HYTRONIK HC038V Detached Linear Occupancy Sensor Owner's Manual

HYTRONIK®

HC038V Detached Linear Occupancy Sensor
Owner's Manual

Contents

HC038V Detached Linear Occupancy Sensor

Tri-level Control & Daylight Harvest Sensor
HC038V HCD038 HCD038/P
Detached Linear Version with Remote Control

Applications

Occupancy detector with tri-level dimming control suitable for indoor use:

- Office / Commercial Lighting
- Classroom
- Meeting Room

Use for new luminaire designs and installations

Features

	DALI-2 and D4i supported (HCD038/P)
	Daylight harvest function to regulate light output for maintaining required lux level
	Active Lux Switching, daylight threshold prior to motion detection
	Tri-level dimming control based upon occupancy (also known as corridor function)
	Optional 1-10V or DALI dimming control method
	One-touch daylight learning via remote control
	Zero crossing detection circuit reduces in-rush current and prolongs relay life (HC038V)
	Loop-in and loop-out terminal for efcient installation (HC038V)
	5-year warranty

Technical Data

Input & Output Characteristics	
Operating voltage	220~240VAC 50/60Hz
Stand-by power	<0.5W
Load ratings:	
HC038V	400VA (capacitive) 800W (resistive)
HCD038 HCD038/P	30mA (max. 15 devices)
Warming-up	20s

Environment	
Operation temperature	Ta: -20°C ~ +55°C
Case temperature (Max.)	Tc: +75°C
IP rating	IP20

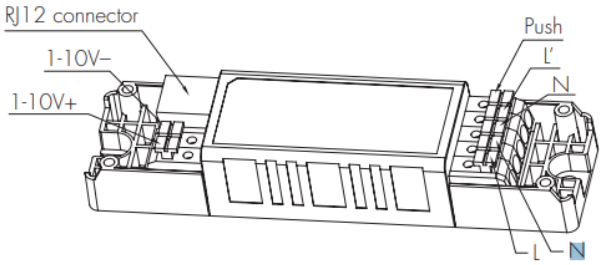
DALI-2 Standards	
	IEC62386 101
HCD038/P+HIR17	IEC 62386 103 IEC 62386 303
	IEC62386 304

Safety & EMC	
EMC standard (EMC)	EN55015, EN61000, EN61547
Safety standard (LVD)	EN60669-1/-2-1, AS/NZS60669-1/-2-1, IEC62386
Radio Equipment (RED)	EN300440, EN301489-1/-3/-17 EN62479, EN300328
Certification	Semko, CB, CE , EMC, RED, RCM,UKCA

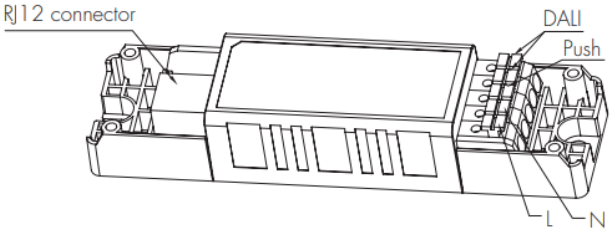
PIR Sensor Propertie (HIR17 & HIR17/R)	
Sensor principle	PIR detection
Operation voltage	5VDC
Detection range *	HIR17 Max installation height 3m (single person) Max detection range (Ø) 12 m HIR17/R Max installation height 8m (single person) Max installation height 12m (forklift) Max detection range (Ø) 14m
Detection angle	360°

Mechanical Structure & Dimensions

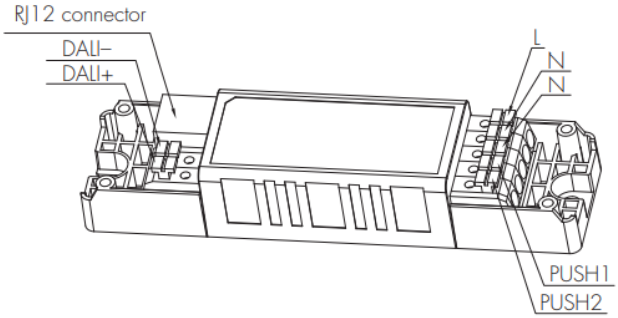
HC038V (1-10V output with 1 push)

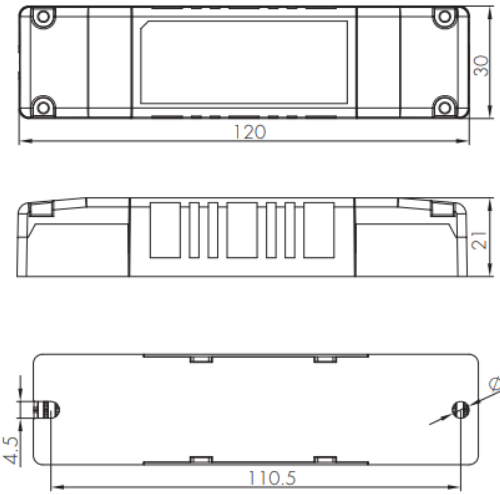


HCD038 (DALI output with 1 push)



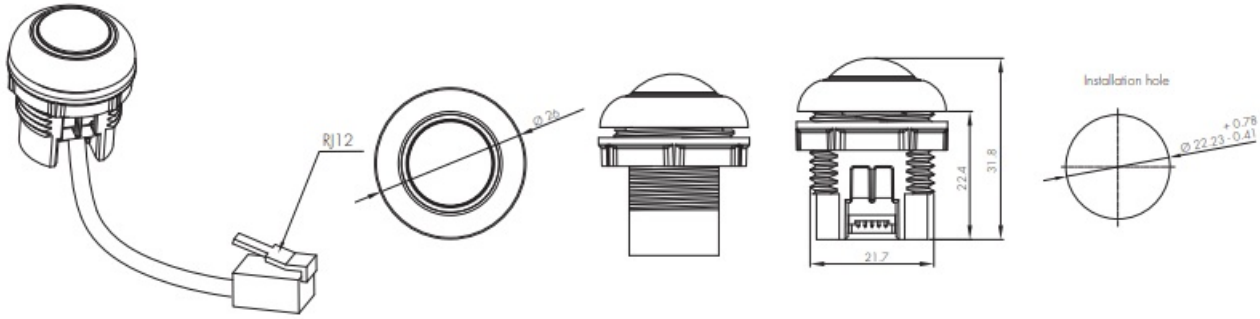
HCD038/P (DALI output with 2 push)



