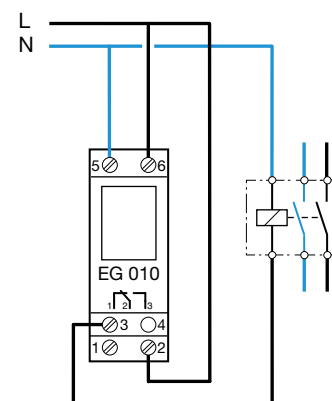
### Display

1. Time
2. Circuit Status
3. Program Selection

### Buttons

4. P to select the program to apply
5. Reset
6. to scroll program steps
7. + and - : to input time

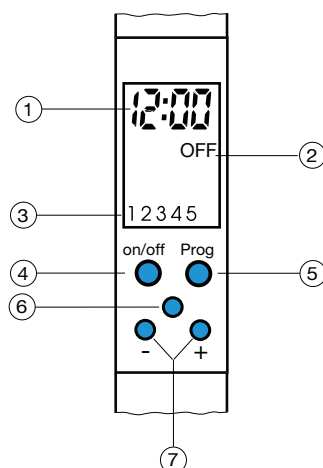
## Electrical Connection



## Technical Characteristics

Electrical Characteristics	
Voltage Supply	230V $\pm 10\%$ 50/60Hz
Consumption	1VA
Output	1 Changeover contact 16A - 250V AC 1 3A - 250V cos $\phi$ = 0.6 1000W Incandescent lighting
Functional Characteristics	
Number of programs	20 Program Steps (each program step can be applied to one of several days)
Accuracy	$\pm 6$ min per year
Supply Failure Reserve	Total of 3 years
Environment	
Working Temperature	-10°C to +50°C
Storage Temperature	-10°C to +60°C
Cable Capacity	1 to 4mm <sup>2</sup>

## Product Presentation



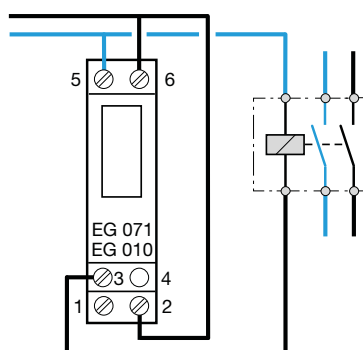
### Display

1. Time
2. Circuit Status
3. Days of the week

### Buttons

4. ON / OFF : to select the circuit status
5. Reset
6. Prog: to program the device and scroll program steps
7. To input time and day

## Electrical Connection

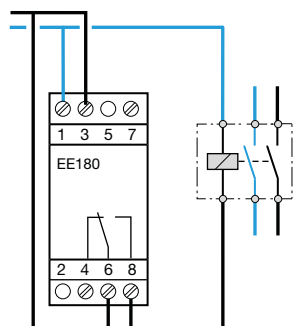




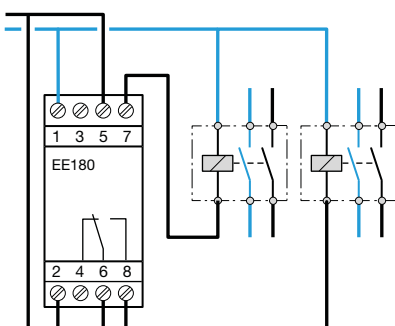
## Technical Characteristics

	EE180 (1 Channel)	EE181 (2 Channel)
Width in 17.5mm Modules	2	2
Supply Voltage	230V AC (+10 % / -15%, 50/60Hz	
Number of Outputs	1	2
Characterisitics of Relay	Change over contact 16A C 1 250V /10A cos phi = 0.6	
Incandescent	2300W	
230V Halogen	2300W	
Standards	CE + CTICK and CEI 60-669	
Connection		
Flexible	1 to 6mm²	
Rigid	1.5 to 10mm²	
Environment		
Storage Temperature	-20°C to +60°C	
Working Temperature	-10°C to +55°C	
IP	IP20	
Functional Characteristics		
Display LCD	Without backlight screen	
Operating reserve	Lithium battery 5 years	
Precision	+/- 1.5s/day	
Programming Key	Yes	
Automatic change of winter / summer time	Yes	
Functions available in free programming	Weekly programming / permanent override / temporary override	
Astro Functions		
Astro mode	Yes	Independent programming for each channel
Programming of the lighting interruption	Yes (if channel Astro)	
Temporary override	15 / 30 / 60min	
Maintained ON	Adjustment common to the 2 channels	
Anticipation ON	Adjustment common to the 2 channels	

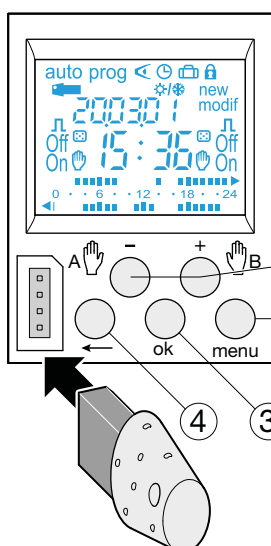
### Electrical Connection EE180 : 1 Channel



### EE181 : 2 Channels



### Product Presentation



### Keys

1. Menu Selection of operating mode
- Auto Mode of running according to the program selected
- Prog New for programming mode
- Prog To modify an existing program
- ⏪ Checking of the program
- ⌚ Modification of time, date and selection of the winter/summer time change mode
- Astro Astronomical mode
- ☆ Indicated that the channel is in astronomical mode
2. + / - Navigation or setting of values
- A In auto, mode, selection of overrides, waiver or random operation
- B In auto, mode, selection of overrides, waiver or random operation
3. OK To validate flashing information on display
4. ⏪ To return to the previous step

You may return into auto mode at any moment using menu.  
If no action is taken for 1 min, the switch returns to auto mode.

## Delay Timers

Delay timer devices are used to control a variety of processes where the requirement is for switching circuits on, off or delaying the on or off switching for a pre-set period of time. Typical device types are...

- Delay on - intended to delay the starting or switching of a circuit for a set period of time following the command signal e.g. to delay the starting of motor loads where a large number of motors are to be started by the same switch to reduce the effects of the starting currents.
- Delay off - intended to delay the stopping or switching off of a circuit for a set period of time following the removal of the command signal e.g. to overrun an extractor following the switching off of a process that creates fumes.
- Adjustable time on - intended to switch on for a set period, the command signal must remain on throughout the set period e.g. to switch on two sets of heaters with one set (the boost) switching off after the set period.
- Impulse timer - intended to switch on for a set period, the command signal length is not important e.g. to boost a time clock controlled circuit such as a water storage heater.
- Symmetrical timer - intended to toggle a circuit on and off in regular time patterns e.g. to run an extractor intermittently.

### Multifunction Timer - 6 Individual Functions

A = Timer.

B = Delay off (output relay opens either at end of command or after set time period - whichever is shorter).

C = Delay off.

D = Delay on.

E = Delay on (output relay closes either at end of command or after set time period - whichever is shorter).


F = Symmetrical timer.

On selection - contact permanently closed

Off selection - contact permanently open

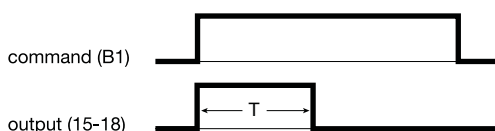
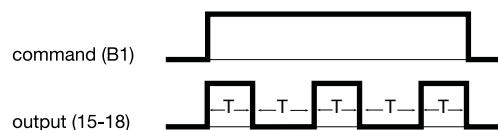
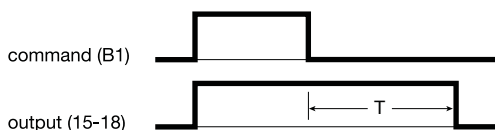
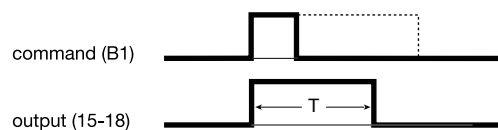
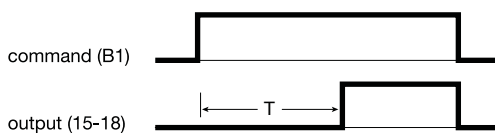
———— Output relay open - with no command

 Output relay open - with command signal running

 Output relay closed - with command signal running

 Output relay close - with command signal removed

 Output relay closed (EZN005)

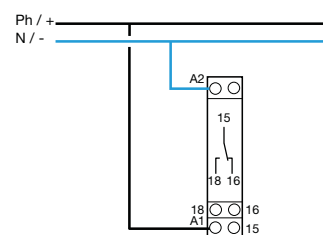


## Technical Specifications

EZN001, EZN002, EZN003, EZN004, EZN005, EZN006t	
<b>Electrical Characteristics</b>	
Supply Voltage	24-28 Vdc 12-48 Vdc (+10%) Terminals A1 & A2 12-230 Vac (+10%) Terminals A3 & A2
Output	1 Volt Free C/O Contact
<b>Life Expectancy</b>	
Max Load AC 1	8A / 230V~ 50,000 Cycles
Incandescent	450W~ 500,000 Cycles
Fluorescent Non Comp.	600W~ 50,000 Cycles
Inductive Load 0.6pf	5A / 230V~ 100,000 Cycles
<b>Min Power</b>	
AC	100mA at 230V
DC	100mA at 12V
<b>Galvanic Isolation</b>	2kV
<b>Standard / Norm</b>	BS EN 60669-2-1
<b>Functional Characteristics</b>	
Timer Range	0.1s - 10 hours
<b>Min. Command Period</b>	
AC	50ms
DC	30ms
<b>Operating Temperature</b>	
Working	-20°C to +50°C
Storage	-40°C to +50°C
<b>Connection Capacity</b>	
Flexible	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>

## Functional characteristics EZN001, EZN003, EZN005, EZN006 (functions D,E,F)

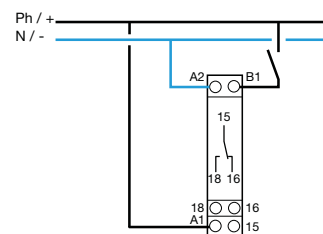
CD : Command.  
O : Output.  
T : Time delay.



## EZN002, EZN004, EZN006 (functions A,B,C)

indicator light (for versions with NO contact).

ON  
OFF



Time Delay Breakers	1 sec to 1 hour	0.1 min to 10 hour	0.1 sec to 10 mins	0.2 mins to 20 hours
Ranges	1 sec to 10 secs 0.1 min to 1 min 1 min to 10 min 0.1 hour to 1 hour	0.1 min to 1 min 1 min to 10 min 0.1 hour to 1 hour 1 hour to 10 hour	0.1 secs to 1 sec 1 second to 10 secs 0.1 min to 1 min 1 min to 10 mins	0.2 min to 2 min 2 min to 20 min 0.2 hour to 2 hour 2 hour to 20 hour

## Time Lag Switches

A common area where time delay devices are used is stairways and corridors in multi occupancy buildings where they provide a level of energy efficiency. The EMN001 device provides basic time lag control.

### Technical Specification

	EMN001	EMN002
<b>Electrical Characteristics</b>		
Supply voltage	230V +10 -15% 50/60Hz	230V +10 -15%50/60Hz
Consumption	1VA	0.5W Permanent 8W Max.
Size	1	-
<b>Breaking Capacity</b>		
AC1	16A 230V AC	4A 230V~
Incandescent	2300W	1000W
Halogen 230V	2300W	1000W
Ferro Magnetic Transformer	1600W	-
Parallel Compensated	Capacitor 112µF	-
Fluorescent Lamps	1000W	-
Series Compensated	3600W	-
Electronic Transformer	2300W	-
Compact Fluorescent Lamps with Electronic Ballast	60 x 7W or 40 x 11W or 32 x 15W or 20 x 23W	-
with Conventional Ballast	23000W	-
<b>Functional Characteristics</b>		
Time Delay	30s to 10min	24s
Retrigger	Yes	-
Max. Current in Rest Position	100mA	-
Automatic 3/4 Recognition	Yes	-
Local Command	Automatic / Override On	-
<b>Environment</b>		
Working Temperature	-10 to +55°C	-15 to +55°C
Storage Temperature	-20 to +60°C	-25 to +70°C
<b>Connection</b>		
Flexible	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>
Connection EM001/EM002	-	2 wires 1.5

#### A: Basic Mode

Press push button to switch ON the light. After a set time (Adjustable "T", the light will switch OFF automatically.

#### B: Prewarning Mode

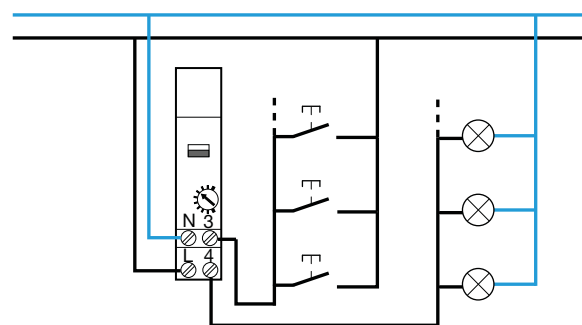
A signal (blink) will appear before the end of the lighting period.

#### C: Double delay mode

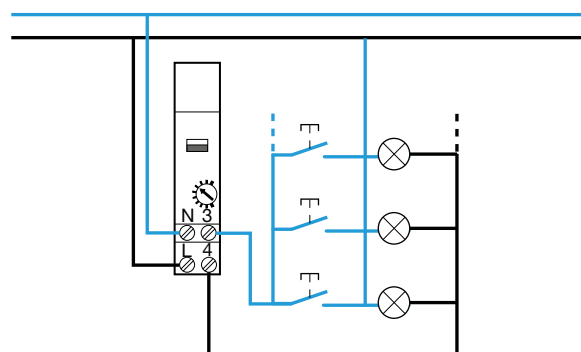
Press push button to switch light ON. After a set time (Adjustable "T", the light will switch OFF automatically. If you press the button for more than 3 seconds, a time lag of one hour begin.

## Wiring Diagrams

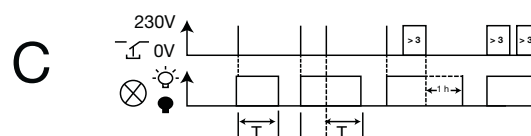
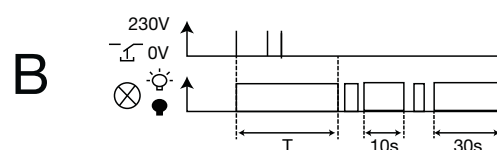
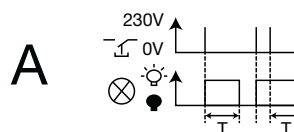
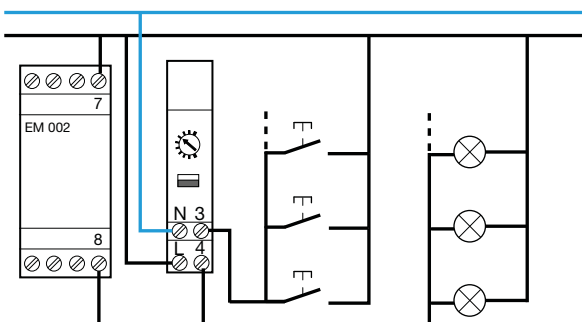
### 4-Wire



### 3-Wire



### Combination EM002 with EMN001



## Light Sensitive Switches

Using light sensitive switches can prevent the unnecessary use of lighting circuits where sufficient daylight exists. The benefit of modular devices is the facility to set the ambient lighting level at which the device will operate, and as the device is fitted at the distribution point prevent unauthorised tampering. The remote photocell unit can be mounted up to a distance of 50 metres from the device. Two devices are available the standard EEN100 light sensitive switch and an enhanced programmable version the EE171 that also allows time clock control.

### Principle of Operation

Both devices control lighting systems according to natural illumination;

- The user sets the working level:
- The photo cell measures the external light level

The output of the EEN100 is:

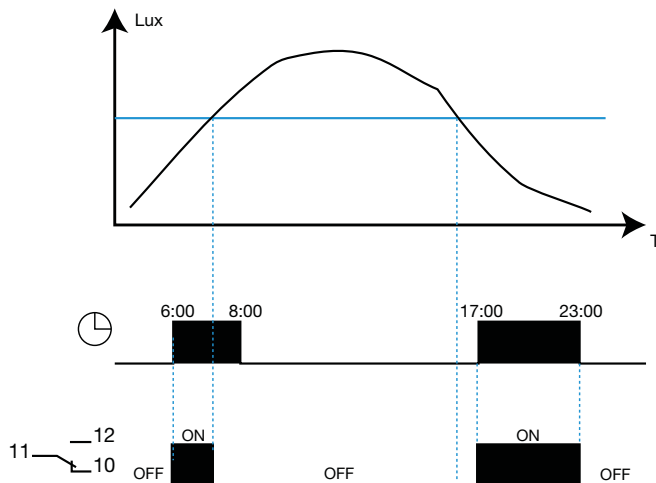
- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

The output of the EE171 during the programmed ON time period is:

- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

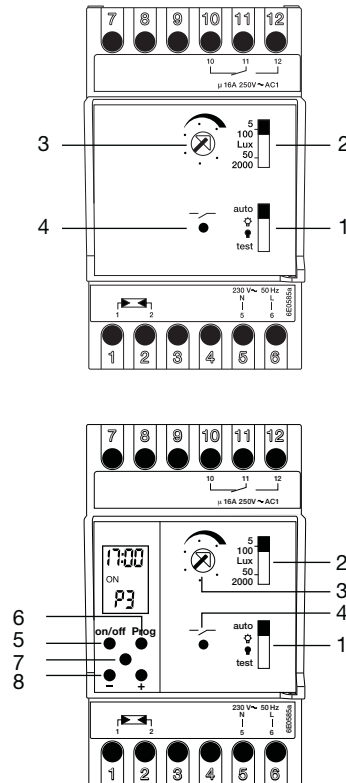
The output of the EE171 during the programmed off time period is:

- OFF, regardless of the lighting level



The light sensitive switches include a built in time delay which avoids unnecessary switching due to temporary factors such as car headlight beams etc...

## Description

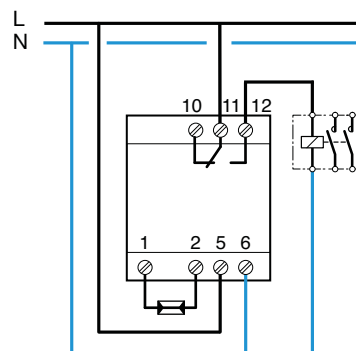


The programmable light sensitive switch EE171 has two main functions:

- Light sensitive switch comprising
  - 1 Override selector switch to allow permanent ON or OFF, auto or test mode
  - 2 Lighting range selector
  - 3 Potentiometer to set light level
  - 4 Indicator to show output switching status
- A programmer to establish the automatic operating cycle
 

The programmer comprises 4 keys:

  - 5 **ON / OFF** to choose whether the circuit is on or off.
  - 6 **Prog** to set the program and scroll program steps
  - 7 **Reset**
  - 8 **+** and **-** to change settings



**Mounting the Cell**

To ensure correct operation of the light sensitive switch, the cell must not be influenced by artificial light or direct solar radiation and should be sheltered from dust and humidity. In case of disconnection of the link between the cell and the light sensitive switch, the output of the device will be switched on. Make sure the light sensitive switch is unplugged before connecting the cell.

	<b>EE002</b>	<b>EE003</b>
<b>Type</b>	Flush Mounting	Surface Mounting
<b>Dimensions (mm)</b>	89 x 48 x 32	25 x 25 x 20 Hole 25mm
<b>Connection</b>	Cable 1m 2 x 0.75mm <sup>2</sup>	0.75 to 4mm <sup>2</sup>
<b>Protection Class</b>	IP54	IP54
<b>Working &amp; Storage Temperature</b>	-30°C to +60°C	-30°C to +60°C

**Adjustment of the Working Level**

The test position of the override selector 1 makes setting the preset level easier by removing the ON and OFF delay.

Select the sensitivity range which suits your application (selector 1) 5 to 100 lux (low light level) application examples; public lighting, shop windows, signals...

50 to 2000 lux (high light level) application examples; controls of shades

At the appropriate moment of the day, put the selector 1 in test position; turn the potentiometer 2 up to the switching point (the indicator 4 lights); put the selector back to position 'auto' the normal operating mode of the device.

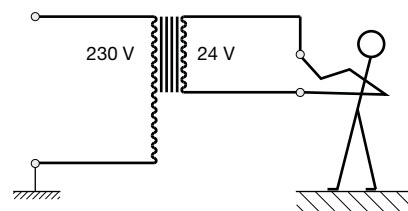
**Technical Specification**

<b>Electrical Specification</b>	
Voltage Rating	230V +10 -15% 50Hz
Consumption	1.5VA Max
Output	1 Voltage Free Changeover Contact
Max Breaking Capacity	AC1 16A 250V~
Incandescent Lamp	2000W 230V~
Halogen Lamp	1000W 230V~
Fluorescent Lamp Uncompensated	1000W 230V~
Compensated in Series (10µF)	1000W 230V~
// Compensated (15µF)	200W 230V~
Duo	1000W 230V~
<b>Functional Characteristics</b>	
Sensitivity Range	5 to 100 lux, 50 to 2000 lux
Cycle	Weekly
Programs	8 Pre-defined Program
Program Setting	1 Minute Increments*
Accuracy	+6min / annum*
Operating Reserve	Lithium Battery Total of 3 Years Supply Failure*
On and Off Delay	15 to 60s
Working Temperature	-30°C to +60°C (cell) -10°C to +50°C (modular device)
Storage Temperature	-20°C to +60°C
Protection Class (cell)	IP54
Insulation Class	II
<b>Connection Capacity</b>	
Modular Device	0.5 to 4mm <sup>2</sup>
Cell	0.75 to 2.5mm <sup>2</sup>
Max Length between Cell and Modular Device	50m
Mounting of the Cell with 2 Screws	2.5mm

\* EE171 only

**Safety Transformers**

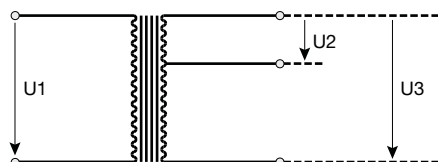
These transformers are designed to ensure personal safety, their primary winding are electrically separated from their secondary windings and they are intended to feed separated extra low voltage circuits  $U \leq 50V$ . A thermal overload, in the primary windings, ensures that if a short circuit or an overload occurs in the output it will not damage the device.

**Bell Transformers**

Bell transformers are similar to safety transformers but the secondary voltages do not exceed 24 volts, they are also similarly protected against short circuits and overloads, by thermal protection in the primary winding.

**Compliance with the Standards**

The bell and safety transformers conform with BS EN 61558. Where transformers are to be used in a common enclosure with other devices heat dissipation inserts LZ060 should be used.

**Recommendation of Use**

- To link only one secondary (never link both simultaneously)
- Do not connect (in series or in parallel) secondaries of different transformers

**Technical Specification**

	ST301	ST303	ST305	ST312	ST313	ST314	ST315
<b>Nominal Power</b>	4VA	8VA	16VA	25VA	16VA	40VA	63VA
<b>Designation</b>	Bell	Bell	Bell	Safety	Safety	Safety	Safety
<b>Primary Voltage</b>	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts
<b>Secondary Voltage</b>	U2	8 Volts	8 Volts	8 Volts	12 Volts	12 Volts	12 Volts
		In = 0.5A	In = 1A	In = 2A	In = 2.08A	In = 1.33A	In = 5.25A
	U3	12 Volts	12 Volts	12 Volts	24 Volts	24 Volts	24 Volts
		In = 0.33A	In = 0.67A	In = 1.33A	In = 1.04A	In = 0.67A	In = 2.63A
<b>No Load</b>	U2	12 Volts	15 Volts	12 Volts	14 Volts	16 Volts	14 Volts
<b>Secondary Voltage</b>	U3	18 Volts	22 Volts	19 Volts	29 Volts	30 Volts	27 Volts
<b>Galvanic Insulation</b>	4kV	4kV	4kV	4kV	4kV	4kV	4kV
<b>Max Functional Temperature</b>	35°C	35°C	35°C	35°C	35°C	35°C	35°C
<b>Overload and S/C Protection</b>	Thermal cut out in the primary winding						
<b>Insulation Class</b>	H	H	B	B	B	B	H

## Technical Specifications

Electrical Characteristics	
Voltage Supply	230V +10 -15% 50/60Hz
Consumption	1.5VA
Output	1 Changeover Contact 2A 230V AC1
Functional Characteristics	
4 Temperature Ranges	-30 to 0°C 0 to +30°C +30 to +60°C +60°C to +90°C (Varying accuracy)
Environment	
Working Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C
Connection Capacity	
Flexible	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>
Probe	Maximum Distance 50m

## Main Characteristics

### Multiple Applications

A single device to solve all your problems of regulation or temperature control, from cold room to incubator.

### Varying Accuracy

The accuracy can be adapted according to the application. e.g.: low for ambient temperature regulation, high for incubator regulation.

### Safety Feature for Probe Failure

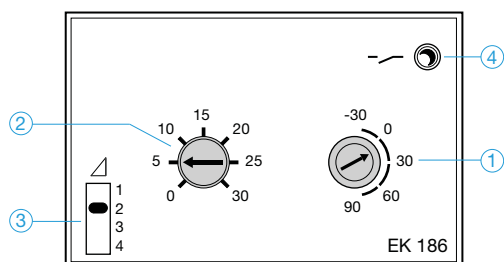
To protect the installation in case of disconnection from the probe, various connections can be made so the thermostat will be:

- Permanent OFF
- Permanent ON
- Cyclical operation: output ON 1 minute in every 4

### Display

State of output.

## Product Presentation



1. Selection of the range
2. Adjustment of the temperature setting
3. Selection of temperature range
4. Display of state of output

### Working Principle

the EK186 regulates the temperature according to all or nothing principle, it can be associated with different probes, according to the application the accuracy is a function of the temperature range and is selected by a slide switch.

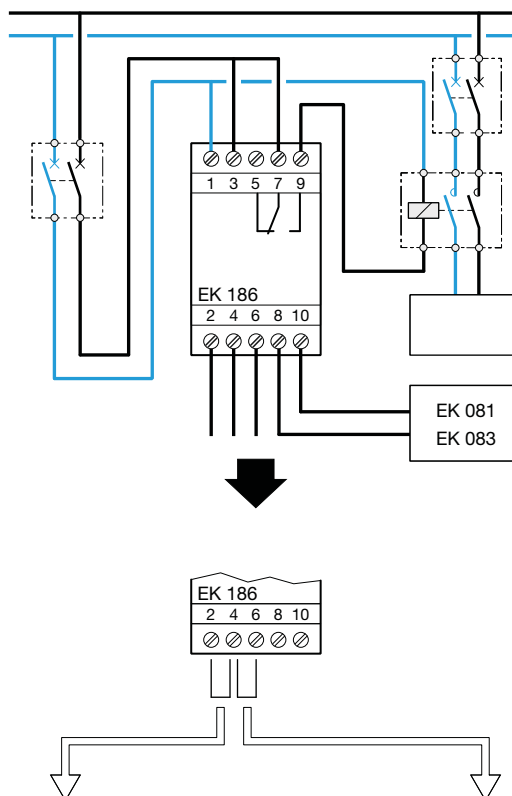
Position on Slide Switch	Temperature range °C			
	-30 to 0	0 to 30	30 to 60	60 to 90
1	± <b>2.15</b>	± 2.54	± 2.98	± 3.43
2	± 0.15	± <b>0.18</b>	± 0.21	± 0.24
3	± 0.38	± 0.45	± <b>0.53</b>	± 0.61
4	± 1.23	± 1.45	± 1.70	± <b>1.96</b>

**Bold** - Preferential accuracies for each temperature range.

### Example of Choice of Accuracy

- Regulation of ambient temperature  
Range: 0 to +30°C  
Accuracy:  $\pm 0.18^\circ\text{C} = 2$
- Control of hot water outgoing circuit  
Range: 30 to +60°C  
Accuracy:  $\pm 0.53^\circ\text{C} = 3$

## Electrical Connection



### Caution

When the temperature ranges 30 to 60°C and 60 to 90°C are selected and the temperature measured by the probe is below 30°C, the safety feature for probe failure must be "permanent on", until the measured temperature reaches the minimum temperature corresponding to the range (i.e. 30°C for the range 30°C to 60°C and 60°C for the range 60°C to 90°C).

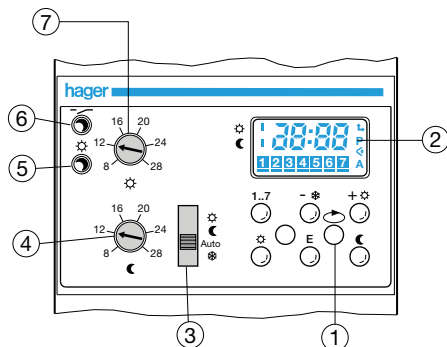




## Technical Specifications

Electrical Characteristics	
Voltage Supply	230V +10 -15% 50Hz
Consumption	4VA
Output	1 Changeover Contact 2A 230V AC1
Functional Characteristics	
Adjustment of Temperature Setting	Comfort and Reduced Temp From +8 to +28°C Fixed Anti-Frost Temperature Setting +8°C Fixed Accuracy: $\pm 0.2^\circ\text{C}$
Cycle	Weekly Cycle
Programming Capacity	24 Steps
Program Setting	1 Minute Increments
Accuracy	$\pm 5$ min/Annum
Supply Failure Reserve	24hours loss of time setting only, program still in memory
Environment	
Working Temperature	-5 to +45°C
Storage Temperature	-20 to +60°C
Connection Capacity	
Flexible	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>
Probe	Maximum Distance 50m

## Product Presentation



1. Programming of automatic cycle "comfort temperature", "reduced temperature", the principle of programming is similar to EG100.
2. LCD screen
3. Facility for permanent override of "comfort temperature", "reduced temperature", or "anti-frost"
4. Adjustment of the reduced temperature setting
5. Display of setting (comfort or reduced)
6. Display of state of output
7. Adjustment of the comfort temperature setting

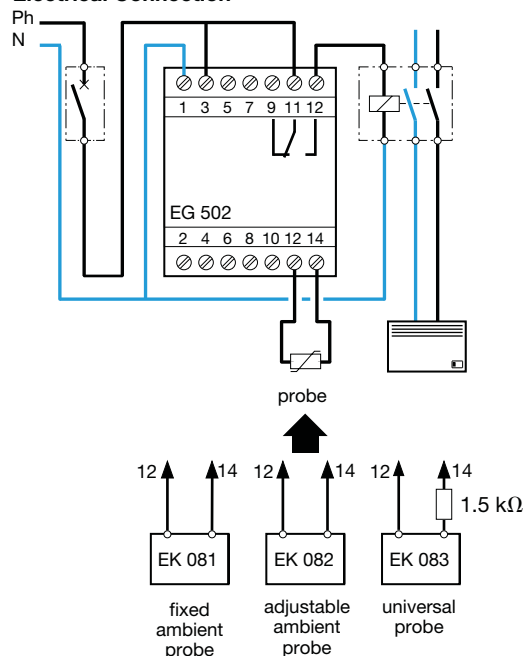
## Main Characteristics

- **Simplified summer/winter time setting**  
Summer/winter time setting is obtained by pressing two separate keys
- **No loss of program in event of unlimited power failure**  
Loss of time setting only, program still in memory
- **Override**
  - Permanent: "comfort, reduced, anti-frost" temperature setting:
  - With automatic return to: "comfort and reduced" temperature setting:
- **2 wires link**  
Between the probe and the unit, this enables the easy replacement of the ambient thermostats in an existing installation
- **Display Mode**  
Allows program to be checked without risk of alteration
- **Groups of days**  
Days can be grouped in order to save program steps (so, a common setting for several days counts only as 1 program step)

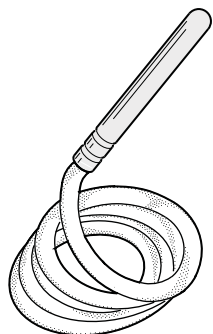
## Working Principle

The programmable thermostat regulates the heating thanks to 2 temperature settings: "comfort" and "reduced", according to a program established by the user; in cases of long absence, it is possible to maintain an anti-frost temperature.

## Electrical Connection



## EK083 Universal Probe



- To associate with EK186 thermostat
- To associate with EK187 thermostat and EK618 time programmable thermostat (for those applications insert in series with the probe a resistance of 1500Ω)

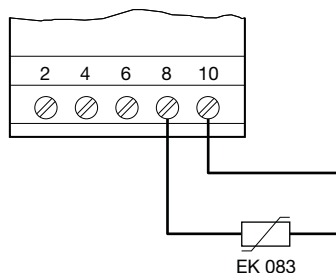
EK083: 10 kOhms at 25°C  
cable length: 4m

### Environment

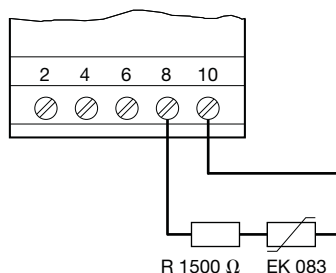
- Working temperature: -30 to +90°C
- Storage temperature: -30 to +100°C

### Electrical Connection

- Associated with EK186



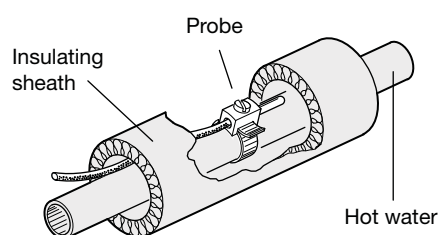
- Associated with EK187 - EK618



## Examples of Applications

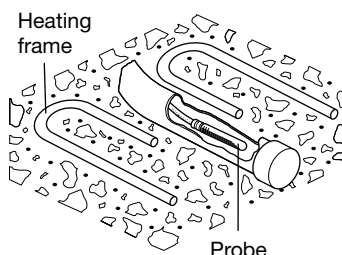
### Use with the clamp collar

- For the control of hot water

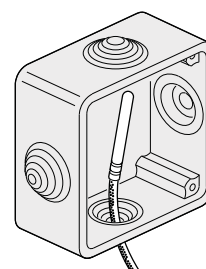


### Use with the clamp collar

- Protected by a sheath for the control of floor temperature



- Used as an external probe in a weatherproof box.



## Resistance of Probes According to Temperature

	EK083	EK081*	EK081** EK082
Temperature °C	R (KΩ)	R (KΩ)	R (KΩ)
+90	0.91	On a wall	-
+80	1.25	1.25	2.83
+70	1.75	1.75	3.33
+50	3.60	3.60	5.18
+30	8.06	8.06	9.64
+25	10	10	11.58
+20	12.49	12.49	14.07
+15	15.71	15.71	17.28
+10	19.90	19.90	21.48
+5	25.39	25.39	26.98
+0	32.65	32.65	34.23

	EK083	EK081*	EK081** EK082
Temperature °C	R (KΩ)	R (KΩ)	R (KΩ)
-5		42.31	-
-10	55.29	-	-
-15	72.89	-	-
-20	96.97	-	-
-25	130.24	-	-
-30	176.68	-	-

Face value at 25°C

Note: \*Association with EK186

\*\*Association with EK187 and EK618

## Technical Specification

- Working voltage : 230 V~ 50/60 Hz - resolution : 1 unit
- Update of the display: 3 / seconds
- Input impedance > 1 MV for the voltmeter SM501
- Isolating resistance : 10 MV
- Maximum voltage: 660 V - number of digits : 3

## Connection

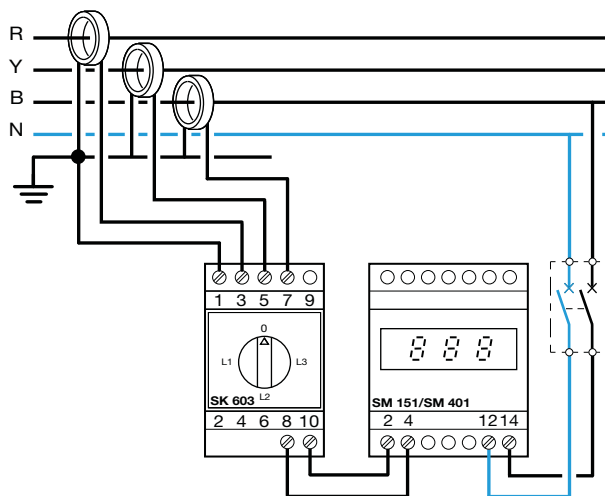
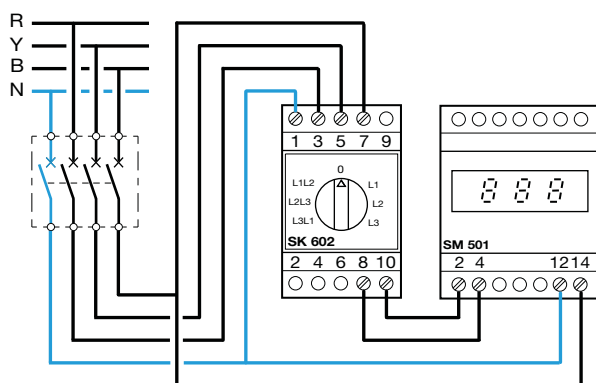
- Flexible: 6mm<sup>2</sup>
- Rigid: 10mm<sup>2</sup>

## Environment

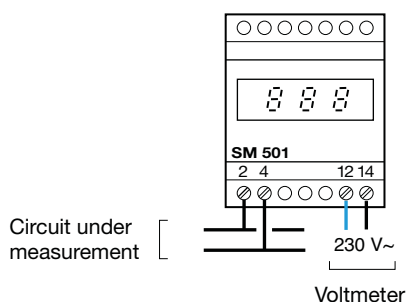
- Working temperature: -10 to +55 °C
- Storage temperature : -40 to +70 °C

Cat ref.	Product	Range	Consump.	Accuracy %	Ref Temp °C	Accuracy Variation °C	Maximum Continuous	Momentary Maximum	Frequency Hz	Isolating Voltage
SM501	Voltmeter	500V	≤4.5 VA	±1	23 ± 1°C	± 0.03% / °C	1.2 Un	2 Un / 5 sec.	45-65	2kV/50Hz - 1 min
SM151 SM401	Ammeter with CT	0-150A 0-400A	≤1 VA	±1	23 ± 1°C	± 0.03% / °C	2 In	10 In / 5 sec.	45-65	2kV/50Hz - 1 min

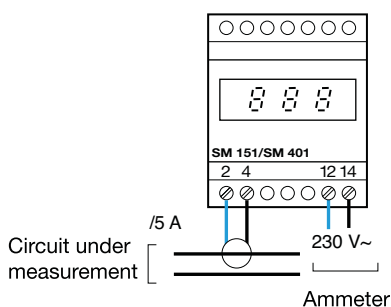
## Electrical Connection



## Electrical Connection SM501



## SM151, SM401



## Hours Counter Technical Specifications

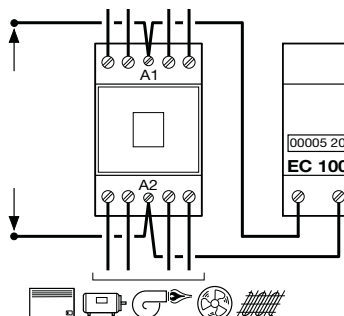
### Electrical Characteristics

- Working voltage: 230V~

### Electrical Connection

- Connection in parallel on the command of the receiver (contactor coil)

## Electrical Connection



## Technical Specification

### Environment

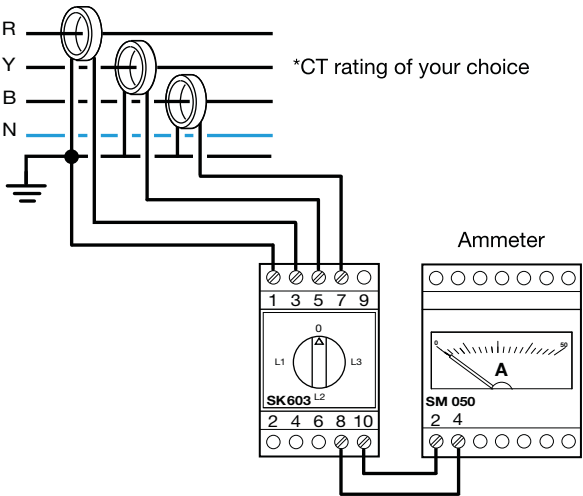
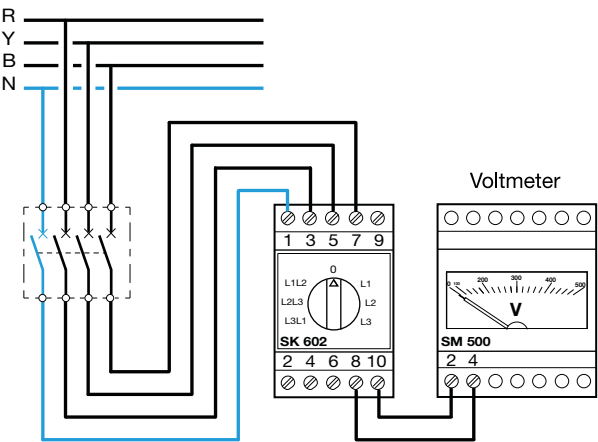
- Working Temperature: -25 to +50 °C
- Storage Temperature: -40 to +80 °C

### Connection

- Flexible: 1 to 6mm<sup>2</sup>
- Rigid: 1.5 to 10mm<sup>2</sup>

Cat ref.	Product	Range	Consump.	Accuracy %	Ref Temp °C	Accuracy Variation °C	Maximum Continuous	Momentary Maximum	Frequency Hz	Isolating Voltage
SM500	Voltmeter	500V	≤3 VA	1.5	23 ± 2°C	± 0.03% / °C	1.2 Un	2Un / 5 sec	45 - 65	2kV/50H z-1min
SM050	Ammeter with CT	0-50A	≤1.1 VA	1.5	23 ± 2°C	± 0.03% / °C	1.2 Un	10Un / 5 sec	45 - 65	2kV/50H z-1min
SM100		0-100A								
SM150		0-150A								
SM250		0-250A								
SM400		0-400A								

## Electrical Connection

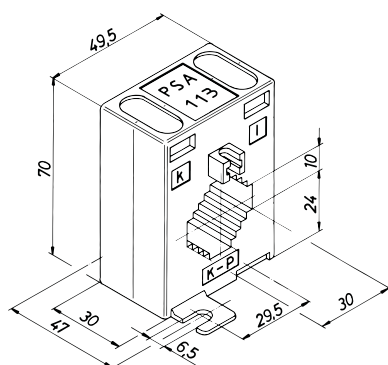


## Technical Data (to EN/IEC60044-1)

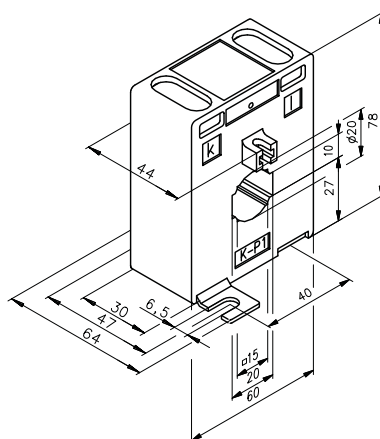
Primary rated current	50 A - 2.000 A
Rated secondary current	5 A
Rated frequency	50 - 60 Hz
Highest voltage for equipment Um	720 V
Rated power-frequency withstand voltage (r.m.s.)	3 kV
Instrument security factor (FS)	FS 5
Rated continuous thermal current	1,2 x In
current rating	120 %
Rated short time thermal current	I <sub>th</sub> = 60 x I <sub>n</sub> (max 50 kA)
Rated dynamic current:	I <sub>dyn</sub> = 2,5 x I <sub>th</sub> (max 120 kA)
Permissible ambient temperature	-40 °C to + 40 °C
Class of insulation in accordance with IEC 60085	E
Degree of protection DIN/EN 60529 / VDE 0470 T1	IP 20
Recommended tightening torque secondary terminals	1,5 - 2 Nm

	Prim. [A]	Sec. [A]	Power [VA]	Accuracy class	Dimensions	Max. Busbar and cable Size
SRA01005	100	5	2.5	1	70 x 49,5 x 30 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm
SRA01505	150	5	2.5	1		
SRA02005	200	5	2.5	1		
SRA02505	250	5	2.5	1		
SRC04005	400	5	5	1		
SRC06005	600	5	5	1		
SRA00505	50	5	1.5	1	78 x 60 x 30 mm	20 x 10 mm 15 x 15 mm Ø 20 mm
SRI03005	300	5	5	1	78 x 60 x 30 mm	40 x 12 mm Ø 28 mm
SRD08005	800	5	5	1	108 x 85 x 30 mm	60 x 10 mm 50 x 30 mm Ø 45 mm
SRD10005	1000	5	5	1		
SRD15005	1500	5	5	1		
SRE20005	2000	5	15	1	122 x 100 x 40 mm	80 x 10 mm 60 x 30 mm Ø 60 mm

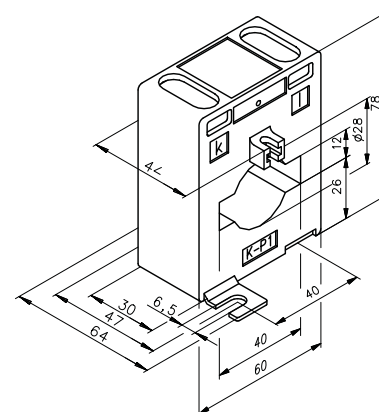
SRA01005, SRA01505, SRA02005,  
SRA02505, SRC04005, SRC06005



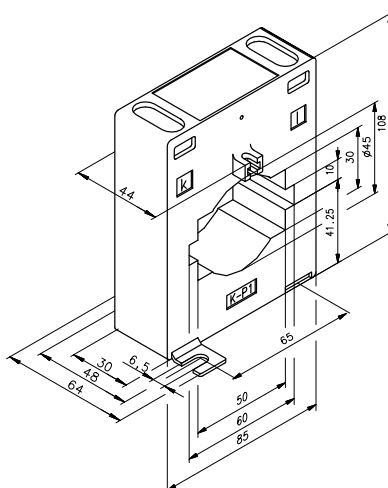
SRA00505



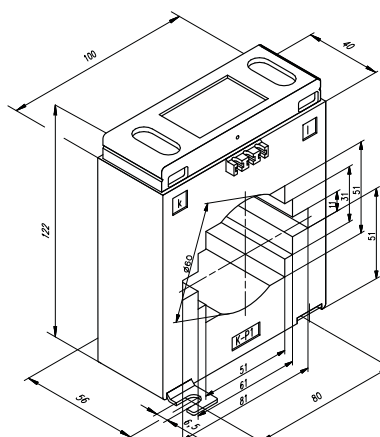
SRI03005



SRD08005, SRD10005, SRD15005



SRE20005

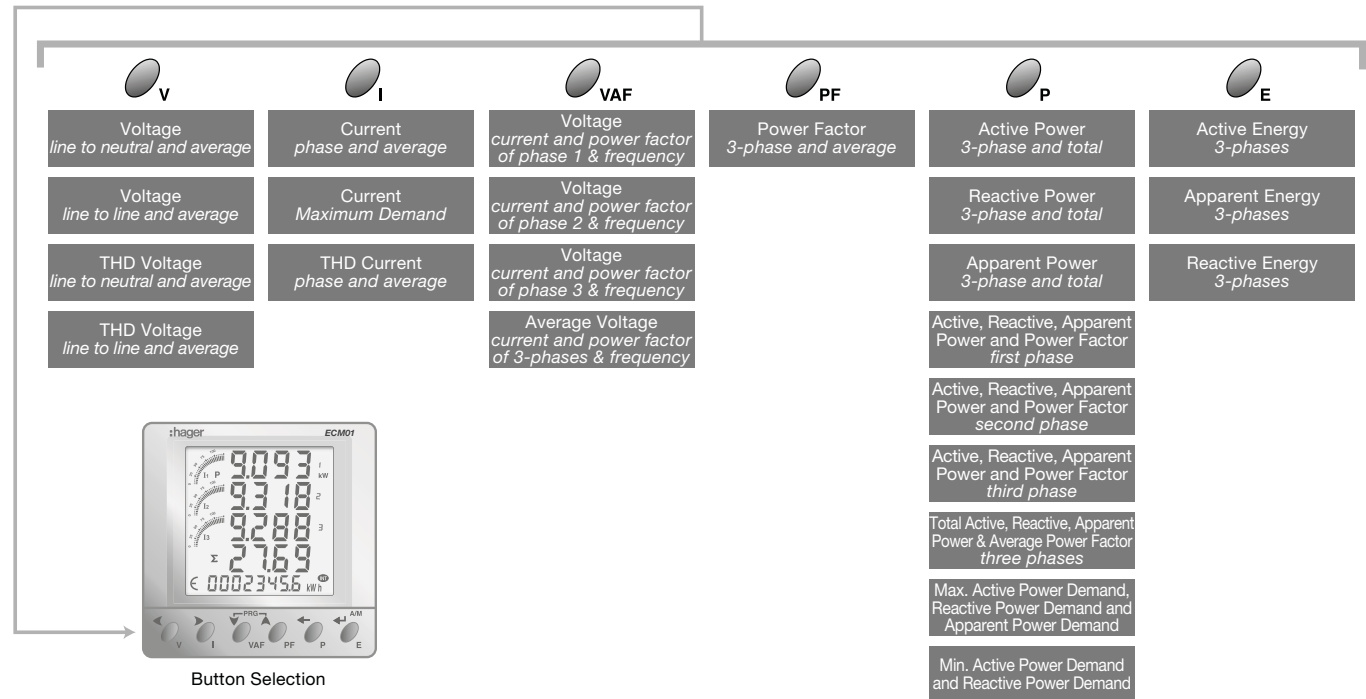


# Multifunction Power Meter - Single CT Connection DIN 96 - LCD Display - ECM01

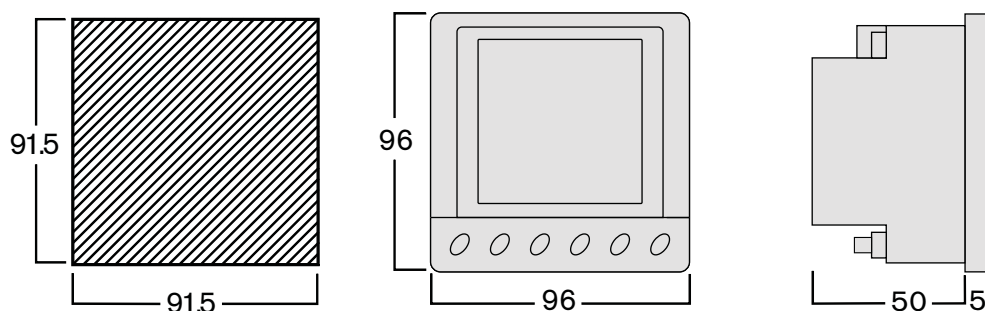
**:hager**

- 96 x 96mm Flush mounting
- Single phase or 3 phase 4 wire network balanced or unbalanced load
- Built in energy pulsed output or with pulsed output and RS485 (modbus)
- Backlit LCD display with bargraph current indication on every page
- Automatic or manual scrolling display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- Programmable VT ratio
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- THD up to 31<sup>st</sup> harmonic for voltage and current
- Self supplied auxiliary
- Programmable CT ratio 5 to 10,000A
- Frequency 45/65Hz
- Wide range of measured parameters (see table below)
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 230g

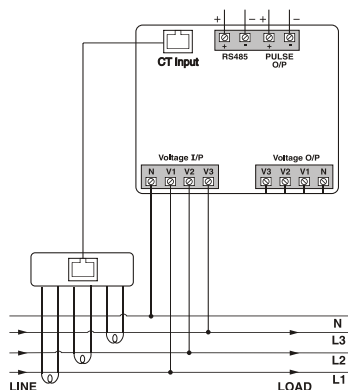
## Function Diagram



## Dimensions Diagram (mm)



Please allow space at the rear of the meter for cable connections.



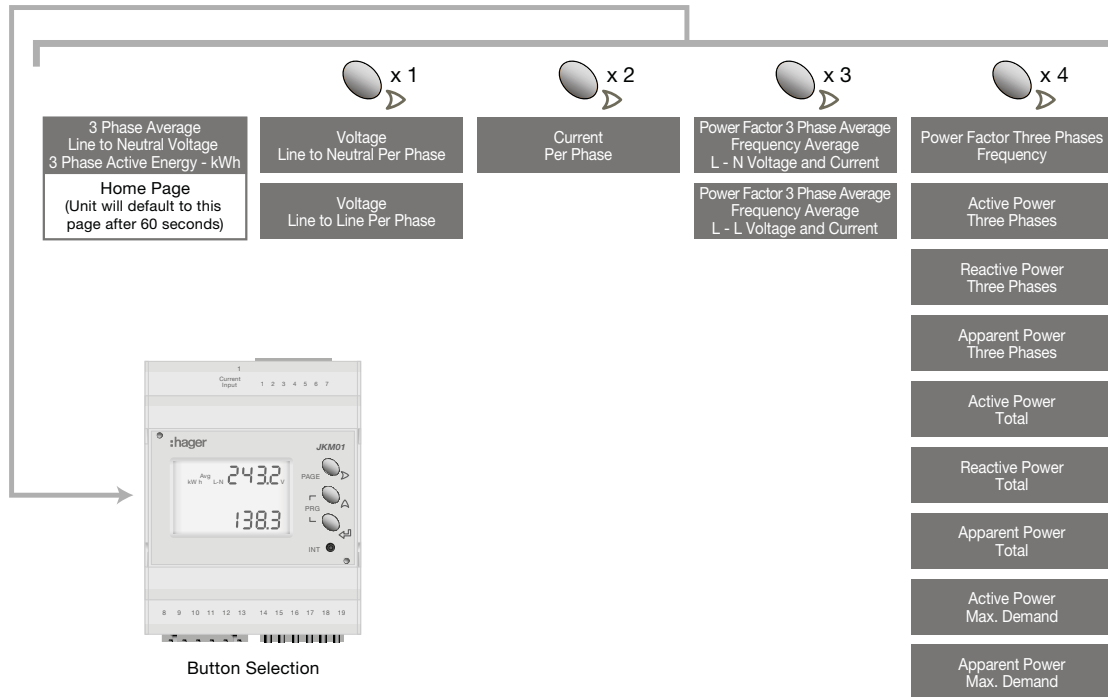
Modular  
Devices

# Multifunction Power Meter - Single CT Connection DIN Rail Mounting - LCD Display - JKM01

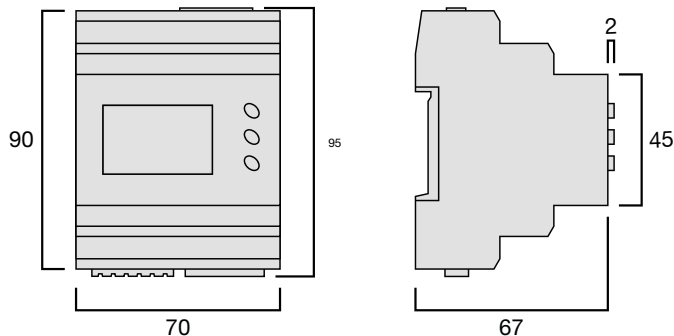
**:hager**

- 4 Module DIN rail mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built-in energy pulse output and RS485 MODBUS communication
- Wide range of measured parameters (see table below)
- High quality backlit LCD display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- THD up to 31st harmonic for voltage and current
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- Self supplied auxiliary
- Programmable CT ratio 5...10,000A
- Programmable VT ratio
- Frequency 45/65Hz
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 190g

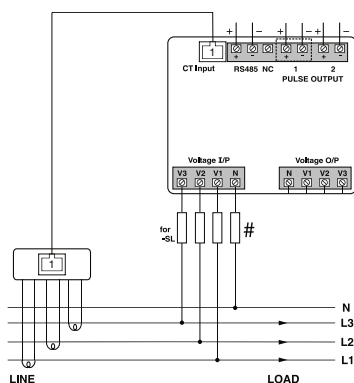
## Function Diagram



## Dimension Diagrams (mm)



Please allow space above and below the meter for cable connections.



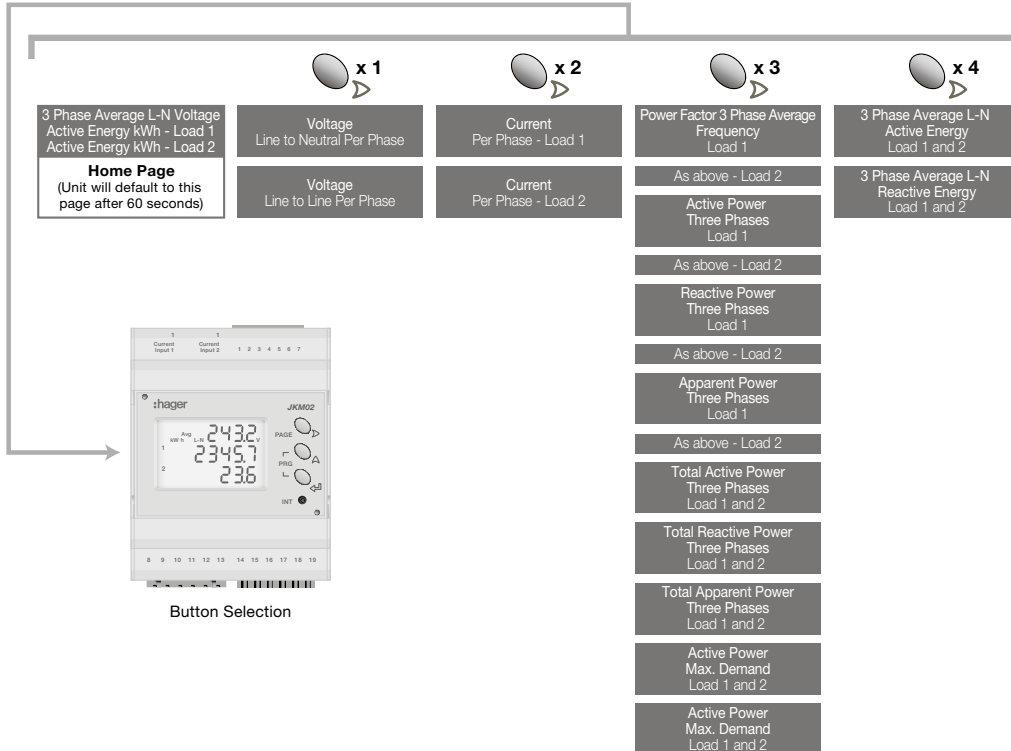


# Multifunction Power Meter - Dual CT Connection Panel Mounting - LCD Display - JKM02

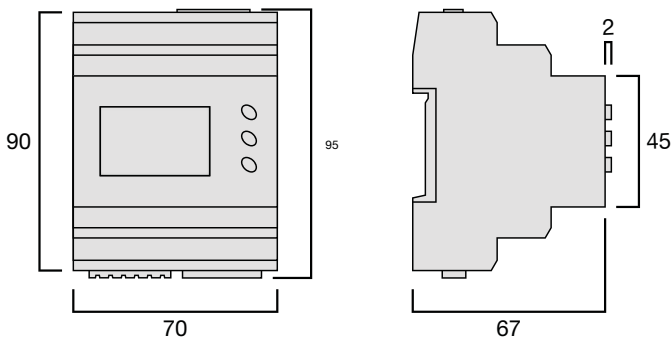
**:hager**

- Split Load, Dual CT input meter
- 4 Module DIN rail mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built-in dual energy pulse output, one for each load and RS485 MODBUS communication
- Wide range of measured parameters (see table below)
- High quality backlit LCD display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- THD upto 31st harmonic for voltage and current
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- Self supplied auxiliary
- Programmable CT ratio 5...10,000A per load
- Programmable VT ratio
- Frequency 45/65Hz
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 200g

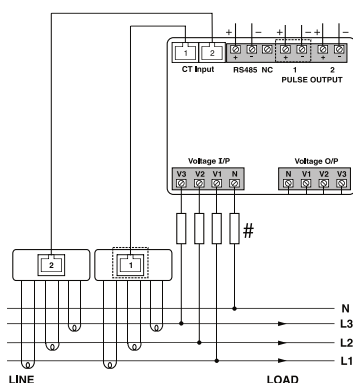
## Function Diagram



## Dimension Diagrams (mm)



Please allow space above and below the meter for cable connections.



Modular  
Devices

- Connect up to 3 standard or split core CT's secondaries)

(1A or 5A

- Integrated protection circuitry

## Standard CT to plug-in Adaptor

The JFA03 converter allows for the connection of up to three standard current transformers, or standard split-core current transformers (with 1A or 5A secondary's), to the plug-in system.

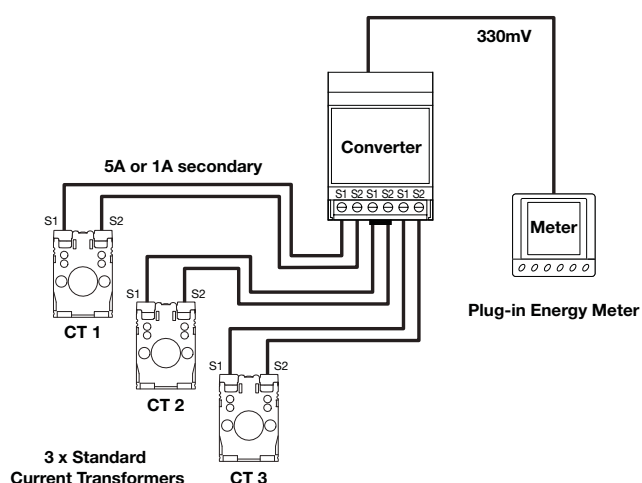
The unit has integrated protection circuitry allowing for disconnection from meter under load conditions for maintenance.

## Important Note

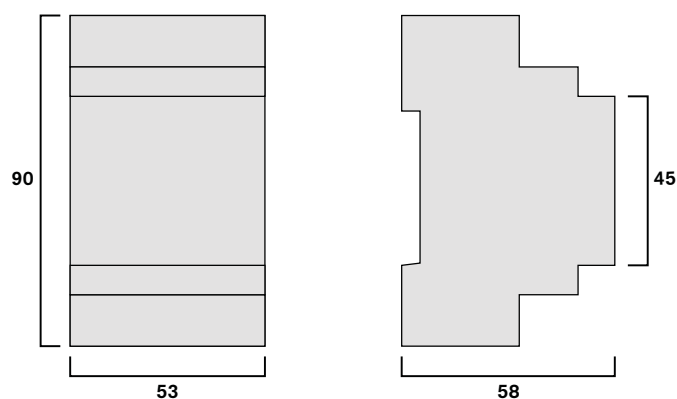
This converter does not provide electrical isolation. Current transformer secondaries may not be earthed and should be wired as shown.

