ABB INDUSTRIAL DRIVES

ACS880-204 IGBT supply modules

Hardware manual

ACS880-204 IGBT supply modules

Hardware manual

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Further information

1

Introduction to the manual

Contents of this chapter

This chapter gives basic information on the manual.

Applicability

The manual is applicable to the ACS880-204 IGBT supply modules for user-defined cabinet installations.

Safety instructions

Obey all safety instructions delivered with the drive.

- Read the **complete safety instructions** before you install, commission, use or service the drive. The complete safety instructions are given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]).
- Read the **software-function-specific warnings and notes** before changing the default settings of a function. For each function, the warnings and notes are given in the section describing the related user-adjustable parameters.
- Read the **task-specific safety instructions** before starting the task. See the section describing the task.

Target audience

This manual is intended for people who plan the installation, install, commission and do maintenance work on the drive, or create instructions for the end user of the drive concerning the installation and maintenance of the drive.

Read the manual before you work on the drive. You are expected to know the fundamentals of electricity, wiring, electrical components and electrical schematic symbols.

Categorization by frame size and option code

The instructions and technical data which concern only certain module or frame sizes are marked with the size identifier.

The module size can be identified from the basic code visible on the type designation label, for example, ACS880-204-0420A-3 where 0420A is the module size. The option codes of the module are listed after the plus sign.

The frame size of the IGBT supply module is, for example, R8i.

Use of component designations

Some device names in the manual include the component designation in brackets (for example, [Q20]). This will help you to identify the components in the circuit diagrams of the drive.

Terms and abbreviations

Term	Description
BAMU	Auxiliary measurement unit
BCON	Type of control board
BCU	Type of control unit
BDFC	Control board for direct-on-line cooling fan
BDPS	Module internal power supply board
BFPS	Control and power supply board for speed-controlled cooling fan
BPA-01	Power unit adapter
Control unit	The part in which the control program runs.
Cubicle	One section of a cabinet-installed drive. A cubicle is typically behind a door of its own.
DC link	DC circuit between line-side converter and motor-side converter
DI	Digital input
Drive	Frequency converter for controlling AC motors
EMC	Electromagnetic compatibility
FCNA-01	Optional ControlNet™ adapter module
FDCO-01	DDCS communication module with two pairs of 10 Mbit/s DDCS channels
FDNA-01	Optional DeviceNet™ adapter module
FDPI	Diagnostics and panel interface board
FEA-03	Optional I/O extension adapter
FECA-01	Optional EtherCAT® adapter module
FENA-11	Optional Ethernet adapter module for EtherNet/IP™, Modbus TCP® and PROFINET IO® protocols
FENA-21	Optional Ethernet adapter module for EtherNet/IP™, Modbus TCP and PROFINET IO protocols, 2-port
FEPL-01	Optional Ethernet POWERLINK adapter module
FIO-01	Optional digital I/O extension module
FIO-11	Optional analog I/O extension module
Flat-PLS	Rittal Flat-PLS, a busbar system for standard, commercially available flat busbars
FPBA-01	Optional PROFIBUS DP® adapter module

Term	Description
Frame, frame size	Physical size of the drive or power module
FSCA-01	Optional RS-485 (Modbus/RTU) adapter
Generic enclosure	See chapter *Ordering information*.
ICU	Incoming unit
IGBT supply module	IGBT bridge and related components enclosed inside a metal frame or enclosure. Intended for cabinet installation.
IGBT supply unit	IGBT supply module(s) under control of one control unit, and related components.
Intermediate circuit	DC circuit between rectifier and inverter
INU	Inverter unit
Inverter	Converts direct current and voltage to alternating current and voltage.
Inverter module	Inverter bridge, related components and drive DC link capacitors enclosed in a metal frame or enclosure. Intended for cabinet installation.
Inverter unit	Inverter module(s) under control of one control unit, and related components. One inverter unit typically controls one motor.
ISU	IGBT supply unit
LCL filter	Inductor-capacitor-inductor filter
Multidrive	Drive for controlling several motors which are typically coupled to the same machinery. Includes one supply unit, and one or several inverter units.
Parameter	In the drive control program, user-adjustable operation instruction to the drive, or signal measured or calculated by the drive. In some (for example fieldbus) contexts, a value that can be accessed as an object. For example, variable, constant, or signal.
RDCO	Optical DDCS communication module
Rectifier	Converts alternating current and voltage to direct current and voltage
Single drive	Drive for controlling one motor
Supply unit	Supply module(s) under control of one control unit, and related components.
VX25	Enclosure system by Rittal (http://www.rittal.com)
WBCA	Mounting adapter for WFU filters that enables supply cabling from below.
WFU	Series of LCL-filters, for example WFU-11
ZCON	Type of control board
ZCU	Type of control unit
ZMU	Type of memory unit, attached to the control unit

Related documents

You can find manuals on the Internet. See below for the relevant code/link. For more documentation, go to www.abb.com/drives/documents.

	Manuals for ACS880 multidrives modules

2

Operation principle and hardware description

Contents of this chapter

This chapter describes how the IGBT supply unit works and also the hardware of the ACS880-204 IGBT supply module.

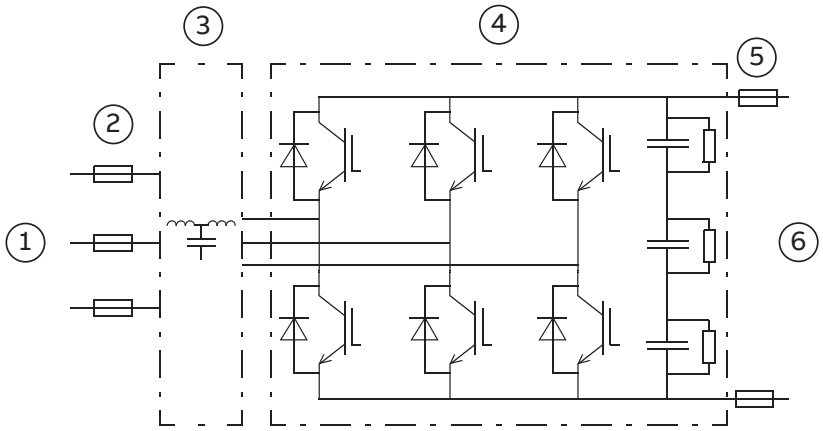
Operation principle

IGBT supply unit rectifies three-phase AC current to direct current for the intermediate DC link of the drive. The intermediate DC link supplies the inverters that run the motors. There can be one inverter unit only (single drives) or several inverter units (multidrives) connected to the intermediate circuit.

The LCL filter is an essential part of the IGBT supply unit. The supply module does not work without the filter. It suppresses the AC voltage distortion and current harmonics. The high AC inductance smooths the line voltage waveform distorted by the high-frequency switching of the converter. Capacitive component of the filter effectively filters the high-frequency (over 1 kHz) harmonics.

Simplified main circuit diagram

The following figure shows the simplified main circuit diagram of the rectifier.



1.	AC voltage
2.	AC fuses
3.	LCL filter
4.	IGBT supply module
5.	DC fuses
6.	DC voltage

Charging

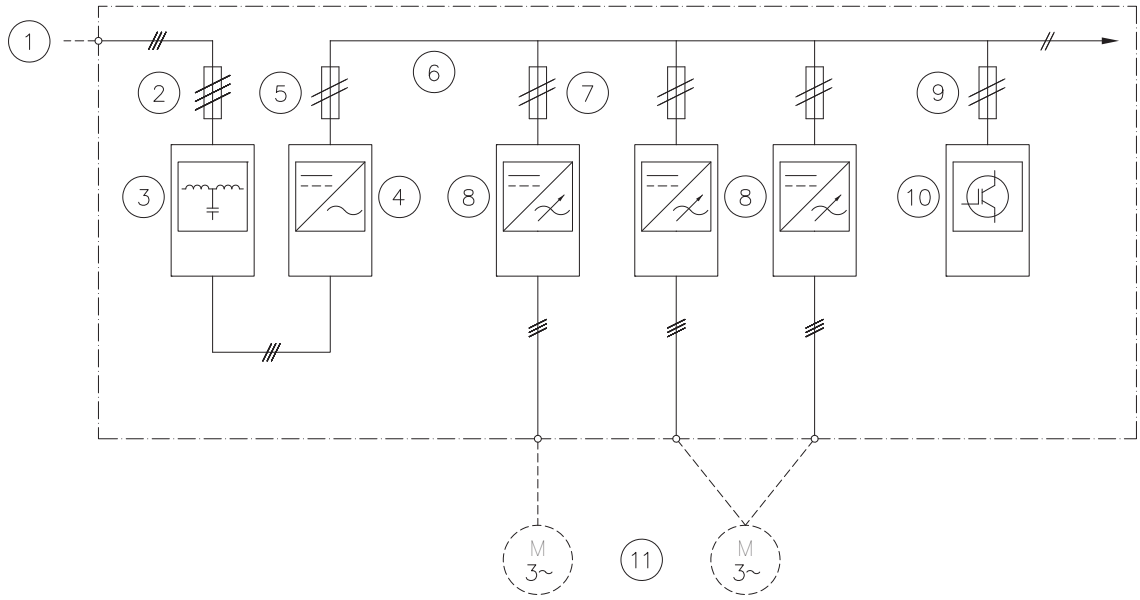
A charging circuit powers up the DC link capacitors of the drive system smoothly. Discharged capacitors cannot be directly connected to the full supply voltage. The charging current must be limited until the capacitors are charged and ready for normal use.

Note: Frames R1i…R4i IGBT supply modules have an inbuilt charging circuit and they do not need external charging components.

The control program has a function for controlling the charging circuit. For further information, see the firmware manual.

Overview diagram of the drive system

The following figure shows a simplified diagram of a common DC bus drive system.



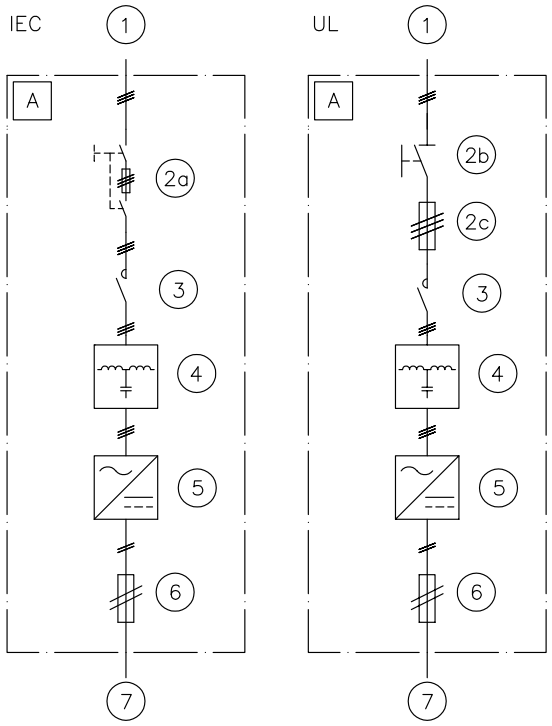
1	AC supply
2	Input AC fuses
3	LCL filter
4	IGBT supply unit
5	Supply unit DC fuses
6	DC bus
7	Inverter DC fuses (with or without DC switch-disconnector)
8	Inverter units (in the example, one of the two units consists of two inverter modules connected in parallel)
9	DC fuses for optional brake chopper
10	Optional brake chopper
11	Motor(s)

Single-line circuit diagrams of the supply unit

The following figures are examples of possible IGBT supply unit configurations. The connection is the same in both Rittal VX25 and generic enclosures. The tables give explanations for the numbers and letters of the diagrams. They also indicate if the components can be ordered from ABB or if the customer needs to acquire them separately. For components, see the ordering information.

Frames R1i...R4i

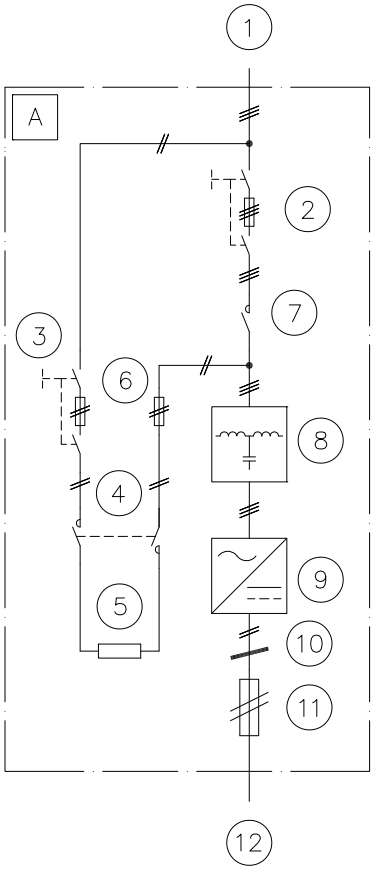
The following figure shows a connection example of a supply unit with a frame size R1i…R4i module.



		1.	AC supply network	-
A	IGBT supply module cubicle (ISU)	2a.	Main switch-disconnector (OS type) with main AC fuses (IEC)	ABB or third party
A	ISU	2b.	Main switch-disconnector (OT type) (UL, CSA)	ABB or third party
A	ISU	2c.	Main AC fuses (UL, CSA)	ABB or third party
A	ISU	3.	Main contactor	ABB or third party
A	ISU	4.	LCL filter module (WFU-xx)	ABB
A	ISU	5.	IGBT supply module (frame R1i…R4i)	ABB
A	ISU	6.	DC fuses	ABB or third party
		7.	DC link	-

Frame R6i and R7i

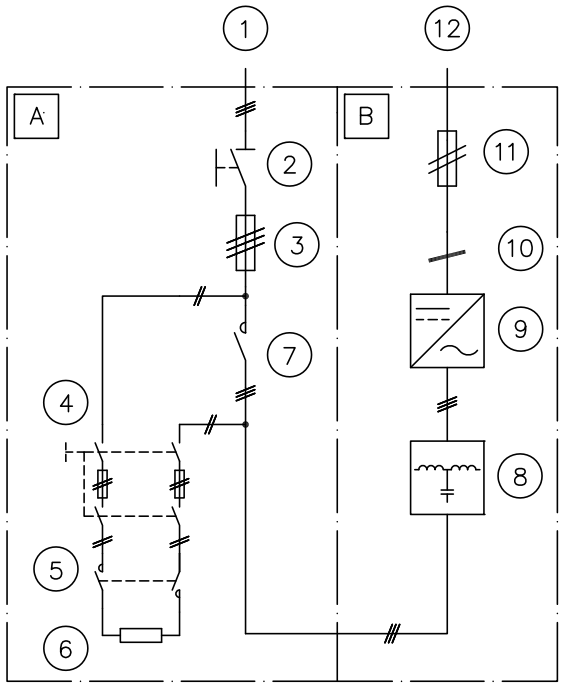
The following figure shows a connection example of a supply unit with a frame size R6i and R7i module.



		1.	AC supply network	-
A	IGBT supply module cubicle (ISU)	2	Main switch-disconnector	ABB or third party
A	ISU	3.	Charging switch-fuse	ABB or third party
A	ISU	4.	Charging contactor	ABB or third party
A	ISU	5.	Charging resistors	ABB
A	ISU	6.	Charging fuses	ABB or third party
A	ISU	7.	Main contactor	ABB or third party
A	ISU	8.	LCL filter	ABB
A	ISU	9.	IGBT supply module (frame R6i and R7i)	ABB
A	ISU	10	Common mode filter	ABB
A	ISU	11	DC fuses	ABB or third party
		12	DC link	-

Frame 1×R8i

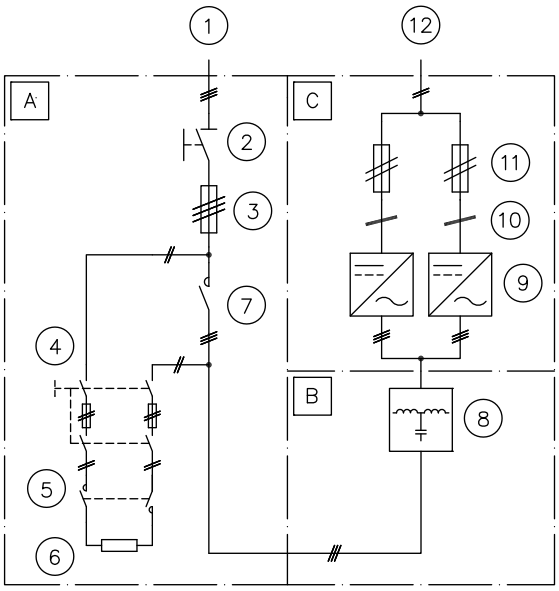
The following figure shows a connection example of a supply unit with one frame R8i module.



		1.	AC supply network	-
A	Incoming cubicle (ICU)	2	Main switch-disconnector	ABB or third party
A	ICU	3.	AC fuses	ABB or third party
A	ICU	4.	Charging switch fuse	ABB or third party
A	ICU	5.	Charging contactor	ABB or third party
A	ICU	6.	Charging resistors	ABB or third party
A	ICU	7.	Main contactor	ABB or third party
B	ISU	8.	LCL filter	ABB
B	ISU	9.	IGBT supply module (frame R8i)	ABB
B	ISU	10	Common mode filter	ABB
B	ISU	11	DC fuses	ABB or third party
		12	DC link	-

Frame R8i multiples

The following figure shows a connection example of a supply unit with multiple frame R8i modules (2×R8i).



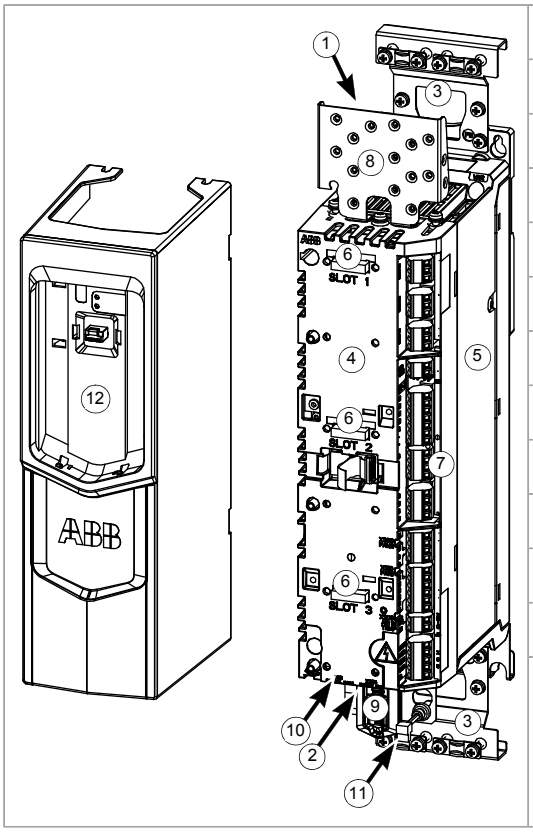
		1.	AC supply network	-
A	Incoming cubicle (ICU)	2	Main switch-disconnector	ABB or third party
A	ICU	3.	AC fuses	ABB or third party
A	ICU	4.	Charging switch fuse	ABB or third party
A	ICU	5.	Charging contactor	ABB or third party
A	ICU	6.	Charging resistors	ABB or third party
A	ICU	7.	Main contactor	ABB or third party
B	LCL filter	8.	LCL filter	ABB
B	ISU	9.	IGBT supply module (frame R8i)	ABB
B	ISU	10	Common mode filter	ABB
B	ISU	11	DC fuses	ABB or third party
		12	DC link	-

IGBT supply module hardware

The following figures show the layout of the IGBT supply modules and LCL filters.

Frame R1i layout

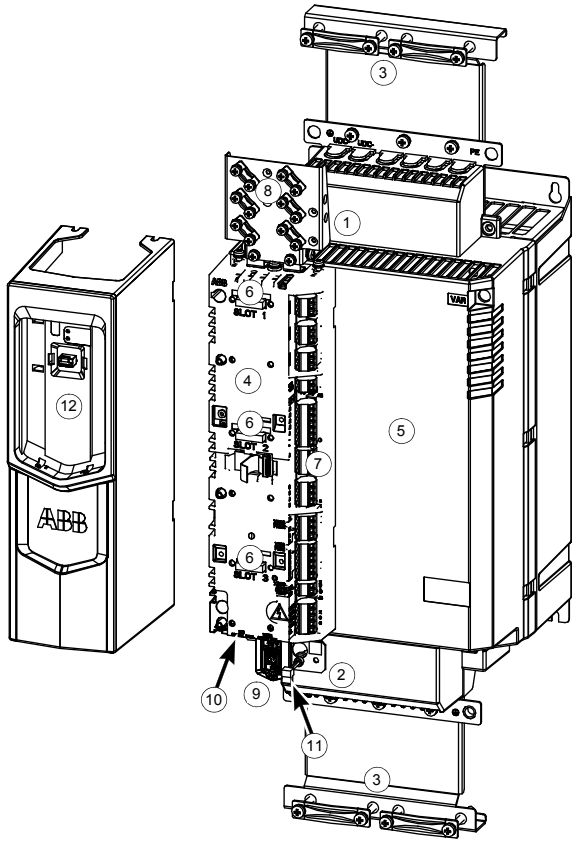
Frame R1i is pictured (frame R2i has a similar layout).



Item	Explanation
1	DC connection (obscured)
2	AC connection (obscured)
3	Grounding/clamping plates for power cables
4	ZCU control unit
5	Power unit
6	Slots for optional I/O modules
7	I/O terminal blocks
8	Grounding/clamping plate for control cables
9	Memory unit
10	Control panel connector
11	Air temperature sensor
12	Cover with recess for control panel (can optionally be left out)

Frame R4i layout

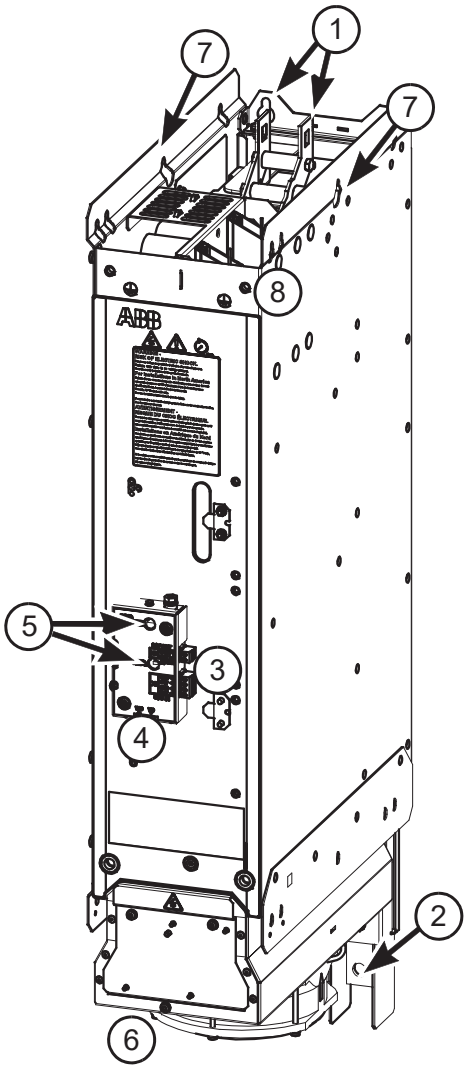
Frame R4i is pictured (frame R3i has a similar layout).



1	DC connection (under connector cover)
2	AC connection (under connector cover)
3	Grounding/clamping plates for power cables
4	ZCU control unit
5	Power unit
6	Slots for optional I/O modules
7	I/O terminal blocks
8	Grounding/clamping plate for control cables
9	Memory unit
10	Control panel connector
11	Air temperature sensor
12	Cover with panel mounting platform (can optionally be left out)

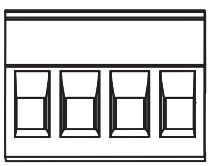
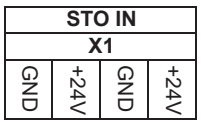
Frame R6i and R7i hardware

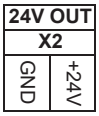
Frame R6i and R7i modules are controlled by a BCU control unit installed separately from the module. The control unit is connected to the module by a fiber optic link. The control unit must be powered from an external 24 V DC supply. The control unit contains the basic I/Os and slots for optional I/O modules. Other equipment is primarily installed on separate mounting plates.



Item	Explanation	
1	DC connection	
2	AC connection	
3	Terminal blocks:	
	X1 (STO IN)	STO input
	X2 (24V OUT)	Not in use
4	Fiber optic connections:	
	V10	Fiber optic transmitter (signal to control unit)
	V20	Fiber optic receiver (signal from control unit)
5	LEDs:	
	24V OUT FAULT	
	INTERNAL POWER OK	
6	Cooling fan holder (frame R6i has one fan, R7i has two)	
7	Lifting eyes	
8	The grounding point (PE) between module frame and cabinet frame	

Connectors X1 and X2

		X1	STO IN	24 V Safe torque off (STO) signals from control unit **Note:** By default, the Safe torque off (STO) terminals are energized by jumpering from terminal X2. De-energizing the STO terminals stops the unit, but this manner of stopping must not be used for safety function purposes. A true Safe torque off function can only be implemented in the inverter unit of the drive.

		X2	24V OUT	Not in use.

Fiber optic connectors V10 and V20

	Control unit connection.

Frame R8i hardware

Frame R8i modules are used in single or parallel configurations. R8i modules run on wheels, and can easily be removed from the cubicle for cable installation or service.

The quick connector at the back of the module couples when the module is inserted into the cubicle.

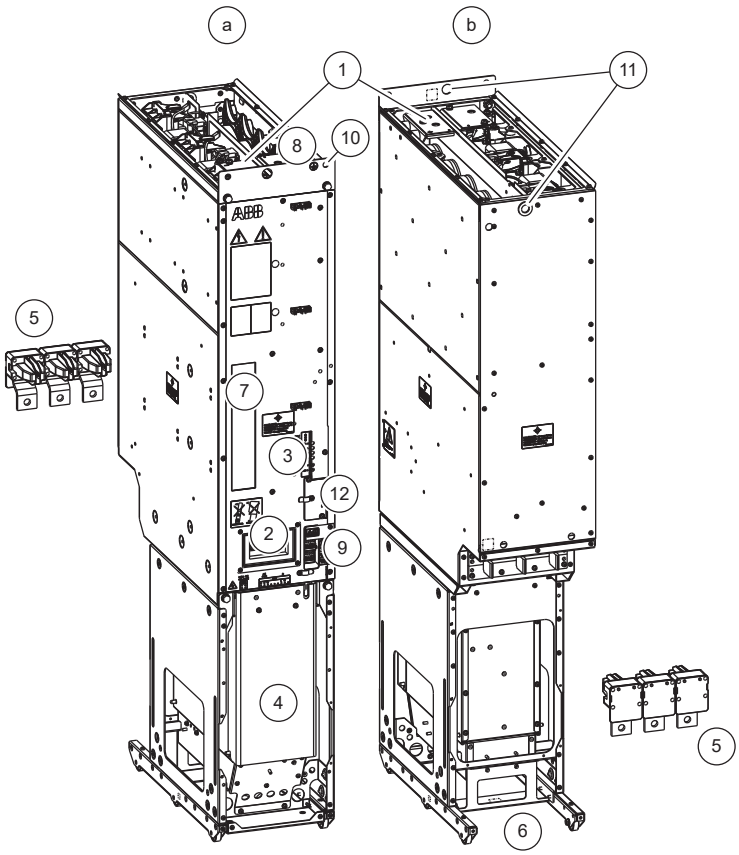
Each parallel-connected module is cabled separately, or connected by busbars to adjacent modules to reduce the number of cables.

The internal electronics of the R8i module need to be powered from an external auxiliary voltage source. The R8i speed-controlled cooling fan (delivered as standard) is supplied internally from DC.

If a direct-on-line fan (option +C188) is used, the user must connect the fan supply (400 V AC / 50/60 Hz or 320 V AC / 60 Hz) to the terminal block [X50].

Frame R8i (and multiples, if any) modules are controlled by a single BCU control unit installed separately from the module(s). The control unit is connected to each module by a fiber optic link. The control unit can be powered from the module (terminal block X53), from an external 24 V DC supply, or both for redundancy. The control unit contains the basic I/Os and slots for optional I/O modules. Other equipment is primarily installed on separate mounting plates.

This figure shows the layout of the R8i module.



A	R8i module, front
B	R8i module, back
1	DC busbars

2	Handle
3	LEDs and fiber optic connectors
4	Fan (standard speed-controlled fan shown; a direct-on-line fan is available as option +C188)
5	Quick connector (three phases). The counterpart is fastened to the cabinet behind the module.
6	Wheels
7	Type designation label
8	Terminal block [X50] (power supply for internal boards and module heating element, option +C183; DOL fan supply, option +C188)
9	Connectors [X51], [X52], [X53]
10	The unpainted grounding point (PE) between module frame and cabinet frame.
11	Lifting eyes
12	Circuit board compartment fan

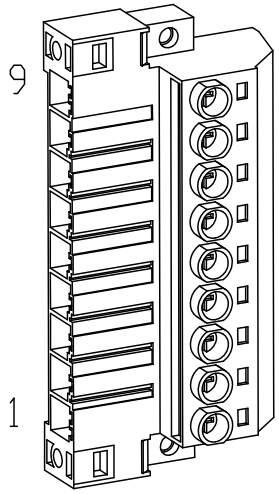
Connectors X50...X53

The cabinet builder must arrange an auxiliary voltage of 230 V AC (or 115 V AC with option +G304) to connector X50 to power the electronics of the power module. Also, the cabinet builder must arrange an auxiliary voltage of 230 V AC to connector X50 to power the main circuit interface board of the module during charging.

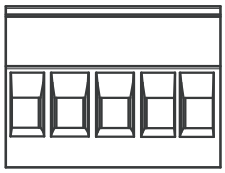
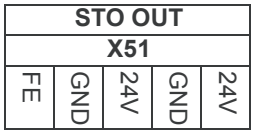
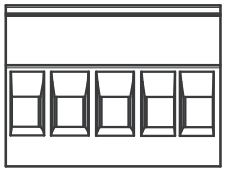
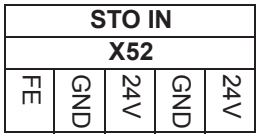
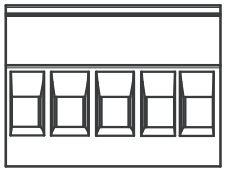
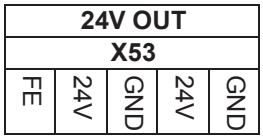
There is an internal power supply (BDPS) in the module that produces 24 V DC from the auxiliary voltage for the internal circuit boards. The 24 V DC voltage is available on X53 and it can be used to power the BCU control unit. It is not allowed to use the 24 V DC output on terminal X53 for any other purpose than for powering the BCU control unit. If the unit consists of parallel-connected R8i modules, ABB recommends to use an external 24 V DC supply to power the BCU control unit.

If a direct-on-line fan (option +C188) is used, the user must connect the fan supply (400 V AC 50 Hz or 60 Hz) to the module control connector [X50.1]. If an internal heating element (option +C183) is used, the user must connect the supply for the heating element to the module control connector [X50.7].

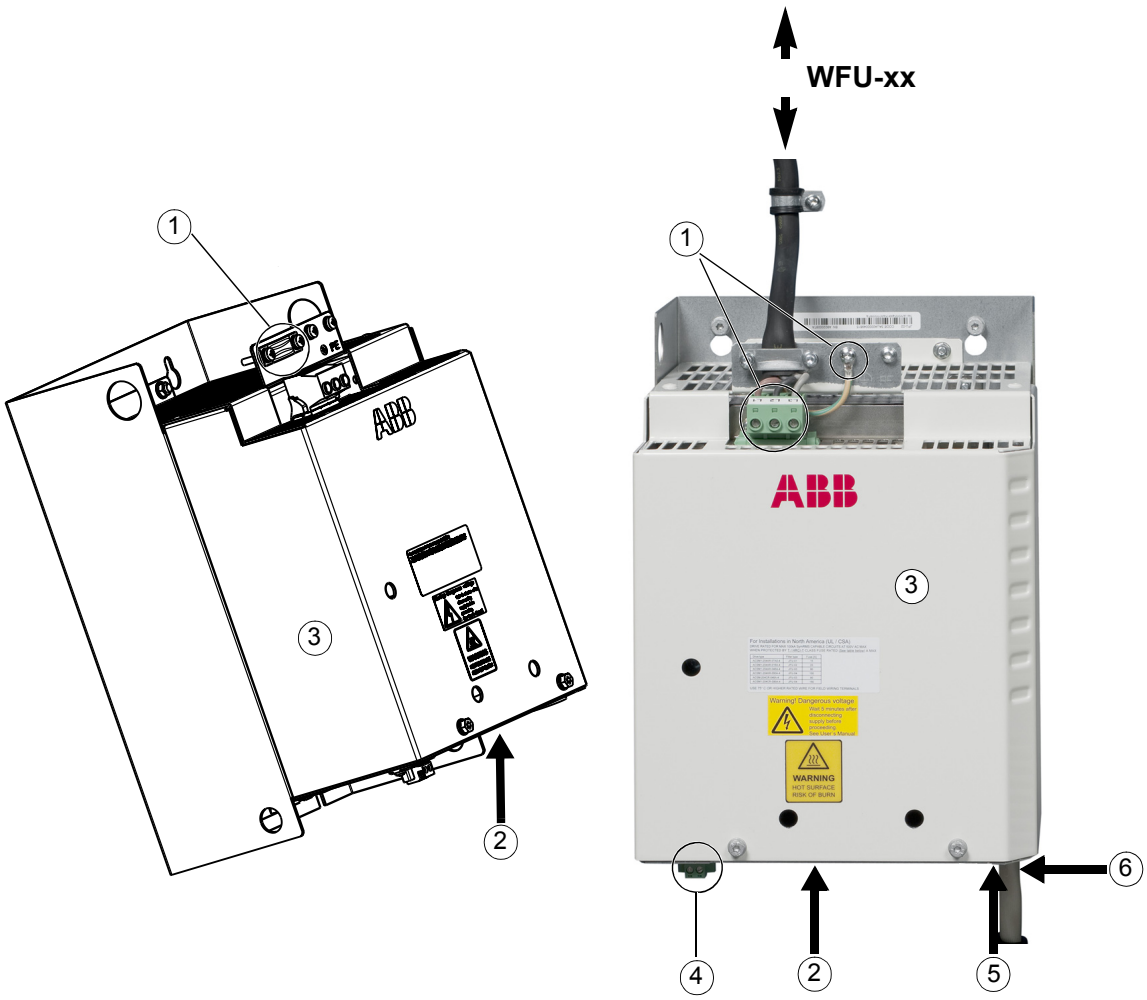
Connector X50



9	Not in use.	
8	N	115/230 V AC (50/60 Hz) input for optional heating element (+C183). The cabinet builder must connect this when the option is in use.
7	L	
6	Not in use.	
5	N	230 V AC 50/60 Hz input for internal power supply (BDPS) (115 V AC 50/60 Hz with option +G304). The cabinet builder must connect this.
4	L	
3	W	400 V AC (50/60 Hz) supply for optional DOL (direct-on-line) cooling fan (option +C188). The cabinet builder must connect this when the option is in use. **Note:** In modules without +C188, the DOL wiring is present but not in use.
2	V	
1	U	

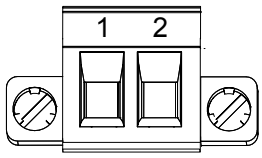
Connectors X51, X52, X53				
		X51	STO OUT	Not in use.
		X52	STO IN	STO connectors of the module. Must be connected to 24 V DC for the module to start.
		X53	24V OUT	24 V DC for BCU and for STO IN to enable the module operation.
		Note: The Safe torque off (STO) safety function is only implemented in inverter units. Therefore, the STO function cannot be used in supply, rectifier, DC/DC converter and brake units. In these units, de-energizing any connection of STO IN (X52) connector stops the unit. Note that this stop is not safety related and must not be used for safety function purposes.		

LCL filter module (filter for frames R1i...R4i)



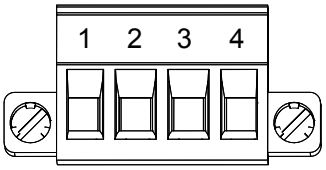
1	Input terminals
2	Cooling fan
3	LCL filter
4	Connector X102
5	Connector X103
6	Pre-wired output cable

Connectors X102 and X103



WFU-xx module connector X102

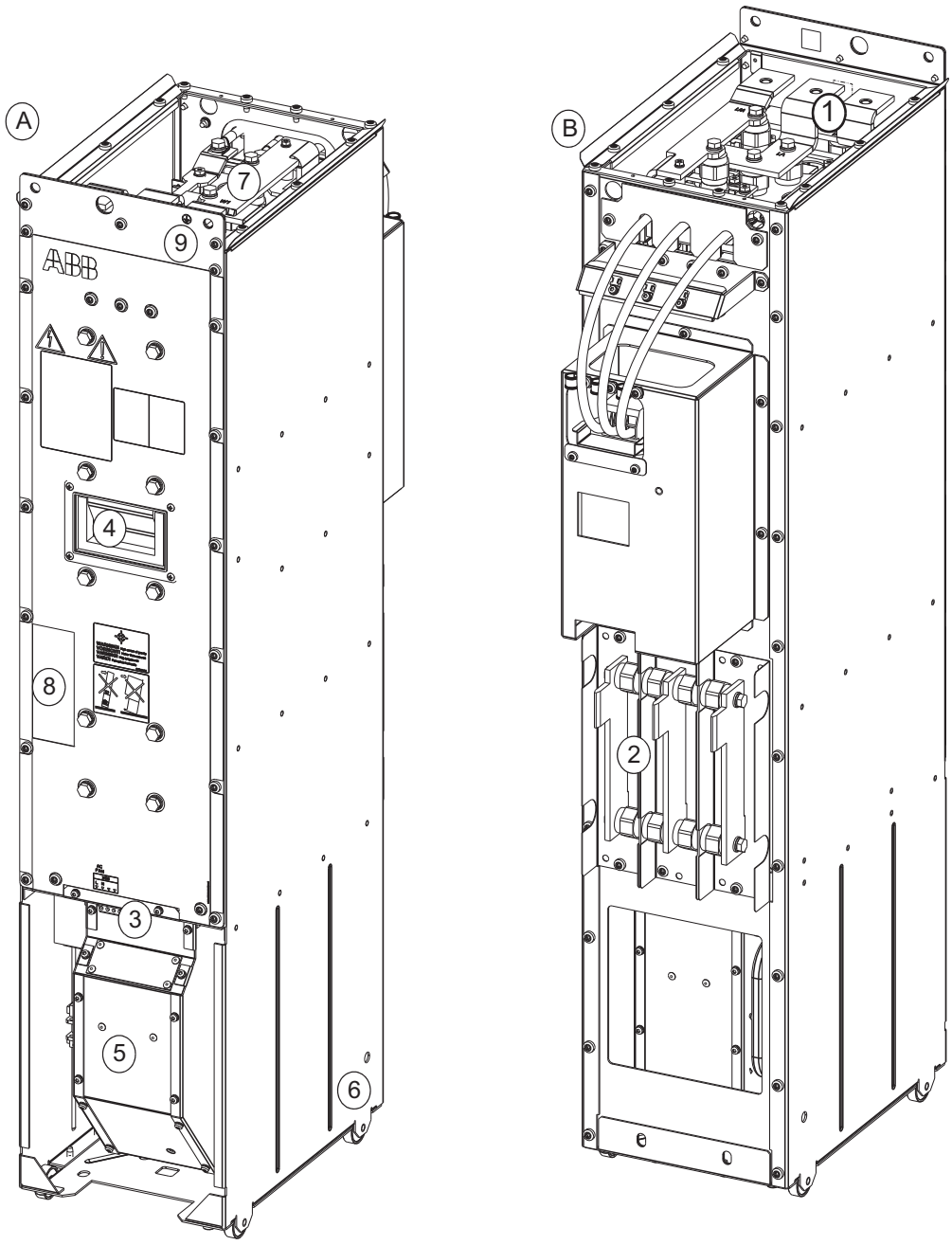
	Description
1.	0 V
2.	Fan power supply, 24 V / 0 V



WFU-xx module connector X103

	Description
1.	Fan on/off, 24 V / 0 V
2.	0 V
3.	Thermistor, TH
4.	Thermistor, TH

LCL filter module (type BLCL-0x-x for frame R6i and R7i)

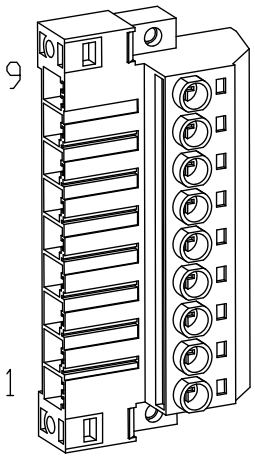


A	LCL filter module, front view
B	LCL filter module, rear view
1	Input (AC) connection
2	Output (AC) connection
3	Terminal block [X55] (direct-on-line fan supply, option +C188) (ready-connected)
4	Handle
5	Fan

6	Wheels
7	Terminal block [X30] (power supply for module direct-on-line fan, option +C188; module thermal cutoff circuit)
8	Type designation label
9	The unpainted grounding point (PE)

Connectors X30 and X55

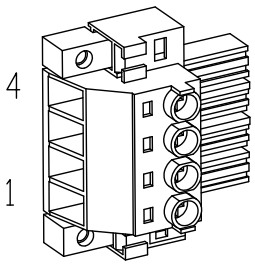
Connector X30



9	Not in use
8	Not in use
7	Not in use
6	TP2, thermal cutoff circuit
5	TP1, thermal cutoff circuit
4	Not in use
3	Not in use
2	+C188: DOL fan N (230 V AC or option +G304: 115 V AC)
1	+C188: DOL fan L (230 V AC or option +G304: 115 V AC)

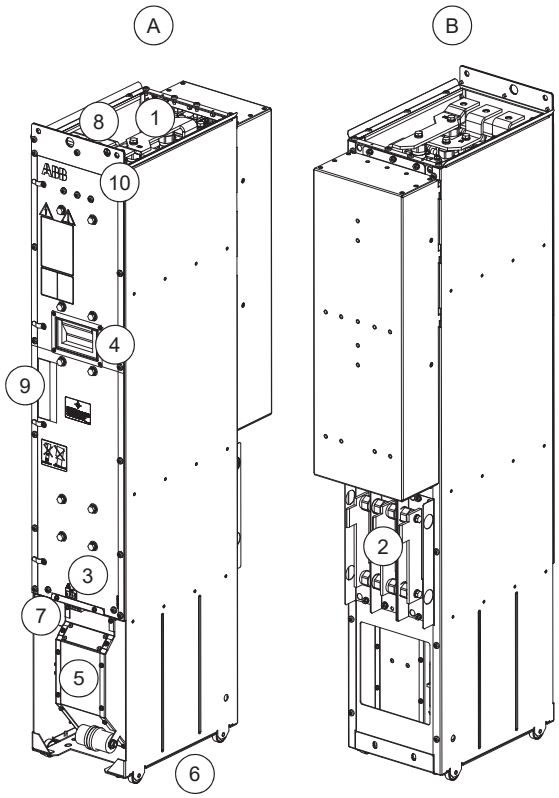
Connector X55

Note: Connections of the connector X55 are ready-made at the factory.