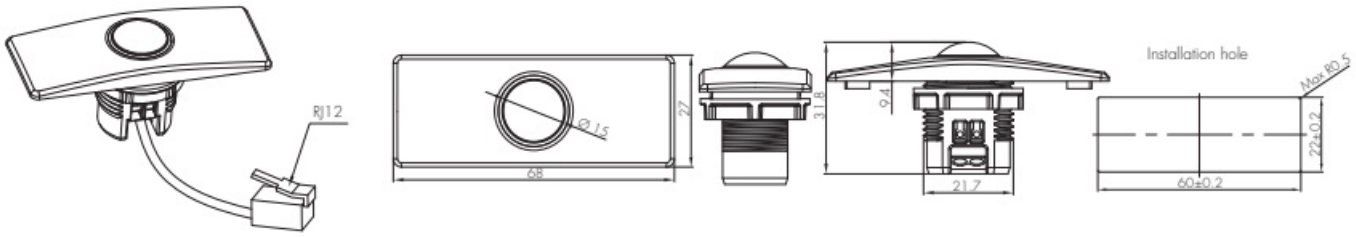


PIR Sensor Head

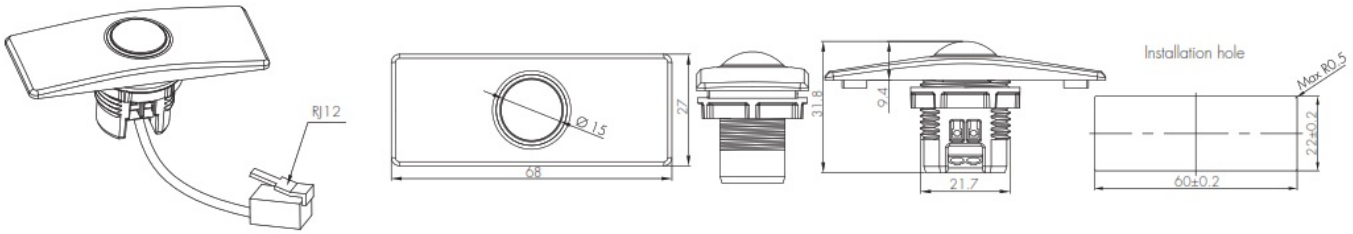
A. HIR17
PIR sensor head
The cable length is around 30cm.



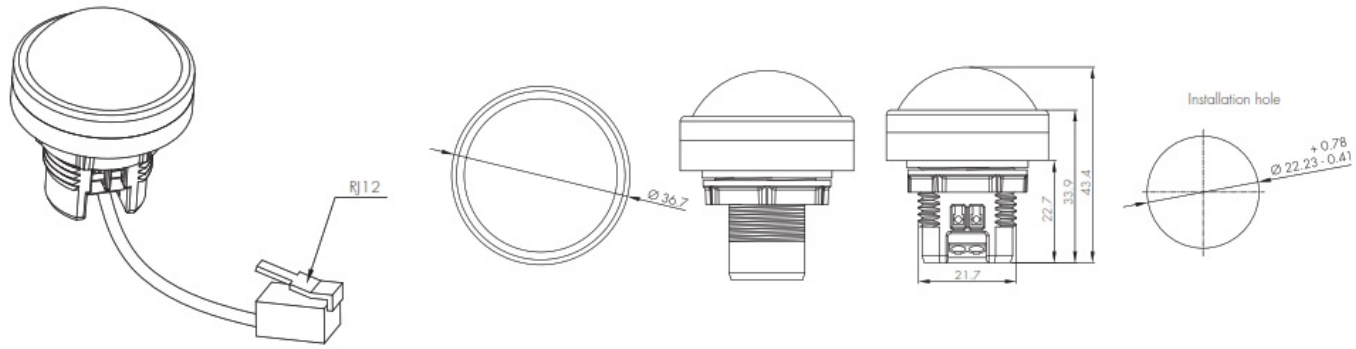
B. HIR17 with HA04
PIR sensor head
Optional accessory
The cable length is around 30cm.



C. HIR17 with HA05
PIR sensor head
Optional accessory
The cable length is around 30cm.



D. HIR17/R
PIR sensor head
IP65 (facia / lens part)
The cable length is around 30cm.



Note:

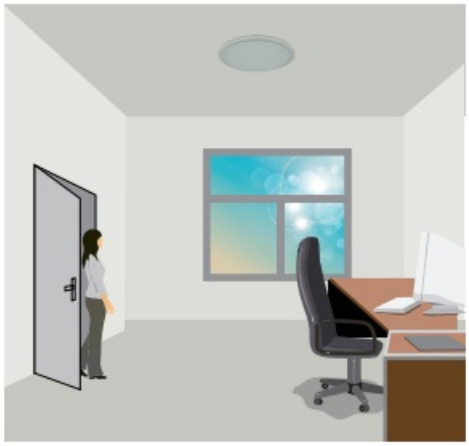
1. When HIR17 or HIR17/R plug with HCD038/P, only one push terminal can be activated for configuration.
2. Only when both HCD038/P and HIR17 or HIR17/R are used together, then the combination is DALI-2 enabled as a whole.
   HIR17 can freely switch between tri-level control and daylight harvest through remote controller HRC-11 setting.

Note:We recommend the mounting distance between sensor to sensor should be more than 2m to prevent sensors from false-triggering.