## Technical Specification

Burden:	<2VA per channel (5A Version) <0.5VA per channel (1A Version)
Accuracy:	0.4%
Suggested Cable Size: (CT to Adaptor)	1.5mm <sup>2</sup> or 2.5mm <sup>2</sup> (2.5mm <sup>2</sup> Max.)
Mounting:	DIN rail 35mm
Termination:	CT to adaptor - Rising clamp screw terminals Adaptor to Meter - RJ45 Patch
<b>Cable</b>	
Operating Temperature:	-10°C...+45°C
Storage Temperature:	-25°C...+70°C



## Dimension Diagrams (mm)



For EC1260CT, EC12100CT, EC12125CT, EC12160CT

- Accuracy Class 1
- Aperture: 3 @ 15.5 x 30mm
- Primary Current: 60 to 160A
- 25mm hole centres
- Housing Material Self extinguishing Nylon IEC185 classification VO

## Description

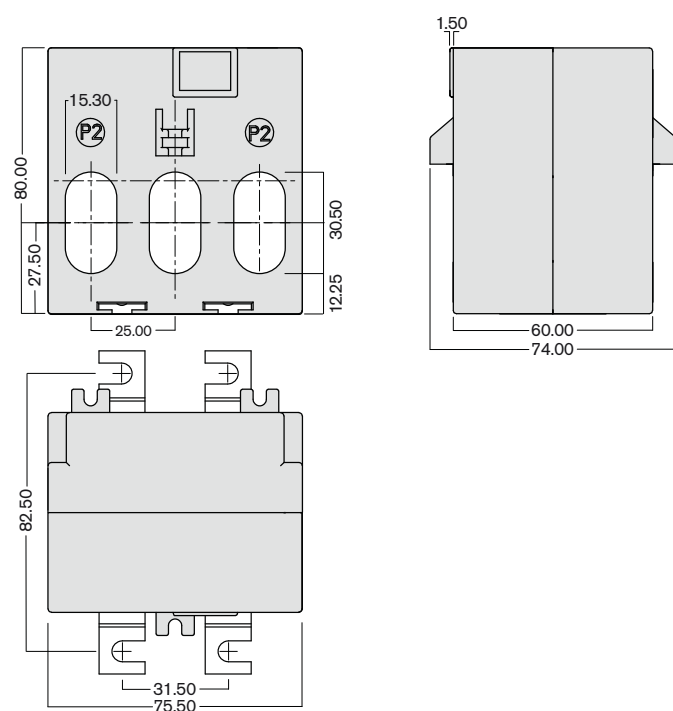
This is a 75mm wide three phase measuring current transformer designed for use with Hager x160 MCCBs and the plug-in multifunction power meters. This current transformer has three 15.5 x 30mm holes and is available with primary currents from 60 to 160A. (x160 frame MCCBs)  
Internal safety circuitry is provided which limits the output voltage to a safe level, allowing the transformer secondary to be left disconnected under load.

## Fixing

Busbar mounting and fixing feet included.



## Dimensions (mm)



according to UL-94

- Reference standard EN60044-8
- Weight : 500g

## Accessories

DIN rail mounting clip.

## Installation

The CT uses plug-in technology allowing much faster installation saving you time and money. Additionally, all our three phase current transformers have been designed with hole centres and apertures to fit most standard industrial circuit breakers.

## Current Transformer Ratios

Cat ref.	Primary current	Output
	A	mV
EC1260CT	60	330
EC12100CT	100	330
EC12125CT	125	330
EC12150CT	150	330
EC12160CT	160	330

For EC2560CT, EC25100CT, EC25125CT, EC25160CT, EC25200CT, EC25250CT

- Accuracy Class 1
- Aperture: 3 @ 21 x 25mm
- Primary Current: 60 to 250A
- 35mm hole centres
- Housing Material Self extinguishing Nylon
- IEC185 classification VO according to UL-94
- Reference standard EN60044-8
- Weight : 550g

## Description

This is a 105mm wide three phase measuring current transformer designed for use with Hager x250 MCCBs and the plug-in multifunction power meters. This current transformer has three 21 x 25mm holes and is available with primary currents from 60 to 250A. (x250, h250 frame MCCBs)

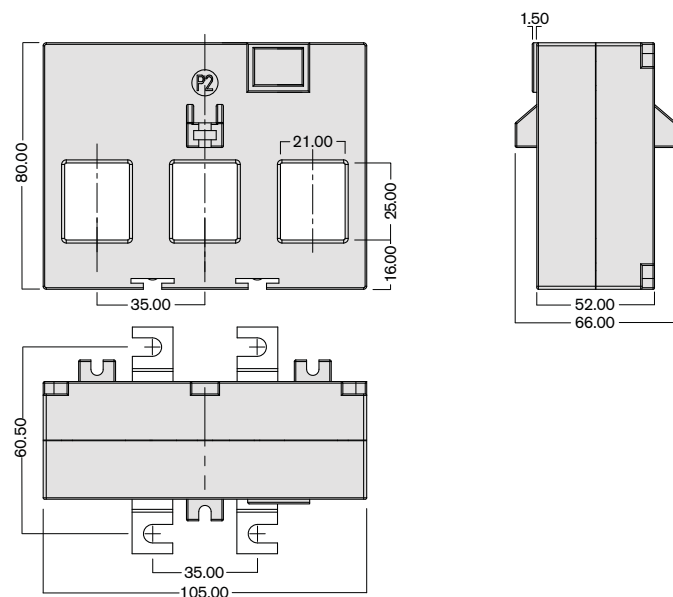
Internal safety circuitry is provided which limits the output voltage to a safe level, allowing the transformer secondary to be left disconnected under load.

## Fixing

Busbar mounting and fixing feet included.



## Dimensions (mm)



## Accessories

DIN rail mounting clip.

## Installation

The CT uses plug-in technology allowing much faster installation saving you time and money. Additionally, all our three phase current transformers have been designed with hole centres and apertures to fit most standard industrial circuit breakers.

## Current Transformer Ratios

Cat ref.	A	mV
EC2560CT	60	330
EC25100CT	100	330
EC25125CT	125	330
EC25150CT	150	330
EC25160CT	160	330
EC25200CT	200	330
EC25250CT	250	330

For EC40250CT, EC40400CT, EC40630CT,

- Accuracy Class 1
- Aperture: 3 @ 31 x 31mm
- Primary Current: 250 to 630A
- 45mm hole centres
- Housing Material Self extinguishing Nylon
- IEC185 classification VO according to UL-94
- Reference standard EN60044-8
- Weight : 680g

## Description

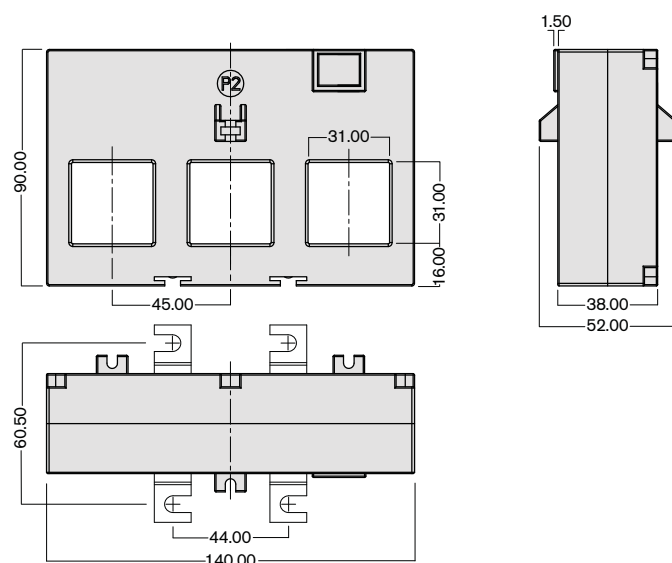
This is a 140mm wide three phase measuring current transformer designed for use with the plug-in multifunction power meters. This current transformer has three 31 x 31mm holes and is available with primary currents from 250 to 630A. (h630 frame)  
Internal safety circuitry is provided which limits the output voltage to a safe level, allowing the transformer secondary to be left disconnected under load.

## Fixing

Busbar mounting and fixing feet included.



## Dimensions (mm)



## Accessories

DIN rail mounting clip.

## Installation

The CT uses plug-in technology allowing much faster installation saving you time and money. Additionally, all our three phase current transformers have been designed with hole centres and apertures to fit most standard industrial circuit breakers.

## Current Transformer Ratios

Cat ref.	A	mV
EC40250CT	250	330
EC40300CT	300	330
EC40400CT	400	330
EC40500CT	500	330
EC40600CT	600	330
EC40630CT	630	330

For EC6060CT, EC60100CT, EC60125CT, EC60150CT, EC60160CT,

- Accuracy Class 1
- Aperture: 3 @ 16 x 20 mm
- Primary Current: 60 to 160A
- 29mm hole centres
- Housing Material Self extinguishing Nylon
- IEC185 classification VO according to UL-94
- Reference standard EN60044-8
- Weight : 500g

## Current Transformer Ratios

Cat ref.	A	mV
EC6060CT	60	330
EC60100CT	100	330
EC60125CT	125	330
EC60150CT	150	330
EC60160CT	160	330

## For EC80800CT

- Accuracy Class 1
- Aperture: 3 @ 54 x 50mm
- Primary Current: 800 -1600A
- 70mm hole centres
- Housing Material Self extinguishing Nylon
- IEC185 classification VO according to UL-94
- Reference standard EN60044-8
- Weight : 1200g

### Description

This is a 215mm wide three phase measuring current transformer designed for use with the plug-in multifunction power meters. This current transformer has three 54 x 50mm holes and is available with primary currents from 800.

Internal safety circuitry is provided which limits the output voltage to a safe level, allowing the transformer secondary to be left disconnected under load.

### Fixing

Busbar mounting and fixing feet included.



### Accessories

DIN rail mounting clip.

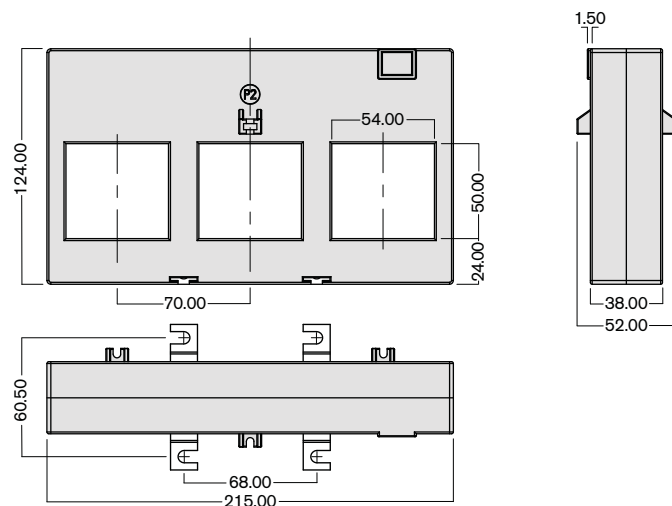
### Installation

The CT uses plug-in technology allowing much faster installation saving you time and money. Additionally, all our three phase current transformers have been designed with hole centres and apertures to fit most standard industrial circuit breakers.

### Current Transformer Ratios

Primary Current	Output	Code
A	mV	
800	330	<b>800</b>
330mV Secondary		

### Dimensions (mm)



CT Output and RJ45 Lead Tester

This device makes it possible to test the RJ45 patch lead used to connect the current transformer to the meter. It also enables a standard electricians multimeter to measure the individual secondary outputs of the current transformer.

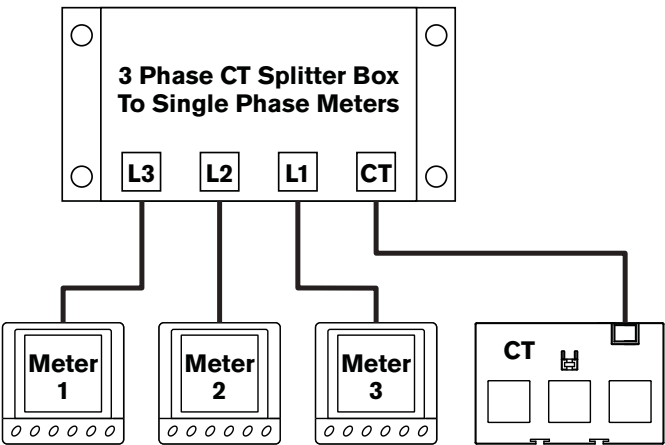
To test the RJ45 patch lead, simply disconnect the lead from the meter and current transformer. Plug one end into socket 1 and the other end into socket 2 on the test box. Press the test button - the Green LED will light to indicate the lead is OK or the Red LED will light to indicate a faulty lead. When the lead is proven to be OK you can then check the individual secondary outputs of the current transformer. To measure the secondary output plug one end of the RJ45 patch lead into the current transformer and the other end into socket 2 on the test box. You can now use a standard multimeter to test the secondaries using the test points on the front of the test box. The output measured for each phase should be between 0 and 330mVac.

Model Reference: JFT03

3 Phase CT Splitter Box

This 3 Phase CT Splitter Box allows the separate monitoring of each phase of a three phase current transformer on individual energy meters.

Model Reference: JFS03



Meter Voltage Supply Cable

Our high quality Meter Voltage Supply Cables are fitted with a plug at one end and insulated bootlace ferrules at the other and provide power to the plug-in meter from your mains supply. Two types of cable material are available:- LSZH (Low Smoke Zero Halogen) & PVC.

Meter to Meter Supply Cable

Our high quality Meter to Meter Voltage Supply Cables are fitted with a plug at one end and socket at the other. This allows multiple plug-in meters to be energised from a common supply. Up to 32 meters can be powered in a 'daisy chain' arrangement using this method. Two types of cable material are available:- LSZH (Low Smoke Zero Halogen) & PVC.

RJ45 Connection Cable

The high quality low loss Category 5e RJ45 Connection Cable provides secondary connection between the plug-in current transformer and meter.

How to Order / Model Reference  
LSZH - 1mm<sup>2</sup>

eg PGM 300

Part Number	PGM
Cable Length	
0.3m - Voltage Supply Cable (300mm)	300
0.5m - Voltage Supply Cable (500mm)	500
1.0m - Voltage Supply Cable (1000mm)	1000
1.3m - Voltage Supply Cable (1300mm)	1300
2.0m - Voltage Supply Cable (2000mm)	2000
3.0m - Voltage Supply Cable (3000mm)	3000

Other lengths available on request (Max. 15m)

How to Order / Model Reference  
LSZH - 1mm<sup>2</sup>

eg PGMT 300

Part Number	PGMT
Cable Length	
0.15m - Supply Link Cable (150mm)	150
0.5m - Supply Link Cable (500mm)	500
1.0m - Supply Link Cable (1000mm)	1000
1.3m - Supply Link Cable (1300mm)	1300
2.0m - Supply Link Cable (2000mm)	2000
3.0m - Supply Link Cable (3000mm)	3000

Other lengths available on request (Max. 15m)

How to Order / Model Reference

eg PGRJ 300

Part Number	PGRJ
Cable Length	
0.3m - RJ45 connector cable (300mm)	300
0.5m - RJ45 connector cable (500mm)	500
1.0m - RJ45 connector cable (1000mm)	1000
1.5m - RJ45 connector cable (1500mm)	1500
2.0m - RJ45 connector cable (2000mm)	2000
3.0m - RJ45 connector cable (3000mm)	3000

Other lengths available on request (Max. 15m)

PVC/PVC - 1mm<sup>2</sup>

eg PGMF 300

Part Number	PGMF
Cable Length	
0.3m - Voltage Supply Cable (300mm)	300
0.5m - Voltage Supply Cable (500mm)	500
1.0m - Voltage Supply Cable (1000mm)	1000
1.3m - Voltage Supply Cable (1300mm)	1300
2.0m - Voltage Supply Cable (2000mm)	2000
3.0m - Voltage Supply Cable (3000mm)	3000

Other lengths available on request (Max. 15m)

PVC/PVC - 1mm<sup>2</sup>

eg PGMFT 300

Part Number	PGMFT
Cable Length	
0.15m - Supply Link Cable (150mm)	150
0.3m - Supply Link Cable (300mm)	300
0.5m - Supply Link Cable (500mm)	500
1.0m - Supply Link Cable (1000mm)	1000
1.3m - Supply Link Cable (1300mm)	1300
2.0m - Supply Link Cable (2000mm)	2000
3.0m - Supply Link Cable (3000mm)	3000

Other lengths available on request (Max. 15m)

	EC150	EC152	EC154M	EC350	EC352	EC360	EC362	EC364M	EC365B	TE360	EC370	EC372	TE370	
Electrical Characteristics														
Voltage	230V~ ±15%			230V~ ±15% 400V~ ±15%										
Frequency	50/60Hz			50/60Hz										
Consumption	< 10VA and 1W			< 10 VA and 3W										
Metrological Data														
Connection	Direct			Direct	Direct					Via current transformer				
Display	Digital display 6+1 digits			Digital display 7 digits										
Accuracy	Accuracy 1% Class B according to EN 50470-3													
I max	63A			63A	100A					6A on CT secondary				
I Starting	40mA			40mA	80mA					10mA on CT secondary				
Base current	10A			10A	20A					5A				
Metrological LED														
	1000 blinking per kWh					500 blinking per kWh					1000 blinking per kWh			
Pulsed Output														
	1 pulse = 100Wh / 100ms / 27V DC max (excepted on KNX meters)													
Tariff														
	1	2	2	1	2	1	2	2	1	2	1	2	2	
Mechanical Characteristics														
Width	3 Modules			4 Modules	7 Modules					4 Modules				
Protection degree	IP20 IP51 (front part)													
Temperature	Storage temperature: -20°C to +70°C Operating temperature: -10°C to +55°C													
Connection capacity	Rigid: 1.5 to 16mm² Flexible: 1 to 16mm²					Rigid: 1.5 to 35mm² Flexible: 1 to 35mm²					Rigid: 1.5 to 10mm² Flexible: 1 to 6mm²			



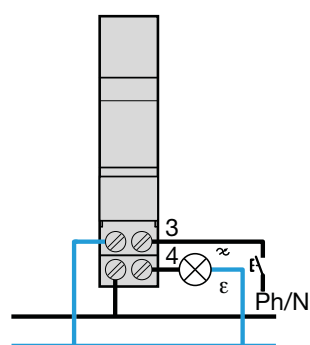
	SM101E	SM101C
<b>Current (TRMS)</b>		
I (1 <sup>st</sup> CT)	5A...9999A	
I (2 <sup>nd</sup> CT)	5A	
I <sub>n</sub>	Calculated	
Minimum measuring current (2 <sup>nd</sup> CT)	5mA	
Input consumption	<0.6VA per phase	
Permanent overload (2 <sup>nd</sup> CT)	6A	
Accuracy	±0.2%	
THD		±1%
Update period	1s	
<b>Voltage (TRMS)</b>		
U	50Vac...520Vac (Ph-Ph) 28Vac...300Vac (Ph-N)	
Input consumption	<0.1VA per phase	
Permanent overload (2 <sup>nd</sup> CT)	760Vac	
Accuracy	±0.2%	
THD		±1%
Update period	1s	
<b>Power</b>		
Accuracy (P,Q)	±0.5%	
Accuracy (S)	±1%	
Accuracy (PF)	±0.02%	
Update period	1s	
<b>Energy</b>		
Accuracy (Ea)		Class 0.5s
Accuracy (Er)		Class 2
Update period		1s
<b>Frequency</b>		
F	45Hz...65Hz	
Accuracy	±0.1%	
Update period	1s	
<b>Supply</b>		
Voltage	200Vac...277Vac ±15%	
Frequency	50/60Hz	
Consumption	<5VA	
<b>Environment</b>		
Protection degree	IP51 (front panel) IP20 (case)	
Operating temperature	-10°C to +55°C	
Storage temperature	-20°C to +70°C	
Insulation category	III (300Vac Ph-Ph)	
Degree of pollution	PD2	
<b>Communication</b>		
Metrological LED	N/A	0.1Wh/pulse
Pulse output	N/A	30Vdc/27mA Max
Communication	N/A	RS485 2/3 wires half duplex Jbus/Modbus 2,400bds...38,400bds Parity (no,odd,even) 1 or 2 Stop bytes
<b>Connection</b>		
Network	1BL 2BL 3BL/3NBL 4BL/4NBL	
Current/Voltage input	4mm <sup>2</sup> (solid or stranded)	
Others	2.5mm <sup>2</sup> (solid or stranded)	
Max torque	0.6Nm	
<b>Shape</b>		
Weight	205g	215g
Size	4M, 73mm x 90mm x 67mm	

## Technical characteristics

	EVN011	EVN012	EVN002	EVN004
Supply voltage	230 V +/- 10 %			
Frequency	50/60 Hz			
Load consumption	0.2 W			
Load control type	Direct			
Remote power	300W		500W	
Compatible Load Types				
Incandescent 230 V	300W	500W		
Halogen 230 V	300W	500W		
ELV halogen with transformer	300VA	500VA		
Dimmable fluocompact	60W	100W		
Dimmable LED 230 V	60W	100W		
I max. authorized for PB light	5mA		-	5mA
Max. PB-dimmers distance or 1-10 V control	50m			
Dim PB and ON/OFF on module	No		Yes	
Number of preset lighting levels	-			1
Preset lighting levels control entry	-			1
Max. power dissipation	2.1W		4.5W	
IP Rating	IP20			
Operating temperature	- 10°C to + 45°C			
Storage temperature	- 25°C to + 70°C			
Rigid connection	1.5 to 6 mm²			
Flexible connection	1 to 6mm²			

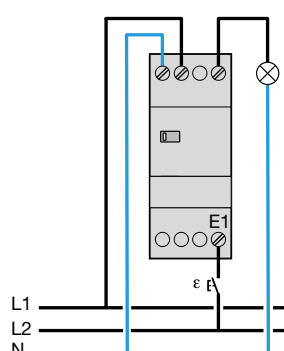
## Wiring diagrams

EVN011 - EVN012

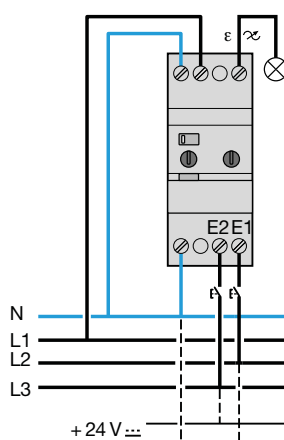


Use the same phase for control and supply.

EVN002



EVN004



Do not forget to connect the 2 neutral points.



## With Hager, you get a whole lot more.

Our Klik range of Lighting Connection and Control products have been designed to make the installation and wiring of lighting systems easier, faster and more versatile.



### Klik 4 Pin

With the Klik connector, luminaires can be plugged in seconds, with absolute safety and without circuit isolation. The secure mechanical and electrical connection gives complete confidence in the systems integrity.



### Klik 7 Pin

Klik 7 pin can be used as a simple stand-alone digital lighting control unit or as part of a more complex building management system.



### Klik LCM

The Klik LCM (Lighting Control Module) allows connection and control of multiple luminaires with four separate channels. The KlikLink app makes setting up easy, utilising bluetooth connectivity.

## Building automation

Tebis.KNX uses the technology of the installation bus for the control of lighting, heating and roller-shutters or other similar loads and is ideal for commercial & residential applications, giving the advance control and flexibility often required.

Tebis.KNX offers the technology to realise true energy savings through automation. Maximum energy savings are achieved where the system controls digital lighting and heating. In addition, by using daylight linking PIR devices to dim lighting in response to natural light availability, energy savings will be maximised. This alone has been proven to cut energy consumption by up to 70%.



System Components and Accessories	6.2
Input Products	6.4
Time Switches	6.5
Light Sensitive Switches	6.6
Presence Detectors	6.7
Automation Products	6.8
Lighting and Heating	6.9
Lighting	6.10
Shutters and Blinds	6.11
KNX Temperature Control Actuator	6.12
Radio Frequency Products (Flush Mounted)	6.14
Push-Buttons and Remote Controls	6.15
Input/Output Products for Combination Systems	6.16
Output Products for Lighting or Shutter Control	6.17
Domovea	6.18

The Tebis system enables the installer and user to control the electrical installation in a simple and comfortable way (lighting, blinds, heating, etc.)

The Tebis offer includes radio and twisted pair products, which are suitable for use in new installations and renovation. Products comply to the KNX standard.

The products below are the components needed to perform, configure or extend an existing Tebis.KNX installation.

#### TX100GB Configurator

This tool is used for programming of the entire system whether it is wire, radio or both. The dialogue and download with the wire products is carried out via the media coupler.

Other functions :

- Tests the links and commands
  - Measurement of radio environment interference level
  - Copy of the system data on a USB flash drive or creation of project documentation with additional software.
- USB flash drive; Delivered with TX100GB, TX101GB kit.

For technical details see page 6.19.



TX101GB

#### Configurator Kit

Kit includes:

- TX100GB configurator
- TR131A media coupler with 230V power cable
- USB Flash Drive Storage
- 4 rechargeable batteries Ni-Mh 1.2 V 1550 mA/h
- 230 V / 9 V 1 A mini charger

Description	Dimensions (mm)	Config.	Cat ref.
Frequency: 868.3 MHz TX100GB: 217 x 75 x 36	Box: 345 x 291 x 65	TX	<b>TX101GB</b>

#### Easy Configuration Tool

The TXA100 is delivered in a case which contains:

- TJA665 Configuration Server
- TXA114 KNX Bus & 24Vdc Power Supply
- WiFi Router
- RJ45 Ethernet Connection Cable

Description	Cat ref.
TXA100 Configuration Tool	<b>TX100GB</b>



TYF130

#### Line Coupler

Allows you to carry out the extension of a wire/bus line.

Description	Characteristics	Width	Config.	Cat ref.
Necessary in case of systems with more than 64 wire products	Supply: bus 30V DC Connects by two TG008 bus connectors	2 Mod	TX/ETS	<b>TYF130</b>

#### DALI Gateway

Description	Characteristics	Width	Config.	Cat ref.
Gateway for communication with DALI Products		4 Mod	ETS	<b>TYA670D</b>



TR131A

**TX Media Coupler**

Allows transmission of messages of twisted pair products towards radio products and vice versa.  
Size: 111 x 51 x 18mm

Characteristics	Colour	Cat ref.
Frequency: 868.3 MHz Bi-directional product	White	<b>TR131A</b>
Frequency: 868.3 MHz Bi-directional product	Silver	<b>TR131A</b>



TH101

**USB to KNX Interface Module**

For connecting a computer to the KNX bus, via a USB connection. This is for the purpose of programming Tebis.KNX devices. In addition, it can also be used for the bus connection of visualisation equipment, computer monitoring and centralised control.

Description	Width	Cat ref.
USB Interface (model B USB slot)	2 Mod	<b>TH101</b>



TR140B

**Radio Repeater**

Amplifies the KNX radio signal. Usage: if distance is important or environment is unfavourable.

Note<sup>1</sup>: all the KNX bidirectional radio products can be configured in receiver by TX100GB.

Note<sup>2</sup>: only requires 230V AC supply.

Description	Characteristics	Config.	Cat ref.
To be used in case of poor communication, amplifies the radio message	Supply: 230V~ Frequency: 868.3 MHz Bi-directional product Size: 111 x 51 x 18	TX	<b>TR140B</b>

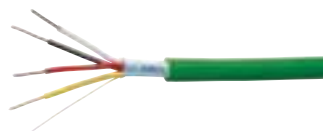


TXA111

**Power Supply Modules**

Supplies 30V SELV DC power supply from the bus which serves directly as remote supply for most of the wire products (see page 6.25).

Description	Characteristics	Width	Cat ref.
Supplies the 30V power supply of the system for an installation carrying up to 64 TX products	Supply: 230V~ 50Hz, 15VA Output Voltage: 30V DC, 320mA Resistant to short circuits	4 Mod	<b>TXA111</b>
Supplies the 30V power supply of the system for an installation carrying up to 64 TX products	Supply: 230V~ 50Hz, 24VA Output Voltage: 30V DC, 640mA Resistant to short circuits	4 Mod	<b>TXA112</b>



TG018

**Bus Cable**

Bus cable (ST) Y 2 x 2 x 0,8mm with length of 100 and 500m (4kV test voltage).

Description	Length	Cat ref.
Insulated 4kV, to install with LV conductors	100m	<b>TG018</b>
Insulated 4kV, to install with LV conductors	500m	<b>TG019</b>



TG008

**Bus Connector**

Allows connections of bus to of TX products by plugging.

Description	Pack qty.	Cat ref.
4 links per connector (connection capacity 0.6 to 0.9mm <sup>2</sup> rigid)	50 pieces	<b>TG008</b>



Input interfaces which manage the information flow to control and manage the electrical equipment of the installation.

They send via the bus, orders to the Tebis system output products.

### Input Modules

For managing the ON/OFF contacts (potential free or 230V) coming from traditional control devices (PB, switch, thermostat, clock, etc.)

A single connection to the bus ensures supply of the products and information exchange, considerably reducing cabling.

For technical details see page 6.26.



TXB302

### Input Modules for Flush Mounting

These modules are placed behind standard electrical fittings (push button or switch) in fixed box with a minimum of 40mm depth. Allow the volt free contact link. All the commands are of the SELV type.

Description	Supply	Dimensions h x w x d (mm)	Configuration	Cat ref.
2 Inputs for Volt Free Contacts	Bus 30V DC	35 x 38 x 12	TX/ETS	<b>TXB302</b>
4 Inputs for Volt Free Contacts	Bus 30V DC	35 x 38 x 12	TX/ETS	<b>TXB304</b>



TXB344

### Four Input Modules with Four LED Output terminals

Four inputs for volt free contacts, four outputs for state indication by LED.

#### Functions:

- ON/OFF control
- Up/Down control (with alarm function)
- Dimming control
- Override control
- Time delay function
- Scene call

#### Features

- Power supply: 30V DC
- Output voltage: 2V DC
- Output current: 0.85mA

Description	Dimensions h x w x d (mm)	Configuration	Cat ref.
Flush Mount 2 Channels with 2 LED Output Terminals	35 x 38 x 12	TX/ETS	<b>TXB322</b>
Flush Mount 4 Channels with 4 LED Output Terminals	35 x 38 x 12	TX/ETS	<b>TXB344</b>



TXA306

### Input Modules

Allows 230V switching products to be interfaced with a tebis system.

Description	Supply	Width	Configuration	Cat ref.
4 x 230V Inputs	Bus 30V DC	2 Mod	TX/ETS	<b>TXA304</b>
6 x Volt free - 230V	Bus 30V DC	6 Mod	TX/ETS	<b>TXA306</b>



Control commands are transmitted directly onto the bus without the need for output controls. Wiring is simplified as power supply is taken direct from the bus. Time switches are used in control of lighting, heating, shutters movement, domestic appliances, sockets, etc. in order to improve comfort and saving energy.

#### Functions

- 7 day programmer, 56 steps of program, minimum setting step of 1 minute
- Possible to program impulses (1s to 30min)
- Automatic change of schedule for summer/winter

#### Programming Key EG005

For programming the time switch

- Copy or saving the program
- Making circuit On or Off temporarily (blinking)
- Permanent priority settings On or Off (manual)

#### Software

- For programming from PC or on the product not connected in the system
- 5 years functioning reserve with lithium battery
- Bar graph display of day profile

#### Other Functions

- Impulse programming (1s to 30min)
- Presence simulation
- Back light screen
- Holiday mode - priority setting On or Off between two dates
- Possible to lock keyboard and programming by EG004 key

#### TXA023

- Can be synchronized on radio via signal DCF77 with help of EG001 antenna.
- Via bus, master timer can set time and date of TXA023

#### Installation

Programming is carried out by configuration device TX100GB via media coupler or by ETS.

For technical details see page 6.27.



TXA022

#### Time Switches

2 channel 7 day Function - ON/OFF, Up/Down, heating control scene selection, master or slave clock function. Product setting on current hour and day.

Description	Supply	Width	Cat ref.
Weekly Time Switch	Bus 30V DC	2 Mod	<b>TXA022</b>
Weekly Time Switch with DCF Capability	Bus 30V DC	2 Mod	<b>TXA023</b>
Antenna for TXA023	-	-	<b>EG001</b>



EG004

#### Accessories

Description	Cat ref.
Locking Key (to stop unauthorised changing of the program)	<b>EG004</b>
Blank Programming Key (to save program from switch or software)	<b>EG005</b>
USB Adaptor and Interface Software (for transferring the program from the PC to the key)	<b>EG003G</b>
Storage Key Module (holds 3 keys)	<b>EG006</b>



EG006

Light sensitive switches are used for automatic control of indoor and outdoor lighting or for the control of blinds, or curtains or shutters according to ambient lighting.

## Energy Saving

Maximises natural light resulting in energy savings.

## Principal Applications

- Residential building - outdoor lighting
- Commercial and industrial sector - classrooms, offices, windows, car parking, etc.

## Comfort

Light sensitive switch will avoid excessive light or will limit overheating of the premises by appropriately managing shutter or blind operation.

## Assembly

Light measurement is carried out with the help of a photo resistive cell connected to the product.

The cell has two versions:

- Flush mounted ref. EE002
- Surface ref. EE003

Note: Switch and cell are required.

## Installation

Programming is carried out by configuration device TX100GB via media coupler or by ETS.

For technical details see page 6.28.



TXA025

## Light Sensitive Switch

Control of indoor or outdoor lighting circuits (ON, OFF, Dimming) as well as the blinds, curtains or shutters according to the ambient light.

Measures ambient light via cell EE002 or E003 and transmits control command when preset level is reached. The information of the cell connected on TXA025 can be shared via Bus with several other TXA025. This makes several levels of regulation possible.

Description	Supply	Width	Cat ref.
2 Sensitivity Ranges: 2 to 200 lux, 200 to 20000 lux. Modes: Auto / Manual / Test. Potentiometer for level setting LED for set point crossing indication. Max. distance between cell and TXA025: 100m (delivered without cell).	Bus 30V DC	2 Mod	<b>TXA025</b>



EE002

## Photo Resistive Cells for TXA025

Description	Cat ref.
Flush Mounted Cell has 1m, 2 x 0.75mm <sup>2</sup> Cable	<b>EE002</b>
Surface Mounted Cell has 4m, 2 x 0.75mm <sup>2</sup> Cable	<b>EE003</b>



EE003

Used for automatic lighting control or heating of the premises based on occupancy and lighting level.  
Principal applications - Offices, corridors, conference rooms, classrooms, etc

Functions - ON/OFF control, Up/Down control, heating control, scene selection, time delay and priority setting, setting dimming levels, Master/slave function.

The bi-directional detector head can be oriented at 90° to adapt the zone of detection depending on the configuration of the room. A large area of detection - with the help of two integrated sensors, these products are able to detect movements in a large area and detect presence (person working in office) in a smaller area.  
Products delivered with BCU (coupling unit to the bus)

## 2 Versions of Detectors

- 2 channel detector with On/Off control AND
- 1 channel lighting regulator detector (for maintaining constant light)

## Installation

Programming is carried out by configuration device TX100GB via media coupler/ETS.

For technical details see page 6.29.



TX510

## 2 Channel Presence Detector 360°

Channel 1: Switching based on presence and lux level. Switching takes place when presence is detected and the lux level is below the set point. Lux level settings - 5, 100, 200, 300, 500, 800, On permanent, Delay off time - 1min to 30min Application - switching off lighting, blinds, curtains or shutters.

Channel 2: Switching based on presence only. Uses both delay on and delay off for switching. Delay off 30 sec > 10 mins - Delay on = 30 secs Delay off 10 mins ≤ 60 mins - Delay on = 5 - 60 mins

Application: heating, ventilation, etc.

Description	Dimensions dia. x depth (mm)	Supply	Cat ref.
Light intensity from 5 to 1200 lux Time delay for lighting Time delay for presence Area covered - 13x7m at 2.5m height	110 x 31	Bus 30V DC	<b>TX510</b>



TX511

## 1 Channel Presence Detector 360°

Associated with Tebis dimmers, it is possible to maintain light intensity in a room at a constant level as long as there is presence in the room irrespective of changes in the natural lighting.

### 3 Operating Modes

- Mode 1 - Dimming inactive (only presence info used)
- Mode 2 - Dimming active as per light setting on product potentiometer
- Mode 3 - Dimming active. Lighting instruction can be changed by long push on communicating PB of presence detector

Description	Dimensions dia. x depth (mm)	Supply	Cat ref.
Light intensity from 5 to 1200 Lux Time delay for lighting Area covered - 13 x 7m at a height of 2.5m	110 x 31	Bus 30V DC	<b>TX511</b>



TCC510S

## 1 Channel Presence Detector 360°

Occupancy sensors TCC510S are presence detectors designed to detect low amplitude movements (movements from body or arms). Detection is by means of the pyroelectric IR sensor located under detection lens.

The occupancy sensor measures the brightness in the room on a continuous basis and compares it to the level preset on the potentiometer (or by means of the remote control EE807) by ETS parameter. These products are part of the Tebis installation system.

### Configuration

- E-mode TX100 V.2.6.0 or >: detailed description in User's Instructions supplied with the configurator.
- S-mode ETS : Application software STCC510S. Database and description available from manufacturer.

Lux and time delay settings via EEK001 or potentiometers located on the device

Description	Dimensions dia. x depth (mm)	Supply	Cat ref.
Light intensity from 5 to 1200 Lux Time delay for lighting Area covered - 13 x 7m at a height of 2.5m	110 x 31	Bus 30V DC	<b>TCC510S</b>

Automation products provide commands in form of contacts. Input information such as rain, wind, sunrise, sunset, indoor and outdoor temperature, as well as commands from remote telephone interface are received and forwarded to input modules for controlling the outputs in the Tebis system.

Wind detector - helps in protecting blinds and shutters in the event of strong wind by creating a closing command.

Weather station - it includes a sensor block and a modular unit for interpretation. It is a complete system with input sensor, processing and weather data transmission. It also integrates a weekly programmer equipped with DCF77 antenna.



TG050

### Wind Detector

Helps protect blinds in the event of strong wind. Consists of an anemometer and electronic box. Use with the Tebis system - contact of anemometer can be connected to input module TXA304 and TXA306. (For further details see page 6.25).

Description	Dimensions dia. x depth (mm)	Supply	Cat ref.
Level of detection adjustable from 5 to 55km/h (Factory preset to 25km/h)	110 x 31	230V AC 50 Hz	<b>TG050</b>



TH020B

### Telephone Gateway 3 Inputs, 3 Outputs

- Remote control : 3 relay outputs
- Status indication : for each output
- User friendly voice guide in English
- Remote alarm detection and sending of voice messages to 3 programmed telephone numbers
- Recording of your own messages
- Voice messages for room temperature indication possibility to use together with an answering machine on the same telephone line
- Personal secret code to limit access to the device
- Timed switch-off of the relay output (from 1 second up to 59h 59min 59sec)

Description	Width (mm)	Supply	Cat ref.
Analog telephone line (PSTN) 48VDC 3 relay output 5A-250V AC1 1 temperature measurement CTN 10 kOhm 2 alarm inputs : 1 input 0-30VAC/DC 5mA min 1 input 0-230V AC 5mA min Power shutdown detection	5 Mod	230VM $\pm 15\%$ 50/60 Hz	<b>TH020B</b>

### Environment

Working temperature : 0/+50°C  
Storage temperature : -20/+70°C  
IP 30, IK03

### Connection

Flexible 2 x 2.5mm<sup>2</sup> max  
Rigid : 2 x 2.5mm<sup>2</sup> max

These products serve as output interfaces for the Tebis system. They ensure the control of the electrical devices by taking commands transmitted by the input products.

Lighting output products allow control of all types of devices by On/Off control or dimming. Without modifying the wiring, it is possible to achieve:

- On, Off or dimming controls in individual and grouped or general controls
- Functions such as time delays, priority settings, scene selection or multi-applications.

All the output modules are equipped with output status display and with a manual override setting on front of the product.

For control of:

- Lighting
- Heating
- Power outlets
- Any load controlled by a simple contact

Note: Refer to technical information for de-rating for alternative load types.

For technical details see page 6.30.



TXA204C



TXA206D



TXA207C

### Lighting and Heating

Functions:

- ON / OFF & ON / OFF Override
- LED indication of each output state
- High end timer function
- Full quick connect connections
- Full symmetrical top down cross through connections
- Large front labelling
- Local on device hand override, permanent or time limited

Description	No of Volt-Free Contacts	Supply (twisted pair)	Width (mm)	Cat ref.
16A AC1	4	Bus 30V DC	4 Mod	<b>TXA204C</b>
4A AC1	6	Bus 30V DC	4 Mod	<b>TXA206A</b>
10A AC1	6	Bus 30V DC	4 Mod	<b>TXA206B</b>
16A AC1	6	Bus 30V DC	4 Mod	<b>TXA206C</b>
16A AC1 / 1500W - 140µF adapted for parallel compensated fluorescent tubes	6	Bus 30V DC	4 Mod	<b>TXA206D</b>
16A AC1	10	Bus 30V DC	6 Mod	<b>TXA207C</b>

**Dimmers****TXA210N, TXA210AN, TXA213N, TXA215**

Universal dimmer with automatic load recognition.  
Min/Max level local setting.  
Manual mode that allows dimming even when the bus is disconnected.

Easy mode: (TX100GB)  
Implementation of the channel dimming actuator scene.

S-mode: (ETS software)

Easy channels features  
32 light scenes with a related scene speed.

Fixing of output state when bus is disconnected.

Enhanced override modes (forced).

**TXA210N Universal dimmer 1 channel 600W****TXA210AN Universal dimmer 1 channel 300W****TXA213N Universal dimmer 3 channels 300W**

3 modes possible :

- 3 channels 3 x 300W
- 2 channels 600W / 300W
- 1 channel 900W

**TXA215 Universal dimmer 1 channel 1000W**

Dimmer with LCD display  
Local setting of the dimming parameters (min/max, soft ON, soft OFF, dimming speed) and light scenes.  
8 light scenes that can be activated locally.

For technical details see page 6.31 - 6.32.



TXA210N

**1 Channel Universal Dimmer 600W**

Description	Width	Cat ref.
600W Incandescent / Halogen 600VA ELV Halogen associated with electronic or ferromagnetic transformer 120W LED /dimmable compact fluorescent	4 Mod	<b>TXA210N</b>



TXA210AN

**1 Channel Universal Dimmer 300W**

Description	Width	Cat ref.
300W Incandescent / Halogen 300VA ELV Halogen associated with electronic or ferromagnetic transformer 60W LED /dimmable compact fluorescent	4 Mod	<b>TXA210AN</b>



TXA213N

**3 Channel Universal Dimmer 300W**

3 channel dimmer that can be used as 3 x 300W, 600W/300W or 900W, selector on device

Description	Width	Cat ref.
300W Incandescent / Halogen 300VA ELV associated with electronic or ferromagnetic transformer 60W LED /dimmable compact fluorescent	6 Mod	<b>TXA213N</b>



TXA215

**1 Channel Universal Dimmer 1000W**

LCD display used to indicate the dimming level and to set the dimming parameters min, max, dimming speed, soft on, soft off, scenes

Description	Width	Cat ref.
1000W Incandescent / Halogen 1000VA ELV Halogen associated with electronic or ferromagnetic transformer	6 Mod	<b>TXA215</b>



TX211A

**Output Modules for Variable Lighting (Dimmer Control)**

For lighting loads requiring 1/10V dimming signal. Functions include ON/OFF and variation in lighting/dimmer control.

Description	Width	Cat ref.
3 Outputs 1/10V	4 Mod	<b>TX211A</b>

These products serve as output interfaces for the Tebis system. They ensure opening and closing control of shutters, roller shutters, curtains, blinds, flaps etc. They interpret commands such as Up, Down, priority setting for Up or Down and Wind detection commands transmitted by input modules. All the output modules are

equipped with output status display and with a manual override setting on the front.

- Note:
- Shutter output modules will open and close KNX/EIB compatible acutators
  - Blind output modules will open, close and incline the slats of KNX/EIB compatible actuators

For technical details see page 6.34.



TXA224

**Output Device for Shutters or Blinds**

For control of roller-shutter curtains or venetian-blinds motors, KNX/EIB

- Functions:
- UP/DOWN
  - Blind inclination and STOP
  - UP/DOWN/STOP manual override
  - LED indication of each output state
  - Wind security functions
  - Blocking
  - Priority
  - Scenes
  - After bus failure position

Description	Width	Cat ref.
4 Shutters or Blind Outputs 230V	4 Mod	<b>TXA224</b>
4 Shutter Outputs 24V DC	4 Mod	<b>TXA225</b>



**Thermostat TX320**

Continuous room temperature regulator, featuring real-time temperature measurement, capable of sending an adjustment value to a servo or actuator, so to achieve the desired room temperature. It can control both heating device and air-conditioners.

**Heating output, 6 channels**

This device is designed for installation into a hot water circulation system, to control a 24V valve servo, e.g.: floor heating facilities. Output switching utilises a Triac so that noiseless switching can be achieved.

**Valve Control Servo**

This servo has a bus connection, which can be directly installed onto the universal valve of the radiating heaters. The corresponding valve servo and motorized device is controlled via the room temperature controller.

For technical details see page 6.33.



TX320

**Thermostat****Features:**

- Power supply: 30V DC
- Measuring range: 0°C to 40°C
- 3 external contact points used for measuring input terminals, such as window magnetic contact points

**Function:**

- Heating / Cooling
- 2 step heating - Primary and Supplementary
- Work mode: Comfort, Standby, Night time, Frost / Overheat protection
- Switch, Light dimming, Blinds control

Description	Dimensions h x w x d (mm)	Cat ref.
Thermostat	27 x 84 x 80	<b>TX320</b>
Floor temperature sensor for TX320	-	<b>EK087</b>
Outside temperature sensor for TX320	-	<b>EK088</b>



TX206H

**Heating Valve Controller (6 Channels)****Features:**

- Power supply: 230V power socket
- System voltage of 30V DC
- 6 channel for 24V heating valves (max 13 valves/channel)
- 6 channel output

**Function:**

- Adjusting value in %
- Override service
- Summer operation

Description	Dimensions h x w x d (mm)	Cat ref.
Heating valve controller (6 channel)	70 x 755 x 302	<b>TX206H</b>





TX502

**Valve Control Servo with Room Temperature Regulator**

**Features:**

- Power supply: 30V DC
- Property: 5 LEDs used to display servo locations
- Interface: 1m, 6-core cable is included

**Function:**

- Automatic regulating apparatus and temperature collection apparatus
- Work mode: Comfort, Standby, Night time, Frost
- Orientated start up
- Forced service
- Summer operation

Description	Dimensions h x w x d (mm)	Cat ref.
Valve control servo with room temperature regulator	70 x 755 x 302	<b>TX502</b>

RF input modules of EIB/KNX are used as interfaces for volt free contact and switches or conventional pushbuttons. Using these modules it is possible to control the electrical devices connected in the network by transmitting an RF signal. They can control RF output modules as well as TP wired products with the help of the media coupler TR131A. These products are particularly useful for renovating or extending existing installations.

**2 or 4 inputs - 230V or Battery Operated**

These input modules are available in following versions

- 2 or 4 input module version - flush mounted
- With power supply of 230V AC or with battery.

Operating temperature : 0°C to 45°C

**Installation**

Link allocation is to be done by configuration device TX100GB. These products can also communicate with TP wired products with the help of media coupler TR131A.

**General Characteristics of the Radio System**

Frequency - 868.3 MHz  
Range - variable according to the environment - up to 30m indoor, 100m in free air. Noise measurement is possible by TX100GB.

**RF System**

- Maximum number of RF products = 256
- Maximum number of RF input translations by the media coupler to twisted pair output products = 63

For technical details see page 6.35.



TRB302A

**RF Input Modules (Battery Operated)**

Frequency: 868.3 MHz  
Power supply: Lithium battery CR1/2 AA 3.0V (Life 5 Years)  
Transmission indicated by LED, for one way transmission

**Functions:**

- ON/OFF, dimming
- Up/Down + alarm - priority setting
- Scenarios

Description

Dimensions  
dia. x depth (mm)

Cat ref.

2 KNX Input Modules For 2 Volt Free Contacts

50 x 16mm

**TRB302A**



TRB302B

**RF Input Modules (230V)**

Frequency: 868.3 MHz  
Power supply: 230V AC 50Hz  
Transmission indicated by LED, for one way transmission

**Functions:**

- ON/OFF, dimming
- Up/Down + alarm - priority setting
- Scenarios

Description

Dimensions  
dia. x depth (mm)

Cat ref.

2 KNX Input Modules For 2 Volt Free Contacts

52 x 30mm

**TRB302B**

Radio push-buttons and remote controls enable easy addition of control points without wiring work. They are suitable for all situations : new systems, renovations or post installation. These products are included in Tebis system. They control both radio output modules as well as twisted pair products via TR131A.

## Radio Remote Control

These are portable radio emitters of EIB/KNX standard. The remote controls are available in 4, 8 and 24 ways.

## Putting Into Service

Allocation of the links is carried out by TX100GB configurator. These products also communicate with twisted pair products via the TR131A bus radio / twisted pair

General characteristics of the radio system

- Frequency : 868.3 MHz
- Range : it is variable according to the environment : up to 30m inside, up to 100m in free air.

Working temperature :  
0°C to +45°C

A measurement of the signal interference is possible by TX100GB

RF system

- Maximum number of RF products = 256
- Maximum number of RF input translations by the media coupler to twisted pair output products = 63

For technical details see page 6.36.



TU404

## KNX Radio Remote Controls

Power supply: CR 2430 3V Lithium Battery Cell (life 3 years)

Unidirectional products: Emitter

Transmission indicated by LED

Functions:

- Start/Stop, Dimming
- Up/Down + Alarm
- Override
- Scenarios

Description	No of Keys	Cat ref.
2 Channel Remote Control	2	<b>TU402</b>
4 Channel Remote Control	4	<b>TU404</b>
6 Way Remote Control	6	<b>TU406</b>
18 Way Remote Control	6 + 1	<b>TU418</b>

The RF EIB/KNX input/output modules are used as an interface between volt free contacts of switches or conventional pushbuttons at input level and electrical devices at output level for direct control. These products are able to communicate with other RF or TP wired products (via media coupler TR131A). They are particularly useful for renovating or extending existing installations.

## 1 Input + 1 Output 10A

For creating simple lighting functions for integrating in a group, general controls or other scenario functions by simple programming.

## 2 Inputs + 1 Output Shutter/Blind

For creating shutter control function for integrating in a group, general control or other scenario functions by simple programming.

### Installation

Link allocation is carried out by configuration device TX100GB. These products also communicate with TP wired products with the help of media coupler TR131A.

## General Characteristics of RF System

Frequency - 868.3 MHz  
Range - variable according to the environment - up to 30m indoor, 100m in free air.  
Noise measurement is possible with the TX100GB.

### RF System

- Maximum number of RF products = 256
- Maximum number of RF input translations by the media coupler to twisted pair output products = 63



TRB501

## 1 Input + 1 Output 10A

Product supplied with input/output module pre-configured for control of the connected output.  
Power supply: 250V AC 50Hz

### Functions of Input:

- ON/OFF, Dimming
- Priority Setting
- Scenarios

### Functions of Output:

- ON/OFF Control
- Time Delay
- 8 Scenes
- Priority Setting

### Description

Bidirectional Product for Transmitting and Receiving  
1 Volt Free Input for Push-Button Switch  
1 Output 10A AC1 230V AC  
For manual control by TX100GB  
Output status display by LED

Dimensions  
dia. x depth (mm)

56 x 30

### Cat ref.

**TRB501**



TRB521

## 2 Inputs + 1 Output Shutter/Blind

Product supplied with input/output module pre-configured for control of the connected output.  
Power supply: 250V AC 50Hz

### Functions of Input:

- Up/Down by brief push  
> 400ms

### Output for Shutter Motor:

- Scenarios

### Functions of Output:

- Up/Down Control
- Inclination of Flaps
- Alarm Security for Wind, Rain
- Time Delay
- 8 Scenes
- Priority Setting

### Description

Bidirectional Product for Transmitting and Receiving  
2 Inputs Volt Free Contacts  
1 Output 6A AC1 230V AC  
Output status display by LED

Dimensions  
dia. x depth (mm)

52 x 27

### Cat ref.

**TRB521**

RF KNX output modules take commands transmitted by input modules. They interface between commands and electrical equipment.

These bidirectional products are able to communicate with all other RF or TP wired products (via media coupler TR131A). They are particularly useful for renovation or for equipment already installed.

## 1 RF Output 16A

This flush mounted module helps control circuits of lighting, VMC, heating, solenoid valves, etc.

### Expansion

All RF output products can be integrated by simple programming, in zone group control, general or centralised controls and in scenarios functions.

## Installation

Link allocation is carried out by configuration device TX100GB. These products can also communicate with TP wired products via media coupler bus/radio TR131A. General characteristics of the radio system

Frequency - 868.3 MHz  
Range - variable according to the environment - up to 30m indoor, 100m in free air.  
Noise measurement is possible with the TX100GB.

## RF System

- Maximum number of RF KNX products - 256

For technical details see page 6.37.



TRB210

## 1 Flush Mounted Dimming Output 200W

For remote control of dimmable lighting.

Power Supply: 230V

Frequency: 868.3MHz

Functions of Output:

- ON/OFF control
- Dimming 0-100%
- LED Indication of each
- 8 Scenes

Description

Dimensions  
dia. x depth (mm)

Cat ref.

Max. load with incandescent lamps 200W - 45°C  
Max. load with 230V halogen lamps 200W - 45°C  
Max. load with halogen ELV lamps via ferromagnetic transformer 200VA - 45°C  
Max. load with halogen ELV lamps via electronic transformer 200VA - 45°C  
Bidirectional product

52 x 30

**TRB210**



TRB221

## Output Device for Shutter/Blinds

For the control of shutters, blinds or blinds with bidirectional flaps.

Power Supply: 230V AC 50Hz

Functions of Output:

- Up/Down control
- Inclination of flaps
- Alarm security wind, rain
- Time delay
- 8 Scenes
- Priority setting

Description

Dimensions  
dia. x depth (mm)

Cat ref.

Two way product for transmitting and receiving  
Output for 1 motor  
Push-button switch 6A AC1 230V AC  
Manual control by TX100GB  
Output status display by LED

52 x 27

**TRB221**

### Features

The Tebis.KNX Domovea visualisation and control system connects the Tebis.KNX bus system with the IP world.

This is provided by the energy efficient Domovea server with modular design, which is housed within the distribution board.

All data on the server can be accessed from any connected Windows® compatible client, whether it be a conventional PC, laptop or wallmounted touch panel. The same functionality can be used as a software solution, without any hardware. Internet access is ensured via the Hager Portal.

### Advantages

- Server in modular form
- Able to be updated via USB interfaces
- Intuitive user interface for display and control of:
  - Lighting
  - Blinds and roller shutters
  - Heating control
  - Graphic display of energy consumption

- Connection of IP cameras
- Integrated logic and sequence module
- Worldwide access via the Domovea Internet portal ([www.domovea.com](http://www.domovea.com))
- iPhone & Android App for local or remote use.



### Domovea system package

Consists of TJA450 Domovea server with remote access & TGA200 power supply

#### Description

Domovea system package for installation of Domovea in a KNX/IP environment

#### Cat Ref.

**TJA451**

TJA451



### Domovea server including software

- Power supply: 24 V DC
- Connections: KNX connectors, 3x USB 2.0, Type A Jack & RJ45 Connection
- Quickconnect
- Configuration software and client on supplied USB memory stick

#### Description

Domovea server including software

#### Width

6 Mod

#### Cat Ref.

**TJA450**

TJA450



### Power supply

#### Description

Power supply 230V AC, 50 Hz - Output voltage 24V DC  
Output current 1A  
4 PLE

#### Width

4 Mod

#### Cat Ref.

**TGA200**

TGA200

### Domovea Apps

Apps can be downloaded from either the Apple App Store or Google Play Store

iPhone - (Search for 'domovea')



iPad - (Search for 'domovea')



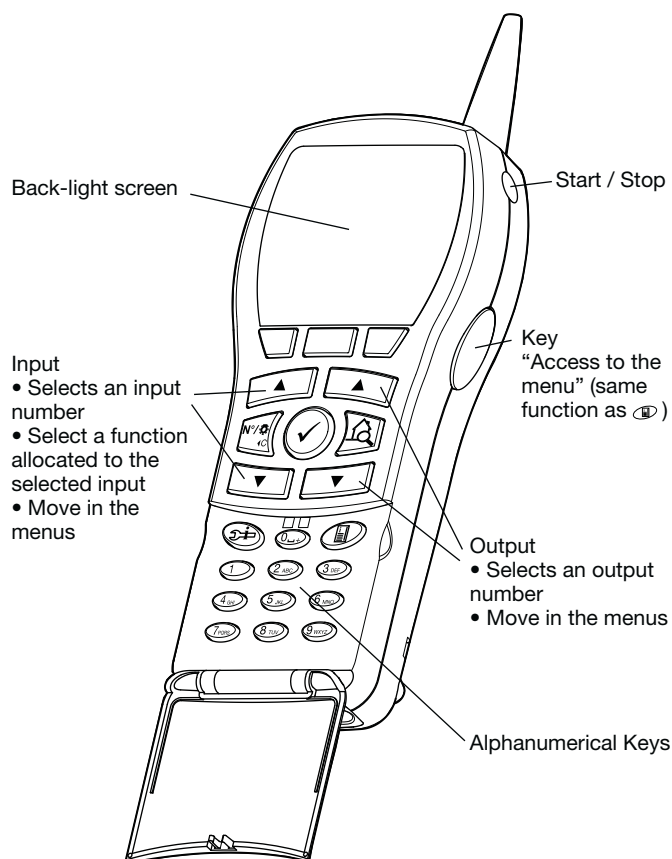
Android - (Search for 'domovea')



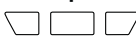
## TX100GB configurator

The TX100GB portable configurator is the tool which programs the desired functions and displays the links between all the products being found in an installation : wire products and/or unidirectional or bi-directional radio system. If the system contains wire products, it is necessary to use the media coupler TR131A. A USB flash drive inserted in TX100GB backs-up all the data relating to a system.

### Description of the keys



### Description of the keys:

 Screenkeys  
Function of each key is indicated on the screen above them, the function changes depending on the screen



- Validates the operation in progress
- Selects the menu
- Validates the entry



- Change the function of the keys on the left (selection of either an input number or a function) return to the previous menu



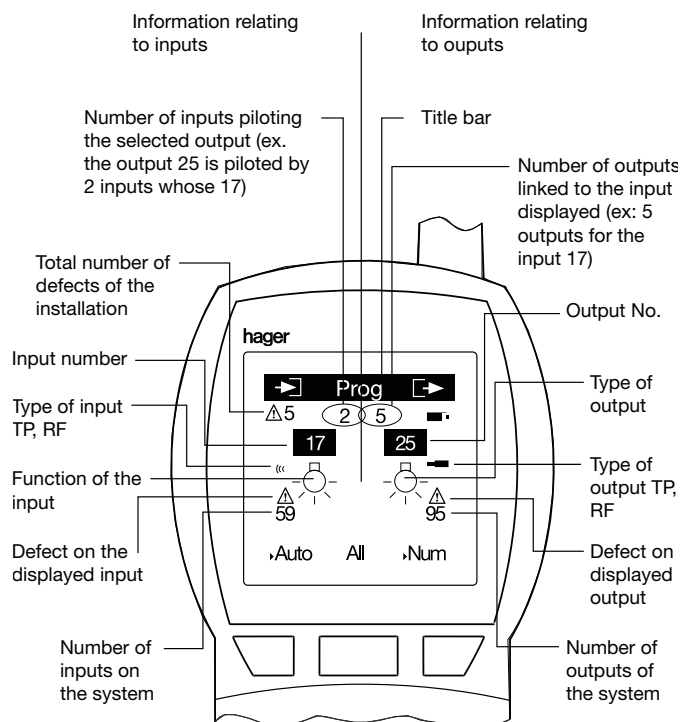
- Activates the selected output
- Starts the numbering of the outputs of the installation








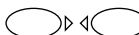

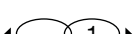
- Access to the help screens for installation




- Access to menus



### Description of the symbols:

-  Battery charge level
-  Output
-  Input
-  Radio product
-  Wire product
-  Preparation of a link
-  Link established
-  Delete a link

### Sound

-  A single "beep" indicates a successful operation
- A double "beep" indicates an unsuccessful operation

### Expert Tip

There are 2 ways to select a channel :

- Selection of an input by acting on the appliance that control it : push-button, switch or remote control. Selection of an output by acting on the manual control of the output product.

- Selection of the inputs or outputs with TX100GB by their numbers with the help of  keys

## Radio system

The TR radio system (to KNX standard) exists in input products, output products and products with combined input/output. They communicate between themselves by using the 868 MHz radio frequency. The products are classified into 2 categories :

- The unidirectional input products : they are only emitters and have only information sent.
- The bidirectional products : they are both emitters and receivers and can thus send and receive information.

These latter ones can also be configured as radio repeaters by TX100GB to increase globally the reliability of the transmission.

Supply of radio system is done, in the following way :

- By 230V mains
- By a battery cell

In an installation containing only radio system, the configuration is done only with TX100GB configuration tool; the media coupler is not used.

The products with combined input/output are pre-programmed; for example for a 2 input products and 1 output or control of roller shutters, the basic functions as for example up/down are preregistered. Only modification of functions, as for example to carry a centralized control, need the use of TX100GB.

## Radio range (indicative data) :

- in open field : 100m
- Inside a building : up to 30m

A pure radio system can contain **up to 250 TR products**.

## The 868 MHz : a dedicated frequency

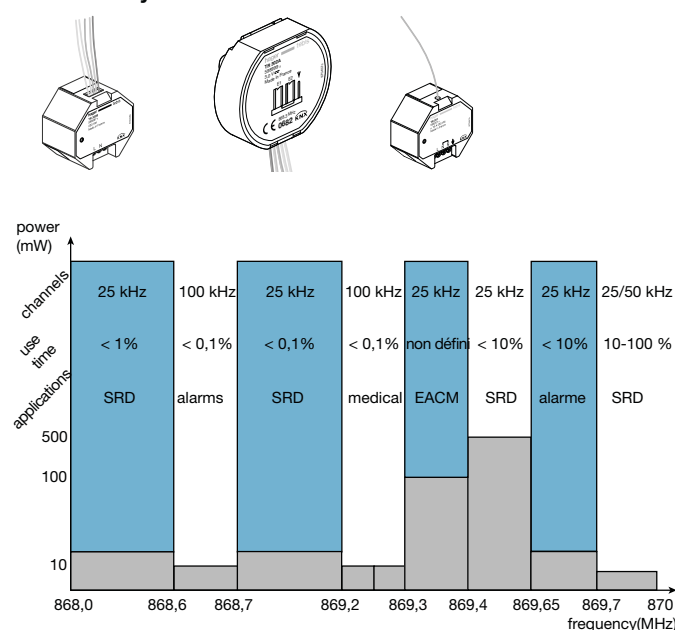
The frequency used is 868 MHz. This frequency is harmonized at the European level. There are 2 levels emission power :

- Repeater products : 25mW maximum
- Battery cell products : 10mW maximum

As comparison, a portable telephone emits with a power of around 2000 mW.

It is to be noted that the regulator authorities have specially attributed the band of 868 MHz to building automation and home automation : the occupation or "duty cycle" rate is predefined and thus avoids the saturation problems of the band. The 868 MHz is outside ISM bands and cannot be thus saturated by permanent emissions (headphones for example).

## Topology 2 : Tebis radio system



## Combined system : Wire + Radio

The combined system needs to put in place a TR131A media coupler to transmit the messages of wire products to the radio system and vice versa.

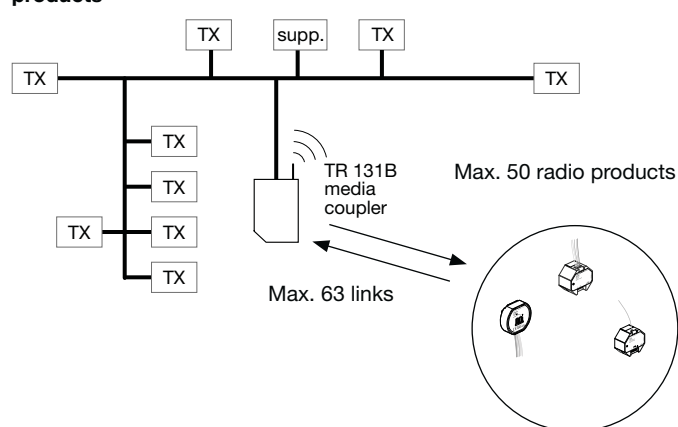
For systems which contain both wire and radio products, the information given above for topics 1 and 2 remain valid. But you must take into account the following limitations :

- Maximum of 63 products of 250 possible radio systems can communicate with TP wire products.
- Maximum 50 links can be established from the wire part to the radio part.
- 1024 channels are available and distributed in 512 channels of inputs and 512 channels of outputs.