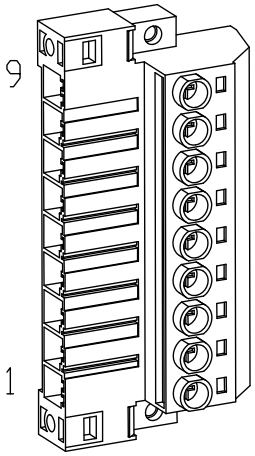
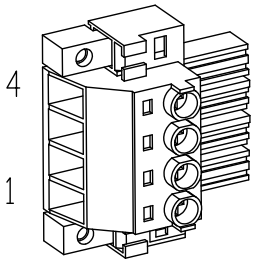
4	Not in use
3	Not in use
2	+C188: DOL fan N (230 V AC or option +G304: 115 V AC)
1	+C188: DOL fan L (230 V AC or option +G304: 115 V AC)

LCL filter module (type BLCL-1x-x for frame 1×R8i)

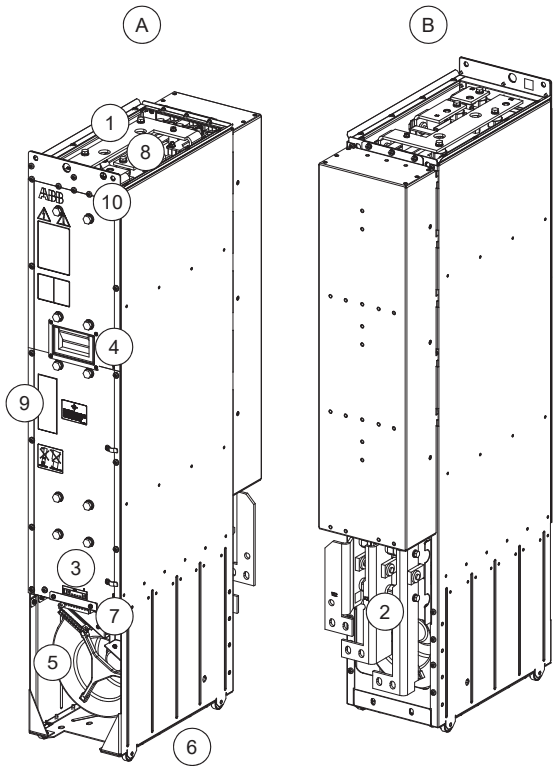


A	LCL filter module, front
B	LCL filter module, back
1.	Input (AC) connection
2.	Output (AC) connection
3.	Terminal block [X55] (power supply for module heating element, option +C183; direct-on-line fan supply, option +C188) (ready-connected)
4.	Handle
5.	Fan
6.	Wheels
7.	Fiber optic connections and LEDs of the BDFC board
8.	Terminal block [X30] (power supply for module direct-on-line fan, option +C188 and heating element, option +C183; module thermal cutoff circuit)
9.	Type designation label
10.	The unpainted grounding point (PE)

Connectors X30 and X55

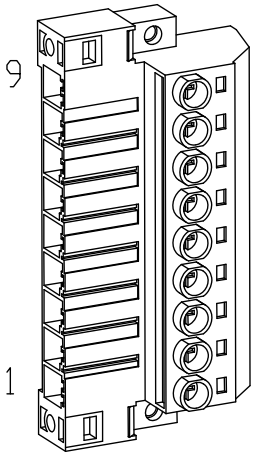
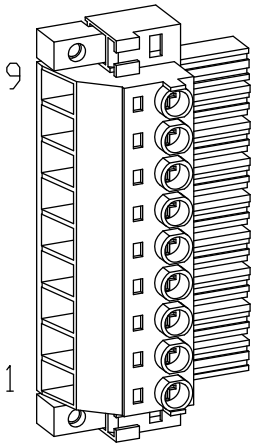
Connector X30		
	9	+C183: Heating element N (230 V AC or 115 V AC)
	8	+C183: Heating element L (230 V AC or 115 V AC)
	7	Not in use
	6	TP2, thermal cutoff circuit
	5	TP1, thermal cutoff circuit
	4	Not in use
	3	Not in use
	2	+C188: DOL fan N (230 V AC or option +G304: 115 V AC)
	1	+C188: DOL fan L (230 V AC or option +G304: 115 V AC)
Connector X55 **Note:** Connections of the connector X55 are ready-made at the factory.		
	4	+C183: Heating element N (230 V AC or 115 V AC)
	3	+C183: Heating element L (230 V AC or 115 V AC)
	2	+C188: DOL fan N (230 V AC or option +G304: 115 V AC)
	1	+C188: DOL fan L (230 V AC or option +G304: 115 V AC)

LCL filter module (type BLCL-2x-x for frame R8i multiples)



A	LCL filter module, front
B	LCL filter module, back
1.	Input (AC) connection
2.	Output (AC) connection
3.	Terminal block [X55] (power supply for module heating element, option +C183; direct-on-line fan supply, option +C188) (ready-connected)
4.	Handle
5.	Fan
6.	Wheels
7.	Fiber optic connections and LEDs of the BDFC board
8.	Terminal block [X30] (power supply for module direct-on-line fan, option +C188 and heating element, option +C183; module thermal cutoff circuit)
9.	Type designation label
10.	The unpainted grounding point (PE)

Connectors X30 and X55

Connector X30			
	9	+C183: Heating element N (230 V AC or 115 V AC)	
	8	+C183: Heating element L (230 V AC or 115 V AC)	
	7	Not in use	
	6	TP2, thermal cutoff circuit	
	5	TP1, thermal cutoff circuit	
	4	Not in use	
	3	+C188: DOL fan W	400 V AC or option +G427: 208 V AC
	2	+C188: DOL fan V	
	1	+C188: DOL fan U	
Connector X55 **Note:** Connections of the connector X55 are ready-made at the factory.			
	9	+C183: Heating element N (230 V AC or 115 V AC)	
	8	+C183: Heating element L (230 V AC or 115 V AC)	
	7	Not in use	
	6	Not in use	
	5	Not in use	
	4	Not in use	
	3	+C188: DOL fan W	400 V AC or option +G427: 208 V AC
	2	+C188: DOL fan V	
	1	+C188: DOL fan U	

Control interfaces

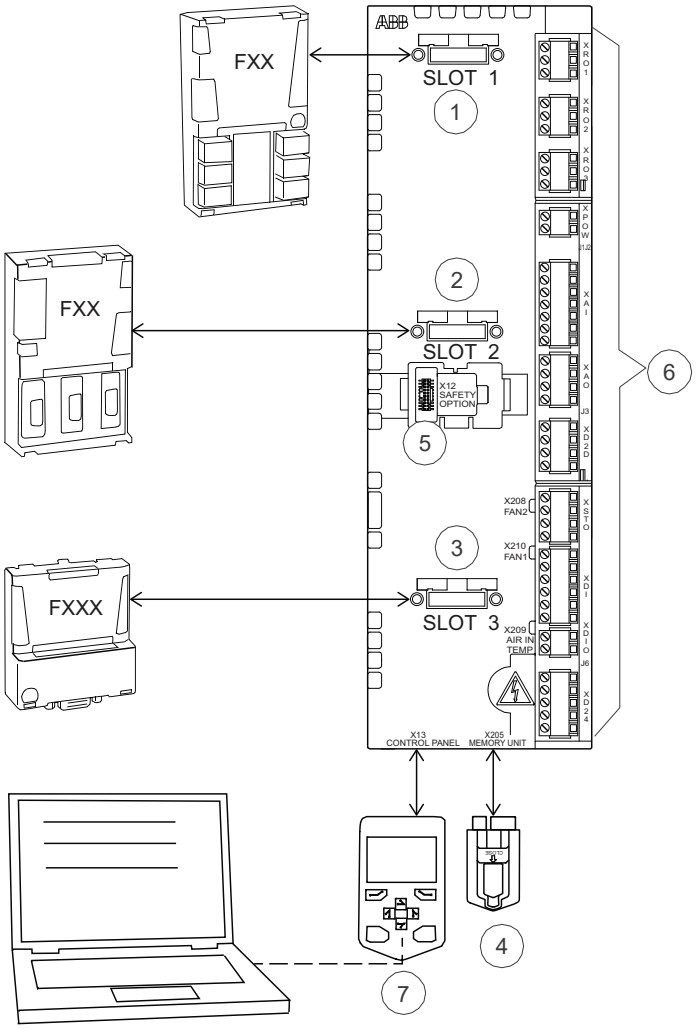
Overview of control connections of ZCU-14 control unit

It is possible to:

- control the unit through the control panel and fieldbus
- read the status information of the supply unit through the control panel, fieldbus and relay output.
- stop the unit with an externally wired emergency stop button (if the unit is equipped with an emergency stop option).

ZCU control unit is used with frame sizes R1i…R4i IGBT supply modules. The control unit is attached to the IGBT supply module.

The diagram shows the control connections and interfaces of the ZCU control unit.



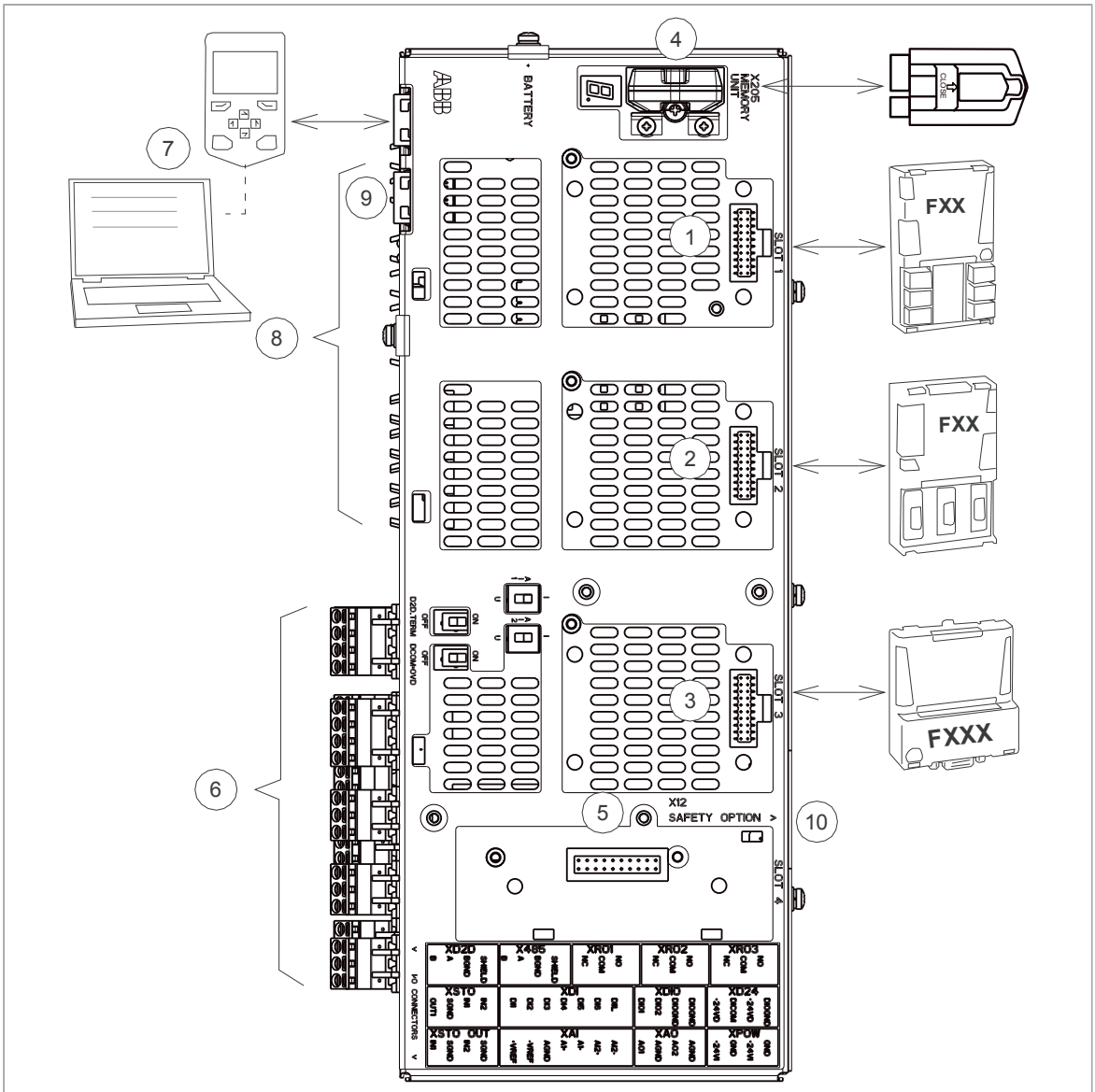
1 2 3	Analog and digital I/O extension modules and fieldbus communication modules can be inserted into slots 1, 2 and 3.
4	Memory unit
5	Not in use in supply modules
6	Terminal blocks

7	Control panel

Overview of the control connections of the BCU control unit

BCU control unit is used with frame size R6i...R8i IGBT supply modules.

The diagram shows the control connections and interfaces of the BCU control unit.



1 2 3	Analog and digital I/O extension modules and fieldbus communication modules can be inserted into slots 1, 2 and 3.	7	Control panel.
4	Memory unit	8	Fiber optic links to power modules (inverter, supply, brake or converter)
5	Slot 4 for RDCO-0x	9	Ethernet port. Not in use.
6	Terminal blocks.	10	Safety option interface. Only in use for the inverter units.

Supply unit control devices

Main disconnecting device

You must equip the supply unit with a main disconnecting device. For example, you can use a main switch-disconnector [Q1.1] or a withdrawable main circuit breaker [Q1]. With this switch, you can isolate the main circuit of the drive from the power line.

WARNING!
The main disconnecting device does not isolate the input power terminals or the auxiliary circuit from the power line. To isolate the input power terminals, open the main breaker of the supply transformer and lock it to the open position.

Auxiliary voltage switch

You can equip the unit with an auxiliary voltage switch [Q21]. Using the switch, you can disconnect the auxiliary circuit from the power line.

Operating switch

You can equip the cabinet with an operating switch [S21].

By default, the operating switch controls the unit as follows:

- The ENABLE/RUN position: The control program closes the charging contactor [Q4] and the main DC link is charged. After the DC link is charged, the main contactor [Q2] will be closed and the charging contactor [Q4] opened. The module starts operating.
- The OFF position: The control program opens the main contactor [Q2] and the module stops rectifying.

Emergency stop and emergency stop reset buttons

The cabinet can be equipped with an emergency stop button [S61] and an emergency stop reset button [S62]. Pressing the emergency stop button activates the emergency stop function of the supply unit. The button locks to open position automatically. You must release the button before you can return to the normal operation. Before the restart, you also need to reset the emergency stop circuit with the reset button.

Note: The customer is fully responsible for implementing and testing the functional safety circuits according to the relevant legislation and acceptance testing regulations. The functional safety option manuals give examples on implementing the safety circuits in cabinet-installed ACS880 multidrives.

The control unit

The supply modules of frame sizes R1i…R4i are controlled by a ZCU control unit. The supply modules of frame size R6i...R8i are controlled by a BCU control unit.

Control panel [A59]

With the control panel, the user can:

- start and stop the unit
- view and reset the fault and warning messages, and view the fault history
- view actual signals
- change parameter settings
- change between local (control panel) and remote (external device) control.

To be able to start and stop the unit by the control panel, the Run enable signal and Start enable signal must be on (1) on the supply control unit. Normally, this is the case when the operating switch [S21] on the cabinet door is in ENABLE/RUN (1) position. The control mode selection on the control panel must also be Local. The Loc/Rem key of the panel selects between the local and remote control modes.

PC connection

There is a USB connector on the front of the control panel that can be used to connect a PC to the drive. When a PC is connected to the control panel, the control panel keypad is disabled.

Fieldbus control

You can control the unit through a fieldbus interface if the unit is equipped with an optional fieldbus adapter and when you have configured the control program for the fieldbus control with the parameters. For information on the parameters, see the firmware manual.

Note: To be able to switch the main contactor [Q2] or main circuit breaker [Q1] and the supply unit on and off (Run enable signal) through the fieldbus, the Run enable command at digital input DI2 must be on (1).

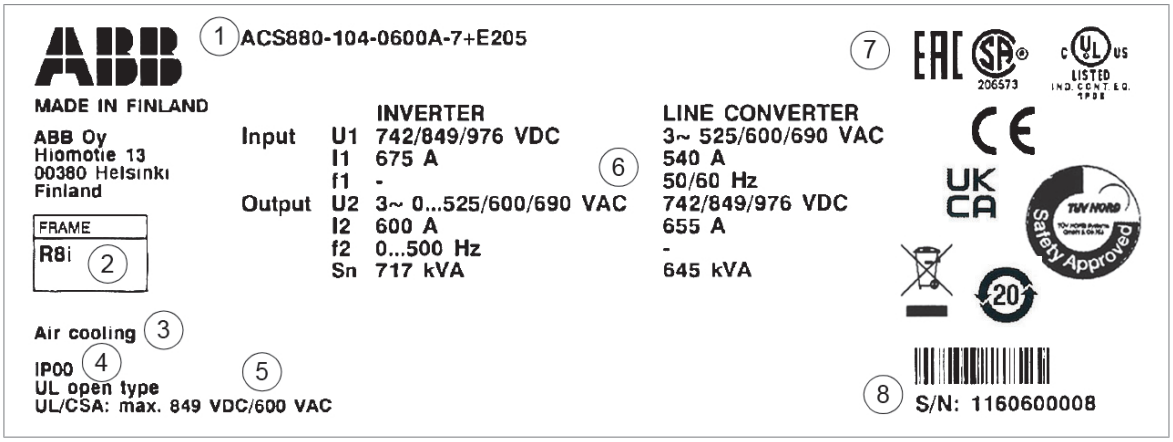
Type designation labels of the supply module and LCL filter module

Each IGBT supply module and LCL filter module has a type designation label attached to it. The type designation stated on the label contains information on the specifications and configuration of the unit.

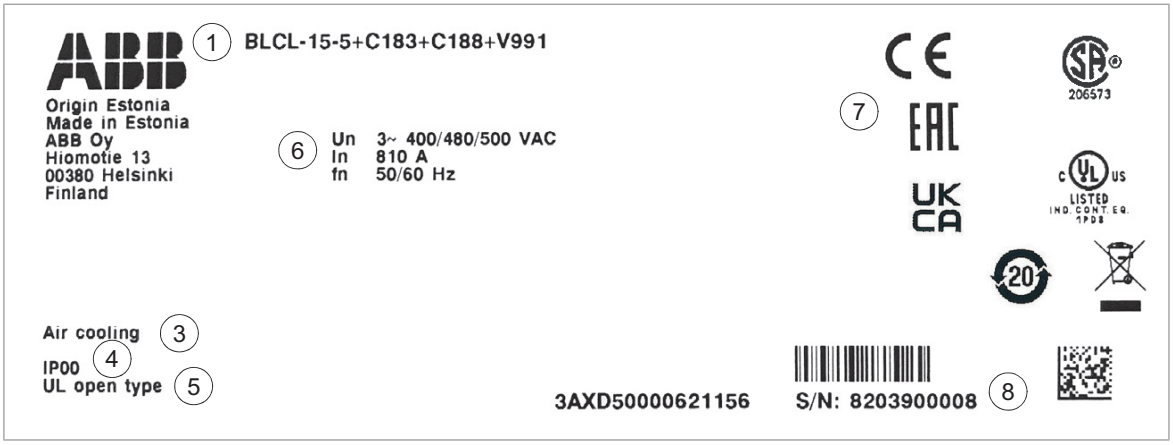
Quote the complete type designation and serial number when contacting technical support on the subject of individual IGBT supply modules or LCL filter modules.

Example labels are shown below.

Supply module



LCL filter module



No.	Description
1	Type designation
2	Frame size
3	Cooling method and additional information
4	Degree of protection
5	UL/CSA data
6	Ratings
7	Valid markings. See ACS880 multidrives cabinets and modules electrical planning instructions (3AUA0000102324 [English]).

No.	Description
8	Serial number. The first digit of the serial number refers to the manufacturing plant. The next four digits refer to the unit's manufacturing year and week, respectively. The remaining digits complete the serial number so that there are no two units with the same number.

Type designation key

IGBT supply module

Type designation describes the composition of the module in short. The complete designation code is divided in subcodes:

- The first digits form the basic code. It describes the basic construction of the module. The fields in the basic code are separated by hyphens.
- The plus codes follow the basic code. Each plus code starts with an identifying letter (common for the whole product series), followed by descriptive digits. The plus codes are separated by plus signs.

The subcodes are described below.

CODE	DESCRIPTION
Basic codes	
ACS880	Product series
104	Construction: Inverter, supply, converter or brake module.
Size	
xxxxx	Refer to the ratings table in the technical data.
Voltage range	
3	DC voltage corresponding AC input voltages 3 ~ 380…415 V. This is indicated in the type designation label as typical input voltage level 566 V DC.
5	DC voltage corresponding AC input voltages 3 ~ 380…500 V. This is indicated in the type designation label as typical input voltage level 566/679/707 V DC.
7	DC voltage corresponding AC input voltages 3 ~ 525…690 V. This is indicated in the type designation label as typical input voltage level 742/849/976 V DC.
Option codes (plus codes)	
C132	Frames R6i...R8i: Marine type-approved
C183	Internal heating element
C188	Direct-on-line (DOL) cooling fan
C249	Frames R6i and R7i: Interface for optical fiber cable connection for BCU control board
E205	Internal d*u*/d*t* filtering.
G304	115 V auxiliary voltage supply
N2200	Frames R1i...R4i: IGBT supply control program
P904	Extended warranty 24/30
P909	Extended warranty 36/42
V992	Frames R6i and R7i: Hardware variant added to product offering during 2023.

LCL filter

CODE	DESCRIPTION
Basic codes	
WFU	LCL filter for frames R1i…R4i IGBT supply modules. The delivery includes direct-on-line cooling fan as standard.
BLCL	LCL filter for frame R6i...R8i IGBT supply module. The delivery includes on/off-controlled cooling fan as standard.

CODE	DESCRIPTION
Size	
01, 02, 11, 21, 22, 05, 13, 15, 24 or 25	Refer to the LCL filter module table in the technical data.
Voltage range	
5	Voltage rating: 380…500 V. This is indicated in type designation label as typical input voltage levels (3~ 400/480/500 V AC).
7	Voltage rating: 525…690 V. This is indicated in type designation label as typical input voltage levels (3~ 525/600/690 V AC, 600 UL, CSA).
Plus codes	
For the plus codes, see chapter Ordering information.	
C183	BLCL-1x-x and BLCL-2x-x only: Internal heating element (included in the delivery as standard)
C188	BLCL-0x-x, BLCL-1x-x and BLCL-2x-x only: Direct-on-line cooling fan (included in the delivery as standard with 230 V supply for BLCL-05-x and BLCL-1x-x/ 400 V AC supply for BLCL-2x-x)
G304	BLCL-0x-x and BLCL-1x-x only: 115 V AC 1-phase fan supply
G427	BLCL-2x-x only: 208 V AC 3-phase fan supply
V991	Frame R8i, BLCL-1x-x and BLCL-2x-x only: Hardware version with enhanced performance. Filter modules with and without this code are interchangeable.

Weak supply networks

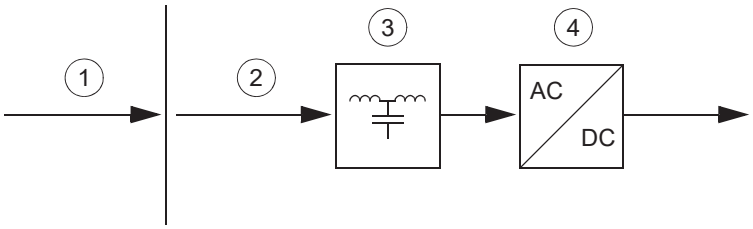
In weak supply networks with a short-circuit ratio less than 8, ABB recommends to equip the supply unit with a BAMU auxiliary measurement unit. Without the BAMU, there is a risk of nuisance DC overvoltage trippings due to disturbances caused by high-voltage THD in the supply voltage. Short-circuit ratio is defined as the supply network's apparent short-circuit power $S_{k,net}$ divided by the drive's nominal apparent power S_n:

$SCR_{net} = S_{k,net} / S_n$, where

- SCR_{net} = short-circuit ratio of the supply network
- $S_{k,net}$ = supply network's apparent short-circuit power
- S_n = nominal apparent power of the drive.

If a generator is used as a supply: The recommendation for ACS880 IGBT supply unit with generator supply is:

- always use a BAMU auxiliary measurement unit
- short-circuit ratio of the supply network $SCR_{net} > 3$
- short-circuit ratio of the generator $SCR_{gen} = 1/xk > 2$, where
  - xk = relative short-circuit reactance
- generator nominal power $P_{gen} > 0.3 \times P_{N,ISU}$, where
  - P_{gen} = generator nominal power (output)
  - $P_{N,ISU}$ = typical power of the IGBT supply unit in no-overload use.



1	Generator. SCR_{gen} > 2
2	Supply network. SCR_{net} > 3
3	LCL filter
4	IGBT supply module

5

Moving and unpacking the module

Contents of this chapter

This chapter gives basic information on moving, unpacking and lifting the modules.

WARNING!
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur.

Moving and lifting the transport package

Move the transport package by a pallet truck or lift. Lift the transport package in a horizontal position. Use soft lifting slings.

Unpacking

Frames R1i...R5i

The module is delivered in a corrugated cardboard box. The module and its parts (such as grounding/clamp plates, terminal blocks, etc.) are placed in the different compartments of the box.

1. Remove any banding and lift off the cover of the box.
2. Lift the module out of the box.
3. Check all the compartments in the box for accessories.

   Note: Some parts may be placed in a compartment directly underneath the module.

Dispose of or recycle the packaging according to the local regulations.

Frames R6i...R8i

The module is delivered on a wooden base, boxed in corrugated cardboard. The cardboard box is tied to the base with PET bands.

1. Cut off the bands.
2. Lift off the cardboard box.
3. Remove any filling material.
4. Cut open the plastic wrapping of the module.
5. Lift off the module.
6. Check that there are no signs of damage.

Dispose of or recycle the packaging according to the local regulations.

Lifting the unpacked modules

Lift the unpacked module only by its lifting eyes.

Moving the unpacked modules

WARNING!
For general safety instructions for moving the module, see ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]).

6

Cabinet construction

Contents of this chapter

This chapter gives instructions on how to install the modules and additional equipment into a cabinet.

For general instructions, see Drive modules cabinet design and construction instructions (3AUA0000107668 [English]).

Limitation of liability

The installation must always be designed and made according to applicable local laws and regulations. ABB does not assume any liability whatsoever for any installation which breaches the local laws and/or other regulations. Furthermore, if the recommendations given by ABB are not followed, the drive may experience problems that the warranty does not cover.

- **North America**

Installations must be compliant with NFPA 70 (NEC)[1)] and/or Canadian Electrical Code (CE) along with state and local codes for your location and application.

[1)] National Fire Protection Association 70 (National Electric Code).

Switching, disconnecting and protecting solution

To arrange the switching, disconnection and protection of the ACS880-204 module, you can use the following solutions depending on the frame size.

- **Frames R1i...R4i**

The switching, disconnecting and protecting equipment can be placed **inside** the drive cabinet in the following way:

1. The AC supply coming to the drive cabinet is first connected to the main switch-disconnector [Q1].
2. The drive is equipped with the main contactor connected between the main switch-disconnector [Q1] and the LCL filter. See section Single-line circuit diagrams of the supply unit (page 24).

For the connection diagram, see chapter Electrical installation.

Frame R6i and R7i

The switching, disconnecting and protecting equipment can be placed **inside** the drive cabinet in the following way:

1. The AC supply coming to the drive cabinet is first connected to the main switch-disconnector [Q1] containing AC fuses.
2. The drive is equipped with the main contactor connected between the main switch-disconnector [Q1] and the LCL filter.
3. A charging circuit for precharging the DC link capacitors is connected over the main switch-disconnector [Q1] and the main contactor [Q2]. See section Single-line circuit diagrams of the supply unit (page 24).

For the connection diagram, see chapter Electrical installation.

Frame R8i

The switching, disconnecting and protecting equipment can be placed **outside** the drive cabinet in the following way:

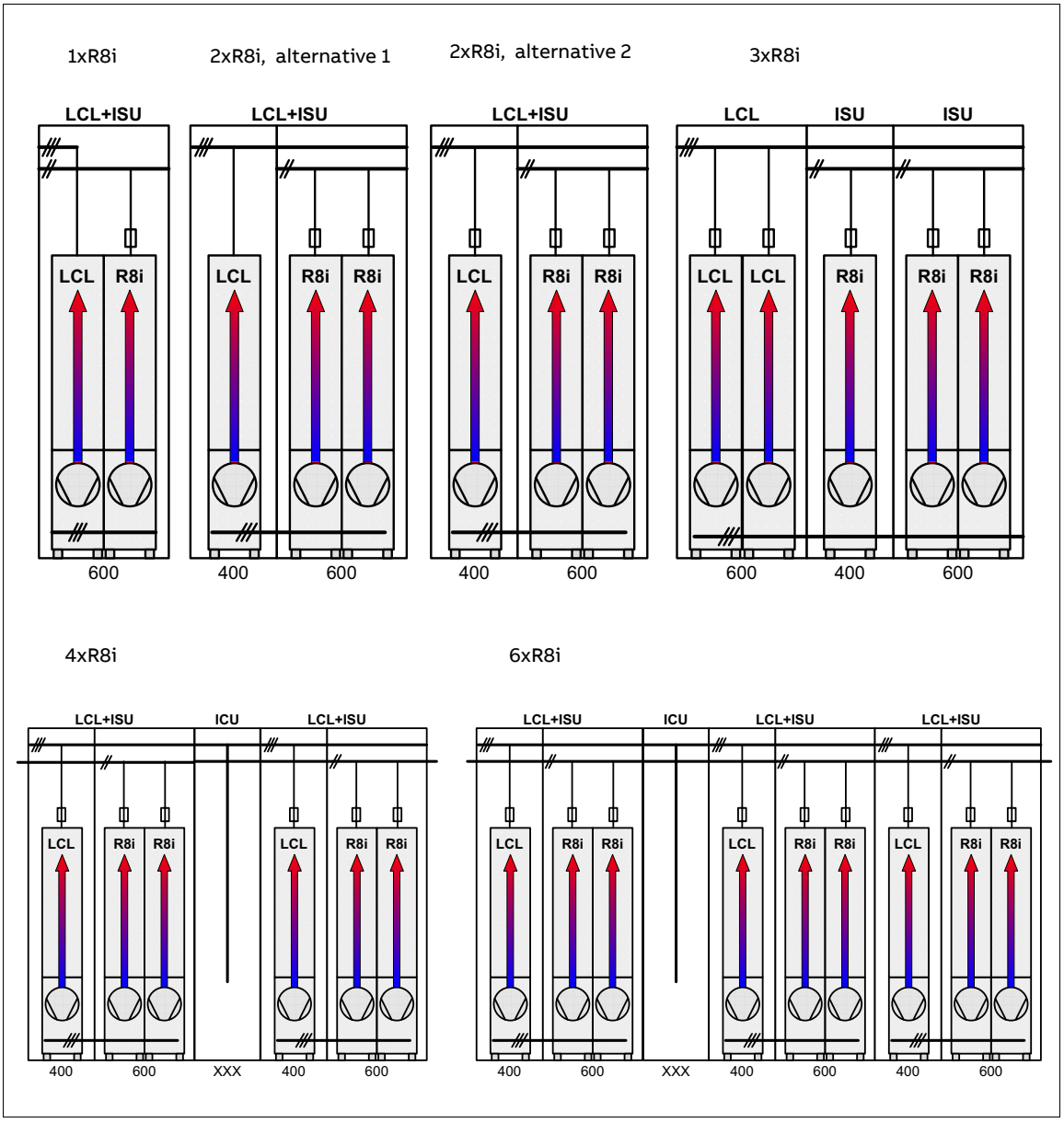
1. The AC supply is first connected to the main switch-disconnector or main circuit breaker [Q1].
2. The AC fuses are connected after the switch-disconnector.
3. The main contactor [Q2] is connected between the AC fuses and the LCL filter.
4. A charging circuit for precharging the DC link capacitors is connected over the main contactor [Q2]. See section Single-line circuit diagrams of the supply unit (page 24).

For the connection diagram, see chapter Electrical installation.

Cabinet configuration overview

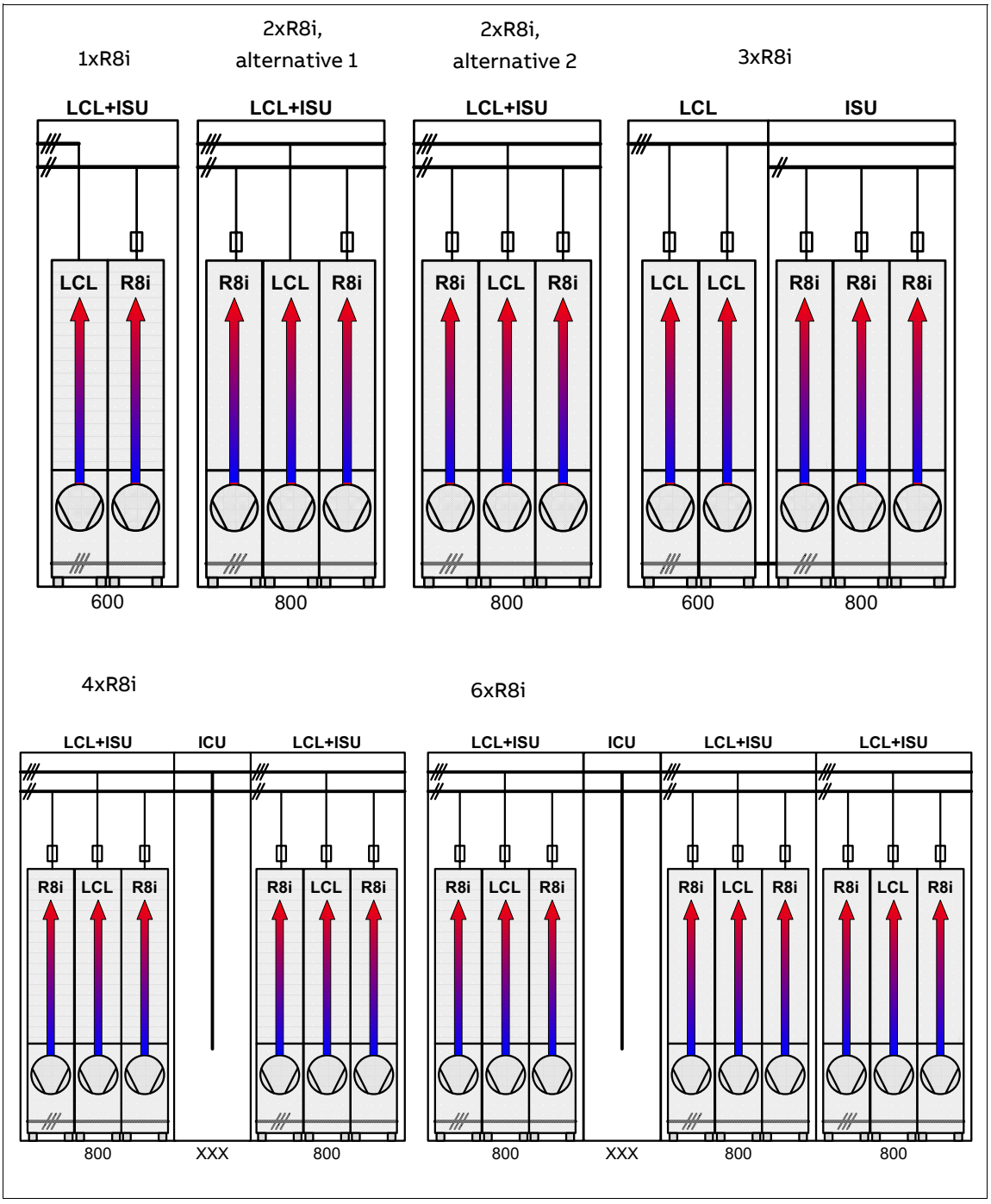
ACS880-204 configurations in Rittal VX25 enclosures

The following figures show examples of ACS880-204 configurations that can be installed in the Rittal VX25 enclosure.



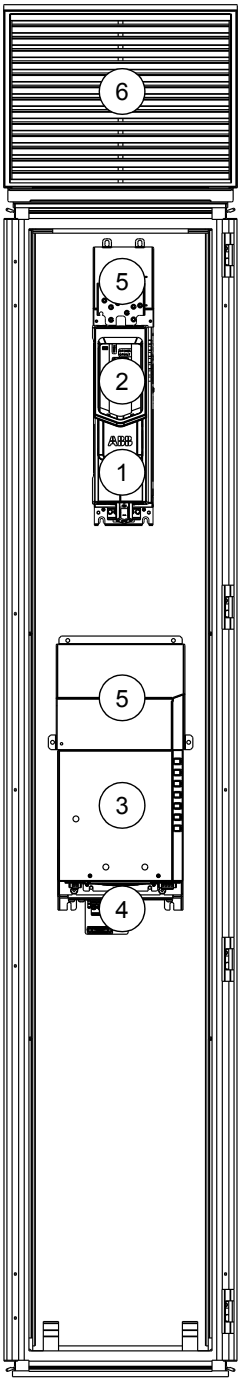
ACS880-204 configurations in generic enclosures

The following figures show examples of ACS880-204 configurations that can be installed in generic enclosure.



IGBT supply unit with frame R1i...R4i module

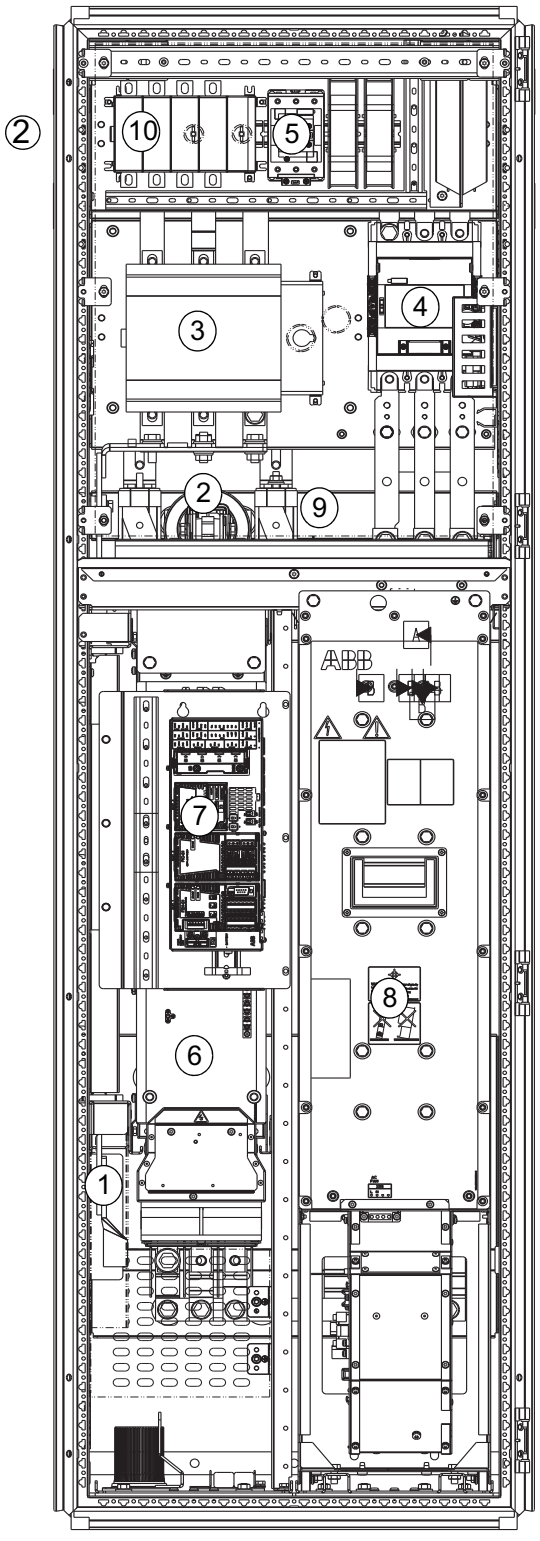
The following figure shows an example of the R1i module in 400 mm wide Rittal VX25 enclosure. The power cables are routed to the cabinet through the bottom.



Description
Cubicle including:
1. IGBT supply module [T01]
2. Control unit [A51] (attached to the IGBT supply module, under the control panel cover)
3. LCL filter module [R03]
4. WBCA bottom connection adapter
5. Air guide
6. Roof fan

IGBT supply unit with frame R6i and R7i module

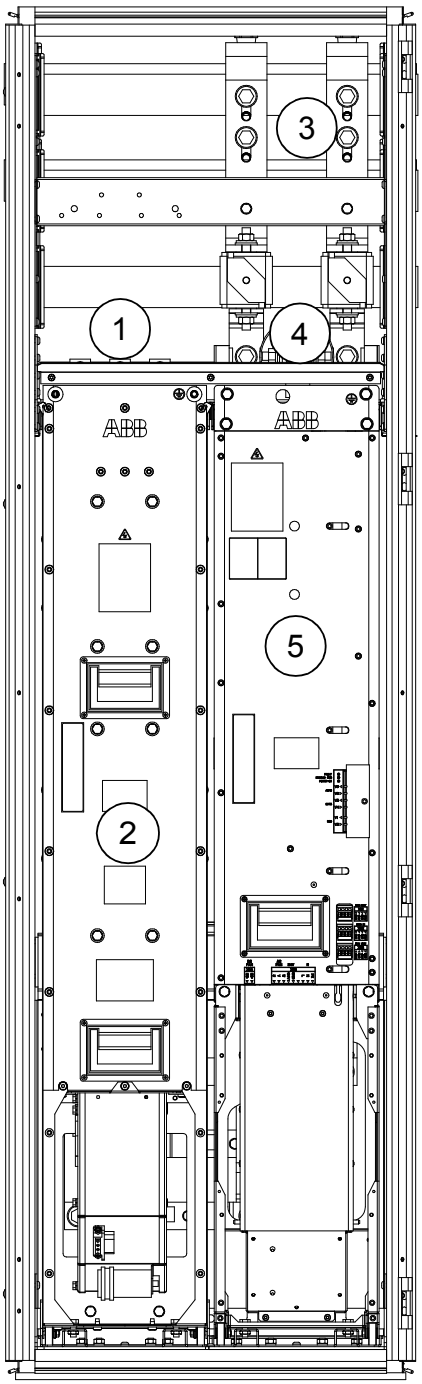
The following figure shows an example of the R6i module in 600 mm wide Rittal VX25 enclosure. The power cables are routed to the cabinet through the bottom.