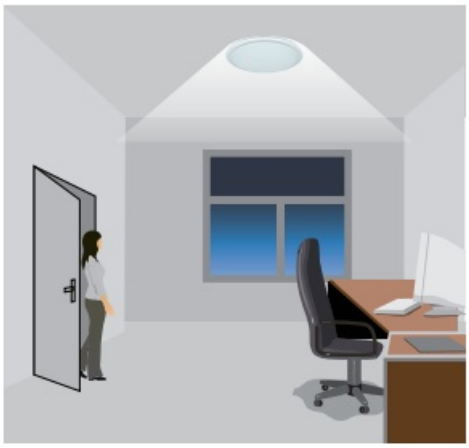
Functions and Features

1. Tri-level Control (Corridor Function)

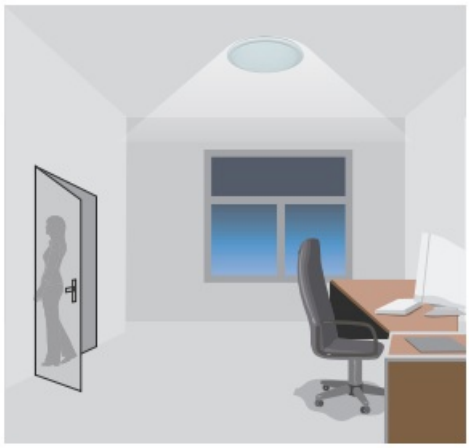
   Hytronik builds this function inside the motion sensor to achieve tri-level control, for some areas which require a light change notice before switch-off. The sensor offers 3 levels of light: 100%–>dimmed light (natural light is insufficient) –>off; and 2 periods of selectable waiting time: motion hold-time and stand-by period; Selectable daylight threshold and freedom of detection area.



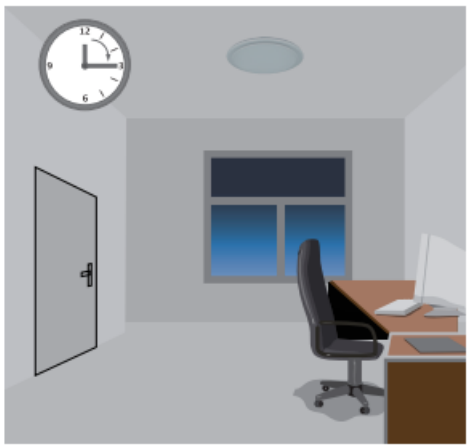
   With sufficient natural light, the light does not switch on when presence is detected.



   With insufficient natural light, the sensor switches on the light automatically when presence is detected.



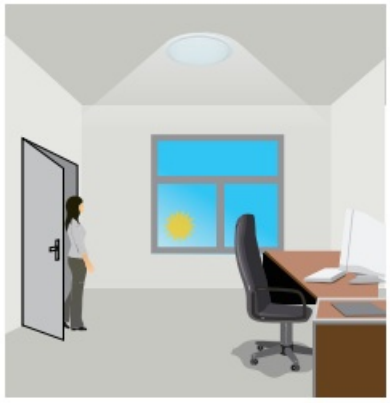
   After hold-time, the light dims to stand-by level if the surrounding natural light is below the daylight threshold.



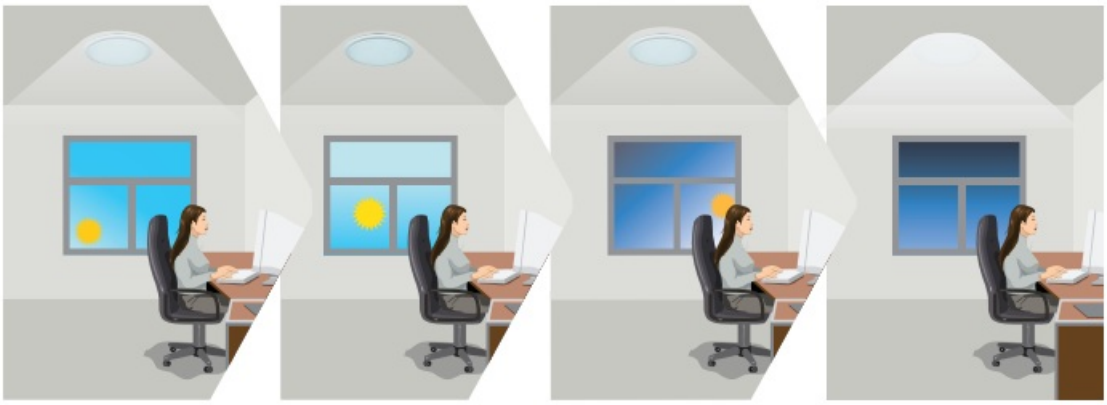
Light switches off automatically after the stand-by period elapses.

2. Daylight Harvest

Light will not switch on when natural light is sufficient, even there is motion detected.

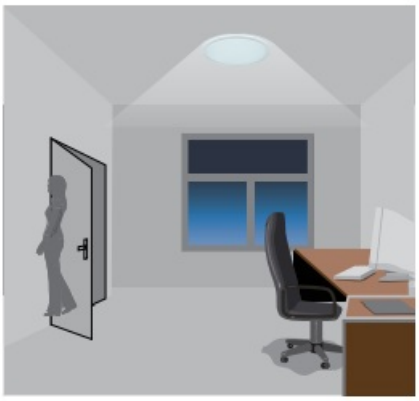


The light switches on automatically with presence when natural light is insufficient.



The light turns on at full or dims to maintain the lux level. The light output regulates according to the level of natural light available.

The light switches off when the ambient natural light is sufficient.



The light dims to stand-by period after hold-time and stays on selected minimum dimming level.