Example :

- 6 output products = 6 channels
- 4 input products = 4 channels
- 2 input radio products = 2 channels

## Topology 3 : Mixed Tebis system containing both twisted pair and radio products





## Topology and architecture of a system

Each installation consists of input and output products which can be wire or radio.

For wire products, a TXA111 bus supply must be installed.

Media and communication support :

- Wire products : use of the bus cable (2 x 2 x 0,8mm)
- Radio system : the link is done by 868 MHz reserved radio frequency

### Topology 1 : Wire installation

Each Tebis product can exchange Information with all other Tebis products connected to the bus cable. Supply of bus is done in continuous 30V DC SELV.

The right side outline gives the maximum lengths of the bus cable with a TXA111 supply.

The following values must not be exceeded :

- Total maximum length : 1000m
- Maximum distance between twisted pair 2 products : 700m
- Maximum distance between supply and a product : 350m

The above data define an EIB line. Each EIB line needs a supply and can have up to 64 communicating products.

### Role of the TYF130 line coupler

The line coupler “expand” and put back into form the signals on the bus cable and allow to extend the system. Thanks to the coupler the primary line can be extended up to 3 times.

### Maximum limit of an “extended” line:

The diagram on the right shows the maximum limits of the system with 4 supplies and 3 line couplers. The lengths of different elementary lines remain the same but at the end, the following

- Total maximum length : 4 x 1000 m
- Maximum distance between 2 products on the same line : 700 m
- Maximum distance between supply of an elementary line and any product of the same elementary line : 350 m

You can thus install at the maximum  $4 \times 64 = 256$  TX products

### Role of the TR131A

In the configuration phase of the installation, the TR131A is the interface between the TX products, connected among themselves by the bus cable and TX100GB radio configuration tool.

After putting into service, the TR131A can be withdrawn and reused to configure other systems.

Nevertheless in case of modification of the system or for maintenance needs it will be necessary to reinstall again the media coupler, that is why, **we recommend leaving TR131A in the system.**

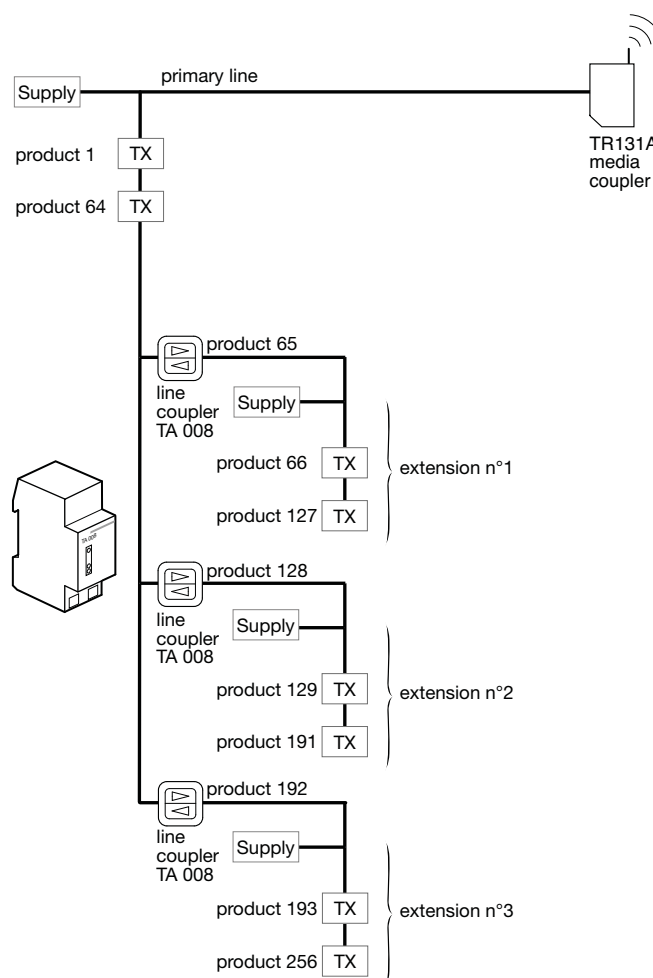
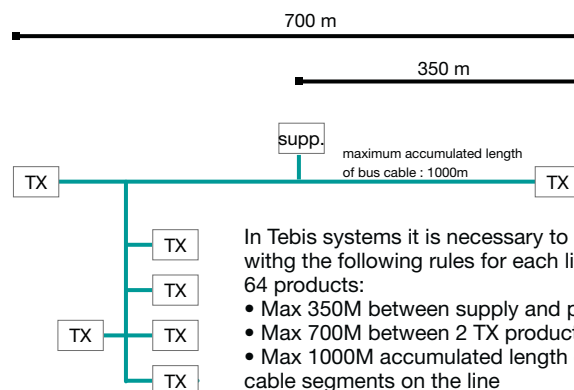
Several system architectures can be found :

1. fully wire systems
2. fully radio systems
3. combined wire and radio systems

The topologies corresponding to these 3 types of systems are described below :

### Tebis Wire System

#### Extension of a Tebis system using wire products



You can extend a line and install more than 64 products by using line couplers and additional supplies (maximum 3).

Note: Power supplies do not count as product, but line couplers do.

## Description of the system

Tebis is a flexible and functional electrical installation for lighting control, roller shutters and adjustment of the temperature room by room. From the implementation point of view, the main difference in relation to a conventional system is the separation of the control and power.

The controlled loads, for example lighting, roller shutters, controlled sockets, are to the output products, themselves connected to connected upstream protection devices. It is no longer necessary to connect from various 230V switch wires from switches, push buttons, to the controlled loads.

**The input products** implement the orders of the user (pushbuttons, detectors,...) they are interconnected by a unique bus cable distributed star-shaped or in a continuous loop, or by radio frequencies.

Tebis therefore carries out, the functions required by simple programming and creation of links between input and output products.

The cabling phase of a Tebis system is independent from the programming phase of the functions.

The designing of a system is simplified by allowing a flexible adaptation to customer demands.

## Composition of the system

Each installation consists of input products and output products which are interconnected either:

- By bus cable : called also wire link (or cable pair) or twisted pair
- By radio : called also RF link (or radio frequency), in 868 MHz

Several system types may be implemented:

- Completely "bus" wire systems with TX products
- Completely radio systems with TR-TU-TD products
- Combined systems, combined twisted pair and radio products

## Configuration and commissioning

For configuration, the TX100GB radio configuration tool and TR131A media coupler are used. The configuration information of the system is safeguarded in a standard USB flash drive, placed in TX100GB.

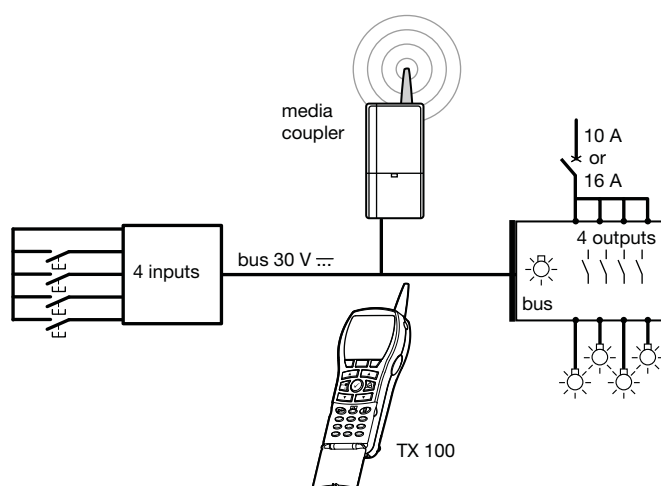
The configuration can be done very easily with the TX100GB portable radio tool : room by room, product by product or function by function.

System products are used in the following manner for the system type implemented:

## Wire system principles

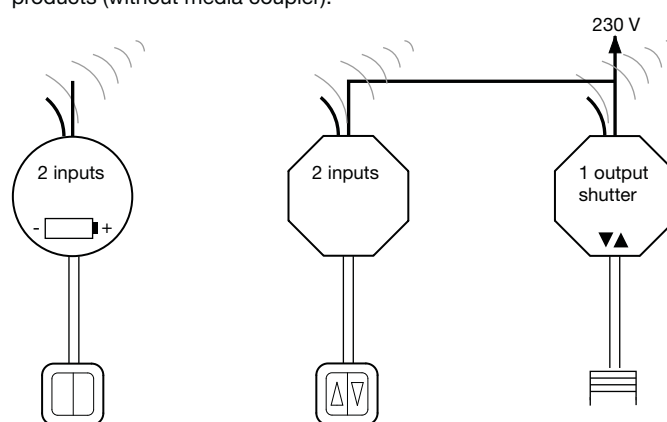
The bus products are supplied by safety very low voltage bus. The configuration needs TX100GB configurator and TR131A media coupler.

After configuration the media coupler can be removed and used for another project but needs to be reinstalled if later modifications are required.



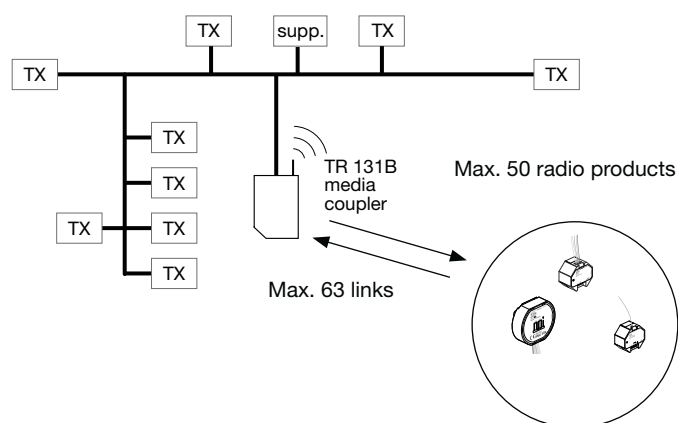
## Radio system principles

The radio products are powered by the mains or a battery. The configuration is carried out directly with TX100GB and the radio products (without media coupler).



## Combined system (bus+radio) principles

The configuration is carried out with TX100GB and TR131A media coupler. In this case, it is necessary to leave the media coupler in place to ensure communication between wire and radio.

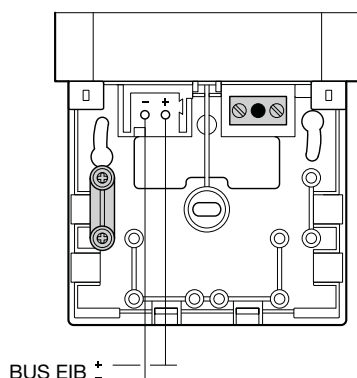


## Symbol and Function

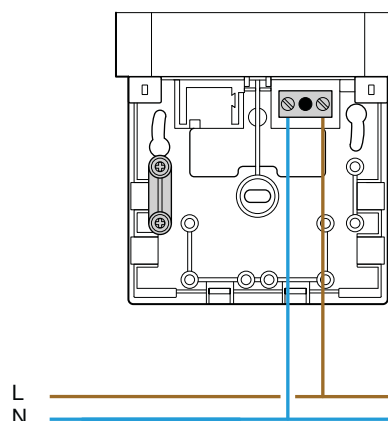
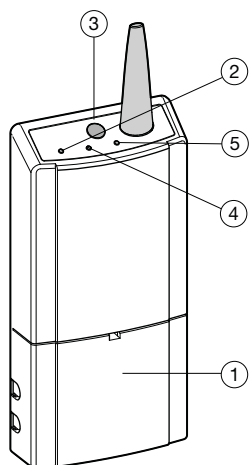
Applications	Symbols	Control Type	Control Product
Lighting		Switching on only	Automatic contact or push button, or TXA023, TXA025
		Switching off only	Automatic contact or push button, or TXA023, TXA025
		Switch type ON/OFF	Automatic contact or push button, or TXA023, TXA025
		Remote break type ON/OFF	Push button
		Remote break type ON/OFF for unidirectional products	RF Push button
		Increase the dimming level	Push button
		Decrease the dimming level	Push button
		Dimming on push button	Push button or detector, TX511, TXA023
		Priority setting STOP	Automatic switch or contact, or TX510, TXA023, TXA025
		Priority setting START	Automatic switch or contact, or TX510, TXA023, TXA025
		Timed start - delay before ON	Automatic switch or contact, or TX510, TXA023, TXA025
		Timed stop - delay before OFF	Automatic switch or contact, or TX510, TXA023, TXA025
		Lighting level 25%, 50%, 75% or 100%	TX510, TXA023, TXA025
Blinds/ Roller Shutters		Push button type UP	Push button
		Push button type DOWN	Push button
		Push button type UP-DOWN	Push button
		Switch type UP-DOWN function	Automatic switch or contact, or TX510, TXA023, TXA025
		Switch type UP function	Automatic switch or contact, or TX510, TXA023, TXA025
		Switch type DOWN function	Automatic switch or contact, or TX510, TXA023, TXA025
		Override UP	Automatic switch or contact, or TX510, TXA023, TXA025
		Override DOWN	Automatic switch or contact, or TX510, TXA023, TXA025
		Wind safety	TG050 air safety detector
Heating		Comfort	Temp. regulator, TX510 automatic push button or contact
		Eco	Temp. regulator, TX510 automatic push button or contact
		Comfort / Eco	Temp. regulator, TX510, TXA023 automatic contact
		Frost free or without frost	Temp. regulator or automatic contact TX510, TXA023
		Stop override	Automatic switch or contact or TXA023
		Comfort override	Automatic switch or contact or TXA023, TX510
		Eco override	Automatic switch or contact or TXA023, TX510
		Timed comfort	Push button or detector TX510-TX511
		Timed eco	Push button
TXA023 Clocks		Master clock	Diffusion TXA023 of the hour on the bus for synchronizing the slave clocks
		Slave clock	TXA023 synchronization on the hour emitted by the master clock
TXA025 Photo electric switch		Master photocell switch	TXA025 light sensitive switch (master) spreads on the bus the light intensity measured by the cell
		Slave photocell switch	TXA025 light sensitive switch reads the light intensity measured by the cell and broadcasted by the master light sensitive switch
TX450A TX450B Ambient controllers		Display zone on the room controller (1 to 4)	Each zone (1 to 4) can display information (temperature hours, date) as well as states or measurements (lighting, heating, physical measurements or functions)
		Logical function	Creation of logical functions for displaying information on the system
All Applications		No function	
		Scenario 1 to 8	Push button

## Technical Characteristics

	TX100GB	TR131A	TR140B
<b>Supply</b>	4 batteries or LR6 battery cells	bus: 30V/DC	4 outputs (230V, 50Hz phases)
<b>Batteries</b>	Ni-Mh 1.2V 1950mAh	-	-
<b>Battery cells</b>	1.5V alkaline	-	-
<b>Working autonomy</b>	AA 230V / 9V 1A charger type	-	-
<b>Consumption</b>	0.5A (per appliance)	-	-
<b>Loss of Max. power</b>	2W (per appliance)	-	-
<b>Functioning autonomy</b>	8 hours	-	-
<b>Max recharge time</b>	3h 30 mins	-	-
<b>Broadcast frequency</b>	868.3 Mhz	868.3 Mhz	868.3 Mhz
<b>Broadcast power</b>	Max. 10mW	Max. 25mW	Max. 25mW
<b>Safeguard</b>	USB flash drive	-	-
<b>Working temperature</b>	0°C to +45°C	0°C to +45°C	0°C to +45°C
<b>Storage temperature</b>	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
<b>Ingress protection</b>	IP 20	IP30	IP40
<b>Weight</b>	340 g		
<b>Size</b>	75 x 169 x 34.9mm	203 x 77 x 26.5mm	203 x 77 x 26.5 mm
<b>Antenna</b>	52mm	52mm	52mm

Electrical connection  
TR131A

## TR140B

Introduction of TR131A  
Media coupler

- ① Cover
- ② Pairing button : pairing with TX100GB (to be activated when synchronising with TX100GB : Select the coupler by pressing on its pairing button for a period of 4 up to 10 seconds)
- ③ Physical addressing light
- ④ EIB / KNX communication light bus/radio

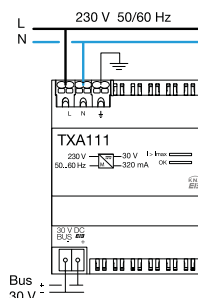
## TXA112, TXA111 Supply Modules

### Functioning principle

This module is the supply source of the bus.  
The output voltage is of the ELV 29V type.

	TXA112	TXA111
<b>Power voltage</b>	230 V 50/60Hz	230V 50/60Hz
<b>Output voltage</b>	29 V 640 mA	29 V 320mA
<b>Absorbed power</b>	24 VA	15 VA
<b>Connection:</b>	Push fit	Push fit
<b>Flexible</b>	1.5mm <sup>2</sup>	0.75 to 2.5mm <sup>2</sup>
<b>Rigid</b>	2.5mm <sup>2</sup>	0.75 to 4mm <sup>2</sup>
<b>Size</b>	4 Modules	4 Modules
<b>Working temperature</b>	-5°C to +45°C	
<b>Storage temperature</b>	-20°C to +70°C	

### Electrical Connection TXA112, TXA111



## TG050 Wind Safety Detector

Composition of the products:

- An anemometer and its fixing support,
- Weatherproof interface box,
- The fixing screws of the box (piercing Δ 6 mm).

Electrical characteristics:

- Supply voltage : 230V 50 Hz,
- Contact type (wind safety) : 230V 4A (protection by slowed 4A fuse)

Functional characteristics:

- Wind speed threshold adjusting : up to 55km/h per potentiometer factory setted 25km/h)
- Reaction time at the threshold excess : 3 seconds (5 seconds max.)
- Wind blocking time : 10 minutes (fixed)

Environment:

- Class II insulation
- IP65 protection index
- Working temperature : -25°C to + 50°C.

Connection:

Capacity : 0.5 to 2.5mm<sup>2</sup>

Overall size:

- Size of weatherproof box (overall) : 80 x 100 x 52mm
- Centre distance from fixing : 90mm

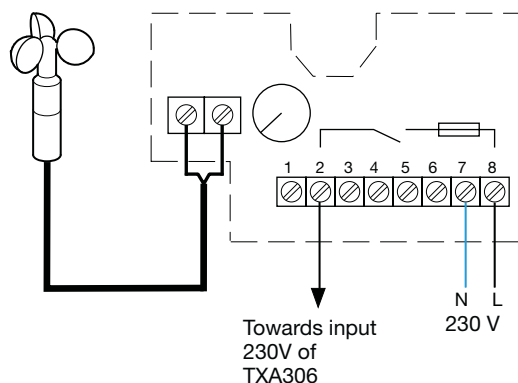
### Working Principle

To exploit the wind safety function with the Tebis.KNX system, it will be necessary to link the contact of the anemometer to an input of the TXA306 module and programme the wind safety link with the configurator. The TG050 wind safety detector is used as protection device for blinds against gusty winds.

If the speed of the wind measured by the anemometer exceeds for 3 consecutive seconds a threshold adjusted by potentiometer, the total assembly of the blinds is launched instantaneously and the blinds are maintained in high position for 10 minutes at the minimum. (other controls become inactive)

If the speed of the wind has weakened sufficiently after 10 minutes, the wind safety is deactivated; the control of the blinds is authorized again.

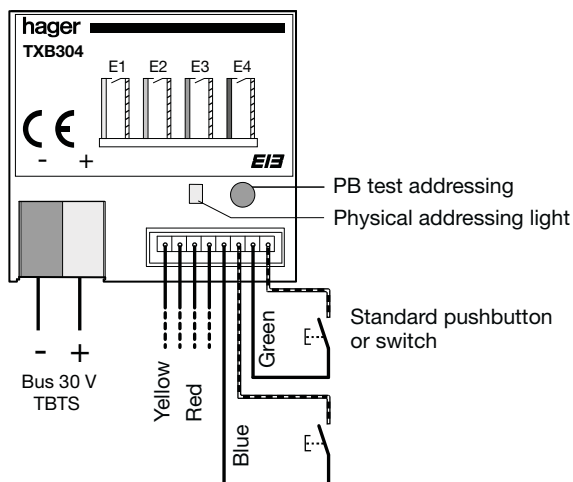
### Electrical connection



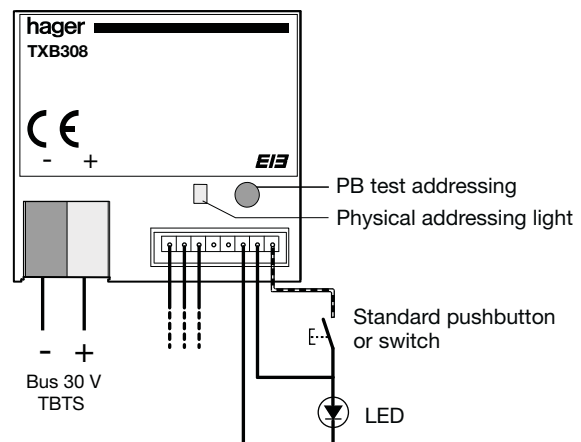
## Technical Specification

	TXB302	TXB304	TXB322/344	TXA304	TXA306
Size	35 x 38 x 12mm			2 Modules	6 Modules
Supply	30V by TX111				
Inputs	2 for potential free contacts	4 for potential free contacts		4 inputs 230V	6 inputs
Outputs	-		2/4 outputs 5V DC I <sub>max</sub> 850µA	-	
Voltage Delivered	5V DC impulse supplied by the product			230V AC (-15/+10%)	
Distance between contacts and the products	Slide in separable connector with 200mm length being able to be lengthened up to 5m.			30m Max	100m Max
Link to EIB bus	Red and black terminal TG008				
Links to Inputs	Separable connector of 200mm length			Through terminals: • Flexible: 1 to 6mm² • Rigid: 1.5 to 10mm²	
Temperature					
Working	-25°C to +55°C				
Storage	-5°C to +45°C				

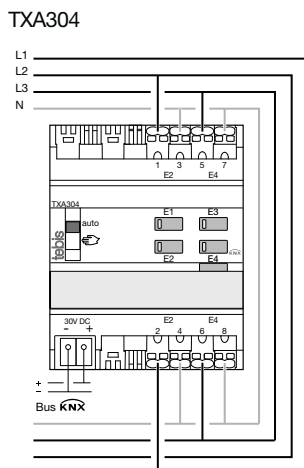
### 4 Input Module Flush Mounted : TXB304



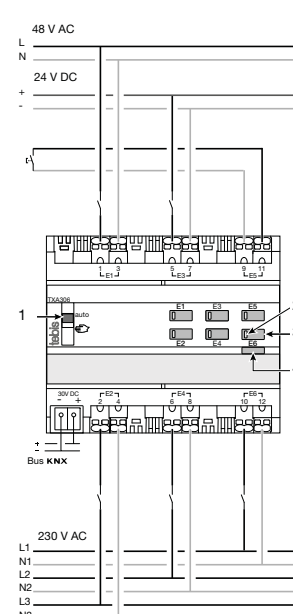
### 4 Input Module / 4 LED Outputs Flush Mounted : TXB308



### 230V 4 Input Modules : TXA304



### 230V 6 Input Module : TXA306



## Technical Specifications

### Electrical characteristics

- Supply : 30 V DC bus EIB
- TXA022 : consumption : max. 9,5 mA
- TXA023 : consumption : max. 10 mA

### Working characteristics

- Programming capacity : 56 steps to be distributed over the two channels
- Minimum time between 2 steps : 1 minute
- Start precision : 5 1.5 sec / 24h
- Start reserve : lithium battery cell (battery life 5 years)
- The product is placed in home position (display switched off) after 1 minute of voltage absence. It returns to Auto mode immediately on return of the voltage or on pressing on a key.
- Protection index : IP 20

### Environment

- Working temperature: -5 to +45 °C
- Storage temperature : -20 to +70 °C

### Connection with Cage Terminals

- Flexible : 1 to 6mm<sup>2</sup>
- Rigid : 1.5 to 10mm<sup>2</sup>

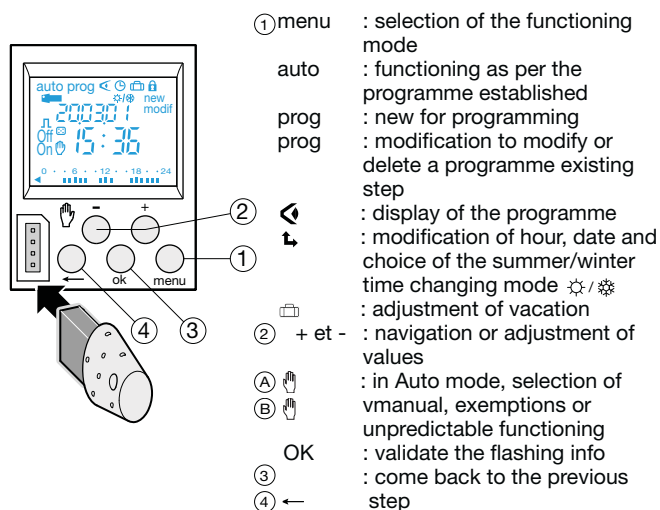
### Reset

- Of the programme: it can be fully reset by simultaneously pressing the 3 bottom keys (←OK & menu). The time and date are maintained.
- Total : by simultaneously pressing on all 5 keys (+, -, menu, ok & ←)
- All the product content is deleted. After a total reset, it is necessary to reset the clock switch to hour and day.

## Main Characteristics

- Product delivered set to current hour and day
- Automatic changing of summer / winter time
- Programming key for permanent exemptions for copying or safeguard of the programme
- Programming by day or group of days
- 56 step of program On, Off, 1 sec to 30 mn or dimming
- Permanent manual On or Off (fixed),
- Temporary manual On or Off that can be parametered by configuration tools
- Temporary exemptions On or Off (flashing),
- Vacation mode: forcing On or Off between two dates
- Presence simulation
- Bar chart displaying daily profile
- Possibility of locking the key
- Programmable off-voltage
- DCF synchronization (TXA023 ONLY)
- Possible display of date and hour on the bus

## Product presentation



You can go to Auto mode at any time with the menu key. If no action is done for 1 min, the switch returns to Auto mode.

## TXA025 Twilight Switch

### Function

This product is intended for automatic control of lighting, of shutters and blinds according to the measured light intensity. When set lux level is reached, the order of control is transmitted via the Bus to output modules.

### Electrical characteristics

#### Supply

30 V SELV Bus

- Time delay at the initialisation : 30s
- Adjustment range : 2-200 and 200-2000 lux
- ON / OFF in Manu mode

### Environment

- Working temperature : 0 °C to +45 °C
- Storage : -20 °C to +70 °C

### Connection

Capacity :

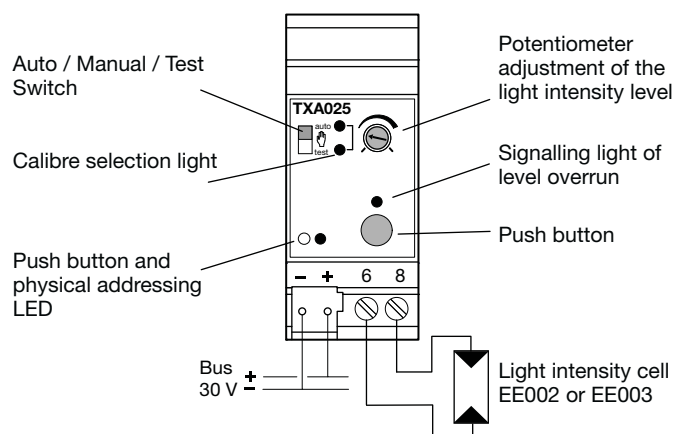
- Flexible : 1<sup>2</sup> to 6<sup>2</sup>
- Rigid : 1.5<sup>2</sup> to 10<sup>2</sup>

### Probe

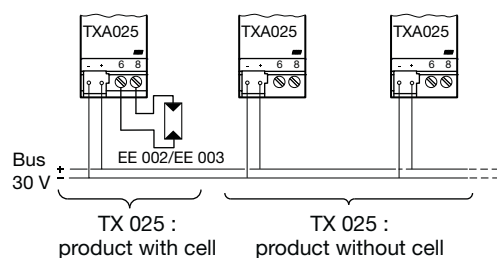
Use double insulated cable for wiring of the EE003 surface mounted cell or for lengthening the cable of the EE002 flush mounted cell.  
Max. distance : 100m

### Overall Size

- Size : 2 Modules (35mm)



### Several TX Channels



It is possible to adjust a level by photocell switch. The light intensity measurement is carried out by a unique probe connected to a TXA025 which retransmits the value of light intensity to other TXA025 on the system via the EIB Bus.



## Technical Specification

	TX510	TX511
<b>Type</b>	Presence detector EIB/KNX TOR	Presence detector EIB/KNX light regulator
<b>Supply</b>	30V bus EIB, 12mA	
<b>Channel 1/Channel 2</b>	ON/OFF switching	-
<b>Channel 1</b>	-	ON/OFF Switching
<b>Light intensity</b>	-	Communication with light intensity level
	-	Adjustment to light intensity level
<b>Light</b>	OFF: Auto ON: Movement	
<b>Consumption</b>	< 0.2W	
<b>Working Temperature</b>	0°C to +45°C	
<b>Storage Temperature</b>	-10°C to +60°C	
<b>Protection Index</b>	IP41	
<b>Connection</b>	By TG008 connector	
<b>Size</b>	110 x 44mm	

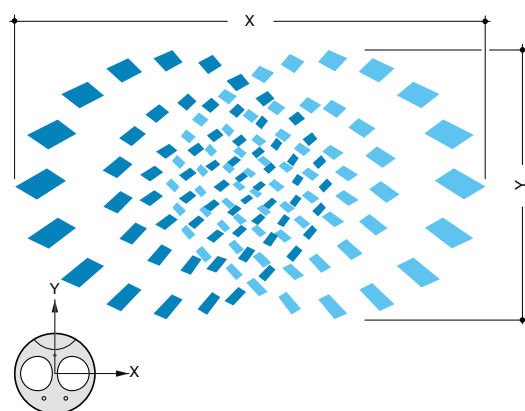
### Function

- Lighting time delay adjusted by potentiometer : 1 to 30min.
- Period of presence adjusted by potentiometer : 30s to 60min.
- Brightness range : 5 to 1200 lux
- System height : 2.5m to 3.5m

### Adjustment of Light Intensity Level

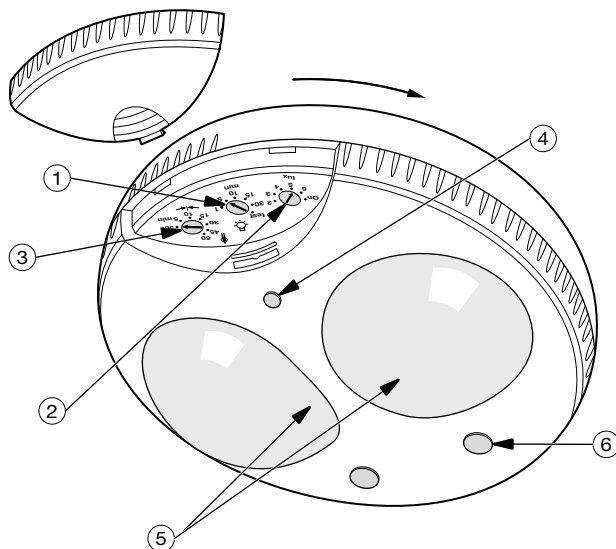
Position	Light Intensity in Lux	Equivalent in a Building
1	5	-
2	100	Circulation
3	200	Circulation. WC
4	300	Work plan
5	500	Office
6	800	Class room laboratory
ON	Measurement of light intensity inactive	-

Position (1...6) do not take into account the environment (office, furniture).

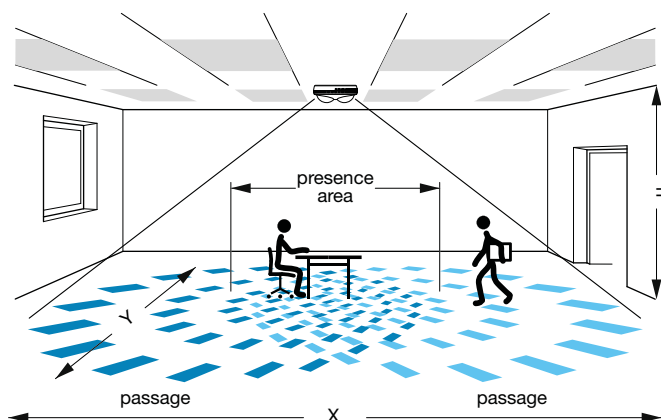
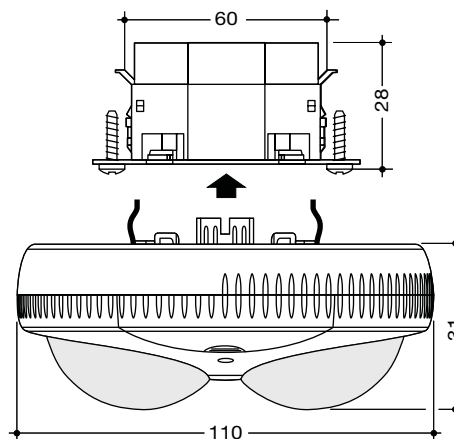


H	2.5m	3m	3.5m
X	13	15.5	18
Y	7	8	9

## Presentation




- 1 Potentiometer adjusting of the lighting time delay
- 2 Potentiometer adjusting of the light intensity level
- 3 Potentiometer adjusting of the presence output (TX510 only)
- 4 VI signalling light
- 5 Detection lens
- 6 Sensor for light intensity measurement



The output modules TXA204C, TXA206A/B/C et TXA207C have 4, 6 or 10 independent outputs (free of potential) to carry out the following controls :

- ON/OFF
- Time delays ON or OFF of 1 second to 12 hours
- Priority settings start or stop
- Sophisticated time lag switch 1 sec. to 24 hours

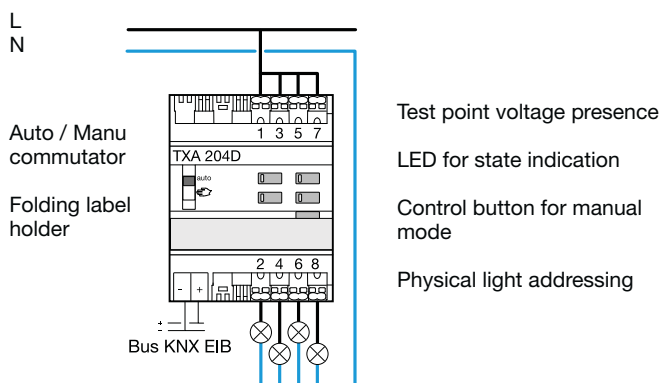
In "Auto" mode, the start and stop orders come from the input modules of Tebis.

In "Manual" mode , these controls are accessible by the push-buttons in front of the module (priority setting). These products are configured with tool TX100GB or by ETS Software\* \*additional functions : heating application with TXA 204C and TXA 206A/B/C/D.

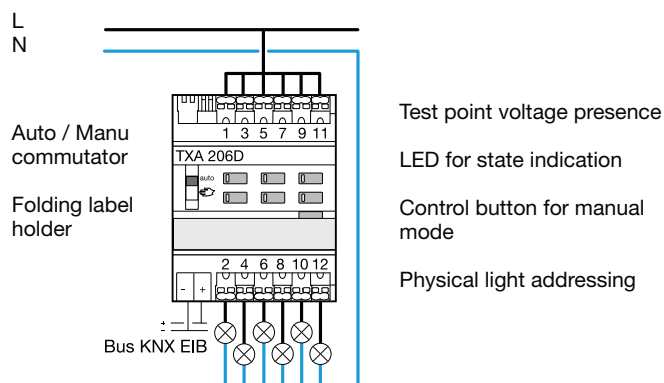
	TXA206A	TXA206B TXA206C	TXA204C	TXA206D	TXA207C
<b>No of outputs, In</b>	6 outputs, 4A	6 outputs, 10A	4 or 6 outputs, 16A capacitive loads	6 outputs, 16A	10 outputs, 16A
<b>Breaking Capacity :</b>					
• Incandescent and halogen 230 V	800W	1200W	2300W	2300W	2300W
• Halogen ELV ferromagnetic transformer	800VA	1200VA	1600VA	1600VA	1600VA
• Halogen ELV electronic transformer	800VA	1000VA	1200VA	1200VA	1200VA
• Non compensated fluorescent tubes	800W	1000W	1200W	1200W	1200W
• Parallel compensated fluorescent tubes				1500W with 200µf	
• Fluorescent tubes for electronic ballast	12 x 36W	15 x 36W	20 x 36W	20 x 36W	20 x 30W
• Compact fluorescent lamps	6 x 23W	12 x 23W	18 x 23W	18 x 23W	18 x 23W
<b>Supply of the module</b>	Bus 30V DC	Bus 30V DC	Bus 30V DC	Bus 30V DC	Bus 30V DC
<b>Maximum dissipation</b>	1W	5W	12W	12W	15W
<b>Working temperature</b>	0°C to +45°C	0°C to +45°C	0°C to +45°C	0°C to +45°C	0°C to +45°C
<b>Storage temperature</b>	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
<b>Degree of protection</b>	IP30	IP30	IP30	IP30	IP30
<b>Width of the module</b>	4 Modules	4 Modules	4 Modules	4 Modules	6 Modules
<b>Connection</b>	0.75 to 2.5mm <sup>2</sup>	0.75 to 2.5mm <sup>2</sup>	0.75 to 2.5mm <sup>2</sup>	0.75 to 2.5mm <sup>2</sup>	0.75 to 2.5mm <sup>2</sup>

## Electrical Connection

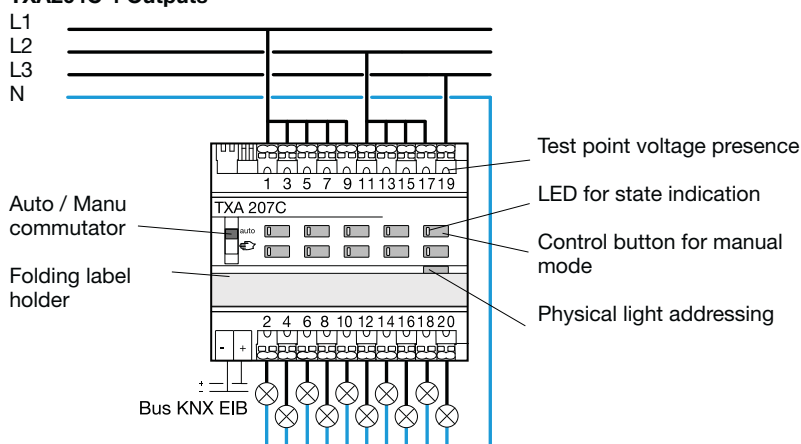
### TXA204C 4 Outputs



### TXA206A/B/C/D 6 Outputs



### TXA207C 4 Outputs



**Technical Characteristics****Dimmers**

The Tebis dimming offer includes:

- Dimmers with direct output 300, 600 or 1000 W
- Units with 1 or 3 outputs

**Dimmers with Direct Output**

Completely renewed, this extended range integrates the new design and the quick connect system.

It includes the following products:

- TXA213N : 3 outputs 300 W
- TXA210N : 1 output 600 W
- TXA215 : 1 output 1000 W
- TXA210AN : 1 output 300W

These products allow the direct connection of the incandescent, fluorescent, ELV halogen or LED loads. They adapt automatically with the type of connected load and have an integrated overheating and overload protection.

**Other Advantages**

- Manual control even when bus is disconnected.
- Mini/maxi level local setting
- Memorizing up to 8 different scene levels of lighting.
- Call of present level by priority setting

**Dimmers 1-10 V : TXA211**

The module TXA211 is provided for control by output:

- Up to 30 dimmers EV 100 or EV 102,
  - Up to 25 electronic ballasts at 20mA
  - Possibility to memorize up to 3 different scene lighting levels.
- In manual mode, the push-buttons situated on the product allow the priority setting of the outputs when there is supply voltage on the bus.

**Dimming Principles**

Only one push-button is needed to select a dimming circuit according to following principle :

- 1 brief press = start or stop
- 1 long press = increase or decrease

At each switching on, the dimmer restores the last stored level, except when scenes are called.

The dimming control is also possible with 2 push-buttons:

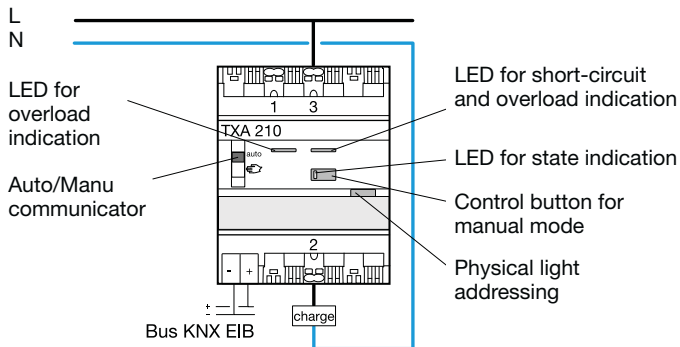
- 1 push-button for start or increase by short or long press
- 1 push-button for stop or decrease by short or long press

**Technical Characteristics**

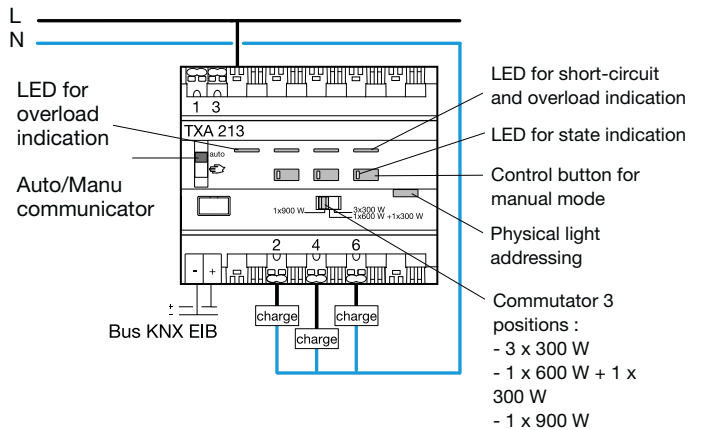
	TXA210AN	TXA210N	TXA213N	TXA215	TXA211
Number of outputs	1 Output 300W	1 Output 600W	1 to 3 Output according to selector	1 Output 1000W	3 Outputs 1-10V
Dimming range in 230V or in ELV ferromagnetic or electronic transformer	25 to 600W / 600VA		20 to 300W / 300VA 20 to 600W / 600VA 20 to 900W / 900VA	20 to 1000W / VA	Output 1-10V : Current max. 50mA + contact TOR 16A AC1
LED	up to 60W	up to 120W	up to 60W up to 120W up to 180W		
Supply	30V DC + 230V - 50/60Hz				
Max dissipation of the product	4W	7.5W	9W	10W	9W
Working temperature	0 to +45°C				-20 to +70°C
Storage temperature	-20 to +60°C				
Degree of protection	IP30				
Width of module	4		6		4
Connection	0.75 to 2.5mm <sup>2</sup> with flexible or rigid wire quick connect terminal				Flexible: 1 to 6mm <sup>2</sup> Rigid: 1.5 to 10mm <sup>2</sup>

## Electrical Connection

### TXA210N/TXA215 : 1 Output 600W / 1000W



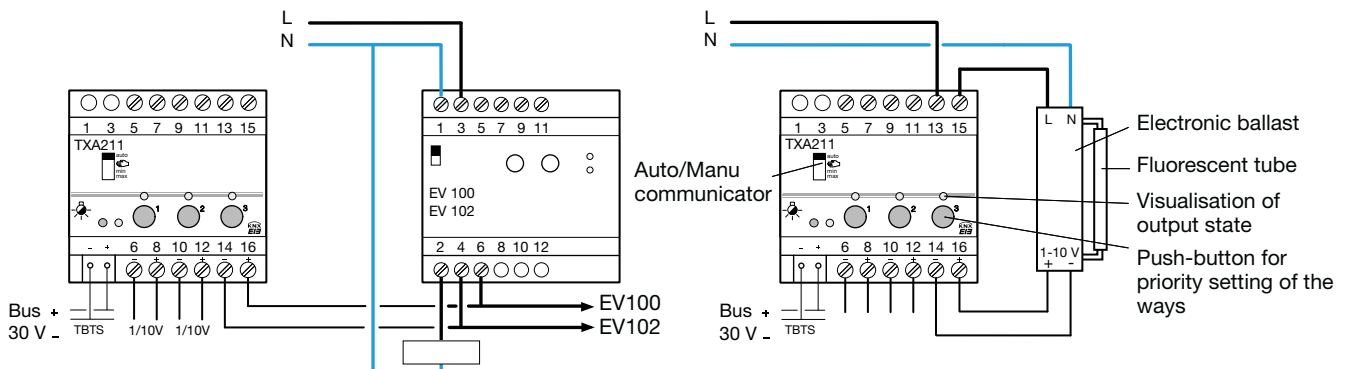
### TXA213N : Single phase 1-3 outputs



### Functions and setting available on TXA215

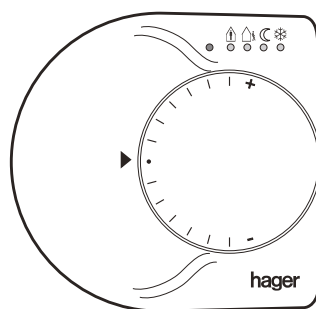
- Display of the dimming level
- Dimming rise time from 0 to 100% adjustable from 1s to 60s (4s by default)
- Dimming start and stop time adjustable from 0s to 30min
- Setting of minimum dimming threshold : 1% per default
- Setting of maximum dimming threshold : 100% per default
- Setting of reached transition time for call of scenario of 0s to 9h59min

### Plot dimmers TXA211



## Thermostat

<b>Product Ref.</b>	<b>TX320</b>
<b>Dimensions</b>	80 x 84 x 28mm
<b>Detection Range</b>	0° to +40°C
<b>Temperature Grade</b>	
Comfort mode	10°C to 28°C (parameter adjustable)
Standby	0.5k to 4k comfort temperature
Night time mode	3k to 8k comfort temperature
Frost preventing mode	3° to -10°C
<b>Bus Connection</b>	Integrated bus coupler
<b>Ambient Temperature</b>	
Storage	-25°C - +60°C
Operation	0° to +50°C
<b>Extra Input End</b>	Bus input end



Select switch for operation mode / display button  
 Comfort mode  
 Standby mode  
 Night time mode  
 Frost preventing mode

Red / Blue diode  
 Red = Heating  
 Blue = Cooling

Off = Already reached preset temperature  
 Dial to set temperature

## Heating Valve Controller

<b>Product Ref.</b>	<b>TX206H</b>
<b>Dimensions</b>	75 x 75 x 306mm
<b>Main Voltage</b>	230V 50/60Hz (Secondary, 24V)
<b>Power Consumption</b>	3W
<b>Voltage of Output Terminal</b>	24V AC
<b>Number of Outputs</b>	6
<b>Valve Number of each Output</b>	Max 4 (for each driver, max 13)
<b>After getting connected, server driving Auto makes interlock</b>	10 min.
<b>Protection Type</b>	IP20
<b>Connection</b>	Plug-in connecting terminal
• Flexible	1 - 1.5mm <sup>2</sup>
• Passive	0.5 - 1.5mm <sup>2</sup>
<b>Ambient Temperature</b>	
• Storage	-25 to +60°C
• Operation	0°C to 50°C

### Notes of Functions

- When network voltage is in function, operation LED will flash.
- When operation of heating valve fails (safety, failure), safety LED will flash. Please call a KNX specialist as required.
- If the actuator connects on startup, function LED will flash.

<b>Product Ref.</b>	<b>TX501</b>	<b>TX502</b>
<b>Dimensions</b>	82 x 50 x 65mm	
<b>Main Voltage</b>	Bus 30V DC (Secondary 24V)	
<b>Valve End Impressing</b>	Auto	
<b>Regulating Force</b>	> 120N	
<b>Max Regulating Travel</b>	6mm (linear motion)	
<b>Operating Time</b>	<20s/mm	
<b>Travel Display</b>	5 LED	Simultaneous press of button
<b>Display of Rating</b>	5 LED	
<b>Accessory Valve Adaptor</b>	Danfoss, RA, Heimeier, MNG, Schlösser, Honeywell, Baukmann, Dumer, Reich, Landis+Gyr, Overtop, Herb, Onda	
<b>Input End</b>	Two input ends in binary system	
<b>Protection Grade</b>	III	
<b>Protection Type</b>	IP21	IP20
<b>Connection</b>	6 pole line (1m): Blk/Red: EIB bus Yellow/Green: Window contact White/Brown: display alarm	
<b>Ambient Temperature</b>		
• Storage	-25°C to +60°C	
• Operation	0 to +50°C	

Output module 4 shutters, blinds or curtains TXA223, TXA224, TXA225 and TXA226.

The whole range of the products blinds and shutters is divided into two applications:

- TXA223 and TXA225 modules manage the controls up, down and stop. They are used to control roller shutters, awning blinds, etc.
- TXA224 and TXA226 modules manage the controls up, down, stop, as well as the inclination of slats.

The TXA225 and TXA226 products are used for direct current motor control. The controls UP and DOWN are obtained by polarity reversal.

In "Auto" mode, the movement orders come from the input modules of the Tebis system.

In "Menu" mode, these controls are accessible by the push-buttons in front of the module (priority setting).

## Technical Characteristics

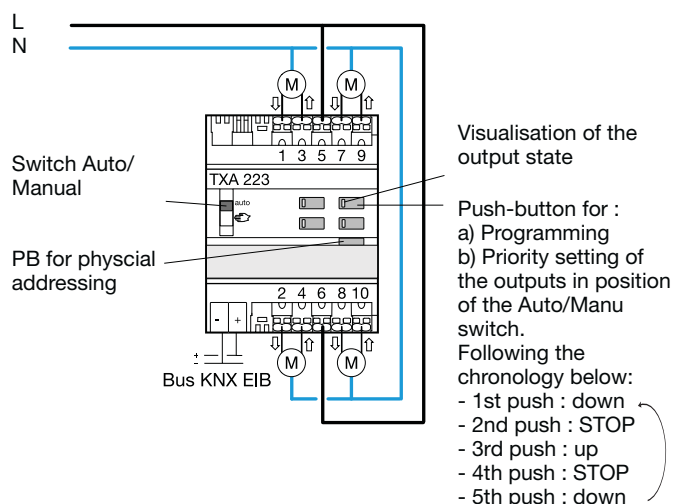
References	TXA223, TXA224	TXA225, TXA226
Number of outputs	4	4
Breaking capacity	6A AC1 250VM	6A DC1 24V ...
Supply of module	Bus 30V DC	
Time setting between 2 controls of opposite direction	600ms	
Max. dissipation of product	2W	
Working temperature	0 to +45°C	
Storage temperature	-20 to +70°C	
Degree of protection	IP30	
Width in modules	4	
Connection flexible or rigid	0.75 to 2.5mm <sup>2</sup> quick connect terminals or rigid	

### Note: Connecting of motors

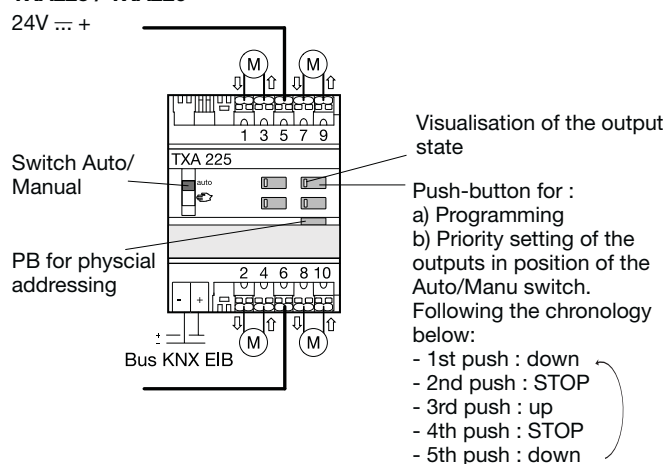
- Alternative current motors (never connect any motors in parallel).
- Continuous current motors (two motors powered in DC can be connected in parallel on condition to meet the nominal current of the TX225 or TX226 modules).

## Electrical Connection

### TXA223 / TXA224



### TXA225 / TXA226

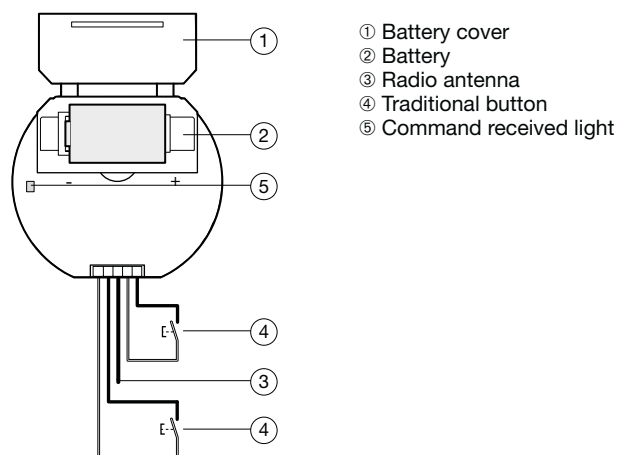


## Technical Characteristics

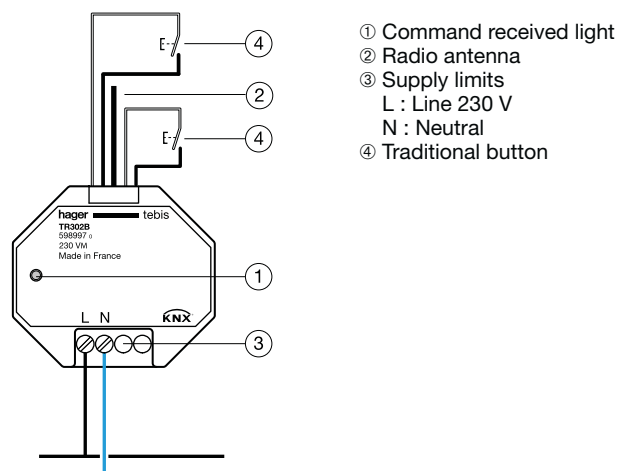
	TRB302A	TRB302B
<b>Supply</b>	CR 1/2AA (3.0V) Battery	230V M 50Hz ± 15%
<b>Input</b>	2/4 inputs potential free contacts	2/4 inputs potential free contacts
<b>Contact current</b>	30µA	30µA
<b>Input current</b>	19mA	19mA
<b>Life of battery</b>	5 years	-
<b>Emission frequency</b>	868.3 Mhz	868.3 Mhz
<b>Emission range</b>		
• Inside a building	max. 30m	max. 30m
• Open area	max. 100m	max. 100m
<b>Working temperature</b>	0°C to +45°C	0°C to +45°C
<b>Storage temperature</b>	-20°C to +70°C	-20°C to +70°C
<b>Protection index</b>	IP30	IP20
<b>Size</b>	45 x 51 x 16mm	48 x 53 x 27mm
<b>Connection</b>	Slide-in connector with 200mm length	Slide-in connector with 200mm length

## Product presentation

### 2 Input modules : TRB302A (Battery Cell)



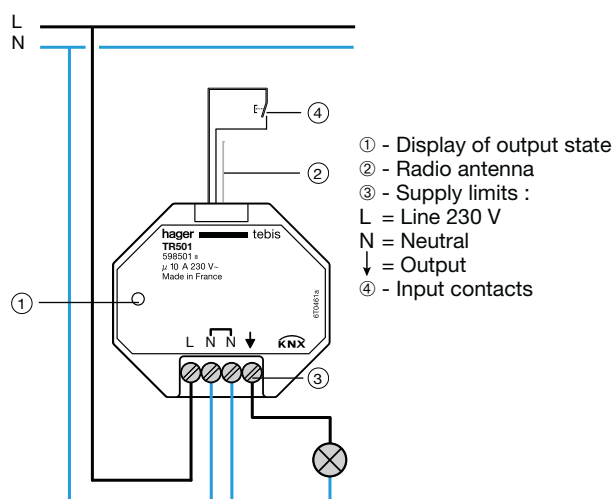
### 2 Input modules : TRB302B (230VM)



## Technical Characteristics

	TRB501
<b>Supply</b>	230V 50Hz ± 15%
<b>Inputs</b>	1 potential free contact
<b>Outputs</b>	
• Incandescence	1500W
• 230V halogen	1500W
• Ferromagnetic ELV halogen	800VA
• Electronic ELV halogen	800VA
• Parallel compensated fluor; tubes	11 x 36W
	Max. 47µf
<b>Connection Through Cage Terminal:</b>	
• Flexible	0.5 to 2.5mm <sup>2</sup>
• Rigid	0.5 to 2.5mm <sup>2</sup>
<b>Emission frequency</b>	868.3 MHz
<b>Emission range</b>	
• Inside a building	Max. 30m
• Open area	Max. 100m
<b>Working temperature</b>	0°C to +45°C
<b>Storage temperature</b>	-20°C to +70°C
<b>Degree of Protection</b>	IP30
<b>Size</b>	

## TRB501 : 1 input / 1 output



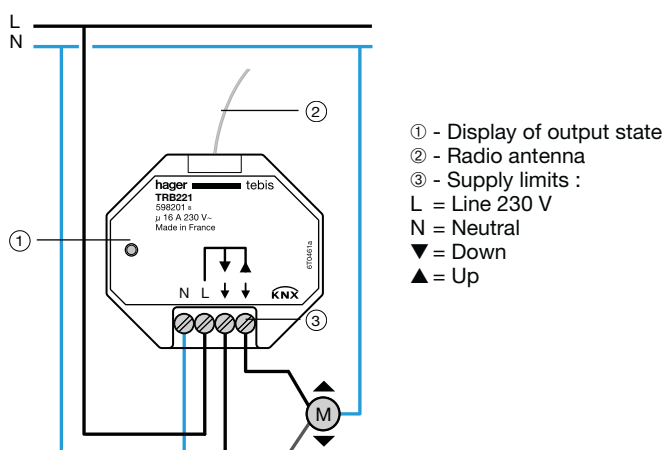


## Technical Characteristics

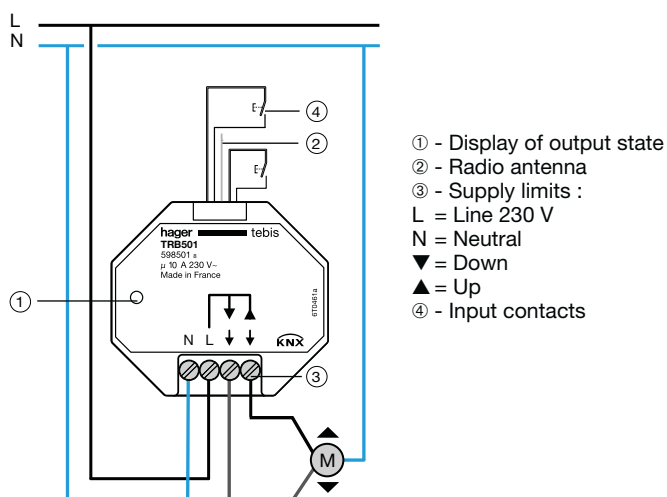
	TRB221	TRB521
<b>Supply</b>	230V 50Hz ± 15%	230V 50Hz ± 15%
<b>Input</b>		2 inputs, potential free
<b>Output</b>	1 shutter output, 6A 230V AC1	1 shutter output, 6A 230V AC1
<b>Maxi. power loss</b>	2W	2W
<b>Min. time between revertive pulsing</b>	600ms	600ms
<b>Radio frequency</b>	868.3 MHz	868.3 MHz
<b>Emission range</b>		
• Inside a building	Max. 30m	
• Open area	Max. 100m	
<b>Working temperature</b>	0°C to +45°C	0°C to +45°C
<b>Storage temperature</b>	-20°C to +70°C	-20°C to +70°C
<b>Degree of Protection</b>	IP30	IP30
<b>Size</b>	48 x 53 x 30mm	48 x 53 x 30mm
<b>Connection Through Cage Terminal</b>		
• Flexible	0.5 to 2.5mm <sup>2</sup>	0.5 to 2.5mm <sup>2</sup>
• Rigid	0.5 to 2.5mm <sup>2</sup>	0.5 to 2.5mm <sup>2</sup>

## Rolling shutters / blinds

### TRB221 : 1 output



### TRB521 : 2 inputs / 1 output

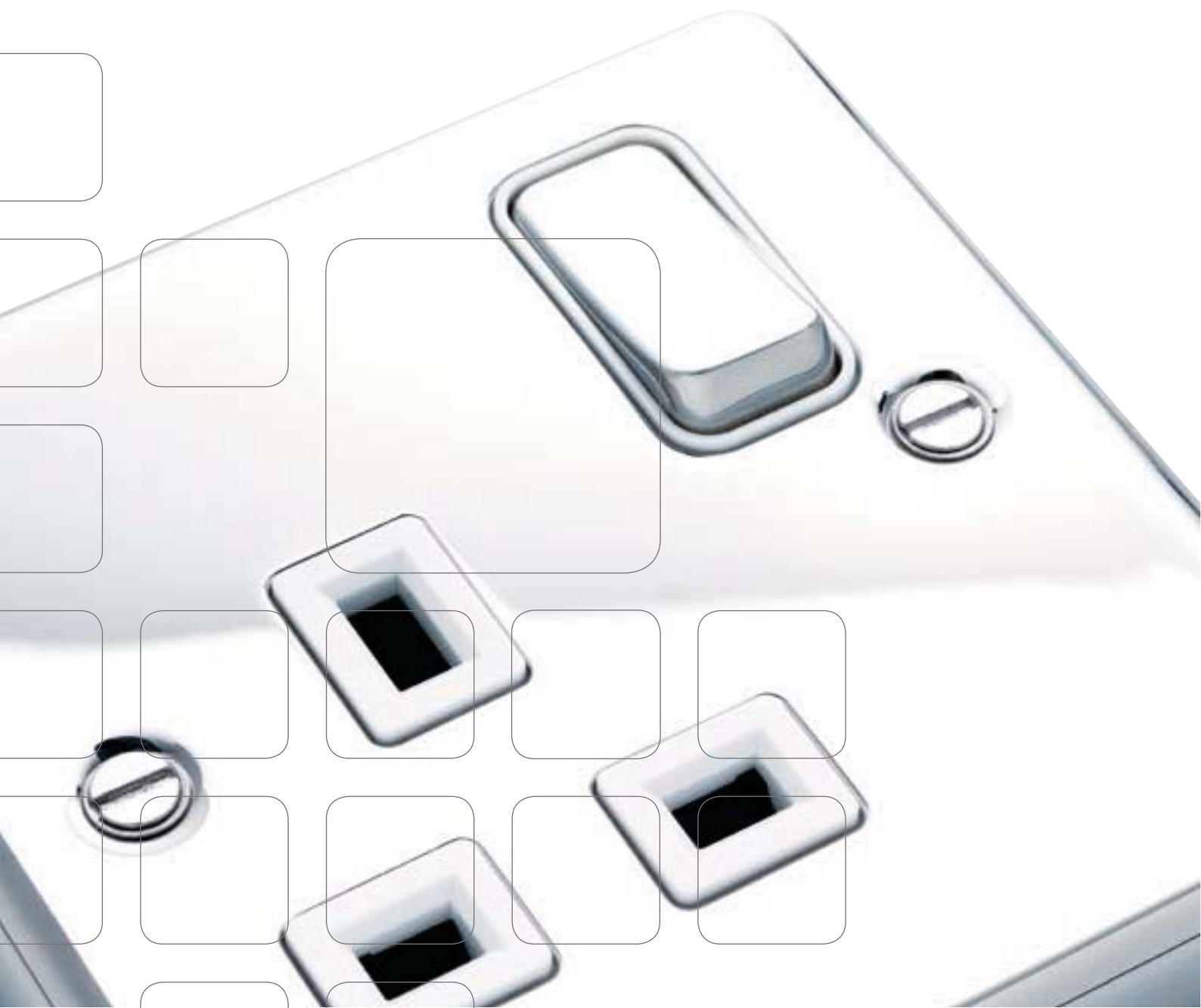


# Sollysta

## Wiring Accessories

Sollysta offers a complete range of wiring solutions for any application.