Description
Cubicle including: 1. AC input 2. DC output (common DC bus running through cubicle [obscured]) 3. Main switch-disconnector [Q1] containing AC fuses [F1] 4. Main contactor [Q2] 5. Charging contactor [Q4] 6. IGBT supply module [T01] 7. Control unit [A51] 8. LCL filter module [R03] 9. DC fuses [F2] 10.Charging fuse switch [Q21]

IGBT supply unit with frame R8i module

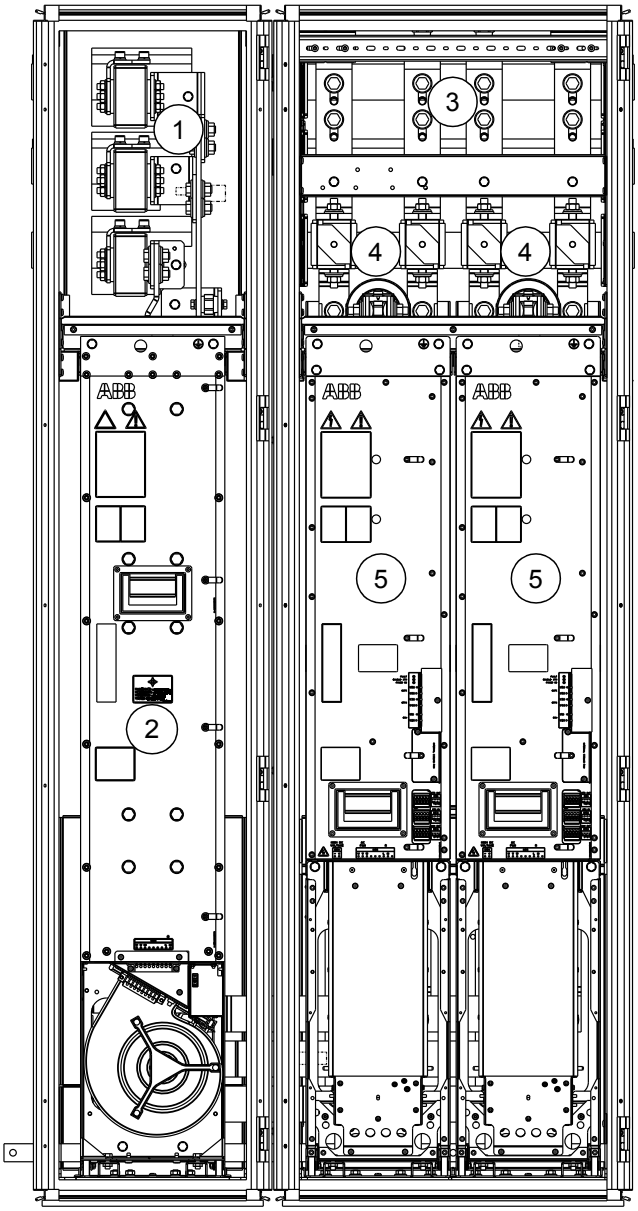
The following figure shows an example of the 1×R8i module in 600 mm wide Rittal VX25 enclosure. The customer must place the control equipment in a separate cabinet.



Description
Cubicle including: 1. AC input 2. LCL filter module (type BLCL-1x-x) 3. Common DC busbars 4. DC output with common mode filters and DC fuses 5. R8i IGBT supply module

IGBT supply unit with frame 2×R8i modules

The following figure shows an example of the 2×R8i modules in 1000 mm wide Rittal VX25 enclosure. The customer must place the control equipment in a separate cabinet.



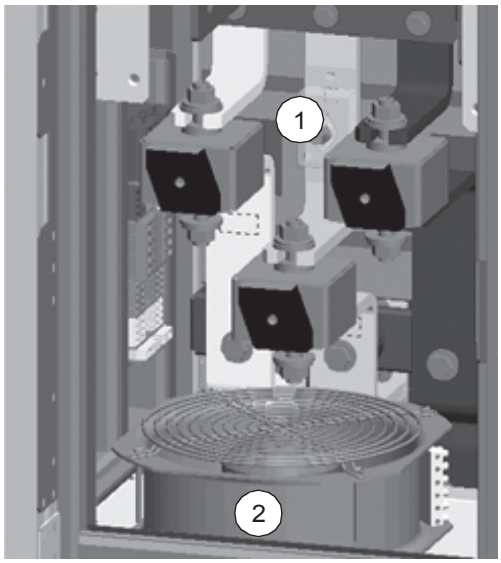
Description
Cubicle including: 1. AC input with AC fuses 2. LCL filter module (type BLCL-2x-x) 3. Common DC busbars 4. DC output with common mode filters and DC fuses 5. R8i IGBT supply module

Incoming cubicle

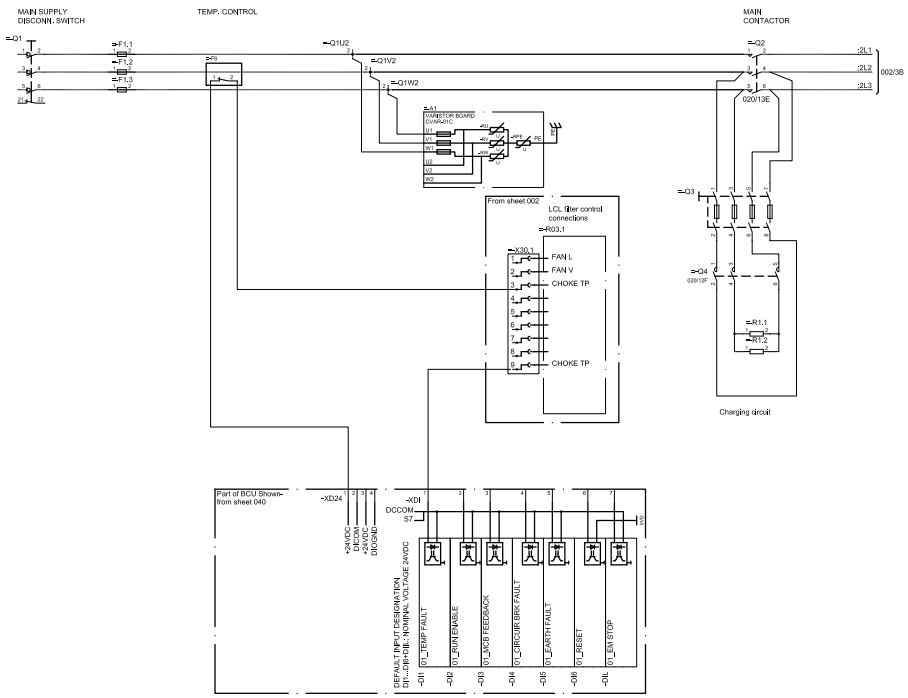
Example of the AC fuse cooling

The AC fuses must be cooled by forced cooling. If the fuses are not located in the same cubicle with the supply/rectifier module, the module cooling fan does not supply the cooling air for the fuses but you must use a separate cooling fan.

The following figures show an example of the cooling system using a thermal switch for the air temperature monitoring near the AC fuses.



	Description
1	Thermal switch
2	Cooling fan

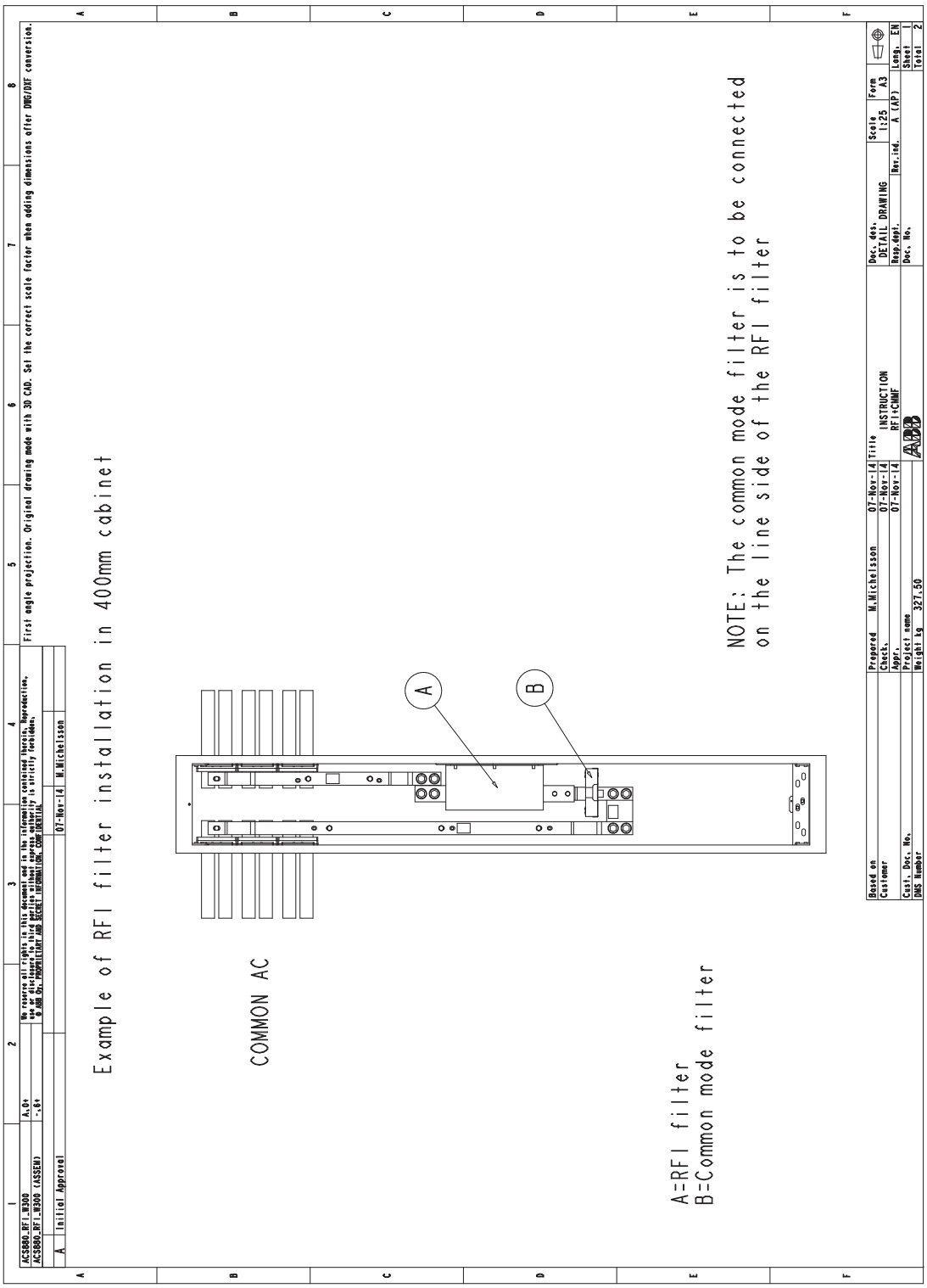


Note: The connection of temperature monitoring requires proper insulation between busbars and thermal switch.

RFI filter, for R6i...R8i only

The RFI filter is used for improving the EMC characteristics of the unit. The RFI filter is not suitable for use in IT (ungrounded) systems.

The following figure shows an example of installing RFI filter to the cabinet. For more information about EMC requirements, see *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).



Installation examples

This section gives examples of how to place the drive and additional equipment into a Rittal VX25 enclosure.

Each example includes a table that lists:

- installation stages of different equipment in the order in which the installation into the enclosure should be done
- instruction code of the step-by-step instructions
- equipment kit code
- kit ordering code.

You can find the kit-specific assembly drawings, step-by-step instructions and kit information on the Internet. Go to https://sites-apps.abb.com/sites/lvacdrivesengineeringsupport/content. If needed, contact your local ABB representative.

The example includes also cabinet assembly drawings that show each stage listed in the table. More detailed steps of each stage are described in the kit-specific assembly drawings. The tightening torques are listed in the kit-specific assembly drawings. See the hardware manual for the tightening torques of drive module input and output terminals.

For general instructions, see Drive modules cabinet design and construction instructions (3AUA0000107668 [English]).

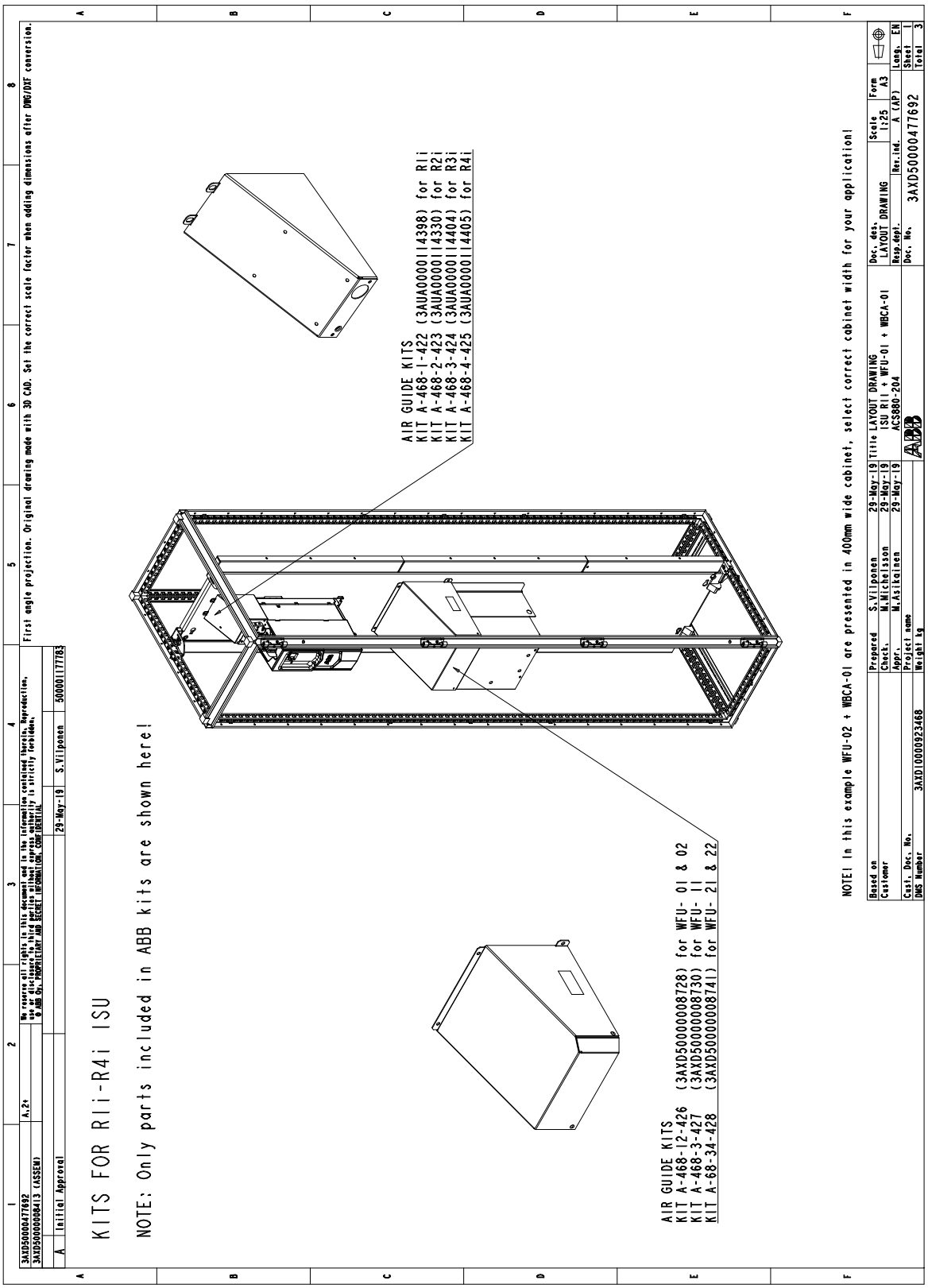
WARNING!
Remove the code labels attached to mechanical parts such as busbars, shrouds and sheet metal parts before installation. They may cause bad electrical connections, or, after peeling off and collecting dust in time, cause arcing or block the cooling air flow.

R1i...R4i module in a 400/600/800 mm wide Rittal VX25 enclosure

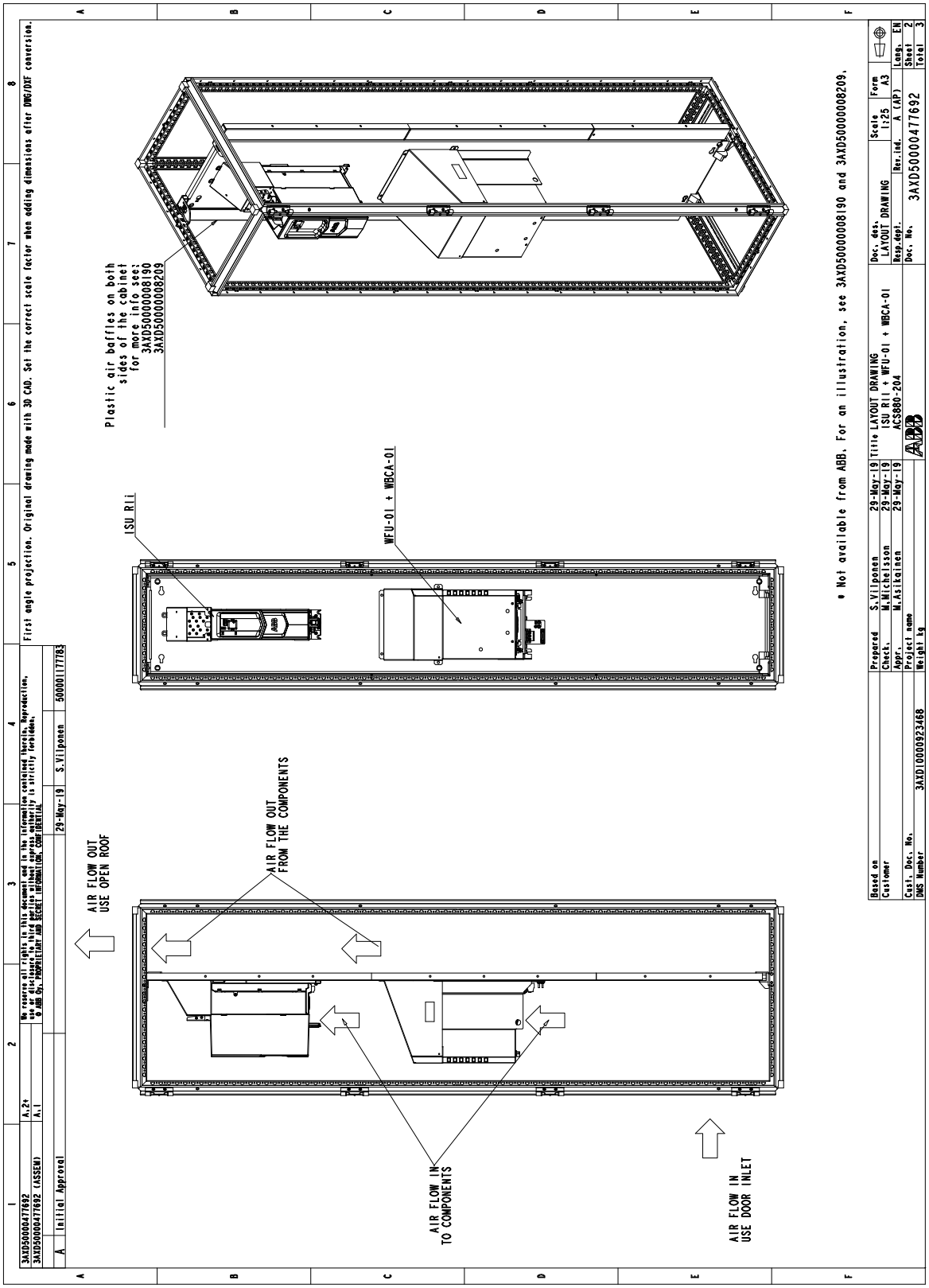
Installation stages

#	Installation stage	Instruction code	Kit code	Kit ordering code
1	Air guide kit for WFU-01/02	3AXD50000477692	A-468-12-426	3AXD50000008728
	Air guide kit for WFU-11		A-468-3-427	3AXD50000008730
	Air guide kit for WFU-21/22		A-68-34-428	3AXD50000008741
2	Air guide kit for IGBT supply module (frame R1i)	3AXD50000477692	A-468-1-422	3AUA0000114398
	Air guide kit for IGBT supply module (frame R2i)		A-468-2-423	3AUA0000114330
	Air guide kit for IGBT supply module (frame R3i)		A-468-3-424	3AUA0000114404
	Air guide kit for IGBT supply module (frame R4i)		A-468-4-425	3AUA0000114405

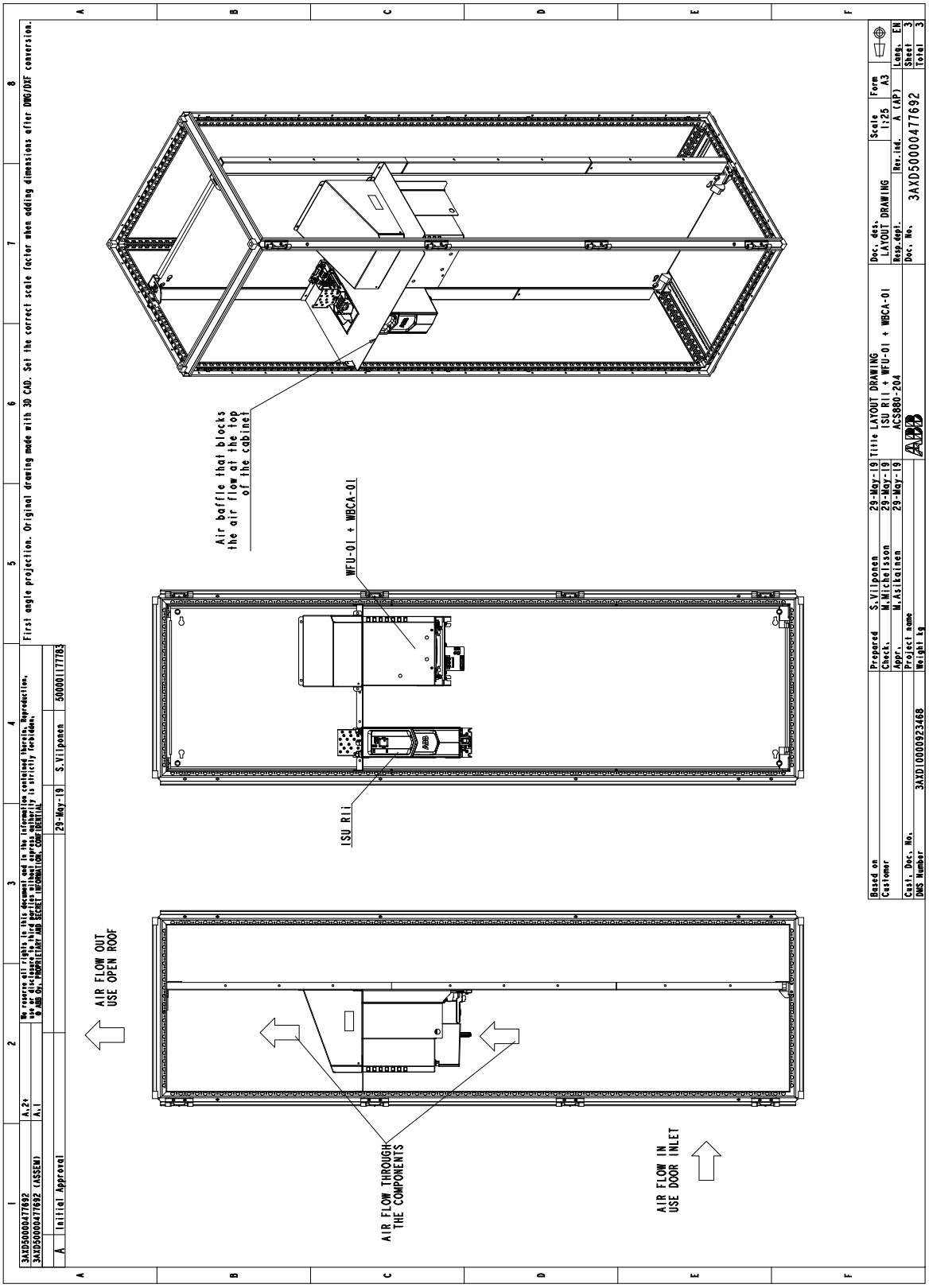
Kits for R1i...R4i modules



Example 1


Plastic air baffles on both sides of the cabinet for more info see: 3AXD50000008190 3AXD50000008209
ISU R1i
WFU-01 + WBCA-01
AIR FLOW OUT USE OPEN ROOF
AIR FLOW OUT FROM THE COMPONENTS
AIR FLOW IN TO COMPONENTS
AIR FLOW IN USE DOOR INLET
* Not available from ABB. For an illustration, see 3AXD50000008190 and 3AXD50000008209.
3AXD50000477692
3AXD50000477692 (ASSEM)
Initial Approval
S.Vilponen
29-May-19
Prepared
Check
Appr.
Based on
Customer
M.Michelsson
M.Asikainen
Title LAYOUT DRAWING
ISU R1i + WFU-01 + WBCA-01
ACS880-204
Doc. des. LAYOUT DRAWING
Rsp.dept.
Doc. No. 3AXD50000477692
Scale 1:25
Form A3
Rev.ind. A (AP)
Lang. EN
Sheet 2
Total 3
Project name
Weight kg
SMS Number 3AXD10000923468

Example 2

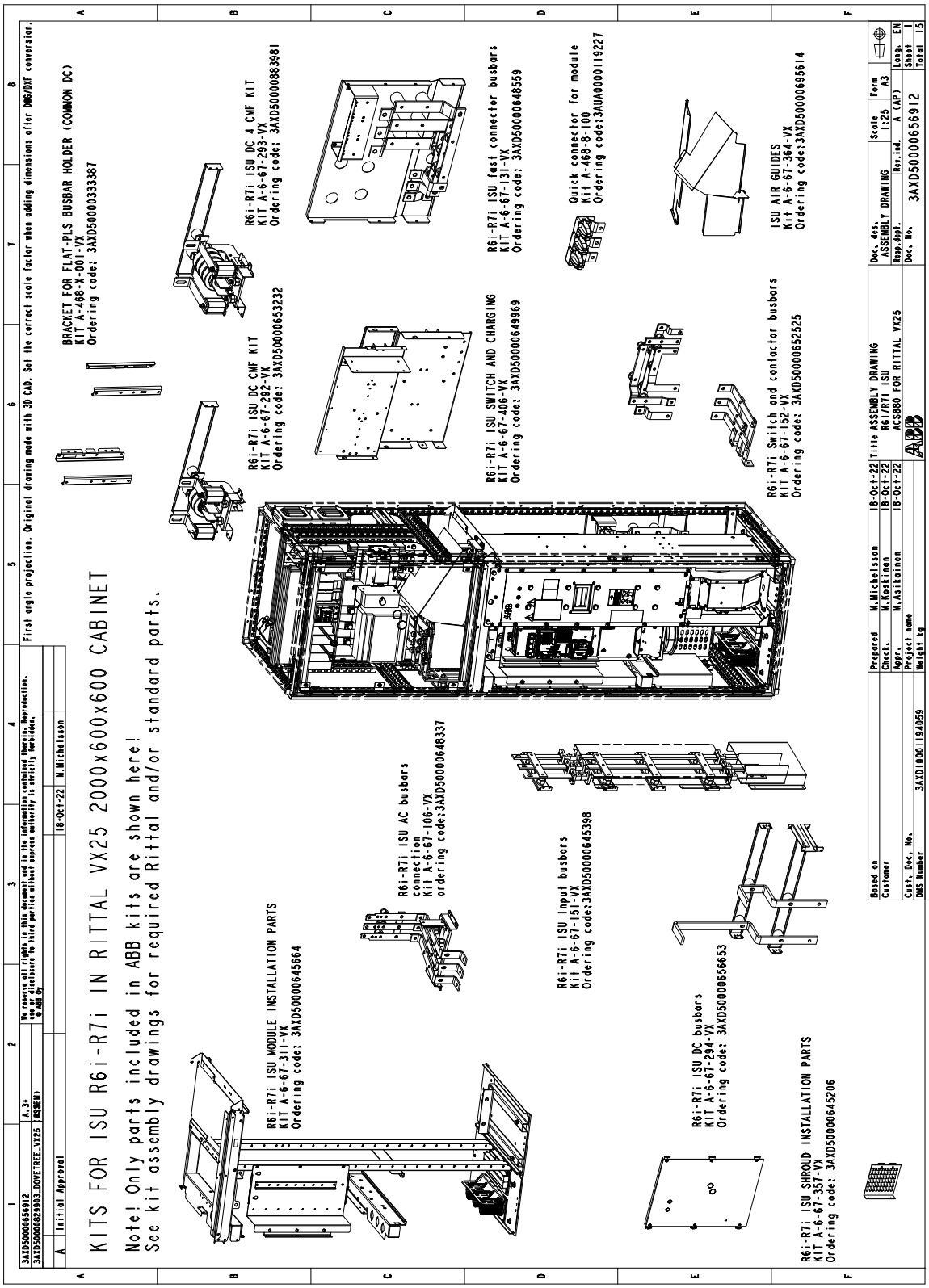

Air baffle that blocks the air flow at the top of the cabinet
WFU-01 + WBCA-01
ISU R1i
AIR FLOW OUT USE OPEN ROOF
AIR FLOW THROUGH THE COMPONENTS
AIR FLOW IN USE DOOR INLET
First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
Title LAYOUT DRAWING
ISU R1i + WFU-01 + WBCA-01
ACS880-204
3AXD50000477692
3AXD50000477692 (ASSEM)
3AXD10000923468
3AXD50000477692

R6i or R7i module in a 600 mm wide Rittal VX25 enclosure

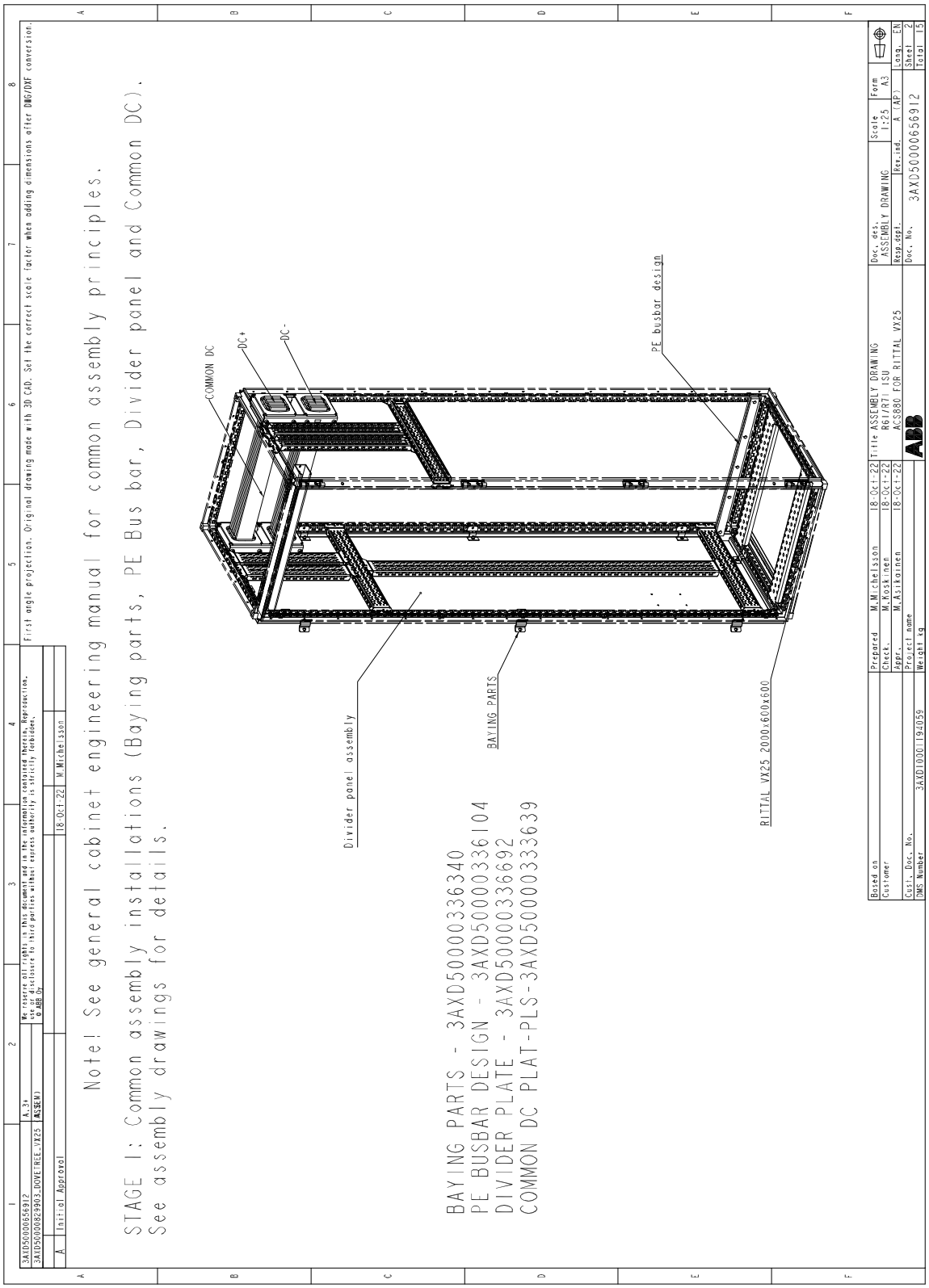
Installation stages

#	Installation stage	Instruction code	Kit code	Kit ordering code
1.	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Common DC Flat-PLS assembly	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2.	Rittal supports installation	3AXD50000656875	-	-
3.	Module supports installation	3AXD50000644735	A-6-67-311-VX	3AXD50000645664
4.	Input busbars	3AXD50000956043	A-6-67-151-VX	3AXD50000645398
5.	DC busbars	3AXD50000653263	A-6-67-294-VX	3AXD50000656653
6.	Common mode filter holder kits (filters not included in kits):			
	CMF kit for 2 toroidal cores	3AXD50000952861	A-6-67-292-VX	3AXD50000653232
	CMF kit for 4 toroidal cores	3AXD50000883950	A-6-67-293-VX	3AXD50000883981
7.	Switch and charging assembly plate	3AXD50000649921	A-6-67-406-VX	3AXD50000649969
8.	Switch and contactor busbars	3AXD50000650156	A-6-67-152-VX	3AXD50000652525
9.	AC busbars	3AXD50000648436	A-6-67-106-VX	3AXD50000648337
10.	Fast connector busbars (fast connector not included in kit)	3AXD50000648566	A-6-67-131-VX	3AXD50000648559
11.	Module installation			
12.	Air guide	3AXD50000955619	A-6-67-364-VX	3AXD50000695614
13.	Shrouding	3AXD50000957293	A-6-67-357-VX	3AXD50000645206

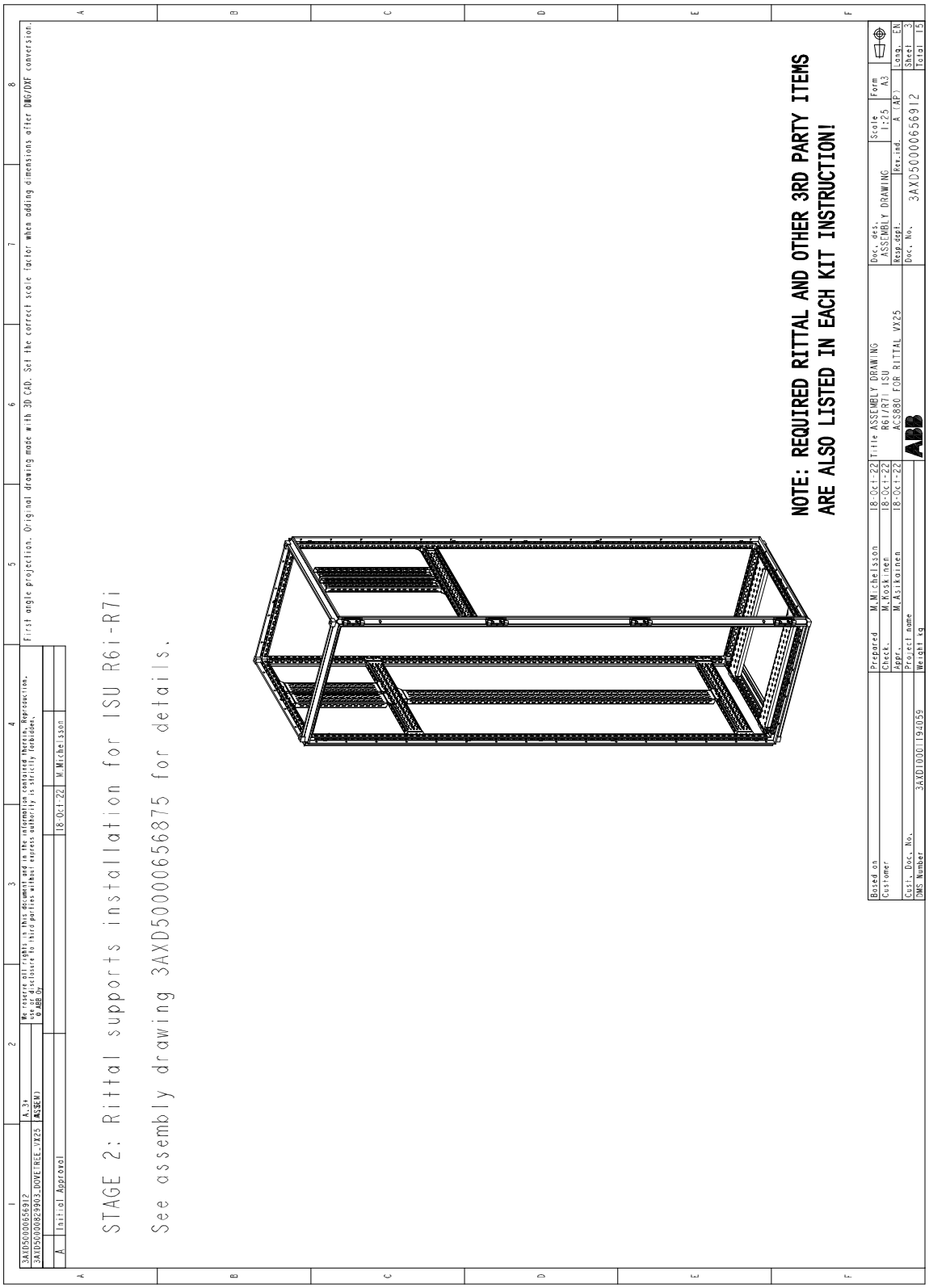
Kits for R6i and R7i module in 600 mm Rittal VX25 enclosure