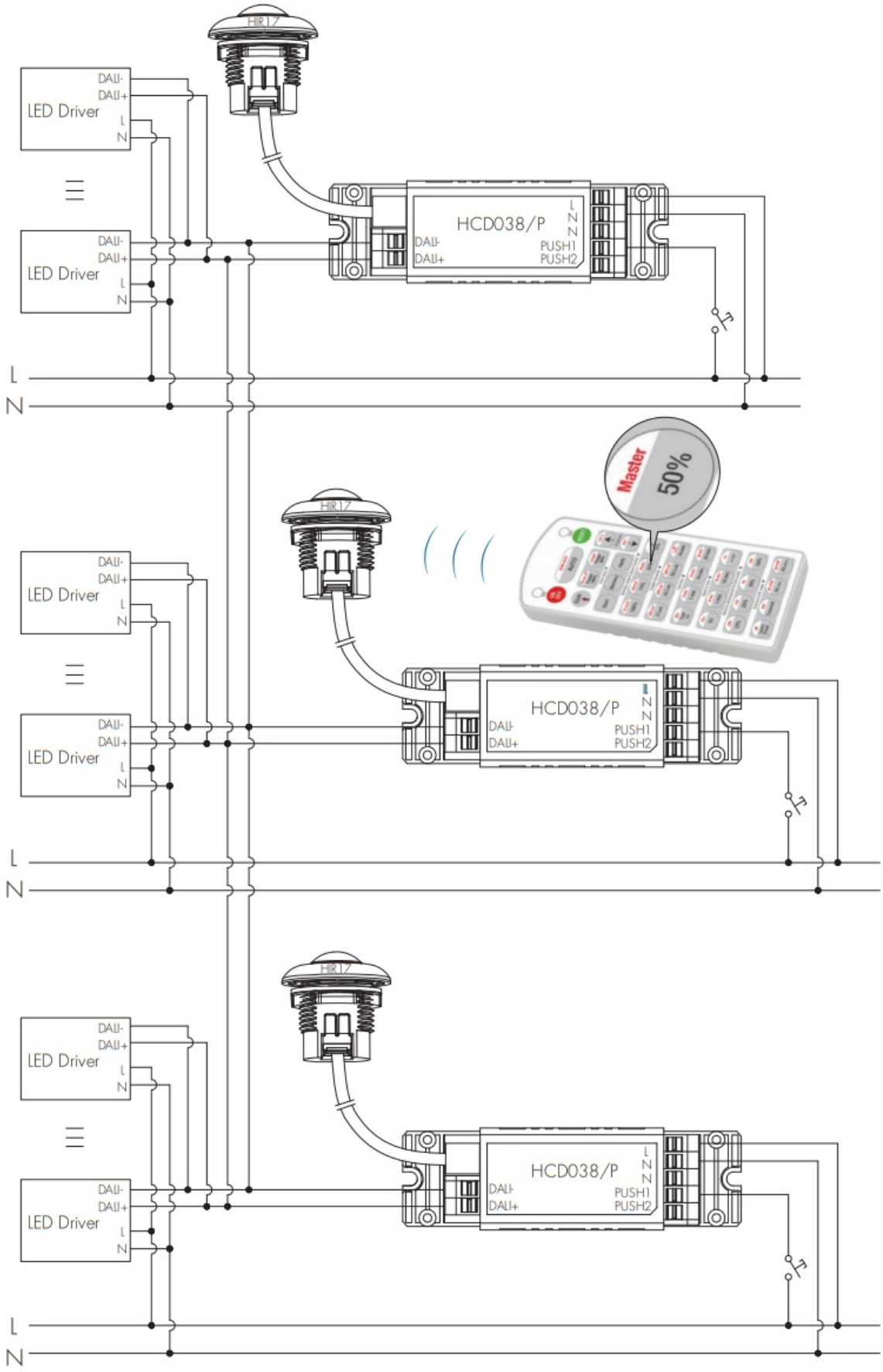
The light switches off completely after the stand-by period.

Note:

The Light automatically dims down and eventually turns off if the natural light lux level exceeds the daylight threshold. However, if the stand-by period is preset at “+∞”, the fixture never switches off but dim to minimum level, even the natural light is sufficient.

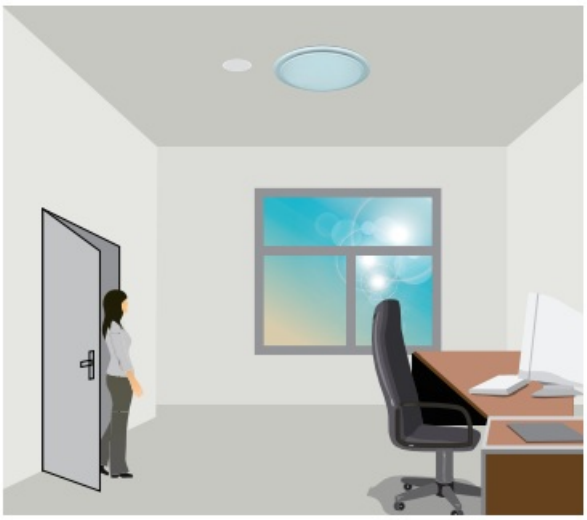
3. Master (HCD038/P)

   HIR17 supports multiple sensors to access DALI network at the same time. In order to prevent conflict during daylight harvest control, you need to manually select one HIR17 as the master when configuring the network. The master has the control authority of this DALI network. Other HIR17 will only report sensing events.

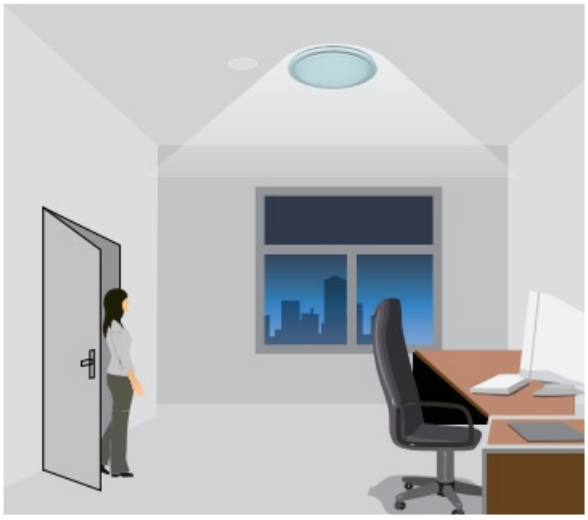


Active Lux Switching (Daylight Detection Prior to Motion Detection)