Specifically designed to inspire confidence, the modern design combines stylish aesthetics and quality without compromising on functionality, reliability or safety. Sollysta is not just good to look at; it protects as well.



White moulded	7.2
Decorative	7.16
Grid	7.34
Metalclad	7.40
IP66	7.46

# Sollysta

## White moulded

The range of Sollysta wiring accessories is the easiest in the market to install with the shallowest back projection for more cabling space. Behind the faceplate the terminals face in the same direction with lead ins for wiring, backed off screws held captive to prevent loss, wire end stops and clear white labelling off a dark grey background.

The wall switches are the market's first with a neutral loop terminal contained within the accessory. This allows contractors to complete the loop connection in the switch instead of in the ceiling rose. Not only does this reduce cabling and the uncomfortable time spent working at ceiling level, but it also meets the needs of BS7671 since the connections are readily accessible for inspection.



Wall Switches & Dimmers	7.4	Telephone, TV & Data	7.10
Isolator Switches & Socket Outlets	7.5	Euro Frontplates & Modules	7.11
Cooker Control Units & Outlet Plates	7.6	Ceiling Switches, Fan Isolator Switches & Light Switches	7.12
Fused Connection Units	7.7	Accessories & Pattress Boxes	7.14
Double Pole Switches	7.8	Part M Wiring Accessories	7.15
Shaver Socket	7.9		





WMPS11



WMPS12W

## Wall Switches

- Unique patented loop terminal allows neutral looping at the switch.
- Complies with BS EN 60669-1, a.c. only.
- 'X' rated - No need to derate for fluorescent loads.
- Two way switches can be wired either 1 way or 2 way.
- Clear terminal markings: 1-way L1 2-way L2
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- For multigang switches use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

## Wall Switches

	Ref.
10AX 1 Gang 1 Way Wall Switch	<b>WMPS11</b>
10AX 1 Gang 1 Way Wall Switch Printed 'Fan'	<b>WMPS11/FAN</b>
10AX 1 Gang 2 Way Wall Switch	<b>WMPS12</b>
10AX 2 Gang 2 Way Wall Switch	<b>WMPS22</b>
10AX 3 Gang 2 Way Wall Switch	<b>WMPS32</b>
10AX 4 Gang 2 Way Wall Switch	<b>WMPS42</b>
10AX 6 Gang 2 Way Wall Switch	<b>WMPS62</b>
10AX 1 Gang 2 Way Wall Switch Wide Rocker	<b>WMPS12W</b>
10AX 2 Gang 2 Way Wall Switch Wide Rocker	<b>WMPS22W</b>

## Intermediate Switches

	Ref.
Intermediate Switch	<b>WMPS16</b>
Intermediate Switch Wide Rocker	<b>WMPS16W</b>

## Push Switches

	Ref.
Push Switch (Retractive)	<b>WMPS12R</b>
Push Switch with Bell Symbol	<b>WMPS12RB</b>
Push Switch Wide Rocker	<b>WMPS12RW</b>



WMDS1

## Switch Dimmers

- Stylish flush buttons give easy press action.
- Quick press for on/off.
- Hold button down to dim or brighten light level.
- Leading edge.
- Soft start feature prolongs lamp life.
- Suitable for dimming mains and dimmable transformer extra low voltage lamps.
- Complies with BS EN 60669-2-1 (including BS EN 55015).
- Automatic switch off in event of transformer instability protects the dimmer and the transformer.
- Supplied with M3.5 x 30mm long fixing screws.

	Ref.
1 Gang Dimmer 400W	<b>WMDS1</b>
2 Gang Dimmer 250W	<b>WMDS2</b>
3 Gang Dimmer 250W	<b>WMDS3</b>
4 Gang Dimmer 250W	<b>WMDS4</b>
Resistive Load for LED Applications	<b>WMRESLOAD</b>



WMDR1/400R

## Rotary Push Button Dimmers

- Quick press for on/off.
- Rotary dimming control.
- 1 or 2 way switching.
- Supplied with M3.5 x 30mm long fixing screws.
- Suitable for resistive loads e.g. incandescent loads.
- Suitable for mains halogen lamps without the need for derating.
- Not suitable for fluorescent, LED or inductive loads.
- Complies with BS EN 60669-2-1 (excluding clause 26 EMC requirements).
- Also available in our grid range see page 7.38

	Ref.
1 Gang Dimmer 400W	<b>WMDR1/400R</b>
2 Gang Dimmer 250W	<b>WMDR2/250R</b>
Resistive Load for LED Applications	<b>WMRESLOAD</b>





WMPS3PIF

## Isolator Switches

- Complies with BS EN 60669-2-4
- Rated conditional short circuit current (Inc) 1500A tested with Hager MTN110 6kA B curve MCB.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- Supplied with M3.5 x 20mm long fixing screws.

3 Pole Isolator Switch

Ref.

**WMPS3PI**

3 Pole Isolator Switch with Fan Symbol

**WMPS3PIF**



WMSS82

## Switched Sockets

- Unique patented 3 part safety shutter.
- Complies with BS 1363-2, a.c. only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- All terminal screws grouped in-line and upward facing for ease of installation.
- Clear printed and engraved terminal markings.
- Capacity of each terminal: 5 x 2.5mm<sup>2</sup> conductors switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 7.51).
- For mounting boxes see selection chart on page 7.50.
- Supplied with M3.5 x 30mm long fixing screws.



WMS51

## 13A Switched Sockets

Ref.

1 Gang Double Pole Switched Socket

**WMSS81**

2 Gang Double Pole Switched Socket Dual Earth

**WMSS82**

2 Gang Double Pole Switched Socket Printed 'House Ring'

**WMSS82/HOUSERNG**

2 Gang Double Pole Switched Socket Dual Earth Outboard Rockers

**WMSS82O**

1 Gang Double Pole Switched Socket with LED Indicator

**WMSS81N**

2 Gang Double Pole Switched Socket Dual Earth with LED Indicator

**WMSS82N**

2 Gang Double Pole Switched Socket Dual Earth Outboard Rockers with LED Indicator

**WMSS82ON**

## 5A / 13A Unswitched Sockets

Ref.

5A 1 Gang Unswitched Socket

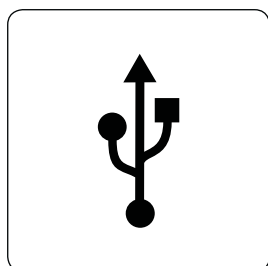
**WMS51**

13A 1 Gang Unswitched Socket

**WMS81**

13A 2 Gang Unswitched Socket Dual Earth

**WMS82**



## USB Sockets

Note: available from October 2016

Ref.

2 Gang Double Pole Switched Socket with Twin USB

**WMSS82USB**



WMCC50

**Cooker Control Unit**

- Complies with BS 4177.
- Switch and socket are double pole.
- Twin earth as standard.
- Available with optional LED indication.
- Main switch is suitable for isolation.
- All terminals are upward facing for ease of installation.
- Clearly printed terminal marking.
- Capacity of terminals 2 x 6.0mm<sup>2</sup>, 1 x 16.0mm<sup>2</sup>.
- For mounting boxes see selection chart on page 7.50.
- Supplied with M3.5 x 30mm long fixing screws.

Ref.

45A Cooker Control Unit

**WMCC50**

45A Cooker Control Unit with LED Indicator

**WMCC50N**



WMCC50N

**Outlet Plates**

- Complies with BS 5733.
- Terminal capacity:
  - 20A 2 x 6.0mm<sup>2</sup>
  - 45A 2 x 10.0mm<sup>2</sup> conductors
- 20A plate features 2 separate terminals for each of Line, Neutral and Earth so flexible and fixed wiring do not occupy the same terminal.
- Single screw fast fix cable clamp.
- Supplied with M3.5 x 30mm long fixing screws.
- 45A features large open brass terminals for ease of installation.
- Protective red washer must be used under cable clamp to prevent damage to cable.

Ref.

Flex Outlet Plate 20A

**WMP2FO**

Cooker Cable Outlet with Terminals 45A

**WMP50FO**



WMP2FO





WMSSU83



WMSSU83N

**13A Switched & Unswitched Fused Connection Units**

- Complies with BS 1363-4.
- Cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- Single screw fast fix cable clamp.
- Available with LED light indicator in rocker.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal markings.
- Capacity of each terminal 2 x 6.0 mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- Supplied with M3.5 x 30mm long fixing screws.

For bespoke printing options please see page 7.51.

	Ref.
13A FCU Unswitched	<b>WMSU83</b>
13A FCU Unswitched with Flex Outlet	<b>WMSU83FO</b>
13A FCU Switched	<b>WMSSU83</b>
13A FCU Switched with Flex Outlet	<b>WMSSU83FO</b>
13A FCU Switched with LED Indicator	<b>WMSSU83N</b>
13A FCU Switched with LED Indicator and Flex Outlet	<b>WMSSU83FON</b>
13A FCU Switched Fitted With 3A Fuse	<b>WMSSU83/3A</b>
13A FCU Switched Printed 'Boiler'	<b>WMSSU83/BO</b>
13A FCU Switched Printed 'Central Heating'	<b>WMSSU83/CTLHTG</b>
13A FCU Switched Printed 'Dishwasher'	<b>WMSSU83/DW</b>
13A FCU Switched Printed 'Extractor Fan'	<b>WMSSU83/EF</b>
13A FCU Switched Printed 'Fan'	<b>WMSSU83/FAN</b>
13A FCU Switched Printed 'Fridge Freezer'	<b>WMSSU83/FF</b>
13A FCU Switched Printed 'Freezer'	<b>WMSSU83/FRE</b>
13A FCU Switched Printed 'Fridge'	<b>WMSSU83/FRI</b>
13A FCU Switched Printed 'Heating'	<b>WMSSU83/HTG</b>
13A FCU Switched Printed 'Heater'	<b>WMSSU83/HTR</b>
13A FCU Switched Printed 'Shower Pump'	<b>WMSSU83/SHWRPUMP</b>
13A FCU Switched Printed 'Socket Below'	<b>WMSSU83/SKTBELOW</b>
13A FCU Switched Printed 'Tumble Dryer'	<b>WMSSU83/TD</b>
13A FCU Switched Printed 'Washing Machine'	<b>WMSSU83/WM</b>
13A FCU Switched With Flex Outlet Printed 'Boiler'	<b>WMSSU83FO/BO</b>
13A FCU Switched With Flex Outlet Printed 'Dishwasher'	<b>WMSSU83FO/DW</b>
13A FCU Switched With Flex Outlet Printed 'Extractor Fan'	<b>WMSSU83FO/EF</b>
13A FCU Switched With Flex Outlet Printed 'Fridge Freezer'	<b>WMSSU83FO/FF</b>
13A FCU Switched With Flex Outlet Printed 'Freezer'	<b>WMSSU83FO/FRE</b>
13A FCU Switched With Flex Outlet Printed 'Fridge'	<b>WMSSU83FO/FRI</b>
13A FCU Switched With Flex Outlet Printed 'Heating'	<b>WMSSU83FO/HTG</b>
13A FCU Switched With Flex Outlet Printed 'Heater'	<b>WMSSU83FO/HTR</b>
13A FCU Switched With Flex Outlet Printed 'Tumble Dryer'	<b>WMSSU83FO/TD</b>
13A FCU Switched With Flex Outlet Printed 'Washing Machine'	<b>WMSSU83FO/WM</b>
13A FCU Switched With LED & Flex Printed 'Boiler'	<b>WMSSU83FON/BO</b>
13A FCU Switched With LED & Flex Printed 'Dishwasher'	<b>WMSSU83FON/DW</b>
13A FCU Switched With LED & Flex Printed 'Extractor Fan'	<b>WMSSU83FON/EF</b>
13A FCU Switched With LED & Flex Printed 'Fan'	<b>WMSSU83FON/FAN</b>
13A FCU Switched With LED & Flex Printed 'Freeze'	<b>WMSSU83FON/FRE</b>
13A FCU Switched With LED & Flex Printed 'Fridge'	<b>WMSSU83FON/FRI</b>
13A FCU Switched With LED & Flex Printed 'Hob'	<b>WMSSU83FON/HB</b>
13A FCU Switched With LED & Flex Printed 'Heating'	<b>WMSSU83FON/HTG</b>
13A FCU Switched With LED & Flex Printed 'Tumbledryer'	<b>WMSSU83FON/TD</b>
13A FCU Switched With LED & Flex Printed 'Washing Machine'	<b>WMSSU83FON/WM</b>
13A FCU Switched With LED Printed 'Boiler'	<b>WMSSU83N/BO</b>
13A FCU Switched With LED Printed 'Dishwasher'	<b>WMSSU83N/DW</b>
13A FCU Switched With LED Printed 'Extractor Fan'	<b>WMSSU83N/EF</b>
13A FCU Switched With LED Printed 'Fan'	<b>WMSSU83N/FAN</b>
13A FCU Switched With LED Printed 'Freezer'	<b>WMSSU83N/FRE</b>
13A FCU Switched With LED Printed 'Fridge'	<b>WMSSU83N/FRI</b>
13A FCU Switched With LED Printed 'Hob'	<b>WMSSU83N/HB</b>
13A FCU Switched With LED Printed 'Heating'	<b>WMSSU83N/HTG</b>
13A FCU Switched With LED Printed 'Tumble Dryer'	<b>WMSSU83N/TD</b>
13A FCU Switched With LED Printed 'Washing Machine'	<b>WMSSU83N/WM</b>



WMDP85N

## Double Pole Switches (20A)

- Complies with BS EN 60669-1, a.c. only.
- Cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- Single screw fast fix cable clamp.
- Available with LED indicator in rocker.
- All terminal screws upward facing for ease of installation.
- Clearly printed and engraved terminal marking.
- Capacity of each terminal 2 x 6.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- Supplied with M3.5 x 30mm long fixing screws.

	Ref.
20A Double Pole (DP) Switch	<b>WMDP84</b>
20A DP Switch with Flex Outlet	<b>WMDP84FO</b>
20A DP Switch with LED Indicator	<b>WMDP84N</b>
20A DP Switch with LED Indicator & Flex Outlet	<b>WMDP84FON</b>
20A DP Switch with LED Indicator Printed 'Waterheater'	<b>WMDP85N</b>
20A DP Switch with LED Indicator & Flex Outlet Printed 'Waterheater'	<b>WMDP85FON</b>
20A DP Switch Printed 'Dishwasher'	<b>WMDP84DW</b>
20A DP Switch Printed 'Freezer'	<b>WMDP84/FRE</b>
20A DP Switch Printed 'Fridge'	<b>WMDP84/FRI</b>
20A DP Switch Printed 'Tumble Dryer'	<b>WMDP84/TD</b>
20A DP Switch Printed 'Washing Machine'	<b>WMDP84/WM</b>
20A DP Switch c/w Flex Outlet Printed 'Freezer'	<b>WMDP84FO/FRE</b>
20A DP Switch c/w Flex Outlet Printed 'Fridge'	<b>WMDP84FO/FRI</b>
20A DP Switch c/w Flex Outlet Printed 'Tumble Dryer'	<b>WMDP84FO/TD</b>
20A DP Switch c/w Flex Outlet Printed 'Washing Machine'	<b>WMDP84FO/WM</b>
20A DP Switch LED c/w Flex Outlet Printed 'Dishwasher'	<b>WMDP84FON/DW</b>
20A DP Switch LED c/w Flex Outlet Printed 'Fan'	<b>WMDP84FON/FAN</b>
20A DP Switch LED c/w Flex Outlet Printed 'Freezer'	<b>WMDP84FON/FRE</b>
20A DP Switch LED c/w Flex Outlet Printed 'Fridge'	<b>WMDP84FON/FRI</b>
20A DP Switch LED c/w Flex Outlet Printed 'Tumble Dryer'	<b>WMDP84FON/TD</b>
20A DP Switch LED c/w Flex Outlet Printed 'Washing Machine'	<b>WMDP84FON/WM</b>
20A DP Switch LED Printed 'Dishwasher'	<b>WMDP84N/DW</b>
20A DP Switch LED Printed 'Fan'	<b>WMDP84N/FAN</b>
20A DP Switch LED Printed 'Freezer'	<b>WMDP84N/FRE</b>
20A DP Switch LED Printed 'Fridge'	<b>WMDP84N/FRI</b>
20A DP Switch LED Printed 'Tumble Dryer'	<b>WMDP84N/TD</b>
20A DP Switch LED Printed 'Washing Machine'	<b>WMDP84N/WM</b>



WMDP50N

## Double Pole Switches (50A)

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current (I<sub>nc</sub>) 1500A tested with Hager MTN150 6kA B curve MCB.
- LED indication.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal marking.
- Capacity of each terminal 2 x 6mm<sup>2</sup>, 1 x 10mm<sup>2</sup>.
- For mounting boxes see selection chart on page 7.50.
- Supplied with M3.5 x 30mm long fixing screws.

	Ref.
50A Double Pole Switch 1 Gang with LED Indicator	<b>WMDP50N</b>
50A Double Pole Switch 2 Gang Vertical with LED Indicator	<b>WMDP50VN</b>
50A Double Pole Switch With LED Printed 'Cooker'	<b>WMDP50N/CK</b>
50A Double Pole Switch With LED Printed 'Hob'	<b>WMDP50N/HB</b>
50A Double Pole Switch With LED Printed 'Oven'	<b>WMDP50N/OV</b>
50A Double Pole Switch With LED Printed 'Shower'	<b>WMDP50N/SH</b>
50A Double Pole Switch 2 Gang Vertical With LED Printed 'Cooker'	<b>WMDP50VN/CK</b>
50A Double Pole 2 Gang Vertical Switch With LED Printed 'Hob'	<b>WMDP50VN/HB</b>
50A Double Pole Switch 2 Gang Vertical With LED Printed 'Oven'	<b>WMDP50VN/OV</b>

We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.



WMSO100

## Shaver Socket

- Complies with BS EN 61558-2-5
- Capacity of each terminal 2 x 2.5mm<sup>2</sup> conductors.
- Designed for use in bathrooms and shower rooms and incorporates a double wound transformer for an earth free supply.
- Input 230V a.c. output dual voltage 230V a.c. and 115V a.c. outlets.
- Rating 20VA on either voltage.
- Primary circuit protected by a self resetting thermal overload device.
- Insertion of shaver plug automatically switches on the transformer.
- Supplied with M3.5 x 30mm long fixing screws.

115/230 Volt Shaver Socket

Ref.

**WMSO100**



WMBTM

**Telephone and Data**

- BT sockets comply with BS EN 6312-2.
- Supplied with fitted cable tie.
- Quick connection with insulation displacement terminals.
- RJ11 has toolless quick connect terminals.
- Clearly printed terminal marking.
- Supplied with M3.5 x 20mm long fixing screws.

	Ref.
BT Master Telephone Outlet	<b>WMBTM</b>
BT Secondary Telephone Outlet	<b>WMBTS</b>
RJ11 Socket	<b>WMRJ11</b>
RJ45 Socket	<b>WMRJ45</b>
IDC Tools (bag of 10)	<b>IDCTOOL</b>



WMTVM

**TV & Satellite**

- TV outlets comply with BS 3041.
- Satellite outlets comply with BS EN 50083-2.
- Fully screened.
- DAB compatible.
- Supplied with M3.5 x 20mm fixing screws.

	Ref.
Single F Type Satellite Outlet Screened	<b>WMSAT</b>
Single Co-Ax TV Socket Outlet Male	<b>WMTVM</b>
Single Co-Ax TV Socket Outlet Female	<b>WMTVF</b>
Double TV & FM/DAB Co-Ax Socket Outlet	<b>WMDX</b>
Triplexer TV, FM/DAB & Satellite Outlet	<b>WMTX</b>
Quadplexer TV, FM/DAB, Satellite 1 & Satellite 2 Outlet	<b>WMQX</b>



WMQX



WMDX



WMSAT



WMP4EU



WMP2EU

### Euro Style Accommodation Plates

- Carrier plates facilitate installation of industry standard modular data outlets.
- Easy to configure for all applications.
- Easy installation of module to plate.
- Robust retention of modules in operation.
- Quick release of modules for maintenance.
- Please note: these are industry standard units and are not colour matched to Sollysta plates.

	Ref.
1 Module	<b>WMP1EU</b>
2 Modules	<b>WMP2EU</b>
4 Modules	<b>WMP4EU</b>
Flat Plate Lounge Plate - For TV Power & Data (White Metal)	<b>WFTVLPWW</b>
Raised Plate Lounge Plate - For TV Power & Data (White Metal)	<b>WRTVLPWW</b>



WMMBTM

WMSAT



WMMQXB



WMMUSB

### Euro Style Modules

	Mod width	Ref. (White)	Ref. (Black)
BT Telephone Master Euromodule	1	<b>WMMBTM</b>	<b>WMMBTMB</b>
BT Telephone Secondary Euromodule	1	<b>WMMBTS</b>	<b>WMMBTSB</b>
RJ11 - Modem Euromodule	1	<b>WMMRJ11</b>	<b>WMMRJ11B</b>
RJ45 - Cat 6 UTP Euromodule	1	<b>WMMRJ45</b>	<b>WMMRJ45B</b>
Phono Plugs - Red/Black - Gold Plated Euromodule	1	<b>WMMPP</b>	-
Speaker Terminal Posts - Gold Plated Euromodule	1	<b>WMMSP</b>	-
Single IEC Female Non Isolated Euromodule	1	<b>WMMTVF</b>	<b>WMMTVFB</b>
Single IEC Male Non Isolated Euromodule	1	<b>WMMTVM</b>	<b>WMMTVMB</b>
Single Satellite F Connector Euromodule	1	<b>WMSAT</b>	<b>WMSATB</b>
Single Blank Euromodule	1	<b>WMMB</b>	<b>WMMBB</b>
HDMI Module	1	<b>WMMHDMI</b>	<b>WMMHDMIB</b>
PIR Occupancy Sensor Euromodule 5m	1	-	<b>WMMPIR05X</b>
PIR Occupancy Sensor Euromodule 10m	1	-	<b>WMMPIR10X</b>
USB Euromodule with Twin USB	2	<b>WMMUSB</b>	<b>WMMUSBB</b>
Diplexer - TV & FM Radio Euromodule	2	<b>WMMDX</b>	<b>WMMDXB</b>
Triplexer - TV, Satellite & FM Radio Euromodule	2	<b>WMMTX</b>	<b>WMMTXB</b>
Quadplexer - TV, Satellite, FM Radio & Return Euromodule	2	<b>WMMQX</b>	<b>WMMQXB</b>



**Light Switches**

- Complies with BS EN 60669-1.
- 'X' rated - no need to derate for fluorescent loads.
- Earth terminal in base.
- Switch will operate at up to an angle of 45°.
- Pull cords 1.5m long.
- Capacity of each terminal: 2 x 1.5mm<sup>2</sup> conductors.

	Ref.
6A Ceiling Switch 1 Way	<b>WMCS11</b>
6A Ceiling Switch 2 Way	<b>WMCS12</b>

WMCS11



**Fan Isolator Switches**

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current (Inc) 1500A tested with Hager MTN110 6kA B Curve MCB.
- Terminal capacity: 3 x 1.5mm<sup>2</sup>
- Supplied with M3.5 x 30mm long fixing screws.

	Ref.
10A 3 Pole Ceiling Switch Printed 'Fan & Isolator'	<b>WMCS3PIF</b>
10A 3 Pole Ceiling Switch Printed 'Isolator'	<b>WMCS3PI</b>
10A 3 Pole Ceiling Switch Printed 'Fan'	<b>WMCS3PF</b>

WMCS3PIF



**Shower Switches**

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current (Inc) 1500A tested with Hager MTN150 6kA B Curve MCB.
- Suitable for use with showers up to 11.5kW.
- Position of the contacts shown by flag indicator.
- Supplied with M3.5 x 30mm fixing screws.
- Capacity of each terminal: 1 x 16mm<sup>2</sup> conductors

	Ref.
50A 2 Pole Isolating Ceiling Switch with LED Indicator	<b>WMCS50N</b>

WMCS50N

# Safety Covers

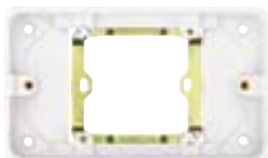


The extended Hager Ceiling Accessories range now includes pendants and batten holders with added safety covers.

With safety both at home and on site being crucial, the added safety cover allows removal of the outer ceiling rose whilst painting, and covers any exposed live parts making it safe to work around.

See our full range of ceiling accessories online at [hager.co.uk](http://hager.co.uk)

 **hager**



WMPB2/20

**Pattress Boxes**

- Complies with BS EN 60670-1.
- Depth quoted is internal depth.
- Colour and footprint match all Sollysta wall accessories.

	Ref.
Single 20mm Deep Moulded Box	<b>WMPB1/20</b>
Single 28mm Deep Moulded Box	<b>WMPB1/28</b>
Single 46mm Deep Moulded Box	<b>WMPB1/46</b>
Twin 28mm Deep Moulded Box	<b>WMPB2/28</b>
Twin 46mm Deep Moulded Box with Cable Clamps	<b>WMPB2/46CC</b>
46mm Deep Moulded Shaver Box	<b>WMPB2/46</b>
20mm Single to Twin Converter Frame	<b>WMPB2/20</b>
Single 14mm Deep Spacer for Base Flex Outlet	<b>WMPB1/BFO</b>



PULLCORD

**Accessories**

	Ref.
Single Spare Pull Cord	<b>PULLCORD</b>
Pack of 100 Push Fit Screw Covers	<b>SCREWCOVER</b>
IDC Tools (bag of 10)	<b>IDCTOOL</b>

**Blank Plates**

Single Blank Plate	<b>WMP1</b>
Twin Blank Plate	<b>WMP2</b>



WMP1

**Hotel Key Card Switch**

Includes indicator light to aid locating. Light is switched off when the card is inserted.

- Complies with BS EN 60669-1
- Supplied with M3.5 x 25mm long fixing screws
- Material: Polycarbonate

	Pack Qty.	Ref.
Key tag switch with key card (time delay 60s)	5	<b>XH9001</b>



XH9001





WMSS82OG



WMPS12WG



WMSS82R/CS



WMSU83R/FA



WMSS82ORR



WMSSU83RR

### Part M Wiring Accessories

- Designed to satisfy Buildings Regulations Approved Document M (referred to as Part M)
- All products comply with their relevant British Standards
- Switches have wide rockers and dark face plates for clear visibility and ease of actuation
- Sockets have outboard rockers to ensure correct switching of appliances and dark face plates for ease of identification of switch position

Grid modules can be found on page 7.38. Euro modules can be found on page 7.11.

### Red Face Plates & Red Rockers

- Red rockers aid ease of identification for safe switching of specific equipment
- Red face plates ensure products are easy to locate
- A range of printed options is available for specific functions

### Grey Part M Switches & Sockets

	Ref.
10AX 1 Gang 2 Way Wall Switch Wide Rocker with Grey Face Plate	<b>WMPS12WG</b>
10AX 2 Gang 2 Way Wall Switch Wide Rocker with Grey Face Plate	<b>WMPS22WG</b>
Intermediate Switch Wide Rocker with Grey Face Plate	<b>WMPS16WG</b>
Push Switch Wide Rocker with Grey Face Plate	<b>WMPS12RWG</b>
Push Switch Wide Rocker with Grey Face Plate Printed 'Fan Boost'	<b>WMPS12RWG/FB</b>
20A 1 Gang Double Pole Switch with LED Indicator	<b>WMDP84NG</b>
50A 2 Gang Double Pole Switch with LED Indicator	<b>WMDP50NG</b>
50A 2 Gang Double Pole Switch with LED Indicator Printed 'Cooker'	<b>WMDP50NG/CK</b>
13A Switched Fuse Connection Unit with LED Indicator	<b>WMSSU83NG</b>
13A Switched Fuse Connection Unit with LED Indicator Printed 'Extract Hood'	<b>WMSSU83NG/EH</b>
13A Switched Fuse Connection Unit with LED Indicator Printed 'Panel Heater'	<b>WMSSU83NG/PH</b>
13A 1 Gang Double Pole Switched Socket with Grey Face Plate	<b>WMSS81G</b>
13A 2 Gang Double Pole Switched Socket Outboard Rockers Grey Face Plate	<b>WMSS82OG</b>

### Part M Grid Plates

	Ref.
1 Gang Grid Plate Grey	<b>WMGP1G</b>
2 Gang Grid Plate Grey	<b>WMGP2G</b>
3 Gang Grid Plate Grey	<b>WMGP3G</b>
4 Gang Grid Plate Grey	<b>WMGP4G</b>
6 Gang Grid Plate Grey (2 x 3)	<b>WMGP6G</b>
8 Gang Grid Plate Grey (2 x 4)	<b>WMGP8G</b>

### Part M Euro Style Accommodation Plates

	Ref.
1 Module	<b>WMP1EUG</b>
2 Modules	<b>WMP2EUG</b>
4 Modules	<b>WMP4EUG</b>

### Switches & Sockets

	Ref. (White Faceplate Red Rocker)	Ref. (Red Faceplate Red Rocker)
13A 1 Gang Double Pole Switched Socket	<b>WMSS81R</b>	<b>WMSS81RR</b>
13A 2 Gang Double Pole Switched Socket	<b>WMSS82R</b>	<b>WMSS82RR</b>
13A 2 Gang Double Pole Switched Socket Outboard Rocker	<b>WMSS82OR</b>	<b>WMSS82ORR</b>
13A 2 Gang DP Switched Socket Printed 'CLEANERS SUPPLY'	<b>WMSS82R/CS</b>	-
13A 2 Gang DP Switched Socket Printed 'EMERGENCY SUPPLY'	<b>WMSS82R/ES</b>	-
13A 2 Gang DP Switched Socket Printed 'DO NOT SWITCH OFF'	<b>WMSS82R/DNS</b>	-
13A 2 Gang DP Switched Socket Printed 'UPS PROTECTED'	<b>WMSS82R/UPS</b>	-
13A Fused Connection Unit Switched	<b>WMSSU83R</b>	-
13A Fused Connection Unit Red Face (White Rocker)	<b>WMSU83R</b>	-
13A Fused Connection Unit Switched	-	<b>WMSSU83RR</b>
13A Fused Connection Unit Printed 'FIRE ALARM'	<b>WMSU83R/FA</b>	-

# Sollysta

## Decorative

The high quality modern finishes that are available within the sollysta decorative range suite seamlessly into any setting. In both raised and flat plate options the range gives you the flexibility to follow the design cues within the building making them perfect for any application.



Wall Switches	7.18	50A Double Pole Switches	7.26
Dimmers	7.20	Shaver Socket	7.27
Isolator Switches	7.21	Telephone & Data	7.28
Socket Outlets	7.22	TV & Satellite	7.30
45A Cooker Control Unit	7.23	Euro Frontplates	7.32
13A Fused Connection Units	7.24	Blank Plates	7.33
20A Double Pole Switches	7.25		





WRPS12PSB



WRPS12BSB



WRPS12PBW



WRPS12BNB

## Wall Switches - Raised Plate

- Unique patented LOOP terminal to allow Neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to derate for fluorescent loads.
- Two way switches can be wired either 1 way or 2 way.
- Clear terminal markings: 1-way L1 2-way L2
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- For multigang switches use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

### Raised Plate 10AX 1 Gang 2 Way

	White Insert Ref.	Black Insert Ref.
Polished Steel	WRPS12PSW	WRPS12PSB
Brushed Steel	WRPS12BSW	WRPS12BSB
Polished Brass	WRPS12PBW	WRPS12PBB
Black Nickel	-	WRPS12BNB

### Raised Plate 10AX 2 Gang 2 Way

Polished Steel	WRPS22PSW	WRPS22PSB
Brushed Steel	WRPS22BSW	WRPS22BSB
Polished Brass	WRPS22PBW	WRPS22PBB
Black Nickel	-	WRPS22BNB

### Raised Plate 10AX 3 Gang 2 Way

Polished Steel	WRPS32PSW	WRPS32PSB
Brushed Steel	WRPS32BSW	WRPS32BSB
Polished Brass	WRPS32PBW	WRPS32PBB
Black Nickel	-	WRPS32BNB

### Raised Plate 10AX 4 Gang 2 Way

Polished Steel	WRPS42PSW	WRPS42PSB
Brushed Steel	WRPS42BSW	WRPS42BSB
Polished Brass	WRPS42PBW	WRPS42PBB
Black Nickel	-	WRPS42BNB

### Raised Plate 10AX 1 Gang 2 Way Wide Rocker

Polished Steel	WRPS12WPSW	WRPS12WPSB
Brushed Steel	WRPS12WBSW	WRPS12WBSB
Polished Brass	WRPS12WPBW	WRPS12WPBB
Black Nickel	-	WRPS12WBNB

### Raised Plate 10AX 2 Gang 2 Way Wide Rocker

Polished Steel	WRPS22WPSW	WRPS22WPSB
Brushed Steel	WRPS22WBSW	WRPS22WBSB
Polished Brass	WRPS22WPBW	WRPS22WPBB
Black Nickel	-	WRPS22WBNB

### Raised Plate Intermediate Switch

Polished Steel	WRPS16PSW	WRPS16PSB
Brushed Steel	WRPS16BSW	WRPS16BSB
Polished Brass	WRPS16PBW	WRPS16PBB
Black Nickel	-	WRPS16BNB



WFPS22PSW



WFPS22WBSW



WFPS12PBW



WFPS12BNB

## Wall Switches - Flat Plate

### Flat Plate 10AX 1 Gang 2 Way

	White Insert Ref.	Black Insert Ref.
Polished Steel	WFPS12PSW	WFPS12PSB
Brushed Steel	WFPS12BSW	WFPS12BSB
Polished Brass	WFPS12PBW	WFPS12PBB
Black Nickel	-	WFPS12BNB

### Flat Plate 10AX 2 Gang 2 Way

Polished Steel	WFPS22PSW	WFPS22PSB
Brushed Steel	WFPS22BSW	WFPS22BSB
Polished Brass	WFPS22PBW	WFPS22PBB
Black Nickel	-	WFPS22BNB

### Flat Plate 10AX 3 Gang 2 Way

Polished Steel	WFPS32PSW	WFPS32PSB
Brushed Steel	WFPS32BSW	WFPS32BSB
Polished Brass	WFPS32PBW	WFPS32PBB
Black Nickel	-	WFPS32BNB

### Flat Plate 10AX 4 Gang 2 Way

Polished Steel	WFPS42PSW	WFPS42PSB
Brushed Steel	WFPS42BSW	WFPS42BSB
Polished Brass	WFPS42PBW	WFPS42PBB
Black Nickel	-	WFPS42BNB

### Flat Plate 10AX 1 Gang 2 Way Wide Rocker

Polished Steel	WFPS12WPSW	WFPS12WPSB
Brushed Steel	WFPS12WBSW	WFPS12WBSB
Polished Brass	WFPS12WPBW	WFPS12WPBB
Black Nickel	-	WFPS12WBNB

### Flat Plate 10AX 2 Gang 2 Way Wide Rocker

Polished Steel	WFPS22WPSW	WFPS22WPSB
Brushed Steel	WFPS22WBSW	WFPS22WBSB
Polished Brass	WFPS22WPBW	WFPS22WPBB
Black Nickel	-	WFPS22WBNB

### Flat Plate Intermediate Switch

Polished Steel	WFPS16PSW	WFPS16PSB
Brushed Steel	WFPS16BSW	WFPS16BSB
Polished Brass	WFPS16PBW	WFPS16PBB
Black Nickel	-	WFPS16BNB



WRDS2BN



WRDS2BS

## Dimmers

- Stylish flush buttons give easy press action.
- Quick press for ON/OFF.
- Hold button down to dim or brighten light level.
- Leading edge.
- Soft start feature prolongs lamp life.
- Suitable for dimming mains and dimmable transformer extra low voltage lamps.
- Automatic switch off in the case of transformer instability protects the dimmer and the transformer.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

### Raised Plate 1 Gang Dimmer 400W

	Ref.
Polished Steel	<b>WRDS1PS</b>
Brushed Steel	<b>WRDS1BS</b>
Polished Brass	<b>WRDS1PB</b>
Black Nickel	<b>WRDS1BN</b>

### Raised Plate 2 Gang Dimmer 250W

Polished Steel	<b>WRDS2PS</b>
Brushed Steel	<b>WRDS2BS</b>
Polished Brass	<b>WRDS2PB</b>
Black Nickel	<b>WRDS2BN</b>

### Raised Plate 3 Gang Dimmer 250W

Polished Steel	<b>WRDS3PS</b>
Brushed Steel	<b>WRDS3BS</b>
Polished Brass	<b>WRDS3PB</b>
Black Nickel	<b>WRDS3BN</b>

### Raised Plate 4 Gang Dimmer 250W

Polished Steel	<b>WRDS4PS</b>
Brushed Steel	<b>WRDS4BS</b>
Polished Brass	<b>WRDS4PB</b>
Black Nickel	<b>WRDS4BN</b>

Resistive Load for LED Applications **WMRESLOAD**



WFDS1PB



WFDS1PS

### Flat Plate 1 Gang Dimmer 400W

Polished Steel	<b>WFDS1PS</b>
Brushed Steel	<b>WFDS1BS</b>
Polished Brass	<b>WFDS1PB</b>
Black Nickel	<b>WFDS1BN</b>

### Flat Plate 2 Gang Dimmer 250W

Polished Steel	<b>WFDS2PS</b>
Brushed Steel	<b>WFDS2BS</b>
Polished Brass	<b>WFDS2PB</b>
Black Nickel	<b>WFDS2BN</b>

### Flat Plate 3 Gang Dimmer 250W

Polished Steel	<b>WFDS3PS</b>
Brushed Steel	<b>WFDS3BS</b>
Polished Brass	<b>WFDS3PB</b>
Black Nickel	<b>WFDS3BN</b>

### Flat Plate 4 Gang Dimmer 250W

Polished Steel	<b>WFDS4PS</b>
Brushed Steel	<b>WFDS4BS</b>
Polished Brass	<b>WFDS4PB</b>
Black Nickel	<b>WFDS4BN</b>

Resistive Load for LED Applications **WMRESLOAD**



WRPS3PIPSW

**Isolator Switches**

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current (Inc) 1500A tested with Hager MTN110 6kA B curve MCB.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

**Raised Plate 3 Pole Fan Isolator Switch**

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WRPS3PIPSW</b>	<b>WRPS3PIPSB</b>
Brushed Steel	<b>WRPS3PIBSW</b>	<b>WRPS3PIBSB</b>
Polished Brass	<b>WRPS3PIPBW</b>	<b>WRPS3PIPBB</b>
Black Nickel	-	<b>WRPS3PIBNB</b>



WFPS3PIPSW

**Flat Plate 3 Pole Fan Isolator Switch**

Polished Steel	<b>WFPS3PIPSW</b>	<b>WFPS3PIPSB</b>
Brushed Steel	<b>WFPS3PIBSW</b>	<b>WFPS3PIBSB</b>
Polished Brass	<b>WFPS3PIPBW</b>	<b>WFPS3PIPBB</b>
Black Nickel	-	<b>WFPS3PIBNB</b>





WRSS81PBW



WRSS81BNB



WFSS81BSW





WFSS82PBW

## Socket Outlets

- Unique patented 3 part safety shutter.
- Complies with BS 1363 Part 2, a.c only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- All terminal screws grouped in-line and upward facing for ease of installation.
- Clear printed and engraved terminal markings.
- Capacity of each terminal: 5 x 2.5mm<sup>2</sup> conductors switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 7.51).
- For mounting boxes see selection chart on page 7.50.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

### Raised Plate 1 Gang Double Pole Switched Socket

	 White Insert Ref.	 Black Insert Ref.
Polished Steel	<b>WRSS81PSW</b>	<b>WRSS81PSB</b>
Brushed Steel	<b>WRSS81BSW</b>	<b>WRSS81BSB</b>
Polished Brass	<b>WRSS81PBW</b>	<b>WRSS81PBB</b>
Black Nickel	-	<b>WRSS81BNB</b>

### Raised Plate 2 Gang Double Pole Switched Socket Dual Earth

Polished Steel	<b>WRSS82PSW</b>	<b>WRSS82PSB</b>
Brushed Steel	<b>WRSS82BSW</b>	<b>WRSS82BSB</b>
Polished Brass	<b>WRSS82PBW</b>	<b>WRSS82PBB</b>
Black Nickel	-	<b>WRSS82BNB</b>

### Raised Plate 5A 1 Gang Unswitched Socket

Polished Steel	<b>WRS51PSW</b>	<b>WRS51PSB</b>
Brushed Steel	<b>WRS51BSW</b>	<b>WRS51BSB</b>
Polished Brass	<b>WRS51PBW</b>	<b>WRS51PBB</b>
Black Nickel	-	<b>WRS51BNB</b>

### Flat Plate 1 Gang Double Pole Switched Socket

Polished Steel	<b>WFSS81PSW</b>	<b>WFSS81PSB</b>
Brushed Steel	<b>WFSS81BSW</b>	<b>WFSS81BSB</b>
Polished Brass	<b>WFSS81PBW</b>	<b>WFSS81PBB</b>
Black Nickel	-	<b>WFSS81BNB</b>

### Flat Plate 2 Gang Double Pole Switched Socket Dual Earth

Polished Steel	<b>WRSS82PSW</b>	<b>WFSS82PSB</b>
Brushed Steel	<b>WFSS82BSW</b>	<b>WFSS82BSB</b>
Polished Brass	<b>WFSS82PBW</b>	<b>WFSS82PBB</b>
Black Nickel	-	<b>WFSS82BNB</b>

### Flat Plate 5A 1 Gang Unswitched Socket

Polished Steel	<b>WFS51PSW</b>	<b>WFS51PSB</b>
Brushed Steel	<b>WFS51BSW</b>	<b>WFS51BSB</b>
Polished Brass	<b>WFS51PBW</b>	<b>WFS51PBB</b>
Black Nickel	-	<b>WFS51BNB</b>





WRCC50NPSB

**45A Cooker Control Unit**

- Complies with BS 4177.
- Switch and socket are double pole.
- Twin earth as standard.
- Main switch is suitable for isolation.
- All terminals are upward facing for ease of installation.
- Clearly printed terminal marking.
- Capacity of terminals 2 x 6.0mm<sup>2</sup>, 1 x 16.0mm<sup>2</sup>.
- For mounting boxes see selection chart on page 7.50.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.



WFCC50NPSW

**Raised Plate 45A Cooker Control Unit**

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WRCC50NPSW</b>	<b>WRCC50NPSB</b>
Brushed Steel	<b>WRCC50NBSW</b>	<b>WRCC50NBSB</b>
Polished Brass	<b>WRCC50NPBW</b>	<b>WRCC50NPBB</b>
Black Nickel	-	<b>WRCC50NBNB</b>

**Flat Plate 45A Cooker Control Unit**

Polished Steel	<b>WFCC50NPSW</b>	<b>WFCC50NPSB</b>
Brushed Steel	<b>WFCC50NBSW</b>	<b>WFCC50NBSB</b>
Polished Brass	<b>WFCC50NPBW</b>	<b>WFCC50NPBB</b>
Black Nickel	-	<b>WFCC50NBNB</b>

# 13A Fused Connection Units



WRSSU83FOBSW



WRSSU83PBB



WFSU83BSW



WFSSU83FOBNN

## 13A Fused Connection Units

- Complies with BS 1363-4.
- Cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- Single screw fast fix cable clamp.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal markings.
- Capacity of each terminal 2 x 6.0 mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

### Raised Plate 13A FCU Switched

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WRSSU83PSW</b>	<b>WRSSU83PSB</b>
Brushed Steel	<b>WRSSU83BSW</b>	<b>WRSSU83BSB</b>
Polished Brass	<b>WRSSU83PBW</b>	<b>WRSSU83PBB</b>
Black Nickel	-	<b>WRSSU83BNB</b>

### Raised Plate 13A FCU Switched with Flex Outlet

Polished Steel	<b>WRSSU83FOPSW</b>	<b>WRSSU83FOPSB</b>
Brushed Steel	<b>WRSSU83FOBSW</b>	<b>WRSSU83FOBSB</b>
Polished Brass	<b>WRSSU83FOPBW</b>	<b>WRSSU83FOPBB</b>
Black Nickel	-	<b>WRSSU83FOBNN</b>

### Raised Plate 13A FCU Unswitched

Polished Steel	<b>WRSU83PSW</b>	<b>WRSU83PSB</b>
Brushed Steel	<b>WRSU83BSW</b>	<b>WRSU83BSB</b>
Polished Brass	<b>WRSU83PBW</b>	<b>WRSU83PBB</b>
Black Nickel	-	<b>WRSU83BNB</b>

### Flat Plate 13A FCU Switched

Polished Steel	<b>WFSSU83PSW</b>	<b>WFSSU83PSB</b>
Brushed Steel	<b>WFSSU83BSW</b>	<b>WFSSU83BSB</b>
Polished Brass	<b>WFSSU83PBW</b>	<b>WFSSU83PBB</b>
Black Nickel	-	<b>WFSSU83BNB</b>

### Flat Plate 13A FCU Switched with Flex Outlet

Polished Steel	<b>WFSSU83FOPSW</b>	<b>WFSSU83FOPSB</b>
Brushed Steel	<b>WFSSU83FOBSW</b>	<b>WFSSU83FOBSB</b>
Polished Brass	<b>WFSSU83FOPBW</b>	<b>WFSSU83FOPBB</b>
Black Nickel	-	<b>WFSSU83FOBNN</b>

### Flat Plate 13A FCU Unswitched

Polished Steel	<b>WFSU83PSW</b>	<b>WFSU83PSB</b>
Brushed Steel	<b>WFSU83BSW</b>	<b>WFSU83BSB</b>
Polished Brass	<b>WFSU83PBW</b>	<b>WFSU83PBB</b>
Black Nickel	-	<b>WFSU83BNB</b>



WRDP84PBW



WRDP84BNB



WFDP84FOPSW



WFDP84BSW

**20A Double Pole Switches**

- Complies with BS EN 60699-2-4 a.c. only.
- Cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- Single screw fast fix cable clamp.
- All terminal screws upward facing for ease of installation.
- Clearly printed and engraved terminal marking.
- Capacity of each terminal 2 x 6.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 7.50.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

**Raised Plate 20A Double Pole Switch**White Insert  
Ref.Black Insert  
Ref.

Polished Steel	<b>WRDP84PSW</b>	<b>WRDP84PSB</b>
Brushed Steel	<b>WRDP84BSW</b>	<b>WRDP84BSB</b>
Polished Brass	<b>WRDP84PBW</b>	<b>WRDP84PBB</b>
Black Nickel	-	<b>WRDP84BNB</b>

**Raised Plate 20A Double Pole Switch with Flex Outlet**

Polished Steel	<b>WRDP84FOPSW</b>	<b>WRDP84FOPSB</b>
Brushed Steel	<b>WRDP84FOBSW</b>	<b>WRDP84FOBSB</b>
Polished Brass	<b>WRDP84FOPBW</b>	<b>WRDP84FOPBB</b>
Black Nickel	-	<b>WRDP84FOBNB</b>

**Raised Plate 20A Double Pole Switch with LED Indicator**

Polished Steel	<b>WRDP84NPSW</b>	<b>WRDP84NPSB</b>
Brushed Steel	<b>WRDP84NBSW</b>	<b>WRDP84NBSB</b>
Polished Brass	<b>WRDP84NPBW</b>	<b>WRDP84NPBB</b>
Black Nickel	-	<b>WRDP84NB NB</b>

**Flat Plate 20A Double Pole Switch**

Polished Steel	<b>WFDP84PSW</b>	<b>WFDP84PSB</b>
Brushed Steel	<b>WFDP84BSW</b>	<b>WFDP84BSB</b>
Polished Brass	<b>WFDP84PBW</b>	<b>WFDP84PBB</b>
Black Nickel	-	<b>WFDP84BNB</b>

**Flat Plate 20A Double Pole Switch with Flex Outlet**

Polished Steel	<b>WFDP84FOPSW</b>	<b>WFDP84FOPSB</b>
Brushed Steel	<b>WFDP84FOBSW</b>	<b>WFDP84FOBSB</b>
Polished Brass	<b>WFDP84FOPBW</b>	<b>WFDP84FOPBB</b>
Black Nickel	-	<b>WFDP84FOBNB</b>

**Flat Plate 20A Double Pole Switch with LED Indicator**

Polished Steel	<b>WFDP84NPSW</b>	<b>WFDP84NPSB</b>
Brushed Steel	<b>WFDP84NBSW</b>	<b>WFDP84NBSB</b>
Polished Brass	<b>WFDP84NPBW</b>	<b>WFDP84NPBB</b>
Black Nickel	-	<b>WFDP84NB NB</b>

# 50A Double Pole Switches



WRDP50NBNB



WRDP50NPBB



WFDP50NPSB



WFDP50NBSW

## 50A Double Pole Switches

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current (Inc) 1500A tested with Hager MTN150 6kA B curve MCB.
- LED indication.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal marking.
- Capacity of each terminal 2 x 6mm<sup>2</sup>, 1 x 10mm<sup>2</sup>.
- For mounting boxes see selection chart on page 7.50.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

### Raised Plate 50A Double Pole Switch 1 Gang with LED Indicator

	White Insert Ref.	Black Insert Ref.
Polished Steel	WRDP50NPSW	WRDP50NPSB
Brushed Steel	WRDP50NBSW	WRDP50NBSB
Polished Brass	WRDP50NPBW	WRDP50NPBB
Black Nickel	-	WRDP50NBNB

### Flat Plate 50A Double Pole Switch 1 Gang with LED Indicator

Polished Steel	WFDP50NPSW	WFDP50NPSB
Brushed Steel	WFDP50NBSW	WFDP50NBSB
Polished Brass	WFDP50NPBW	WFDP50NPBB
Black Nickel	-	WFDP50NBNB



WRSO100PSW

**Shaver Socket**

- Complies with BS EN 61558-2-5
- Capacity of each terminal 2 x 2.5mm<sup>2</sup> conductors.
- Designed for use in bathrooms and shower rooms and incorporates a double wound transformer for an earth free supply.
- Input 230V a.c. output dual voltage 230V a.c. and 115V a.c. outlets.
- Rating 20VA on either voltage.
- Primary circuit protected by a self resetting thermal overload device.
- Insertion of shaver plug automatically switches on the transformer.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

**Raised Plate 115/230V Shaver Socket**

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WRSO100PSW</b>	<b>WRSO100PSB</b>
Brushed Steel	<b>WRSO100BSW</b>	<b>WRSO100BSB</b>
Polished Brass	<b>WRSO100PBW</b>	<b>WRSO100PBB</b>
Black Nickel	-	<b>WRSO100BNB</b>



WFSO100PSW

**Flat Plate 115/230V Shaver Socket**

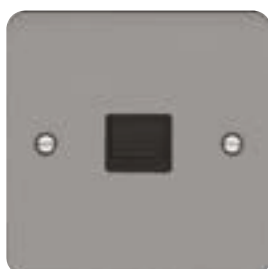
Polished Steel	<b>WFSO100PSW</b>	<b>WFSO100PSB</b>
Brushed Steel	<b>WFSO100BSW</b>	<b>WFSO100BSB</b>
Polished Brass	<b>WFSO100PBW</b>	<b>WFSO100PBB</b>
Black Nickel	-	<b>WFSO100BNB</b>



WRBTMBSW



WRBTMPBW



WFBTMBNB



WFBTMPSW

### Telephone & Data

- BT sockets comply with BS EN 6312-2.
- Supplied with fitted cable tie.
- Quick connection with insulation displacement terminals.

- RJ11 has tool-less quick connect terminals.
- Clearly printed terminal marking.

- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

#### Raised Plate BT Master Telephone Outlet

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WRBTMPSW</b>	<b>WRBTMPSB</b>
Brushed Steel	<b>WRBTMBSW</b>	<b>WRBTMBSB</b>
Polished Brass	<b>WRBTMPBW</b>	<b>WRBTMPBB</b>
Black Nickel	-	<b>WRBTMBNB</b>

#### Raised Plate BT Secondary Telephone Outlet

Polished Steel	<b>WRBTSPSW</b>	<b>WRBTSPSB</b>
Brushed Steel	<b>WRBTSBSW</b>	<b>WRBTSBSB</b>
Polished Brass	<b>WRBTSPBW</b>	<b>WRBTSPBB</b>
Black Nickel	-	<b>WRBTSBNB</b>

#### Raised Plate RJ45 Socket

Polished Steel	<b>WRRJ45PSW</b>	<b>WRRJ45PSB</b>
Brushed Steel	<b>WRRJ45BSW</b>	<b>WRRJ45BSB</b>
Polished Brass	<b>WRRJ45PBW</b>	<b>WRRJ45PBB</b>
Black Nickel	-	<b>WRRJ45BNB</b>

#### Flat Plate BT Master Telephone Outlet

Polished Steel	<b>WFBTMPSW</b>	<b>WFBTMPSB</b>
Brushed Steel	<b>WFBTMBSW</b>	<b>WFBTMBSB</b>
Polished Brass	<b>WFBTMPBW</b>	<b>WFBTMPBB</b>
Black Nickel	-	<b>WFBTMBNB</b>

#### Flat Plate BT Secondary Telephone Outlet

Polished Steel	<b>WFBTSPSW</b>	<b>WFBTSPSB</b>
Brushed Steel	<b>WFBTSBSW</b>	<b>WFBTSBSB</b>
Polished Brass	<b>WFBTSPBW</b>	<b>WFBTSPBB</b>
Black Nickel	-	<b>WFBTSBNB</b>

#### Flat Plate RJ45 Socket

Polished Steel	<b>WFRJ45PSW</b>	<b>WFRJ45PSB</b>
Brushed Steel	<b>WFRJ45BSW</b>	<b>WFRJ45BSB</b>
Polished Brass	<b>WFRJ45PBW</b>	<b>WFRJ45PBB</b>
Black Nickel	-	<b>WFRJ45BNB</b>

# Maintenance Free Junction Box

## Maintenance Free Junction Box

The **first junction box** with the  symbol



Junction boxes are an integral part of virtually every electrical installation. Unfortunately these connections often do not comply with the Wiring Regulations due to incorrect product selection.

To download the guide & see our full range of Junction Boxes visit [hager.co.uk](http://hager.co.uk)





WRSATBSW



WRSATPSW



WRDXPBW



WRTXBSW

**TV & Satellite - Raised Plate**

- TV outlets comply with BS 3041.
- Satellite outlets comply with BS EN 50083-2.
- Fully screened.
- DAB compatible.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

**Raised Plate Single F Type Satellite Outlet Screened**

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WRSATPSW</b>	<b>WRSATPSB</b>
Brushed Steel	<b>WRSATBSW</b>	<b>WRSATBSB</b>
Polished Brass	<b>WRSATPBW</b>	<b>WRSATPBB</b>
Black Nickel	-	<b>WRSATBNB</b>

**Raised Plate Single CO-AX TV Outlet Female**

Polished Steel	<b>WRTVFPSW</b>	<b>WRTVFPSB</b>
Brushed Steel	<b>WRTVFBW</b>	<b>WRTVFB</b>
Polished Brass	<b>WRTVFPBW</b>	<b>WRTVFPBB</b>
Black Nickel	-	<b>WRTVFBNB</b>

**Raised Plate Double TV & FM/DAB CO-AX Socket Outlet**

Polished Steel	<b>WRDXPSW</b>	<b>WRDXPSB</b>
Brushed Steel	<b>WRDXBSW</b>	<b>WRDXBSB</b>
Polished Brass	<b>WRDXPBW</b>	<b>WRDXPBB</b>
Black Nickel	-	<b>WRDXBNB</b>

**Raised Plate Triplexer TV, FM/DAB & Satellite Outlet**

Polished Steel	<b>WRTXPSW</b>	<b>WRTXPSB</b>
Brushed Steel	<b>WRTXBSW</b>	<b>WRTXBSB</b>
Polished Brass	<b>WRTXPBW</b>	<b>WRTXPBB</b>
Black Nickel	-	<b>WRTXBNB</b>

**Raised Plate Quadplexer TV, FM/DAB, Satellite 1 & Satellite 2 Outlet**

Polished Steel	<b>WRQXPSW</b>	<b>WRQXPSB</b>
Brushed Steel	<b>WRQXBSW</b>	<b>WRQXBSB</b>
Polished Brass	<b>WRQXPBW</b>	<b>WRQXPBB</b>
Black Nickel	-	<b>WRQXBNB</b>





WFTVFBSW



WFDXBSW



WFDXPBW



WFTXPSW

## TV & Satellite - Flat Plate

### Flat Plate Single F Type Satellite Outlet Screened

	White Insert Ref.	Black Insert Ref.
Polished Steel	<b>WFSATPSW</b>	<b>WFSATPSB</b>
Brushed Steel	<b>WFSATBSW</b>	<b>WFSATBSB</b>
Polished Brass	<b>WFSATPBW</b>	<b>WFSATPBB</b>
Black Nickel	-	<b>WFSATBNB</b>

### Flat Plate Single CO-AX TV Outlet Female

Polished Steel	<b>WFTVFPSW</b>	<b>WFTVFPSB</b>
Brushed Steel	<b>WFTVFBWS</b>	<b>WFTVFBBS</b>
Polished Brass	<b>WFTVFPBW</b>	<b>WFTVFPBB</b>
Black Nickel	-	<b>WFTVFBNB</b>

### Flat Plate Double TV & FM/DAB CO-AX Socket Outlet

Polished Steel	<b>WFDXPSW</b>	<b>WFDXPSB</b>
Brushed Steel	<b>WFDXBSW</b>	<b>WFDXBSB</b>
Polished Brass	<b>WFDXPBW</b>	<b>WFDXPBB</b>
Black Nickel	-	<b>WFDXBNB</b>

### Flat Plate Triplexer TV, FM/DAB & Satellite Outlet

Polished Steel	<b>WFTXPSW</b>	<b>WFTXPSB</b>
Brushed Steel	<b>WFTXBSW</b>	<b>WFTXBSB</b>
Polished Brass	<b>WFTXPBW</b>	<b>WFTXPBB</b>
Black Nickel	-	<b>WFTXBNB</b>

### Flat Plate Quadplexer TV, FM/DAB, Satellite 1 & Satellite 2 Outlet

Polished Steel	<b>WFQXPSW</b>	<b>WFQXPSB</b>
Brushed Steel	<b>WFQXBSW</b>	<b>WFQXBSB</b>
Polished Brass	<b>WFQXPBW</b>	<b>WFQXPBB</b>
Black Nickel	-	<b>WFQXBNB</b>



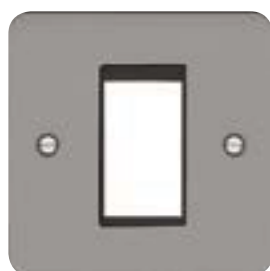
WRP1EUPBW



WRP1EUPSB



WFP1EUBSB



WFP1EUBNB

## Euro Frontplates

- Carrier plates facilitate installation of industry standard modular data outlets.
- Easy to configure for all applications.
- Easy installation of module to plate.
- Robust retention of modules in operation.
- Quick release of modules for maintenance.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

For Euro Modules please see page 7.11.

### Raised Plate 1 Module

	White Insert Ref.	Black Insert Ref.
Polished Steel	WRP1EUPSW	WRP1EUPSB
Brushed Steel	WRP1EUBSW	WRP1EUBSB
Polished Brass	WRP1EUPBW	WRP1EUPBB
Black Nickel	-	WRP1EUBNB

### Raised Plate 2 Modules

Polished Steel	WRP2EUPSW	WRP2EUPSB
Brushed Steel	WRP2EUBSW	WRP2EUBSB
Polished Brass	WRP2EUPBW	WRP2EUPBB
Black Nickel	-	WRP2EUBNB

### Raised Plate 4 Modules

Polished Steel	WRP4EUPSW	WRP4EUPSB
Brushed Steel	WRP4EUBSW	WRP4EUBSB
Polished Brass	WRP4EUPBW	WRP4EUPBB
Black Nickel	-	WRP4EUBNB

### Flat Plate 1 Module

Polished Steel	WFP1EUPSW	WFP1EUPSB
Brushed Steel	WFP1EUBSW	WFP1EUBSB
Polished Brass	WFP1EUPBW	WFP1EUPBB
Black Nickel	-	WFP1EUBNB

### Flat Plate 2 Modules

Polished Steel	WFP2EUPSW	WFP2EUPSB
Brushed Steel	WFP2EUBSW	WFP2EUBSB
Polished Brass	WFP2EUPBW	WFP2EUPBB
Black Nickel	-	WFP2EUBNB

### Flat Plate 4 Modules

Polished Steel	WFP4EUPSW	WFP4EUPSB
Brushed Steel	WFP4EUBSW	WFP4EUBSB
Polished Brass	WFP4EUPBW	WFP4EUPBB
Black Nickel	-	WFP4EUBNB



WFTVLPBSW



WFTVLPBSW

## Lounge Plates

### Flat Plate Lounge Plate for TV, Power & Data

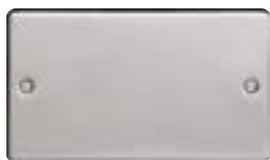
	White Insert Ref.	Black Insert Ref.
Polished Steel	WFTVLPBSW	WFTVLPBSB
Brushed Steel	WFTVLPBSW	WFTVLPBSB
Black Nickel	-	WFTVLPBSB
White Metal	WFTVLPWW	-

### Raised Plate Lounge Plate for TV, Power & Data

White Metal	WRTVLPWW	
-------------	----------	--

### Lounge Plate Back Box

	White Insert Ref.
Steel	WFTVBOX



WRP2PS



WRP2PB



WFP1BS

**Blank Plates**

- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

**Raised Plate Switch Blank Plate**

Polished Steel	<b>WRP1PS</b>
Brushed Steel	<b>WRP1BS</b>
Polished Brass	<b>WRP1PB</b>
Black Nickel	<b>WRP1BN</b>

**Raised Plate Twin Blank Plate**

Polished Steel	<b>WRP2PS</b>
Brushed Steel	<b>WRP2BS</b>
Polished Brass	<b>WRP2PB</b>
Black Nickel	<b>WRP2BN</b>

**Flat Plate Switch Blank Plate**

Polished Steel	<b>WFP1PS</b>
Brushed Steel	<b>WFP1BS</b>
Polished Brass	<b>WFP1PB</b>
Black Nickel	<b>WFP1BN</b>

**Flat Plate Twin Blank Plate**

Polished Steel	<b>WFP2PS</b>
Brushed Steel	<b>WFP2BS</b>
Polished Brass	<b>WFP2PB</b>
Black Nickel	<b>WFP2BN</b>

# Sollysta

## Grid

Sollysta grid gives you the flexibility to customise your installation whilst retaining the features of sollysta you have become accustomed to. The various finishes blend seamlessly with the rest of the range, whilst the comprehensive choice of grid modules makes it truly versatile.