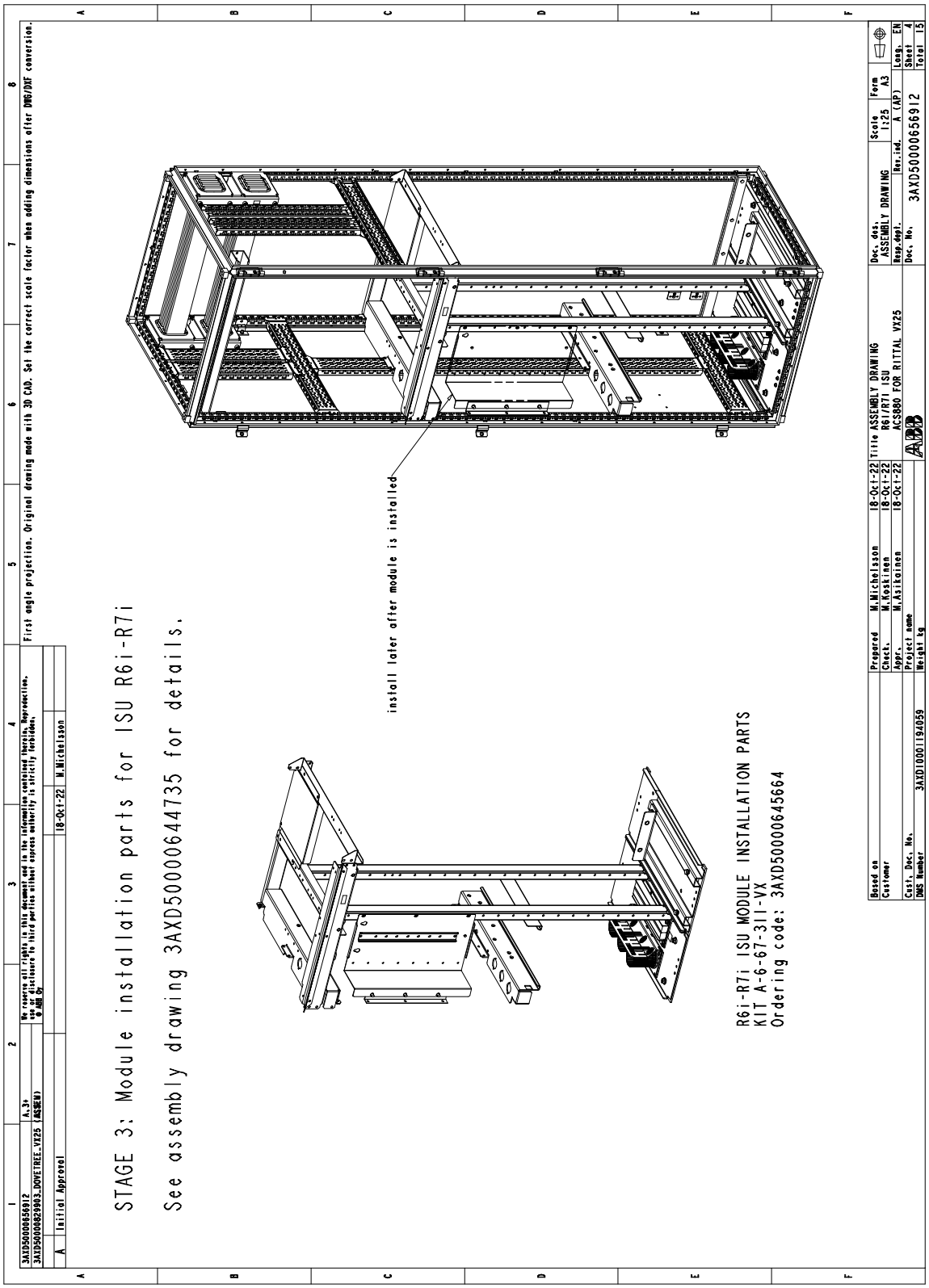
Stage 1: Installation of common parts



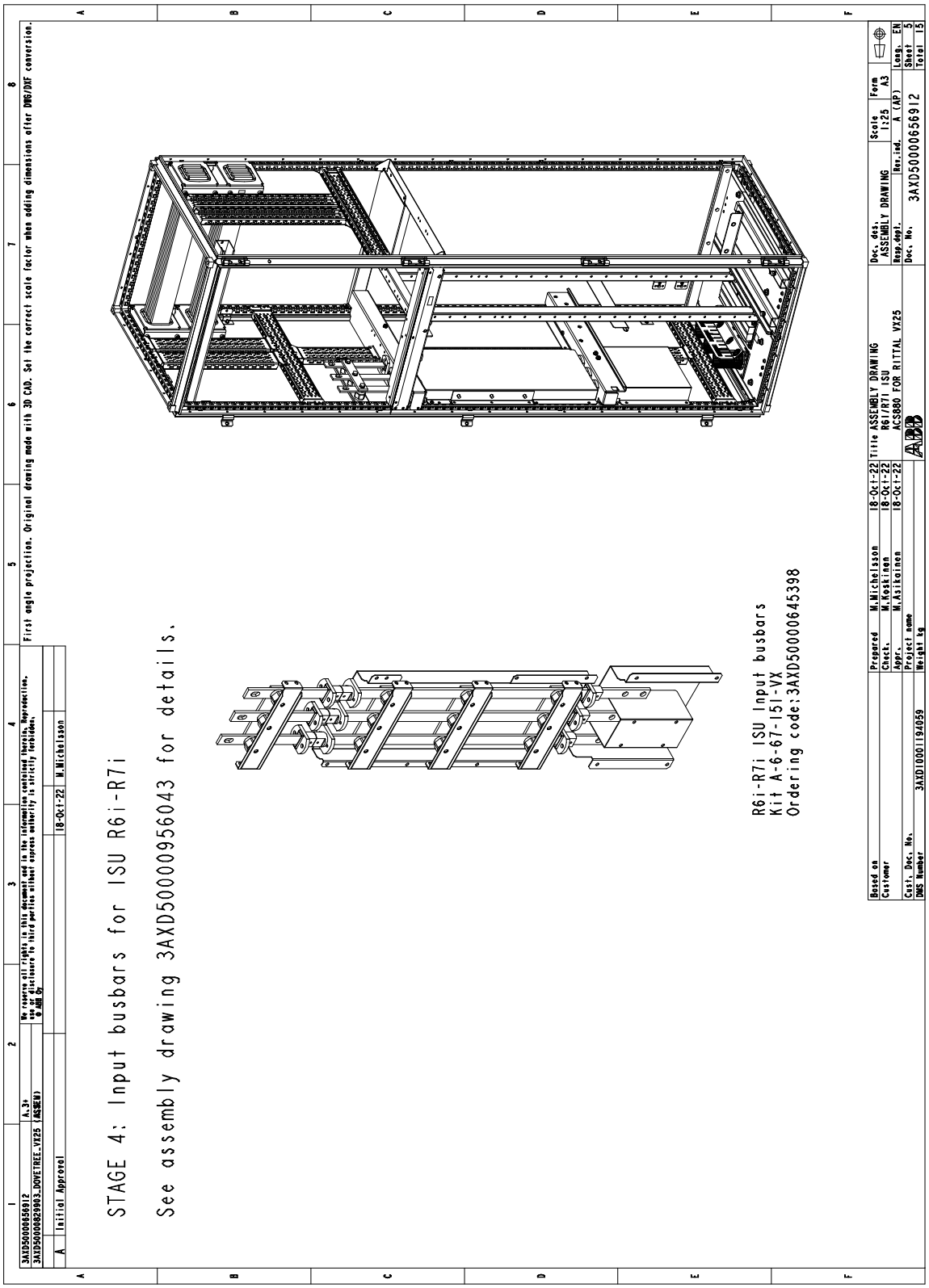
Stage 2: Rittal supports installation



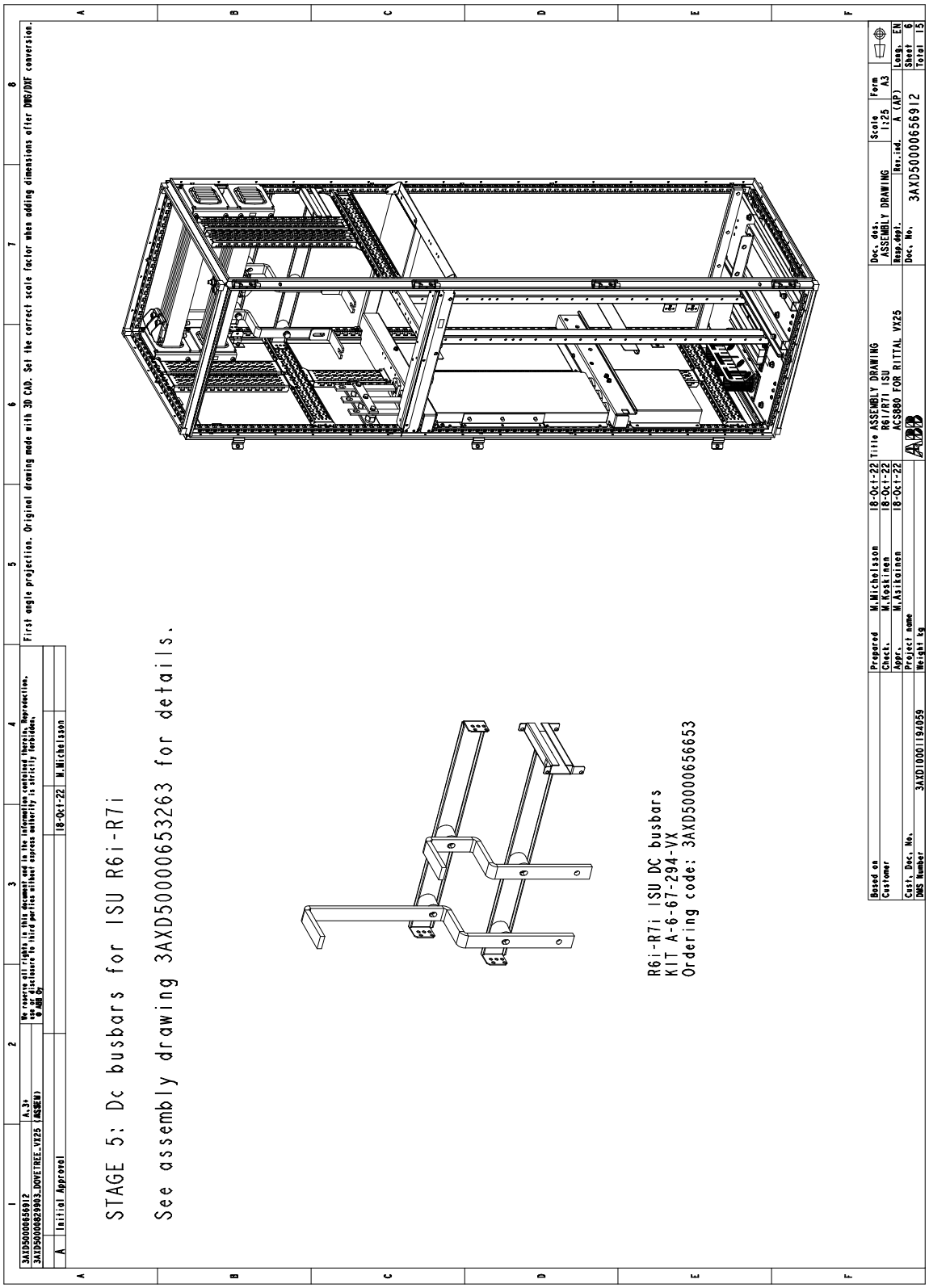
Stage 3: Module supports installation



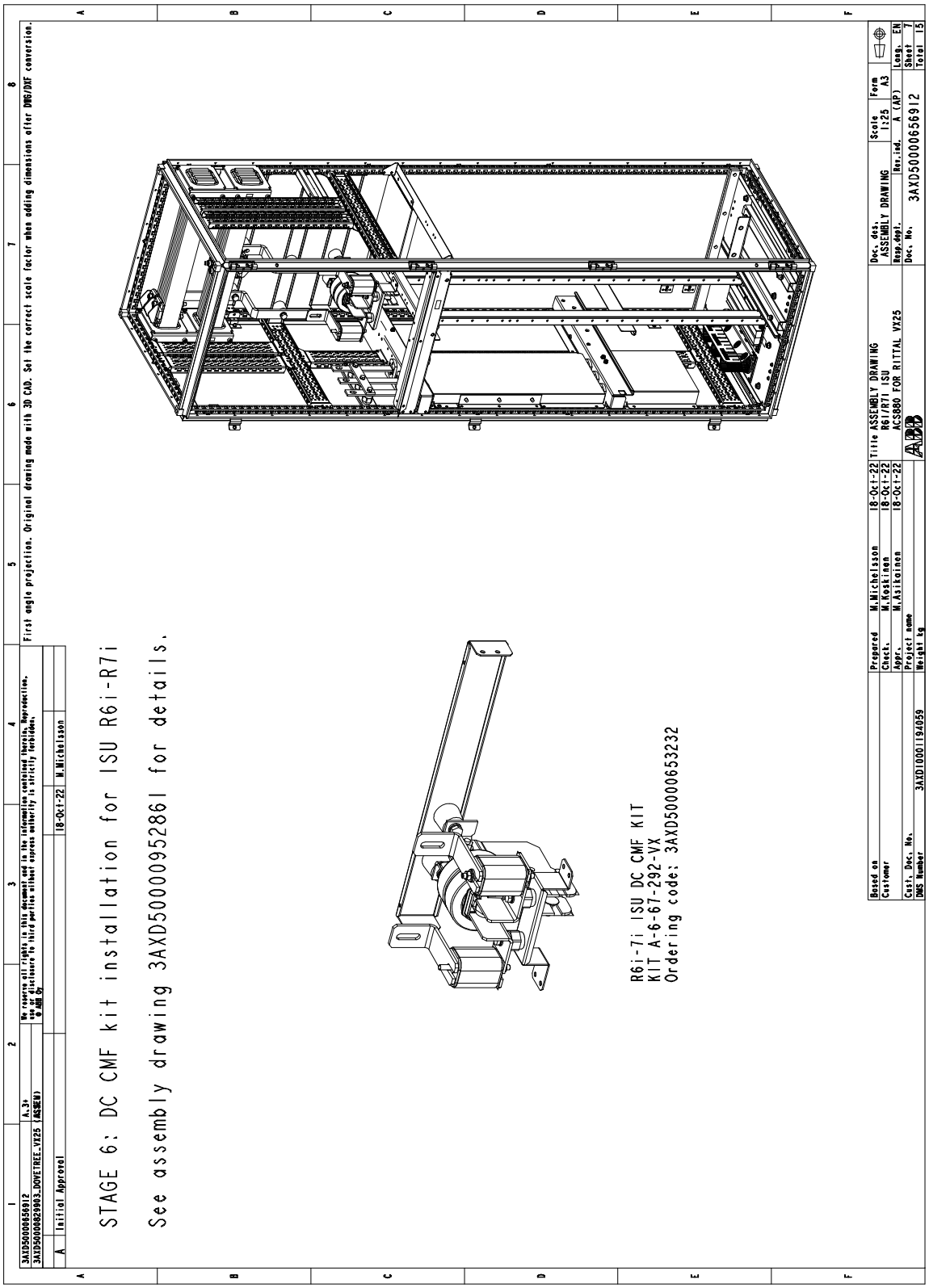
Stage 4: Input busbars



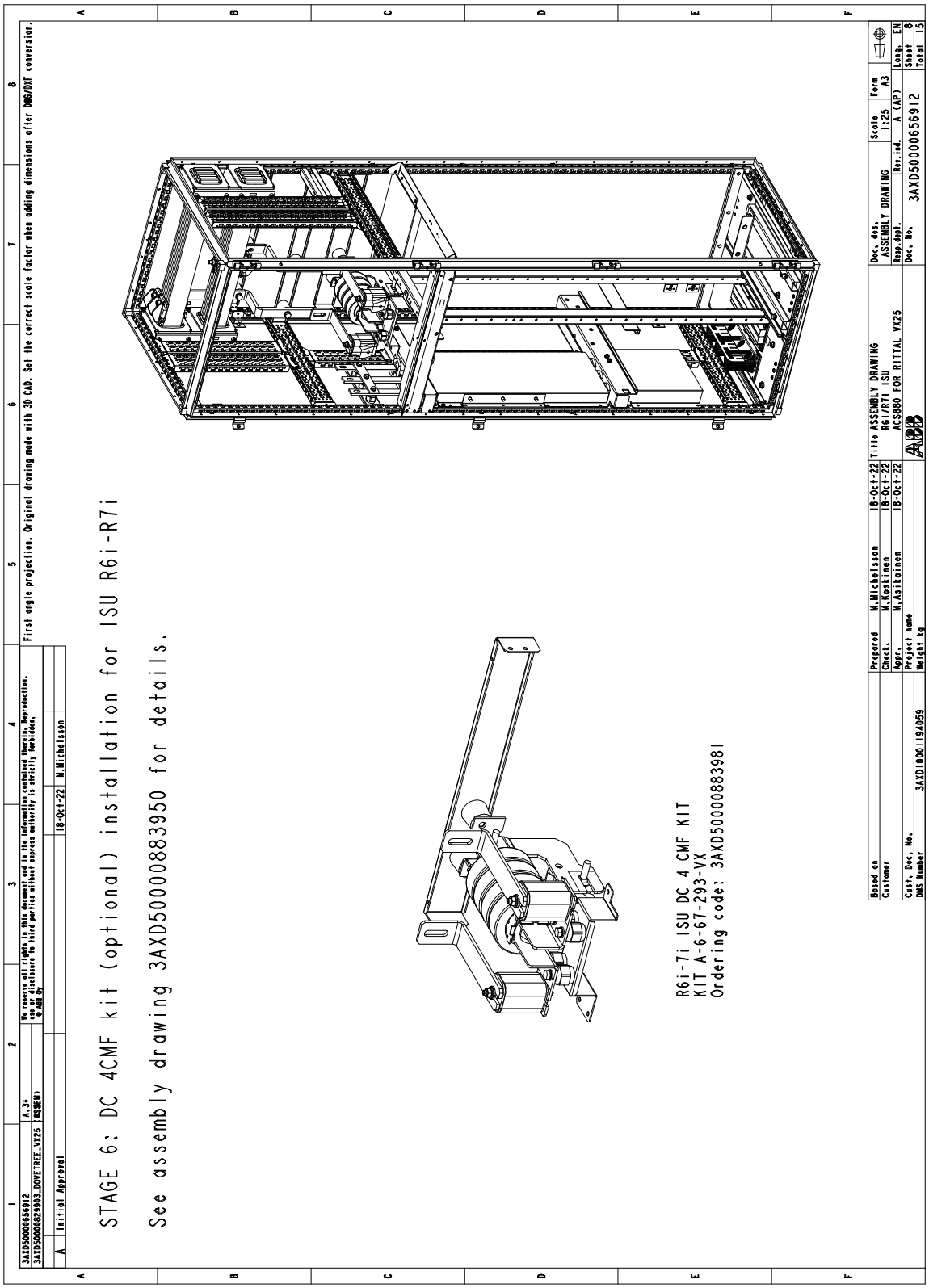
Stage 5: DC busbars



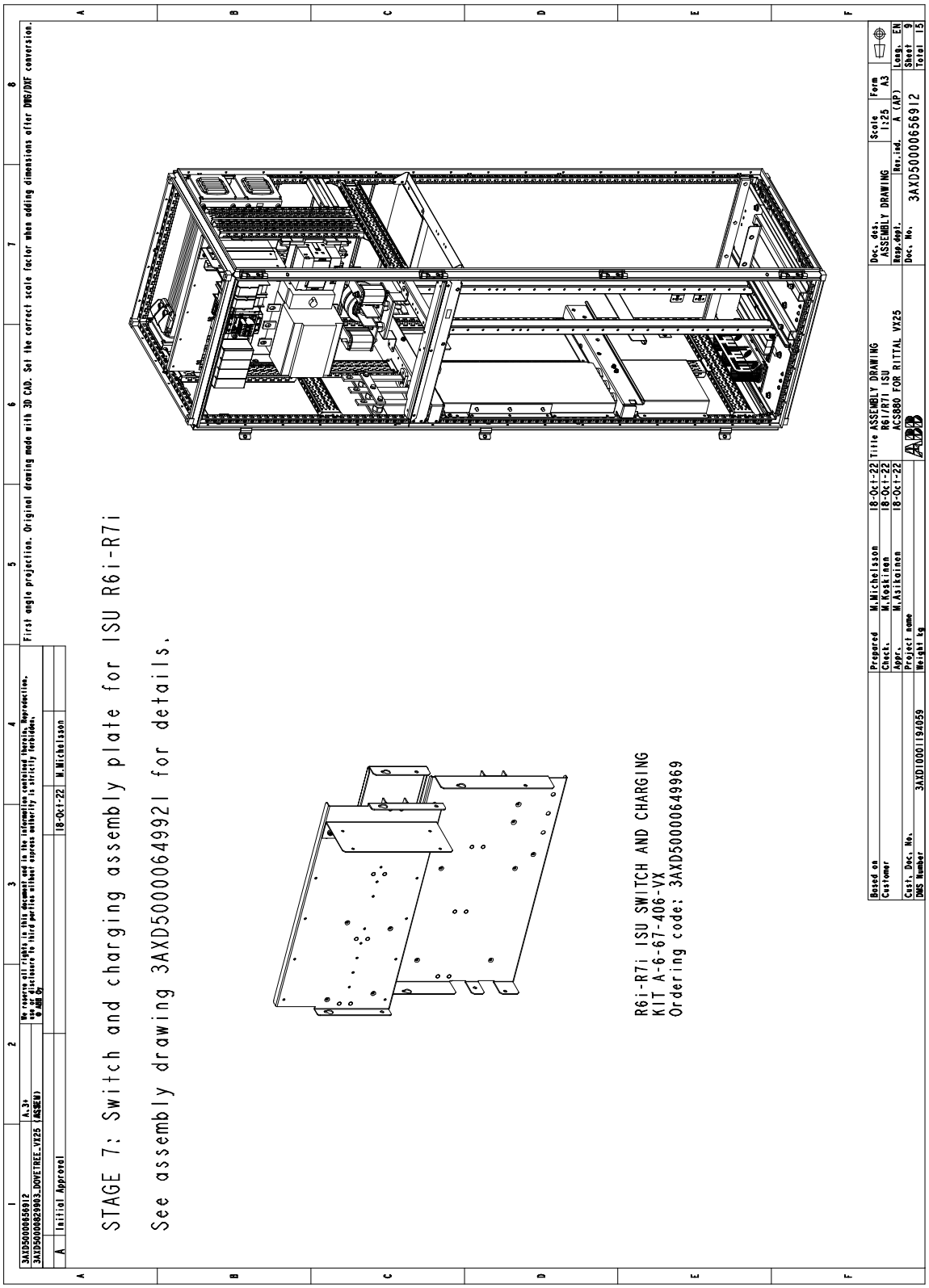
Stage 6: DC common mode filter kit (for 2 toroidal cores)



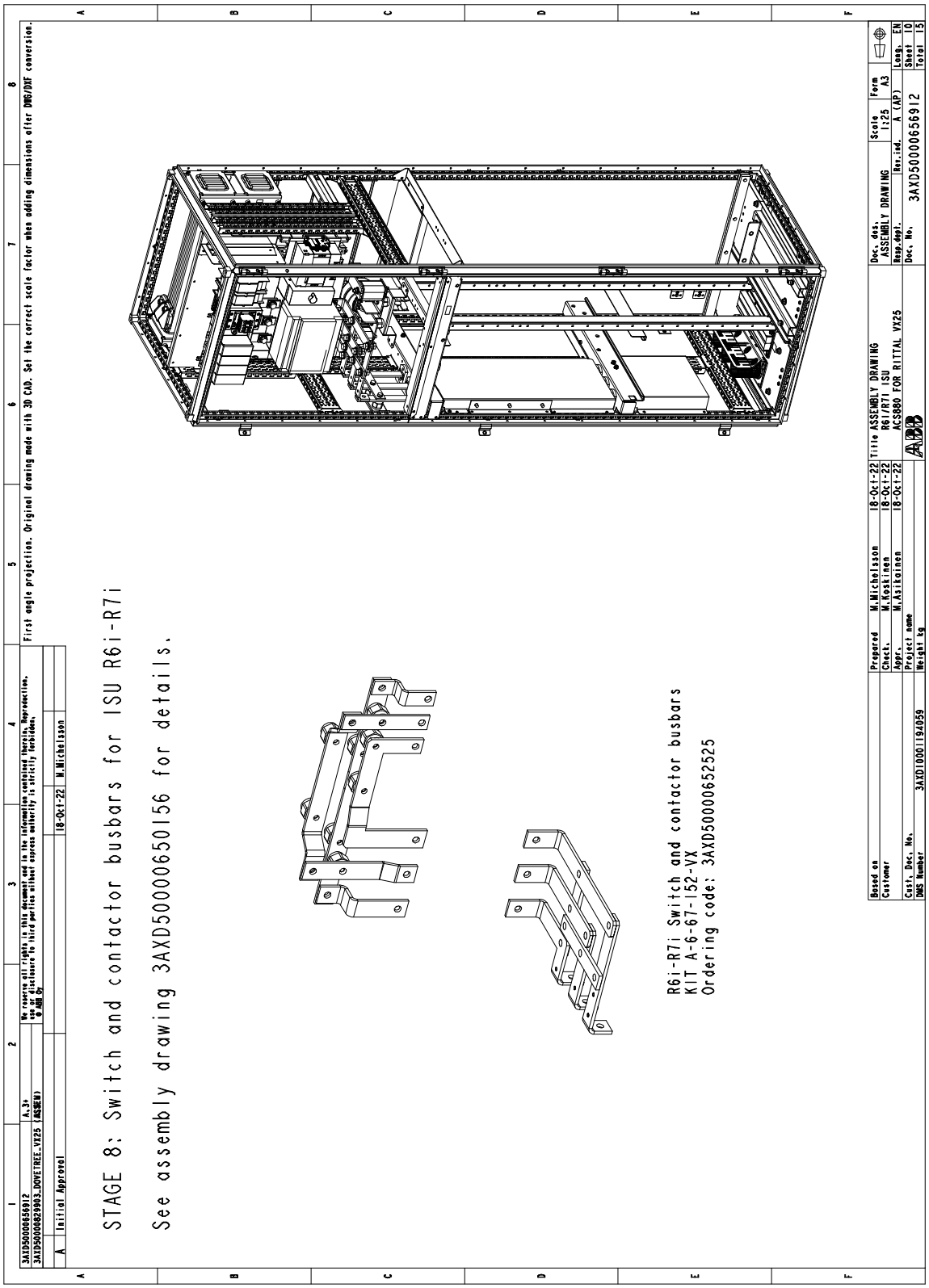
Stage 6: DC common mode filter kit (for 4 toroidal cores)



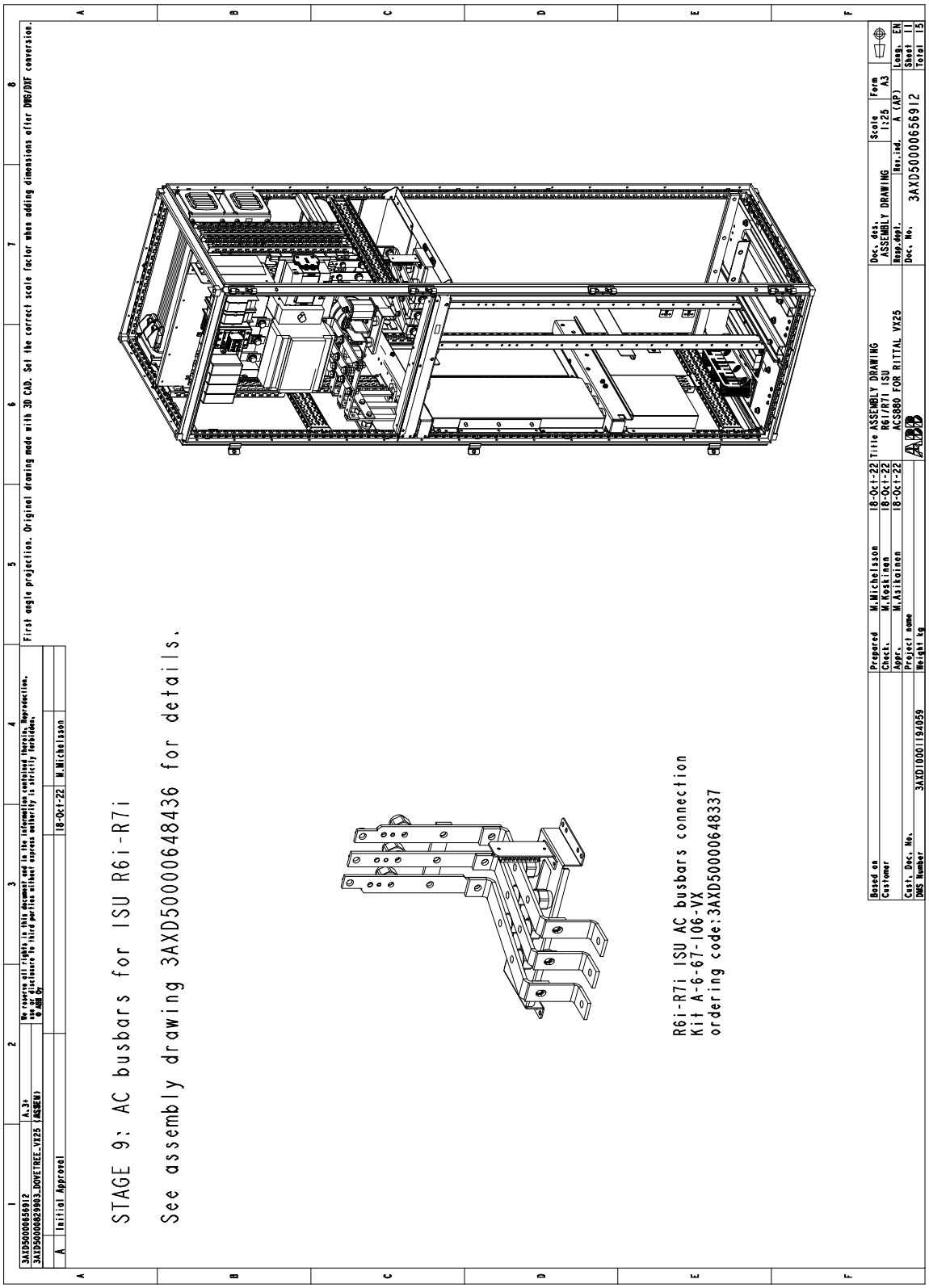
Stage 7: Switch and charging assembly plate



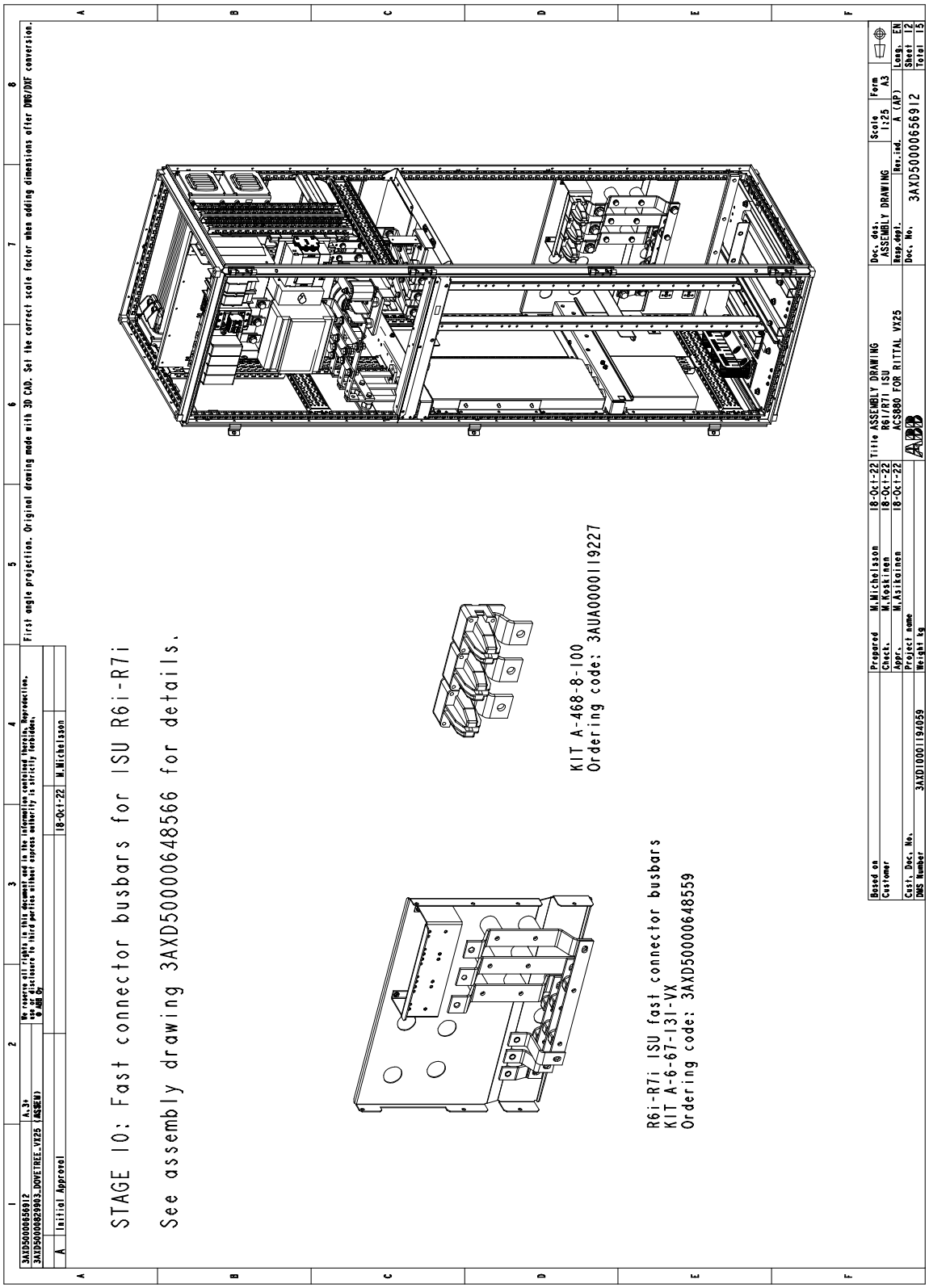
Stage 8: Switch and contactor busbars



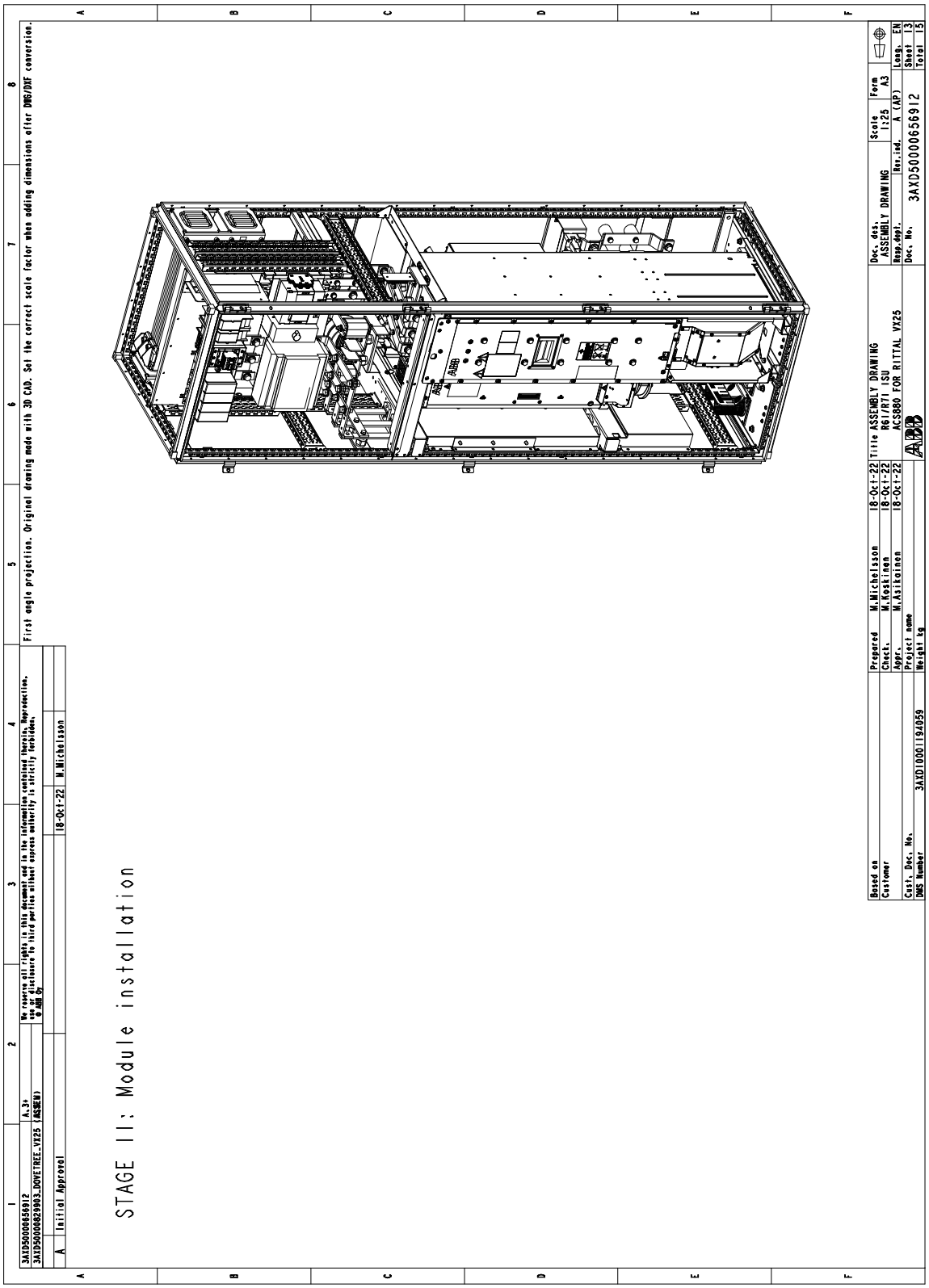
Stage 9: AC busbars



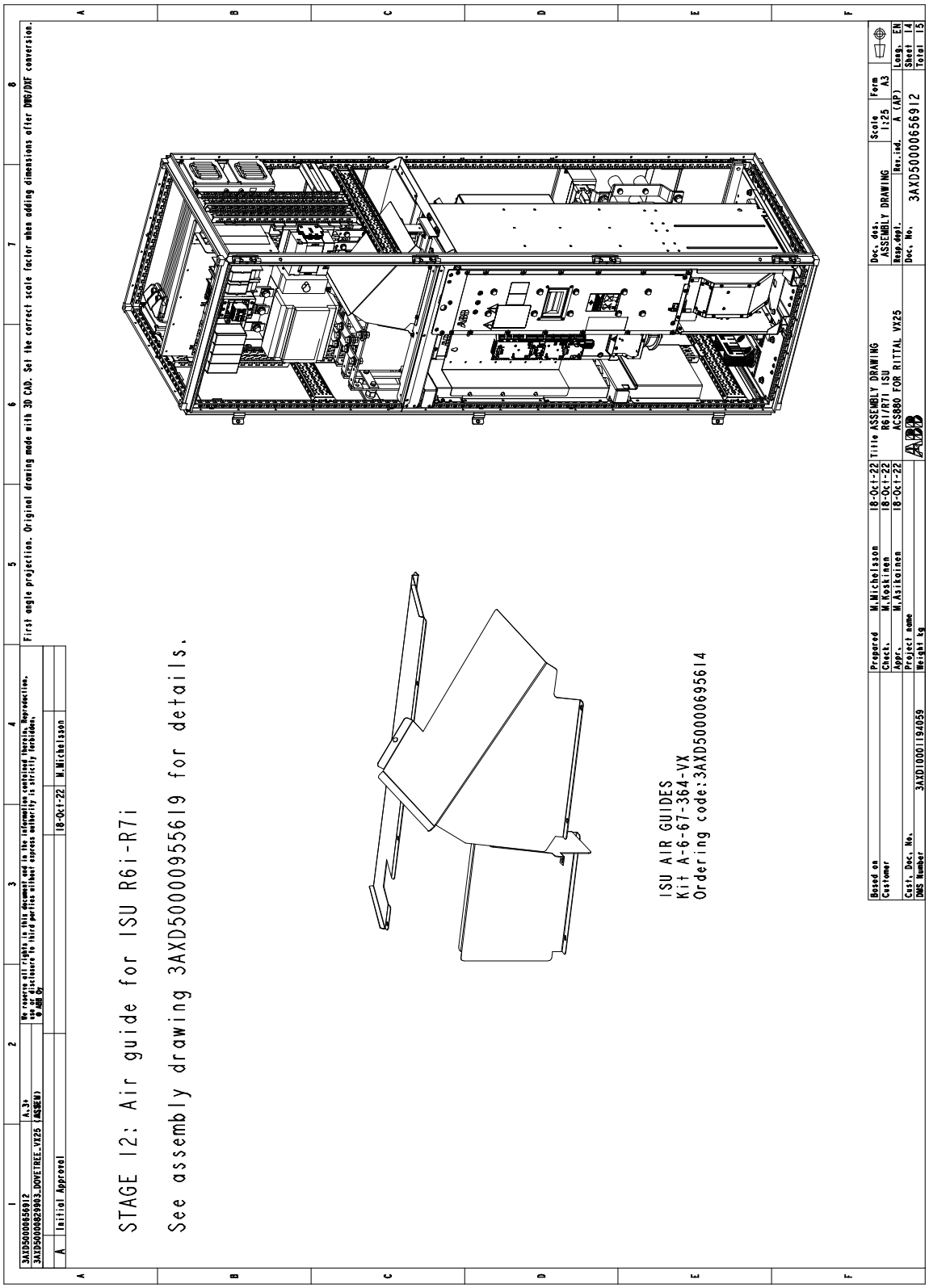
Stage 10: Fast connector busbars



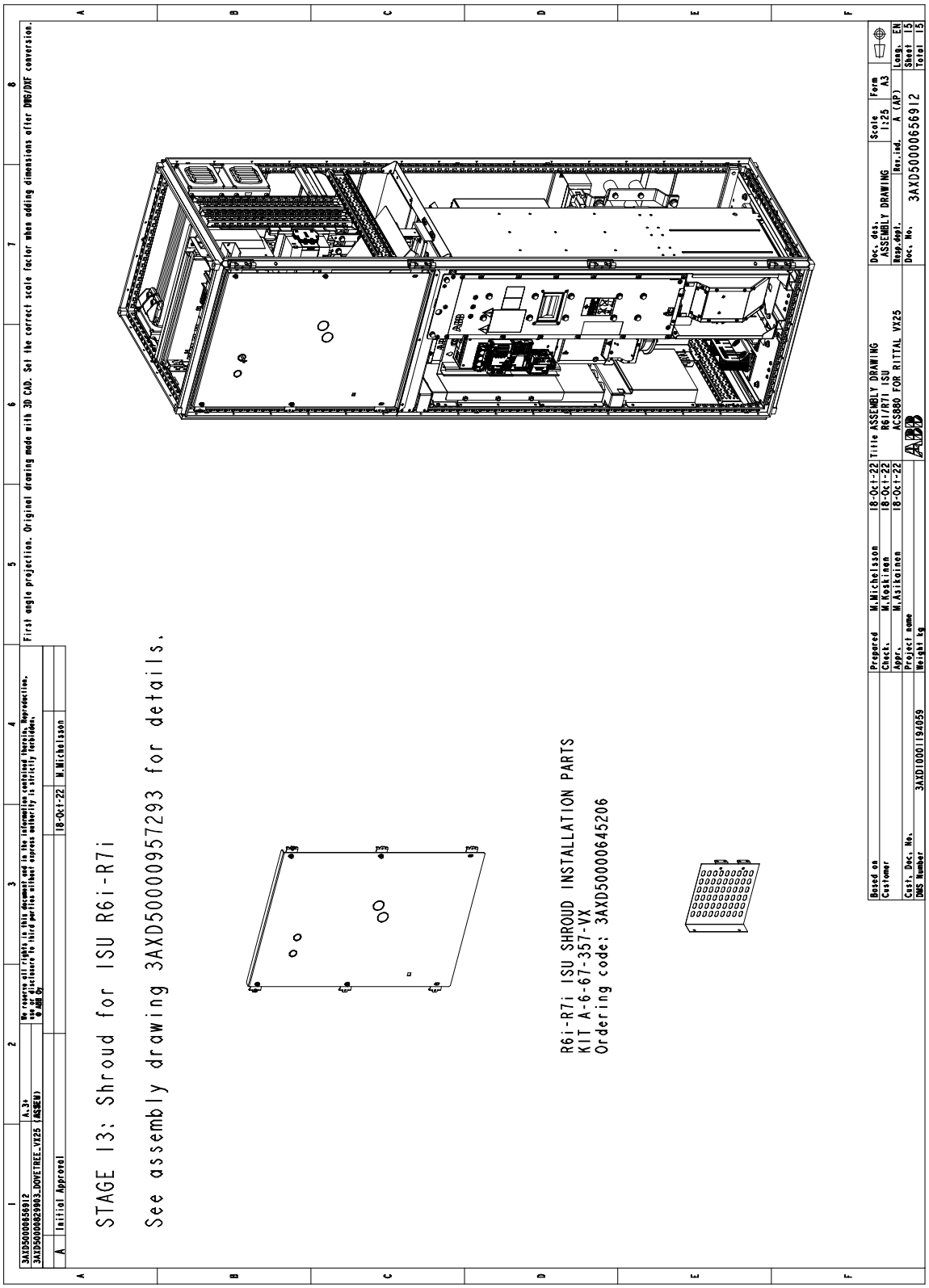
Stage 11: Module installation



Stage 12: Airflow guides



Stage 13: Shrouding

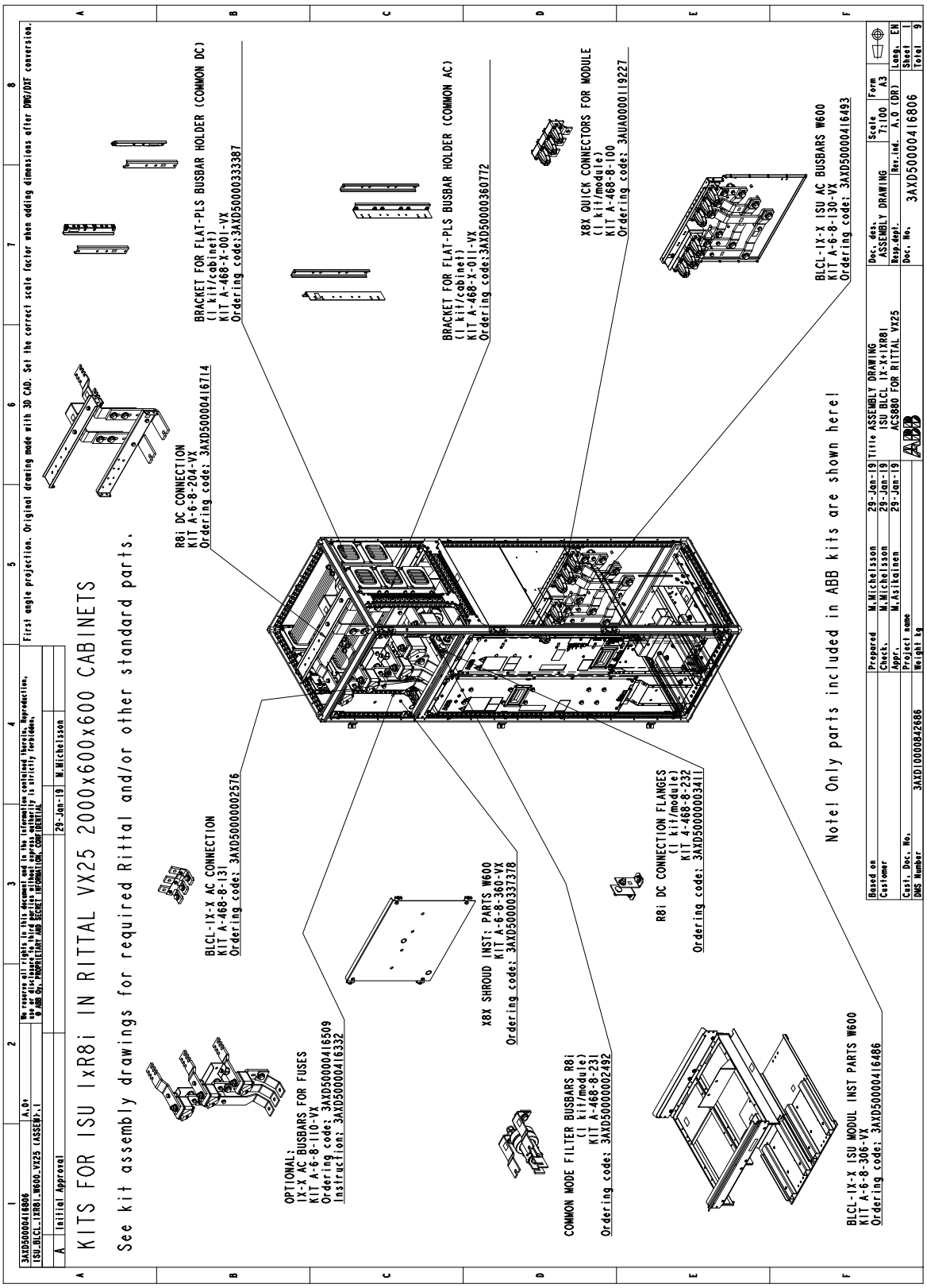


1×R8i module in a 600 mm wide Rittal VX25 enclosure

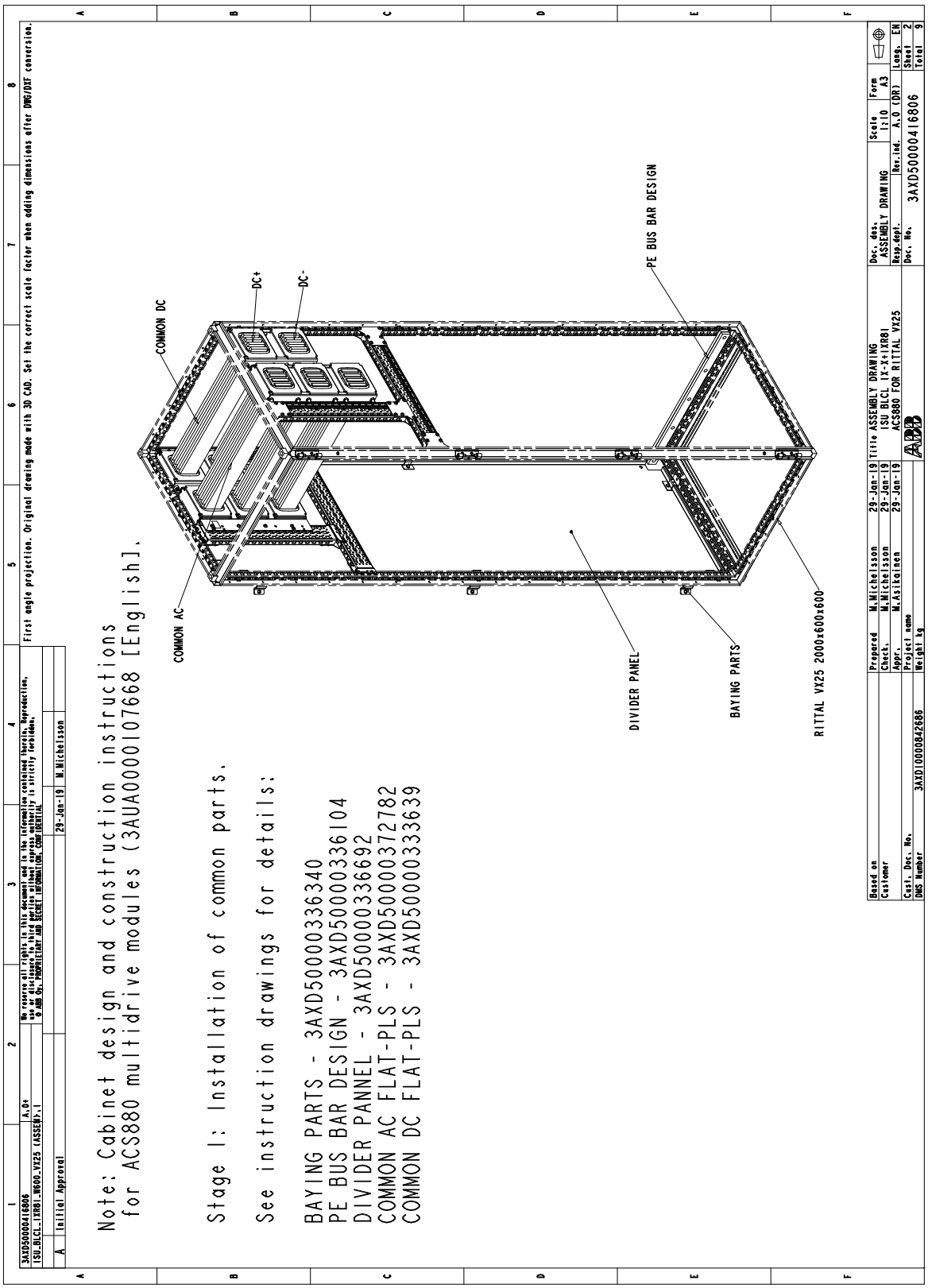
Installation stages

#	Installation stage	Instruction code	Kit code	Kit ordering code
1.	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Common AC Flat-PLS assembly	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Common DC Flat-PLS assembly	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2.	LCL filter installation parts	3AXD50000384914	A-6-8-306-VX	3AXD50000416486
3.	BLCL AC busbars and quick connectors	3AXD50000384945	A-6-8-130-VX A-468-8-100	3AXD50000416493 3AUA0000119227
4.	DC connection	3AXD50000384990	A-6-8-204-VX	3AXD50000416714
5.	Common mode filter busbars and DC connection flanges	3AXD50000002502 3AXD50000003403	A-468-8-231 A-468-8-232	3AXD50000002492 3AXD50000003411
6.	BLCL AC connection	3AXD50000002577	A-468-8-131	3AXD50000002576
7.	Shroud installation parts	3AXD50000335022	A-6-8-360-VX	3AXD50000337378
8.	Module installation	-	-	-