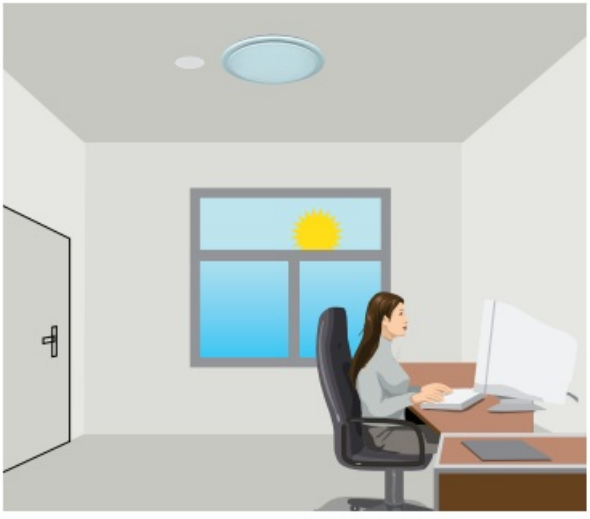
The built-in photocell will also automatically turn off the light when the ambient ambient light exceeds the programmed lux level for more than 5min, regardless of whether motion is detected or not.



With sufficient ambient light, the light does not switch on when presence is detected.



With insufficient ambient light, the sensor switches on the light automatically when presence is detected.



The sensor switches off the light when ambient light is sufficient, even with presence.

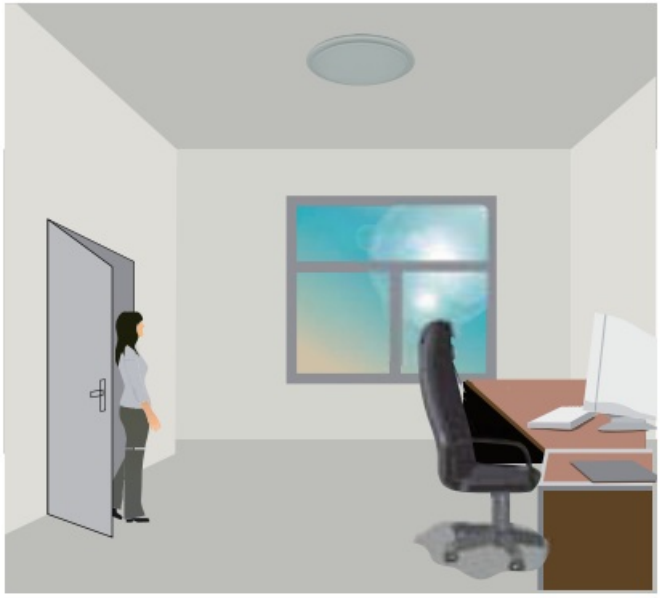
Manual Override

This sensor reserves the access of manual override function for end-user to switch on/off, or adjust the brightness by push-switch, which makes the product more user-friendly and offers more options to fit some extra-ordinary demands:
* Short Push (<1s): on/off function;
On → Off: the light turns off immediately and cannot be triggered ON by motion until the expiration of pre-set hold-time. After this period, the sensor goes back to normal sensor mode.

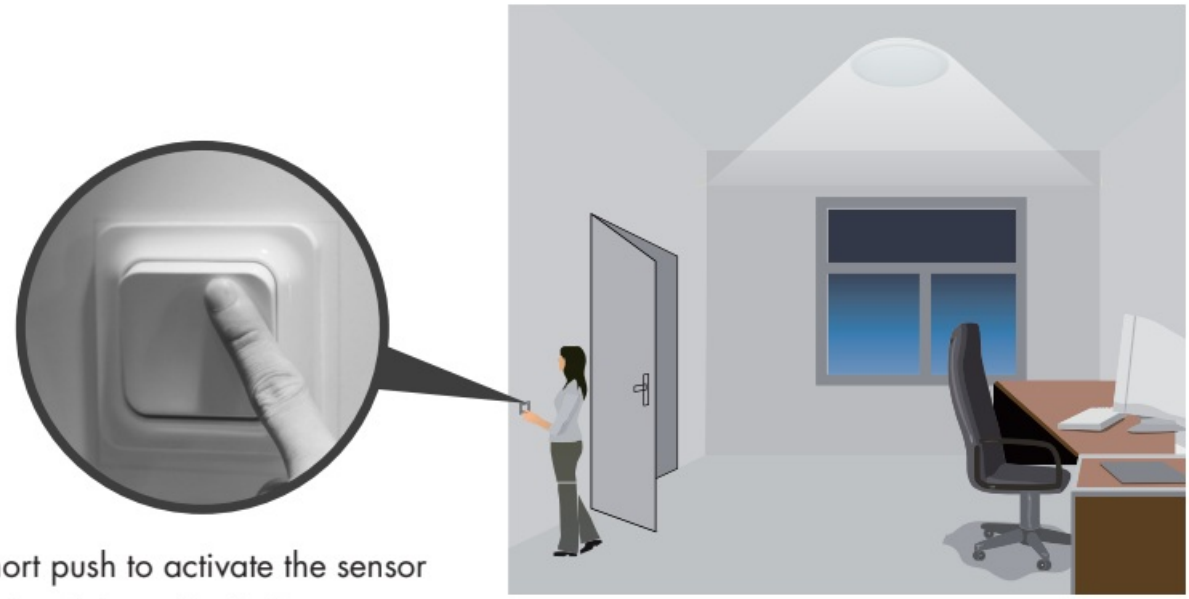
Off → On: the light turns on and goes to sensor mode, no matter if ambient Lux level exceeds the daylight threshold or not.
* Long Push (>1s): adjust the hold-time brightness level between10% and 100%.
Note: if end-user do not want this manual override function, just leave the "push" terminal unconnected to any wire.

Semi-auto Mode (Absence Detection)

It is easy to forget to switch off the light, in office, corridor, even at home. And in many other cases, people do not want to have a sensor to switch on the light automatically, for example, when people just quickly pass-by, there is no need to have the light on. The solution is to apply this "absence detector": motion sensor is employed, but only activated on the manual press of the push switch, the light keeps being ON in the presence, and dims down in the absence, and eventually switches off in the long absence. This is a good combination of sensor automation and manual override control, to have the maximum energy saving, and at the same time, to keep efficient and comfortable lighting.