Grid Plates & Frames	7.36
Grid Switches & Modules	7.38
Printed Grid Switches & Modules	7.39



## Grid Plates & Frames



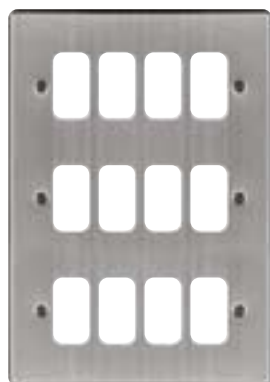
WRGP1PB



WRGP1PS



WMGP3



WRGP12BS

### Grid Plates - Raised

#### Raised Plate 1 Gang Grid Plate

	Ref.
White Moulded	WMGP1
Part M (Grey)	WMGP1G
Polished Steel	WRGP1PS
Brushed Steel	WRGP1BS
Polished Brass	WRGP1PB
Black Nickel	WRGP1BN

#### Raised Plate 2 Gang Grid Plate

White Moulded	WMGP2
Part M (Grey)	WMGP2G
Polished Steel	WRGP2PS
Brushed Steel	WRGP2BS
Polished Brass	WRGP2PB
Black Nickel	WRGP2BN

#### Raised Plate 3 Gang Grid Plate

White Moulded	WMGP3
Part M (Grey)	WMGP3G
Polished Steel	WRGP3PS
Brushed Steel	WRGP3BS
Polished Brass	WRGP3PB
Black Nickel	WRGP3BN

#### Raised Plate 4 Gang Grid Plate

White Moulded	WMGP4
Part M (Grey)	WMGP4G
Polished Steel	WRGP4PS
Brushed Steel	WRGP4BS
Polished Brass	WRGP4PB
Black Nickel	WRGP4BN

#### Raised Plate 6 Gang (2 x 3) Grid Plate

White Moulded	WMGP6
Part M (Grey)	WMGP6G
Polished Steel	WRGP6PS
Brushed Steel	WRGP6BS
Polished Brass	WRGP6PB
Black Nickel	WRGP6BN

#### Raised Plate 8 Gang (2 x 4) Grid Plate

White Moulded	WMGP8
Part M (Grey)	WMGP8G
Polished Steel	WRGP8PS
Brushed Steel	WRGP8BS
Polished Brass	WRGP8PB
Black Nickel	WRGP8BN

#### Raised Plate 12 Gang (3 x 4) Grid Plate

Polished Steel	WRGP12PS
Brushed Steel	WRGP12BS
Polished Brass	WRGP12PB
Black Nickel	WRGP12BN

#### Raised Plate 1 Gang Printed Grid Plate

White Moulded Printed 'House Ring'	WMP1/HOUSERING
------------------------------------	----------------



WFGP1PS



WFGP2BS



WFGP3BS

## Grid Plates - Flat

### Flat Plate 1 Gang Grid Plate

	Ref.
Polished Steel	<b>WFGP1PS</b>
Brushed Steel	<b>WFGP1BS</b>
Polished Brass	<b>WFGP1PB</b>
Black Nickel	<b>WFGP1BN</b>

### Flat Plate 2 Gang Grid Plate

Polished Steel	<b>WFGP2PS</b>
Brushed Steel	<b>WFGP2BS</b>
Polished Brass	<b>WFGP2PB</b>
Black Nickel	<b>WFGP2BN</b>

### Flat Plate 3 Gang Grid Plate

Polished Steel	<b>WFGP3PS</b>
Brushed Steel	<b>WFGP3BS</b>
Polished Brass	<b>WFGP3PB</b>
Black Nickel	<b>WFGP3BN</b>

### Flat Plate 4 Gang Grid Plate

Polished Steel	<b>WFGP4PS</b>
Brushed Steel	<b>WFGP4BS</b>
Polished Brass	<b>WFGP4PB</b>
Black Nickel	<b>WFGP4BN</b>

### Flat Plate 6 Gang (2 x 3) Grid Plate

Polished Steel	<b>WFGP6PS</b>
Brushed Steel	<b>WFGP6BS</b>
Polished Brass	<b>WFGP6PB</b>
Black Nickel	<b>WFGP6BN</b>

### Flat Plate 8 Gang (2 x 4) Grid Plate

Polished Steel	<b>WFGP8PS</b>
Brushed Steel	<b>WFGP8BS</b>
Polished Brass	<b>WFGP8PB</b>
Black Nickel	<b>WFGP8BN</b>

### Flat Plate 12 Gang (3 x 4) Grid Plate

Polished Steel	<b>WFGP12PS</b>
Brushed Steel	<b>WFGP12BS</b>
Polished Brass	<b>WFGP12PB</b>
Black Nickel	<b>WFGP12BN</b>



WMGF34

## Grid Frames

### Frames for White Moulded and Decorative Raised Plate ranges

	Ref.
1 Gang Frame	<b>WMGF1</b>
2 Gang Frame	<b>WMGF2</b>
3/4 Gang Frame	<b>WMGF34</b>

### Frames for Decorative Flat Plate ranges

1 Gang Frame	<b>WFGF1</b>
2 Gang Frame	<b>WFGF2</b>
3/4 Gang Frame	<b>WFGF34</b>



WMGFU13BSW



WMGKS



WMGB1



WMINDRED



WMGFU13

## Grid Switches

- Complies with BS EN 606691-1 switches, BS 5733 fuse carrier.
- Shallowest switch modules for ease of installation.
- Modules clip from the front for ease of installation and maintenance.
- Terminal screw can be accessed with modules clipped into frames.
- Frames locate to finished wall level.
- Frames clip to ease alignment for 6 gang and 8 gang applications.

### 20AX 2 Way Single Pole Switch

	White Insert Ref.	Black Insert Ref.
White Moulded	WMGS12	-
Polished Steel	WMGS12PSW	WMGS12PSB
Brushed Steel	WMGS12BSW	WMGS12BSB
Polished Brass	WMGS12PBW	WMGS12PBB
Black Nickel	-	WMGS12BNB

### 20A Intermediate Switch

White Moulded	WMGS16	-
Polished Steel	WMGS16PSW	WMGS16PSB
Brushed Steel	WMGS16BSW	WMGS16BSB
Polished Brass	WMGS16PBW	WMGS16PBB
Black Nickel	-	WMGS16BNB

### 20A 2 Way Retractive Switch

White Moulded	WMGS22R	-
Polished Steel	WMGS22RPSW	WMGS22RPSB
Brushed Steel	WMGS22RBSW	WMGS22RBSB
Polished Brass	WMGS22RPBW	WMGS22RPBB
Black Nickel	-	WMGS22RBNB

### 20A 1 Way Double Pole Switch

White Moulded	WMGSDP2	WMGSDP2B
Polished Steel	WMGSDP2PSW	WMGSDP2PSB
Brushed Steel	WMGSDP2BSW	WMGSDP2BSB
Polished Brass	WMGSDP2PBW	WMGSDP2PBB
Black Nickel	-	WMGSDP2BNB

### 20A Double Pole Key Switch

White Moulded	WMGKS	-
White Moulded	WMGKS/EL	WMGKS/EL

### 13A Fuse Carrier

White Moulded	WMGFU13	-
Polished Steel	WMGFU13PSW	WMGFU13PSB
Brushed Steel	WMGFU13BSW	WMGFU13BSB
Polished Brass	WMGFU13PBW	WMGFU13PBB
Black Nickel	-	WMGFU13BNB

### Blank Module

White Moulded	WMGB1	-
Polished Steel	WMGB1PSW	WMGB1PSB
Brushed Steel	WMGB1BSW	WMGB1BSB
Polished Brass	WMGB1PBW	WMGB1PBB
Black Nickel	-	WMGB1BNB

Grid Dimmer Switch Leading Edge White Moulded	WMGSD1L	WMGSD1LB
Grid Dimmer Switch Trailing Edge White Moulded	WMGSD1T	WMGSD1TB
Grid Dimmer Switch White Moulded	WMGSD1S	WMGSD1SB
Grid Indicator Red White Moulded	WMINDRED	-

2 Way & Centre Off Latching Switch	WMGS13L	WMGS13LB
2 Way & Centre Off Latching Switch Red Rocker	WMGS13LR	-
2 Way & Centre Off Retractive Switch	WMGS13R	WMGS13RB
2 Way & Centre Off Retractive Switch Red Rocker	WMGS13RR	-

13A Fused Connection Unit Unswitched with LED	WMGSU83N
---	----------





WMGSDP2/CHD



WMGSDP2/EF



WMGSDP2/HB



WMGSDP2/MW



WMGSDP2/MW2

**20A 1 Way Double Pole Switch - Standard**

	White Insert Ref.	Black Insert Ref.
Unprinted	WMGSDP2	WMGSDP2B
Printed 'Cooker Hood'	WMGSDP2/CHD	WMGSDP2B/CHD
Printed 'Dishwasher'	WMGSDP2/DW	WMGSDP2B/DW
Printed 'Extract Fan'	WMGSDP2/EF	WMGSDP2B/EF
Printed 'Fridge Freezer'	WMGSDP2/FF	WMGSDP2B/FF
Printed 'Freezer'	WMGSDP2/FRE	WMGSDP2B/FRE
Printed 'Fridge'	WMGSDP2/FRI	WMGSDP2B/FRI
Printed 'Hob'	WMGSDP2/HB	WMGSDP2B/HB
Printed 'Heating'	WMGSDP2/HTG	WMGSDP2B/HTG
Printed 'Microwave'	WMGSDP2/MW	WMGSDP2B/MW
Printed 'Micro wave'	WMGSDP2/MW2	WMGSDP2B/MW2
Printed 'Tumble Dryer'	WMGSDP2/TD	WMGSDP2B/TD
Printed 'Waste Disposal'	WMGSDP2/WD	WMGSDP2B/WD
Printed 'Washing Machine'	WMGSDP2/WM	WMGSDP2B/WM
Printed 'Oven'	WMGSDP2/OV	WMGSDP2B/OV
Printed 'Wine Cooler'	WMGSDP2/WC	WMGSDP2B/WC
Printed 'Hot Water'	WMGSDP2/HW	WMGSDP2B/HW
Printed 'Coffee Maker'	WMGSDP2/CM	WMGSDP2B/CM
Printed 'Hot Drawer'	WMGSDP2/HD	WMGSDP2B/HD
Printed 'Fan Boost'	WMGSDP2/FB	WMGSDP2B/FB
Printed 'EM LTG TEST'	WMGSDP2/EL	WMGSDP2B/EL
Printed 'Boiler'	WMGSDP2/BOI	-
Printed 'Outside Light'	WMGSDP2/OL	-
Printed 'Plinth Heater'	WMGSDP2/PH	-

**20A 1 Way Double Pole Switch - With LED Indicator**

Unprinted	WMGSDP2N	WMGSDP2NB
Printed 'Cooker Hood'	WMGSDP2N/CHD	WMGSDP2NB/CHD
Printed 'Dishwasher'	WMGSDP2N/DW	WMGSDP2NB/DW
Printed 'Extract Fan'	WMGSDP2N/EF	WMGSDP2NB/EF
Printed 'Fridge Freezer'	WMGSDP2N/FF	WMGSDP2NB/FF
Printed 'Freezer'	WMGSDP2N/FRE	WMGSDP2NB/FRE
Printed 'Fridge'	WMGSDP2N/FRI	WMGSDP2NB/FRI
Printed 'Hob'	WMGSDP2N/HB	WMGSDP2NB/HB
Printed 'Heating'	WMGSDP2N/HTG	WMGSDP2NB/HTG
Printed 'Microwave'	WMGSDP2N/MW	WMGSDP2NB/MW
Printed 'Micro Wave'	WMGSDP2N/MW2	WMGSDP2NB/MW 2
Printed 'Tumble Dryer'	WMGSDP2N/TD	WMGSDP2NB/TD
Printed 'Waste Disposal'	WMGSDP2N/WD	WMGSDP2NB/WD
Printed 'Washing Machine'	WMGSDP2N/WM	WMGSDP2NB/WM
Printed 'Oven'	WMGSDP2N/OV	WMGSDP2NB/OV
Printed 'Wine Cooler'	WMGSDP2N/WC	WMGSDP2NB/WC
Printed 'Hot Water'	WMGSDP2N/HW	WMGSDP2NB/HW
Printed 'Coffee Maker'	WMGSDP2N/CM	WMGSDP2NB/CM
Printed 'Hot Drawer'	WMGSDP2N/HD	WMGSDP2NB/HD
Printed 'Fan Boost'	WMGSDP2N/FB	WMGSDP2NB/FB
Printed 'EM LTG TEST'	WMGSDP2N/EL	WMGSDP2NB/EL
Printed 'Outside Light'	WMGSDP2N/OL	-
Printed 'Plinth Heater'	WMGSDP2N/PH	-

We also offer a bespoke printing service for your individual requirements.  
Please contact our Sales Service Centre on 01952 675612 for further details.

# Sollysta Metalclad

Sollysta Metalclad has been specifically designed to combine both durability and aesthetics without compromising on functionality. Manufactured from high grade galvanised steel and finished with a durable epoxy powder coating, the rugged good looks of Sollysta Metalclad are protected over time.



**White Metal**

Wall Switches	7.42
Socket Outlets	7.42
13A Fuse Connection Units	7.42
Grid Plates	7.43
Euro Plates	7.43
Accessories	7.43

**Grey Metal**

Wall Switches	7.44
Socket Outlets	7.44
13A Fuse Connection Units	7.44
Grid Plates	7.45
Euro Plates	7.45
Accessories	7.45



# Metalclad White

## Switches, Sockets & Fused Connection Units



WPPS12W

### Metalclad White Wall Switches

- Unique patented LOOP terminal to allow Neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to derate for fluorescent loads.
- Two way switches can be wired either 1 way or 2 way.
- Clear terminal markings: 1-way L1 2-way L2
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
50A Double Pole Switch 1 Gang cw LED	<b>WPDP50NW</b>	<b>WPDP50NBW</b>	<b>WPDP50NBKOW</b>
20A Double Pole Switch cw Flex Outlet	<b>WPDP84FOW</b>	<b>WPDP84FOBW</b>	<b>WPDP84FOBKOW</b>
20A Double Pole Switch cw LED & Flex Outlet	<b>WPDP84FONW</b>	<b>WPDP84FONBW</b>	<b>WPDP84FONBKOW</b>
10AX 1 Gang 2 Way Wall Switch	<b>WPPS12W</b>	<b>WPPS12BW</b>	<b>WPPS12BKOW</b>
10AX 2 Gang 2 Way Wall Switch	<b>WPPS22W</b>	<b>WPPS22BW</b>	<b>WPPS22BKOW</b>
10AX 3 Gang 2 Way Wall Switch	<b>WPPS32W</b>	<b>WPPS32BW</b>	<b>WPPS32BKOW</b>
10AX Push Switch	<b>WPPS12RW</b>	<b>WPPS12RBW</b>	<b>WPPS12RBKOW</b>



WPSS81W

### Metalclad White Socket Outlets

- Unique patented 3 part safety shutter.
- Complies with BS 1363-2, a.c only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- All terminal screws grouped in-line and upward facing for ease of installation.
- Clear printed and engraved terminal markings.
- Capacity of each terminal: 5 x 2.5mm<sup>2</sup> conductors switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 7.51).

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
1 Gang Double Pole Switch Socket	<b>WPSS81W</b>	<b>WPSS81BW</b>	<b>WPSS81BKOW</b>
1 Gang Double Pole Switch Socket cw LED	<b>WPSS81NW</b>	<b>WPSS81NBW</b>	<b>WPSS81NBKOW</b>
2 Gang Double Pole Switch Socket	<b>WPSS82W</b>	<b>WPSS82BW</b>	<b>WPSS82BKOW</b>
2 Gang Double Pole Switch Socket cw LED	<b>WPSS82NW</b>	<b>WPSS82NBW</b>	<b>WPSS82NBKOW</b>
2 Gang Double Pole Switch Socket Outboard Rockers	<b>WPSS82OW</b>	<b>WPSS82OBW</b>	<b>WPSS82OBKOW</b>



WPSSU83FOW

### Metalclad White 13A Fuse Connection Units

- Complies with BS 1363-4.
- Cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- Single screw fast fix cable clamp.
- Available with LED light indicator in rocker.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal markings.
- Capacity of each terminal 2 x 6.0 mm<sup>2</sup> conductors.

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
13A FCU UnSwitched cw Flex Outlet	<b>WPSU83FOW</b>	<b>WPSU83FOBW</b>	<b>WPSU83FOBKOW</b>
13A FCU Switched cw Flex Outlet	<b>WPSSU83FOW</b>	<b>WPSSU83FOBW</b>	<b>WPSSU83FOBKOW</b>
13A FCU Switched cw LED & Flex Outlet	<b>WPSSU83FONW</b>	<b>WPSSU83FONBW</b>	<b>WPSSU83FONBKOW</b>



WPGP1W

## Metalclad White Grid Plates

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
Grid plate 1 Gang	<b>WPGP1W</b>	<b>WPGP1BW</b>	<b>WPGP1BKOW</b>
Grid plate 2 Gang	<b>WPGP2W</b>	<b>WPGP2BW</b>	<b>WPGP2BKOW</b>
Grid plate 3 Gang	<b>WPGP3W</b>	<b>WPGP3BW</b>	<b>WPGP3BKOW</b>
Grid plate 4 Gang	<b>WPGP4W</b>	<b>WPGP4BW</b>	<b>WPGP4BKOW</b>
Grid plate 6 Gang	<b>WPGP6W</b>	<b>WPGP6BW</b>	<b>WPGP6BKOW</b>
Grid plate 8 Gang	<b>WPGP8W</b>	<b>WPGP8BW</b>	<b>WPGP8BKOW</b>



WPP1EUW

## Metalclad White Euro Plates

- Carrier plates facilitate installation of industry standard modular data outlets.
- Easy to configure for all applications.

- Easy installation of module to plate.
- Robust retention of modules in operation.
- Quick release of modules for maintenance.

For Euro Modules please see page 7.11.

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
1 Module Euro Plate	<b>WPP1EUW</b>	<b>WPP1EUBW</b>	<b>WPP1EUBKOW</b>
2 Module Euro Plate	<b>WPP2EUW</b>	<b>WPP2EUBW</b>	<b>WPP2EUBKOW</b>
4 Module Euro Plate	<b>WPP4EUW</b>	<b>WPP4EUBW</b>	<b>WPP4EUBKOW</b>



WPB140W

## Metalclad White Accessories

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
Single Backbox	-	<b>WPB140W</b>	<b>WPB140KOW</b>
Twin Backbox	-	<b>WPB240W</b>	<b>WPB240KOW</b>
Two Row Twin Backbox	-	<b>WPB6840W</b>	<b>WPB6840KOW</b>
Single Blank Plate	<b>WPP1W</b>	<b>WPP1BW</b>	<b>WPP1BKOW</b>
Twin Blank Plate	<b>WPP2W</b>	<b>WPP2BW</b>	<b>WPP2BKOW</b>



# Metalclad Grey

## Switches, Sockets & Fused Connection Units



WPPS12

### Metalclad Grey Wall Switches

- Unique patented LOOP terminal to allow Neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to derate for fluorescent loads.
- Two way switches can be wired either 1 way or 2 way.
- Clear terminal markings:  
1-way L1  
2-way L2
- Capacity of each terminal  
2 x 4.0mm<sup>2</sup> conductors.

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
50A Double Pole Switch 1 Gang cw LED	<b>WPDP50N</b>	<b>WPDP50NB</b>	<b>WPDP50NBKO</b>
20A Double Pole Switch cw Flex Outlet	<b>WPDP84FO</b>	<b>WPDP84FOB</b>	<b>WPDP84FOBKO</b>
20A Double Pole Switch cw LED & Flex Outlet	<b>WPDP84FON</b>	<b>WPDP84FONB</b>	<b>WPDP84FONBKO</b>
10AX 1 Gang 2 Way Wall Switch	<b>WPPS12</b>	<b>WPPS12B</b>	<b>WPPS12BKO</b>
10AX 2 Gang 2 Way Wall Switch	<b>WPPS22</b>	<b>WPPS22B</b>	<b>WPPS22BKO</b>
10AX 3 Gang 2 Way Wall Switch	<b>WPPS32</b>	<b>WPPS32B</b>	<b>WPPS32BKO</b>
10AX Push Switch	<b>WPPS12R</b>	<b>WPPS12RB</b>	<b>WPPS12RBKO</b>



WPSS81

### Metalclad Grey Socket Outlets

- Unique patented 3 part safety shutter.
- Complies with BS 1363-2, a.c only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- All terminal screws grouped in-line and upward facing for ease of installation.
- Clear printed and engraved terminal markings.
- Capacity of each terminal:  
5 x 2.5mm<sup>2</sup> conductors switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 7.51).

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
1 Gang Double Pole Switch Socket	<b>WPSS81</b>	<b>WPSS81B</b>	<b>WPSS81BKO</b>
1 Gang Double Pole Switch Socket cw LED	<b>WPSS81N</b>	<b>WPSS81NB</b>	<b>WPSS81NBKO</b>
2 Gang Double Pole Switch Socket	<b>WPSS82</b>	<b>WPSS82B</b>	<b>WPSS82BKO</b>
2 Gang Double Pole Switch Socket cw LED	<b>WPSS82N</b>	<b>WPSS82NB</b>	<b>WPSS82NBKO</b>
2 Gang Double Pole Switch Socket Outboard Rockers	<b>WPSS82O</b>	<b>WPSS82OB</b>	<b>WPSS82OBKO</b>



WPSSU83FON

### Metalclad Grey 13A Fuse Connection Units

- Complies with BS 1363-4.
- Cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- Single screw fast fix cable clamp.
- Available with LED light indicator in rocker.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal markings.
- Capacity of each terminal  
2 x 6.0 mm<sup>2</sup> conductors.

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
13A FCU UnSwitched cw Flex Outlet	<b>WPSU83FO</b>	<b>WPSU83FOB</b>	<b>WPSU83FOBKO</b>
13A FCU Switched cw Flex Outlet	<b>WPSSU83FO</b>	<b>WPSSU83FOB</b>	<b>WPSSU83FOBKO</b>
13A FCU Switched cw LED & Flex Outlet	<b>WPSSU83FON</b>	<b>WPSSU83FONB</b>	<b>WPSSU83FONBKO</b>



WPGP1

### Metalclad Grey Grid Plates

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
Grid plate 1 Gang	<b>WPGP1</b>	<b>WPGP1B</b>	<b>WPGP1BKO</b>
Grid plate 2 Gang	<b>WPGP2</b>	<b>WPGP2B</b>	<b>WPGP2BKO</b>
Grid plate 3 Gang	<b>WPGP3</b>	<b>WPGP3B</b>	<b>WPGP3BKO</b>
Grid plate 4 Gang	<b>WPGP4</b>	<b>WPGP4B</b>	<b>WPGP4BKO</b>
Grid plate 6 Gang	<b>WPGP6</b>	<b>WPGP6B</b>	<b>WPGP6BKO</b>
Grid plate 8 Gang	<b>WPGP8</b>	<b>WPGP8B</b>	<b>WPGP8BKO</b>



WPP1EU

### Metalclad Grey Euro Plates

- Carrier plates facilitate installation of industry standard modular data outlets.
- Easy to configure for all applications.

- Easy installation of module to plate.
- Robust retention of modules in operation.
- Quick release of modules for maintenance.

For Euro Modules please see page 7.11.

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
1 Module Euro Plate	<b>WPP1EU</b>	<b>WPP1EUB</b>	<b>WPP1EUBKO</b>
2 Module Euro Plate	<b>WPP2EU</b>	<b>WPP2EUB</b>	<b>WPP2EUBKO</b>
4 Module Euro Plate	<b>WPP4EU</b>	<b>WPP4EUB</b>	<b>WPP4EUBKO</b>



WPB140KO

### Metalclad Grey Accessories

	Plate Only.	With Backbox w/o Knockouts	With Backbox with Knockouts
Single Backbox	-	<b>WPB140</b>	<b>WPB140KO</b>
Twin Backbox	-	<b>WPB240</b>	<b>WPB240KO</b>
Two Row Twin Backbox	-	<b>WPB6840</b>	<b>WPB6840KO</b>
Single Blank Plate	<b>WPP1</b>	<b>WPP1B</b>	<b>WPP1BKO</b>
Twin Blank Plate	<b>WPP2</b>	<b>WPP2B</b>	<b>WPP2BKO</b>

# Sollysta

## IP66

Manufactured from a tough, durable thermoplastic, the Sollysta IP66 range is ideal for indoor and outdoor applications where wiring accessories may be vulnerable to the potentially harmful effects of dust or water ingress. The IP66 rating assures total protection from ingress of dust and protection against powerful water jets.





Wall Switches	7.48
Socket Outlets	7.48
Fused Connection Unit	7.48





WXPPS12

### Wall Switches

- Sockets and switches are from the unique and popular Sollysta White Moulded range.
- IP66 rating conforms to BS EN 60529 : 1992.
- Functional products tested and certified to appropriate British Standards.
- Robust and rugged enclosures designed to withstand the elements.
- Unique double hinge allows lid to fully open through 180 degrees.
- Fixing point for padlock.
- Cable entries:  
90 x 90 = 4x20, 1x20 & 1x25  
103 x 116.5 = 4x20, 1x20 & 1x25  
164 x 116.5 = 6x20, 1x20 & 1x25

	Dimensions (mm) h x w	Pack qty.	Ref.
10AX 1 Gang 2 Way Switch	90 x 90	1	<b>WXPPS12</b>
10AX 2 Gang 2 Way Switch	90 x 90	1	<b>WXPPS22</b>
20AX Double Pole 1 Gang 1 Way Switch	90 x 90	1	<b>WXPD84</b>
10A 1 Gang Bell Push Switch	90 x 90	1	<b>WXPPS12B</b>



WXPSS82

### Socket Outlets

- Sockets and switches are from the unique and popular Sollysta White Moulded range.
- IP66 rating conforms to BS EN 60529 : 1992.
- Functional products tested and certified to appropriate British Standards.
- Robust and rugged enclosures designed to withstand the elements.
- Unique double hinge allows lid to fully open through 180 degrees.
- Fixing point for padlock.
- Cable entries:  
90 x 90 = 4x20, 1x20 & 1x25  
103 x 116.5 = 4x20, 1x20 & 1x25  
164 x 116.5 = 6x20, 1x20 & 1x25

	Dimensions (mm) h x w	Pack qty.	Ref.
13A 1 Gang Double Pole Unswitched Socket	116.5 x 103	1	<b>WXPSS81</b>
13A 1 Gang Double Pole Switched Socket	116.5 x 103	1	<b>WXPSS81</b>
13A 2 Gang Double Pole Unswitched Socket	116.5 x 164	1	<b>WXPSS82</b>
13A 2 Gang Double Pole Switched Socket	116.5 x 164	1	<b>WXPSS82</b>



WXPSSU83FO

### Fused Connection Unit

- Sockets and switches are from the unique and popular Sollysta White Moulded range.
- IP66 rating conforms to BS EN 60529 : 1992.
- Functional products tested and certified to appropriate British Standards.
- Robust and rugged enclosures designed to withstand the elements.
- Unique double hinge allows lid to fully open through 180 degrees.
- Fixing point for padlock.
- Cable entries:  
90 x 90 = 4x20, 1x20 & 1x25  
103 x 116.5 = 4x20, 1x20 & 1x25  
164 x 116.5 = 6x20, 1x20 & 1x25



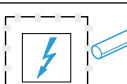
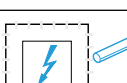
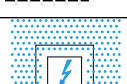

	Dimensions (mm) h x w	Pack qty.	Ref.
13A Double Pole Fused Connect Unit with Flex Outlet	103 x 116.5	1	<b>WXPSSU83FO</b>

The Ingress Protection (IP) for all low voltage enclosures up to 1000 V a.c. and 1500 V d.c. is defined in identical fashion by the standards EN 60529 - IEC 529 it comprises the letters IP followed by two character numerals and or additional/supplementary letters.

**The first character numeral** indicates the degree of protection provided by the enclosure against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person and ingress of solid foreign objects.

## The first character numeral:

Protection against foreign objects

IP	Description	
0		Non-protected
1		Protected against solid objects $\geq$ than 50mm
2		Protected against solid objects $\geq$ than 12.5mm
3		Protected against solid objects $\geq$ than 2.5mm
4		Protected against solid objects $\geq$ than 1.0mm
5		Dust-protected
6		Dust-tight

## Additional letter (in option)

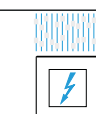
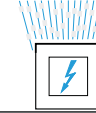
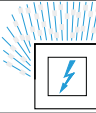

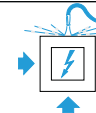
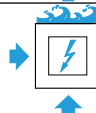
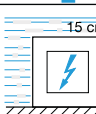

Protection of people against access to hazardous parts

	Description
A	Protected against access to hazardous parts with the back of the hand
B	Protected against access to hazardous parts with a finger
C	Protected against access to hazardous parts with a tool - $\varnothing$ 2.5mm
D	Protected against access to hazardous parts with a wire - $\varnothing$ 1mm

**The second character numeral** indicates the degree of protection provided by the enclosure with respect to harmful effects on the equipment due to the ingress of water. An X signifies that the tests are not applicable to the product.

## The second character numeral:

Protection against ingress of water with harmful effects

IP	Description	
0		Non-protected
1		Protected against vertically falling water drops
2		Protected against vertically falling water drops when enclosure tilted up to 15°
3		Protected against spraying water
4		Protected against splashing water
5		Protected against water jets
6		Protected against powerful water jets
7		Protected against the effect of temporary immersion in water
8		Protected against continuous immersion in water

## Additional letter (in option)

Specific information on the product

	Description
H	High voltage apparatus
M	Motion during water test
S	Stationary during water test
W	Weather conditions

Product Reference	Product Description	Standard Surface Box Reference	Deep Surface Box Reference
WMBTM	BT Master Telephone Outlet	WMPB1/28	WMPB1/46
WMBTS	BT Secondary Telephone Outlet	WMPB1/28	WMPB1/46
WMCC50	50A Cooker Control Unit	WMPB2/46CC	N/A
WMCC50N	50A Cooker Control Unit with LED Indicator	WMPB2/46CC	N/A
WMDP50N	50A Double Pole Switch 1 Gang with LED Indicator	WMPB1/46	N/A
WMDP50VN	50A Double Pole Switch 2 Gang Vertical with LED Indicator	WMPB2/46	N/A
WMDP84	20A Double Pole Switch	WMPB1/28	WMPB1/46
WMDP84FO	20A Double Pole Switch with Flex Outlet	WMPB1/28	WMPB1/46
WMDP84FON	20A Double Pole Switch with LED Indicator & Flex Outlet	WMPB1/28	WMPB1/46
WMDP84N	20A Double Pole Switch with LED Indicator	WMPB1/28	WMPB1/46
WMDP85FON	20A Double Pole Switch with LED Indicator & Flex Outlet Printed Water Heater	WMPB1/28	WMPB1/46
WMDP85N	20A Double Pole Switch with LED Indicator Printed Water Heater	WMPB1/28	WMPB1/46
WMDS1	1 Gang Dimmer	WMPB1/28	WMPB1/46
WMDS2	2 Gang Dimmer	WMPB1/28	WMPB1/46
WMDS3	3 Gang Dimmer	WMPB2/28	WMPB2/46
WMDS4	4 Gang Dimmer	WMPB2/28	WMPB2/46
WMDX	Double TV & FM/DAB CO-AX Socket Outlet	WMPB1/28	WMPB1/46
WMP1	Single Blank Plate	WMPB1/20	WMPB1/28
WMP2	Twin Blank Plate	WMPB2/28	N/A
WMP2FO	Flex Outlet Plate 20A	WMPB1/20	WMPB1/28
WMP50FO	Cooker Cable Outlet with Terminals	WMPB1/46	N/A
WMPS11	10AX 1 Gang 1 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS12	10AX 1 Gang 2 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS12R	Push Switch	WMPB1/20	WMPB1/28
WMPS12RB	Push Switch with Bell Symbol	WMPB1/20	WMPB1/28
WMPS12W	10AX 1 Gang 2 Way Wall Switch Wide Rocker	WMPB1/20	WMPB1/28
WMPS16	Intermediate Switch	WMPB1/20	WMPB1/28
WMPS22	10AX 2 Gang 2 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS22W	10AX 2 Gang 2 Way Wall Switch Wide Rocker	WMPB1/20	WMPB1/28
WMPS32	10AX 3 Gang 2 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS3PI	3 Pole Isolator Switch	WMPB1/20	WMPB1/28
WMPS3PIF	3 Pole Isolator Switch with Fan Symbol	WMPB1/20	WMPB1/28
WMPS42	10AX 4 Gang 2 Way Wall Switch	WMPB2/28	WMPB2/28
WMQX	Quadplexer TV & FM/DAB & SAT1 & SAT2	WMPB1/28	WMPB1/46
WMRJ11	RJ11 Socket	WMPB1/28	WMPB1/46
WMRJ45	RJ45 Socket	WMPB1/28	WMPB1/46
WMS51	5A 1 Gang Unswitched Socket	WMPB1/28	WMPB1/46
WMS81	13A 1 Gang Unswitched Socket	WMPB1/28	WMPB1/46
WMS82	13A 2 Gang Unswitched Socket Dual Earth	WMPB2/28	WMPB2/46
WMSAT	Single F Type Satellite Outlet Screened	WMPB1/28	WMPB1/46
WMSO100	115/230V Shaver Outlet	WMPB2/46	N/A
WMSS81	1 Gang Double Pole Switched Socket	WMPB1/28	WMPB1/46
WMSS82	2 Gang Double Pole Switched Socket Dual Earth	WMPB2/28	WMPB2/46
WMSS82O	2 Gang Double Pole Switched Outlet Outboard Rockers	WMPB2/28	WMPB2/46
WMSSU83	13A Fused Connection Unit Switched	WMPB1/28	WMPB1/46
WMSSU83FO	13A Fused Connection Unit Switched with Flex Outlet	WMPB1/28	WMPB1/46
WMSSU83FON	13A Fused Connection Unit Switched with LED Indicator & Flex Outlet	WMPB1/28	WMPB1/46
WMSSU83N	13A Fused Connection Unit Switched with LED Indicator	WMPB1/28	WMPB1/46
WMSU83	13A Fused Connection Unit Unswitched	WMPB1/28	WMPB1/46
WMSU83FO	13A Fused Connection Unit Unswitched with Flex Outlet	WMPB1/28	WMPB1/46
WMTVF	Single CO-AX TV Socket Outlet Female	WMPB1/28	WMPB1/46
WMTVM	Single CO-AX TV Socket Outlet Male	WMPB1/28	WMPB1/46
WMTX	TriplexerTV & FM/DAB & SAT Outlet	WMPB1/28	WMPB1/46

**Maximum number of conductors per terminal  
(Solid or Stranded conductors BS 6004)**

<b>Accessory Type</b>	<b>Rating</b>	1.0 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	4.0 mm <sup>2</sup>	6.0 mm <sup>2</sup>	10.0 mm <sup>2</sup>	16.0 mm <sup>2</sup>
Plate & Ceiling Accessories	10AX	4	4	3	2			
Dimmer Switches	10AX	4	3					
BS 546 Socket Outlet	5A	3	3	3	2	2		
Shaver Socket	10A	4	3	2				
Fused Connection Units	13A			3	2	2		
BS 1363 Socket Outlets	13A			3	3	2		
BS546 Socket Outlet	15A			3	3	2		
Flex Outlet Plates	20A	5	4	3	2	2		
Double Pole Switches	20A			3	2	2	1	
Double Pole Switches	45/50A				3	2	1	1
Cooker Control Unit	45A				3	2	1	1
Cooker Connection Outlet	45A				2	3		
Grid Switches	20AX	4	4	3	2			

## Printed Products

Many of our Sollysta wiring accessories are available with printed options, such as Washing Machine, Dishwasher etc.

For a full list of products generally available from stock please go to [www.hager.co.uk/printedproducts](http://www.hager.co.uk/printedproducts)

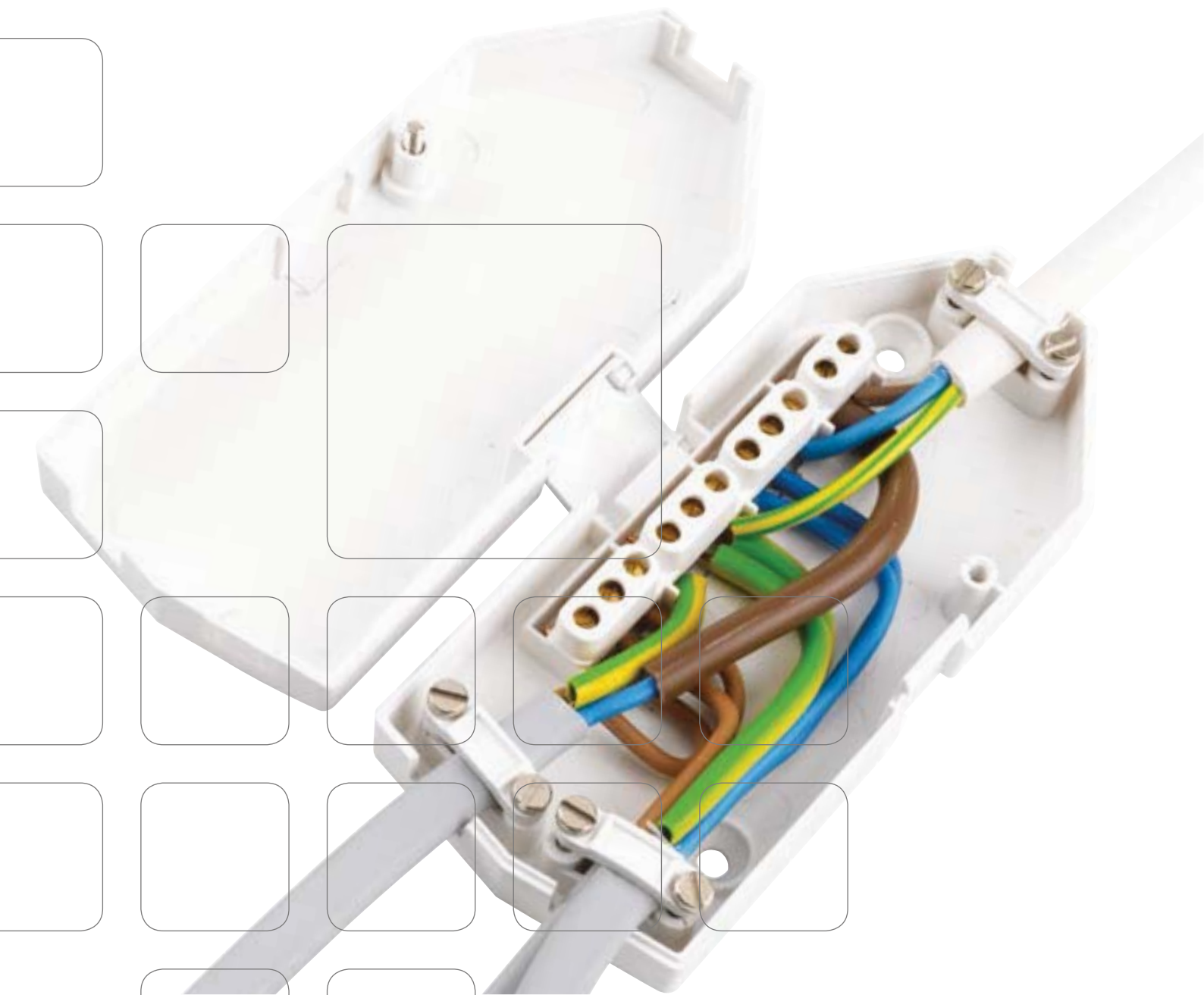
We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.



# Junction Boxes & Ceiling Accessories

Including the award winning downlighter junction box, maintenance free junction box and traditional junction boxes.

Also includes our safety lampholders and pendants. Designed to make life easier for you. When the lamp is removed from the lamp holder body the power is automatically disconnected at the contacts; ensuring that there is no risk of access to live parts.



Downlighter Junction Box	8.2
Traditional Junction Boxes	8.3
Safety Lampholders	8.4
Safety Pendant Sets	8.5
Ceiling Accessories	8.6

- Complies with BS EN 60670-22.
- Fits through a 58mm diameter hole.
- Cable clamps to prevent strain on terminations.
- 3 plate terminal style with captive terminal screws.
- Separate terminals for flexible cords.
- Junction box selection chart see page 8.7.



J501

## Downlighter Junction Box

Junction box complete with incoming and outgoing cable clamps. Three plate terminals with separate terminals for flexible cords.

Current Rating	Dimensions h x w x d (mm)	Terminal capacity (mm <sup>2</sup> )	Pack qty.	Cat Ref.
16 Amp	122 x 53 x 27	3 x 3 x 1.5mm <sup>2</sup> 1 x 2 x 1.5mm <sup>2</sup>	10	<b>J501</b>

# Maintenance Free Junction Boxes

- Comply with BS EN 60670-22.
- Suitable for use in 'inaccessible' areas.
- Spring fit terminals do not relax over time.
- Four separate cable terminations per connector.
- Junction box selection chart see page 8.7.



J804

## Maintenance Free Junction Box

Junction box complete with incoming and outgoing cable clamps.

Current Rating	Dimensions h x w x d (mm)	Terminal capacity (mm <sup>2</sup> )	Pack qty.	Cat Ref.
32 Amp - 3 Terminals	140 x 65 x 30	3 x 4 x (0.5-4.0)	10	<b>J803</b>
20 Amp - 4 Terminals	140 x 65 x 30	4 x 4 x (0.5-4.0)	10	<b>J804</b>



- Complies with BS EN 60670-22.
- Slot terminals are ideal for taking spurs off uncut ring or loop circuit cables.
- Solid machined brass terminals.
- Junction box covers secured by single centre screws (apart from J701 which has two screws).
- J701 and J701/TB junction / adaptable box will accept 16mm x 16mm and /or 16mm x 25mm mini-trunking.
- Junction box selection chart see page 8.7.



J201

## Knockout Slot Terminal Junction Box

Description	Dimensions dia x h (mm)	Fixing centres (mm)	Terminal capacity (mm <sup>2</sup> )	Pack qty.	Cat ref.
20 Amp, 4 Terminal, Brown	59 x 25	50.8	3 x 1.5	10	<b>J201</b>



J601

## Selective Entry Slot Terminal Junction Boxes

Description	Dimensions dia x h (mm)	Fixing centres (mm)	Terminal capacity (mm <sup>2</sup> )	Pack qty.	Cat ref.
20 Amp, 4 Terminal, Brown	79 x 26	50.8	3 x 1.5	10	<b>J301</b>
30 Amp, 3 Terminal, Brown	89 x 32	50.8	4 x 2.5	10	<b>J401</b>
20 Amp, 6 Terminal, Brown	89 x 26	50.8	3 x 1.5	10	<b>J601</b>



J701/TB

## Junction / Adaptable Box

Description	Dimensions h x w x d (mm)	Terminal capacity (mm <sup>2</sup> )	Pack qty.	Cat ref.
No terminals	122 x 156 x 32	-	10	<b>J701</b>
With terminal block, cable ties, and related wiring card	122 x 156 x 32	4 x 1.5	10	<b>J701/TB</b>

- Complies with BS EN 7895.
- T2 = heat resistance rating (210°C).
- Automatically disconnect power at the contacts when the lamp is removed.
- 50.8mm fixing centres for non-access versions. Use with mounting blocks MB326E/MT.
- Solid brass plungers and copper plated steel springs maintain plunger pressure throughout their long life.
- Body angle of angled batters set at 30°.
- Access lampholders have integral RL624 ceiling rose base and heat resisting PVC tails.
- All pendants incorporate automatic cord grips and sleeve caps for ease of flexible cord stripping.



SEL212

## Bayonet Cap Cord Grip Lampholders

Description	Pack qty.	Cat ref.
Safety Cord Grip Lampholders - Short Skirt	20	<b>SEL212</b>
Safety Cord Grip Lampholders - Home Office Shield	20	<b>SEL214</b>



SEL354

## Safety Straight Batten Lampholder

Description	Pack qty.	Cat ref.
Three Terminal - Home Office Shield	20	<b>SEL354</b>



SEL96T

## Safety Access Batten Lampholder

Description	Pack qty.	Cat ref.
Straight 2 Terminal Body, 3 Terminal and Earth Base - Home Office Shield	10	<b>SEL96T</b>
Angled 2 Terminal Body, 3 Terminal and Earth Base - Home Office Shield	10	<b>SEL106T</b>

- Pendant set complies with BS EN 60598-1.
- Capacity of each terminal: 3 x 1.00mm<sup>2</sup> conductor
- Common base with 'access' batten lampholders.
- Barriers between terminals.
- Flexible pendant cord restraining hooks.
- Fixing centres 50.8mm.
- Feet on base to aid mounting on uneven surfaces.
- 3 separate knockouts accept 1, 2 or 3 x 1.5mm<sup>2</sup> conductors.
- Optional halo RL602 (see page 8.6).



624SEL212/6

## Pendant Sets with Access Ceiling Rose

Description	Pack qty.	Cat ref.
Safety Pendant Set 6" - Short Skirt	10	<b>624SEL212/6</b>
Safety Pendant Set 9" - Short Skirt	10	<b>624SEL212/9</b>
Safety Pendant Set 12" - Short Skirt	10	<b>624SEL212/12</b>
Safety Shield Pendant Set 6"- Home Office Shield	10	<b>624SEL214/6</b>

## Super Access Terminal Bank Type Ceiling Rose

Description	Dimensions dia x h (mm)	Pack qty.	Cat ref.
3 Terminals	81 diameter x 26 (halo = 108mm diameter)	10	<b>RL624</b>



LEL212/6

## Low Energy Pendant

Description	Pack qty.	Cat ref.
Low Energy Pendant to accomodate GU10-L1 lamp	1	<b>LEL212/6</b>

- Capacity of earth terminal for mounting blocks:  
3 x 1.5mm<sup>2</sup> cables

- Cable knockout entries:  
**MB326E/MT** - centrally in base. 4 on periphery will accept 16mm x 16mm or 16mm x 25mm mini trunking.



MB326E/MT

### Mounting Blocks

Description	Dimensions dia x h (mm)	Pack qty.	Cat ref.
Round Mounting Box with Earth Terminal	81 x 19	20	<b>MB326E/MT</b>
Round Surface Box 30mm Deep	84 x 30	10	<b>MB2</b>

### Lampholder Skirts (Home Office Shield and Shade Ring)

Suitable for use with any lampholder or batten lampholder

Description	Pack qty.	Cat ref.
Short Skirts	50	<b>HAL70</b>
Home Office Shield	50	<b>HAL72</b>



RL602

### Halo

Description	Pack qty.	Cat ref.
Halo (108mm Diameter)	20	<b>RL602</b>



Is the  
location  
accessible

NO

Maintenance free  
terminals required

YES



Is there a  
suitable  
fixing  
position

NO

Cable clamping  
recommended

YES

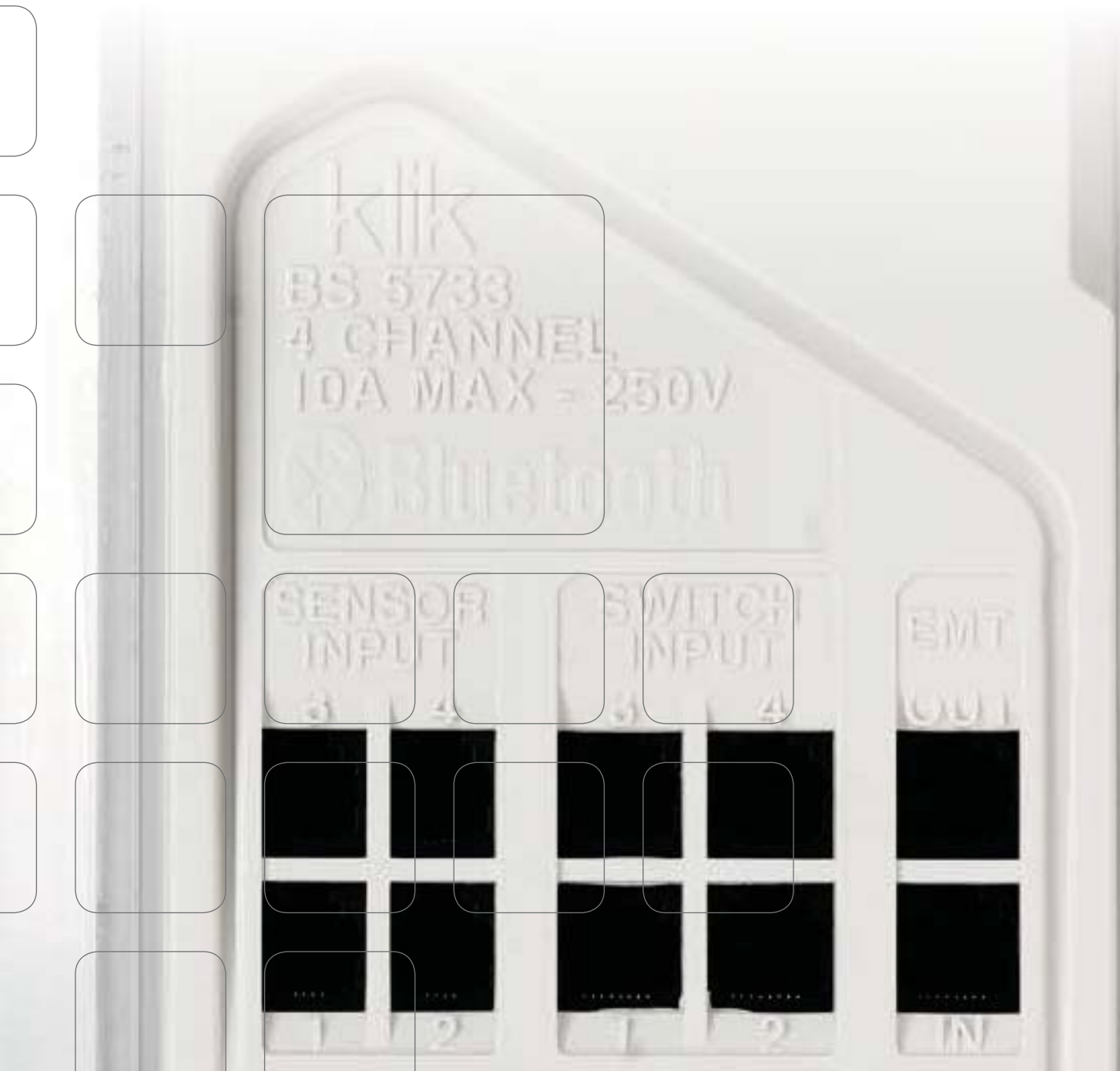


Traditional  
Junction  
Boxes are  
acceptable

Description	N° of Terminals	Terminal Rating	Reference	Benefits / Considerations
Downlighter Junction Box	3 x 3 x 1.5mm <sup>2</sup> 1 x 2 x 1.5mm <sup>2</sup>	16A	<b>J501</b>	Provided with cable clamps and separate terminals for flex
Maintenance Free Junction Box	3 x 4 x (0.5-4.0mm <sup>2</sup> )	32A	<b>J803</b>	Suitable for use in inaccessible locations
	4 x 4 x (0.5 - 4.0mm <sup>2</sup> )	20A	<b>J804</b>	
Traditional Junction Boxes	4	20A	<b>J201</b>	Acceptable for locations which are accessible
	4	20A	<b>J301</b>	
	3	30A	<b>J401</b>	
	6	20A	<b>J601</b>	

# Lighting Connection & Control

Our range of Klik range of 4 and 7 pin products offer a wide range of lighting connection and control solutions such as lighting distribution, occupancy sensor control, lighting control module functionality and the ability to connect to a central lighting control system.



Klik 4 pin	9.2
Klik 7 pin	9.10
Controls	9.18

# Klik 4 pin

## Lighting Distribution System

With the Klik connector, luminaires can be plugged in seconds, with absolute safety and without circuit isolation. The secure mechanical and electrical connection gives complete confidence in the systems integrity.

Today there is pressure on all areas of construction is to reduce costs. The installation speed of Klik makes a significant contribution to both the on-site wiring and on-going maintenance costs, whether from a single outlet PCR or a multi-outlet marshalling box.





Marshalling Boxes	9.4
Occupancy Sensors	9.4
Plug-In Ceiling Roses & Covers	9.5
Pre-Wired Plug-In Ceiling Roses & Covers	9.6
Plugs	9.7
Pre-Wired Plugs	9.8
Socket Outlets & Mounting Boxes	9.9



KLDS4



KLDS8



KLDS12

## Marshalling Boxes

Klik marshalling boxes are used in conjunction with Klik 3 and 4 pin plugs to connect luminaires within an area. The Klik marshalling box can be separated into two independently switched circuits. These circuits can be controlled via wall switch or occupancy sensor.

- Complies with BS 5733
- Main terminal rating 16 Amps
- Socket outlet rating 6 Amps
- Separate terminals for flexible conductors, rating 10 Amps
- Socket outlets accept either Klik lighting (3 pin) plugs, Klik auxiliary (4 pin) plugs or Klik pre-wired leads
- Short circuit tested 1500A conditional rating

Description	Pack qty.	Cat ref.
4 Way Klik Lighting Distribution Unit	1	<b>KLDS4</b>
6 Way Klik Lighting Distribution Unit	1	<b>KLDS6</b>
8 Way Klik Lighting Distribution Unit	1	<b>KLDS8</b>
10 Way Klik Lighting Distribution Unit	1	<b>KLDS10</b>
12 Way Klik Lighting Distribution Unit	1	<b>KLDS12</b>

## Occupancy Sensors



EEK510B

Hager occupancy sensors come complete with integral photocell and the facility for wall switch override.

- Can be programmed for presence or absence
- Range 7m diameter for large movements, 5m diameter for small movements
- Factory presets, lux = 400, time = 20 min, presence detection
- EEK001 programming tool is easy to use with 2 memory settings to enable repeatability
- EEK002 remote control comes with a wall mounting bracket for storage and allows room occupant to have control of lighting output



EEK001

Description	Pack qty.	Cat ref.
Standard Occupancy Sensor, Pre-Wired 3m	1	<b>EEK513W</b>
Standard Occupancy Sensor (without cable)	1	<b>EEK510B</b>
Surface Mount Kit	1	<b>EEK005</b>
Programming Tool	1	<b>EEK001</b>
Remote Control	1	<b>EEK002</b>
Long Range/ Corridor Occupancy Sensor	1	<b>KLOS6LR</b>



PCR2000

## 3 Pin Plug-In Ceiling Rose & Cover

The 6A plug-in ceiling rose is used to offer a pluggable connection for luminaires. The luminaire can be connected and disconnected under load.

- Complies with BS 6972 and BS 5733:2010
- Sockets have 4 terminations: line, neutral, earth and loop-in

- Plugs have 3 terminations: line, neutral and CPC
- Fixing: 50.8mm Standard Diagonal (BESA)

Description	Pack qty.	Cat ref.
3 Pin Plug-in Ceiling Rose White	10	<b>PCR2000</b>



CR64AX/R

## 4 Pin (including Auxiliary) Plug-In Ceiling Rose & Cover

Klik 6A pre-wired plug-in ceiling roses are used to connect luminaires to a fixed wiring installation. Auxiliary contact available, a typical use is for emergency lighting.

- Complies with BS 6972 and BS 5733
- PVC flexible cord complies with BS EN 50525-2-11
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11

- All leads have prepared ends
- Sockets have 5 terminations: line, neutral, CPC, auxiliary and loop-in
- Plugs have 4 terminations: line, neutral, CPC and auxiliary

Description	Pack qty.	Cat ref.
4 Pin Plug-in Ceiling Rose White	10	<b>CR64AX</b>
4 Pin Plug-in Ceiling Rose Red	10	<b>CR64AX/R</b>

## Spare Ceiling Rose Cover



A1

Description	Pack qty.	Cat ref.
Ceiling Rose Cover White	10	<b>A1</b>
Ceiling Rose Cover Red	10	<b>A1/R</b>



A1/R



PCR2000/1.0

### 3 Pin Pre-Wired 6A Plug-in Ceiling Rose

6A pre-wired plug-in ceiling roses are used to connect luminaires to a fixed wiring installation.

- Complies with BS 6972 and BS 5733
- PVC flexible cord complies with BS EN 50525-2-11

- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11
- All leads have prepared ends

Length	Pack qty.	PVC Cat ref.	Low smoke zero halogen Cat ref.
1 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>PCR2000/1.0</b>	<b>PCR2000/LSF/1.0</b>
2 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>PCR2000/2.0</b>	<b>PCR2000/LSF/2.0</b>
3 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>PCR2000/3.0</b>	<b>PCR2000/LSF/3.0</b>
4 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>PCR2000/4.0</b>	<b>PCR2000/LSF/4.0</b>
2 Metre 1.00mm <sup>2</sup> Flexible Cord	10	<b>PCR2000/1.0PVC/2</b>	<b>PCR2000/1.0LSF/2</b>
3 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>PCR2000/1.0PVC/3</b>	<b>PCR2000/1.0LSF/3</b>
4 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>PCR2000/1.0PVC/4</b>	<b>PCR2000/1.0LSF/4</b>
5 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>PCR2000/1.0PVC/5</b>	<b>PCR2000/1.0LSF/5</b>



CR64AX/1.0

### 4 Pin (including Auxiliary) Pre-Wired 6A Plug-in Ceiling Rose

Auxiliary 6A pre-wired plug-in ceiling roses are used to connect luminaires to a fixed wiring installation.

- Complies with BS 6972 and BS 5733
- PVC flexible cord complies with BS EN 50525-2-11

- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11
- All leads have prepared ends

Length	Pack qty.	PVC Cat ref.	Low smoke zero halogen Cat ref.
1 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>CR64AX/1.0</b>	<b>CR64AX/LSF/1.0</b>
2 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>CR64AX/2.0</b>	<b>CR64AX/LSF/2.0</b>
3 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>CR64AX/3.0</b>	<b>CR64AX/LSF/3.0</b>
4 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>CR64AX/4.0</b>	<b>CR64AX/LSF/4.0</b>
2 Metre 1.00mm <sup>2</sup> Flexible Cord	10	<b>CR64AX/1.0PVC/2</b>	<b>CR64AX/1.0LSF/2</b>
3 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>CR64AX/1.0PVC/3</b>	<b>CR64AX/1.0LSF/3</b>
4 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>CR64AX/1.0PVC/4</b>	<b>CR64AX/1.0LSF/4</b>
5 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>CR64AX/1.0PVC/5</b>	<b>CR64AX/1.0LSF/5</b>



P22

**3 Pin Plug**

Klik 3 pin plugs are used to connect into a Klik socket giving a pluggable connection to luminaires.

- Complies with BS 6972 and BS 5733
- Suitable for use with any Klik 3 or 4 pin socket

- P22 plug is supplied in a plug-in ceiling rose, cat ref. PCR2000
- Plugs have 3 terminations: line, neutral and CPC

**Warning**

Plugs must not be fitted on the supply side of any installation - they must be connected to the load / fitting / appliance side of the installation.

Description	Pack qty.	Cat ref.
3 Pin Plug White	10	<b>P22</b>



P64AX/R

**4 Pin (including Auxiliary) Plug**

Klik plugs with auxiliary pin are used to connect into the Klik sockets giving a pluggable connection to luminaires.

- Complies with BS 6972 and BS 5733
- Suitable for use with any Klik 3 or 4 pin sockets

- P64AX plug is supplied in a plug-in ceiling rose, Cat. ref. CR64AX
- Plugs have 4 terminations: line, neutral, CPC and auxiliary

**Warning**

Plugs must not be fitted on the supply side of any installation - they must be connected to the load / fitting / appliance side of the installation.

Description	Pack qty.	Cat ref.
White with Cord Grip and Cover, 57mm x 25mm x 44mm	10	<b>P64AX</b>
Red with Cord Grip and Cover, 57mm x 25mm x 44mm	10	<b>P64AX/R</b>



P22/1.0

## 3 Pin Pre-Wired 6A Plugs

6A pre-wired plugs are used to connect luminaires to a Klik ceiling rose or marshalling box.

- Complies with BS 6972 and BS 5733
- PVC flexible cord complies with BS EN 50525-2-11
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11
- All leads have prepared ends

Length	Pack qty.	PVC Cat ref.	Low smoke zero halogen Cat ref.
1 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>P22/1.0</b>	<b>P22/LSF/1.0</b>
2 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>P22/2.0</b>	<b>P22/LSF/2.0</b>
3 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>P22/3.0</b>	<b>P22/LSF/3.0</b>
4 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>P22/4.0</b>	<b>P22/LSF/4.0</b>
2 Metre 1.00mm <sup>2</sup> Flexible Cord	10	<b>P22/1.0PVC/2</b>	<b>P22/1.0LSF/2</b>
3 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P22/1.0PVC/3</b>	<b>P22/1.0LSF/3</b>
4 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P22/1.0PVC/4</b>	<b>P22/1.0LSF/4</b>
5 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P22/1.0PVC/5</b>	<b>P22/1.0LSF/5</b>



P64AX/1.0

## 4 Pin (including Auxiliary) Pre-Wired 6A Plugs - White

Klik.AX 6A pre-wired plugs are used to connect luminaires to a Klik ceiling rose or marshalling box.

- Complies with BS 6972 and BS 5733
- PVC flexible cord complies with BS EN 50525-2-11
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11
- All leads have prepared ends

Length	Pack qty.	PVC Cat ref.	Low smoke zero halogen Cat ref.
1 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>P64AX/1.0</b>	<b>P64AX/LSF/1.0</b>
2 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>P64AX/2.0</b>	<b>P64AX/LSF/2.0</b>
3 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>P64AX/3.0</b>	<b>P64AX/LSF/3.0</b>
4 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>P64AX/4.0</b>	<b>P64AX/LSF/4.0</b>
2 Metre 1.00mm <sup>2</sup> Flexible Cord	10	<b>P64AX/1.0PVC/2</b>	<b>P64AX/1.0LSF/2</b>
3 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AX/1.0PVC/3</b>	<b>P64AX/1.0LSF/3</b>
4 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AX/1.0PVC/4</b>	<b>P64AX/1.0LSF/4</b>
5 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AX/1.0PVC/5</b>	<b>P64AX/1.0LSF/5</b>



P64AXR/1.0

## 4 Pin (including Auxiliary) Pre-Wired 6A Plugs - Red

Klik.AX 6A pre-wired plugs are used to connect luminaires to a Klik ceiling rose or marshalling box.

- Complies with BS 6972 and BS 5733
- PVC flexible cord complies with BS EN 50525-2-11
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11
- All leads have prepared ends

Length	Pack qty.	PVC Cat ref.	Low smoke zero halogen Cat ref.
1 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>P64AXR/1.0</b>	<b>P64AXR/LSF/1.0</b>
2 Metre 0.75mm <sup>2</sup> Flexible Cord	10	<b>P64AXR/2.0</b>	<b>P64AXR/LSF/2.0</b>
3 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/3.0</b>	<b>P64AXR/LSF/3.0</b>
4 Metre 0.75mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/4.0</b>	<b>P64AXR/LSF/4.0</b>
2 Metre 1.00mm <sup>2</sup> Flexible Cord	10	<b>P64AXR/1.0PVC/2</b>	<b>P64AXR/1.0LSF/2</b>
3 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/1.0PVC/3</b>	<b>P64AXR/1.0LSF/3</b>
4 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/1.0PVC/4</b>	<b>P64AXR/1.0LSF/4</b>
5 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/1.0PVC/5</b>	<b>P64AXR/1.0LSF/5</b>



S27

**3 Pin Plug Socket Outlets**

6A socket outlets are used in conjunction with 6A plugs to provide a pluggable connection to luminaires.

- Complies with BS 6972 and BS 5733

- Suitable for use with standard Klik 3 pin plug
- S27 socket is supplied in plug-in ceiling rose, Cat. Ref. PCR2000
- S27 socket will accept A1

cover

- S26/TC socket is an S26 architrave socket pre-assembled with a trunking clamp

Description	Pack qty.	Cat ref.
Ultra Flush Socket White	10	<b>S21</b>
Architrave Socket White	10	<b>S26</b>
Architrave Socket comes with Trunking Clamp	10	<b>S26/TC</b>
3 Pin Round Socket White	10	<b>S27</b>
Ultra Flush Round Socket White	10	<b>S28</b>



S64AX

**4 Pin (including Auxiliary) Plug Socket Outlets**

Klik.AX 6A socket outlets are used in conjunction with Klik auxiliary 6A plugs to provide a pluggable connection to luminaires.