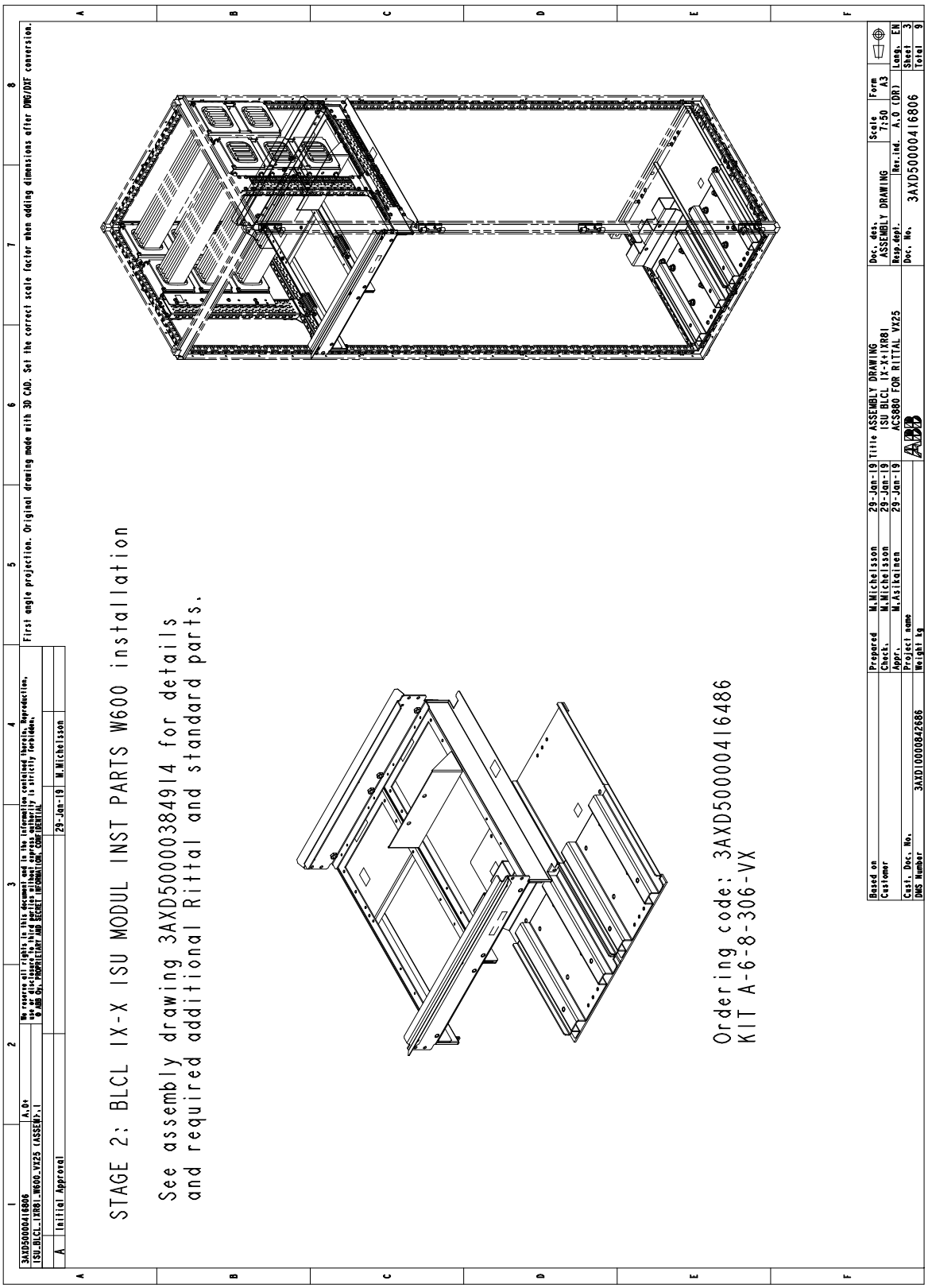
Kits for R8i module in 600 mm Rittal VX25 enclosure



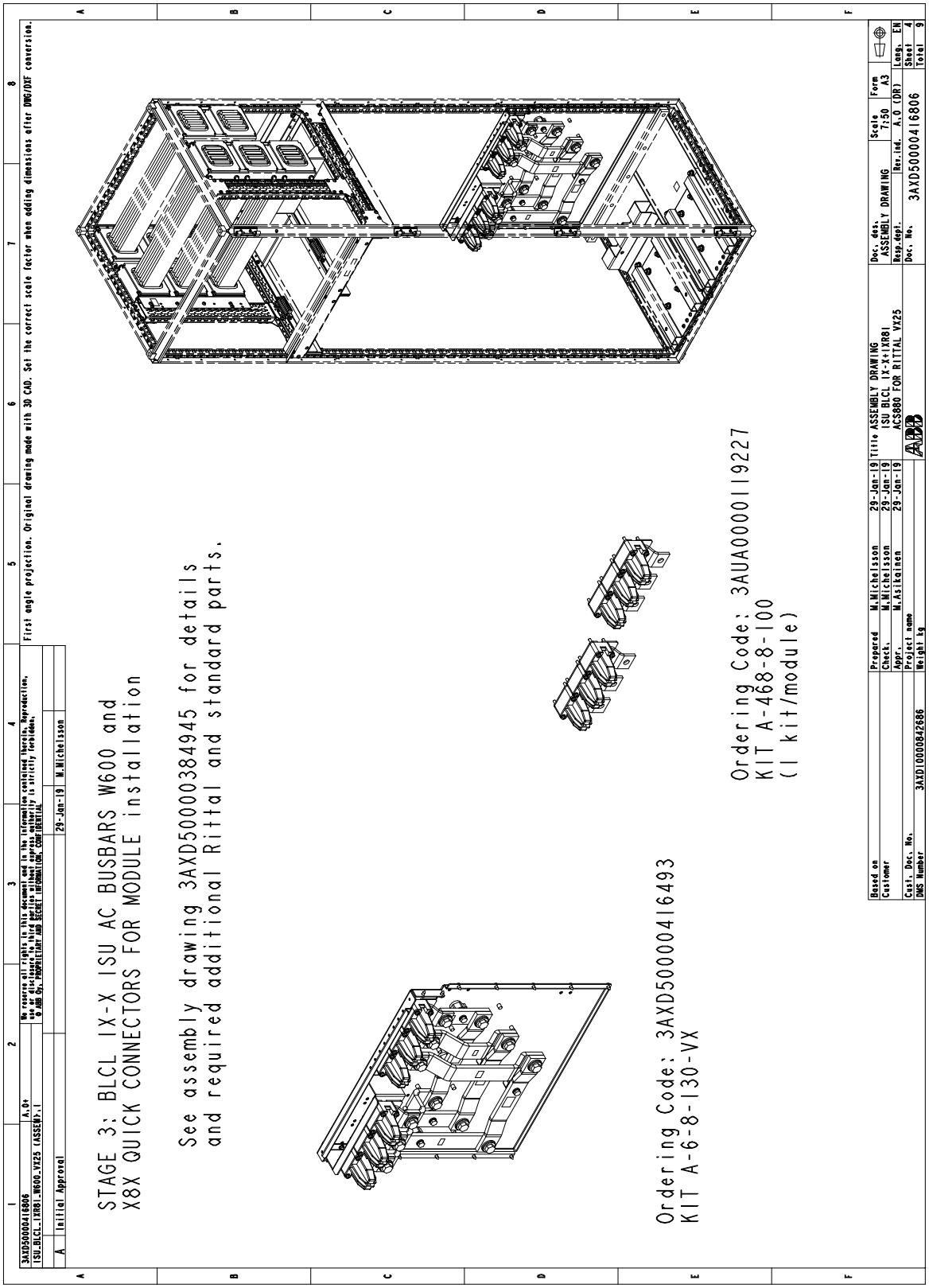
Stage 1: Installation of common parts



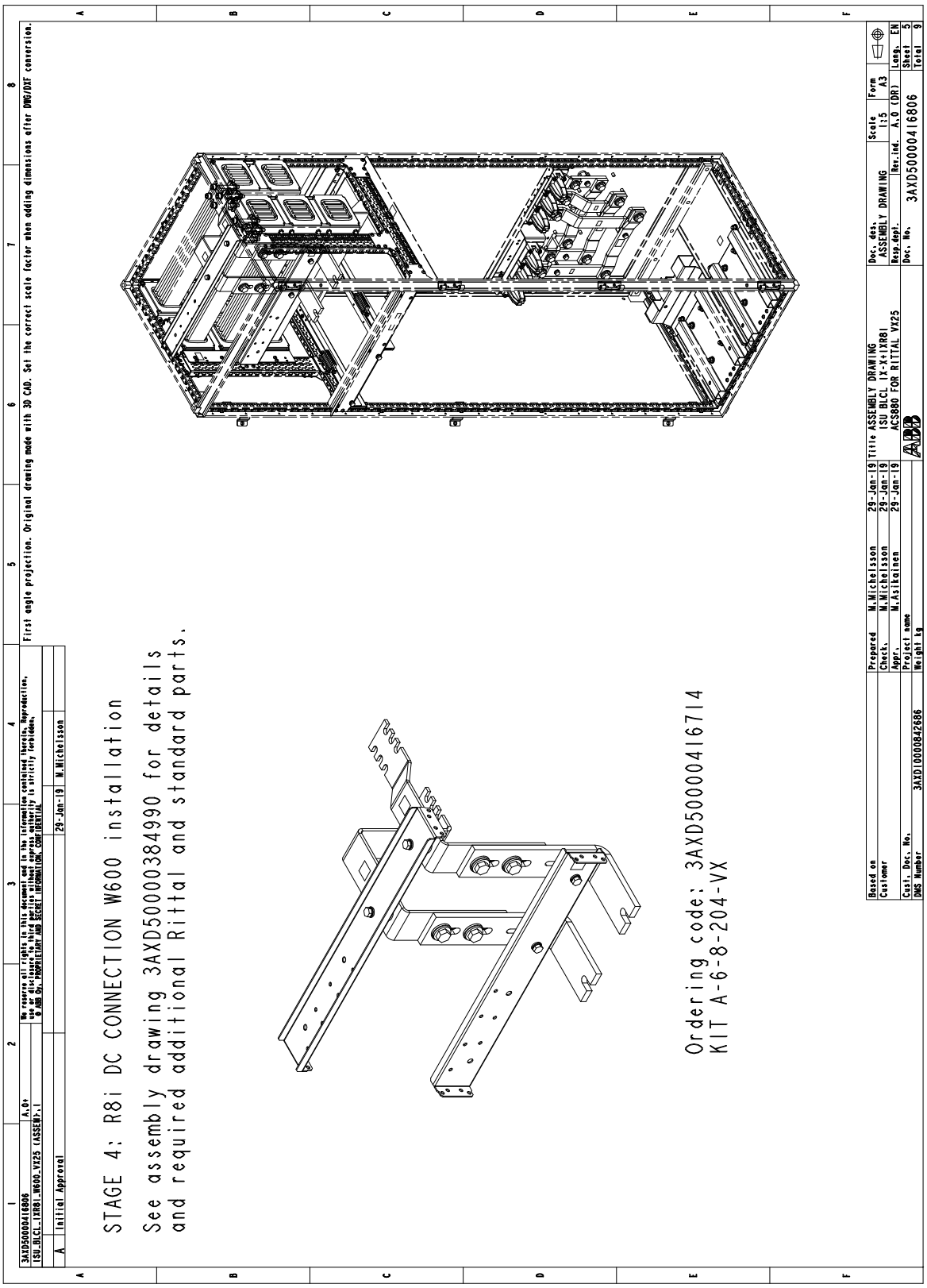
Stage 2: Module installation parts



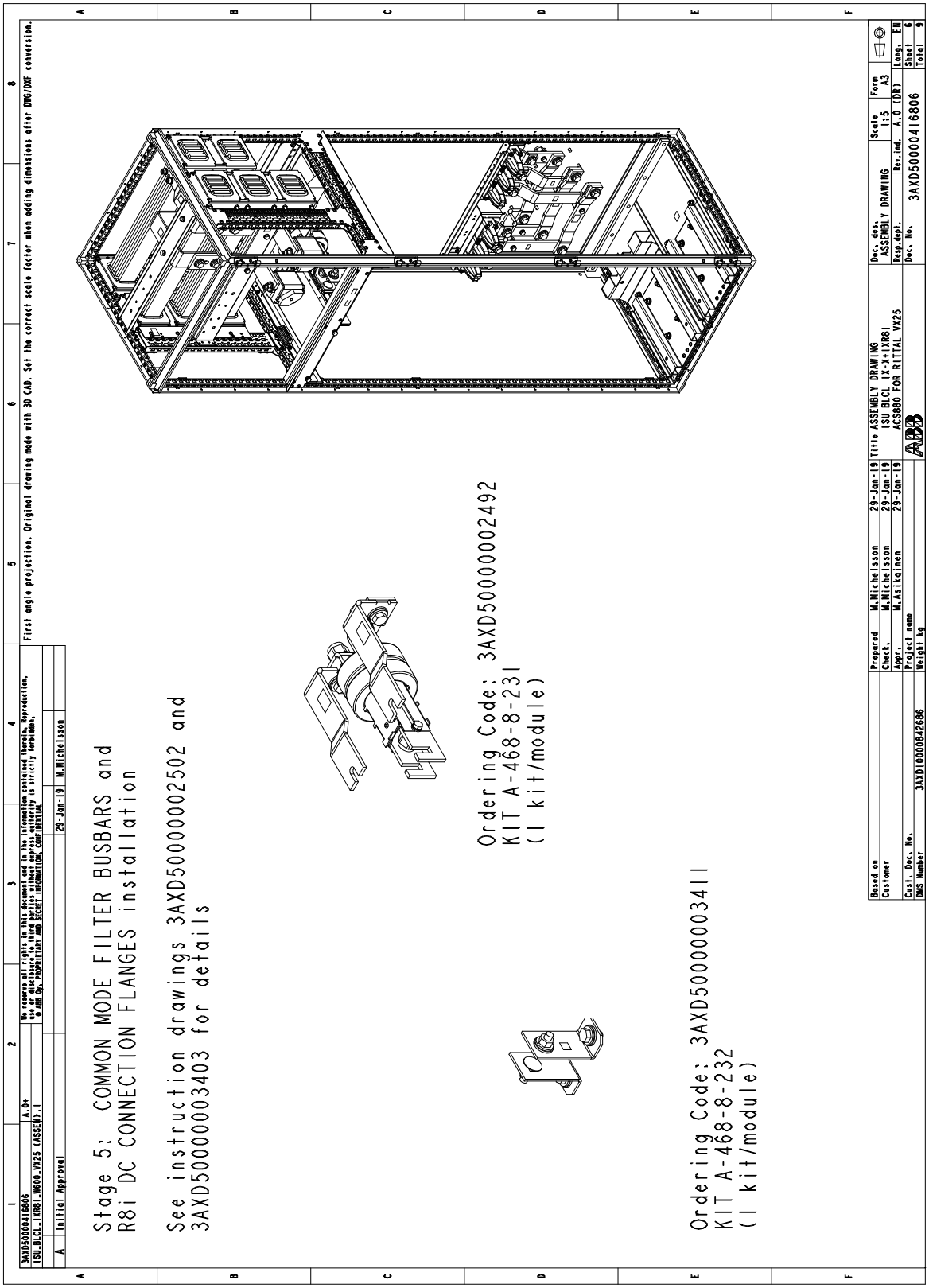
Stage 3: BLCL AC busbars and quick connectors



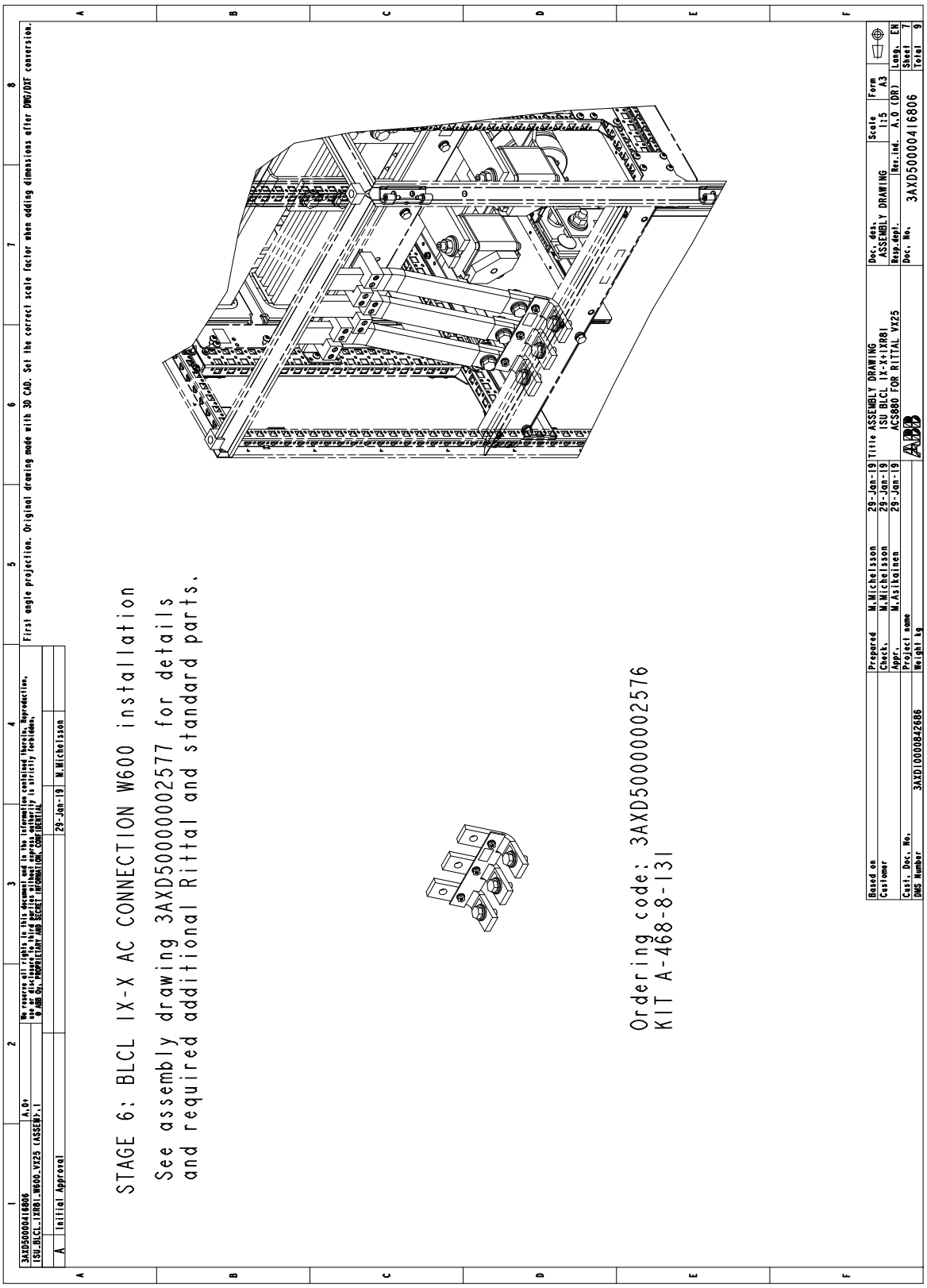
Stage 4: DC connection



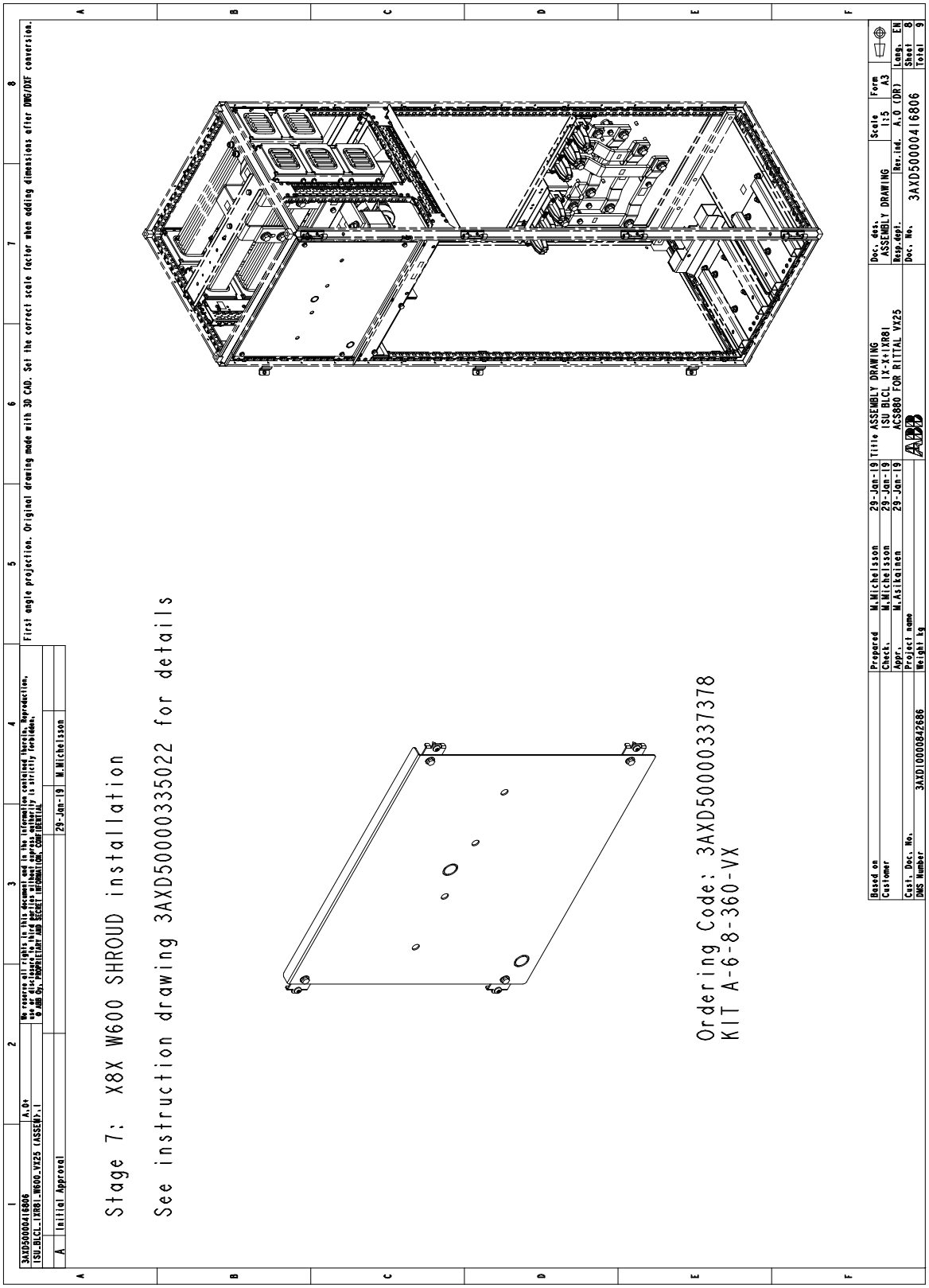
Stage 5: Common mode filter busbars and DC connection flanges



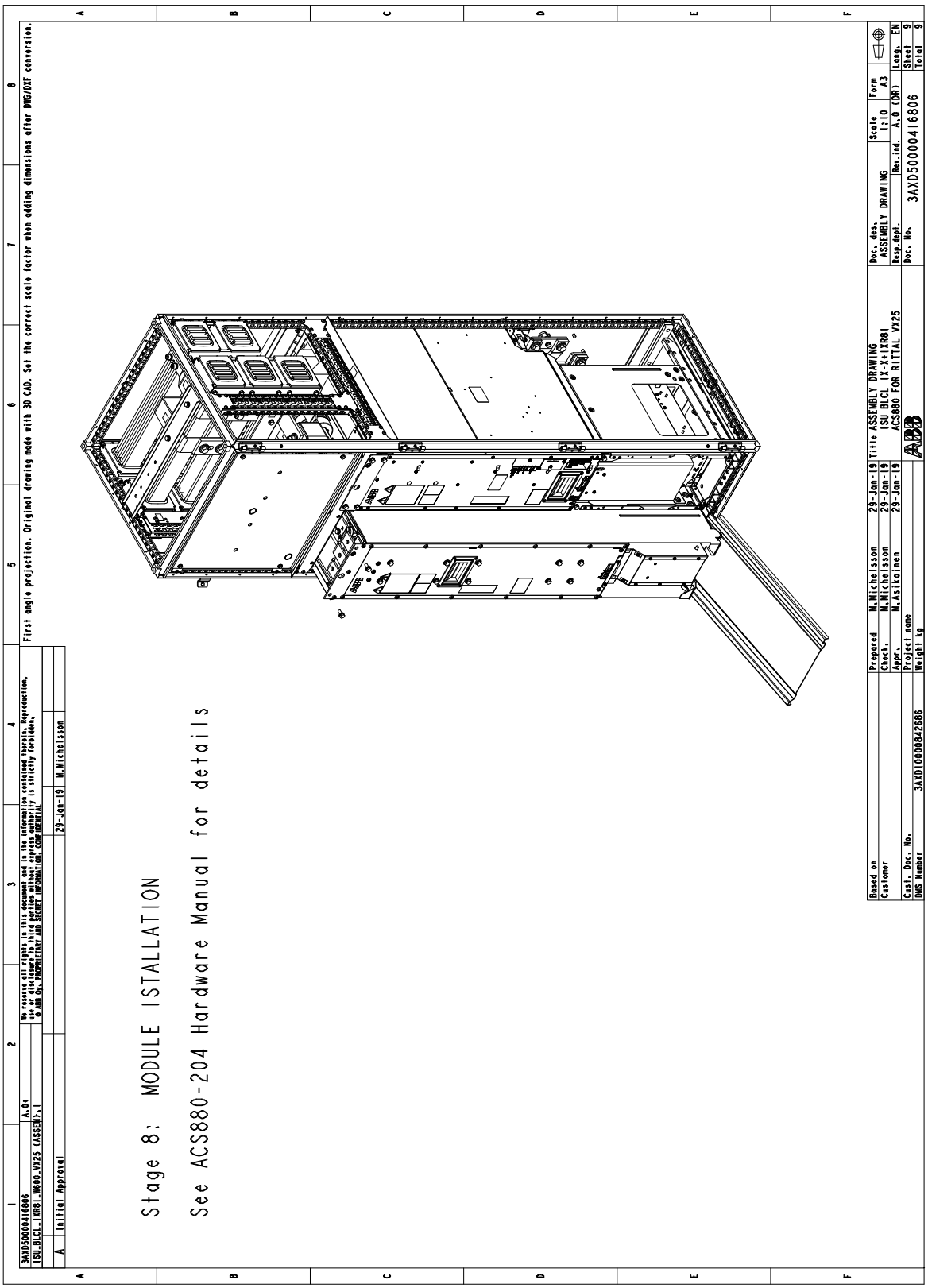
Stage 6: BLCL AC connection



Stage 7: Shroud installation parts



Stage 8: Module installation

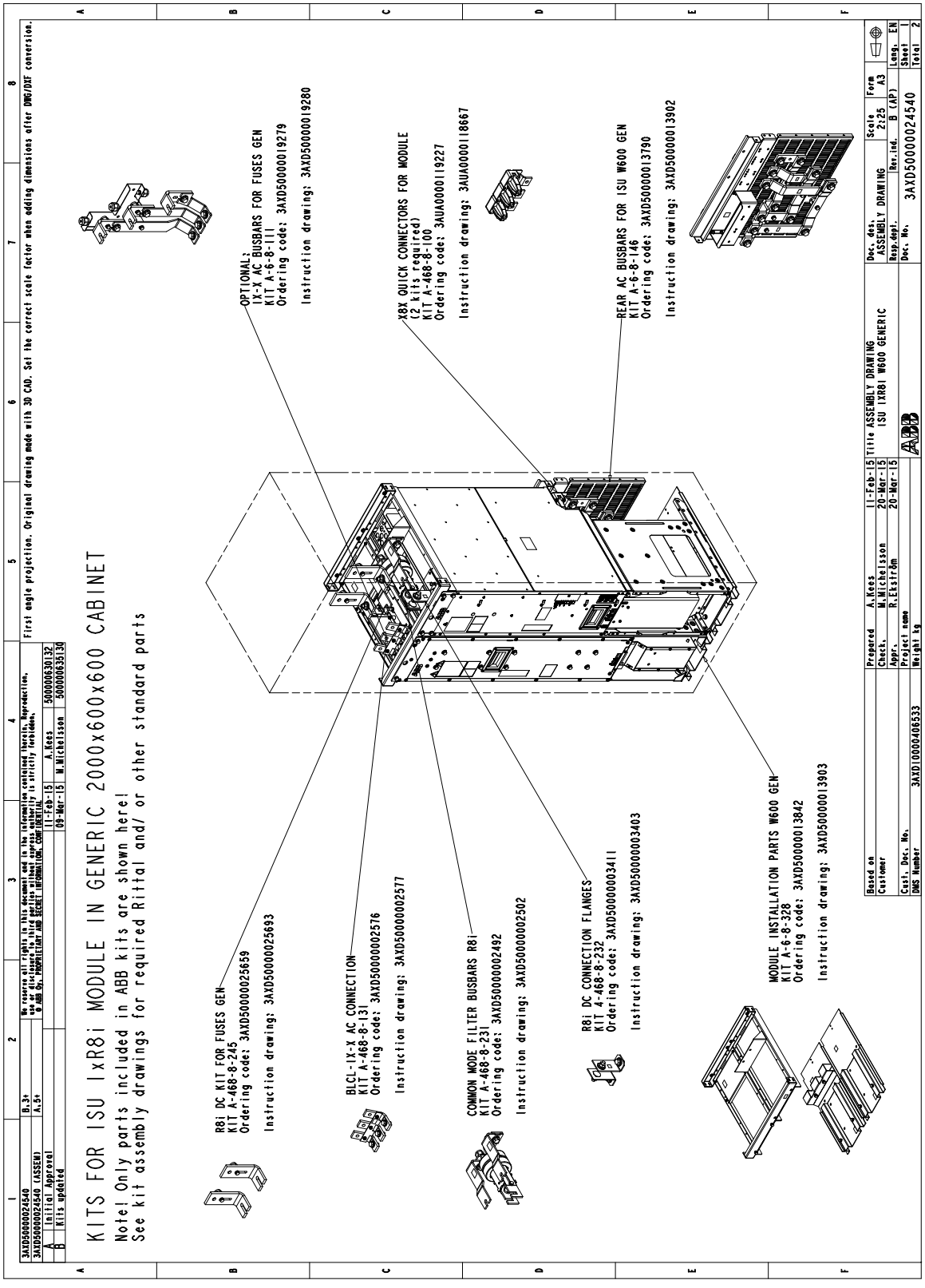


1×R8i module in a 600 mm wide generic enclosure

Parts to be installed

Parts to be installed	Instruction code	Kit code	Kit ordering code
Module installation parts	3AXD50000013903	A-6-8-328	3AXD50000013842
Quick connectors	3AUA0000118667	A-468-8-100	3AUA0000119227
AC busbars	3AXD50000013902	A-6-8-146	3AXD50000013790
BLCL-1x-x AC connection	3AXD50000002577	A-468-8-131	3AXD50000002576
Optional kit [1)]	3AXD50000019280	A-6-8-111	3AXD50000019279
Common mode filter busbars	3AXD50000002502	A-468-8-231	3AXD50000002492
DC connection flanges	3AXD50000003403	A-468-8-232	3AXD50000003411
DC kit for fuses	3AXD50000025693	A-468-8-245	3AXD50000025659

1) This kit is not included in ABB's standard design but may be used if you wish to have AC fuses on top of the LCL filter module.

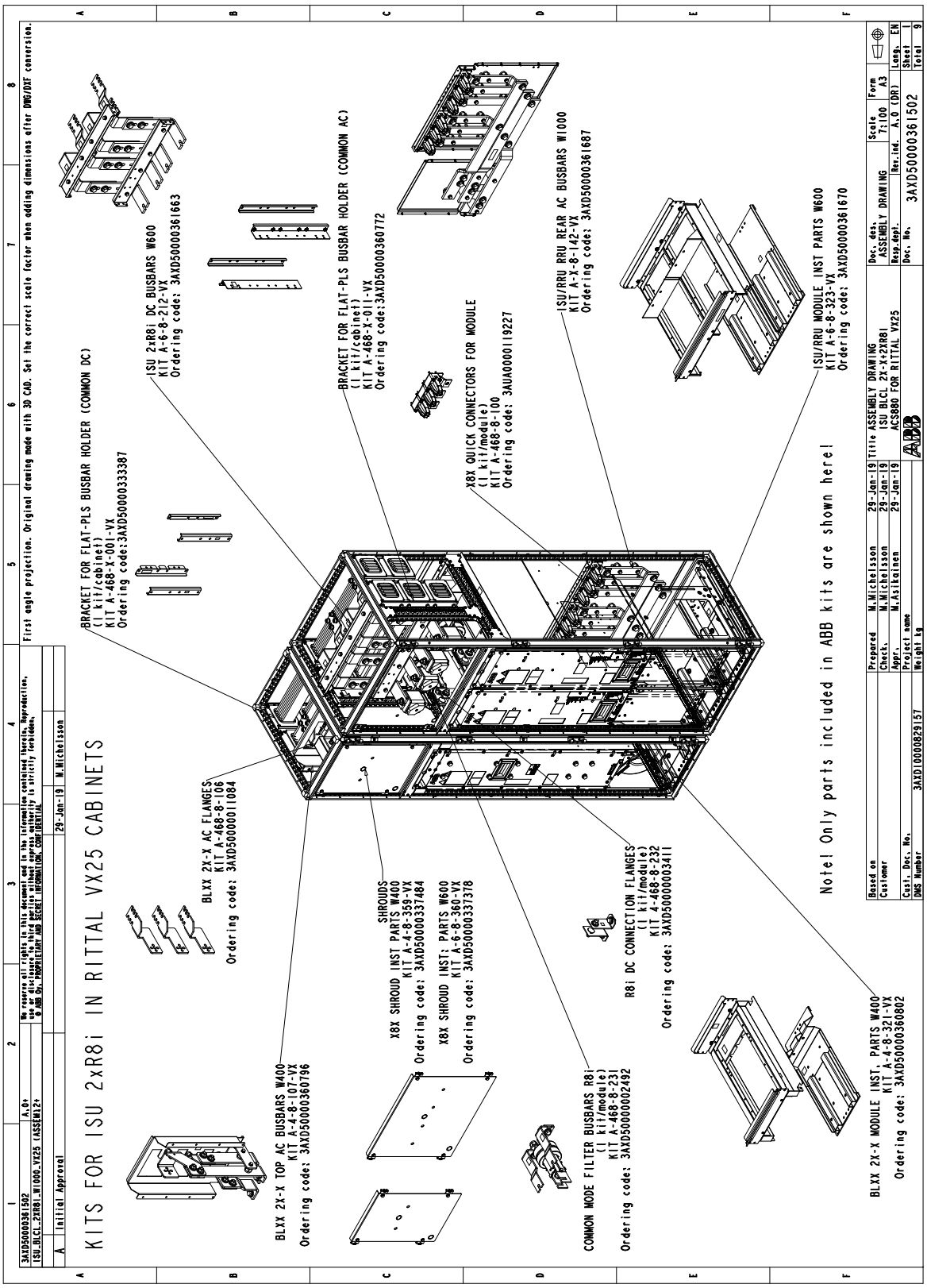

KITS FOR ISU 1xR8i MODULE IN GENERIC 2000x600x600 CABINET
Note! Only parts included in ABB kits are shown here!
See kit assembly drawings for required Rittal and/ or other standard parts
R8i DC KIT FOR FUSES GEN
KIT A-468-8-245
Ordering code: 3AXD50000025659
Instruction drawing: 3AXD50000025693
BLCL-1X-X AC CONNECTION
KIT A-468-8-131
Ordering code: 3AXD50000002576
Instruction drawing: 3AXD50000002577
COMMON MODE FILTER BUSBARS R8i
KIT A-468-8-231
Ordering code: 3AXD50000002492
Instruction drawing: 3AXD50000002502
R8i DC CONNECTION FLANGES
KIT 4-468-8-232
Ordering code: 3AXD50000003411
Instruction drawing: 3AXD50000003403
MODULE INSTALLATION PARTS W600 GEN
KIT A-6-8-328
Ordering code: 3AXD50000013842
Instruction drawing: 3AXD50000013903
OPTIONAL:
1X-X AC BUSBARS FOR FUSES GEN
KIT A-6-8-111
Ordering code: 3AXD50000019279
Instruction drawing: 3AXD50000019280
XBX QUICK CONNECTORS FOR MODULE
(2 kits required)
KIT A-468-8-100
Ordering code: 3AUA0000119227
Instruction drawing: 3AUA0000118667
REAR AC BUSBARS FOR ISU W600 GEN
KIT A-6-8-146
Ordering code: 3AXD50000013790
Instruction drawing: 3AXD50000013902
3AXD50000024540
B.3+
A.5+
Initial Approval
Kits updated
A. Kees
M.Michelsson
11-Feb-15
09-Mar-15
3AXD50000030132
3AXD50000035130
Prepared
Check.
Appr.
Cust. Doc. No.
DMS Number
3AXD10000406533
Weight kg
11-Feb-15
20-Mar-15
Title ASSEMBLY DRAWING
ISU 1XR8i W600 GENERIC
Dec. des.
ASSEMBLY DRAWING
Resp.dept.
Doc. No.
3AXD50000024540
Scale 2:25
Form A3
Rev.ind. B (AP)
Lang. EN
Sheet 1
Total 2