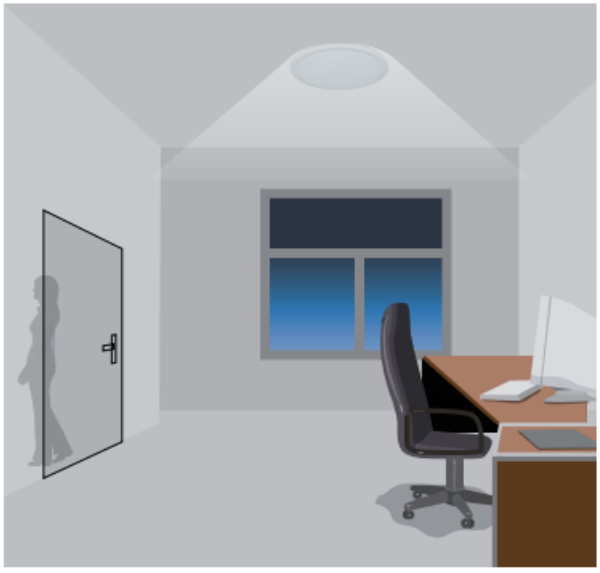
The light does not switch on when there is presence being detected.



Short push to activate the sensor and switch on the light

The light turns on full, and the sensor stays in sensor mode.

The light keeps being ON during the presence.



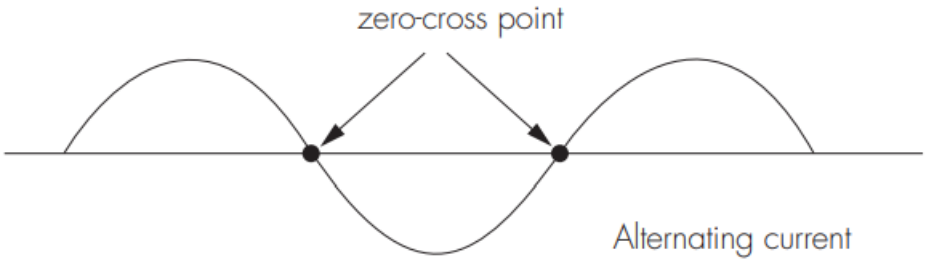
People left, the light dims to stand-by level after the hold-time.

The light switches off automatically after the stand-by period elapses.

Note: end-user can choose either function**5** or function**6** for application. Default function is manual override.

Zero-cross Relay Operation (HC038V)

Designed in the software, sensor switches on/off the load right at the zero-cross point, to ensure that the in-rush current is minimised, enabling the maximum lifetime of the relay.

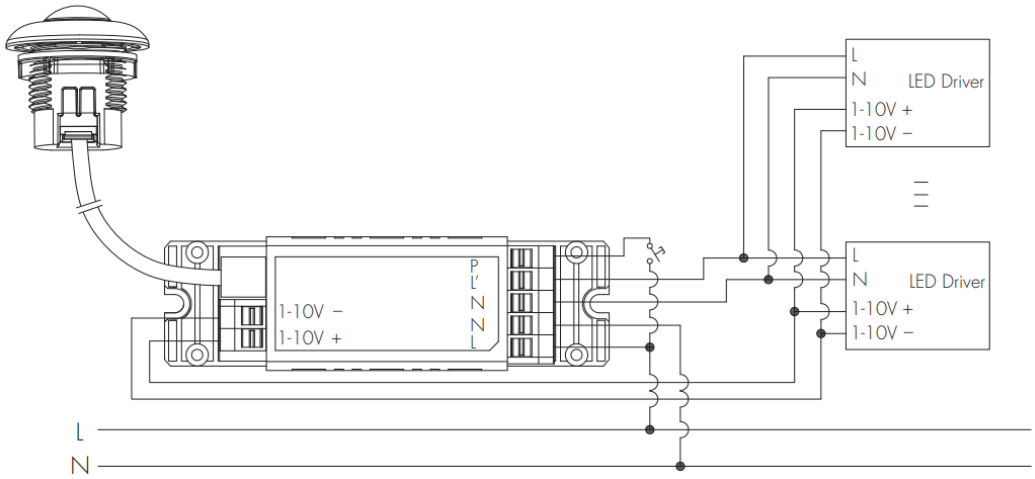


Loop-in and Loop-out Terminal (HC038V)

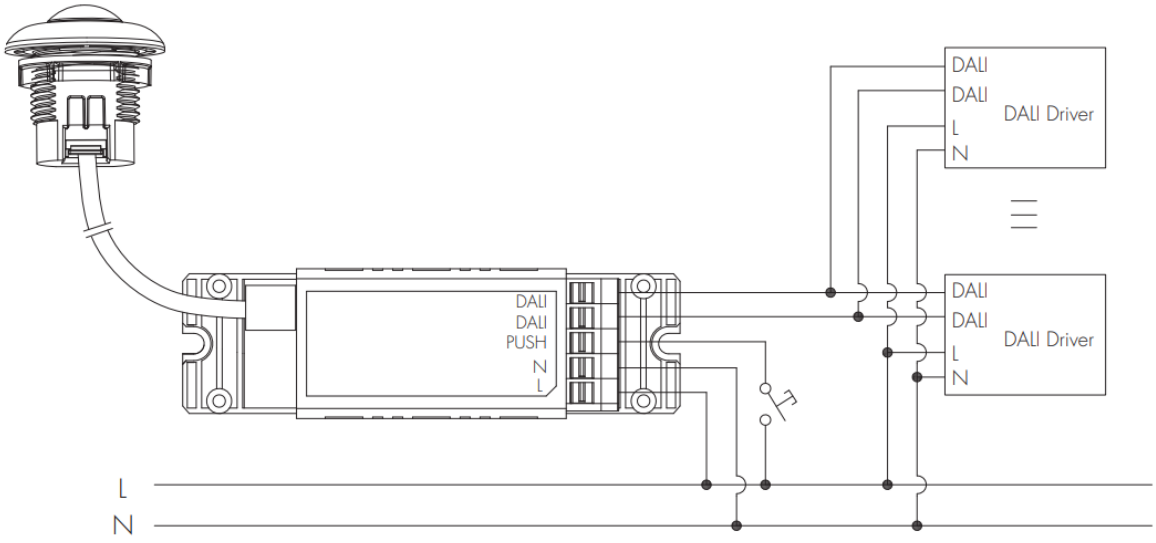
Double L N terminal makes it easy for wire loop-in and loop-out, and saves the cost of terminal block and assembly time.