- Complies with BS 6972 and BS 5733
- Suitable for use with standard

Klik 4 pin plug

- S27 socket is supplied in plug-in ceiling rose, Cat. Ref. PCR2000
- S27 socket will accept A1 cover
- S26/TC socket is an S26 architrave socket pre-

assembled with a trunking clamp

- All sockets have 5 terminations: line, neutral, CPC, auxiliary and loop-in
- Can be used with Klik 3 or 4 pin plug

Description	Pack qty.	Cat ref.
4 Pin Round Socket White	10	<b>S64AX</b>
4 Pin Square Socket White	10	<b>S65AX</b>



MB2

**Moulded Mounting Boxes**

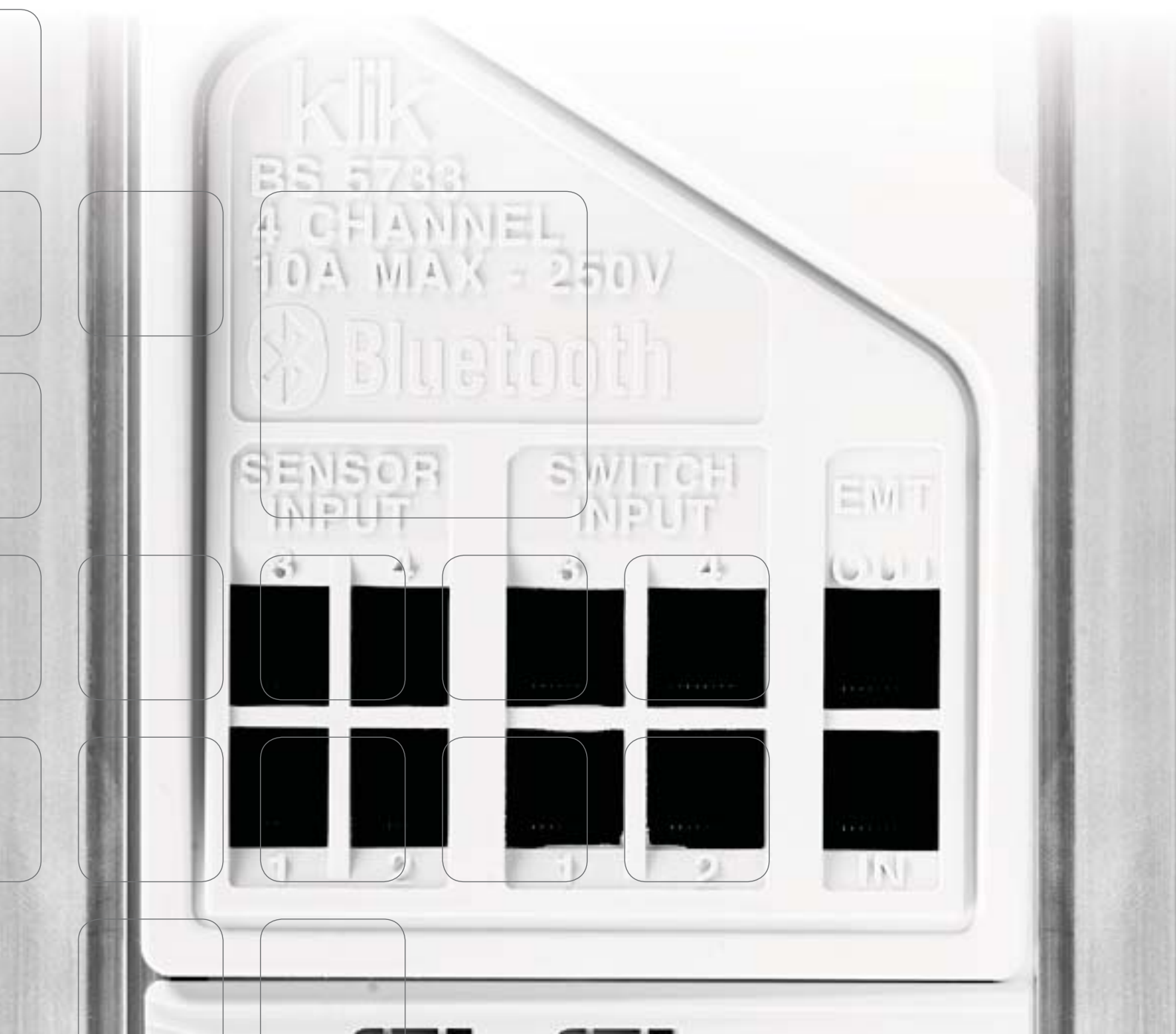
Description	Pack qty.	Cat ref.
Round Surface Box White	10	<b>MB2</b>

# Klik 7 pin

## Secure connection system

Klik 7 pin can be used as a simple stand-alone digital lighting control unit or as part of a more complex building management system.

The Klik 7 pin range of unique plug and play connectors has been enhanced with a choice of products ideal for electrical contractors who want to add digital lighting control solutions to their offer.





Lighting Marshalling Boxes	9.12
Occupancy Sensors	9.12
Lighting Control Module	9.13
Link Leads	9.14
Luminaire Leads	9.14
Connectors, Ceiling Rose & Sockets	9.16
Switch Drop Leads	9.17



KLMB4W

## Lighting Marshalling Boxes

The KLMB marshalling box allows the connection and control of multiple luminaires. The marshalling box utilises a robust extruded aluminium body.

- 7 Pole
- 4, 6, 8, 10, 12 outlet (Wire-in)
- 5, 7, 9, 11 outlet (Plug-in)
- 16A Rated
- BS 5733

- Short circuit tested: 1500A conditional rating

### Single Supply Wire In, Plug Out

	Cat ref.
4 Way LMB Wire In Plug Out	<b>KLMB4W</b>
6 Way LMB Wire In Plug Out	<b>KLMB6W</b>
8 Way LMB Wire In Plug Out	<b>KLMB8W</b>
10 Way LMB Wire In Plug Out	<b>KLMB10W</b>
12 Way LMB Wire In Plug Out	<b>KLMB12W</b>

### Dual Channel Wire In, Plug Out

	Cat ref.
8 Way LMB, 4/4 Wire In, Plug Out	<b>KLMB244W</b>
10 Way LMB, 5/5 Wire In, Plug Out	<b>KLMB255W</b>
12 Way LMB, 6/6 Wire In, Plug Out	<b>KLMB266W</b>

### Single Supply Plug In, Plug Out

	Cat ref.
5 Way LMB, Plug In Plug out	<b>KLMB5P</b>
7 Way LMB, Plug In Plug out	<b>KLMB7P</b>
9 Way LMB, Plug In Plug out	<b>KLMB9P</b>
11 Way LMB, Plug In Plug out	<b>KLMB11P</b>

### Dual Supply Plug In, Plug Out\*

	Cat ref.
10 Way LMB, 1 in 5 out, 1 in 5 out	<b>KLMB255DSP</b>
14 Way LMB, 1 in 7 out, 1 in 7 out	<b>KLMB277DSP</b>

### Dual Supply Digital Link Plug In, Plug Out\*

	Cat ref.
10 Way LMB, 1 in 5 out, 1 in 5 out	<b>KLMB255DSP/DL</b>
14 Way LMB, 1 in 7 out, 1 in 7 out	<b>KLMB277DSP/DL</b>

## Occupancy Sensors



EEK513P

Hager occupancy sensors come complete with integral photocell and the facility for wall switch override.

- Can be programmed for presence or absence
- Range 7m diameter for large movements, 5m diameter for small movements
- Factory presets, lux = 400, time = 20 min, presence detection
- EEK001 programming tool is easy to use with 2 memory settings to enable repeatability
- EEK002 remote control comes with a wall mounting bracket for storage and allows room occupant to have control of lighting output

### Standard & Digital Occupancy Sensors

	Cat ref.
Standard Relay Sensor complete with 3m Lead and Plug LS0H	<b>EEK513P</b>
Standard Relay Sensor complete with 5m Lead and Plug LS0H	<b>EEK515P</b>
Digital Sensor complete with 3m Lead and Plug LS0H	<b>EEK523P</b>
Digital Sensor complete with 5m Lead and Plug LS0H	<b>EEK525P</b>
Programming Tool	<b>EEK001</b>
Remote Control	<b>EEK002</b>
Surface Mount Kit	<b>EEK005</b>

### KNX Occupancy Sensors

	Cat ref.
KNX Relay Sensor complete with 3m Lead and Plug LS0H	<b>TKK513PE</b>
KNX Relay Sensor complete with 5m Lead and Plug LS0H	<b>TKK515PE</b>
KNX Digital Sensor complete with 3m Lead and Plug LS0H	<b>TKK523PE</b>
KNX Digital Sensor complete with 5m Lead and Plug LS0H	<b>TKK525PE</b>
KNX Occupancy Sensor (KNX only, without cable)	<b>TCC510S</b>
Programming Tool	<b>EEK001</b>
Remote Control	<b>EEK002</b>
Surface Mount Kit	<b>EEK005</b>



TKK513P



KLCM413W

## Lighting Control Module with KlikLink

The KLCM allows connection and control of multiple luminaires with four separate channels.

- Switching
- Dimming (DSI & DALI)
- Corridor hold
- Partition switching
- Daylight switching & dimming
- Scene settings

- Integral emergency test times
  - Reset profiles
  - Light level offset (channel to channel)
- See page 9.40-9.41 for more information

### Description

12 Way 4 Channel LCM Plug in, Plug out

13 Way 4 Channel LCM Wire in, Plug out

KlikLink iPad App

### Cat Ref.

**KLCM412P**

**KLCM413W**



KLCM-OS

## Lighting Control Module Occupancy Sensors

Klik LCM occupancy sensors come complete with a 10m RJ11 lead and have integrated daylight sensing.

Sensing options are selected via the Kliklink app (e.g. presence/absence)

KLCM-3OS is designed for use as a corridor sensor.  
KLCM-5OS is designed for use as a whole room sensor.

## LCM Occupancy Sensor with KlikLink

Klik LCM Occupancy Sensor with KlikLink (provided with 10m RJ11 Lead)

### Cat ref.

**KLCM-OS**

## LCM Wide Area Sensors

Klik LCM Corridor Sensor with 3 Sensor Heads (Provided with RG11 lead)

Klik LCM Wide Area Sensor with 5 Sensor Heads (Provided with RG11 lead)

### Cat ref.

**KLCM-3OS**

**KLCM-5OS**



KLO15RJ45G

## Lighting Control Module Switch Drop Lead SELV (Grey)

RJ45 to switch (wire-in) lead available in a variety of lengths

- SELV
- RJ45 connector

(Cables supplied standard with RJ45 plug on both ends)

### Description

5m RJ45 SELV Switch Drop Lead

10m RJ45 SELV Switch Drop Lead

15m RJ45 SELV Switch Drop Lead

20m RJ45 SELV Switch Drop Lead

30m RJ45 SELV Switch Drop Lead

40m RJ45 SELV Switch Drop Lead

50m RJ45 SELV Switch Drop Lead

### Cat ref.

**KLO5RJ45G**

**KLO10RJ45G**

**KLO15RJ45G**

**KLO20RJ45G**

**KLO30RJ45G**

**KLO40RJ45G**

**KLO50RJ45G**



KLO15RJ45R

## Lighting Control Module Link Lead SELV (Red)

RJ45 to RJ45 link lead

- SELV
- RJ45 connector

(Cables supplied standard with RJ45 plug on both ends)

### Description

5m RJ45 SELV Link Lead

10m RJ45 SELV Link Lead

15m RJ45 SELV Link Lead

20m RJ45 SELV Link Lead

30m RJ45 SELV Link Lead

40m RJ45 SELV Link Lead

50m RJ45 SELV Link Lead

RJ45 Splitter

### Cat ref.

**KLO5RJ45R**

**KLO10RJ45R**

**KLO15RJ45R**

**KLO20RJ45R**

**KLO30RJ45R**

**KLO40RJ45R**

**KLO50RJ45R**

**KLORJ45CON**



KLA/3/1-5P

## Link Leads

The link leads are used to connect KLMB to KLMB all leads are low smoke zero halogen and are factory connected and tested. **Note: to ensure correct link lead selection see the connection key on page 9.32**

- 1.5mm<sup>2</sup> CSA
- 3m, 5m & 10m lengths
- Standard, Digital and Emergency Luminaires
- 16A Rated

- BS 5733
- BS EN 61535
- Short circuit tested: 1500A conditional rating
- Cable standard BS6500 & BS7211

### Supply Link Leads 16A Plug Out, Plug In 1.5mm<sup>2</sup> 3 Core

	Cat ref.
3m 3 Core Link Lead, Plug to Plug	<b>KLA/3/1-5P</b>
5m 3 Core Link Lead, Plug to Plug	<b>KLA/5/1-5P</b>
10m 3 Core Link Lead, Plug to Plug	<b>KLA/10/1-5PX*</b>

### Supply Link Leads 16A Plug Out, Plug In 1.5mm<sup>2</sup> 4 Core

	Cat ref.
3m 4 Core Link Lead, Plug to Plug	<b>KLK/3/1-5P</b>
5m 4 Core Link Lead, Plug to Plug	<b>KLK/5/1-5P</b>
10m 4 Core Link Lead, Plug to Plug	<b>KLK/10/1-5PX*</b>

### Supply Link Leads 16A Plug Out, Plug In 1.5mm<sup>2</sup> 5 Core

	Cat ref.
3m 5 Core Link Lead, Plug to Plug	<b>KLK/3/1-5P</b>
5m 5 Core Link Lead, Plug to Plug	<b>KLK/5/1-5P</b>
10m 5 Core Link Lead, Plug to Plug	<b>KLK/10/1-5PX*</b>

### Supply Link Leads 16A Plug Out, Plug In 1.5mm<sup>2</sup> 6 Core

	Cat ref.
3m 6 Core Link Lead, Plug to Plug	<b>KLV/3/1-5P</b>
5m 6 Core Link Lead, Plug to Plug	<b>KLV/5/1-5P</b>
10m 6 Core Link Lead, Plug to Plug	<b>KLV/10/1-5PX*</b>

### Supply Link Leads 16A Plug Out, Plug In 1.5mm<sup>2</sup> 7 Core

	Cat ref.
3m 7 Core Link Lead, Plug to Plug	<b>KLZ/3/1-5P</b>
5m 7 Core Link Lead, Plug to Plug	<b>KLZ/5/1-5P</b>
10m 7 Core Link Lead, Plug to Plug	<b>KLZ/10/1-5PX*</b>

\* Special lengths are available to order (not stocked) which includes 2.5mm<sup>2</sup> and 4mm<sup>2</sup> variants

## Luminaire Leads



KLB/3/0-75W

## Luminaire Leads

Connections to the luminaire are made via a pre-wired plug and lead, all leads are low smoke zero halogen and are factory connected and tested

- Up to 5m lengths
- Standard, Digital and Emergency Luminaires
- Short circuit tested: 1500A conditional rating

- Cable standard BS6500 & BS7211

### Standard 6A Luminaire Lead 0.75mm<sup>2</sup> 3 Core

	Cat ref.
1m 3 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLB/1/0-75W</b>
2m 3 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLB/2/0-75W</b>
3m 3 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLB/3/0-75W</b>
4m 3 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLB/4/0-75W</b>
5m 3 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLB/5/0-75W</b>

### Standard 10A Luminaire Lead 1mm<sup>2</sup> 3 Core

	Cat ref.
1m 3 Core 1mm Luminaire Lead Plug to Wire	<b>KLB/1/1-5W</b>
2m 3 Core 1mm Luminaire Lead Plug to Wire	<b>KLB/2/1-5W</b>
3m 3 Core 1mm Luminaire Lead Plug to Wire	<b>KLB/3/1-5W</b>
4m 3 Core 1mm Luminaire Lead Plug to Wire	<b>KLB/4/1-5W</b>
5m 3 Core 1mm Luminaire Lead Plug to Wire	<b>KLB/5/1-5W</b>

### Standard 16A Luminaire Lead 1.5mm<sup>2</sup> 3 Core

	Cat ref.
1m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLB/1/1-5W</b>
2m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLB/2/1-5W</b>
3m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLB/3/1-5W</b>
4m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLB/4/1-5W</b>
5m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLB/5/1-5W</b>



KLP/3/0-75W

**Standard 6A Luminaire Lead 0.75mm<sup>2</sup> with Emergency 4 Core**

Cat ref.

1m 4 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLJ/1/0-75W</b>
2m 4 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLJ/2/0-75W</b>
3m 4 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLJ/3/0-75W</b>
4m 4 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLJ/4/0-75W</b>
5m 4 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLJ/5/0-75W</b>

**Standard 10A Luminaire Lead 1mm<sup>2</sup> with Emergency 4 Core**

Cat ref.

1m 4 Core 1mm Luminaire Lead Plug to Wire	<b>KLJ/1/1W</b>
2m 4 Core 1mm Luminaire Lead Plug to Wire	<b>KLJ/2/1W</b>
3m 4 Core 1mm Luminaire Lead Plug to Wire	<b>KLJ/3/1W</b>
4m 4 Core 1mm Luminaire Lead Plug to Wire	<b>KLJ/4/1W</b>
5m 4 Core 1mm Luminaire Lead Plug to Wire	<b>KLJ/5/1W</b>

**Standard 16A Luminaire Lead 1.5mm<sup>2</sup> with Emergency 4 Core**

Cat ref.

1m 4 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLJ/1/1-5W</b>
2m 4 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLJ/2/1-5W</b>
3m 4 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLJ/3/1-5W</b>
4m 4 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLJ/4/1-5W</b>
5m 4 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLJ/5/1-5W</b>

**Digital 6A Luminaire Lead 0.75mm<sup>2</sup> 5 Core**

Cat ref.

1m 5 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLP/1/0-75W</b>
2m 5 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLP/2/0-75W</b>
3m 5 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLP/3/0-75W</b>
4m 5 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLP/4/0-75W</b>
5m 5 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLP/5/0-75W</b>

**Digital 10A Luminaire Lead 1mm<sup>2</sup> 5 Core**

Cat ref.

1m 5 Core 1mm Luminaire Lead Plug to Wire	<b>KLP/1/1W</b>
2m 5 Core 1mm Luminaire Lead Plug to Wire	<b>KLP/2/1W</b>
3m 5 Core 1mm Luminaire Lead Plug to Wire	<b>KLP/3/1W</b>
4m 5 Core 1mm Luminaire Lead Plug to Wire	<b>KLP/4/1W</b>
5m 5 Core 1mm Luminaire Lead Plug to Wire	<b>KLP/5/1W</b>

**Digital 16A Luminaire Lead 1.5mm<sup>2</sup> 5 Core**

Cat ref.

1m 5 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLP/1/1-5W</b>
2m 5 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLP/2/1-5W</b>
3m 5 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLP/3/1-5W</b>
4m 5 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLP/4/1-5W</b>
5m 5 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLP/5/1-5W</b>

**Digital 6A Luminaire Lead 0.75mm<sup>2</sup> with Emergency 6 Core**

Cat ref.

1m 6 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLT/1/0-75W</b>
2m 6 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLT/2/0-75W</b>
3m 6 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLT/3/0-75W</b>
4m 6 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLT/4/0-75W</b>
5m 6 Core 0.75mm Luminaire Lead Plug to Wire	<b>KLT/5/0-75W</b>

**Digital 10A Luminaire Lead 1mm<sup>2</sup> with Emergency 6 Core**

Cat ref.

1m 6 Core 1mm Luminaire Lead Plug to Wire	<b>KLT/1/1W</b>
2m 6 Core 1mm Luminaire Lead Plug to Wire	<b>KLT/2/1W</b>
3m 6 Core 1mm Luminaire Lead Plug to Wire	<b>KLT/3/1W</b>
4m 6 Core 1mm Luminaire Lead Plug to Wire	<b>KLT/4/1W</b>
5m 6 Core 1mm Luminaire Lead Plug to Wire	<b>KLT/5/1W</b>

**Digital 16A Luminaire Lead 1.5mm<sup>2</sup> with Emergency 6 Core**

Cat ref.

1m 6 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLT/1/1-5W</b>
2m 6 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLT/2/1-5W</b>
3m 6 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLT/3/1-5W</b>
4m 6 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLT/4/1-5W</b>
5m 6 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLT/5/1-5W</b>

**16A Emergency Light Lead**

Cat ref.

3m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLE/3/1-5W</b>
5m 3 Core 1.5mm Luminaire Lead Plug to Wire	<b>KLE/5/1-5W</b>



KLPCR/7

**Connectors, Ceiling Rose & Sockets**

7 pole Conduit Box / Surface Connector to allow the easy connection of digital lighting within traditional fixed wire installations. The connector is fitted directly to trunking or conduit allowing the luminaire to be connected / disconnected via the pluggable luminaire lead.

- 7 Pole
- 16A Rated
- Standards: BS 5733
- Short circuit tested: 1500A conditional rating

**Connectors**

16A 7 pin Tee Connector LMB Pluggable  
16A 7 pin 2-Way Switch Block

Cat ref.

**KL/T**

**KL/2**

**Ceiling Rose**

16A 7 pin Plug-in Ceiling Rose

Cat ref.

**KLPCR/7**

**Sockets**

16A 3 Pin Panel Mount Socket  
16A 4 Pin Panel Mount Socket  
16A 5 Pin Panel Mount Socket  
16A 6 Pin Panel Mount Socket

Cat ref.

**KLPB/3**

**KLPJ/4**

**KLPP/5**

**KLPT/6**



KLPB/3



KLL/5/1-5W

## Switch Drop Lead Mains Voltage (not for use with LCM)

The switch drop prewired lead allows plug in switch to KLMB connection. All leads are low smoke zero halogen and are factory connected and tested

- 1.5mm<sup>2</sup> CSA
- 5m, 10m & 15m lengths
- Standard, Digital and Emergency Luminaires
- 16A Rated

- Short circuit tested: 1500A conditional rating
- Cable standard BS6500 & BS7211

## Switch Drop Lead (Retractive N/O switch absence or override off for OS)

Cat ref.

5m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLL/5/1-5W</b>
10m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLL/10/1-5W</b>
15m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLL/15/1-5W</b>

## Switch Drop Lead (1-gang 1-way or retractive N/O for digital OS wall dimming)

Cat ref.

5m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLD/5/1-5W</b>
10m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLD/10/1-5W</b>
15m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLD/15/1-5W</b>

## Switch Drop Lead (2-gang 1-way plus emergency key)

Cat ref.

5m 4 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLH/5/1-5W</b>
10m 4 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLH/10/1-5W</b>
15m 4 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLH/15/1-5W</b>

## Switch Drop Lead (1-gang 2-way)

Cat ref.

5m 4 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLM/5/1-5W</b>
10m 4 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLM/10/1-5W</b>
15m 4 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLM/15/1-5W</b>

## Switch Drop Lead (2-gang 2-way plus emergency key)

Cat ref.

5m 5 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLR/5/1-5W</b>
10m 5 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLR/10/1-5W</b>
15m 5 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLR/15/1-5W</b>

## Switch Drop Lead (Emergency Key)

Cat ref.

5m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLC/5/1-5W</b>
10m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLC/10/1-5W</b>
15m 3 Core 1.5mm Switch Drop Lead, Plug to Wire	<b>KLC/15/1-5W</b>

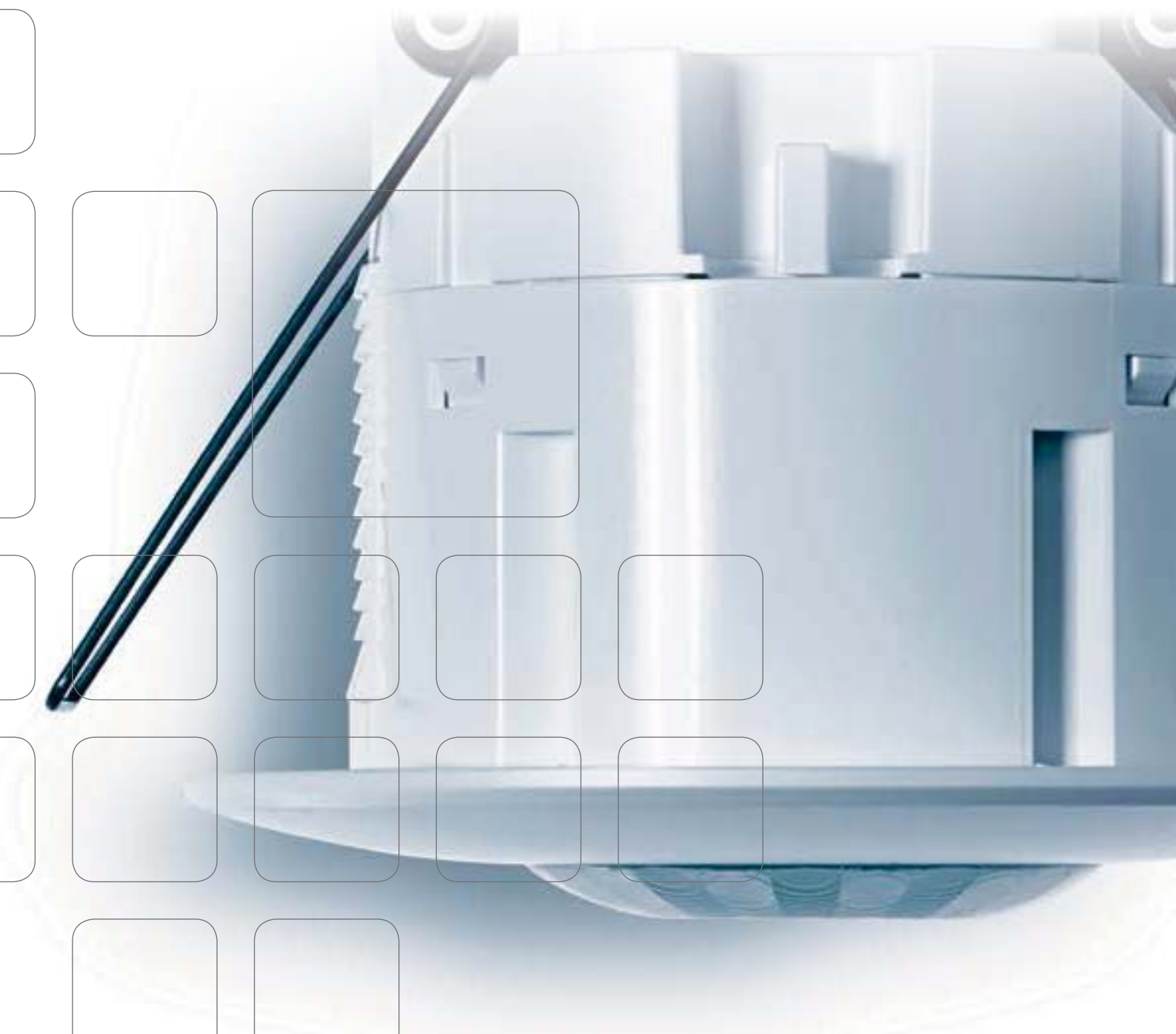


# Controls

## Lighting controls

Today's buildings need an efficient and seamless electrical solution. Our LED Lighting and Occupancy sensors range have been designed to complement and enhance your lighting control system.

Energy efficiency is an important factor for today's businesses. Our LED wall-lights provide energy saving with integrated PIR motion detection, whilst our ceiling mounted occupancy sensors are equipped with intelligent control technology, easily identifying when lighting is required.





Occupancy Sensors	9.20
<hr/>	
Lighting	9.21



EE810

**Presence Detector**

The EE810 is a one-channel occupancy sensor & the EE811 is a two channel occupancy sensor designed to detect low amplitude movements (e.g. worker sitting at a desk). Detection is achieved using

2 pyroelectric sensors, each located under a detection lens. The sensors measure the brightness in the room on a continuous basis and compare it against the level preset by means of potentiometer.

The head of the detectors are directional at 90° and can be used to adjust the detection area according to the room configuration.

**Presence Detector - Ceiling Mounted**

Presence detector 360° 1 channel  
Presence detector 360° 2 channel

Cat ref.

**EE810**  
**EE811**



EE880

**Corridor Motion Sensor**

The EE880 corridor occupancy sensor is sensitive to infrared radiation emitted as heat from a moving body. The detector switches on the load connected to it when a heat-emitting body

moves within in its detection area.

The load remains lit for the period of time to which the detector has been set and until

it no longer detects movement in its surveillance area. This detector has been specially designed to meet the needs of corridors.

**Corridor Motion Detector - Ceiling Mounted**

IR corridor motion detector

Cat ref.

**EE880**



EE883

**High Frequency Detector**

The EE883 is a ceiling-mounted motion detector, active over 360°.

The detector employs Hyper Frequency technology and reacts to movements regardless of the temperature.

It can detect movements through doors, windows and even non-metallic low-thickness partitions.

**High Frequency Detector - Ceiling Mounted**

Circulation sensor high frequency

Cat ref.

**EE883**



EE610

Wall Mounted

LED Floodlights		Cat ref.
LED floodlight with PIR 220/360 white		<b>EE600</b>
LED floodlight with PIR 220/360 RF QL		<b>TRE600</b>
LED deco lamp with IR detector white		<b>EE610</b>



# Klik Project Service

One of the characteristics of prefabricated wiring systems is that they are bespoke and made for a particular project. The product range is complemented by our specially developed Klik 7 pin service offer.

## Sales

Highly trained, with an in depth technical understanding of Klik, the engineers are able to discuss in detail both the pluggability and control options available to the designer/consultant for the project.

## Klik training

Klik project installations are carried out by electrical contractors who have been trained to the relevant level of competence. We will continually provide training to contractors from basic level through to advanced commissioning level. Our Klik project partners will have access to dedicated technical information and support from our technical engineers.

## Design and quotation

Our design and quotation team use a dedicated software package to produce a fully marked up lighting distribution design layer drawing showing positions of products and cable runs. Volt drop and  $Z_s$  calculations for the system based on design length and cross sectional area. A comprehensive product list, presented in your format, by room, area or floor. A quotation in the format you require and finally a schedule of circuits with all necessary information already completed.

Once your quote has been sent to you we will contact you to ascertain it has been received, is clear, and meets your requirements. At this stage we will add to, or change the design as necessary to meet any changes to specification.

## Order process

Once the order has been received our system will break it down to sub-orders to match the delivery schedule and products required by room or area. You will receive an order and delivery schedule confirmation.

## Delivery and logistics

A dedicated team will fulfil the orders as required for dispatch direct to site. The Klik 7 pin components will be grouped to the customers requirements.

## Technical support and commissioning

A dedicated team of Technical Support Engineers are on hand to assist with any system issues arising during installation. Most Klik 7 pin products will be easily setup on site by installers. However, some of the more in-depth control systems may require commissioning, we can quote for this service as part of the project.

**To learn more about our Klik Project Service offering, please contact us:**

**Contact number: 01952 675600**  
**Email: [estimation@hager.co.uk](mailto:estimation@hager.co.uk)**  
**Faxline: 01952 675557**

Product Description	Klik Product identification	BS number	Description
<b>Klik Lighting Distribution System</b>	KLDS	BS 5733:2010	General requirements for Electrical Accessories
<b>Occupancy Sensor</b>	EEK*W	IEC 60669-1, IEC 60669-2-1	Switches for household & similar fixed electrical installations Part 2-1 for Electronic switches.
<b>Mounting Boxes</b>	MB	BS 6972:1988	General requirements for Luminaire supporting couplers for domestic, light industrial & commercial use
<b>Mounting Boxes</b>	MP	BS 5733:2010	General requirements for Electrical Accessories
<b>Klik Ceiling Roses, Plugs, Outlets &amp; Pre-Wired Leads</b>	S, P, PCR	BS 5733:2010 BS 6972:1988	General requirements for Electrical Accessories General requirements for Luminaire supporting couplers for domestic, light industrial & commercial use
<b>PVC Flexible Cord</b>	PVC	BS 6500:2000	Flexible cords rated to 300/350V for use with appliances & equipment intended for domestic, office & similar environments.
<b>LSF Flexible Cord</b>	LSF	BS 6500:2000 BS 7211:1998	Flexible cords rated to 300/350V for use with appliances & equipment intended for domestic, office & similar environments.

## Product Materials

Klik plugs and sockets feature solid brass terminals and phosphor bronze contacts for good conductivity. Moulded components are manufactured from high quality thermoplastics.

## Klik Terminal Capacities

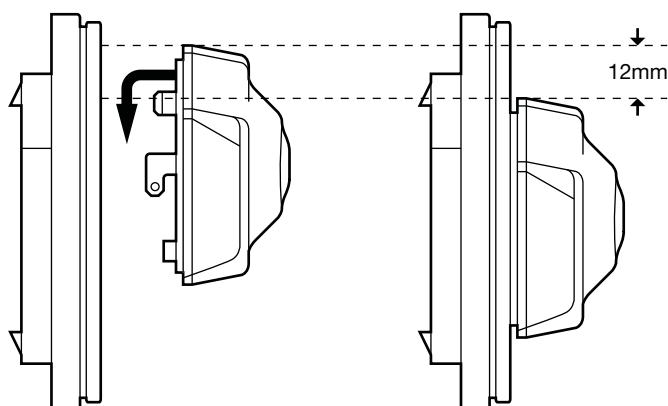
	Number of Conductors				
	0.75mm <sup>2</sup>	1.0mm <sup>2</sup>	1.5mm <sup>2</sup>	2.5mm <sup>2</sup>	4.0mm <sup>2</sup>
<b>Socket Outlets</b>	-	5	4	3	2
<b>Plugs P22, P64X, P26</b>	1	1	-	-	-

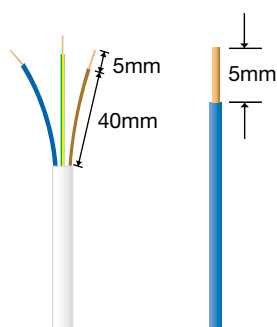
## Cables for Klik Plugs

	0.75mm <sup>2</sup> PVC / LSF 3 Core	0.75mm <sup>2</sup> PVC / LSF 4 Core	1.0mm <sup>2</sup> PVC / LSF 3 Core	1.0mm <sup>2</sup> PVC / LSF 4 Core
<b>P22</b>	Y	-	Y	-
<b>P64AX</b>	Y	Y	Y	Y

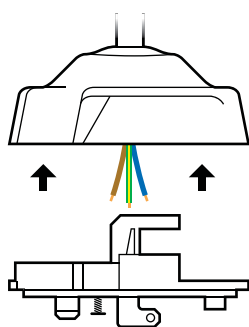
## Application Notes

The mating face of each interface module must be mounted 0.1mm minimum proud of its proposed surround. Engaged plug sits centrally on socket but a minimum of 12mm extra clearance should be maintained north of the upper load grip to allow plug travel.



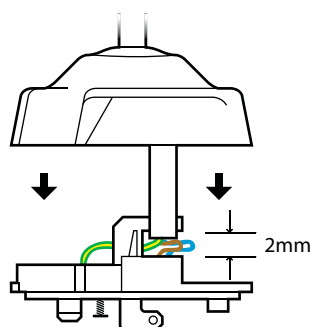


1. Strip cable as above -  
Note: Trim cable tails to  
double over for better  
terminal contact.



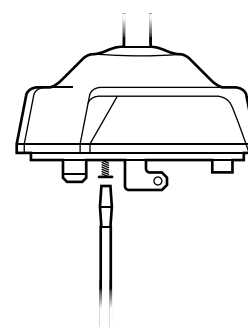
2. Remove plug cover.

3. Pass cable through plug cover  
centre hole.



4. Terminate conductors into  
terminals.

5. Push outer sheath of cable  
firmly into jaws of sheath grip,  
making sure that at least 2mm  
of sheath protrudes below the  
grip.



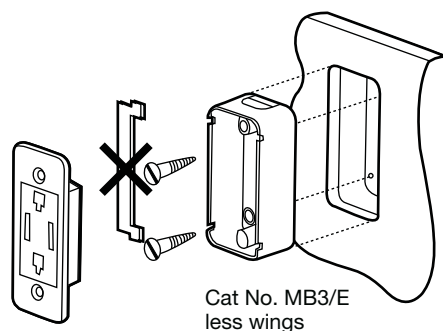
6. Refit cover.

## Klik Mounting Box Installation

Cable entry through spout in base of box for maximum wiring space.

MB2 knockouts in base and sides. Supplied with M4 x 20mm long  
fixing screws.

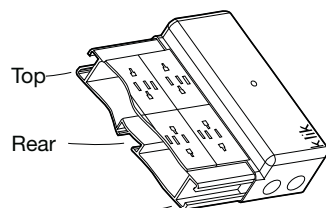
## Flush Mounting for Solid Walls



Cat No. S21

## Mounting Methods

- Hanging from ceiling  
suspension system with  
Caddy Clips™
- Direct fixing to lighting  
trunking
- Direct fixing to ceiling or wall  
with No. 8 screws



Drop rods on sides



Screw to surface

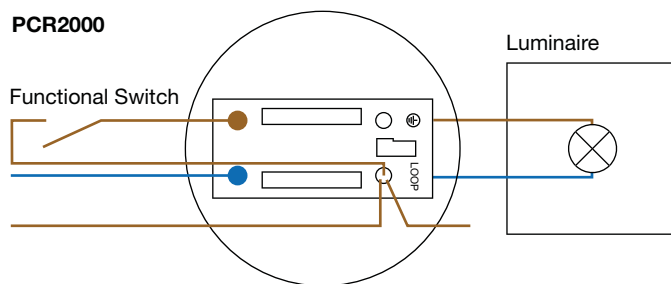


Drop rods on rear

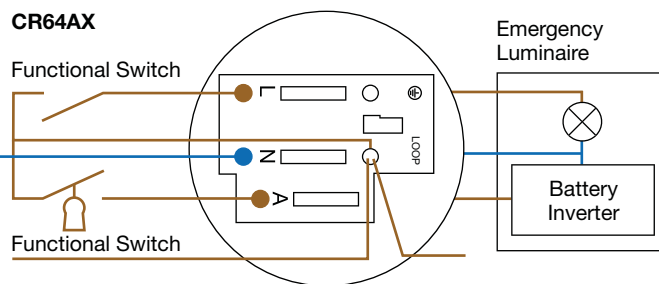


Bottom

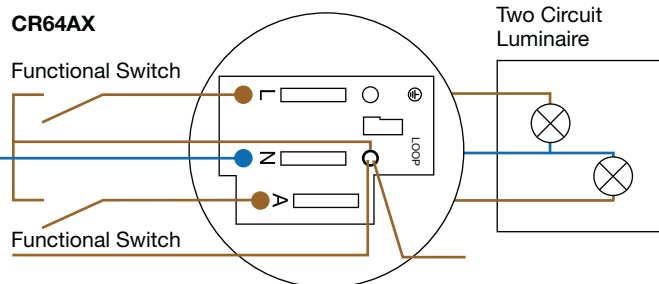
## PCR2000



## CR64AX

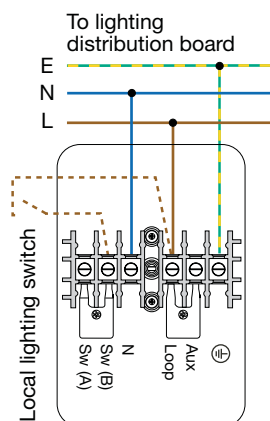


## CR64AX

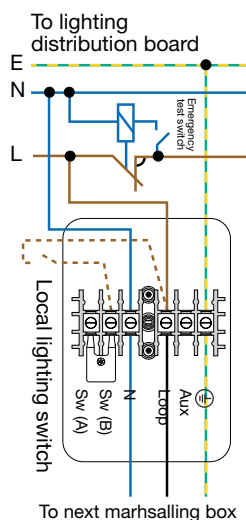


Note: earth connections omitted for clarity

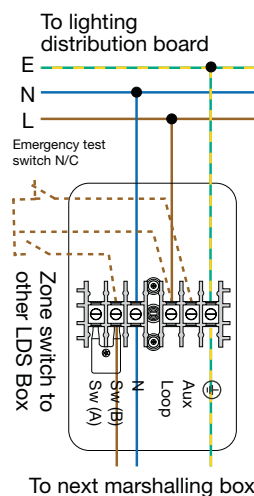
## Local Lighting Switch Control Permanent emergency feed



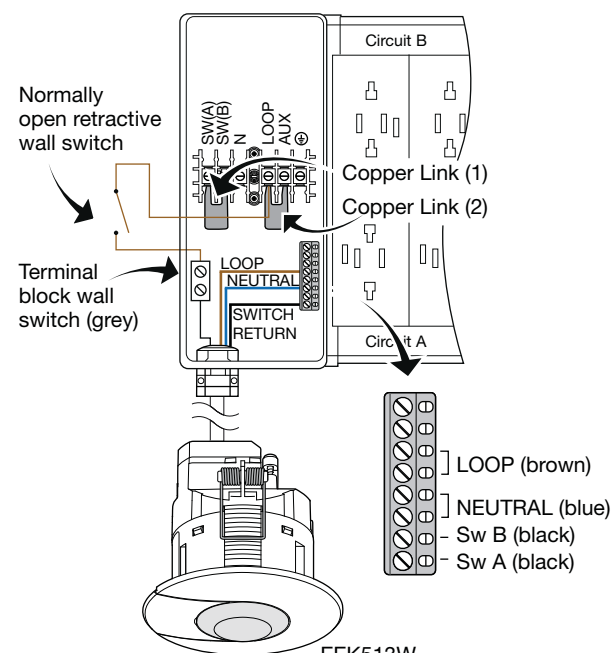
## Local Lighting Switch Control Centralised emergency test via keyswitch



## Zone Lighting Control Local emergency test control

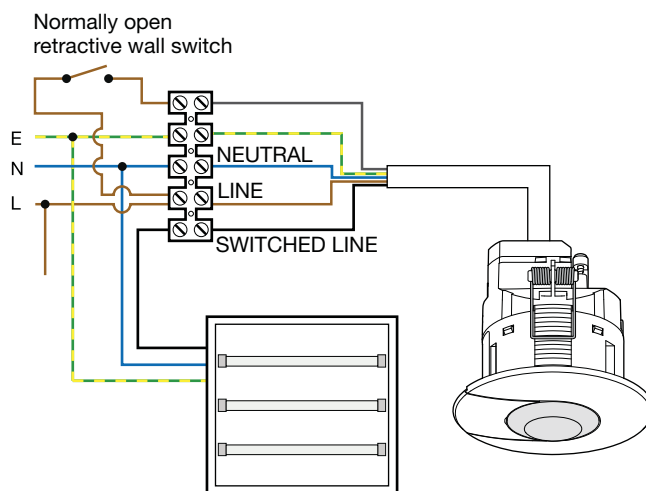


## All ways switched by a single Hager EEK513W occupancy sensor



Switch wire to be connected as required.

## Connected directly to a single luminaire

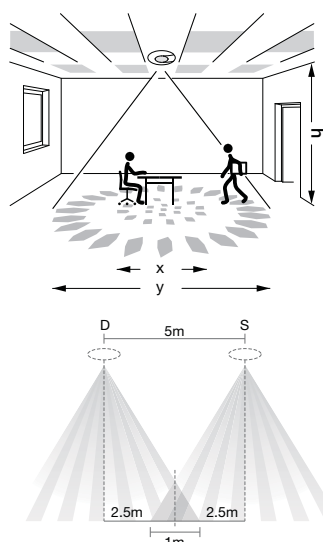




## Technical Characteristics

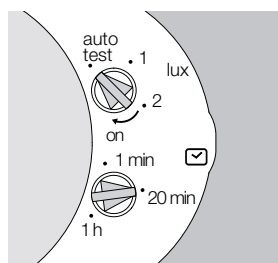
	EEK513W / EEK515W	KLOS6LR
Detection range	motion area: diameter 7m (product installed at 2½m height) presence area: diameter 5m (product installed at 2½m height)	Primary Zone 10m Secondary zone 15m to 25m
Supply voltage	230 V AC + 10% -15%	230VAC
Frequency	50/60 Hz	
Local lux threshold setting	5 to 1000 lux	30 to 1000 Lux
Local time setting	1 min to 1hr	10 seconds to 40 minutes
Commissioning via installer remote control	EEK001 for power up, absence / presence mode, timer active / passive cell	
Control with IR user remote control	EEK002 for ON / OFF override	
Output	16A AC1 relay output (cut live): - 2300W incandescent or 230V halogen: > 26000 cycles - 1500W VLV halogen lamps with ferromagnetic or electronic transformer: > 35000 cycles - 1000W / 130 µF parallel compensated fluo tube: > 50000 cycles -23 x 23W fluo-compact with electronic ballast: > 20000 cycles	
Push button input	phase input for absence / presence detection (semi-automatic / automatic mode) same phase as power supply.	
Terminals	for 1.5mm <sup>2</sup> rigid / flexible wires	
Power dissipation	300mW	
Isolation class	II	II
Protection	IP41 / IK03	IP41
Operating temperature	-10°C to +45°C	-20°C to +50°C
Storage temperature	-20°C to +60°C	-35°C to +70°C
Standards	IEC 60669-1, IEC 60669-2-1	

### Detection areas

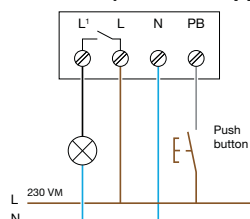


H	2.5m	3m	3.5m
X	5m	5m	5m
Y	7m	8m	9m

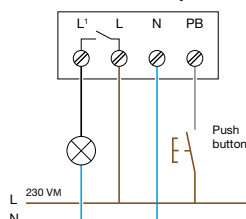
### Settings EEK513W/EEK515W



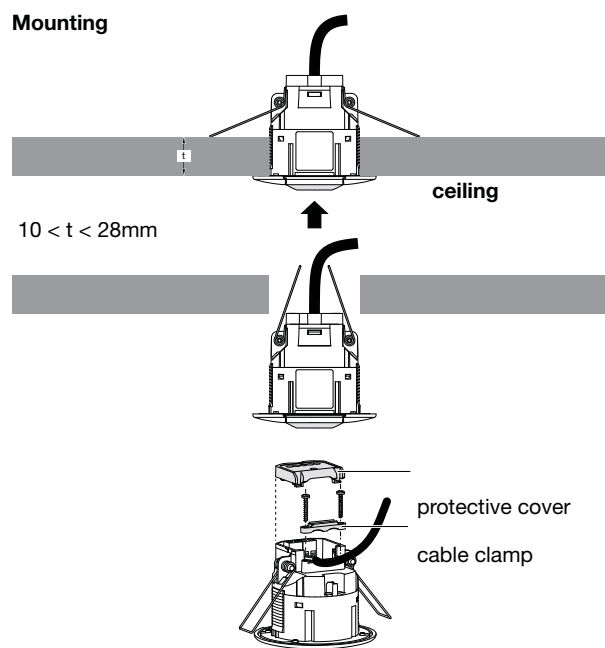
### Wiring diagram EEK510B (no cable supplied)

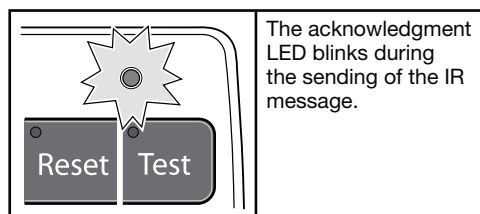
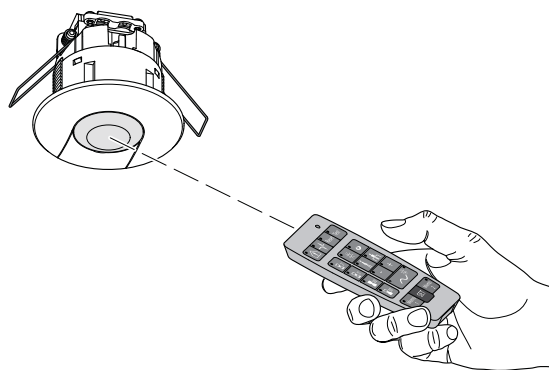
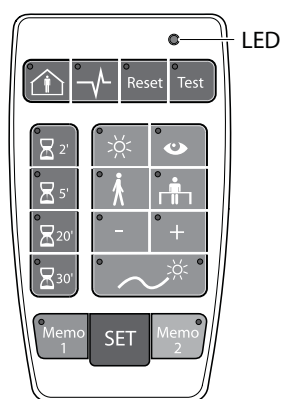


### EEK513W (Cable supplied connected to OS)



### Mounting





The acknowledgment LED blinks during the sending of the IR message.

**Technical specification**  
Power supply: 1x 3V CR2032  
Shelf life of battery: 2½ years  
Protection index: IP 30

## Use

The remote control allows the user to set or modify presence detector settings. When the potentiometer is on auto test it allows single and multiple settings.

The SET key is used to send the IR messages to the occupancy sensors. Multiple settings can be stored in Memo 1 and Memo 2 and re-called to set several devices.

## Single setting

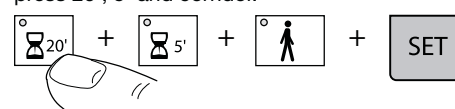
Example: reset



## Multiple settings

Define the parameters to be changed and press SET to send.

Example: for 25 minutes and corridor use, press 20', 5' and corridor.

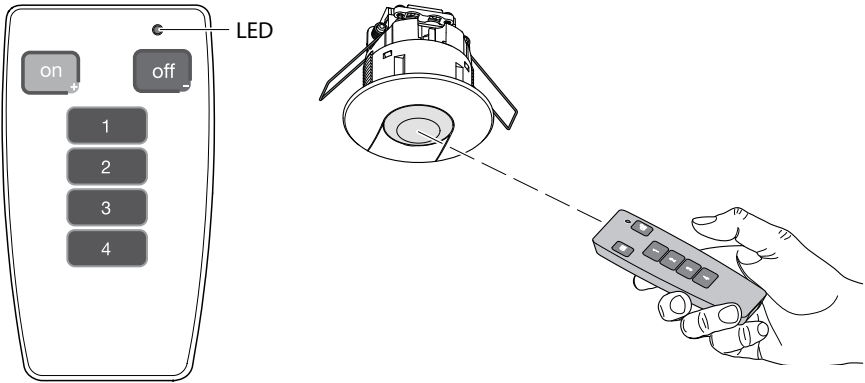


In the case of 2 opposite states the green LED denotes ON and red LED denotes OFF (except Presence / Absence).

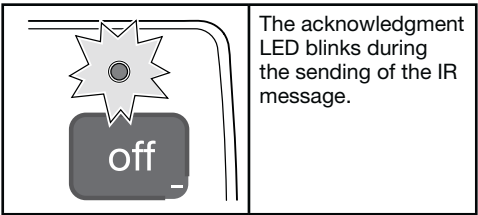
When no function is selected all LED's are OFF.

## Settings available

Key	Meaning	Indication	Function
	Presence	Green LED on	Presence on (automation mode)
	Absence	Red LED on	Absence on (semi automatic mode)
	Power Up	Green LED on	The light is automatically switched on for 30 seconds after power up
		Red LED on	During warm up phase, the light output is off
Reset	Reset	LED on	To return to factory settings (Lux = 400, time = 20 min, presence on, power up off and cell active)
Test	Test	LED on	To validate the detection area
	Time	LED on	To set the time It is possible to add times together e.g. press 2' and 5' for a time value of 7'
	Day level 1000 Lux	LED on	To set the value to 1000 Lux
	Learn	LED on	To learn the current Lux level
	Corridor 200 Lux	LED on	To set the value to 200 Lux
	Office 400 Lux	LED on	To set the value to 400 Lux
+	Lux +	LED on	To increase the Lux level (+100)
-	Lux -	LED on	To decrease the Lux level (-100)
	Active cell	Green LED on	The light is continuously measured
	Passive cell	RED LED on	The sensor will not switch the light off even if the ambient luminosity is sufficient
Memo and set Key			
Memo 1	Press	LED is on until a setting is changed	To load/unload Memo 1
	Long press	LED is on for 5s, then will blink until released. After release, the LED goes off in case of setting change	To save the current setting as Memo 1
Memo 2	Press	LED is on until a setting is changed	To load/unload Memo 2
	Long press	LED is on for 5s, then will blink until released. After release, the LED goes off in case of setting change	To save the current setting as Memo 2
SET	Short press (<5s)	LED flashes	To send an IR message of the current setting
	Long press (>5s but <10s) only available if no setting active	LED blinks until release press	To toggle automatic mode on DALI/DSI



**Use**  
The remote control allows the user to set or modify settings on the presence detectors EEK513W and EEK510B. Each button corresponds to a command.



**Technical specification**  
Power supply: 1x 3V CR2032  
Shelf life of battery: 3½ years  
Protection index: IP 30

Settings available

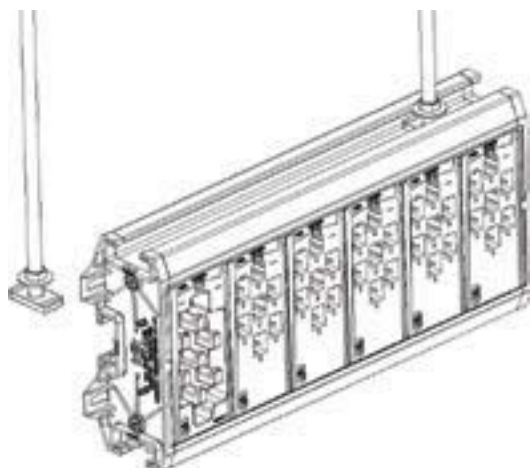
Key	Action	Function	Product Type
on +	Short Press (< 5s.)	On	EEK513W / EEK510B
	Long Press (> 5s.)	Dim up	EEK513W / EEK510B
off -	Short Press	Off	EEK513W / EEK510B
	Long Press (> 5s.)	Dim down	EEK513W / EEK510B
1	Short Press	To start scene 1	
	Long Press (> 5s.)	To start scene 1	
2	Short Press	To start scene 2	
	Long Press (> 5s.)	To start scene 2	
3	Short Press	To start scene 3	
	Long Press (> 5s.)	To start scene 3	
4	Short Press	To start scene 4	
	Long Press (> 5s.)	To start scene 4	

Product Description	Klik Product identification	BS number	Description
<b>Klik 7 pin Marshalling Boxes</b>	KLMB*W	BS 5733:2010	General Requirements for Electrical Accessories.
<b>Occupancy Sensor</b>	EEK*	IEC 60669-1, IEC 60669-2-1	Switches for household & similar fixed electrical installations Part 2-1 for Electronic switches.
<b>Conduit Box / Surface Connector</b>	KLPCR/7	BS 5733:2010	General requirements for Luminaire supporting couplers for domestic, light industrial & commercial use.
<b>Luminaire Leads</b>	KL B*, KLJ*, KLP*, KLT*	BS 5733:2010 BS EN 61535	General Requirements for Electrical Accessories. Installation couplers intended for permanent connection in fixed installations.
<b>LS0H Flexible Cord</b>	Supplied with luminaire lead	BS 6500:2000 BS 7211:1998	Flexible cords rated to 300/350V for use with appliances & equipment intended for domestic, office & similar environments.
<b>Klik Lighting Control Module</b>	KLCM	BS 5733:2010 F <sub>pr</sub> EN 60669-2-5  BS EN 61335:2009	General Requirements for Electrical Accessories. Switches for household and similar fixed electrical installations - Part 2-5; Particular requirements - Switches for related accessories for use in home and building electronic systems  Installation couplers intended for permanent connection in fixed installations. Excluding classes 10.1 & 10.3 are to aluminium enclosures

## Mounting Options for Drop Rod

### Option 1.

Klik 7 Pin LMB features open ends to allow you to slide the box into position before tightening for easier installation, or push the box up on to the nut and rotate to locate and tighten to secure.



### Option 2.

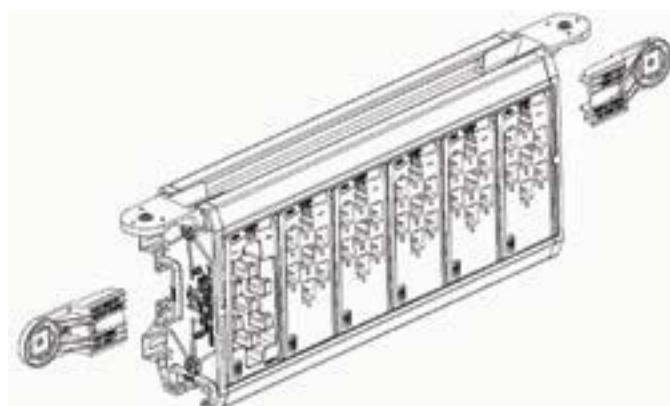
Single sided LMB can be mounted from the top as option 1 or from the rear as shown. Note: Double sided LMBs can only be mounted with option 1.



## Mounting Options for Wall & Ceiling

Klik 7 Pin LMB includes the Klik mounting accessory, this makes it much easier to mount LMB with Nail Guns or traditional fixings. 2 accessories are included with each LMB. Mounting Accessory can be clipped into the rear or top channel slot. It can be easily removed by inserting a screwdriver in the RELEASE slot.

**Note: Double sided LMB can only be mounted on top channel slot.**



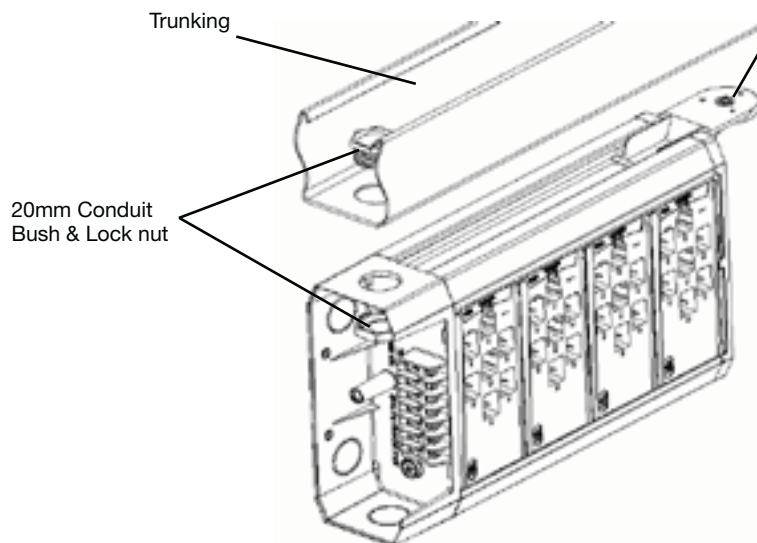
Screw mounting tabs (x4)



## Mounting Options for Trunking

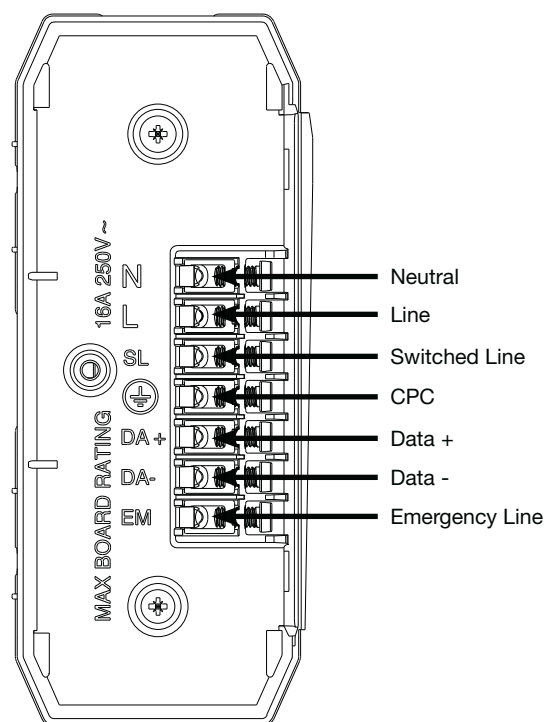
Mounting Accessory can be clipped into the rear or top channel slot. It can be easily removed by inserting a screwdriver in the RELEASE slot.

Use a machine screw and nut to secure to trunking using Mounting Accessory



## Fixed Wiring Connection

Klik 7 Pin LMB has 7 screw terminals available to the installer and are arranged in the end cap as per diagram. DA+/DA- connections can be used for DALI/DSI control.

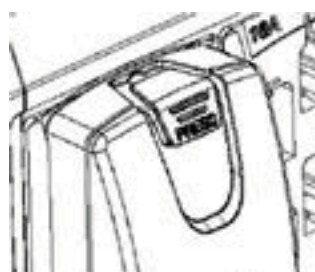
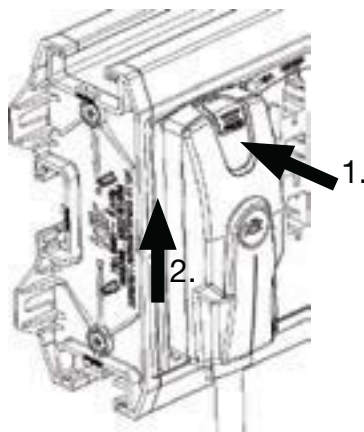
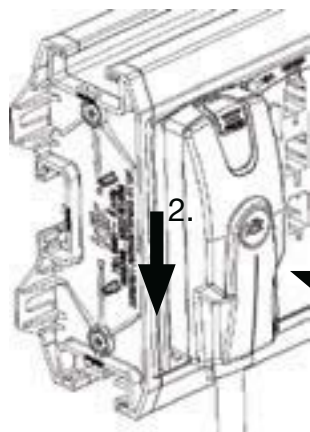


## Making a Connection

To connect, locate plug in socket and push down to connect and lock

To disconnect, press button to unlock and push up to remove.