2×R8i modules in a 1000 mm wide Rittal VX25 enclosure

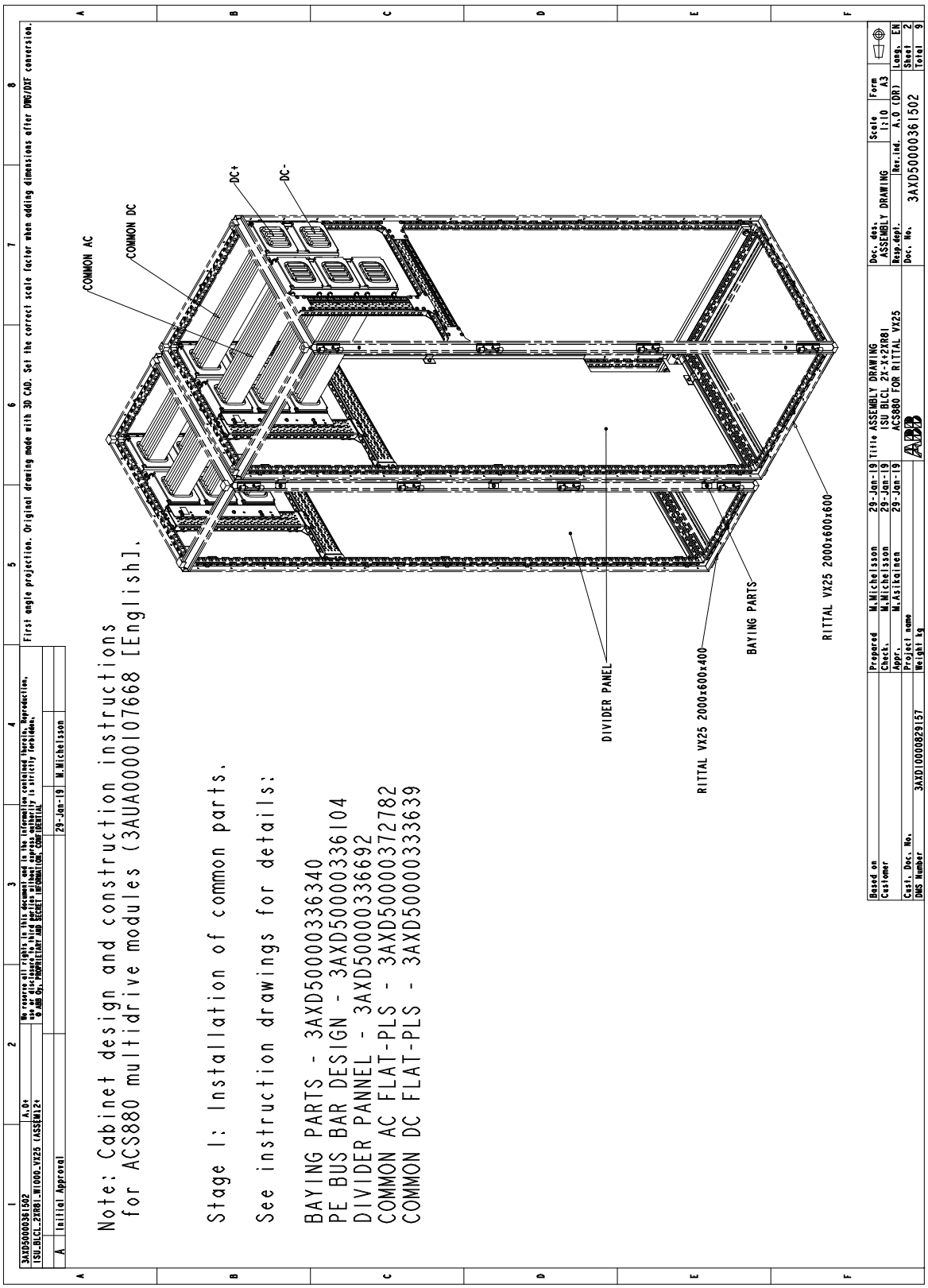
Installation stages

#	Installation stage	Instruction code	Kit code	Kit ordering code
1.	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Common AC Flat-PLS assembly	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Common DC Flat-PLS assembly	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2.	Module installation parts	3AXD50000349982 3AXD50000351756	A-4-8-321-VX A-6-8-323-VX	3AXD50000360802 3AXD50000361670
3.	Rear AC busbars and quick connectors	3AXD50000353477	A-X-8-142-VX A-468-8-100	3AXD50000361687 3AUA0000119227
4.	BLCL AC busbars and AC flanges	3AXD50000353491 3AXD50000012934	A-4-8-107-VX A-468-8-106	3AXD50000360796 3AXD50000011084
5.	DC connection	3AXD50000353507	A-6-8-212-VX	3AXD50000361663
6.	Common mode filter busbars and DC connection flanges	3AXD50000002502 3AXD50000003403	A-468-8-231 A-468-8-232	3AXD50000002492 3AXD50000003411
7.	Shroud installation parts	3AXD50000335169 3AXD50000335022	A-4-8-359-VX A-6-8-360-VX	3AXD50000337484 3AXD50000337378
8.	Modules installation	-	-	-

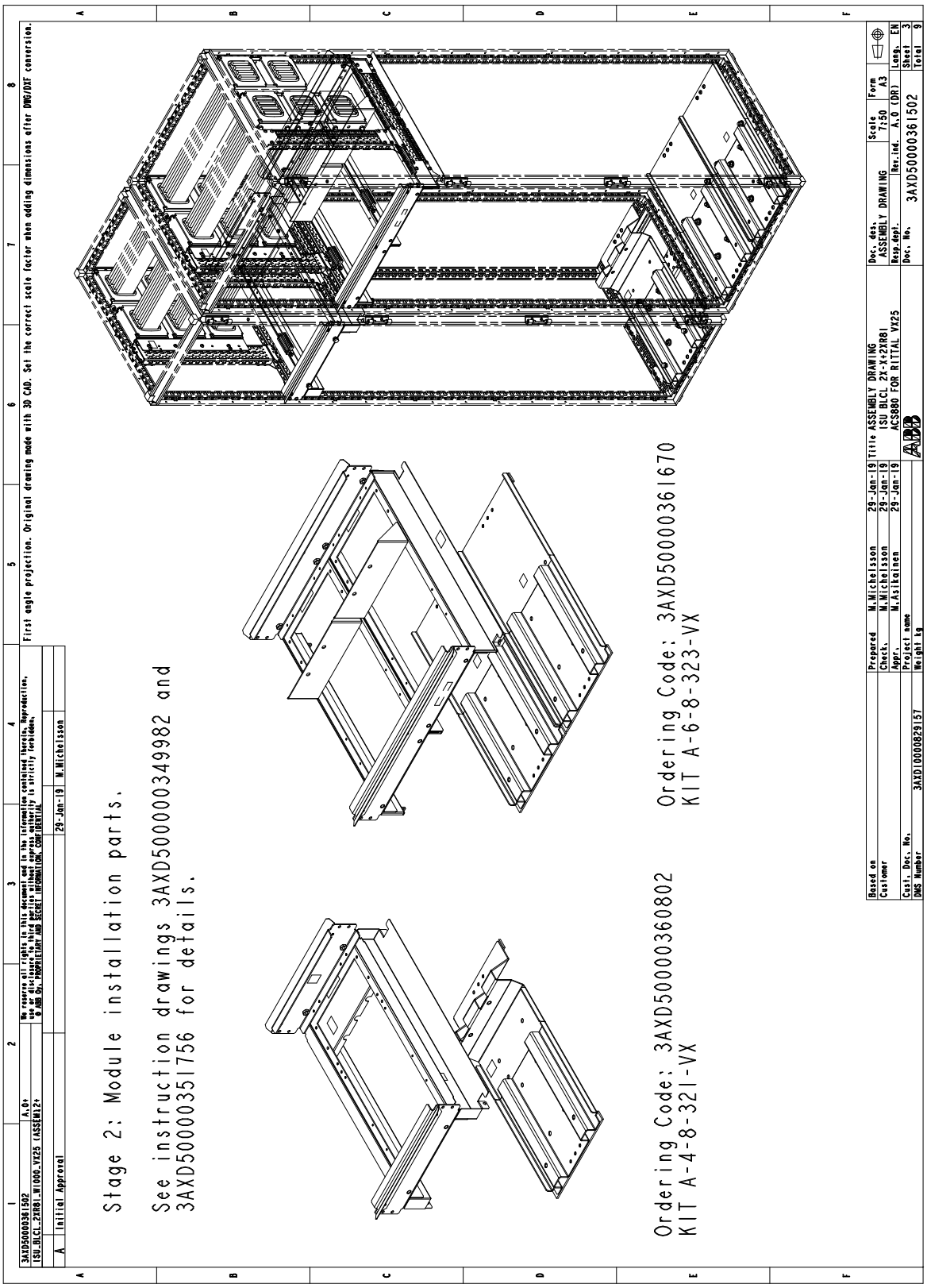
Kits for 2×R8i modules in 1000 mm Rittal VX25 enclosure



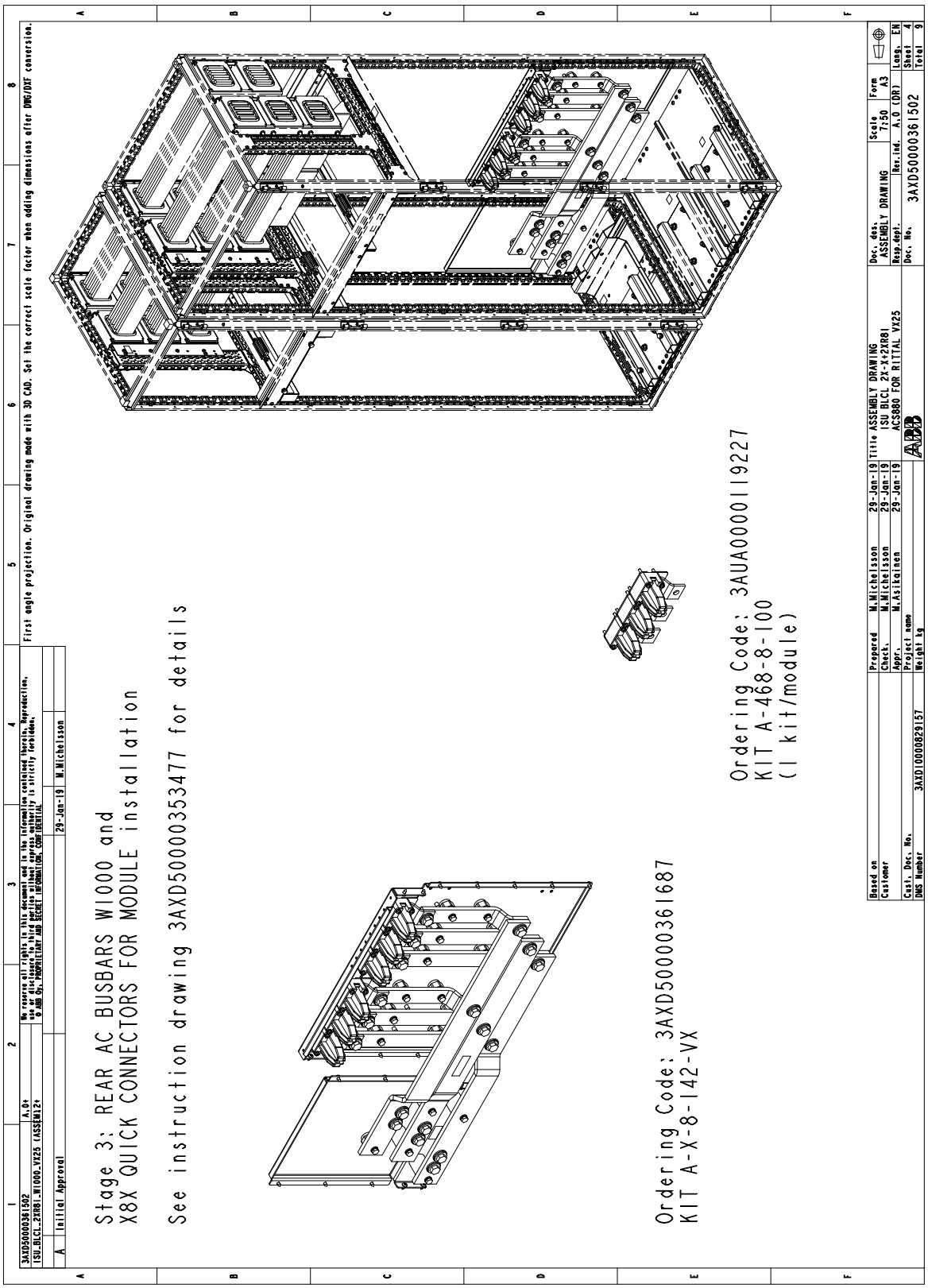
Stage 1: Installation of common parts



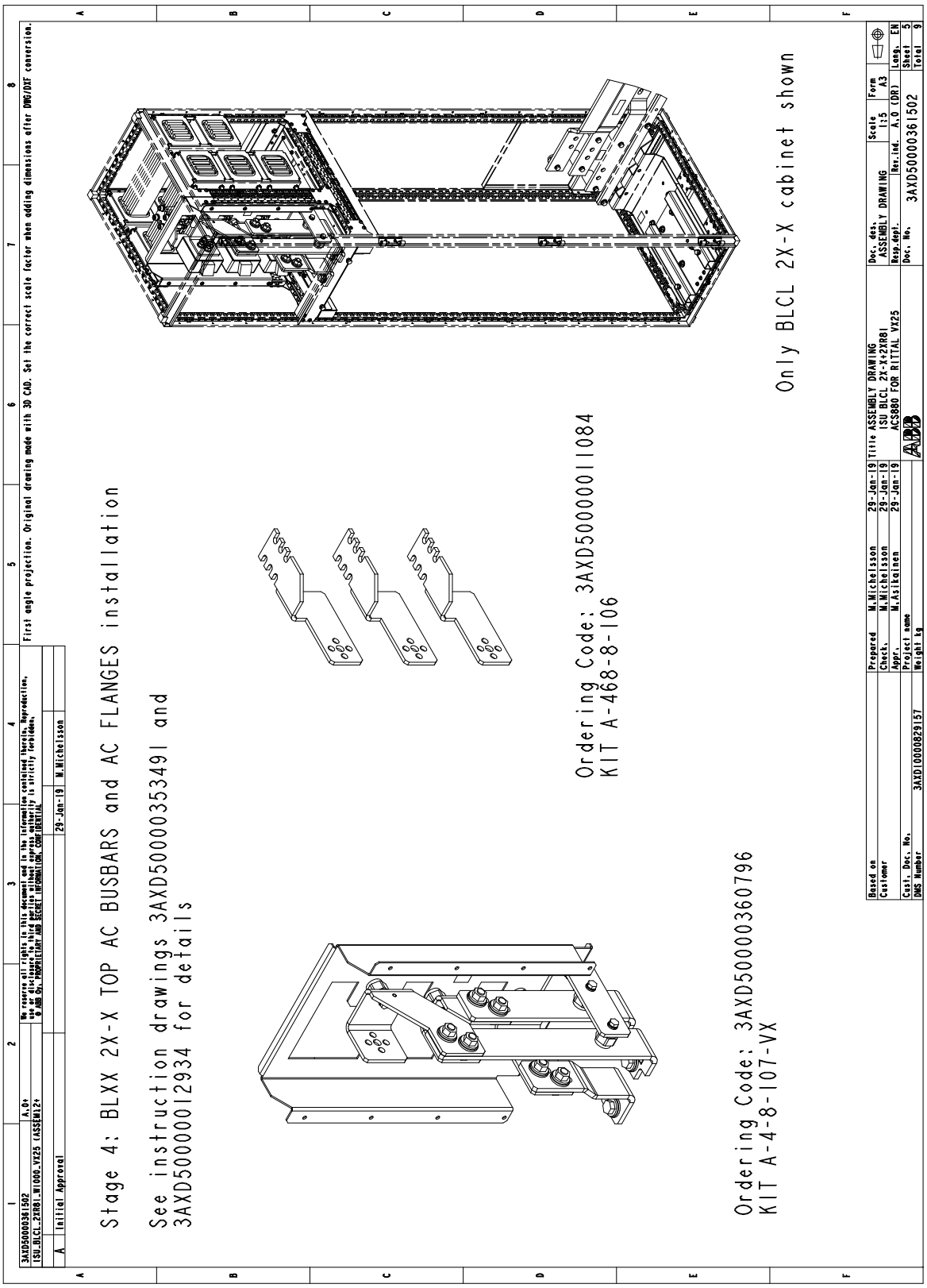
Stage 2: Module installation parts



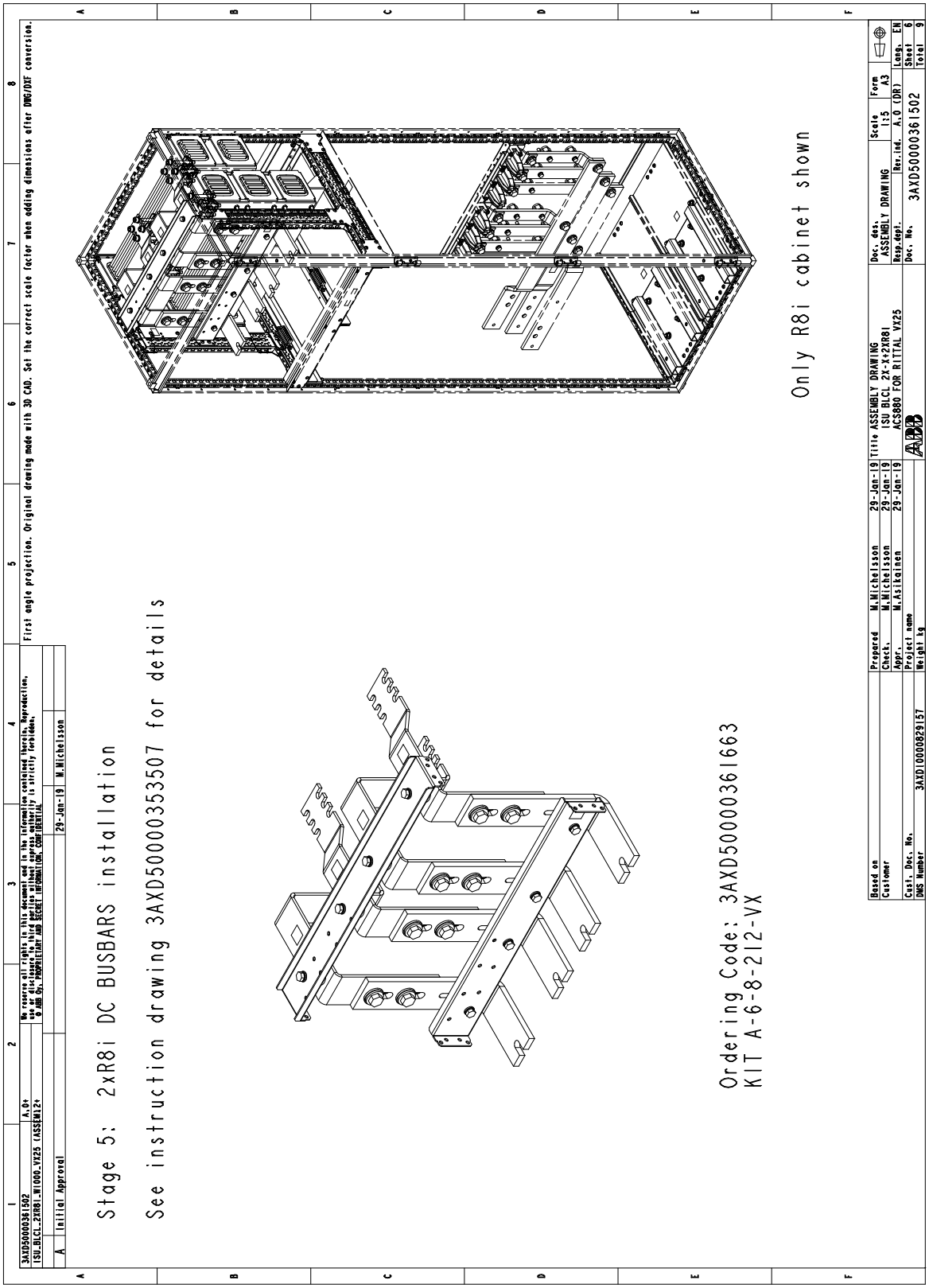
Stage 3: Rear AC busbars and quick connectors



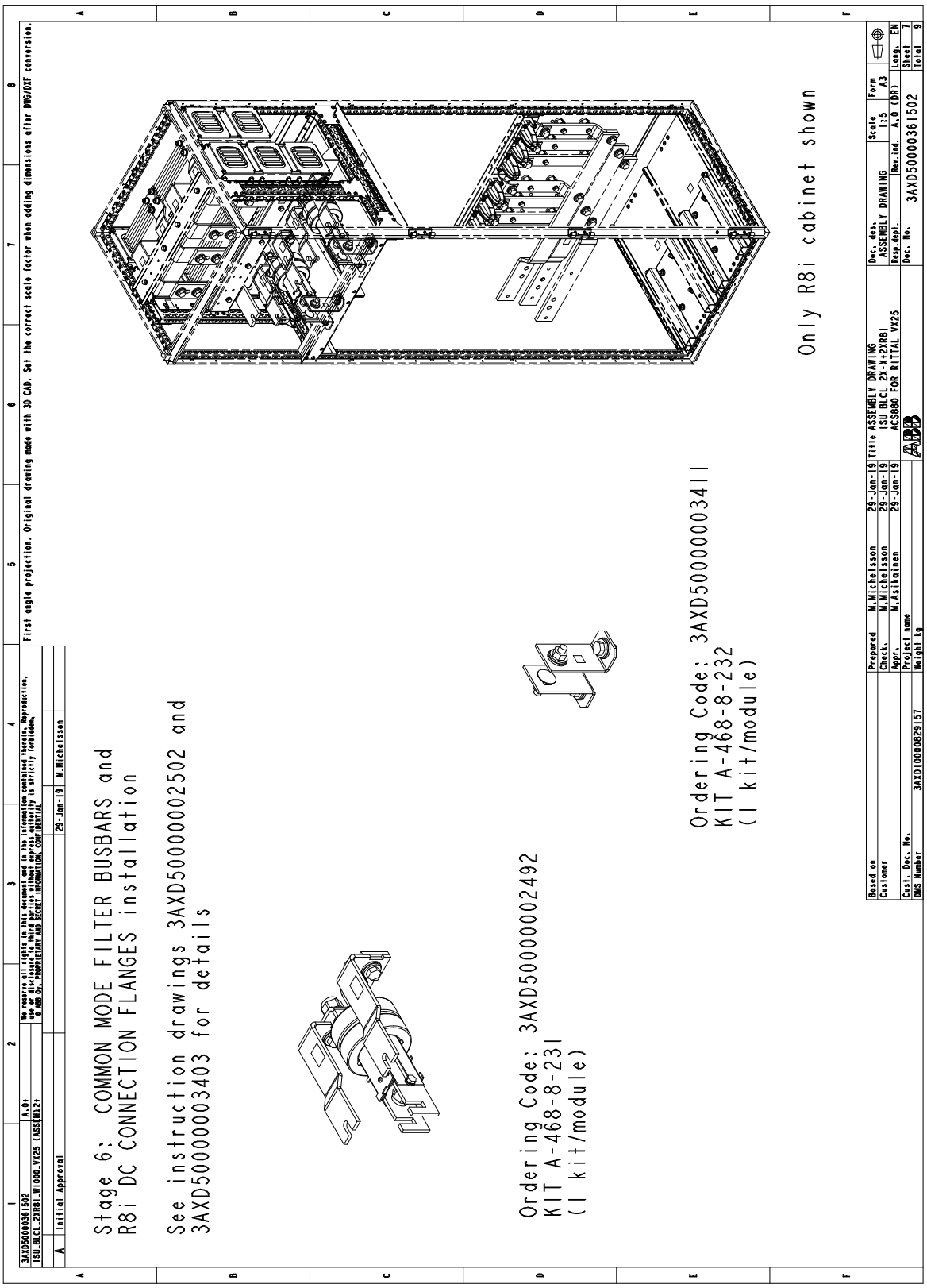
Stage 4: BLCL AC busbars and AC flanges



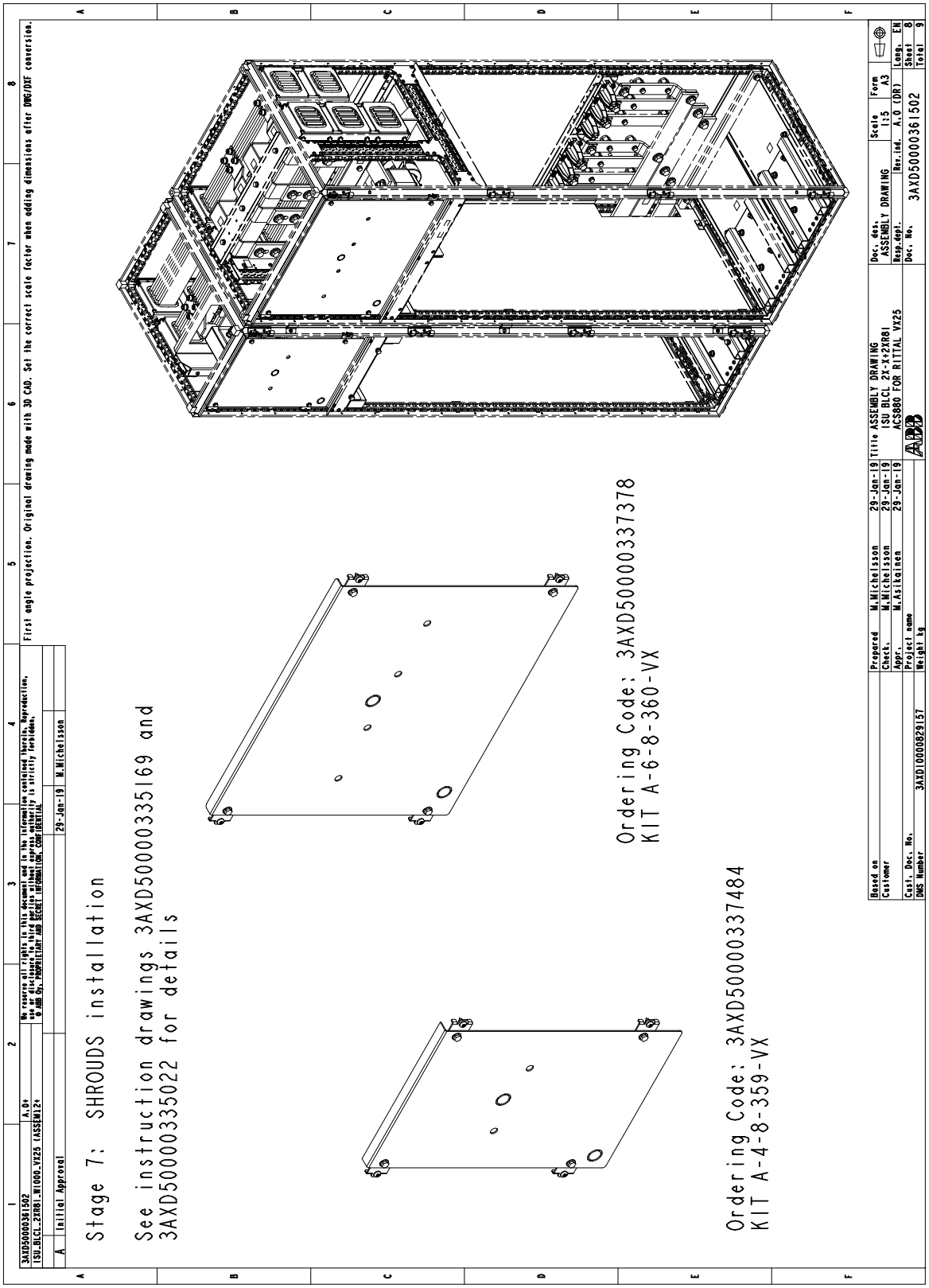
Stage 5: DC connection



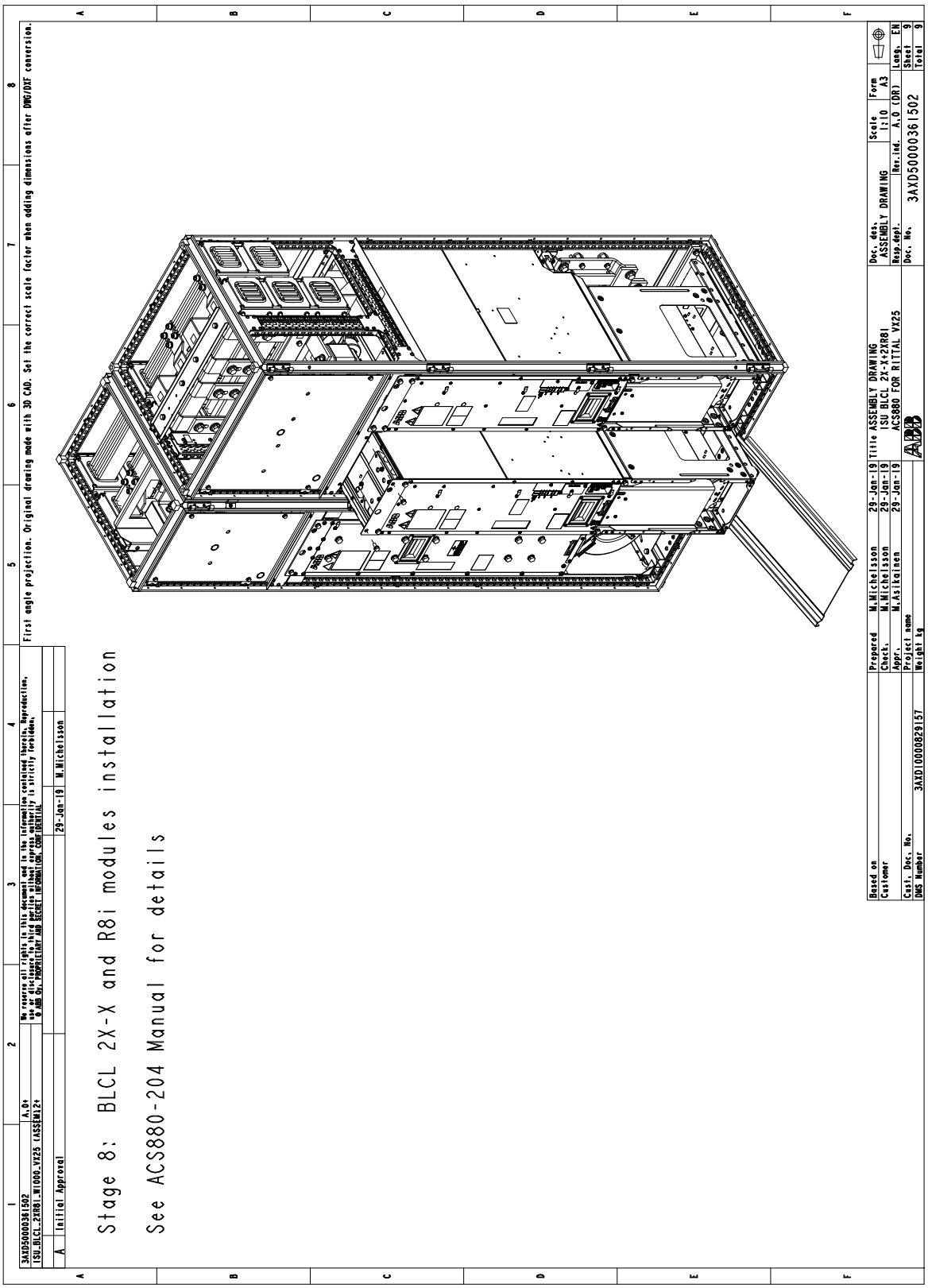
Stage 6: Common mode filter busbars and DC connection flanges



Stage 7: Shroud installation parts



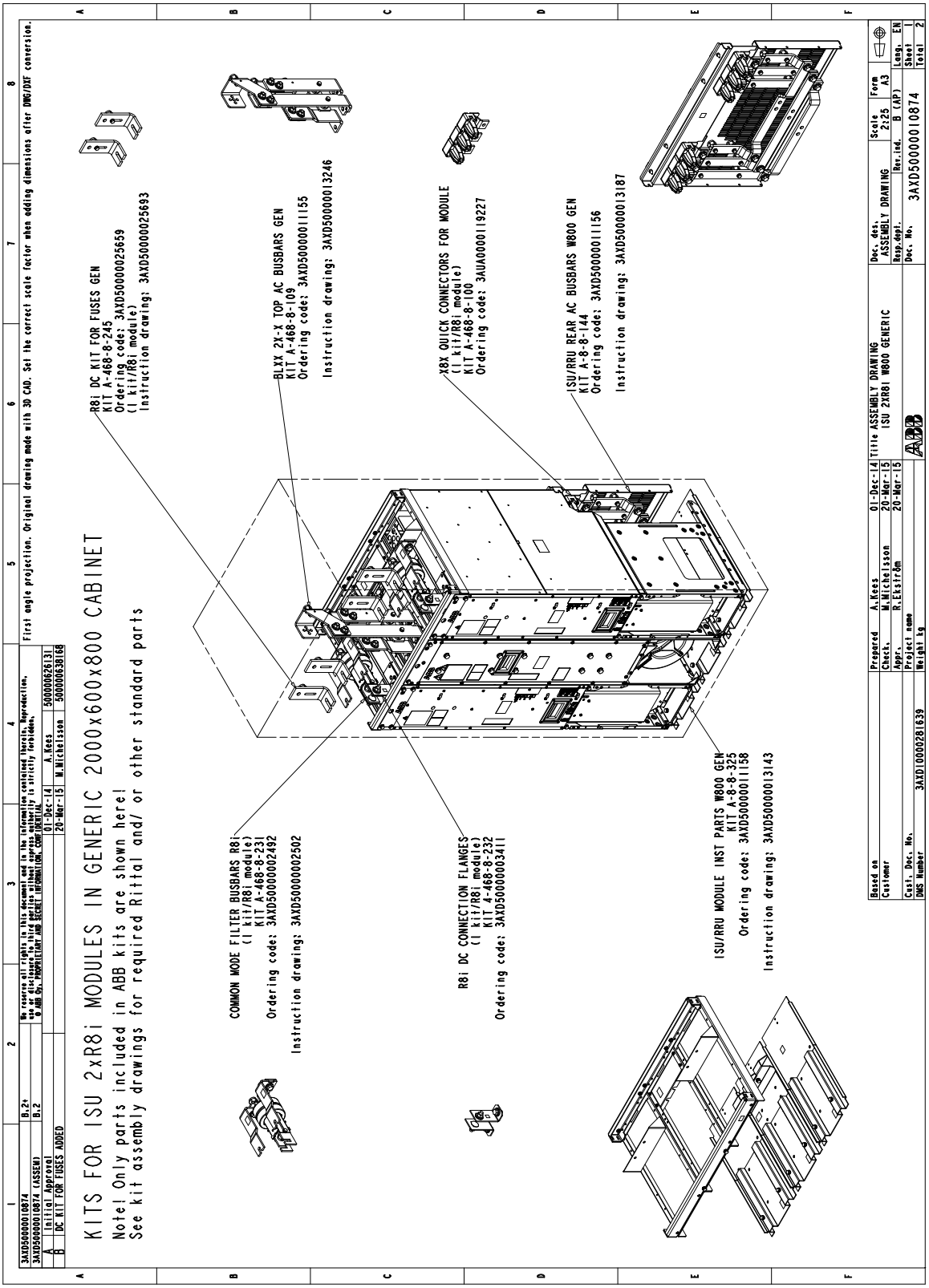
Stage 8: Modules installation



2×R8i modules in an 800 mm wide generic enclosure

Parts to be installed

Parts to be installed	Instruction code	Kit code	Kit ordering code
Module installation parts	3AXD50000013143	A-8-8-325	3AXD50000011158
Quick connectors	3AUA0000118667	A-468-8-100	3AUA0000119227
AC busbars	3AXD50000013187	A-8-8-144	3AXD50000011156
BLCL-2x-x AC connection	3AXD50000013246	A-468-8-109	3AXD50000011155
Common mode filter busbars	3AXD50000002502	A-468-8-231	3AXD50000002492
DC connection flanges	3AXD50000003403	A-468-8-232	3AXD50000003411
DC kit for fuses	3AXD50000025693	A-468-8-245	3AXD50000025659

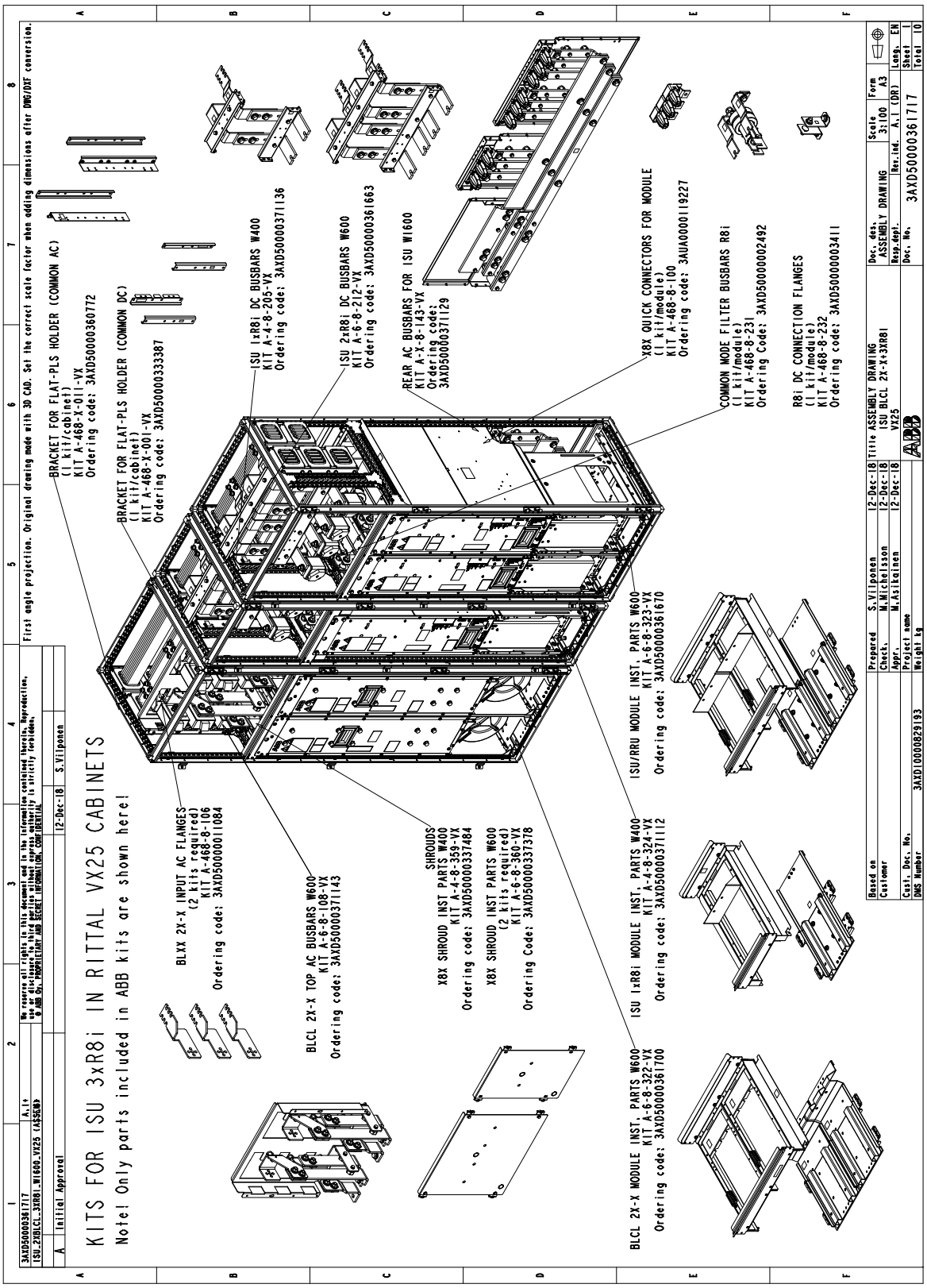

KITS FOR ISU 2xR8i MODULES IN GENERIC 2000x600x800 CABINET
Note! Only parts included in ABB kits are shown here!
See kit assembly drawings for required Rittal and/ or other standard parts
R8i DC KIT FOR FUSES GEN
KIT A-468-8-245
Ordering code: 3AXD50000025659
(1 kit/R8i module)
Instruction drawing: 3AXD50000025693
BLXX 2X-X TOP AC BUSBARS GEN
KIT A-468-8-109
Ordering code: 3AXD50000011155
Instruction drawing: 3AXD50000013246
X8X QUICK CONNECTORS FOR MODULE
(1 kit/R8i module)
KIT A-468-8-100
Ordering code: 3AUA0000119227
ISU/RRU REAR AC BUSBARS W800 GEN
KIT A-8-8-144
Ordering code: 3AXD50000011156
Instruction drawing: 3AXD50000013187
COMMON MODE FILTER BUSBARS R8i
(1 kit/R8i module)
KIT A-468-8-231
Ordering code: 3AXD50000002492
Instruction drawing: 3AXD50000002502
R8i DC CONNECTION FLANGES
(1 kit/R8i module)
KIT 4-468-8-232
Ordering code: 3AXD50000003411
ISU/RRU MODULE INST PARTS W800 GEN
KIT A-8-8-325
Ordering code: 3AXD50000011158
Instruction drawing: 3AXD50000013143
3AXD50000010874
3AXD50000010874 (ASSEM)
A Initial Approval
B DC KIT FOR FUSES ADDED
B.2*
B.2
01-Dec-14
20-Mar-15
A.Kees
M.Michelsson
5000006261
5000005810
First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
Prepared A.Kees 01-Dec-14
Check. M.Michelsson 20-Mar-15
Appr. R.Ekström 20-Mar-15
Project name
Weight kg
3AXD10000281639
Title ASSEMBLY DRAWING
ISU 2XR8i W800 GENERIC
Dec. des. ASSEMBLY DRAWING
Resp.dept.
Dec. No. 3AXD50000010874
Scale 2:25
Rev.ind. B (AP)
Form A3
Lang. EN
Sheet 1
Total 2