Wiring Diagram

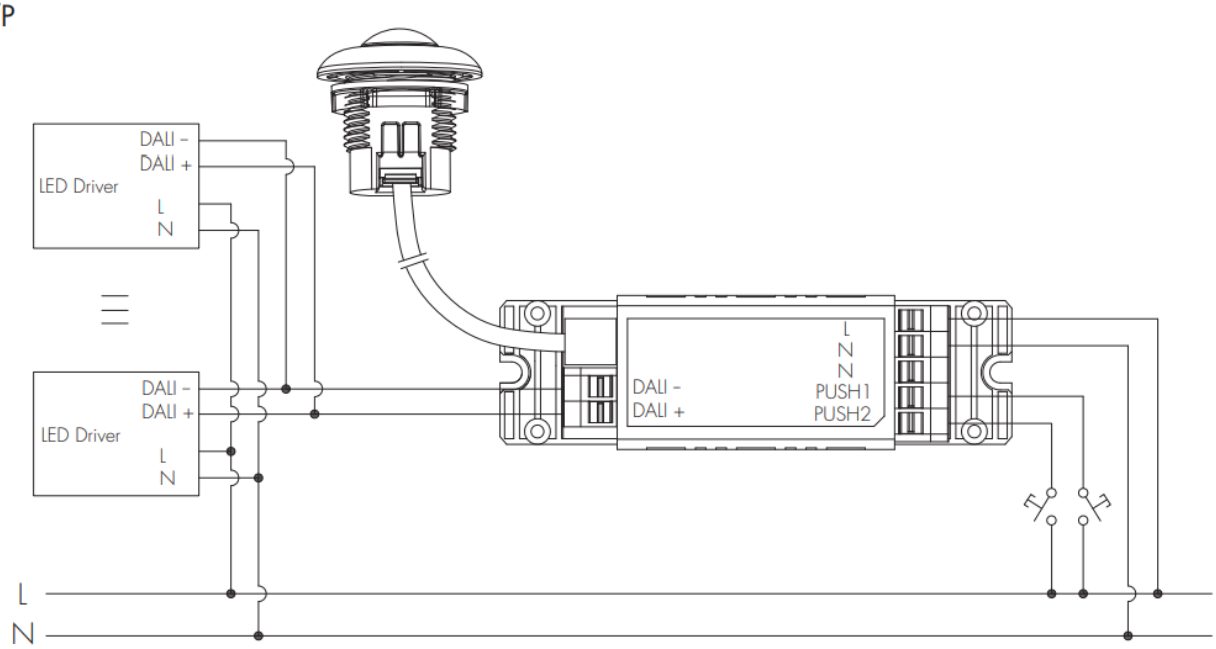
HC038V



HCD038

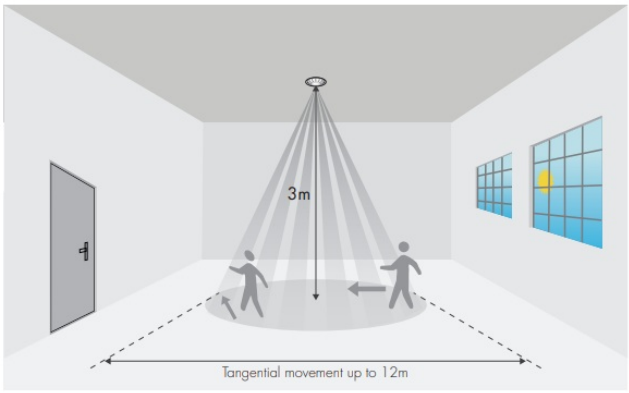


HCD038/P

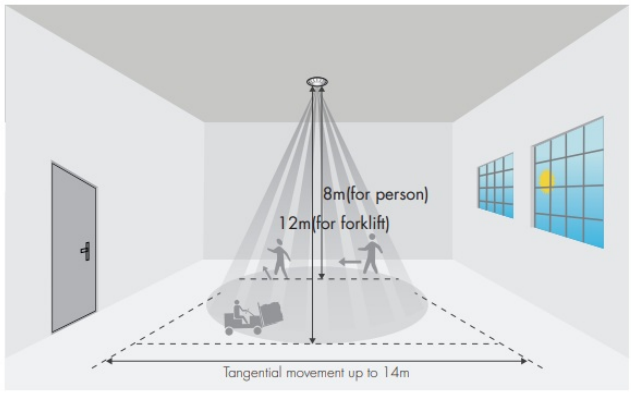


Detection Pattern

HIR17



HIR17/R



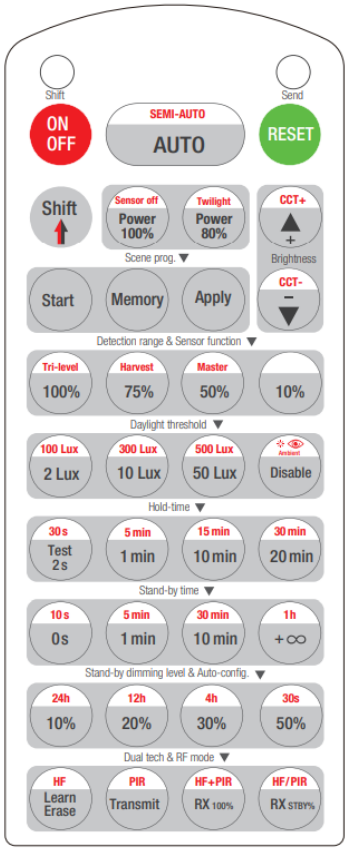
*The detection patterns are based upon 5km/h movement speed.