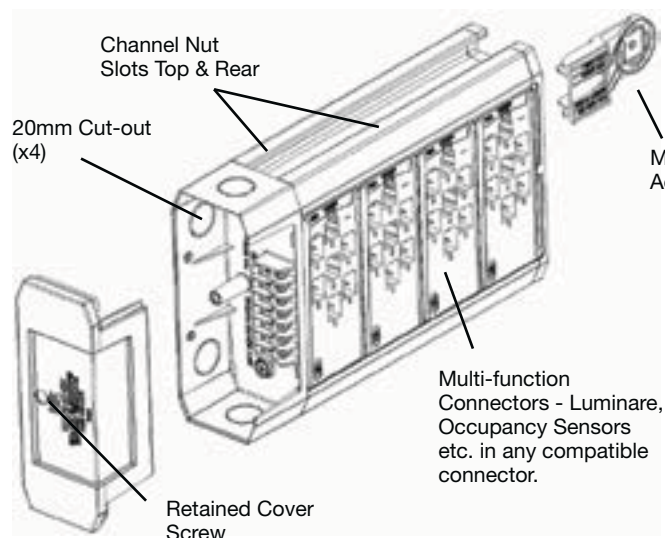
Plug type is identifiable by the colour of the button



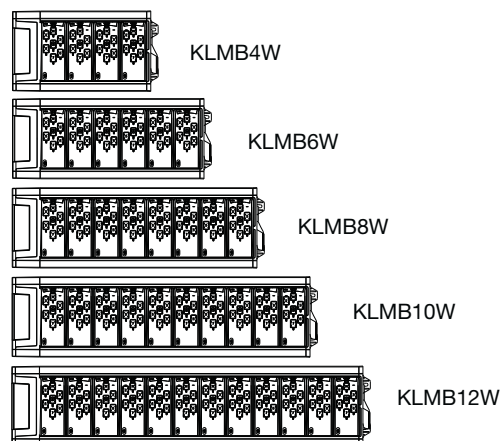
**White:** Luminaire Lead  
**Red:** Luminaire + Emergency  
**Black:** Link Lead  
**Blue:** Switching (OS, Wall)



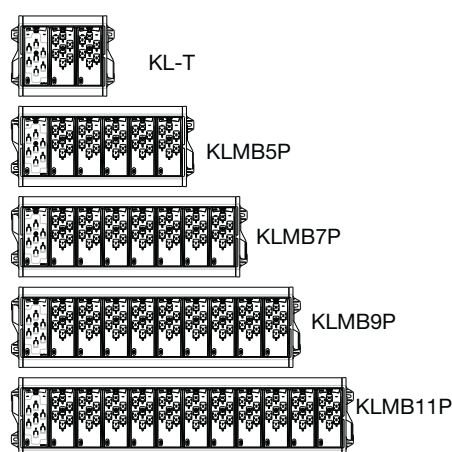
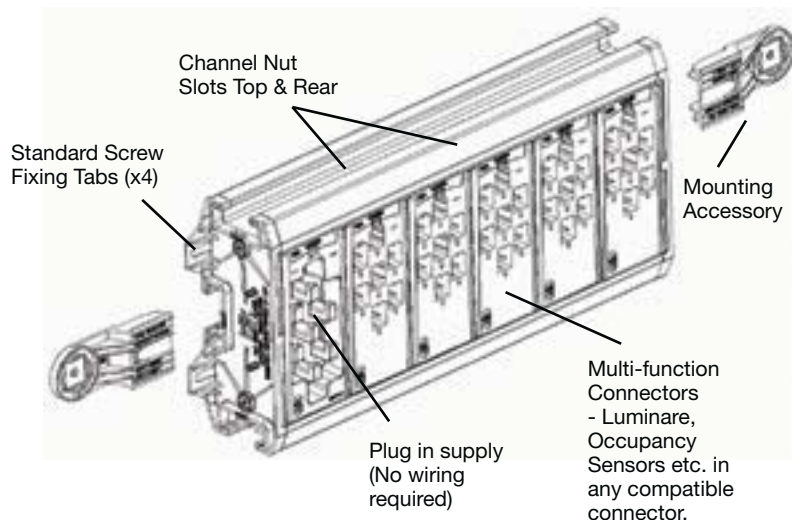
## Lighting Marshalling Boxes (LMB) - Fixed Wiring 16A Rated LMB Complying to BS 5733



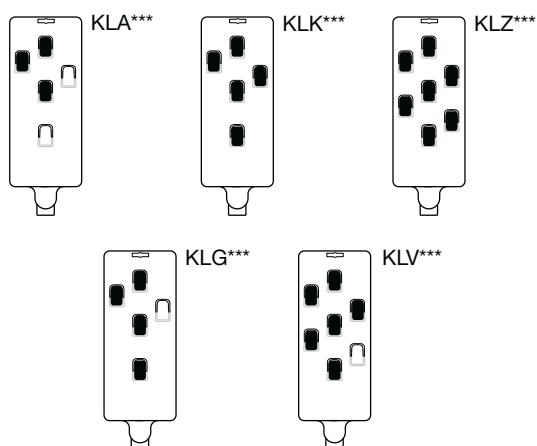
### Hard Wire LMB Range



## Lighting Marshalling Boxes (LMB) - Pluggable 16A Rated LMB Complying to BS 5733



### Link leads

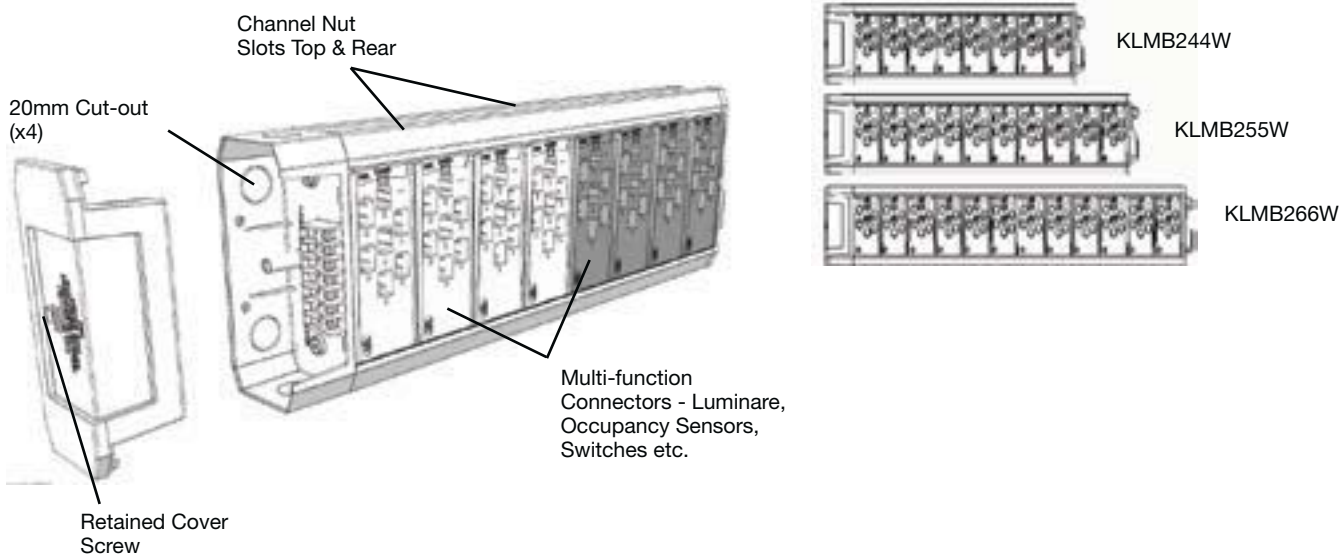


KLA***	L, N, CPC
KLK***	L, N, E, CPC
KLZ***	L, N, S, E, CPC
KLK***	L, N, S, E, DA+, CPC
KLZ***	L, N, S, E, DA+, DA-, CPC

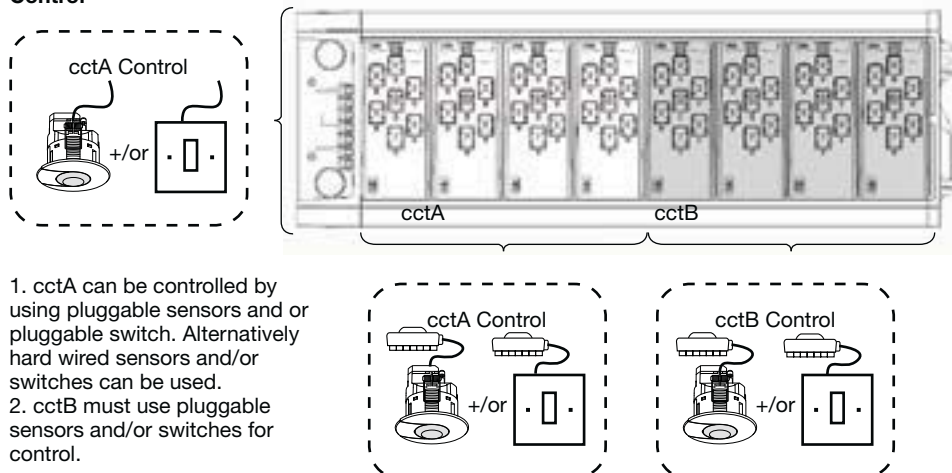
Key	
N	Neutral
L	Permanent Line
S	Switched Line
CPC	Circuit Protective Conductor
+	DA+
-	DA-
E	Emergency Line



## Dual Channel Lighting Marshalling Boxes (LMB) - Fixed Wiring 16A Rated LMB Complying to BS 5733



### Control

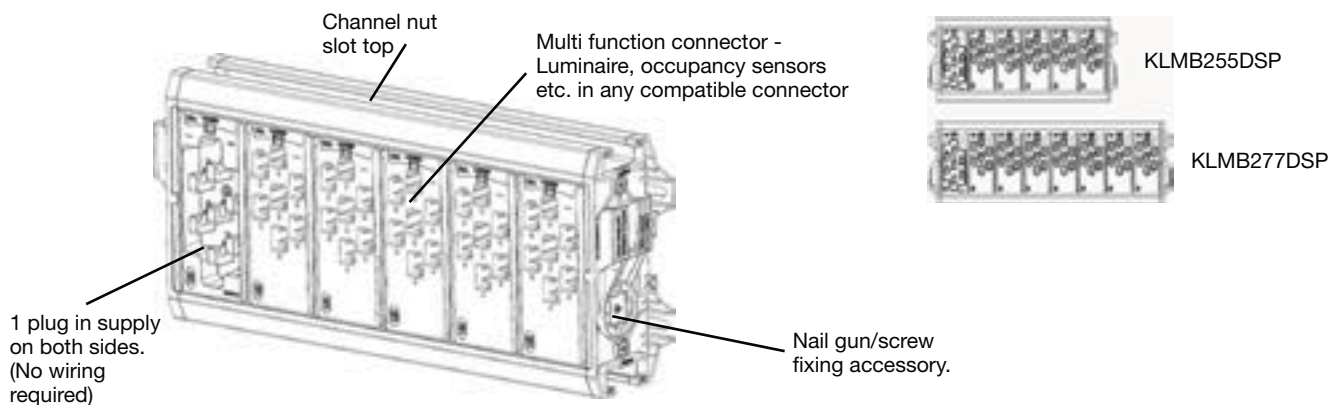


## Dual Supply Lighting Marshalling Boxes (LMB) - Pluggable. 2 x 16A Rated LMB Complying to BS 5733

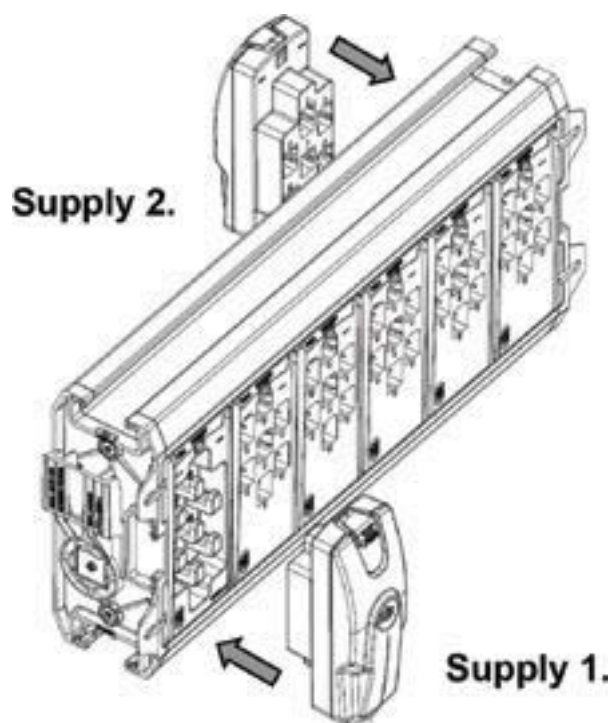
Designed for use with dual supply where independent control of each supply is required.

- Dual supply - Essential & Non-essential from one box.
- Independent control of each supply
- Wall switch\* override & dimming

\*When wall switch is used it must be connected on the same side as the sensor.

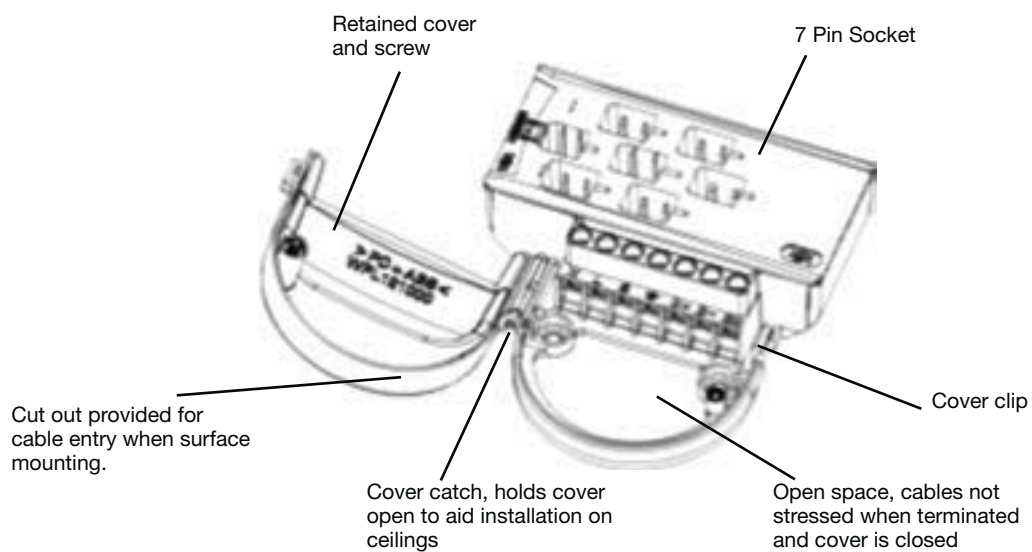


**Dual Channel Lighting Marshalling Boxes (LMB) - Fixed Wiring**  
16A Rated LMB Complying to BS 5733



**Dual Channel Lighting Marshalling Boxes (LMB) - Fixed Wiring**  
16A Rated LMB Complying to BS 5733





PCR can be mounted in two ways, firstly on to conduit box or secondly direct on to a surface.



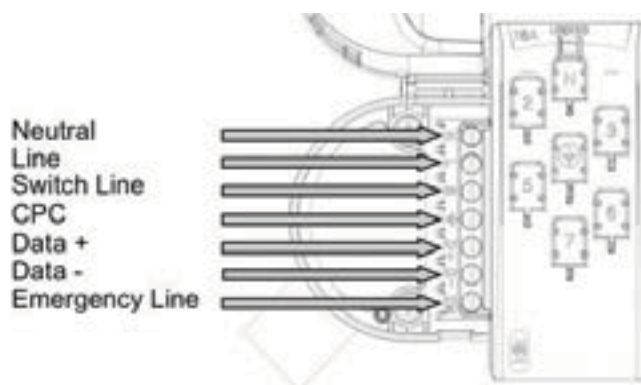
KLPCR/7

Terminating cables.

Terminal screws are retained in pockets.

Max Terminal Capacity 2x4mm<sup>2</sup>

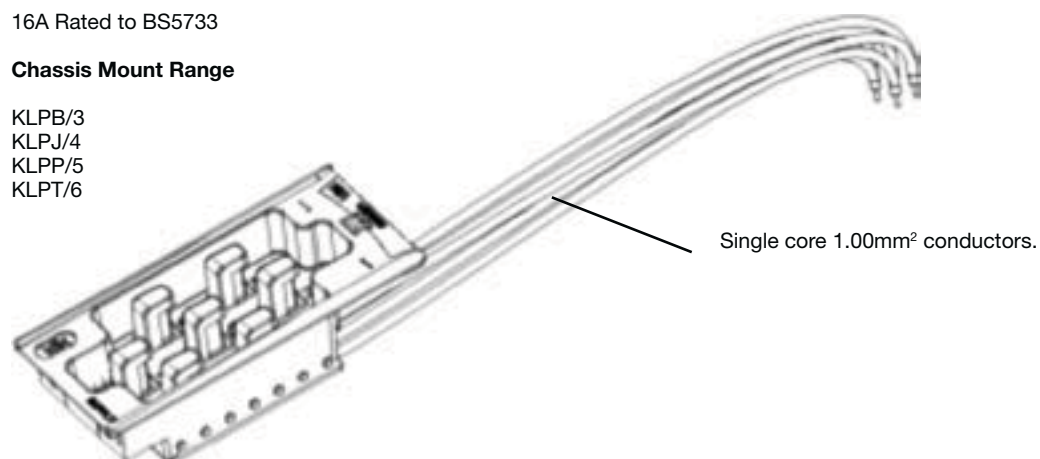
Conductor strip length: 10mm.



16A Rated to BS5733

## Chassis Mount Range

KLPB/3  
KLPJ/4  
KLPP/5  
KLPT/6

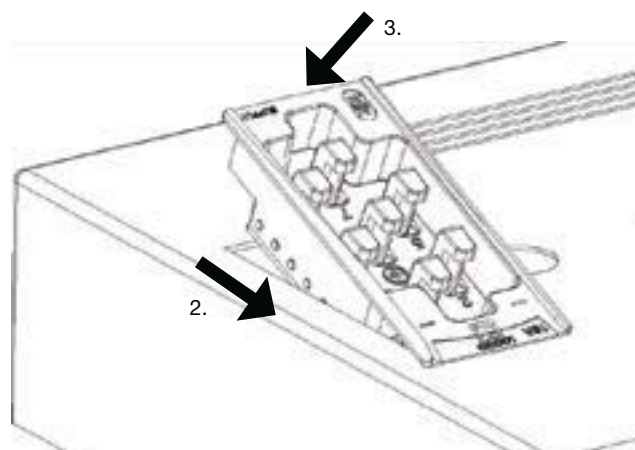


## Installation:

Create aperture in Luminaire if not already existing.

1. Insert cables through aperture
2. Locate fixed clips of socket in position at one end of aperture and push in.
3. Push down bottom end of connector until it clips down onto luminaire

Aperture Size: 97mmx42mm ( $\leq 1.2$ mm wall)



## Terminating Cables:

### KLPB/3 (Standard)

Brown - Switched line  
Blue - Neutral  
Green/Yellow - CPC

### KLPJ/4 (Standard + Emergency)

Brown - Switched Line  
Blue - Neutral  
Green/Yellow - CPC  
Black - Emergency Line

### KLPP/5 (Digital)

Brown - Line  
Blue - Neutral  
Green/Yellow - CPC  
Orange - DA+  
White - DA-

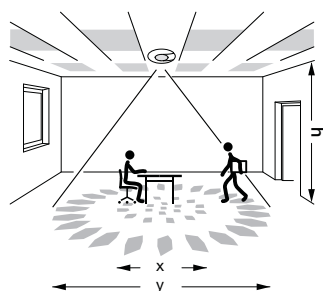
### KLPT/6 (Digital + Emergency)

Brown - Line  
Blue - Neutral  
Green/Yellow - CPC  
Orange - DA+  
White - DA-  
Black - Emergency Line

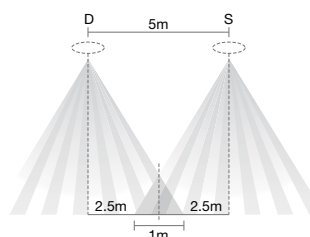
## Technical Characteristics

	EEK513P / EEK515P	EEK523P / EEK525P	KLCM-OS
Detection range	motion area: diameter 7m (product installed at 2½m height) presence area: diameter 5m (product installed at 2½m height)		motion area: diameter 6m (product installed at 2½m height) presence area: diameter 6m (product installed at 2½m height)
Supply voltage	230 V AC + 10% -15%		12V DC
Frequency	50/60 Hz		
Local lux threshold setting	5 to 1000 lux	3 modes available	0 - 4000 Lux
Local time setting	1 min to 1hr		Via KLCM
Commissioning via installer remote control	EEK001 for power up, absence / presence mode, timer active / passive cell		KlikLink App
Control with IR user remote control	EEK002 for ON / OFF override	EEK002 for ON / OFF override and dimming up / down	KlikLink App
Output	16A AC1 relay output (cut live): - 2300W incandescent or 230V halogen: > 26000 cycles - 1500W VLV halogen lamps with ferromagnetic or electronic transformer: > 35000 cycles - 1000W / 130 µF parallel compensated fluo tube: > 50000 cycles - 23 x 23W fluo-compact with electronic ballast: > 20000 cycles	14V / 50mA (for a DALI bus with 24 ballasts) - No isolation between the mains and the DALI bus	RS485
Push button input	phase input for absence / presence detection (semi-automatic / automatic mode) same phase as power supply.	to dim up / down and absence / presence detection (semi-automatic / automatic mode) same phase as power supply.	N/A
Terminals	for 1.5mm² rigid / flexible wires		RJ11
Power dissipation	300mW	60mW	3mA @ 12V DC
Isolation class	II		
Protection	IP41 / IK03		
Operating temperature	-10°C to +45°C		-20°C to +60°C
Storage temperature	-20°C to +60°C		-2°C to +70°C
Standards	IEC 60669-1, IEC 60669-2-1		BS EN55015:2013

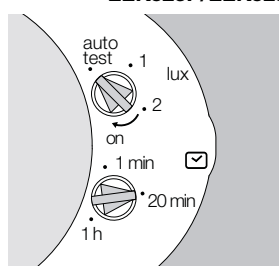
### Detection areas



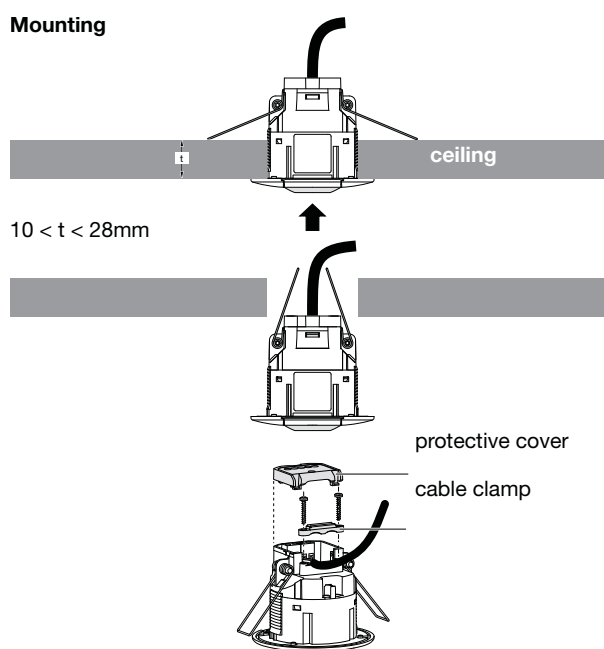
H	2.5m	3m	3.5m
X	5m	5m	5m
Y	7m	8m	9m

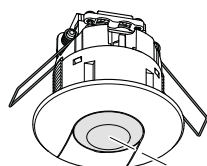
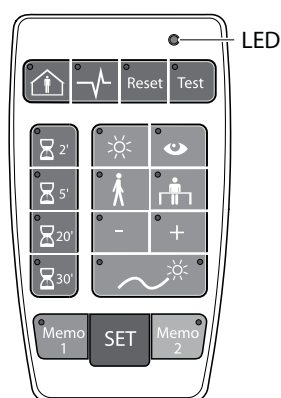


### Settings EEK513P/EEK515P EEK523P/EEK525P



### Mounting





## Use

The remote control allows the user to set or modify presence detector settings. When the potentiometer is on auto test it allows single and multiple settings.

The SET key is used to send the IR messages to the occupancy sensors. Multiple settings can be stored in Memo 1 and Memo 2 and re-called to set several devices.

## Single setting

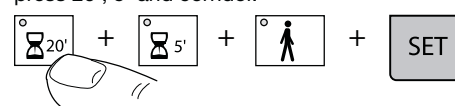
Example: reset



## Multiple settings

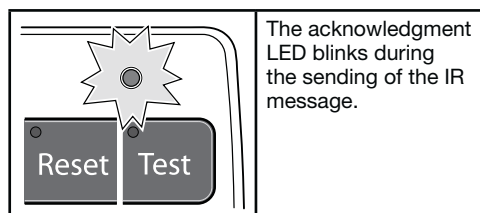
Define the parameters to be changed and press SET to send.

Example: for 25 minutes and corridor use, press 20', 5' and corridor.



In the case of 2 opposite states the green LED denotes ON and red LED denotes OFF (except Presence / Absence).

When no function is selected all LED's are OFF.



## Technical specification

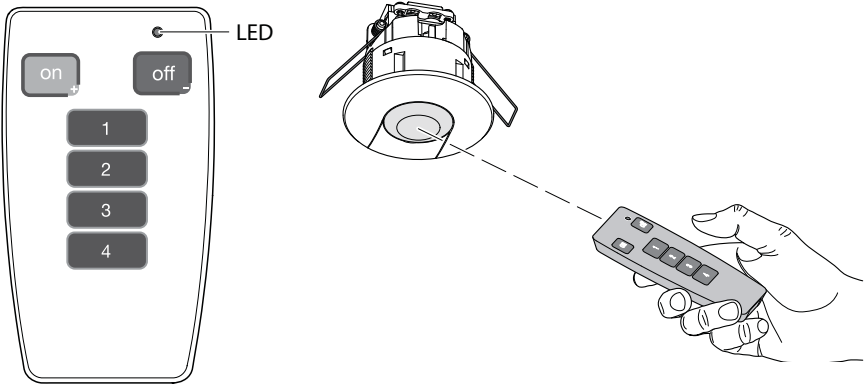
Power supply: 1x 3V CR2032

Shelf life of battery: 2½ years

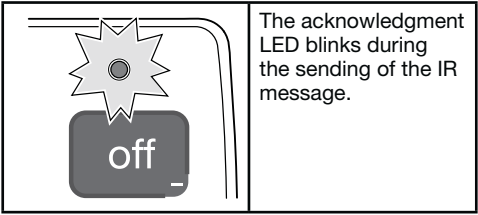
Protection index: IP 30

## Settings available

Key	Meaning	Indication	Function
	Presence	Green LED on	Presence on (automation mode)
	Absence	Red LED on	Absence on (semi automatic mode)
	Power Up	Green LED on	The light is automatically switched on for 30 seconds after power up
		Red LED on	During warm up phase, the light output is off
Reset	Reset	LED on	To return to factory settings (Lux = 400, time = 20 min, presence on, power up off and cell active)
Test	Test	LED on	To validate the detection area
	Time	LED on	To set the time It is possible to add times together e.g. press 2' and 5' for a time value of 7'
	Day level 1000 Lux	LED on	To set the value to 1000 Lux
	Learn	LED on	To learn the current Lux level
	Corridor 200 Lux	LED on	To set the value to 200 Lux
	Office 400 Lux	LED on	To set the value to 400 Lux
+	Lux +	LED on	To increase the Lux level (+100)
-	Lux -	LED on	To decrease the Lux level (-100)
	Active cell	Green LED on	The light is continuously measured
	Passive cell	RED LED on	The sensor will not switch the light off even if the ambient luminosity is sufficient
Memo and set Key			
Memo 1	Press	LED is on until a setting is changed	To load/unload Memo 1
	Long press	LED is on for 5s, then will blink until released. After release, the LED goes off in case of setting change	To save the current setting as Memo 1
Memo 2	Press	LED is on until a setting is changed	To load/unload Memo 2
	Long press	LED is on for 5s, then will blink until released. After release, the LED goes off in case of setting change	To save the current setting as Memo 2
SET	Short press (<5s)	LED flashes	To send an IR message of the current setting
	Long press (>5s but <10s) only available if no setting active	LED blinks until release press	To toggle automatic mode on DALI/DSI



**Use**  
The remote control allows the user to set or modify settings on the presence detectors EEK513P/EEK515P and EEK523P and EEK525P  
Each button corresponds to a command.

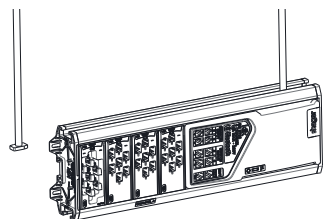


**Technical specification**  
Power supply: 1x 3V CR2032  
Shelf life of battery: 3½ years  
Protection index: IP 30

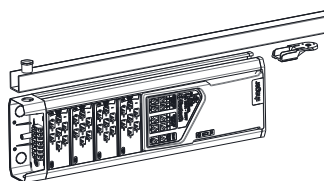
**Settings available**

Key	Action	Function	Product Type
on +	Short Press (< 5s.)	On	EEK513P / EEK515P EEK523P / EEK525P
	Long Press (> 5s.)	Dim up	EEK523P / EEK525P
off -	Short Press	Off	EEK513P / EEK515P EEK523P / EEK525P
	Long Press (> 5s.)	Dim down	EEK523P / EEK525P
1	Short Press	To start scene 1	EEK523P / EEK525P
	Long Press (> 5s.)	To start scene 1	
2	Short Press	To start scene 2	
	Long Press (> 5s.)	To start scene 2	
3	Short Press	To start scene 3	
	Long Press (> 5s.)	To start scene 3	
4	Short Press	To start scene 4	
	Long Press (> 5s.)	To start scene 4	

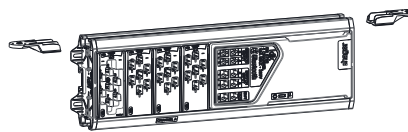
## Fixing Methods



Drop Rods



Trunking  
(Not possible for plug-in  
KLCM412P)



Direct: e.g. nail gun or screw fixing  
(not possible for hard-wire KLCM413W)

## Switch inputs - 1 to 4 (retractive wall switch ref: WMGS13R)

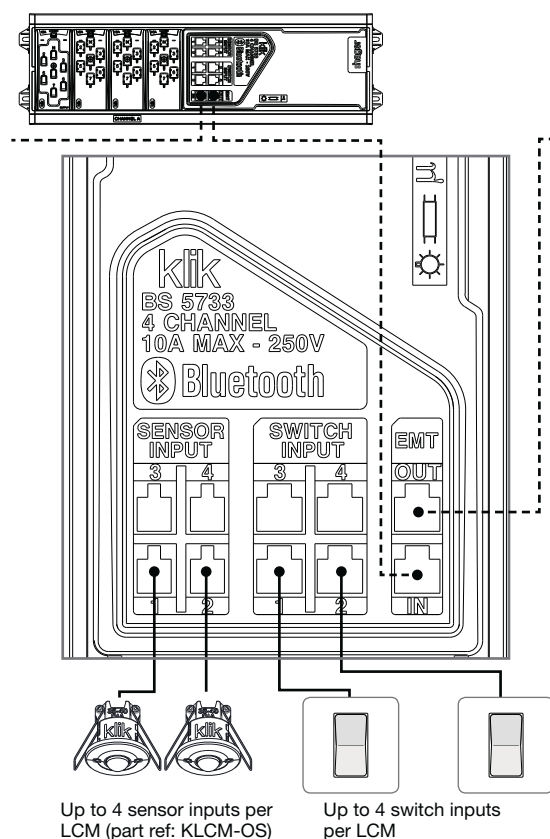
Orange/White	Scene 1	
Orange	Scene 2	
Green/White	Scene 3	
Blue	Scene 4	
Brown/White	On/Dim Up	
Blue/White	Off/Dim Down	
Brown	0V (Common)	
Green	12V (Not Used, must not be connected.)	

## Emergency test in & out

Orange/White	Override - All Outputs On
Orange	Override - All Outputs Off
Green/White	Corridor Hold Line
Blue	Emergency Test (Timer 1)
Blue/White	Emergency Test (Timer 2)
Green	Emergency Test (Timer 3)
Brown	Common
Brown/White	Not Used.

## Occupancy Sensor Technical Characteristics

Technical Characteristics	KLCM-30S	KLCM-50S
Supply Voltage	SELV (12VDC)	SELV (12VDC)
Detection Area	360° 5m to 15m	360° 15m
Receiver Class	2	2
Parasitic Power	534uA	874uA
Duration of lighting output operation	Via KlikLink App & LCM	Via KlikLink App & LCM
Luminosity threshold	Via KlikLink App & LCM	Via KlikLink App & LCM
Recommended installation height	2.5m	2.5m
Operating temperature	-20°C to +50°C	-20°C to +50°C
Storage temperature	-35°C to +70°C	-35°C to +70°C
Insulation class	II	II
Protection rating	IP41	IP41
Standards	BS EN55015:2013, BS EN61547:2009	BS EN55015:2013, BS EN61547:2009
Maximum installation altitude	2000m	2000m
Polution degree	2	2
Connection	RJ11 6P4C	RJ11 6P4C
Dimensions	High: 70mm, Diameter: 101mm	High: 70mm, Diameter: 101mm
Weight	110 grams	110 grams
Mounting hole diameter	85mm	85mm



- Plug-in sensor and switch control
- Any port can be configured via the KlikLink App.
- Grouping LCMs via RJ45 leads for corridor hold and groups for emergency test
- Programmed via the KlikLink app. Download from the AppStore.

#### Wiring accessories from the Sollysta Grid range

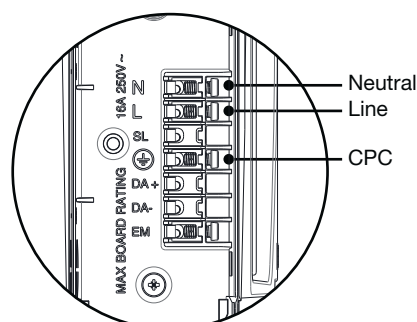
Centre off retractive switch module	WMGS13R
White moulded Grid Plates	WMGPx (1,2,3,4,6 & 8) G
Grid Frames	WMGFx (1,2 & 3/4) G

## Technical Characteristics

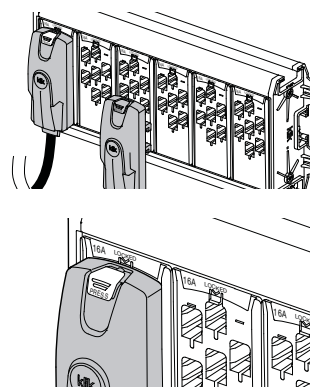
Number of channels	4
Number of outputs per channel	3 (hard wired LCM has 4 outputs on channel A)
Number of sensor inputs	4 (KLCM-OS)
Number of switch inputs	4
Supply Voltage	230V AC 50Hz
Rated current	10A (total load)
Rated current each connector	10A
Complies with	BS 5733:2010, BS EN 60669-2-5 BS EN 61535:2009 - (Excluding clauses 10.1 and 10.3 due to Aluminium enclosure)
IP protection	IP20
Connection for programming	Bluetooth Smart (Bluetooth 4) (only available on Apple iPad)
Dimensions	Height 145mm   Width 440mm   Depth 58mm   Weight 1.9kg

## Supply input connection

Hard wired



Pluggable



- Connecting the supply lead: plug in and push down
- Disconnecting the supply lead: press button and push up.

#### Plug colour coding

White: Luminaire Lead  
Red: Luminaire & Emergency  
Black: Link Lead



## LCM Functions (via the KlikLink App)

### Lighting Configuration Profiles.

The KLCM KlikLink App is pre-loaded with the most common room type configuration profiles. These are selected in the File Manager section of the KlikLink App and are provided to speed up the LCM set-up.

### Switching - On/Off.

Each channel is capable of being switched via one of 4 switch inputs. This is an on/ off state utilised for standard luminaires.

### Presence and Absence Sensing.

Each output channel can be set to Presence or Absence and can be different on each channel. Absence detection will give the best energy efficiencies by minimising unwanted activations, whilst Presence gives an immediate response to occupation in an area.

### Sensor with integral lux sensor.

This allows daylight dimming and switch utilising any natural light available

### Dimming – DSI, DALI (Broadcast).

The LCM takes information from the sensor and broadcasts a signal on the required channel to all connected luminaires and can be controlled via a retractive wall switch or utilising the daylight dimming function. The protocol for this broadcast is selected during programming.

### Scene Setting.

4 lighting scenes are possible (plus global Up/Down-On/Off) and can be achieved with via centre off 2 pole retractive grid switch modules (3 grid modules to control all inputs) The LCM can be configured during programming to have 2 separate Scene profiles.

### Partition Switch Function.

This allows the control of a room with a partition and switch fitted. If a partitioned room has individual wall switches controlling each section, when the partition is removed, both sets of switches could control the whole area. This can be used in conjunction with profiles.

### Corridor Hold Function.

This is achieved by linking a series of LCMs together with an RJ45 lead and assigning certain channels with the attributes of a corridor. If there is any area occupied, the associated corridor lighting will be held ON.

### Variable burn in up to 250 hrs.

Allows dimmable luminaires to be set at 100% output for the required burn in time period (Dimming is disabled during this period) This may be beneficial to the life of the lamps. After the burn in time, the LCM will return to any programmes set (e.g. dimming)

### Integral Emergency Test Timers.

This allows the emergency test to be carried out via an emergency test switch. The timers can be set for up to 5 hours within the App. Whilst on test the other luminaires will dim to a pre-set value.

### Light Level Offset between Channels.

This function allows the levels from different channels to set as a percentage of the lead channel. For example when a number of different dimming levels are set within an area as a scene set, the lighting levels can be adjusted universally across all channels, whilst maintaining the relationship between channels.

### 3 Level Timeout.

Allows the lighting to turn Off or Down in three stages. When no presence has been detected for the timeout period, the lighting can be turned down to the first set level, after a further period the lighting can be reduced further, after the final time period the luminaires can be turned off or driven to a minimum value set during programming.







[check.hager](http://check.hager)

# Counterfeiting: a plague gaining ground...

The counterfeiting of products is gaining ground throughout the world. In 2002 counterfeiting represented 7% of the world's trade, this has now risen to 10%. Counterfeiting does not only concern luxury items, but also covers electrical products where people's safety is endangered!

Counterfeit products do not bring any guarantee of safety or quality for our customers. These products can be dangerous, contain inappropriate materials or be of poor quality. In certain cases only the external appearance is preserved and the vital functions are removed to reduce the costs!



# Let's act together!

# 1

## **Authentication Process**

All of our circuit breakers, switches and earth leakage circuit breakers have been assigned a unique identification number which can be located on the side of the product. The identification number from each product is then stored in a protected data base. If it doesn't have a number please contact us immediately.

# 2

## **Dedicated Website**

Our customers can access this database to check the authenticity of a Hager product by going to <https://check.hager.com>. The website will check the validity of the identification number on the product and confirm if the product is an authentic Hager product or a suspected counterfeit product, this result will be immediate.

# 3

## **Action Plan**

Check the identification number by going to <https://check.hager.com>. If [check.hager.com](https://check.hager.com) identifies the product as a counterfeit contact Hager on 01952 675612 along with the details of the wholesaler from which the product was purchased. We will then take all the appropriate information and collect the product for analysis. If necessary we will take appropriate legal action.

# 4

## **Ethical Charter**

As a manufacturer we commit to:

- Provide our customers with the means to check the authenticity of our products.
- To communicate the results of any investigations.

Our distributors commit:

- To make sure that products purchased are not counterfeit products.
- To inform the manufacturers of any offers of counterfeit products.
- To support the actions of Manufacturers.

To ensure customers can check the authenticity of our products we have set up a simple and rapid procedure called:

<https://check.hager.com>

Check hager is a detection weapon to fight against counterfeiting.

Every circuit breaker, switch and earth leakage circuit breaker has a sole identification number recorded by Hager in our database.

Worldwide access to <https://check.hager.com> by any customer provides a quick and easy way of establishing the authenticity of products.

The information is in real time.

#		B							
4	6.15	BD163T	4.7	CR64AX/LSF/2.0	9.6	EPN525	5.4		
624SEL212/6	8.5	BD264	4.6	CR64AX/LSF/3.0	9.6	EPN528	5.4		
624SEL212/9	8.5	BD464	4.6	CR64AX/LSF/4.0	9.6	EPN529	5.4		
624SEL212/12	8.5	BDC280E	4.13	CR64AX/R	9.5	EPN540	5.4		
624SEL214/6	8.5	BDC380E	4.13	CZ001	4.17	EPN541	5.4		
800LBS	3.28	BDC480E	4.13	CZ007	4.16	ERC218	5.5		
		BE163T	4.7	CZ008	4.16	ERC225	5.8		
		BE264	4.6	CZN005	4.16	ERC326	5.8		
		BE464	4.6	CZN006	4.16	ERC418	5.5		
		BF163T	4.7			ERD218	5.5		
		BF264	4.6	E		ERD225	5.8		
A1	9.5	BF464	4.6	EC050	5.29	ERD418	5.5		
A1/R	9.5	BFC480E	4.13	EC051	5.29	ERL218	5.5		
ACB106	4.19	BN264	4.6	EC100	5.22	ERL418	5.5		
ACB116	4.19	BN464	4.6	EC150	5.29	ESC001	5.5, 5.7		
ACB125	4.19	BP264	4.6	EC152	5.29	ESC002	5.5, 5.7		
ACB132	4.19	BP464	4.6	EC154M	5.29	ESC003	5.5, 5.7		
ACC106	4.19	BTC280E	4.13	EC350	5.30	ESC080	5.5, 5.7, 5.8, 5.9		
ACC116	4.19	BTC380E	4.13	EC352	5.30	ESC125	5.8		
ACC125	4.19	BTC480E	4.13	EC360	5.30	ESC225	5.8		
ACC132	4.19			EC362	5.30	ESC225S	5.7		
ADA156U	4.18			EC364M	5.30	ESC226	5.8		
ADA160U	4.18	C		EC365B	5.30	ESC240	5.8		
ADA166U	4.18	CCA216U	4.16	EC370	5.30	ESC240S	5.7		
ADA170U	4.18	CCC216U	4.15	EC372	5.30	ESC263	5.8		
ADA182U	4.18	CD280U	4.15	EE002	5.14, 6.6	ESC263S	5.7		
ADA906U	4.20	CD284U	4.15	EE003	5.14, 6.6	ESC325	5.8		
ADA910U	4.20	CD480U	4.15	EE171	5.14	ESC325S	5.7		
ADA916U	4.20	CD484U	4.15	EE180	5.12	ESC340	5.8		
ADA920U	4.20	CDA225U	4.16	EE181	5.12	ESC340S	5.7		
ADA925U	4.20	CDA240U	4.16	EE960	5.15	ESC425	5.8		
ADA932U	4.20	CDA263U	4.16	EEK001	9.4, 9.12	ESC425S	5.7		
ADA940U	4.20	CDA425U	4.16	EEK002	9.4, 9.12	ESC426	5.8		
ADA956U	4.20	CDA440U	4.16	EEK005	9.4, 9.12	ESC426S	5.7		
ADA960U	4.20	CDA463U	4.16	EEK510B	9.4	ESC428S	5.7		
ADA966U	4.20	CDC225U	4.15	EEK513P	9.12	ESC440	5.8		
ADA970U	4.20	CDC240U	4.15	EEK513W	9.4	ESC440S	5.7		
ADA975U	4.20	CDC263U	4.15	EEK515P	9.12	ESC441	5.8		
ADA982U	4.20	CDC425U	4.15	EEK523P	9.12	ESC443	5.8		
ADA990U	4.20	CDC440U	4.15	EEK525P	9.12	ESC463	5.8		
ADB106	4.19	CDC463U	4.15	EG001	6.5	ESC463S	5.7		
ADB110	4.19	CE280U	4.15	EG003G	5.11, 5.13, 6.5	ESC464	5.8		
ADB116	4.19	CE284U	4.15	EG004	5.11, 6.5	ESC465	5.8		
ADB120	4.19	CE480U	4.15	EG005	5.11, 5.13, 6.5	ESC466	5.8		
ADB125	4.19	CE484U	4.15	EG006	5.11, 6.5	ESD225	5.8		
ADB132	4.19	CEC225U	4.15	EG071	5.11	ESD227	5.8		
ADB140	4.19	CEC240U	4.15	EG103	5.11	ESD240	5.8		
ADB145	4.19	CEC263U	4.15	EG103E	5.11	ESD425	5.8		
ADB150	4.19	CEC425U	4.15	EG103V	5.11	ETC225	5.9		
ADC106	4.19	CEC440U	4.15	EG203	5.11	ETC225S	5.9		
ADC110	4.19	CEC463U	4.15	EG203E	5.11	ETC325	5.9		
ADC116	4.19	CF280U	4.15	EG493E	5.13	ETC425	5.9		
ADC120	4.19	CF284U	4.15	EG502	5.22	ETC440	5.9		
ADC125	4.19	CF480U	4.15	EH010	5.10	EVN002	5.33		
ADC132	4.19	CF484U	4.15	EH011	5.10	EVN004	5.33		
ADC140	4.19	CFC225U	4.15	EH110	5.10	EVN011	5.33		
ADC145	4.19	CFC240U	4.15	EH111	5.10	EVN012	5.33		
ADC150	4.19	CFC263U	4.15	EH171	5.10	EZN001	5.17		
ADC806F	4.20	CFC425U	4.15	EK081	5.21	EZN002	5.17		
ADC810F	4.20	CFC440U	4.15	EK082	5.21	EZN003	5.17		
ADC816F	4.20	CFC463U	4.15	EK083	5.21	EZN004	5.17		
ADC820F	4.20	CN284U	4.16	EK087	6.12	EZN005	5.17		
ADC825F	4.20	CN484U	4.16	EK088	6.12	EZN006	5.17		
ADC832F	4.20	CP284U	4.16	EK186	5.21				
ADN106	4.18	CP484U	4.16	EK187	5.21	F			
ADN110	4.18	CR64AX	9.5	EMN001	5.16	FL02Z	2.12		
ADN116	4.18	CR64AX/1.0	9.6	EMN005	5.16	FL03Z	2.12		
ADN120	4.18	CR64AX/1.0LSF/2	9.6	EN145	5.6	FL04Z	2.12		
ADN132	4.18	CR64AX/1.0LSF/3	9.6	EN146	5.6	FL05Z	2.12		
ADN140	4.18	CR64AX/1.0LSF/4	9.6	EPN050	5.4	FL06Z	2.12		
ADN145	4.18	CR64AX/1.0LSF/5	9.6	EPN051	5.4	FL41G	2.12		
ADN150	4.18	CR64AX/1.0PVC/2	9.6	EPN510	5.4	FL80Z	2.10		
AEC110	4.19	CR64AX/1.0PVC/3	9.6	EPN513	5.4	FL81Z	2.11		
AEC116	4.19	CR64AX/1.0PVC/4	9.6	EPN515	5.4	FL85Z	2.10		
AEC120	4.19	CR64AX/1.0PVC/5	9.6	EPN518	5.4	FL94Z	2.10		
AEC125	4.19	CR64AX/3.0	9.6	EPN519	5.4	FL95Z	2.10		
AEC132	4.19	CR64AX/4.0	9.6	EPN520	5.4	FL96Z	2.10, 2.11		
		CR64AX/LSF/1.0	9.6	EPN521	5.4	FL97Z	2.11		
				EPN524	5.4	FL98Z	2.11		

G									
			HHA063Z	4.31				JAE425	3.36
			HHA078Z	4.31		HR822	4.27		
			HHA080U	4.31		HR823	4.27	JAG331	3.36
GD24H	1.23		HHA080Z	4.31		HR824	4.27	JAG340	3.36
GD102E	2.4		HHA098Z	4.31		HR830	4.27	JAG431	3.36
GD104E	2.4		HHA100U	4.31		HR831	4.27	JAG440	3.36
GD106E	2.4		HHA100Z	4.31		HR832	4.27	JAH363	3.36
GD108E	2.4		HHA123Z	4.31		HXA001H	4.33, 4.36	JAH380	3.36
GD110E	2.4		HHA125U	4.31		HXA002H	4.33, 4.36	JAH463	3.36
GP102P	2.5		HHA125Z	4.31		HXA003H	4.33, 4.36	JAH480	3.36
GP102T	2.5		HHA160U	4.31		HXA004H	4.33, 4.36	JC10L	3.35
GP104P	2.5		HHA160Z	4.31		HXA005H	4.33, 4.36	JC20L	3.35
GP104T	2.5		HHB100Z	4.35		HXA011H	4.33, 4.36	JC40L	3.35
GP106P	2.5		HHB125Z	4.35		HXA013H	4.33, 4.36	JC60L	3.35
GP106T	2.5		HHB160Z	4.35		HXA014H	4.33, 4.36	JC63L	3.35
GP108P	2.5		HHB200Z	4.35		HXA015H	4.33, 4.36	JF003BP	3.30
GP108T	2.5		HHB250Z	4.35		HXA021H	4.33, 4.36	JF95A	3.25
GP110P	2.5		HMC180T	4.10		HXA024H	4.33, 4.36	JF96BP	3.24, 3.31
GP110T	2.5		HMC190T	4.10		HXA025H	4.33, 4.36	JF130VMF	5.27
GZ04E	2.5		HMC199T	4.10		HXA026H	4.33, 4.36	JF296A	3.25, 3.27, 3.30
GZ04N	2.5		HMC280T	4.10		HXA039H	3.25, 3.27, 3.30, 4.34, 4.36	JF300CF	3.31
GZ07E	2.5		HMC290T	4.10				JF403BA	3.27
						HXA051H	4.33, 4.36	JF403MJ	3.27



JF406B	3.26	JFH331U	3.34	JK024	3.5	JK212BSH	3.19
JF406BG	3.26	JFH340U	3.34	JK25A	1.8	JK216B	3.14
JF408B	3.26	JFH431U	3.35	JK030BEB	3.11, 3.15, 3.20	JK216BDFG	3.18
JF408BG	3.26	JFH440U	3.35	JK032	3.5	JK216BG	3.14
JF412B	3.26	JFI363U	3.34	JK044	3.5	JK216BSF	3.19
JF412BG	3.26	JFI380U	3.34	JK066	3.5	JK216BSH	3.19
JF416B	3.26	JFI463U	3.35	JK100HK	3.11, 3.15, 3.20	JK216E	3.16
JF416BG	3.26	JFI480U	3.35	JK100TAP	3.11, 3.15, 3.20	JK216EG	3.16
JF418B	3.26	JFM01	5.25	JK101BSH	3.19	JK218B	3.14
JF418BG	3.26	JFPLATE	3.27, 3.30	JK101DK	3.17	JK218BDFG	3.18
JF443BM	3.26	JFS03	5.25	JK101SE	3.17	JK218BG	3.14
JF443BS	3.26	JFT03	5.28	JK102DK	3.17	JK218BSF	3.19
JF444BD	3.26	JG00S	3.37	JK102LE	3.17	JK218BSH	3.19
JF444BM	3.26	JG01S	3.37	JK104	3.4	JK222PK	3.11, 3.15, 3.20, 3.25, 3.27, 3.30
JF444BS	3.26	JG02S	3.37	JK104B	3.10	JK224B	3.14
JF450CF	3.31	JG03S	3.37	JK104BD	3.21	JK224BDFG	3.18
JF608B	3.28	JG04S	3.37	JK104BDFG	3.18	JK224BG	3.14
JF608BG	3.28	JG05S	3.37	JK104BF	3.21	JK224BSF	3.19
JF801E	3.27, 3.29	JG10A	3.37	JK104BG	3.10	JK224BSH	3.19
JF801EG	3.27, 3.29	JG20A	3.37	JK104BSF	3.19	JK232E	3.16
JF803BA	3.29	JG25BM	3.38	JK104BSH	3.19	JK232EG	3.16
JF803E	3.27, 3.29	JG26BM	3.38	JK106	3.4	JK240MJ	3.15
JF803EG	3.27, 3.29	JG27BM	3.38	JK106B	3.10	JK240MP	3.15
JF803MJ	3.29	JG27BR	3.38	JK106BD	3.21	JK242BA	3.15
JF805DK	3.27, 3.29	JG28BM	3.38	JK106BDFG	3.18	JK250BSP	3.11, 3.15, 3.20
JF805E	3.27, 3.29	JG29BM	3.38	JK106BF	3.21	JK304H	3.4
JF806DK	3.27, 3.29	JG30BM	3.38	JK106BG	3.10	JK306H	3.4
JF806E	3.27, 3.29	JG30BR	3.38	JK106BSF	3.19	JK310H	3.4
JF812B	3.28	JG31BM	3.38	JK106BSH	3.19	JK314H	3.4
JF812BG	3.28	JG32BM	3.38	JK107DL	3.12	JK320H	3.4
JF818B	3.28	JG33BM	3.38	JK108B	3.10	JK328H	3.4
JF818BG	3.28	JG34BS	3.38	JK108BD	3.21	JK404H	3.4
JF843BM	3.28	JG35BS	3.38	JK108BDFG	3.18	JK406H	3.4
JF844BM	3.28	JG416DC	3.37	JK108BF	3.21	JK410H	3.4
JF844BSW	3.28	JG425DC	3.37	JK108BG	3.10	JK414H	3.4
JF863BM	3.28	JG440DC	3.37	JK108BSF	3.19	JK420H	3.4
JF864BM	3.28	JHF812B	3.30	JK108BSH	3.19	JK527H	3.5
JF864BSW	3.28	JHF812BG	3.30	JK110	3.4	JK706C	3.5
JF884BD	3.28	JHF818B	3.30	JK112B	3.10	JK710C	3.5
JF1260CT	5.26	JHF818BG	3.30	JK112BD	3.21	JK714C	3.5
JF3004TM	3.31	JHF883BM	3.30	JK112BDFG	3.18	JK10634C	3.10
JF4508TM	3.31	JHF884BM	3.30	JK112BF	3.21	JK10634RH	3.10, 3.21
JF12504SM	3.31	JHF80206B	3.30	JK112BG	3.10	JK11003S	3.10, 3.21
JF14006SM	3.31	JHF80206BG	3.30	JK112BSF	3.19	JK11004C	3.10
JF15508SM	3.31	JHF80210B	3.30	JK112BSH	3.19	JK11004RH	3.10, 3.21
JF17009SM	3.31	JHF80210BG	3.30	JK114	3.4	JK11004RL	3.10, 3.21
JF60204B	3.28	JHF80404B	3.30	JK114AG	3.6	JK11004RLD	3.10, 3.21
JF60204BG	3.28	JHF80404BG	3.30	JK116B	3.10	JK11004RM	3.10, 3.21
JF80206B	3.28	JHF80408B	3.30	JK116BD	3.21	JK11004RMD	3.10, 3.21
JF80206BG	3.28	JHF80408BG	3.30	JK116BDFG	3.18	JK11004S	3.10, 3.21
JF80210B	3.28	JHF80414B	3.30	JK116BF	3.21	JK11253S	3.10, 3.21
JF80210BG	3.28	JHF80414BG	3.30	JK116BG	3.10	JK11254CO	3.10
JF80404B	3.28	JHF80612B	3.30	JK116BSF	3.19	JK11254D	3.10, 3.21
JF80404BG	3.28	JHF80612BG	3.30	JK116BSH	3.19	JK11254S	3.10
JF80408B	3.28	JK1/2TOPSHROUD	3.20	JK116E	3.16	JK21253M	3.14
JF80408BG	3.28	JK01B	1.9, 1.22, 3.11, 3.15, 3.20, 4.14	JK116EG	3.16	JK21254M	3.14
JF80414B	3.28	JK01DC	3.11, 3.15, 3.20	JK118B	3.10	JK21604C	3.14
JF80414BG	3.28	JK1/INCOMSHROUD	3.20	JK118BG	3.10	JK22503M	3.14
JF80612B	3.28	JK1/NEUTRALSHROUD	3.20	JK120	3.4	JK22503S	3.14
JF80612BG	3.28	JK1PLATEB	3.11, 3.15, 3.20	JK124B	3.10	JK22504D	3.14
JFA03	5.25	JK1PLATEM	3.20	JK124BG	3.10	JK22504M	3.14
JFB202U	3.34	JK2/INCOMSHROUD	3.20	JK125BSP	3.11, 3.15, 3.20	JK22504MCS	3.14
JFB203U	3.34	JK2PLATEB	3.11, 3.15, 3.20	JK128	3.4	JKD125BKWP	3.13
JFB302U	3.34	JK2PLATEM	3.20	JK129AG	3.6	JKD125BMM	3.13
JFB303U	3.34	JK04TC	3.20	JK132E	3.16	JKD125BMP	3.13
JFB402U	3.35	JK04TE	3.20	JK132EG	3.16	JKD146B	3.12
JFB403U	3.35	JK04TJ	3.20	JK140MJ	3.11	JKD146BM	3.12
JFD206U	3.34	JK04TK	3.20	JK140MP	3.11	JKD168B	3.12
JFD306U	3.34	JK04TL	3.20	JK142BA	3.11	JKD168BM	3.12
JFD406U	3.35	JK04TP	3.20	JK201BSH	3.19	JKD250BKWP	3.15
JFE210U	3.34	JK06TC	3.20	JK201SE	3.17	JKD250BMM	3.15
JFE310U	3.34	JK06TE	3.20	JK202LE	3.17	JKD250BMP	3.15
JFE410U	3.35	JK06TJ	3.20	JK208B	3.14	JKD1416B	3.12
JFG312U	3.34	JK06TK	3.20	JK208BDFG	3.18	JKD1416BM	3.12
JFG316U	3.34	JK06TL	3.20	JK208BG	3.14	JKD1812B	3.12
JFG320U	3.34	JK06TP	3.20	JK208BSF	3.19	JKD1812BM	3.12
JFG325U	3.34	JK008	3.5	JK208BSH	3.19	JKLABELPACK	3.11, 3.15, 3.20
JFG412U	3.35	JK012	3.5	JK212B	3.14	JKM01	5.25
JFG416U	3.35	JK016	3.5	JK212BDFG	3.18	JKM02	5.25
JFG420U	3.35	JK022	3.5	JK212BG	3.14	JN001BP	3.25, 3.27, 3.30
JFG425U	3.35			JK212BSF	3.19		

JN2PLATE	3.25	KF81A	2.15	KLMB255W	9.12	KM25E	2.13	
JN130VMF	5.27	KF82A	2.15	KLMB266W	9.12	KM25N	2.13	
JN201BA	3.25	KF83D	2.15	KLMB277DSP	9.12	KN06E	2.7, 2.8	
JN201BE	3.25	KF84A	2.15	KLMB277DSP/DL	9.12	KN06N	2.7, 2.8	
JN201BEG	3.25	KL/2	9.16	KLO5RJ45G	9.13	KN10E	2.7, 2.8	
JN201MJ	3.25	KLA/3/1-5P	9.14	KLO5RJ45R	9.13	KN10N	2.7, 2.8	
JN201NS	3.25	KLA/5/1-5P	9.14	KLO10RJ45G	9.13	KN14E	2.7, 2.8	
JN203BE	3.25	KLA/10/1-5PX	9.14	KLO10RJ45R	9.13	KN14N	2.7, 2.8	
JN203BEG	3.25	KLB/1/0-75W	9.14	KLO15RJ45G	9.13	KN18E	2.7, 2.8	
JN204B	3.24	KLB/1/1-5W	9.14	KLO15RJ45R	9.13	KN18N	2.7, 2.8	
JN204BG	3.24	KLB/1/1W	9.14	KLO20RJ45G	9.13	KN22E	2.7, 2.8	
JN205BE	3.25	KLB/2/0-75W	9.14	KLO20RJ45R	9.13	KN22N	2.7, 2.8	
JN205DK	3.25	KLB/2/1-5W	9.14	KLO30RJ45G	9.13	KN26E	2.7, 2.8	
JN206B	3.24	KLB/2/1W	9.14	KLO30RJ45R	9.13	KN26N	2.7, 2.8	
JN206BE	3.25	KLB/3/0-75W	9.14	KLO40RJ45G	9.13	KN99E	2.7, 2.8	
JN206BG	3.24	KLB/3/1-5W	9.14	KLO40RJ45R	9.13	KN99N	2.7, 2.8	
JN206DK	3.25	KLB/3/1W	9.14	KLO50RJ45G	9.13	KRN190	1.9, 1.22, 3.20	
JN208B	3.24	KLB/4/0-75W	9.14	KLO50RJ45R	9.13	KWB01	2.14	
JN208BG	3.24	KLB/4/1-5W	9.14	KLORJ45CON	9.13	KWE01G	2.14	
JN212B	3.24	KLB/4/1W	9.14	KLP/1/0-75W	9.15	KWE03G	2.14	
JN212BG	3.24	KLB/5/0-75W	9.14	KLP/1/1-5W	9.15	KWE04G	2.14	
JN216B	3.24	KLB/5/1-5W	9.14	KLP/1/1W	9.15	KXA02E	2.14	
JN216BG	3.24	KLB/5/1W	9.14	KLP/2/0-75W	9.15	KXA02LH	2.14	
JN223BM	3.24	KLC/5/1-5W	9.17	KLP/2/1-5W	9.15	KXA02NH	2.14	
JN223BS	3.24	KLC/10/1-5W	9.17	KLP/2/1W	9.15	KXA04LH	2.14	
JN224BD	3.24	KLC/15/1-5W	9.17	KLP/3/0-75W	9.15	KXA04NH	2.14	
JN224BM	3.24	KLCM412P	9.13	KLP/3/1-5W	9.15	KXA06LH	2.14	
JN224BS	3.24	KLCM413W	9.13	KLP/3/1W	9.15	KXA06NH	2.14	
JN300CF	3.24	KLCM-OS	9.13	KLP/4/0-75W	9.15	KXA10E	2.14	
JN450CF	3.24	KLD/5/1-5W	9.17	KLP/4/1-5W	9.15	KXA10L	2.14	
JN3003TM	3.24	KLD/10/1-5W	9.17	KLP/4/1W	9.15	KXA10N	2.14	
JN4506TM	3.24	KLD/15/1-5W	9.17	KLP/5/0-75W	9.15	KXA16E	2.14	
JN9502SM	3.24	KLDS4	9.4	KLP/5/1-5W	9.15	KXA16L	2.14	
JN11004SM	3.24	KLDS6	9.4	KLP/5/1W	9.15	KXA16N	2.14	
JN12506SM	3.24	KLDS8	9.4	KLPB/3	9.16	KXA35L	2.14	
JN15508SM	3.24	KLDS10	9.4	KLPCR/7	9.16	KXA35N	2.14	
JP015	2.7	KLDS12	9.4	KLPJ/4	9.16	KXB04E	2.14	
JZA700	3.36	KLE/3/1-5W	9.15	KLPP/5	9.16	KXB06E	2.14	
JZA701	3.34, 3.35, 3.36	KLE/5/1-5W	9.15	KLPT/6	9.16	KXB35E	2.14	
JZA702	3.34, 3.35, 3.36	KLJ/3/1-5P	9.14	KLR/5/1-5W	9.17	KXB70E	2.14	
JZA703	3.34, 3.35	KLJ/5/1-5P	9.14	KLR/10/1-5W	9.17	KXB70LH	2.14	
K		KLG/10/1-5PX	9.14	KLR/15/1-5W	9.17	KXB70NH	2.14	
		KLH/5/1-5W	9.17	KL/T	9.16	KZ012	2.13	
		KLH/10/1-5W	9.17	KLT/1/0-75W	9.15	KZ013	2.13	
		KLH/15/1-5W	9.17	KLT/1/1-5W	9.15	KZ014	2.13	
	K018	2.14	KLJ/1/0-75W	9.15	KLT/1/1W	9.15	KZ021	2.15
	K037	2.14	KLJ/1/1-5W	9.15	KLT/2/0-75W	9.15	KZ023A	2.15
	K140	2.13	KLJ/1/1W	9.15	KLT/2/1-5W	9.15	KZ024	2.15
	K142	2.13	KLJ/2/0-75W	9.15	KLT/2/1W	9.15	KZ059	2.16
	K143	2.13	KLJ/2/1-5W	9.15	KLT/3/0-75W	9.15	KZ060	2.13
	K144	2.13	KLJ/2/1W	9.15	KLT/3/1-5W	9.15	L	
K145	2.13	KLJ/3/0-75W	9.15	KLT/3/1W	9.15			
K148	2.13	KLJ/3/1-5W	9.15	KLT/4/0-75W	9.15			
K151	2.13	KLJ/3/1W	9.15	KLT/4/1-5W	9.15	L12401		4.21
K156	2.13	KLJ/4/0-75W	9.15	KLT/4/1W	9.15	L12501		4.21
K158	2.13	KLJ/4/1-5W	9.15	KLT/5/0-75W	9.15	L12601		4.21
K159	2.13	KLJ/4/1W	9.15	KLT/5/1-5W	9.15	L12701		4.21
K160F	2.13	KLJ/5/0-75W	9.15	KLT/5/1W	9.15	L12801		4.21
K171UK	2.15	KLJ/5/1-5W	9.15	KLV/3/1-5P	9.14	L14700		4.21
KB163N	2.15	KLJ/5/1W	9.15	KLV/5/1-5P	9.14	L15300		4.21
KB163P	2.15	KLK/3/1-5P	9.14	KLV/10/1-5PX	9.14	L15500	4.21	
KB263C	2.15	KLK/5/1-5P	9.14	KLZ/3/1-5P	9.14	L15600	4.21	
KB280B	2.15	KLK/10/1-5PX	9.14	KLZ/5/1-5P	9.14	L15800	4.21	
KB363C	2.15	KLL/5/1-5W	9.17	KLZ/10/1-5PX	9.14	L17100	4.22	
KB380B	2.15	KLL/10/1-5W	9.17	KM04L	2.13	L17200	4.22	
KB463C	2.15	KLL/15/1-5W	9.17	KM07E	2.13	L17300	4.22	
KB480B	2.15	KLM/5/1-5W	9.17	KM07L	2.13	L17400	4.22	
KD190B	2.16	KLM/10/1-5W	9.17	KM07N	2.13	LB113	4.21	
KDN263B	2.16	KLM/15/1-5W	9.17	KM10D	2.13	LB115	4.21	
KDN363B	2.16	KLMB4W	9.12	KM10E	2.13	LB116	4.21	
KDN463B	2.16	KLMB5P	9.12	KM10F	2.13	LB118	4.21	
KE01B	2.16	KLMB6W	9.12	KM10N	2.13	LEL212/6	8.5	
KE01R	2.16	KLMB7P	9.12	KM11B	2.13	LF138	4.21	
KE02B	2.16	KLMB8W	9.12	KM11E	2.13	LF139	4.21	
KE02R	2.16	KLMB9P	9.12	KM11L	2.13	LF140	4.21	
KE03B	2.16	KLMB10W	9.12	KM11N	2.13	LF141	4.21	
KE03R	2.16	KLMB11P	9.12	KM13E	2.13	LF142	4.21	
KE04B	2.16	KLMB12W	9.12	KM13N	2.13	LS201	4.22	
KE06R	2.16	KLMB244W	9.12	KM14N	2.13	LZ060	5.7, 5.9	
KE07B	2.16	KLMB255DSP	9.12	KM17E	2.13			
KF50SB	2.15	KLMB255DSP/DL	9.12	KM17N	2.13			