3×R8i modules in a 1600 mm wide Rittal VX25 enclosure

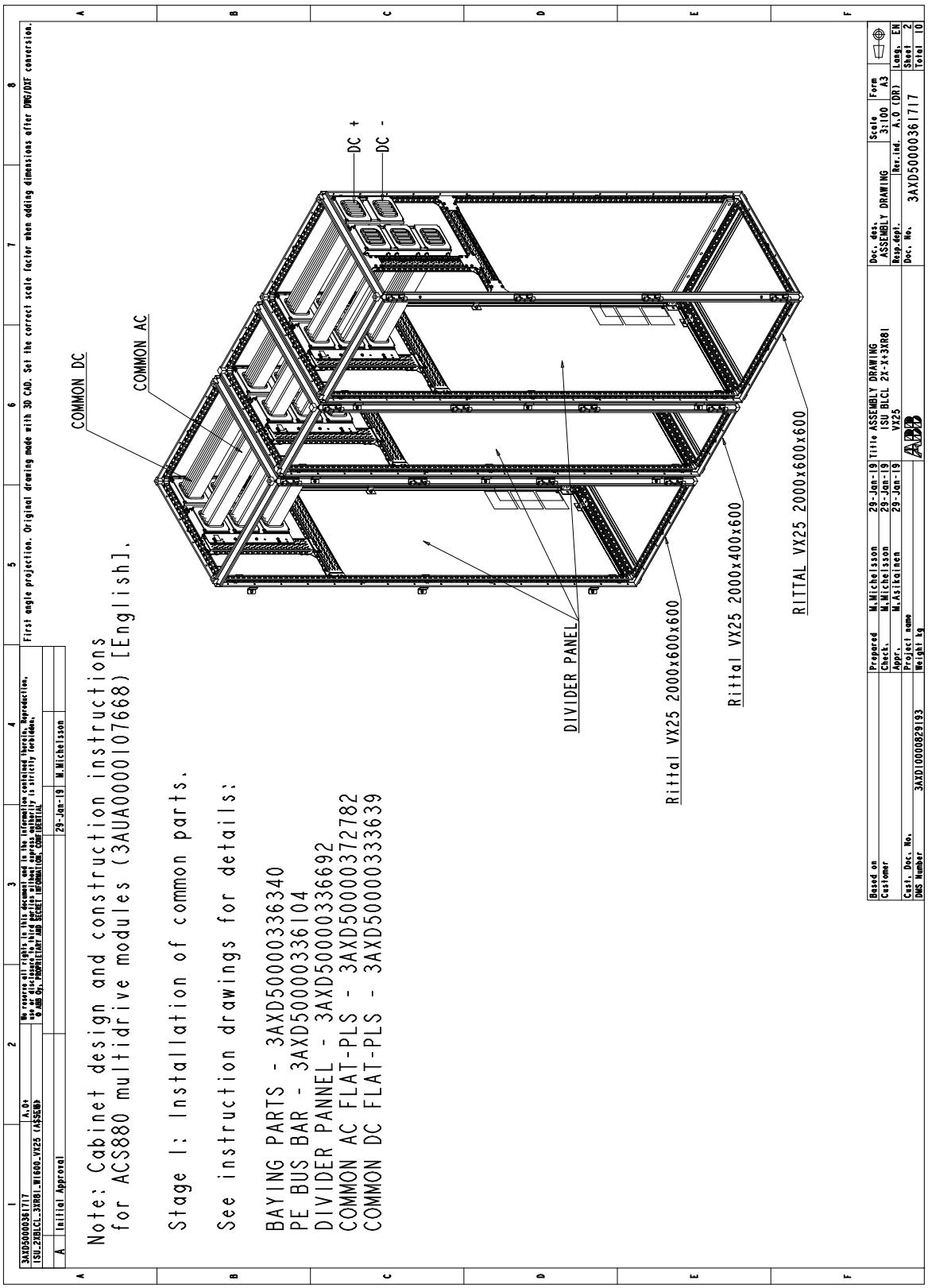
Installation stages

#	Installation stage	Instruction code	Kit code	Kit ordering code
1.	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Common AC Flat-PLS assembly	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Common DC Flat-PLS assembly	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2.	Module installation parts	3AXD50000372935 3AXD50000351756 3AXD50000351930	A-4-8-324-VX A-6-8-323-VX A-6-8-322-VX	3AXD50000371112 3AXD50000361670 3AXD50000361700
3.	BLCL rear AC busbars and quick connectors	3AXD50000360444	A-X-8-143-VX A-468-8-100	3AXD50000371129 3AUA0000119227
4.	BLCL top AC busbars and AC flanges	3AXD50000352999 3AXD50000012934	A-468-8-106 A-6-8-108-VX	3AXD50000011084 3AXD50000371143
5.	DC connection	3AXD50000360987 3AXD50000353507	A-6-8-212-VX A-4-8-205-VX	3AXD50000361663 3AXD50000371136
6.	Common mode filter busbars and DC connection flanges	3AXD50000002502 3AXD50000003403	A-468-8-231 A-468-8-232	3AXD50000002492 3AXD50000003411
7.	Shroud installation parts	3AXD50000335169 3AXD50000335022	A-6-8-360-VX A-4-8-359-VX	3AXD50000337378 3AXD50000337484
8.	Modules installation	-	-	-

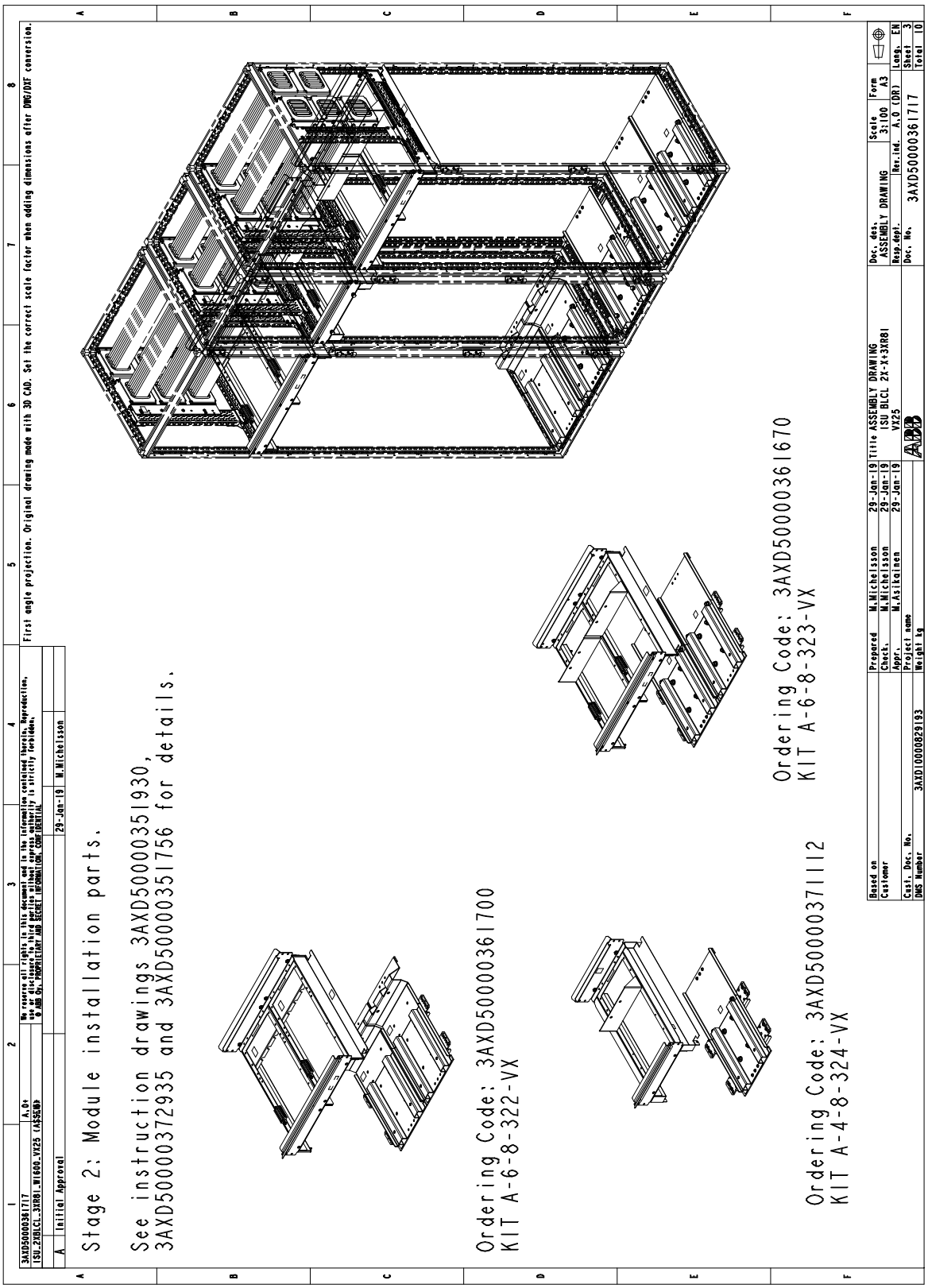
Kits for 3×R8i modules in 1600 mm Rittal VX25 enclosure



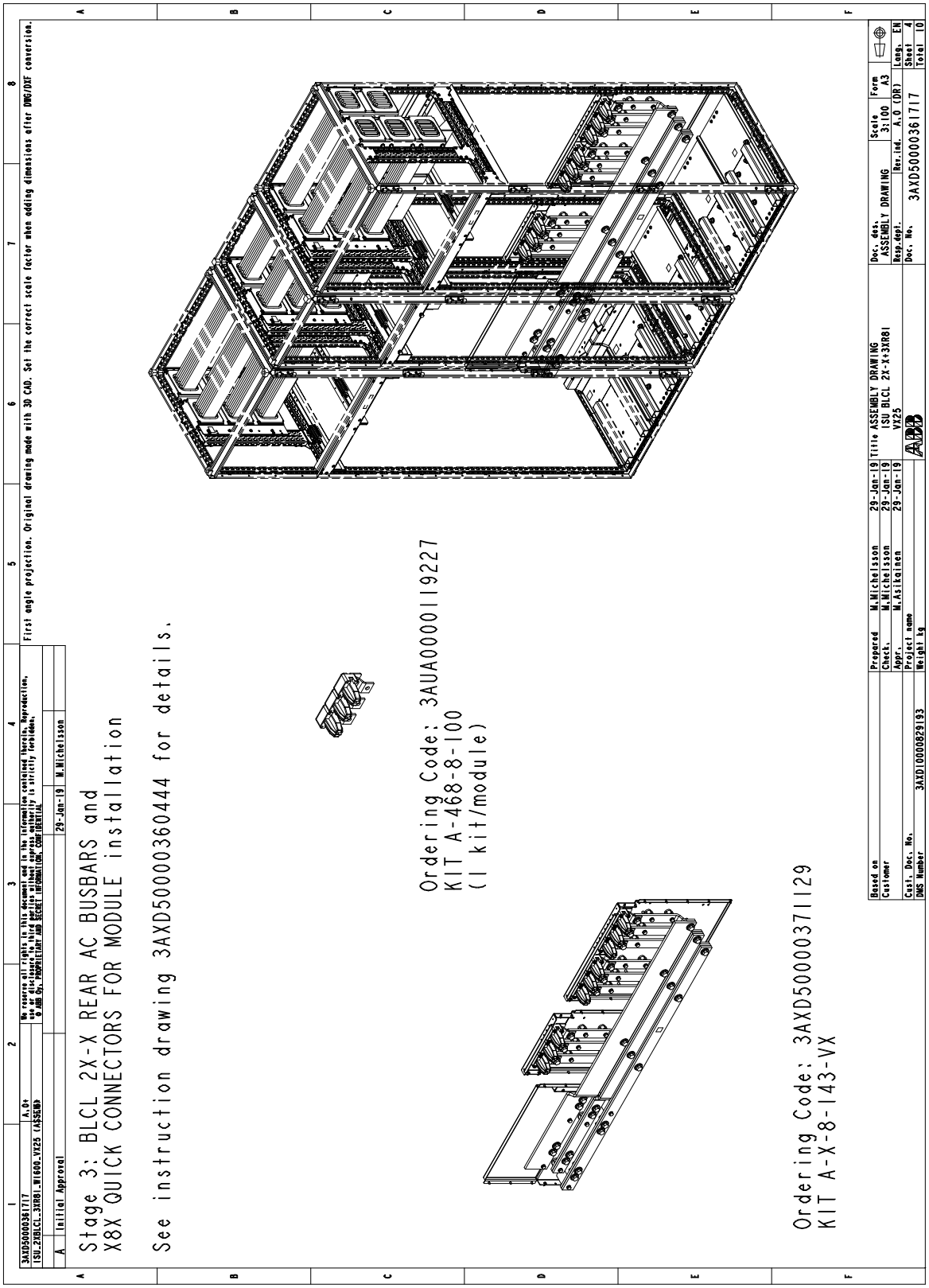
Stage 1: Installation of common parts



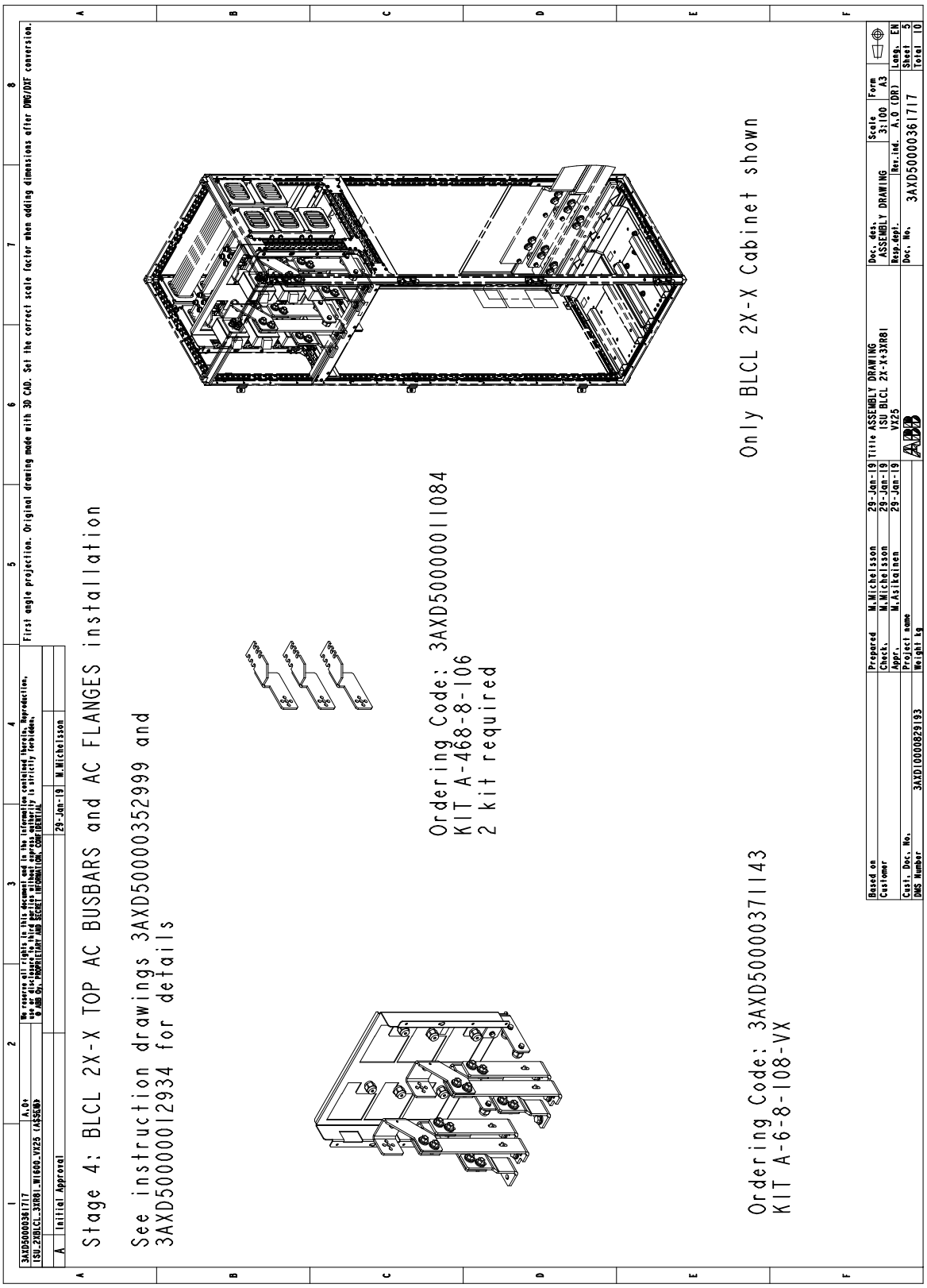
Stage 2: Module installation parts



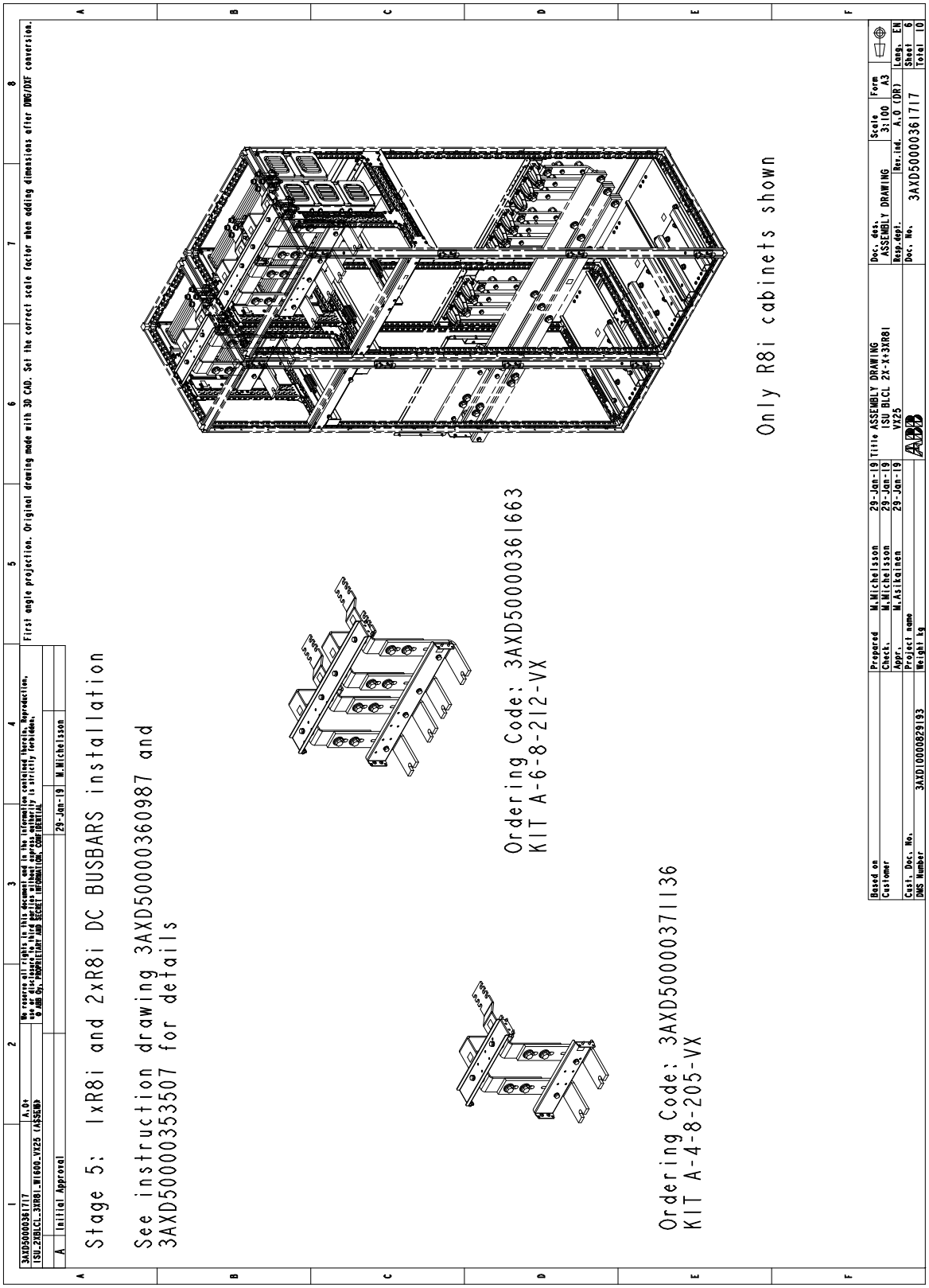
Stage 3: BLCL rear AC busbars and quick connectors



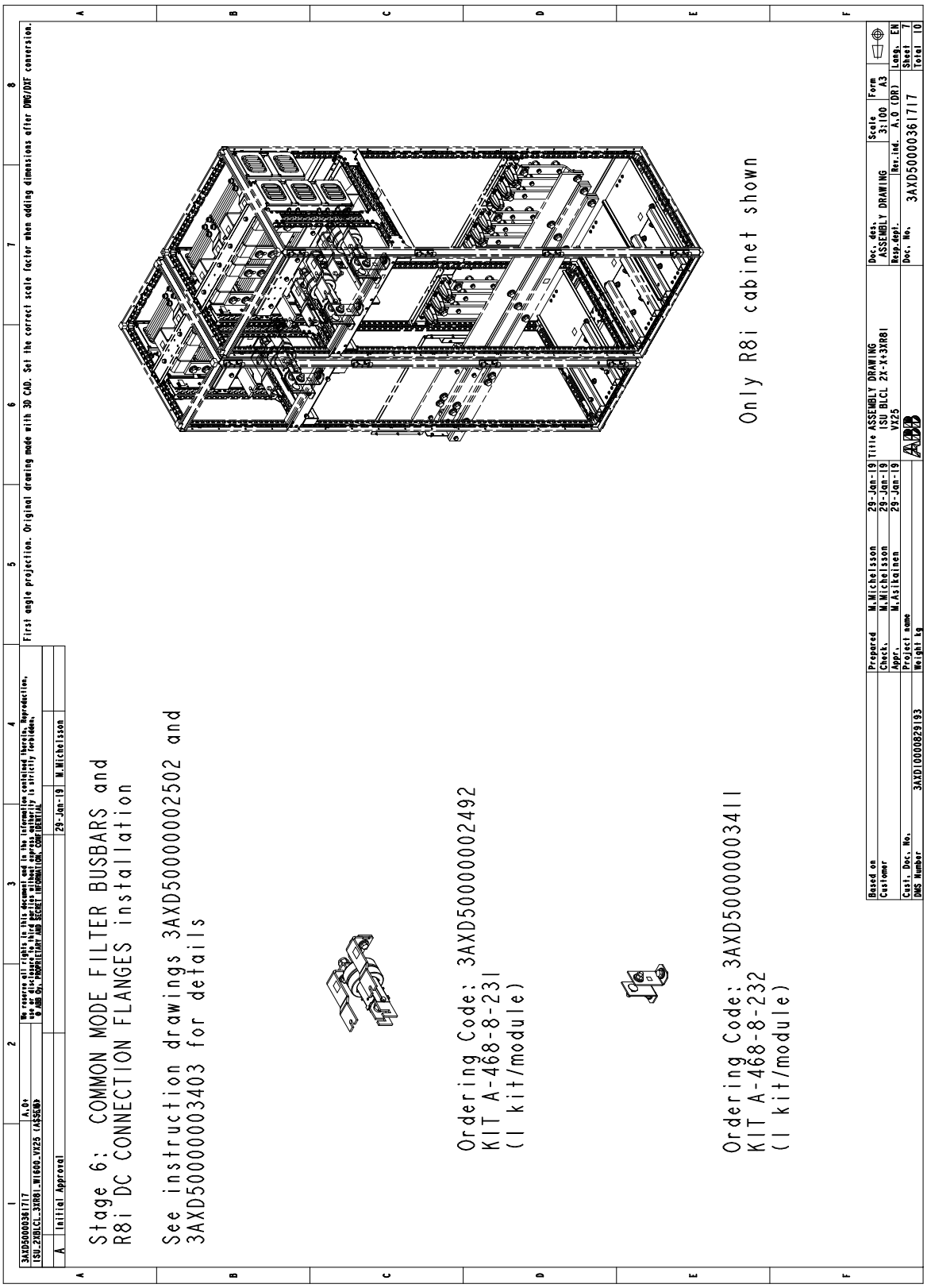
Stage 4: BLCL top AC busbars and AC flanges



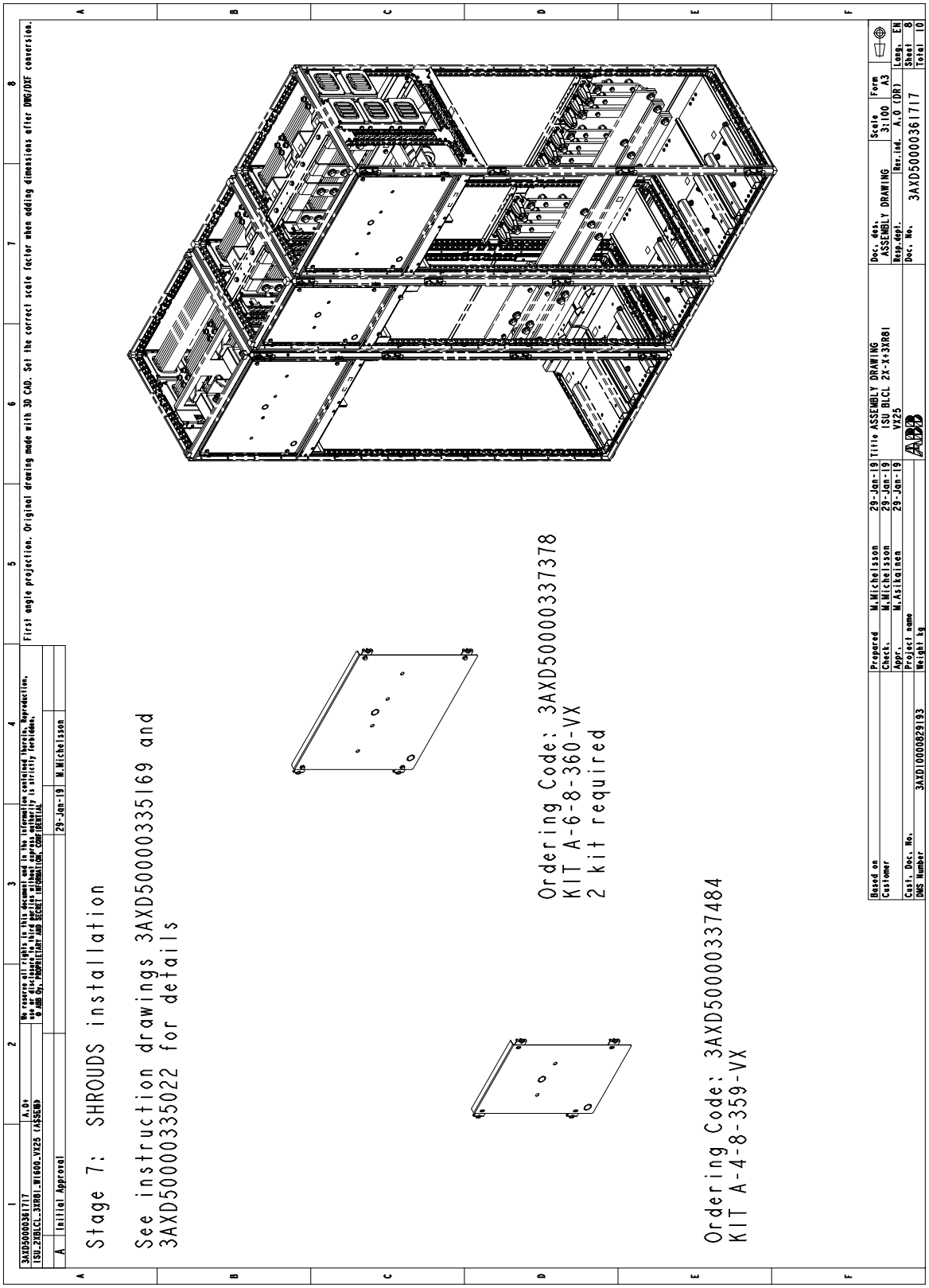
Stage 5: DC connection



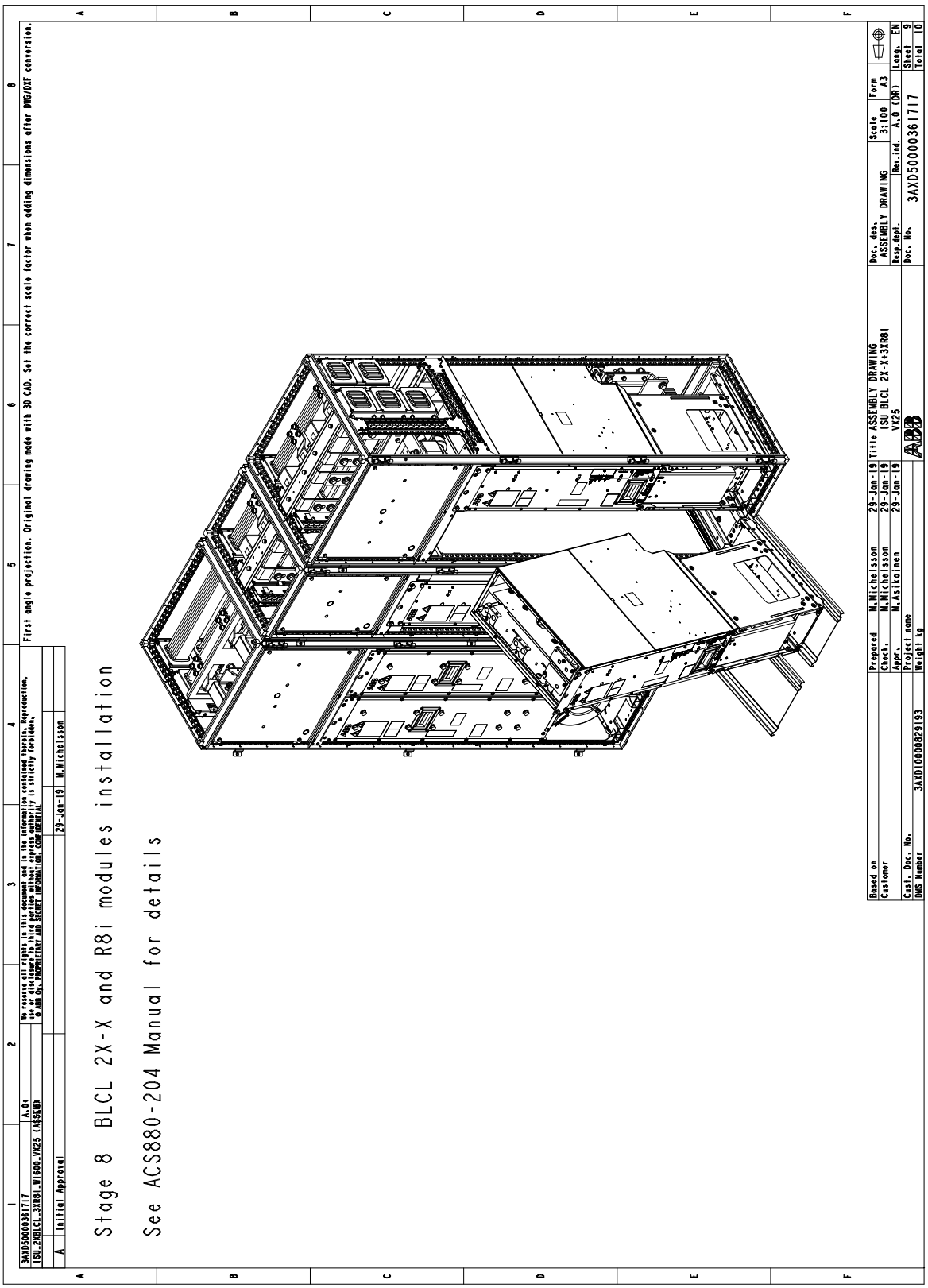
Stage 6: Common mode filter busbars and DC connection flanges



Stage 7: Shroud installation parts



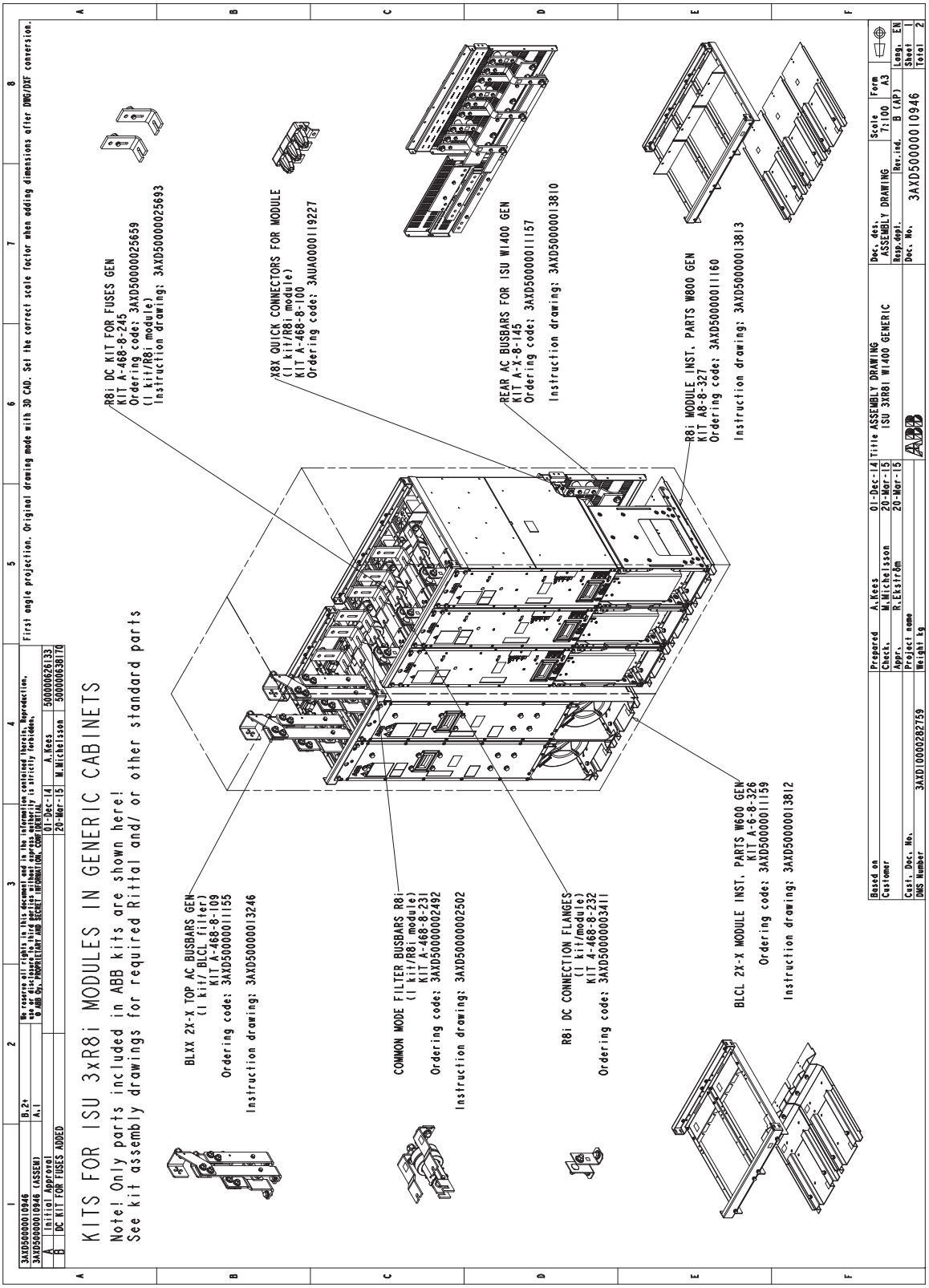
Stage 8: Modules installation



3×R8i modules in a 1400 mm wide generic enclosure

Parts to be installed

Parts to be installed	Instruction code	Kit code	Kit ordering code
Module installation parts	- -	A-6-8-326 A-8-8-327	3AXD50000011159 3AXD50000011160
Quick connectors	3AUA0000118667	A-468-8-100	3AUA0000119227
AC busbars	-	A-X-8-145	3AXD50000011157
BLCL-2x-x AC connection	3AXD50000013246	A-468-8-109	3AXD50000011155
Common mode filter busbars	3AXD50000002502	A-468-8-231	3AXD50000002492
DC connection flanges	3AXD50000003403	A-468-8-232	3AXD50000003411
DC kit for fuses	3AXD50000025693	A-468-8-245	3AXD50000025659


KITS FOR ISU 3xR8i MODULES IN GENERIC CABINETS
Note! Only parts included in ABB kits are shown here!
See kit assembly drawings for required Rittal and/ or other standard parts
BLXX 2X-X TOP AC BUSBARS GEN
(1 kit/ BLCL filter)
KIT A-468-8-109
Ordering code: 3AXD50000011155
Instruction drawing: 3AXD50000013246
COMMON MODE FILTER BUSBARS R8i
(1 kit/R8i module)
KIT A-468-8-231
Ordering code: 3AXD50000002492
Instruction drawing: 3AXD50000002502
R8i DC CONNECTION FLANGES
(1 kit/module)
KIT 4-468-8-232
Ordering code: 3AXD50000003411
BLCL 2X-X MODULE INST. PARTS W600 GEN
KIT A-6-8-326
Ordering code: 3AXD50000011159
Instruction drawing: 3AXD50000013812
R8i DC KIT FOR FUSES GEN
KIT A-468-8-245
Ordering code: 3AXD50000025659
(1 kit/R8i module)
Instruction drawing: 3AXD50000025693
X8X QUICK CONNECTORS FOR MODULE
(1 kit/R8i module)
KIT A-468-8-100
Ordering code: 3AUA0000119227
REAR AC BUSBARS FOR ISU W1400 GEN
KIT A-X-8-145
Ordering code: 3AXD50000011157
Instruction drawing: 3AXD50000013810
R8i MODULE INST. PARTS W800 GEN
KIT A8-8-327
Ordering code: 3AXD50000011160
Instruction drawing: 3AXD50000013813
3AXD50000010946 (ASSEMBLY)
3AXD50000010946 (ASSEMBLY)
A Initial Approval
B DC KIT FOR FUSES ADDED
B.2
A.1
01-Dec-14
20-Mar-15
A.Kees
M.Michelsson
3000006133
3000006170
First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
Prepared
Check.
Appr.
Cust. Doc. No.
DMS Number
A.Kees
M.Michelsson
R.Ekström
3AXD10000282759
01-Dec-14
20-Mar-15
20-Mar-15
Title ASSEMBLY DRAWING
ISU 3XR8I W1400 GENERIC
Based on
Customer
Project name
Weight kg
Dec. des.
ASSEMBLY DRAWING
Resp.dept.
Rev.ind.
Doc. No.
Scale
7:100
Form
A3
B (AP)
Lang.
EN
Sheet
1
Total
2
3AXD50000010946

7

Electrical installation

Contents of this chapter

This chapter describes the electrical installation of the modules.

The wiring diagrams in this chapter are simplified presentations. For details, see the example circuit diagrams included in the manual.

Note: The instructions do not cover all possible cabinet constructions.

For more information on electrical installation, see ACS880 multidrive cabinets and modules electrical planning instructions (3AUA0000102324 [English]).

Safety and liability

WARNING!
Only qualified electrical professionals are allowed to do the work described in this chapter. Read the **complete safety instructions** before you install, commission, use or service the drive. The complete safety instructions are given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]).

Note: The installation must always be designed and made according to applicable local laws and regulations. ABB does not assume any liability whatsoever for any installation which breaches the local laws and/or other regulations. Furthermore, if the recommendations given by ABB are not followed, the drive system may experience problems that the warranty does not cover.

Electrical safety precautions

These electrical safety precautions are for all personnel who do work on the drive, motor cable or motor.

WARNING!
Obey these instructions. If you ignore them, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

Do these steps before you begin any installation or maintenance work.

1. Clearly identify the work location and equipment.
2. Disconnect all possible voltage sources. Make sure that re-connection is not possible. Lock out and tag out.
   - Open the main disconnecting device of the drive.
   - Open the charging switch if present.
   - Open the disconnector of the supply transformer. (The main disconnecting device in the drive cabinet does not disconnect the voltage from the AC input power busbars of the drive cabinet.)
   - If the drive is equipped with a DC/DC converter unit (optional) or a DC feeder unit (optional): Open the DC switch-disconnector [Q11] of the unit. Open the disconnecting device of the energy storage connected to the unit (outside the drive cabinet).
   - Open the auxiliary voltage switch-disconnector (if present), and all other possible disconnecting devices that isolate the drive from dangerous voltage sources.
   - If you have a permanent magnet motor connected to the drive, disconnect the motor from the drive with a safety switch or by other means.
   - Disconnect all dangerous external voltages from the control circuits.
   - After you disconnect power from the drive, always wait 5 minutes to let the intermediate circuit capacitors discharge before you continue.
3. Protect any other energized parts in the work location against contact.
4. Take special precautions when close to bare conductors.
5. Measure that the installation is de-energized. Use a quality voltage tester. If the measurement requires removal or disassembly of shrouding or other cabinet structures, obey the local laws and regulations applicable to live working (including – but not limited to – electric shock and arc protection).
   - Before and after you measure the installation, verify the operation of the voltage tester on a known voltage source.
   - Make sure that the voltage between the drive input power terminals (L1, L2, L3) and the grounding (PE) busbar is zero.
   - Make sure that the voltage between the drive output terminals (T1/U, T2/V, T3/W) and the grounding (PE) busbar is zero.

     Important! Repeat the measurement also with the DC voltage setting of the tester. Measure between each phase and ground. There is a risk of dangerous DC voltage charging due to leakage capacitances of the motor circuit. This voltage can remain charged for a long time after the drive power-off. The measurement discharges the voltage.
   - Make sure that the voltage between the drive DC terminals (UDC+ and UDC-) and the grounding (PE) terminal is zero. In cabinet-built drives, measure between the drive DC busbars (+ and -) and the grounding (PE) busbar.

6. Install temporary grounding as required by the local regulations.
7. Ask for a permit to work from the person in control of the electrical installation work.

General notes

Printed circuit boards

WARNING!
Use a grounding wristband when you handle printed circuit boards. Do not touch the boards unnecessarily. The boards contain components sensitive to electrostatic discharge.

Optical components

WARNING!
Obey these instructions. If you ignore them, damage to the equipment can occur.

- Handle the fiber optic cables with care.
- When you unplug the fiber optic cables, always hold the connector, not the cable itself.
- Do not touch the ends of the fibers with bare hands as the ends are extremely sensitive to dirt.
- Do not bend the fiber optic cables too tightly. The minimum allowed bend radius is 35 mm (1.4 in).

Checking the insulation of the assembly

Measuring the insulation resistance of the drive

WARNING!
Do not do any voltage withstand or insulation resistance tests on any part of the drive as testing can damage the drive. Every drive has been tested for insulation between the main circuit and the chassis at the factory. Also, there are voltage-limiting circuits inside the drive which cut down the testing voltage automatically.

Measuring the insulation resistance of the input power cable

Before you connect the input power cable to the drive, measure its insulation resistance according to local regulations.

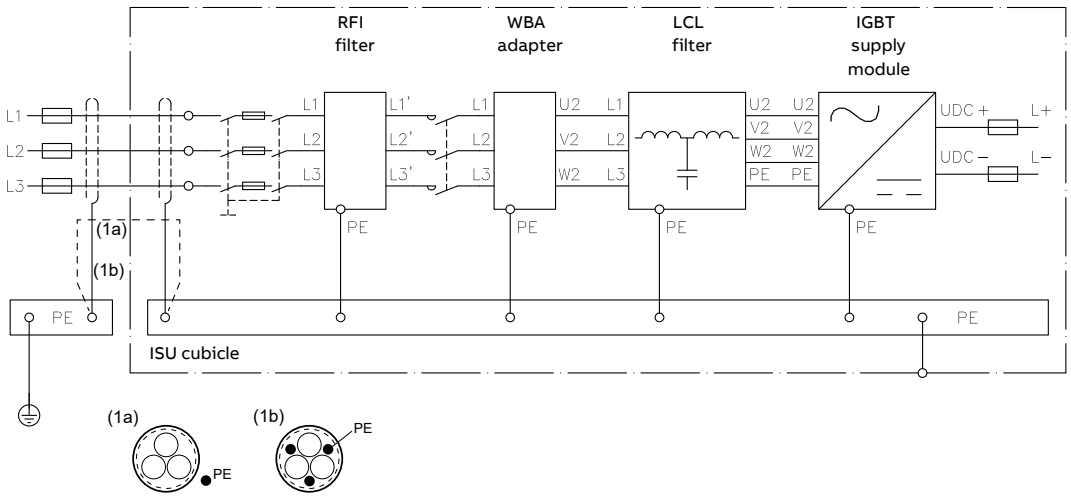
Checking the compatibility with IT (ungrounded) systems

The RFI filter is not suitable for use in IT (ungrounded) systems. Disconnect the filter before connecting the drive to the supply network. For instructions on how to do this, contact your local ABB representative.

WARNING!
If a drive with an RFI filter is installed on an IT system (an ungrounded power system), the system will be connected to earth potential through the filter capacitors of the drive. This can cause danger, or damage the unit.