*The detection patterns are based upon 5km/h movement speed.

Settings (Remote Control HRC-11, for HIR17 & HIR17/R)

ON/ OFF
Permanent ON/OFF function
Press button “ON/OFF” to select permanent ON or permanent OFF mode.
* Press button “AUTO”, “RESET” or “Ambient” to quit this mode.
The mode will change to AUTO Mode after power failure.

RESET Reset Settings
Press button “RESET”, all settings go back to default values (Tri-level Control mode).
Detection range: 100%; Hold-time: 5min; Stand-by period: 10min;
Stand-by dimming level:10%; Lux disabled



HRC-11

Shift Button

Press button “Shift”, the LED on the top left corner is on to indicate mode selection.
All values / settings in RED are valid for 20 seconds.

AUTO mode

Press button “AUTO” to initiate automatic mode. The sensor starts working and all settings remain as before the light is switched ON/OFF.
Note: To initiate automatic mode under semi-auto mode, please press button “RESET” rst.

SEMI-AUTO mode

1. Press button “Shift”, the red LED ashes for indication.
2. Press button “SEMI-AUTO/AUTO” to initiate semi-auto mode. The fixture is manually turned on by pressing the push-switch, and goes off automatically after stand-by time. (Absence detection mode)

Power output

Press the buttons to select light output at 80% (at initial 10,000 hours) or 100%.

Sensor off & Twilight

Press button “Shift”, the red LED is on for indication. Press button “Twilight”, the function of motion detection is

disabled. The function of photocell is still working, and the product becomes a pure dusk / dawn daylight sensor. Press button “Sensor off”, the function of motion detection is disabled. The function of photocell is also disabled.

Switching between Tri-level and Daylight Harvest
Press button “Shift”, the red LED is on for indication.Then press “Tri-level” or “Harvest” to switch.

Brightness +/-
For Tri-level control, press these two buttons to adjust the light output brightness. Press button “Shift”, the red LED is on for indication. Press these two buttons to adjust the light output colour temperature.
For Daylight Harvest, press these two buttons to adjust the light output brightness and set a new target lux level.The daylight sensor can measure ambient daylight level and ignore the LED light, so as to calculate how much artificial light is needed to maintain the target lux level. Press button “Shift”, the red LED is on for indication. Press these two buttons to adjust the light output colour temperature.

Scene program – 1-key commissioning

1. Press button “Start” to program.
2. Select the buttons in “Detection range”, “Daylight threshold”, “Hold-time”, “Stand-by time”, “Stand-by dimming level” to set all parameters.
3. Press button “Memory” to save all the settings programmed in the remote control.
4. Press button “Apply” to set the settings to each sensor unit(s).
   For example, to set detection range 100%, daylight threshold Disable, hold-time 5min, stand-by time +∞, stand-by dimming level 30%, the steps should be:
   Press button “Start”, button ”100%”, “Disable”, “Shift”, “5min”, “Shift”, “+∞”, “30%”, “Memory”. By pointing to the sensor unit(s) and pressing “Apply”, all settings are passed on the sensor(s).

Detection range
All buttons in this zone are disabled.

Master (HCD038/P)
HIR17 supports multiple sensors to access DALI network at the same time. In order to prevent confiict during daylight harvest control, you need to manually select one HIR17 as the master when conguring the network. The master has the control authority of this DALI network. Other HIR17 will only report sensing events.

Daylight threshold
Press buttons in zone “ Daylight threshold” to set daylight sensor at 2Lux/ 10Lux / 50Lux / 100Lux / 300Lux / 500Lux / Disable.
Note: To set daylight sensor at 100Lux / 300Lux / 500Lux, press “Shift” button first.
Ambient daylight threshold

1. Press button “Shift”, the red LED starts to fiat.
2. Press button “Ambient”, the surrounding lux level is sampled and set as the new daylight threshold.

Hold-time
Press buttons in zone “hold-time” to set the hold-time at 2s / 30s / 1min / 5min / 10min / 15min / 20min / 30min.
Note:

1. To set hold-time at 30s / 5min / 15min / 30min, press “Shift” button first.
2. 2s is for testing purpose only, stand-by period and daylight sensor settings are disabled in this mode.

   *To exit from Test mode, press button “RESET” or any button in “Hold-time”.

Stand-by time (corridor function)
Press buttons in zone “stand-by time” to set the stand-by period at 0s / 10s / 1min / 5min / 10min / 30min / 1h / +∞.
Note: “0s” means on/off control; “+∞” means the stand-by time is infinite and the fixture never switches off.

Stand-by dimming level
Press the button in zone “stand-by dimming level” to set the stand-by dimming level at 10% / 20% / 30% / 50%.
Auto-configuration function
This is a function for Daylight Harvest mode, select a time period and the sensor will do light level measurement and determine / save the lowest light level (commission line) wih 100% on, so as to automatically set the target lux level for daylight harvesting.
For Tri-level Control, All buttons in this zone are disabled.
Dual tech & RF mode
All buttons in this zone are disabled.

Additional Information / Documents

1. Regarding precautions for PIR sensor installation and operation, please kindly refer to www.hytronik.com/download ->knowledge ->PIR Sensors – Precautions for Product Installation and Operation
2. Regarding precautions for Photodiode/Photocell Usages, please kindly refer to www.hytronik.com/download ->knowledge ->Precautions for Photodiode/Photocell Usages
3. Data sheet is subject to change without notice. Please always refer to the most recent release on www.hytronik.com/products/Motion Sensors ->Built-in HF Sensor
4. Regarding Hytronik standard guarantee policy, please refer to www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy

Subject to change without notice.
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Documents / Resources

	HYTRONIK HC038V Detached Linear Occupancy Sensor [pdf] Owner's Manual HC038V, HCD038, HCD038-P, HC038V Detached Linear Occupancy Sensor, Detached Linear Occupancy Sensor, Linear Occupancy Sensor, Occupancy Sensor, Sensor

References

- Catalogue_Hytronik