N	
NBN106A	4.3
NBN110A	4.3
NBN116A	4.3
NBN120A	4.3
NBN125A	4.3
NBN132A	4.3
NBN140A	4.3
NBN150A	4.3
NBN163A	4.3
NBN206A	4.3
NBN210A	4.3
NBN216A	4.3
NBN220A	4.3
NBN225A	4.3
NBN232A	4.3
NBN240A	4.3
NBN250A	4.3
NBN263A	4.3
NBN306A	4.4
NBN310A	4.4
NBN316A	4.4
NBN320A	4.4
NBN325A	4.4
NBN332A	4.4
NBN340A	4.4
NBN350A	4.4
NBN363A	4.4
NBN406A	4.4
NBN410A	4.4
NBN416A	4.4
NBN420A	4.4
NBN425A	4.4

NBN432A	4.4
NBN440A	4.4
NBN450A	4.4
NBN463A	4.4
NCN100A	4.3
NCN101A	4.3
NCN102A	4.3
NCN103A	4.3
NCN104A	4.3
NCN106A	4.3
NCN110A	4.3
NCN116A	4.3
NCN120A	4.3
NCN125A	4.3
NCN132A	4.3
NCN140A	4.3
NCN150A	4.3
NCN163A	4.3
NCN200A	4.3
NCN201A	4.3
NCN202A	4.3
NCN203A	4.3
NCN204A	4.3
NCN206A	4.3
NCN210A	4.3
NCN216A	4.3
NCN220A	4.3
NCN225A	4.3
NCN232A	4.3
NCN240A	4.3
NCN250A	4.3
NCN263A	4.3
NCN300A	4.4
NCN301A	4.4
NCN302A	4.4
NCN303A	4.4
NCN304A	4.4
NCN306A	4.4
NCN310A	4.4
NCN316A	4.4
NCN320A	4.4
NCN325A	4.4
NCN332A	4.4
NCN340A	4.4
NCN350A	4.4
NCN363A	4.4
NCN400A	4.4
NCN401A	4.4
NCN402A	4.4
NCN403A	4.4
NCN404A	4.4
NCN406A	4.4
NCN410A	4.4
NCN416A	4.4
NCN420A	4.4
NCN425A	4.4
NCN432A	4.4
NCN440A	4.4
NCN450A	4.4
NCN463A	4.4
NDN100A	4.3
NDN101A	4.3
NDN102A	4.3
NDN103A	4.3
NDN104A	4.3
NDN106A	4.3
NDN110A	4.3
NDN116A	4.3
NDN120A	4.3
NDN125A	4.3
NDN132A	4.3
NDN140A	4.3
NDN150A	4.3
NDN163A	4.3
NDN200A	4.3
NDN201A	4.3
NDN202A	4.3
NDN204A	4.3
NDN206A	4.3
NDN210A	4.3
NDN216A	4.3

P22	9.7
P22/1.0	9.8
P22/1.0LSF/2	9.8
P22/1.0LSF/3	9.8
P22/1.0LSF/4	9.8
P22/1.0LSF/5	9.8
P22/1.0PVC/2	9.8
P22/1.0PVC/3	9.8
P22/1.0PVC/4	9.8
P22/1.0PVC/5	9.8
P22/2.0	9.8
P22/3.0	9.8
P22/4.0	9.8
P22/LSF/1.0	9.8
P22/LSF/2.0	9.8
P22/LSF/3.0	9.8
P22/LSF/4.0	9.8
P031F	2.7
P032F	2.7
P64AX	9.7
P64AX/1.0	9.8
P64AX/1.0LSF/2	9.8
P64AX/1.0LSF/3	9.8
P64AX/1.0LSF/4	9.8
P64AX/1.0LSF/5	9.8
P64AX/1.0PVC/2	9.8
P64AX/1.0PVC/3	9.8
P64AX/1.0PVC/4	9.8
P64AX/1.0PVC/5	9.8
P64AX/2.0	9.8
P64AX/3.0	9.8
P64AX/4.0	9.8
P64AX/LSF/1.0	9.8
P64AX/LSF/2.0	9.8
P64AX/LSF/3.0	9.8
P64AX/LSF/4.0	9.8
P64AX/R	9.7
P64AXR/1.0	9.8
P64AXR/1.0LSF/2	9.8
P64AXR/1.0LSF/3	9.8
P64AXR/1.0LSF/4	9.8
P64AXR/1.0LSF/5	9.8
P64AXR/1.0PVC/2	9.8

P64AXR/1.0PVC/3	9.8
P64AXR/1.0PVC/4	9.8
P64AXR/1.0PVC/5	9.8
P64AXR/2.0	9.8
P64AXR/3.0	9.8
P64AXR/4.0	9.8
P64AXR/LSF/1.0	9.8
P64AXR/LSF/2.0	9.8
P64AXR/LSF/3.0	9.8
P64AXR/LSF/4.0	9.8
PCR2000	9.5
PCR2000/1.0	9.6
PCR2000/1.0LSF/2	9.6
PCR2000/1.0LSF/3	9.6
PCR2000/1.0LSF/4	9.6
PCR2000/1.0LSF/5	9.6
PCR2000/1.0PVC/2	9.6
PCR2000/1.0PVC/3	9.6
PCR2000/1.0PVC/4	9.6
PCR2000/1.0PVC/5	9.6
PCR2000/2.0	9.6
PCR2000/3.0	9.6
PCR2000/4.0	9.6
PCR2000/LSF/1.0	9.6
PCR2000/LSF/2.0	9.6
PCR2000/LSF/3.0	9.6
PCR2000/LSF/4.0	9.6
PG9522FEMALE	5.28
PG9523MALE	5.28
PGM300	5.27
PGM500	5.27
PGM1000	5.27
PGM1300	5.27
PGM2000	5.27
PGM3000	5.27
PGMF300	5.27
PGMF500	5.27
PGMF1000	5.27
PGMF1300	5.27
PGMF2000	5.27
PGMF3000	5.27
PGMFT150	5.27
PGMFT300	5.27
PGMFT500	5.27
PGMFT1000	5.27
PGMFT1300	5.27
PGMFT2000	5.27
PGMFT3000	5.27
PGMT150	5.27
PGMT500	5.27
PGMT1000	5.27
PGMT1300	5.27
PGMT2000	5.27
PGMT3000	5.27
PGRJ300	5.28
PGRJ500	5.28
PGRJ1000	5.28
PGRJ1500	5.28
PGRJ2000	5.28
PGRJ3000	5.28
PULLCORD	7.16
<b>R</b>	
RL602	8.6
RL624	8.5
<b>S</b>	
S20/MOP	9.9
S21	9.9
S26	9.9
S26/TC	9.9
S27	9.9
S28	9.9
S60AX/MOP	9.9
S64AX	9.9
S65AX	9.9
SBB125	5.2
SBB132	5.2

RL602	8.6
RL624	8.5

S20/MOP	9.9
S21	9.9
S26	9.9
S26/TC	9.9
S27	9.9
S28	9.9
S60AX/MOP	9.9
S64AX	9.9
S65AX	9.9
SBB125	5.2
SBB132	5.2



SBB225	5.2	SPN802	4.29	TRB501	6.16	VAT12	1.9, 1.22
SBB232	5.2	SPN802R	4.29	TRB521	6.16	VAT13	1.9, 1.22
SBN125	5.2	SPV325	4.30	TU404	6.15	VAT14	1.9, 1.22
SBN132	5.2	SRA00505	5.31	TU406	6.15	VAT15	1.9, 1.22
SBN140	5.2	SRA01005	5.31	TU418	6.15	VAT16	1.9, 1.22
SBN163	5.2	SRA01505	5.31	TX100GB	6.2	VAT17	1.9, 1.22
SBN180	5.2	SRA02005	5.31	TX101GB	6.2	VAT18	1.9, 1.22
SBN190	5.2	SRA02505	5.31	TX206H	6.12	VAT19	1.9, 1.22
SBN225	5.2	SRC04005	5.31	TX211A	6.10	VAT20	1.9, 1.22
SBN232	5.2	SRC06005	5.31	TX320	6.12	VAT21	1.9, 1.22
SBN240	5.2	SRD08005	5.31	TX502	6.13	VAT22	1.9, 1.22
SBN263	5.2	SRD10005	5.31	TX510	6.7	VAT23	1.9, 1.22
SBN280	5.2	SRD15005	5.31	TX511	6.7	VAT24	1.9, 1.22
SBN290	5.2	SRE20005	5.31	TXA022	6.5	VB18B	2.7
SBN325	5.2	SRI03005	5.31	TXA023	6.5	VB18R	2.7
SBN332	5.2	SRZH01	5.31	TXA025	6.6	VB36B	2.7
SBN340	5.2	ST301	5.20	TXA111	6.3	VB36R	2.7
SBN363	5.2	ST303	5.20	TXA112	6.3	VB54B	2.7
SBN380	5.2	ST305	5.20	TXA204C	6.9	VB54R	2.7
SBN390	5.2	ST312	5.20	TXA206A	6.9	VC02SW	2.9
SBN399	5.2	ST313	5.20	TXA206B	6.9	VC008	2.3
SBN425	5.2	ST314	5.20	TXA206C	6.9	VC008G	2.3
SBN432	5.2	ST315	5.20	TXA206D	6.9	VC012	2.3
SBN440	5.2	SU212	5.20	TXA207C	6.9	VC012G	2.3
SBN463	5.2	SU213	5.20	TXA210AN	6.10	VC016	2.3
SBN480	5.2	SU214	5.20	TXA210N	6.10	VC016G	2.3
SBN490	5.2	SU215	5.20	TXA213N	6.10	VC022	2.3
SBN499	5.2	SVN121	5.19	TXA215	6.10	VC022G	2.3
SCREWCOVER	7.16	SVN122	5.19	TXA224	6.11	VC104	1.12
SEL96T	8.4	SVN123	5.19	TXA225	6.11	VC104G	1.12
SEL106T	8.4	SVN124	5.19	TXA304	6.4	VC106	1.12
SEL212	8.4	SVN125	5.19	TXA306	6.4	VC106G	1.12
SEL214	8.4	SVN126	5.19	TXB302	6.4	VC108	1.12
SEL354	8.4	SVN127	5.19	TXB304	6.4	VC108G	1.12
SF263	5.3	SVN131	5.19	TXB322	6.4	VC110	1.12
SFH125	5.3	SVN132	5.19	TXB344	6.4	VC110G	1.12
SFH225	5.3	SVN311	5.18	TYA670D	6.2	VC112	1.12
SFM125	5.3	SVN312	5.18	TYF130	6.2	VC112G	1.12
SFT125	5.3	SVN321	5.18			VC114	1.12
SFT225	5.3	SVN322	5.18	<b>V</b>		VC114G	1.12
SFT240	5.3	SVN331	5.18			VC116	1.12
SK602	5.24	SVN332	5.18	VA02SPD	1.9, 1.22, 4.30	VC116G	1.12
SK603	5.24	SVN341	5.18	VA10MT	1.8	VC120	1.12
SK606	5.3, 5.24	SVN342	5.18	VAB08	1.9, 1.22	VC120G	1.12
SM050	5.23	SVN351	5.18	VAB12	1.9, 1.22	VC201	1.12
SM100	5.23	SVN352	5.18	VAB14N	1.22	VC202	1.12
SM101C	5.32	SVN371	5.18	VAB16	1.9, 1.22	VC204	1.12
SM101E	5.32	SVN391	5.18	VAB21	1.9, 1.22	VC206	1.12
SM150	5.23	SVN411	5.18	VAC00	1.22	VC206G	1.12
SM151	5.23	SVN413	5.18	VAF3S	1.22	VC304H	1.13
SM250	5.23	SVN422	5.18	VAF3SG	1.22	VC308H	1.13
SM400	5.23	SVN432	5.18	VAF4S	1.22	VC314H	1.13
SM401	5.23	SVN433	5.18	VAF4SG	1.22	VC402H	1.13
SM500	5.23	SVN441	5.18	VAF5S	1.22	VC403H	1.13
SM501	5.23	SVN452	5.18	VAF5SG	1.22	VC404H	1.13
SM601	5.23			VAF6S	1.22	VC406H	1.13
SP202N	4.30	<b>T</b>		VAF6SG	1.22	VC408H	1.13
SPA201	4.29			VAK0D	1.9, 1.22	VC710C1	1.15
SPA401	4.29	TCC510S	6.7, 9.12	VAK0S	1.9, 1.22	VC710C1G	1.15
SPN015D	4.30	TE360	5.30	VAK0T	1.9, 1.22	VC710CU	1.16
SPN015R	4.30	TE370	5.30	VAL00	1.22	VC710CUG	1.16
SPN040D	4.30	TG008	6.3	VAM00	1.22	VC712C1	1.15
SPN040N	4.30	TG018	6.3	VAN00	1.9, 1.22	VC712C1G	1.15
SPN040R	4.30	TG019	6.3	VAP00	1.9, 1.22	VC712TG	1.14
SPN080	4.29	TG050	6.8	VAR3S	1.22	VC714C1	1.15
SPN080N	4.29	TGA200	6.18	VAR4S	1.22	VC714C1G	1.15
SPN115D	4.30	TH020B	6.8	VAR5S	1.22	VC716C1	1.15
SPN115R	4.30	TH101	6.3	VAR6S	1.22	VC716C1G	1.15
SPN140D	4.30	TJA450	6.18	VAS02	1.22	VC716CU	1.16
SPN140R	4.30	TJA451	6.18	VAT00	1.9, 1.22	VC716CUG	1.16
SPN215D	4.30	TKK513PE	9.12	VAT02	1.9, 1.22	VC733H1	1.15
SPN215R	4.30	TKK515PE	9.12	VAT03	1.9, 1.22	VC754R	1.17
SPN240D	4.30	TKK523PE	9.12	VAT04	1.9, 1.22	VC754RG	1.17
SPN240R	4.30	TKK525PE	9.12	VAT05	1.9, 1.22	VC755H1	1.15
SPN290	1.22	TR131A	6.3	VAT06	1.9, 1.22	VC755H1G	1.15
SPN415D	4.30	TR140B	6.3	VAT07	1.9, 1.22	VC766H1	1.15
SPN415R	4.30	TRB210	6.17	VAT08	1.9, 1.22	VC766H1G	1.15
SPN440D	4.30	TRB221	6.17	VAT09	1.9, 1.22	VC776R	1.17
SPN440R	4.30	TRB302A	6.14	VAT10	1.9, 1.22	VC816C	1.15
SPN801	4.29	TRB302B	6.14	VAT11	1.9, 1.22	VC816CU	1.16
SPN801R	4.29					VC818CU	1.16

VC818CUG	1.16	VH854RG	1.17	VM866HK	1.7	<b>W</b>	
VC854U	1.16	VH854U	1.16	VM878R	1.7	WFBTMBNB	7.39
VC855H	1.15	VH855H	1.15	VM878RK	1.7	WFBTMBSB	7.39
VC866H	1.15	VH866H	1.15	VM918C	1.7	WFBTMBSW	7.39
VC876U	1.16	VH876RG	1.17	VM918CK	1.7	WFBTMPBB	7.39
VC912C	1.19	VH876U	1.16	VM8662	1.7	WFBTMPBW	7.39
VC918C	1.19	VH918C	1.19	VM8662K	1.7	WFBTMPSPB	7.39
VC7343U	1.16	VH7343U	1.16	VM9651	1.7	WFBTMPSPW	7.39
VC7563U	1.16	VH8343UG	1.16	VM9651K	1.7	WFBTSBNB	7.39
VC8552	1.18	VH8552	1.18	VMHBL	1.8	WFBTSBSB	7.39
VC8563U	1.16	VM01CE	1.8	VML004	2.2	WFBTSBSW	7.39
VC9651	1.19	VM02CE	1.8	VML008	2.2	WFBTSPBB	7.39
VE24H	1.23	VM004	2.2	VML012	2.2	WFBTSPBW	7.39
VE103U	2.6	VM004K	2.2	VML016	2.2	WFBTSPSB	7.39
VE106U	2.6	VM008	2.2	VML018	2.2	WFBTSPSW	7.39
VE110U	2.6	VM008K	2.2	VML022	2.2	WFCC50NBNB	7.33
VE112U	2.6	VM012	2.2	VML106	1.4	WFCC50NBSB	7.33
VE212U	2.6	VM012K	2.2	VML110	1.4	WFCC50NBSW	7.33
VE312U	2.6	VM016	2.2	VML114	1.4	WFCC50NPBB	7.33
VF710C1	1.15	VM016K	2.2	VML120	1.4	WFCC50NPBW	7.33
VF712C1	1.15	VM018	2.2	VML202	1.4	WFCC50NPSB	7.33
VF714C1	1.15	VM018K	2.2	VML206	1.4	WFCC50NPSW	7.33
VF716C1	1.15	VM022	2.2	VML306H	1.4	WFDP50NBNB	7.31
VF716CU	1.16	VM022K	2.2	VML310H	1.4	WFDP50NBSB	7.31
VF812C	1.15	VM106	1.6	VML314H	1.4	WFDP50NBSW	7.31
VF814C	1.15	VM106K	1.6	VML402H	1.4	WFDP50NPBB	7.31
VF816CU	1.16	VM110	1.6	VML406H	1.4	WFDP50NPBW	7.31
VH004	2.3	VM110K	1.6	VML410H	1.4	WFDP50NPSB	7.31
VH008	2.3	VM114	1.6	VML710C	1.5	WFDP50NPSW	7.31
VH008G	2.3	VM114K	1.6	VML710CU	1.5	WFDP84BNB	7.29
VH012	2.3	VM120	1.6	VML712TG	1.4	WFDP84BSB	7.29
VH012G	2.3	VM120K	1.6	VML716C	1.5	WFDP84BSW	7.29
VH016	2.3	VM202	1.6	VML716CU	1.5	WFDP84FOBNB	7.29
VH016G	2.3	VM202K	1.6	VML733H	1.5	WFDP84FOBSB	7.29
VH022	2.3	VM206	1.6	VML754R	1.5	WFDP84FOBSW	7.29
VH022G	2.3	VM206K	1.6	VML755H	1.5	WFDP84FOPBB	7.29
VH104	1.12	VM306H	1.6	VML766H	1.5	WFDP84FOPSB	7.29
VH104G	1.12	VM306HK	1.6	VML778R	1.5	WFDP84FOPSW	7.29
VH106	1.12	VM310H	1.6	VML810C	1.5	WFDP84NBNB	7.29
VH106G	1.12	VM310HK	1.6	VML810CU	1.5	WFDP84NBSB	7.29
VH108	1.12	VM314H	1.6	VML816C	1.5	WFDP84NBSW	7.29
VH108G	1.12	VM314HK	1.6	VML816CU	1.5	WFDP84NPBB	7.29
VH110	1.12	VM402H	1.6	VML854R	1.5	WFDP84NPSB	7.29
VH110G	1.12	VM402HK	1.6	VML855H	1.5	WFDP84NPSW	7.29
VH114	1.12	VM406H	1.6	VML866H	1.5	WFDP84PBB	7.29
VH114G	1.12	VM406HK	1.6	VML878R	1.5	WFDP84PSB	7.29
VH116	1.12	VM410H	1.6	VML918C	1.5	WFDP84PSW	7.29
VH116G	1.12	VM410HK	1.6	VML8662	1.5	WFDS1BN	7.23
VH120	1.12	VM710C	1.7	VML9651	1.5	WFDS1BS	7.23
VH120G	1.12	VM710CK	1.7	VMLOCK	1.8	WFDS1PB	7.23
VH124	1.21	VM710CU	1.7	VS112	1.20	WFDS1PS	7.23
VH124G	1.21	VM710CUK	1.7	VS710C	1.20	WFDS2BN	7.23
VH129	1.21	VM712TG	1.6	VS712C	1.20	WFDS2BS	7.23
VH129G	1.21	VM712TGK	1.6	VS754U	1.20	WFDS2PB	7.23
VH141	1.21	VM716C	1.7	VS854U	1.20	WFDS2PS	7.23
VH141G	1.21	VM716CK	1.7	VU12EP	2.8	WFDS3BN	7.23
VH201	1.12	VM716CU	1.7	VU24EP	2.8	WFDS3BS	7.23
VH202	1.12	VM716CUK	1.7	VU36EP	2.8	WFDS3PB	7.23
VH304H	1.13	VM733H	1.7	VU48EP	2.8	WFDS3PS	7.23
VH306H	1.13	VM733HK	1.7	VW110G	1.23	WFDS4BN	7.23
VH308H	1.13	VM754R	1.7	VW310G	1.23	WFDS4BS	7.23
VH308NG	1.20	VM754RK	1.7	VW620G	1.23	WFDS4PB	7.23
VH318H	1.13	VM755H	1.7	VZ302N	2.8	WFDS4PS	7.23
VH404H	1.13	VM755HK	1.7	VZ310	2.7	WFDXBNB	7.41
VH406H	1.13	VM766H	1.7	VZ311	2.6	WFDXBBSB	7.41
VH408H	1.13	VM766HK	1.7	VZ313	2.5	WFDXBSW	7.41
VH712C1	1.15	VM778R	1.7	VZ403	2.6, 2.8	WFDXPBB	7.41
VH714C1	1.15	VM778RK	1.7	VZ405N	2.8	WFDXPBW	7.41
VH716CU	1.16	VM810C	1.7	VZ428	2.6, 2.8	WFDXPSB	7.41
VH726H1	1.21	VM810CK	1.7	VZ703	2.7	WFDXPSW	7.41
VH726H1G	1.21	VM810CU	1.7	VZ706	2.7	WFGF1	7.46
VH738H1	1.21	VM810CUK	1.7	VZ707	2.7	WFGF2	7.46
VH738H1G	1.21	VM816C	1.7	VZ708	2.7	WFGF34	7.46
VH754RG	1.17	VM816CK	1.7	VZ709	2.7	WFGP1BN	7.47
VH755H1	1.15	VM816CU	1.7	VZ744	2.6	WFGP1BS	7.47
VH766H1	1.15	VM816CUK	1.7			WFGP1PB	7.47
VH816CU	1.16	VM854R	1.7			WFGP1PS	7.47
VH826H	1.21	VM854RK	1.7			WFGP2BN	7.47
VH826HG	1.21	VM855H	1.7			WFGP2BS	7.47
VH838H	1.21	VM855HK	1.7			WFGP2PB	7.47
VH838HG	1.21	VM866H	1.7				

WFGP2PS	7.47	WFPS22PBB	7.21	WFSSU83FOPBW	7.35	WMGFU13PSW	7.49
WFGP3BN	7.47	WFPS22PBW	7.21	WFSSU83FOPSB	7.35	WMGKS	7.49
WFGP3BS	7.47	WFPS22PSB	7.21	WFSSU83FOPSW	7.35	WMGKSB/EL	7.48
WFGP3PB	7.47	WFPS22PSW	7.21	WFSSU83PBB	7.35	WMGKS/EL	7.48
WFGP3PS	7.47	WFPS22WBNB	7.21	WFSSU83PBW	7.35	WMGP1	7.46
WFGP4BN	7.47	WFPS22WBSB	7.21	WFSSU83PSB	7.35	WMGP1G	7.15, 7.46
WFGP4BS	7.47	WFPS22WBSW	7.21	WFSSU83PSW	7.35	WMGP2	7.46
WFGP4PB	7.47	WFPS22WPBB	7.21	WFSU83BNB	7.35	WMGP2G	7.15, 7.46
WFGP4PS	7.47	WFPS22WPBW	7.21	WFSU83BSB	7.35	WMGP3	7.46
WFGP6BN	7.47	WFPS22WPSB	7.21	WFSU83BSW	7.35	WMGP3G	7.15, 7.46
WFGP6BS	7.47	WFPS22WPSW	7.21	WFSU83PBB	7.35	WMGP4	7.46
WFGP6PB	7.47	WFPS32BNB	7.21	WFSU83PBW	7.35	WMGP4G	7.15, 7.46
WFGP6PS	7.47	WFPS32BSB	7.21	WFSU83PSB	7.35	WMGP6	7.46
WFGP8BN	7.47	WFPS32BSW	7.21	WFSU83PSW	7.35	WMGP6G	7.15, 7.46
WFGP8BS	7.47	WFPS32PBB	7.21	WFTVBOX	7.45	WMGP8	7.46
WFGP8PB	7.47	WFPS32PBW	7.21	WFTVFBNB	7.41	WMGP8G	7.15, 7.46
WFGP8PS	7.47	WFPS32PSB	7.21	WFTVFBWB	7.41	WMGS12	7.49
WFGP12BN	7.47	WFPS32PSW	7.21	WFTVFBW	7.41	WMGS12BNB	7.49
WFGP12BS	7.47	WFPS42BNB	7.21	WFTVFPBB	7.41	WMGS12BSB	7.49
WFGP12PB	7.47	WFPS42BSB	7.21	WFTVFPBW	7.41	WMGS12BSW	7.49
WFGP12PS	7.47	WFPS42BSW	7.21	WFTVFPB	7.41	WMGS12PBB	7.49
WFP1BN	7.45	WFPS42PBB	7.21	WFTVFPBW	7.41	WMGS12PBW	7.49
WFP1BS	7.45	WFPS42PBW	7.21	WFTVLPBNB	7.45	WMGS12PSB	7.49
WFP1EUBNB	7.43	WFPS42PSB	7.21	WFTVLPBSB	7.45	WMGS12PSW	7.49
WFP1EUBSB	7.43	WFPS42PSW	7.21	WFTVLPBSW	7.45	WMGS16	7.49
WFP1EUBSW	7.43	WFQXBNB	7.41	WFTVLPBSW	7.45	WMGS16BNB	7.49
WFP1EUPBB	7.43	WFQXBSB	7.41	WFTVLPBSW	7.45	WMGS16BSB	7.49
WFP1EUPBW	7.43	WFQXBSW	7.41	WFTVLPWW	7.45	WMGS16BSW	7.49
WFP1EUPSB	7.43	WFQXPBB	7.41	WFTXBNB	7.41	WMGS16PBB	7.49
WFP1EUPSW	7.43	WFQXPBW	7.41	WFTXBSB	7.41	WMGS16PBW	7.49
WFP1PB	7.45	WFQXPSB	7.41	WFTXBSW	7.41	WMGS16PSB	7.49
WFP1PS	7.45	WFQXPSW	7.41	WFTXPBB	7.41	WMGS16PSW	7.49
WFP2BN	7.45	WFRJ45BNB	7.39	WFTXPBW	7.41	WMGS22R	7.49
WFP2BS	7.45	WFRJ45BSB	7.39	WFTXPBSB	7.41	WMGS22RBNB	7.49
WFP2EUBNB	7.43	WFRJ45BSW	7.39	WFTXPBW	7.41	WMGS22RBSB	7.49
WFP2EUBSB	7.43	WFRJ45PBB	7.39	WMBTM	7.10	WMGS22RBSW	7.49
WFP2EUBSW	7.43	WFRJ45PBW	7.39	WMBTS	7.10	WMGS22RPBB	7.49
WFP2EUPBB	7.43	WFRJ45PSB	7.39	WMCC50	7.7	WMGS22RPBW	7.49
WFP2EUPBW	7.43	WFRJ45PSW	7.39	WMCC50N	7.7	WMGS22RPSB	7.49
WFP2EUPSB	7.43	WFS51BNB	7.27	WMCS3PF	7.12	WMGS22RPSW	7.49
WFP2EUPSW	7.43	WFS51BSB	7.27	WMCS3PI	7.12	WMGSD1L	7.49
WFP2PB	7.45	WFS51BSW	7.27	WMCS3PIF	7.12	WMGSD1LB	7.49
WFP2PS	7.45	WFS51PBB	7.27	WMCS11	7.12	WMGSD1S	7.49
WFP4EUBNB	7.43	WFS51PBW	7.27	WMCS12	7.12	WMGSD1SB	7.49
WFP4EUBSB	7.43	WFS51PSB	7.27	WMCS50N	7.13	WMGSD1T	7.49
WFP4EUBSW	7.43	WFS51PSW	7.27	WMDP50N	7.6	WMGSD1TB	7.49
WFP4EUPBB	7.43	WFSATBNB	7.41	WMDP50NG	7.15	WMGSDP2	7.48, 7.49
WFP4EUPBW	7.43	WFSATBSB	7.41	WMDP50NG/CK	7.15	WMGSDP2B	7.48
WFP4EUPSB	7.43	WFSATBSW	7.41	WMDP50VN	7.6	WMGSDP2B/CHD	7.48
WFP4EUPSW	7.43	WFSATPBB	7.41	WMDP84	7.6	WMGSDP2B/CM	7.48
WFPS3PIBNB	7.25	WFSATPBW	7.41	WMDP84FO	7.6	WMGSDP2B/DW	7.48
WFPS3PIBSB	7.25	WFSATPSB	7.41	WMDP84FON	7.6	WMGSDP2B/EF	7.48
WFPS3PIBSW	7.25	WFSATPSW	7.41	WMDP84N	7.6	WMGSDP2B/FB	7.48
WFPS3PIPBW	7.25	WFSO100BNB	7.37	WMDP84NG	7.15	WMGSDP2B/FF	7.48
WFPS3PIPSB	7.25	WFSO100BSB	7.37	WMDP85FON	7.6	WMGSDP2B/FRE	7.48
WFPS3PIPSW	7.25	WFSO100BSW	7.37	WMDP85N	7.6	WMGSDP2B/FRI	7.48
WFPS12BNB	7.21	WFSO100PBB	7.37	WMDR1/400R	7.4	WMGSDP2B/HB	7.48
WFPS12BSB	7.21	WFSO100PBW	7.37	WMDR2/250R	7.4	WMGSDP2B/HD	7.48
WFPS12BSW	7.21	WFSO100PSB	7.37	WMDS1	7.4	WMGSDP2B/HTG	7.48
WFPS12PBB	7.21	WFSO100PSW	7.37	WMDS2	7.4	WMGSDP2B/HW	7.48
WFPS12PBW	7.21	WFSS81BNB	7.27	WMDS3	7.4	WMGSDP2B/MW	7.48
WFPS12PSB	7.21	WFSS81BSB	7.27	WMDS4	7.4	WMGSDP2B/OS	7.48
WFPS12PSW	7.21	WFSS81BSW	7.27	WMDX	7.10	WMGSDP2B/OV	7.48
WFPS12PBB	7.21	WFSS81PBB	7.27	WMGB1	7.49	WMGSDP2B/BSB	7.49
WFPS12WBNB	7.21	WFSS81PBW	7.27	WMGB1BNB	7.49	WMGSDP2BSW	7.49
WFPS12WBSB	7.21	WFSS81PSB	7.27	WMGB1BSB	7.49	WMGSDP2B/TD	7.48
WFPS12WBSW	7.21	WFSS81PSW	7.27	WMGB1BSW	7.49	WMGSDP2B/WC	7.48
WFPS12WPBB	7.21	WFSS82BNB	7.27	WMGB1PBB	7.49	WMGSDP2B/WD	7.48
WFPS12WPBW	7.21	WFSS82BSB	7.27	WMGB1PBW	7.49	WMGSDP2B/WM	7.48
WFPS12WPSB	7.21	WFSS82BSW	7.27	WMGB1PSB	7.49	WMGSDP2/CHD	7.48
WFPS12WPSW	7.21	WFSS82PBB	7.27	WMGB1PSW	7.49	WMGSDP2/CM	7.48
WFPS16BNB	7.21	WFSS82PBW	7.27	WMGF1	7.46	WMGSDP2/DW	7.48
WFPS16BSB	7.21	WFSS82PSB	7.27	WMGF2	7.46	WMGSDP2/EF	7.48
WFPS16BSW	7.21	WFSS82PSW	7.27	WMGF34	7.46	WMGSDP2/FB	7.48
WFPS16PBB	7.21	WFSSU83BNB	7.35	WMGFU13	7.49	WMGSDP2/FF	7.48
WFPS16PBW	7.21	WFSSU83BSB	7.35	WMGFU13BNB	7.49	WMGSDP2/FRE	7.48
WFPS16PSB	7.21	WFSSU83BSW	7.35	WMGFU13BSB	7.49	WMGSDP2/FRI	7.48
WFPS16PSW	7.21	WFSSU83FOPNB	7.35	WMGFU13BSW	7.49	WMGSDP2/HB	7.48
WFPS22BNB	7.21	WFSSU83FOBSB	7.35	WMGFU13PBB	7.49	WMGSDP2/HD	7.48
WFPS22BSB	7.21	WFSSU83FOBSW	7.35	WMGFU13PBW	7.49	WMGSDP2/HTG	7.48
WFPS22BSW	7.21	WFSSU83FOPBB	7.35	WMGFU13PSB	7.49		

WMGSDP2/HW	7.48	WMPB2/20	7.14	WRCC50NBSW	7.33	WRGP12PS	7.47
WMGSDP2/MW	7.48	WMPB2/28	7.14	WRCC50NPBB	7.33	WRP1BN	7.45
WMGSDP2N	7.48	WMPB2/46	7.14	WRCC50NPBW	7.33	WRP1BS	7.45
WMGSDP2NB	7.48	WMPB2/46CC	7.14	WRCC50NPSB	7.33	WRP1EUBNB	7.43
WMGSDP2NB/CHD	7.48	WMPS3PI	7.5	WRCC50NPSW	7.33	WRP1EUBSB	7.43
WMGSDP2NB/DW	7.48	WMPS3PIF	7.5	WRDP50NBNB	7.31	WRP1EUBSW	7.43
WMGSDP2NB/EF	7.48	WMPS11	7.4	WRDP50NBSB	7.31	WRP1EUPBB	7.43
WMGSDP2NB/FF	7.48	WMPS12	7.4	WRDP50NBSW	7.31	WRP1EUPBW	7.43
WMGSDP2NB/FRE	7.48	WMPS12R	7.4	WRDP50NPBB	7.31	WRP1EUPSB	7.43
WMGSDP2NB/FRI	7.48	WMPS12RB	7.4	WRDP50NPBW	7.31	WRP1EUPSW	7.43
WMGSDP2NB/HB	7.48	WMPS12RW	7.4	WRDP50NPSB	7.31	WRP1PB	7.45
WMGSDP2NB/HTG	7.48	WMPS12RWG	7.15	WRDP50NPSW	7.31	WRP1PS	7.45
WMGSDP2NB/MW	7.48	WMPS12RWG/FB	7.15	WRDP84BNB	7.29	WRP2BN	7.45
WMGSDP2NB/OS	7.48	WMPS12W	7.4	WRDP84BSB	7.29	WRP2BS	7.45
WMGSDP2NB/TD	7.48	WMPS12WG	7.15	WRDP84BSW	7.29	WRP2EUBNB	7.43
WMGSDP2NB/WD	7.48	WMPS16	7.4	WRDP84FOBNNB	7.29	WRP2EUBSB	7.43
WMGSDP2NB/WM	7.48	WMPS16W	7.4	WRDP84FOBSB	7.29	WRP2EUBSW	7.43
WMGSDP2N/CHD	7.48	WMPS16WG	7.15	WRDP84FOPBSW	7.29	WRP2EUPBB	7.43
WMGSDP2N/DW	7.48	WMPS22	7.4	WRDP84FOPBB	7.29	WRP2EUPBW	7.43
WMGSDP2N/EF	7.48	WMPS22W	7.4	WRDP84FOPSB	7.29	WRP2EUPSB	7.43
WMGSDP2N/FF	7.48	WMPS22WG	7.15	WRDP84FOPSW	7.29	WRP2EUPSW	7.43
WMGSDP2N/FRE	7.48	WMPS32	7.4	WRDP84NBNB	7.29	WRP2PB	7.45
WMGSDP2N/FRI	7.48	WMPS42	7.4	WRDP84NBSB	7.29	WRP2PS	7.45
WMGSDP2N/HB	7.48	WMQX	7.10	WRDP84NBSW	7.29	WRP4EUBNB	7.43
WMGSDP2N/HTG	7.48	WMRJ11	7.10	WRDP84NPBB	7.29	WRP4EUBSB	7.43
WMGSDP2N/MW	7.48	WMRJ45	7.10	WRDP84NPSB	7.29	WRP4EUBSW	7.43
WMGSDP2N/OS	7.48	WMS51	7.5	WRDP84NPSW	7.29	WRP4EUPBB	7.43
WMGSDP2N/OV	7.48	WMS81	7.5	WRDP84PBB	7.29	WRP4EUPBW	7.43
WMGSDP2N/TD	7.48	WMS82	7.5	WRDP84PBW	7.29	WRP4EUPSB	7.43
WMGSDP2N/WD	7.48	WMSAT	7.10	WRDP84PSB	7.29	WRP4EUPSW	7.43
WMGSDP2N/WM	7.48	WMSO100	7.9	WRDP84PSW	7.29	WRPS3PIBNB	7.25
WMGSDP2/OS	7.48	WMSS81	7.5	WRDS1BN	7.23	WRPS3PIBSB	7.25
WMGSDP2/OV	7.48	WMSS81G	7.15	WRDS1BS	7.23	WRPS3PIBSW	7.25
WMGSDP2PBB	7.49	WMSS81N	7.5	WRDS1PB	7.23	WRPS3PIPBB	7.25
WMGSDP2PBW	7.49	WMSS81R	7.15	WRDS1PS	7.23	WRPS3PIPBW	7.25
WMGSDP2PSB	7.49	WMSS81RR	7.15	WRDS2BN	7.23	WRPS3PIPSB	7.25
WMGSDP2PSW	7.49	WMSS82	7.5	WRDS2BS	7.23	WRPS3PIPSW	7.25
WMGSDP2/TD	7.48	WMSS82N	7.5	WRDS2PB	7.23	WRPS12BNB	7.21
WMGSDP2/WC	7.48	WMSS82O	7.5	WRDS2PS	7.23	WRPS12BSB	7.21
WMGSDP2/WD	7.48	WMSS82OG	7.15	WRDS3BN	7.23	WRPS12BSW	7.21
WMGSDP2/WM	7.48	WMSS82ON	7.5	WRDS3BS	7.23	WRPS12PBB	7.21
WMMB	7.11, 7.42	WMSS82OR	7.15	WRDS3PB	7.23	WRPS12PBW	7.21
WMMBB	7.11, 7.42	WMSS82ORR	7.15	WRDS3PS	7.23	WRPS12PSB	7.21
WMMBTM	7.11, 7.42	WMSS82R	7.15	WRDS4BN	7.23	WRPS12PSW	7.21
WMMBTMB	7.11, 7.42	WMSS82R/CS	7.15	WRDS4BS	7.23	WRPS12WBNB	7.21
WMMBTS	7.11, 7.42	WMSS82R/DNS	7.15	WRDS4PB	7.23	WRPS12WBSB	7.21
WMMBTSB	7.11, 7.42	WMSS82R/ES	7.15	WRDS4PS	7.23	WRPS12WBSW	7.21
WMMDX	7.11, 7.42	WMSS82RR	7.15	WRDXBNB	7.41	WRPS12WPBB	7.21
WMMDXB	7.11, 7.42	WMSS82R/UPS	7.15	WRDXBSB	7.41	WRPS12WPBW	7.21
WMMPP	7.11, 7.42	WMSSU83	7.7	WRDXBSW	7.41	WRPS12WPSB	7.21
WMMQX	7.11, 7.42	WMSSU83FO	7.7	WRDXPBB	7.41	WRPS12WPSW	7.21
WMMQXB	7.11, 7.42	WMSSU83FON	7.7	WRDXPBW	7.41	WRPS16BNB	7.21
WMMRJ11	7.11, 7.42	WMSSU83N	7.7	WRDXPSB	7.41	WRPS16BSB	7.21
WMMRJ11B	7.11, 7.42	WMSSU83NG	7.15	WRDXPSW	7.41	WRPS16BSW	7.21
WMMRJ45	7.11, 7.42	WMSSU83NG/EH	7.15	WRGP1BN	7.47	WRPS16PBB	7.21
WMMRJ45B	7.11, 7.42	WMSSU83NG/PH	7.15	WRGP1BS	7.47	WRPS16PBW	7.21
WMMSAT	7.11, 7.42	WMSSU83R	7.15	WRGP1PB	7.47	WRPS16PSB	7.21
WMMSATB	7.11, 7.42	WMSSU83RR	7.15	WRGP1PS	7.47	WRPS16PSW	7.21
WMMSP	7.11, 7.42	WMSU83	7.7	WRGP2BN	7.47	WRPS22BNB	7.21
WMMTVF	7.11, 7.42	WMSU83FO	7.7	WRGP2BS	7.47	WRPS22BSB	7.21
WMMTVFB	7.11, 7.42	WMSU83R	7.15	WRGP2PB	7.47	WRPS22BSW	7.21
WMMTVM	7.11, 7.42	WMSU83R/FA	7.15	WRGP2PS	7.47	WRPS22PBB	7.21
WMMTVMB	7.11, 7.42	WMTVF	7.10	WRGP3BN	7.47	WRPS22PBW	7.21
WMMTX	7.11, 7.42	WMTVM	7.10	WRGP3BS	7.47	WRPS22PSB	7.21
WMMTXB	7.11, 7.42	WMTX	7.10	WRGP3PB	7.47	WRPS22PSW	7.21
WMMUSB	7.11, 7.42	WRBTMBNB	7.39	WRGP3PS	7.47	WRPS22WBNB	7.21
WMMUSBB	7.11, 7.42	WRBTMBSB	7.39	WRGP4BN	7.47	WRPS22WBSB	7.21
WMP1	7.11	WRBTMBSW	7.39	WRGP4BS	7.47	WRPS22WBSW	7.21
WMP1EU	7.11	WRBTMPBB	7.39	WRGP4PB	7.47	WRPS22WPBB	7.21
WMP1EUG	7.15	WRBTMPBW	7.39	WRGP4PS	7.47	WRPS22WPBW	7.21
WMP2	7.11	WRBTMPSB	7.39	WRGP6BN	7.47	WRPS22WPSB	7.21
WMP2EU	7.11	WRBTMPSW	7.39	WRGP6BS	7.47	WRPS22WPSW	7.21
WMP2EUG	7.15	WRBTSBNB	7.39	WRGP6PB	7.47	WRPS32BNB	7.21
WMP2FO	7.8	WRBTSBSB	7.39	WRGP6PS	7.47	WRPS32BSB	7.21
WMP4EU	7.11	WRBTSBSW	7.39	WRGP8BN	7.47	WRPS32BSW	7.21
WMP4EUG	7.15	WRBTSPBB	7.39	WRGP8BS	7.47	WRPS32PBB	7.21
WMP50FO	7.8	WRBTSPBW	7.39	WRGP8PB	7.47	WRPS32PBW	7.21
WMPB1/20	7.14	WRBTSPSB	7.39	WRGP8PS	7.47	WRPS32PSB	7.21
WMPB1/28	7.14	WRBTSPSW	7.39	WRGP12BN	7.47	WRPS32PSW	7.21
WMPB1/46	7.14	WRCC50NBNB	7.33	WRGP12BS	7.47	WRPS42BNB	7.21
WMPB1/BFO	7.14	WRCC50NBSB	7.33	WRGP12PB	7.47	WRPS42BSB	7.21



WRPS42BSW	7.21	WRTVFPSW	7.41
WRPS42PBB	7.21	WRTXBNB	7.41
WRPS42PBW	7.21	WRTXBSB	7.41
WRPS42PSB	7.21	WRTXBSW	7.41
WRPS42PSW	7.21	WRTXPBB	7.41
WRQXBNB	7.41	WRTXPBW	7.41
WRQXBSB	7.41	WRTXPSB	7.41
WRQXBSW	7.41	WRTXPSW	7.41
WRQXPBB	7.41	WXPDP84	7.52
WRQXPBW	7.41	WXPPS12	7.52
WRQXPSB	7.41	WXPPS12B	7.52
WRQXPSW	7.41	WXPPS22	7.52
WRRJ45BNB	7.39	WXPS81	7.52
WRRJ45BSB	7.39	WXPS82	7.52
WRRJ45BSW	7.39	WXPSS81	7.52
WRRJ45PBB	7.39	WXPSS82	7.52
WRRJ45PBW	7.39	WXPSSU83FO	7.52
WRRJ45PSB	7.39		
WRRJ45PSW	7.39	<b>X</b>	
WRS51BNB	7.27		
WRS51BSB	7.27	XH9001	7.13
WRS51BSW	7.27		
WRS51PBB	7.27		
WRS51PBW	7.27		
WRS51PSB	7.27		
WRS51PSW	7.27		
WRSATBNB	7.41		
WRSATBSB	7.41		
WRSATBSW	7.41		
WRSATPBB	7.41		
WRSATPBW	7.41		
WRSATPSB	7.41		
WRSATPSW	7.41		
WRSO100BNB	7.37		
WRSO100BSB	7.37		
WRSO100BSW	7.37		
WRSO100PBB	7.37		
WRSO100PBW	7.37		
WRSO100PSB	7.37		
WRSO100PSW	7.37		
WRSS81BNB	7.27		
WRSS81BSB	7.27		
WRSS81BSW	7.27		
WRSS81PBB	7.27		
WRSS81PBW	7.27		
WRSS81PSB	7.27		
WRSS81PSW	7.27		
WRSS82BNB	7.27		
WRSS82BSB	7.27		
WRSS82BSW	7.27		
WRSS82PBB	7.27		
WRSS82PBW	7.27		
WRSS82PSB	7.27		
WRSS82PSW	7.27		
WRSSU83BNB	7.35		
WRSSU83BSB	7.35		
WRSSU83BSW	7.35		
WRSSU83FOBNB	7.35		
WRSSU83FOBSB	7.35		
WRSSU83FOBSW	7.35		
WRSSU83FOPBB	7.35		
WRSSU83FOPBW	7.35		
WRSSU83FOPSB	7.35		
WRSSU83FOPSW	7.35		
WRSSU83PBB	7.35		
WRSSU83PBW	7.35		
WRSSU83PSB	7.35		
WRSSU83PSW	7.35		
WRSU83BNB	7.35		
WRSU83BSB	7.35		
WRSU83BSW	7.35		
WRSU83PBB	7.35		
WRSU83PBW	7.35		
WRSU83PSB	7.35		
WRSU83PSW	7.35		
WRTVFBNB	7.41		
WRTVFBBSB	7.41		
WRTVFBBSW	7.41		
WRTVFPBB	7.41		
WRTVFPBW	7.41		
WRTVFPSB	7.41		

[illegible]

[illegible]

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



1. In these Terms the following expressions shall have the following meanings:
  - 1.1 "Buyer" the purchaser of the Goods from the Seller.
  - 1.2 "Seller" Hager Limited.
  - 1.3 "Contract" the contract for the sale and purchase of the Goods made pursuant to these Terms.
  - 1.4 "Delivery" delivery of the Goods in accordance with these Terms.
  - 1.5 "Delivery Address" the location for Delivery agreed by the Seller and the Buyer (save where it is agreed that the Buyer shall collect the Goods from the Seller's premises).
  - 1.6 "Delivery Date" the date for Delivery agreed by the Seller and the Buyer.
  - 1.7 "Force Majeure" any circumstances beyond the reasonable control of the Seller.
  - 1.8 "Goods" the products which the Seller has agreed to supply to the Buyer pursuant to these Terms.
  - 1.9 "Loss" all actions claims demands losses (direct, indirect, consequential or otherwise) expenses costs actions and proceedings.
  - 1.10 "Payment Terms" the terms of payment in respect of the Price (and where relevant any delivery order or handling charges) which unless otherwise agreed by the Buyer and the Seller shall require payment not later than the last day of the month following that in which the Seller notifies the Buyer that the Goods are ready for despatch or have been dispatched.
  - 1.11 "Price" the price of the Goods as set out in the Seller's current price list at the date of despatch.
  - 1.12 "Quotation" includes any quotation, estimate, or tender given or made by the Seller.
  - 1.13 "Terms" the terms and conditions set out herein including any special terms and conditions agreed in writing by the Seller and the Buyer.
  - 1.14 "Product Lifetime" is the reasonable lifetime of a wiring accessory product in this catalogue and is taken to be 25 years from the date of manufacture.
2. All orders are accepted and all contracts are made subject to the Terms which shall prevail and be effective notwithstanding any variations or additions contained in any order or other document submitted by the Buyer including without limitation any standard conditions of purchase of the Buyer. No modification, of these Terms shall be binding upon the Seller unless made in writing by a duly authorised employee of the Seller.
3. A Quotation does not constitute an offer by the Seller to supply Goods and every acceptance of any Quotation by the Buyer shall be deemed an offer by the Buyer to purchase Goods from the Seller and will not be binding on the Seller until the Seller has given written acknowledgement or acceptance of such order.
4. The Seller reserves the right by giving notice to the Buyer at any time before Delivery to increase the price of the Goods or any installment of the Goods to reflect any increase in their cost of production, delivery, provision or otherwise which is due to Force Majeure, including but not by way of limitation any fluctuations in the cost of raw materials.
5. Unless otherwise agreed by the Buyer and the Seller, the Price shall be for Delivery to the Delivery Address. The Price shall include carriage and transit insurance costs to the Delivery Address. The Price is exclusive of any VAT (which will be applied in accordance with the legislation in force at the tax point date) for which the Buyer will be additionally liable.
6. In addition to the price, an order charge of £10 shall be payable by the buyer on orders under the value of £250 (per order number). The Seller reserves the right to charge the Buyer a reasonable handling charge for special deliveries made at the Buyer's request.
7. The Seller shall be entitled to send the invoice for the Goods to the Buyer immediately the Goods have been dispatched or when they are ready for despatch but are prevented or delayed from being dispatched due to Force Majeure.
8. The Buyer shall pay the Price plus any VAT strictly in accordance with the Payment Terms. The Seller will afford the Buyer a 2.5% discount on the Price if payment is made on or before the due date. Non-compliance with the Seller's terms of payment shall constitute default without reminder. In case of default the Seller may without prejudice to any other of its rights under these Terms charge interest to accrue on a daily basis at the rate of 3% per month from the date upon which payment falls due to the actual date of payment such interest to be paid monthly. Except where insolvency laws provide otherwise the Buyer shall not be entitled to withhold or set off payment for Goods for any reason whatsoever.
9. If the Buyer shall fail to fulfil the Payment Terms in respect of any invoice of the Seller the Seller may demand payment of all outstanding balances from the Buyer whether due or not and/or cancel all outstanding orders and/or decline to make further deliveries except upon receipt of cash or satisfactory securities.
10. In addition to any right or lien to which the Seller may by law be entitled the Seller shall in the event of the Buyer's insolvency or the Buyer failing to render payment for any Goods supplied by the Seller when due be entitled to a general lien on all goods of the Buyer in the Seller's possession for the unpaid price of any Goods sold and delivered by the Seller under the same or any other contract.
11. In addition and without prejudice to its other rights the Seller may on 14 days notice to the Buyer sell any goods of the Buyer on which the Seller has a lien and shall be deemed the Buyer's agent for the purposes of effecting such sale. The Seller may apply the proceeds of sale towards the satisfaction of sums due from the Buyer without prejudice to the Seller's right to recover the balance thereof from the Buyer.
12. Any date or period set out in a Quotation or the Seller's acceptance of order or which is otherwise agreed by the Seller and the Buyer for the delivery of the Goods or any part of them is approximate only and time shall not be of the essence of such delivery. If the Seller is prevented from delivering any Goods at the time provided for delivery by reason of Force Majeure then the period for delivery shall in any event be extended by the time lost due to such Force Majeure.
13. Delivery shall be made by the Seller supplying the Goods to the Delivery Address and the Buyer shall be responsible for the unloading of the Goods at the Delivery Address and the cost thereof. Where the Seller and the Buyer agree in writing that the Buyer shall collect the Goods from the Seller's premises the Buyer shall arrange at its expense unless otherwise agreed in writing for the carriage of the Goods (including cost of insurance in transit) and the Goods shall be deemed to have been delivered upon their loading upon the carrier and for the purpose of these Terms "Delivery" shall be construed accordingly.
14. Should the Buyer fail to take Delivery on or before the Delivery Date the Seller shall be entitled:
  - 14.1 If it has not already done so to invoice such Goods forthwith and to take the invoice into account;
  - 14.2 To treat the Contract as repudiated by the Buyer and without prejudice to any other right it may have against the Buyer the Seller shall be entitled to resell the Goods and shall be entitled to be indemnified by the Buyer for any Loss which it suffers.
15. The Seller reserves the right to deliver the Goods by installments and where it does so each delivery shall constitute a separate contract and any failure by the Seller to deliver any one or more of the installments in accordance with these Terms or any claim by the Buyer in respect of any one or more installments shall not entitle the Buyer to treat the Contract as a whole as repudiated.
16. The Buyer shall store and transport the Goods in conditions that will preserve the Goods in good condition. The Buyer shall comply with all reasonable requests made by the Seller with regard to the conditions in which the Goods are to be stored and transported.
17. Packing cases and cartons in which the Goods are supplied are non-returnable and provided free of charge.
- 18.18.1 If the Goods are to be manufactured by the Seller in accordance with a specification submitted by the Buyer, the Buyer shall indemnify the Seller against all Loss suffered by the Seller in connection with any claim by a third party that the manufacture and/or supply of the Goods to such specification infringes the rights of any third party.
- 18.2 Unless otherwise agreed in writing all copyright and design rights in any drawings created by the Seller in the performance of the Contract shall vest in the Seller and remain the property of the Seller notwithstanding the purchase of the Goods by the Buyer.
- 19.19.1 Subject as expressly provided for herein all warranties, conditions, or other terms implied by statute or common law are excluded to the fullest extent permitted by law and the Seller shall have no liability to the Buyer other than as expressly set out herein.
- 19.2 The Seller makes no warranty as to the accuracy of all general drawings including weights and dimensions issued by the Seller and such drawings and any descriptions and illustrations contained in any catalogue, price list or other advertising material are for information only and are a general description of the Goods and do not form part of the Contract.
- 19.3 The Buyer shall be deemed to have inspected and quantified the Goods upon Delivery and the Seller shall have no liability to the Buyer in relation to short delivery or damage to the Goods in transit which was apparent on inspection or which would have been apparent on reasonable inspection unless such short delivery or damage is notified to the Seller and the carriers in writing within 3 days of Delivery specifying (in such detail as the Supplier shall reasonably require) the shortage in or damage to the Goods.

- 19.4 The Seller shall have no liability to the Buyer in relation to non-delivery of the Goods unless such non-delivery is notified to the Seller in writing within 10 days of the Delivery Date.
- 19.5 Where any valid claim in respect of short delivery or non-delivery of or damage to the Goods is notified to the Seller in accordance with these Terms, the Seller shall be entitled to supply goods to remedy any short delivery or non-delivery or damage free of charge or, at the Seller's discretion refund to the Buyer the price of the relevant Goods but the Seller shall have no further liability to the Buyer except in the case of death or personal injury caused by the negligence of the Seller.
- 19.6 Where the Seller does not manufacture the Goods or any part thereof the Seller shall have no liability in relation to any defect in or failing of the Goods other than to use its reasonable endeavours to pass to the Buyer the benefit of any guarantee given in respect of the Goods or part thereof by their manufacturer.
- 19.7.1 The company undertakes to replace or repair at its discretion products should they become inoperable within the time periods as outlined below:

Brand	Product lifetime	10 years	2 years
Hager wiring accessories	✓		
Metalclad ranges		✓	
dimmer switches, shaver units, portable lamps			✓
klik	✓		
occupancy sensors			✓
Tehalit	✓		
Hager			✓

- 19.7.2 In all cases defects shall be taken as arising solely from faulty materials and or workmanship and the defective goods must always be returned to Hager Ltd and Hager Ltd must be notified of the defect or suspected defect immediately the same became known to the Buyer. The Guarantee will be invalidated if the product has not been installed or maintained in accordance with the Company's instructions, has not been used appropriately or if any attempt has been made to rectify, dismantle or alter the product in any way.
- 19.8 The Seller shall not be liable to repair or replace defective Goods or part thereof if the Goods or part thereof have been subject to any misuse, unauthorised repair replacement modification or alteration.
- 19.9 The Seller shall not be liable for any Loss suffered by the Buyer due to the Seller's failure to meet its obligations under the Contract due to Force Majeure.
- 19.10 Except in respect of death or personal injury caused by the Seller's negligence, the Seller shall have no liability to the Buyer for any loss of profit, business, contracts, revenues or anticipated savings or for any special indirect or consequential damage or loss of any nature whatsoever and whether caused by the negligence of the Seller or its employees, or agents) which arises out of or in connection with the supply of the Goods and/or their use or resale by the Buyer, except as may otherwise be expressly provided for in these Terms.
- 19.11 For the avoidance of doubt nothing herein contained shall be deemed to exclude or restrict the Seller's liability for death or personal injury arising due to the Seller's negligence.
20. The risk in the Goods shall pass to the Buyer immediately upon Delivery.
21. The Buyer shall indemnify the Seller against all Loss (including without limitation the Price in respect of Goods completed, costs incurred by the Seller in respect of partially completed Goods, reasonable cancellation charges incurred by the Seller due to any subcontracts entered into to perform the Contract and estimated profits on the Goods under the Contract on which work by the Seller has not been started) suffered by the Seller which arises as a result of the cancellation of the Contract by the Buyer, the breach by the Buyer of any provision of the Contract or the negligence of the Buyer or any of its representatives.
22. Until payment by the Buyer in full of the Price of the Goods and any other monies due to the Seller in respect of all other products supplied or agreed to be sold by the Seller to the Buyer (including but without limitation any costs of delivery):
  - 22.1 The property in the Goods shall remain in the Seller and the Buyer shall hold the same as the fiduciary agent of and bailee for the Seller;
  - 22.2 The Buyer shall store the Goods separately from other products in a manner which makes them readily identifiable as being the property of the Seller and shall keep them protected and insured but shall be entitled to resell or use the Goods in the ordinary course of its business.
23. Until such time as property in the Goods has passed to the Buyer (and provided that the Goods are still in existence and have not been resold) the Seller shall be entitled at any time to require the Buyer to deliver up the Goods to the Seller and if the Buyer fails to do so forthwith the Seller or its agents may enter the premises of the Buyer and take possession of any Goods in which property remains in the Seller and remove and dispose of them as the Seller thinks fit. The Seller shall apply the proceeds of disposal (after deduction of all expenses) in discharge of the amount unpaid by the Buyer.
- 24.24.1 Save as may be otherwise agreed in writing between the Seller and the Buyer where Goods are supplied for export from the United Kingdom they shall be charged for and delivered FOB the air or sea port of shipment and the Seller shall not be obliged to give the Buyer the notice specified in Section 32(3) of the Sale of Goods Act 1979.
- 24.2 The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties thereon. In particular, if any licence or consent of any government or other authority shall be required for the acquisition, carriage or use of the Goods by the Buyer the Buyer shall obtain the same at its own expense and if necessary produce evidence of the same to the Seller on demand. Failure to do so shall not entitle the Buyer to withhold or delay payment of the Price. Any additional expenses or charges incurred by the Seller resulting from such failure shall be for the Buyer's account.
- 24.3 The seller supplies the goods to the buyer on the sole basis that goods are on-sold by the buyer to suitably qualified, professional installers only.
25. If the Buyer:
  - 25.1 Shall default in or commit any breach of any of its obligations to the Seller under these Terms; or
  - 25.2 Shall be involved in any legal proceedings in which its solvency is in question; or
  - 25.3 Being a company shall present a petition or have a petition presented for its winding up or convene a meeting to pass a resolution for voluntary winding up or have a receiver appointed over all or any part of its assets or call a meeting of or enter into any composition or arrangement with its creditors or being an individual shall be presented with a bankruptcy petition; or
  - 25.4 Shall cease or threaten to cease to trade or if in the opinion of the Seller serious doubts arise as to the Buyer's solvency then in any such case the Seller shall immediately become entitled (without prejudice to its other claims and rights under the Contract) to suspend further performance of the Contract for such time as it shall in its absolute discretion think fit or (whether or not notice of such a suspension shall have been given) to treat the Contract as wrongfully repudiated by the Buyer and forthwith terminate the Contract (either with or without notice to the Buyer) and if the Goods have been delivered but not paid for the Price shall become immediately due and payable notwithstanding any previous agreement to the contrary.
26. All Contracts shall be governed by English Law and the English Courts shall have nonexclusive jurisdiction for the hearing of any dispute between the parties.
27. These Terms supersede all previous Conditions of Sale of the Seller.
28. The Seller shall be entitled to assign or sub-contract all or any of its rights and obligations hereunder. The Buyer shall not be entitled to assign transfer sub-contract or otherwise delegate any of its rights or obligations hereunder.
29. It is a condition of any sale under these terms and conditions that both parties shall abide by the principles of The Electrical Installation Industry Charter adopted by the major electrical industry trade bodies and consequently shall avoid the distribution of counterfeit and/or non-compliant electrical products.

Conditions of Use  
The products listed in this publication should be installed by suitably qualified professional personnel in accordance with the company's instructions, requirements of relevant legislation, regulations (including IEE Wiring Regulations) and the accepted practice in the industry.

Hager Ltd.  
Hortonwood 50  
Telford  
Shropshire  
TF1 7FT

Sales Service Centre: 01952 675612  
Sales Service Centre Faxline: 01952 675645  
[sales@hager.co.uk](mailto:sales@hager.co.uk)

Technical Service Centre: 01952 675689  
Technical Service Centre Faxline: 01952 675557  
[www.hager.co.uk](http://www.hager.co.uk)  
[technical@hager.co.uk](mailto:technical@hager.co.uk)

Hager Ltd.  
Unit M2  
Furry Park Industrial Estate  
Swords Road  
Santry  
Dublin 9  
D09 NY19  
Ireland

Northern Ireland Tel: 00 44 7968 147444  
Northern Ireland Fax: 00 353 1 8869520

Republic of Ireland Tel: 1890 551 502  
Republic of Ireland Fax: 1890 551 503  
[www.hager.ie](http://www.hager.ie)  
[customer.service@hager.ie](mailto:customer.service@hager.ie)