Connecting the input power cables

Connection diagram (frames R1i...R4i)



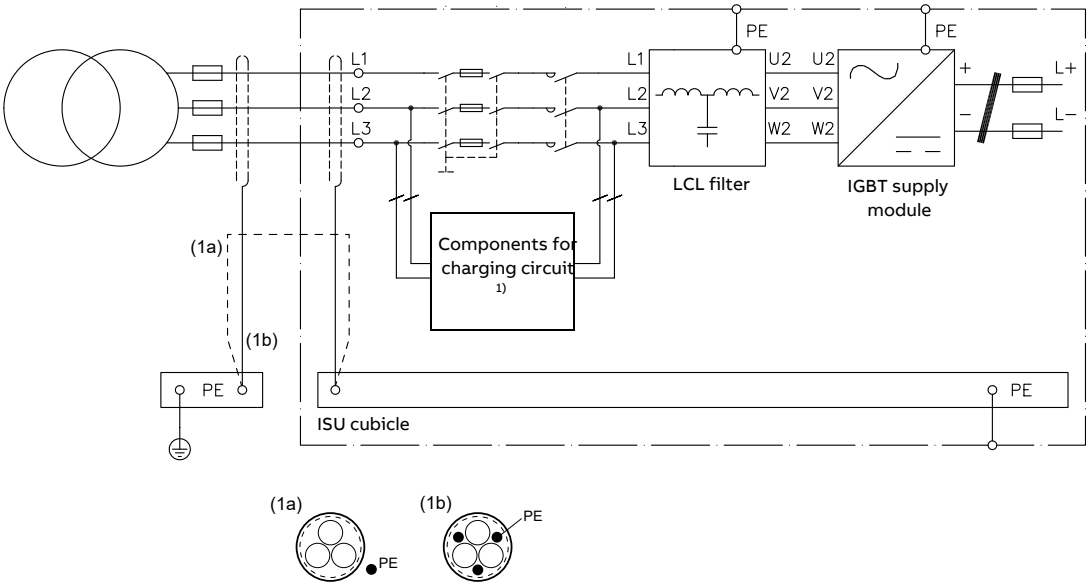
Note: If the LCL filter is mounted onto the WBCA adapter, the LCL filter can be grounded through the fastening screws of the WBCA adapter (no additional grounding conductors are needed).

Use a separate PE cable (1a) or a cable with a separate PE conductor (1b) in addition if the conductivity of the shields does not meet the requirement for the PE conductor. See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the cable selection instructions, see *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the tightening torques, see *Cabinet design and construction instructions for ACS880 multidrive modules* (3AUA0000107668 [English]).

Connection diagram (frame R6i and R7i)



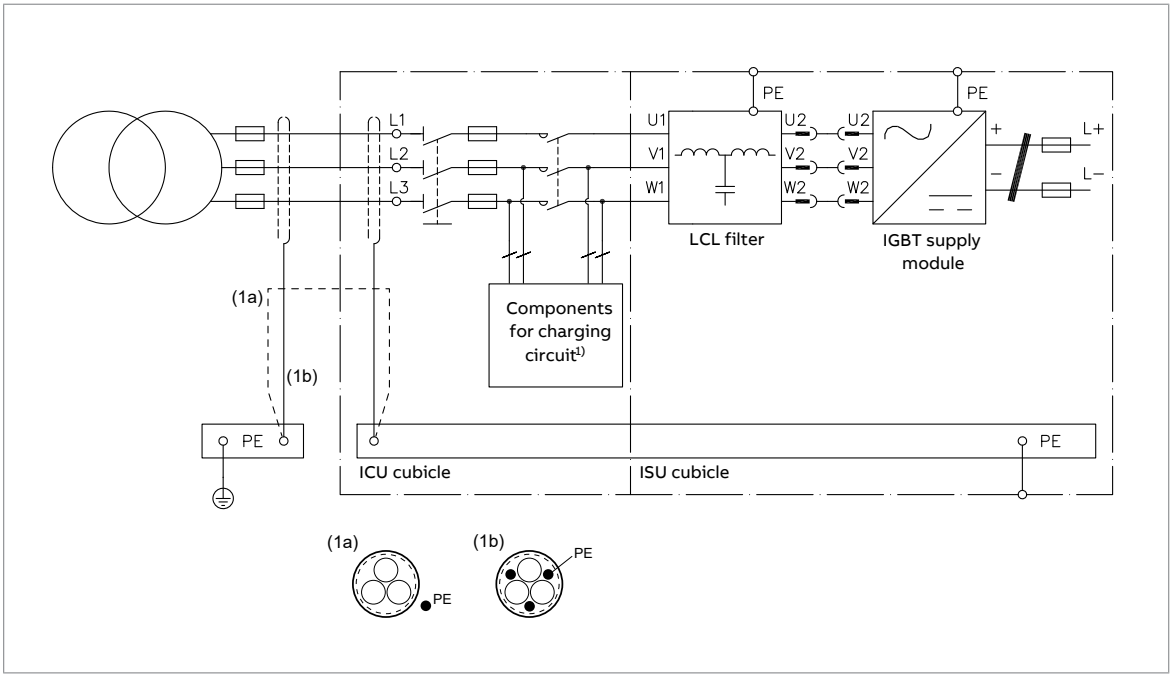
Note: Use a separate grounding PE cable (1a) or a cable with a separate PE conductor (1b) in addition if the conductivity of the shields does not meet the requirement for the PE conductor. See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the cable selection instructions, see *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the tightening torques, see *Cabinet design and construction instructions for ACS880 multidrive modules* (3AUA0000107668 [English]).

1) For details, see the example circuit diagrams.

Connection diagram (frame 1×R8i)



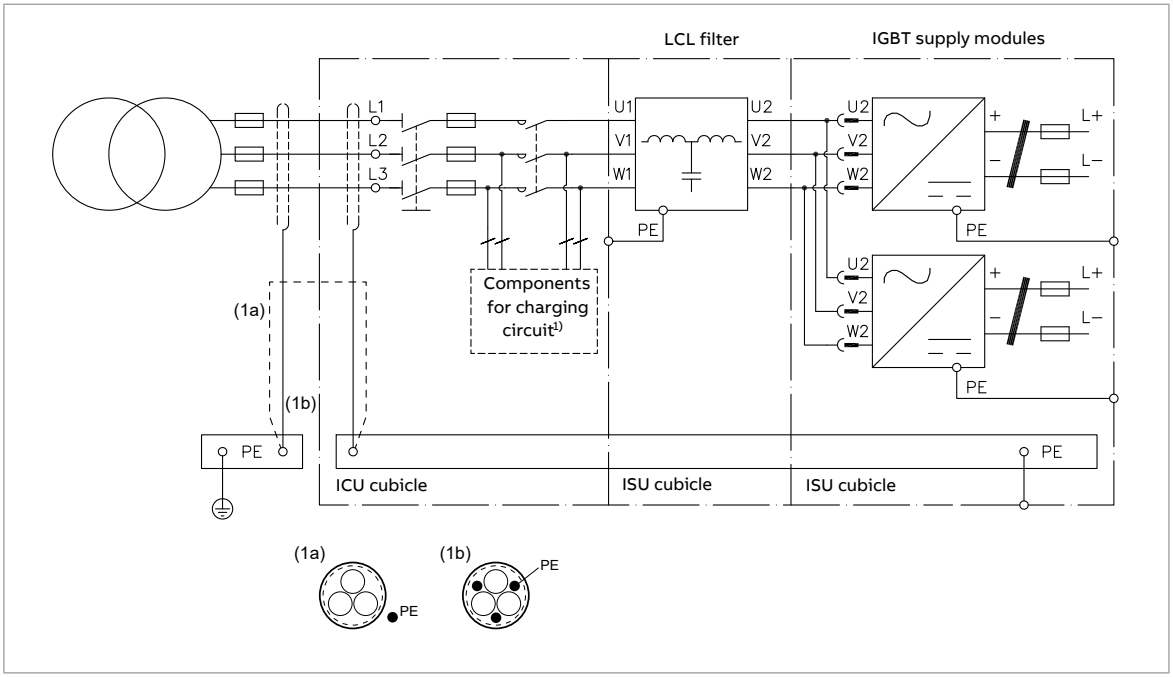
Note: Use a separate grounding PE cable (1a) or a cable with a separate PE conductor (1b) in addition if the conductivity of the shields does not meet the requirement for the PE conductor. See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the cable selection instructions, see *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the tightening torques, see *Cabinet design and construction instructions for ACS880 multidrive modules* (3AUA0000107668 [English]).

1) For details, see the example circuit diagrams.

Connection diagram (frame R8i multiples)



Note: Use a separate grounding PE cable (1a) or a cable with a separate PE conductor (1b) in addition if the conductivity of the shields does not meet the requirement for the PE conductor. See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the cable selection instructions, see *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

For the tightening torques, see *Cabinet design and construction instructions for ACS880 multidrive modules* (3AUA0000107668 [English]).

1) For details, see the example circuit diagrams.

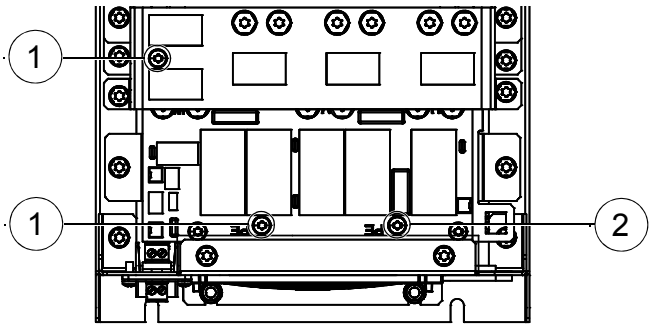
Connection procedure (frames R1i...R4i)

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

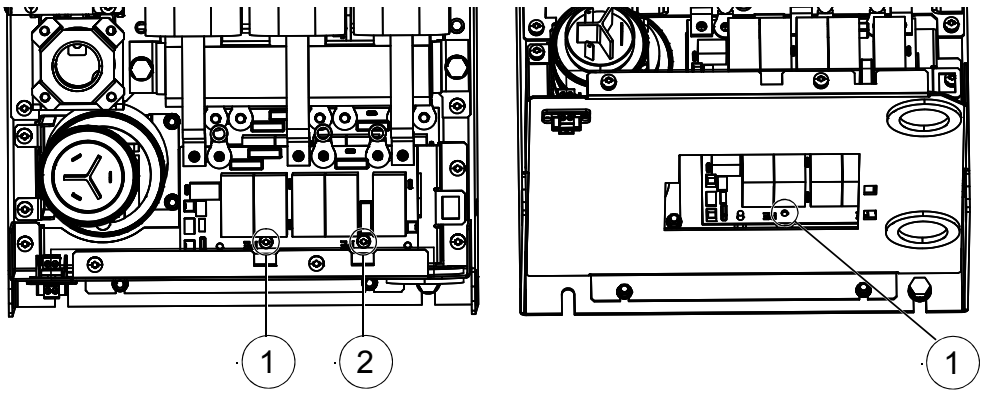
For cabling drawings for each frame size, see sections Frame R1i … Frames R3i and R4i (connector covers removed)below.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Frames R3i and R4i only: Remove the two plastic connector covers at the top and bottom of the supply module. Each cover is fastened with two screws.
3. On IT (ungrounded) systems and corner grounded TN systems, disconnect the EMC and varistor screws from the LCL filter module.
   - Remove the cover of the LCL filter module.
     WFU-11, WFU-21 and WFU-22 only: Remove the fan.
   - Remove the two screws labeled FILTER and one screw labeled VARISTOR. The locations of the screws are shown in the pictures below.
   - Reinstall the cover.
     WFU-11, WFU-21 and WFU-22 only: Reinstall the fan.

WFU-01, WFU-02



WFU-21, WFU-22



1	Filter
2	Varistor

Note: When the internal EMC filter is disconnected, the IGBT supply module is not EMC compatible.

WARNING!
If a supply module whose varistors are not disconnected is installed on an IT system (an ungrounded power system or a high resistance grounded [over 30 ohms] power system), the system is connected to earth potential through the varistors of the supply module. This may cause danger or damage the supply module.

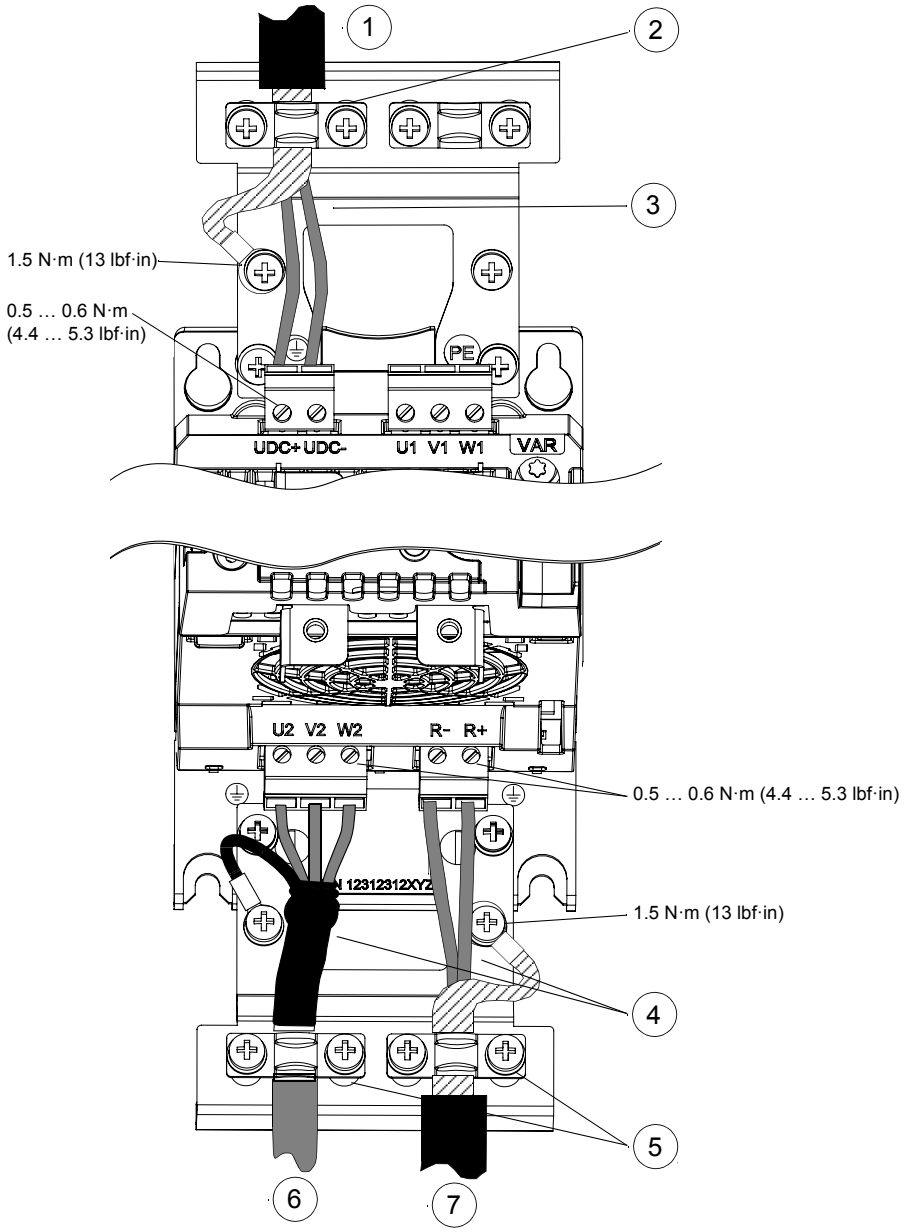
If a supply module whose varistors are not disconnected is installed on a corner grounded TN system, the supply module will be damaged.

4. Fasten the two cable clamp plates included in the supply module, one at the top, one at the bottom. The clamp plates are identical. Using the cable clamp plates will provide better EMC compliance, as well as act as a strain relief for the power cables.
5. Strip the power cables so that the shields are bare at the cable clamps.
6. Twist the ends of the cable shield wires into pigtails.
7. Strip the ends of the phase conductors.
8. Connect the phase conductors to the input terminals of the main switch-disconnector [Q1]. For the tightening torques, see *Cabinet design and construction instructions for ACS880 multidrive modules* (3AUA0000107668 [English]).
9. Connect the output terminals of the main switch-disconnector [Q1] to the main contactor [Q2] input terminals.
10. Connect the contactor [Q2] output terminals to the WFU-xx LCL filter module input terminals (L1/L2/L3). See section Connecting the WBCA adapter to the LCL filter (frames R1i…R4i) (page 142).
11. Connect the phase conductors of the WFU-xx LCL filter module output terminals (U2/V2/W2) to the phase conductors of the AC input terminals (U2/V2/W2) of the IGBT supply module. See section Connecting WFU-xx LCL filter module (frames R1i…R4i) (page 143).
12. Connect the phase conductors of the DC output cable to the UDC+ and UDC- terminals of the IGBT supply module.
    Connect the resistor cable conductors (if present) to the R+ and R- terminals.
    With frames R3i or R4i, attach the screw terminal lugs included to the conductors first. Crimp lugs can be used instead of the screw lugs.
13. Tighten the cable clamps onto the bare cable shields.
14. Crimp a cable lug onto each shield pigtail. Fasten the lugs to ground terminals.

    Note: Make a compromise between the length of the pigtail and the length of unshielded phase conductors as both should ideally be as short as possible.
15. Cover visible bare shield and pigtail with insulating tape.
16. With frames R3i or R4i, cut suitable slots on the edges of the connector covers to accommodate the AC and DC cables. Refit the covers. (Tighten the screws to 3 N·m [25 lbf·in]).

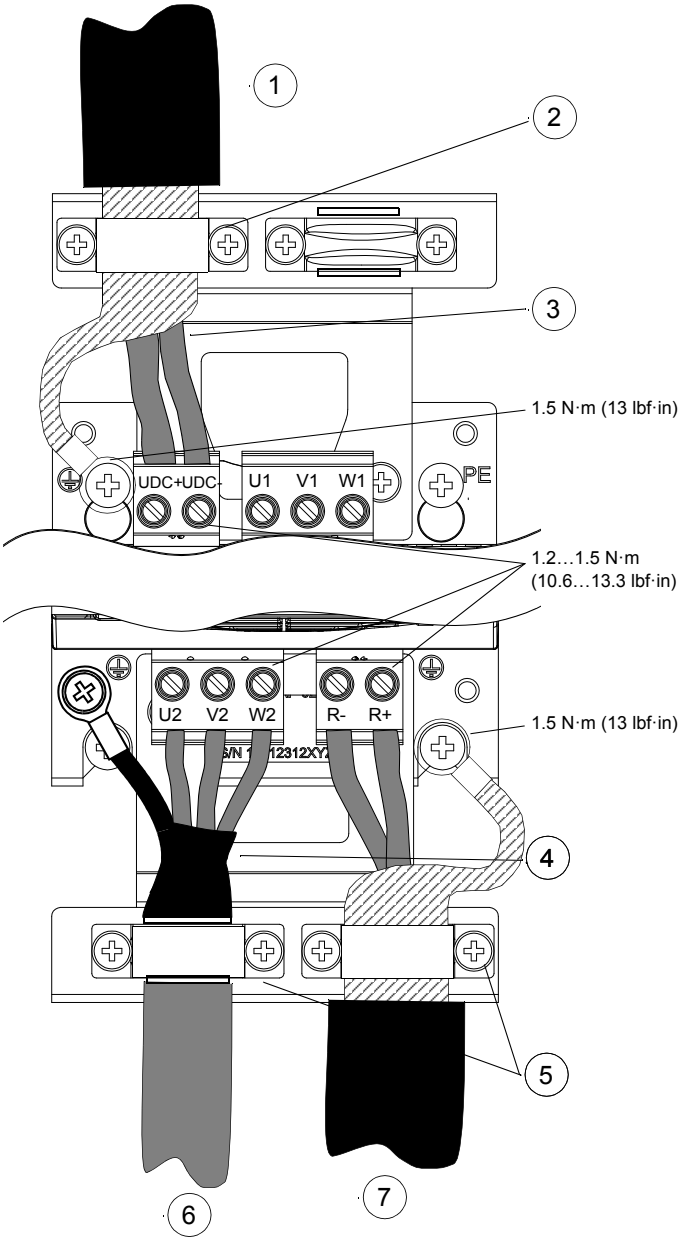
17. Secure the cables outside the unit mechanically.
18. Ground the other end of the input power cable shield or PE conductor(s) at the distribution board.
19. Connect the module DC busbars into the cabinet common DC busbars.

Frame R1i



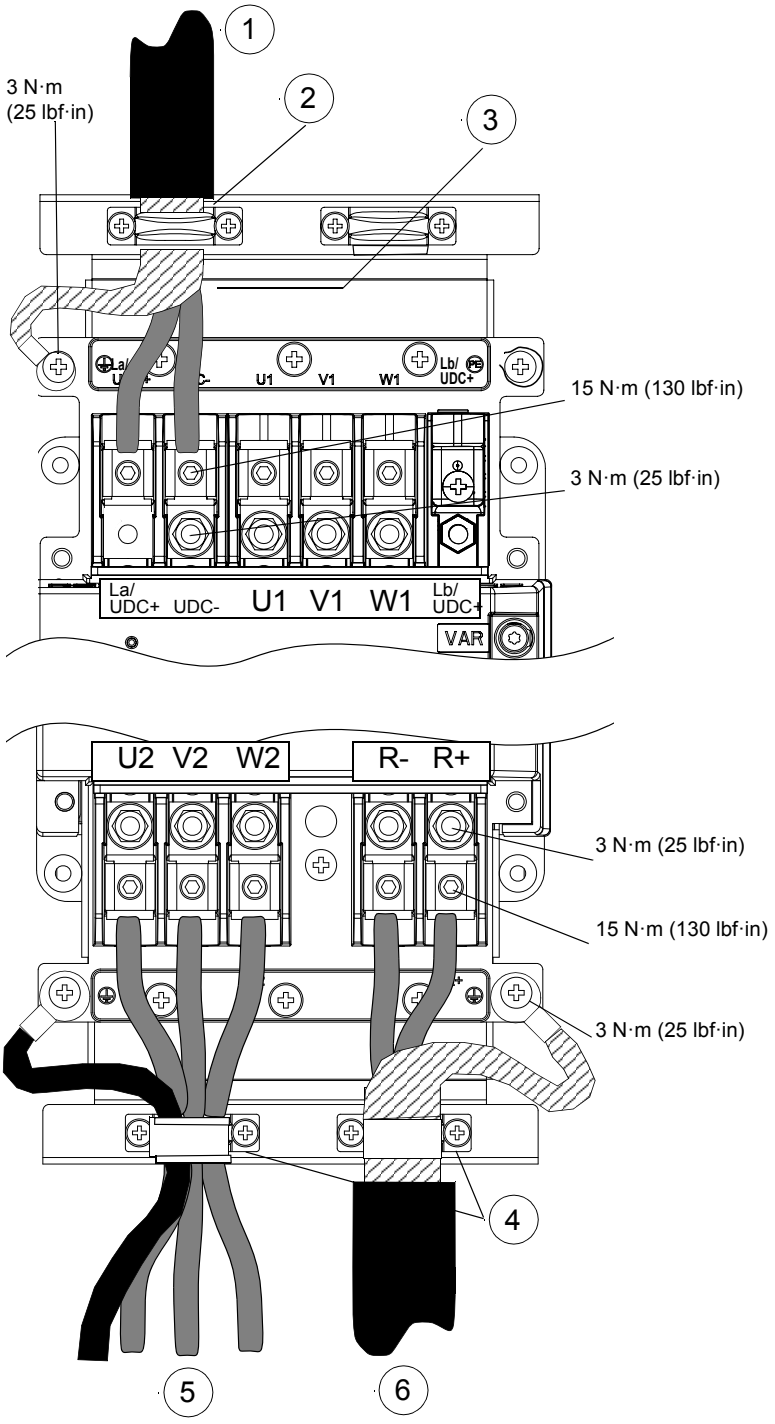
1	DC output cable
2	Cable clamp on bare shield, 1.5 N·m (13 lbf·in)
3	Below cable clamp, cover bare shield with insulating tape
4	Above cable clamp, cover bare shield with insulating tape
5	Cable clamp on bare shield, 1.5 N·m (13 lbf·in)
6	AC input cable (from WFU-xx)
7	Brake resistor cable (if present)

Frame R2i

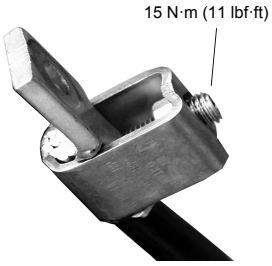
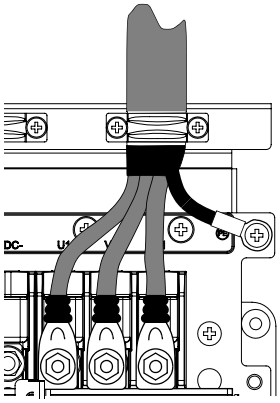


1	DC output cable
2	Cable clamp on bare shield, 1.5 N·m (13 lbf·in)
3	Below cable clamp, cover bare shield with insulating tape
4	Above cable clamp, cover bare shield with insulating tape
5	Cable clamp on bare shield, 1.5 N·m (13 lbf·in)
6	AC input cable (from WFU-xx)
7	Brake resistor cable (if present)

Frames R3i and R4i (connector covers removed)



1	DC output cable
2	Cable clamp on bare shield, 1.5 N·m (13 lbf·in)
3	Below cable clamp, cover bare shield with insulating tape
4	Cable clamp on bare shield, 1.5 N·m (13 lbf·in)
5	AC input cable (from WFU-xx)
6	Brake resistor cable (if present)

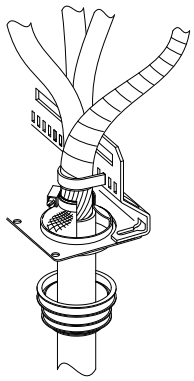
Screw lug detail	Direct lug connection Instead of using the screw lugs included, the conductors of power cables can be connected to the drive terminals by removing the screw lugs and using crimp lugs.
	

Connection procedure (frame R6i and R7i)

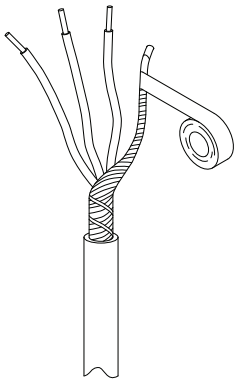
WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Lead the cables into the inside of the cabinet. 360° grounding of the cable shield at the lead-through is recommended to suppress interference.
3. Twist the cable shields to bundles and connect to cabinet PE (ground) busbar. Connect the separate ground conductors/cables to cabinet PE (ground) busbar.
4. Connect the phase conductors to the input terminals of the main switch-disconnector [Q1]. For the tightening torques, see *Cabinet design and construction instructions for ACS880 multidrive modules* (3AUA0000107668 [English]).
5. Connect the output terminals of the main switch-disconnector [Q1] to the main contactor [Q2] input terminals.
6. Connect the contactor [Q2] output terminals to the AC busbars.
7. Push the LCL filter module into the quick connectors.
8. Ground the module.
   - Ground the module from the module front plate at top of the module. The grounding point is marked on the module. Connect the frame support bracket on the module front plate with screws. The frame support bracket should have galvanic connection to the PE busbar through the cabinet frame.

2

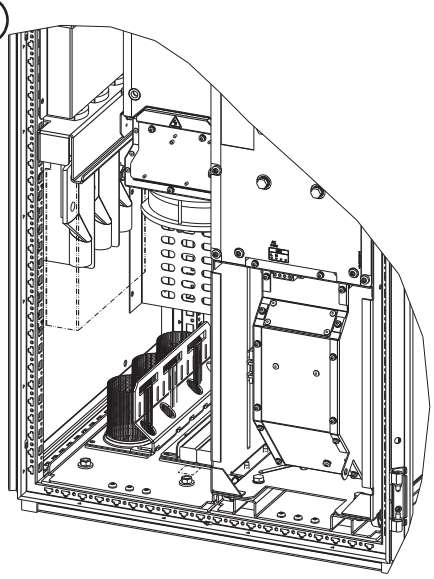


3

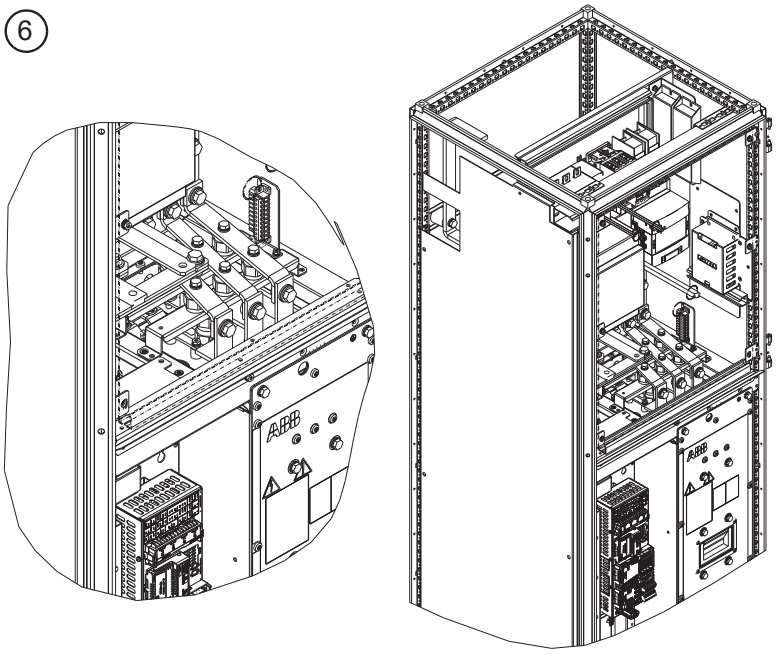


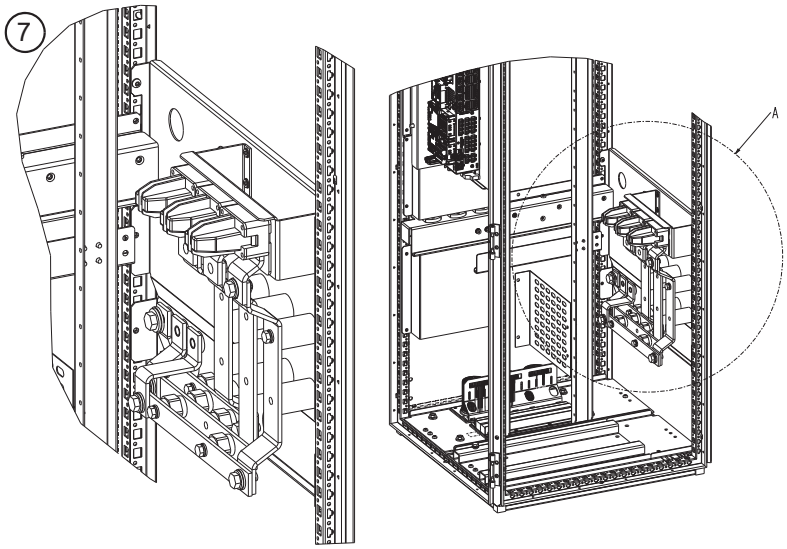
Note that figure 2 is an example of a cable lead-through that has to be acquired by the customer.

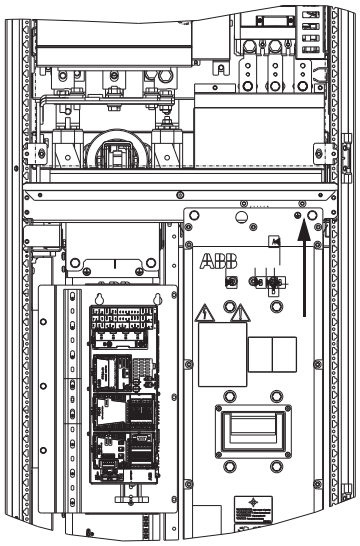
4



6







Connection procedure (frame R8i)

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

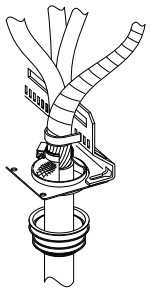
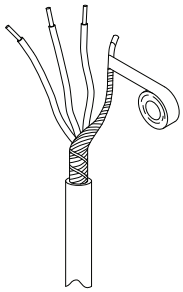
WARNING!
Apply grease to stripped aluminum conductors before attaching them to non-coated aluminum cable lugs. Obey the grease manufacturer's instructions. Aluminum-aluminum contact can cause oxidation in the contact surfaces.

With the R8i modules, the input power cables are connected outside the supply/rectifier unit cabinet, typically inside the incoming cubicle.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Lead the cables into the inside of the cabinet. 360° grounding of the cable shield at the entry is recommended to suppress interference.
3. Twist the cable shields to bundles and connect to the cabinet PE (ground) busbar. Connect the separate ground conductors/cables to the cabinet PE (ground) busbar.
4. Connect the phase conductors to the input terminals of the main switch-disconnector [Q1]. For tightening torques, see *Drive modules cabinet design and construction instructions* (3AUA0000107668 [English]).
5. Connect the output terminals of the main switch-disconnector [Q1] to the main fuses [F1.x].
6. Connect the main fuses [F1.x] to the main contactor [Q2] input terminals.
7. Connect the contactor [Q2] output terminals to the AC busbars of the filter in the supply/rectifier unit cabinet by cabling, busbars or equivalent.
8. Inside the supply/rectifier unit cabinet, push the R8i module into the quick connectors.
   LCL filter module of type BLCL-1x-x: Push the LCL filter module into the quick connectors.
   LCL filter module of type BLCL-2x-x: Remove the fan of the LCL filter module (see the instructions in the maintenance chapter). Push the LCL filter module into its place. Connect the filter output busbars (behind the filter module) to the busbars on the cabinet frame. Reinstall the fan of the LCL filter module.
9. Ground the modules:
   - Ground the modules by the top edge of the front plate. The grounding point is marked on the module. Connect the front plate to the frame support bracket with screws. The frame support bracket should have a galvanic connection to the PE busbar through the cabinet frame.

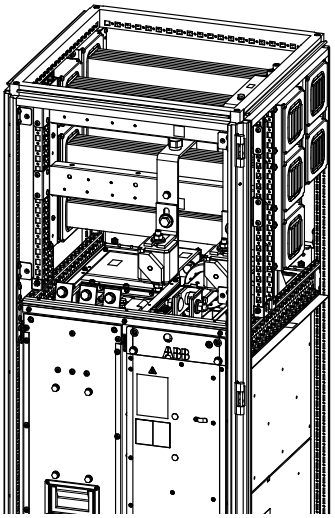
   Note: If the cabinet frame is painted (such as with, Rittal VX25 enclosures), it is important to make sure that good galvanic connection to ground (PE busbar) is achieved. You can, for example, remove the paint from the connection points and use star washers.

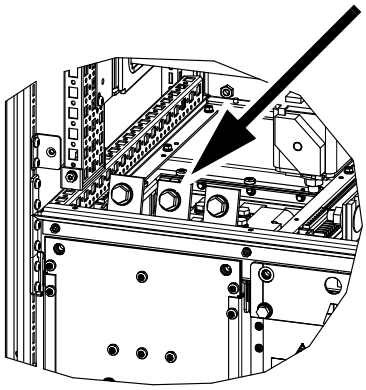
   Note: The connection to ground merely through the mounting screws and the cabinet chassis is not always good enough. To make sure the continuity of the protective bonding circuit, you can connect the modules to the cabinet PE busbar with a copper busbar or cable. The inductance and impedance of the PE conductor must be rated according to permissible touch voltage appearing under fault conditions (so that the fault point voltage will not rise excessively when a ground fault occurs). See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).
10. Connect the DC busbars of the rectifier module into the cabinet common DC busbars.

2 	3 
Note that figure 2 is an example of a cable entry that has to be acquired by the customer.	

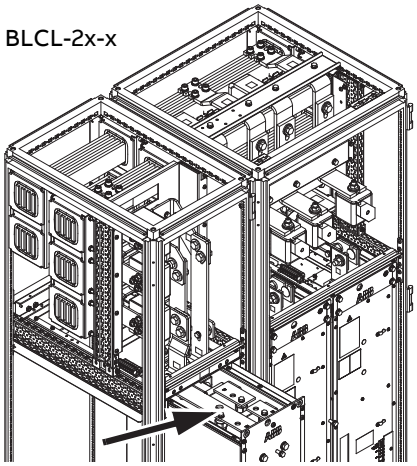
7. AC input of the LCL filter module

BLCL-1x-x



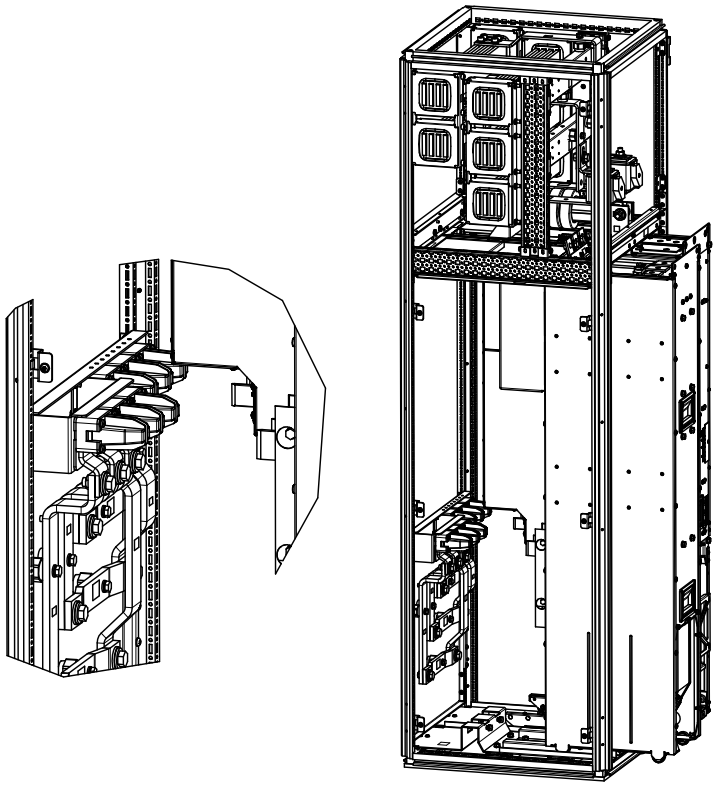


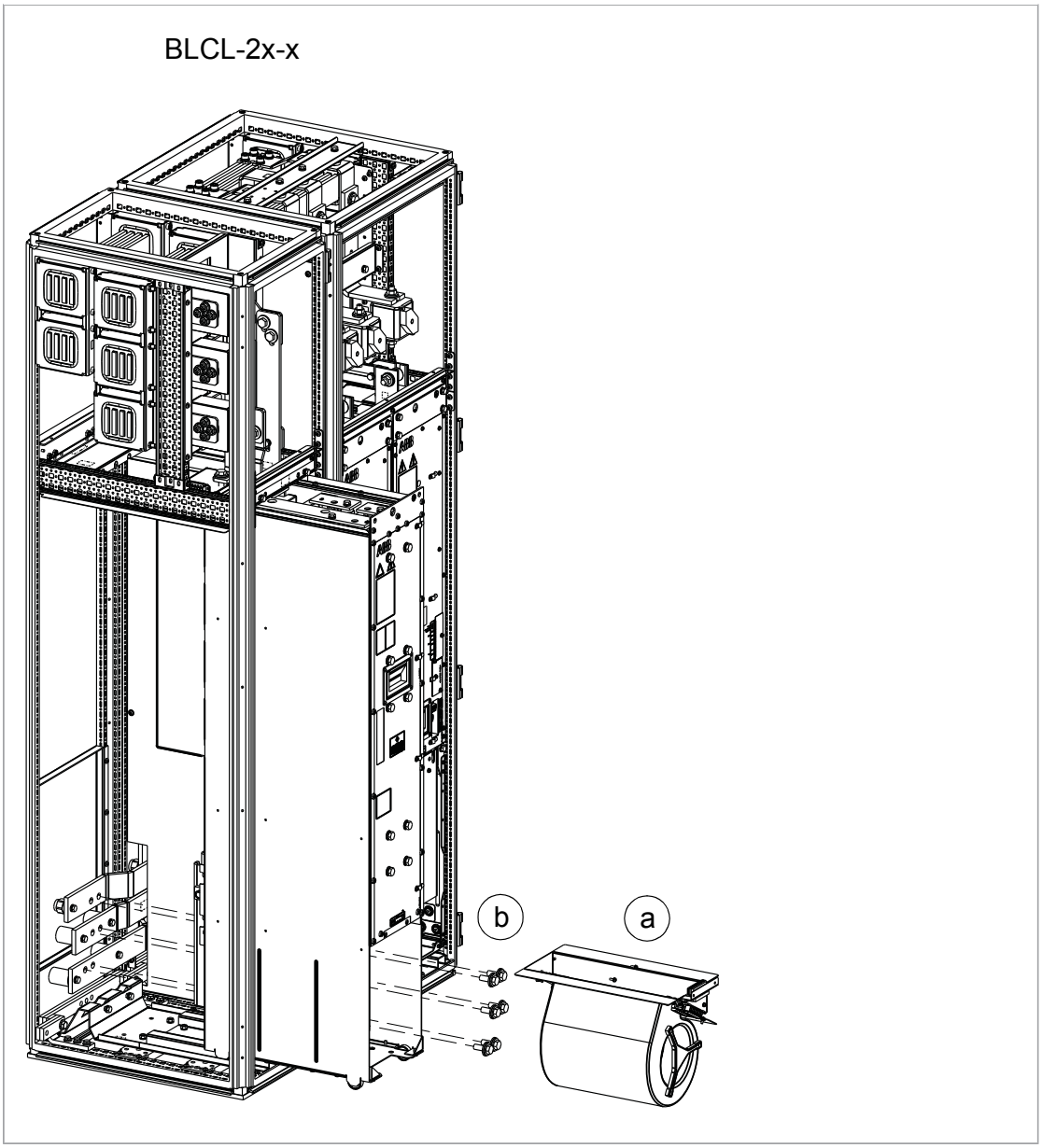
BLCL-2x-x



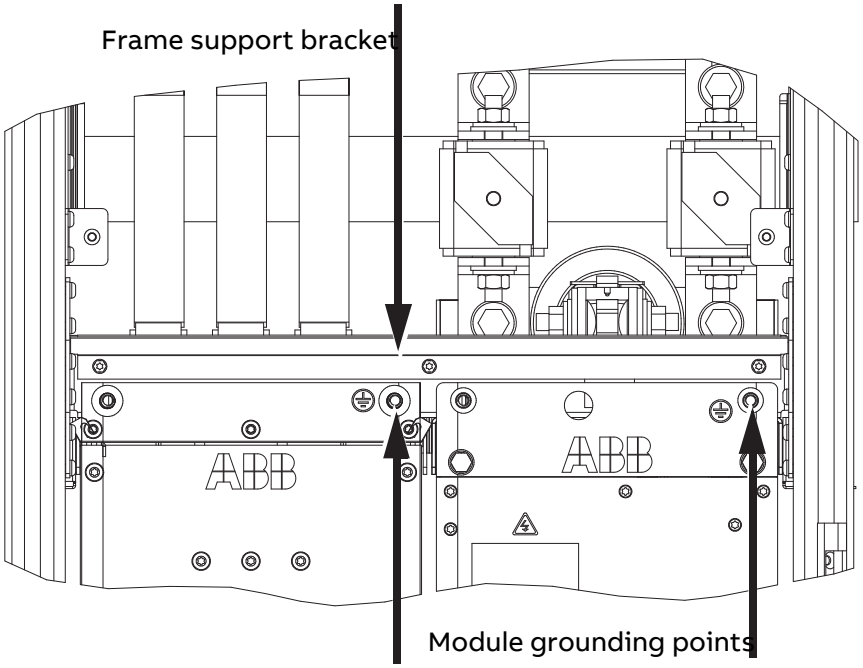
8. AC output of the LCL filter module

BLCL-1x-x




BLCL-2x-x
b
a

9.



Connecting the LCL filter

By default, the LCL filter is protected against overheating (caused by a faulty fan, for example) with a thermistor. If the filter temperature becomes too high, the IGBT supply module is automatically stopped. The thermistor must always be connected to digital input XDI1 on the control unit.

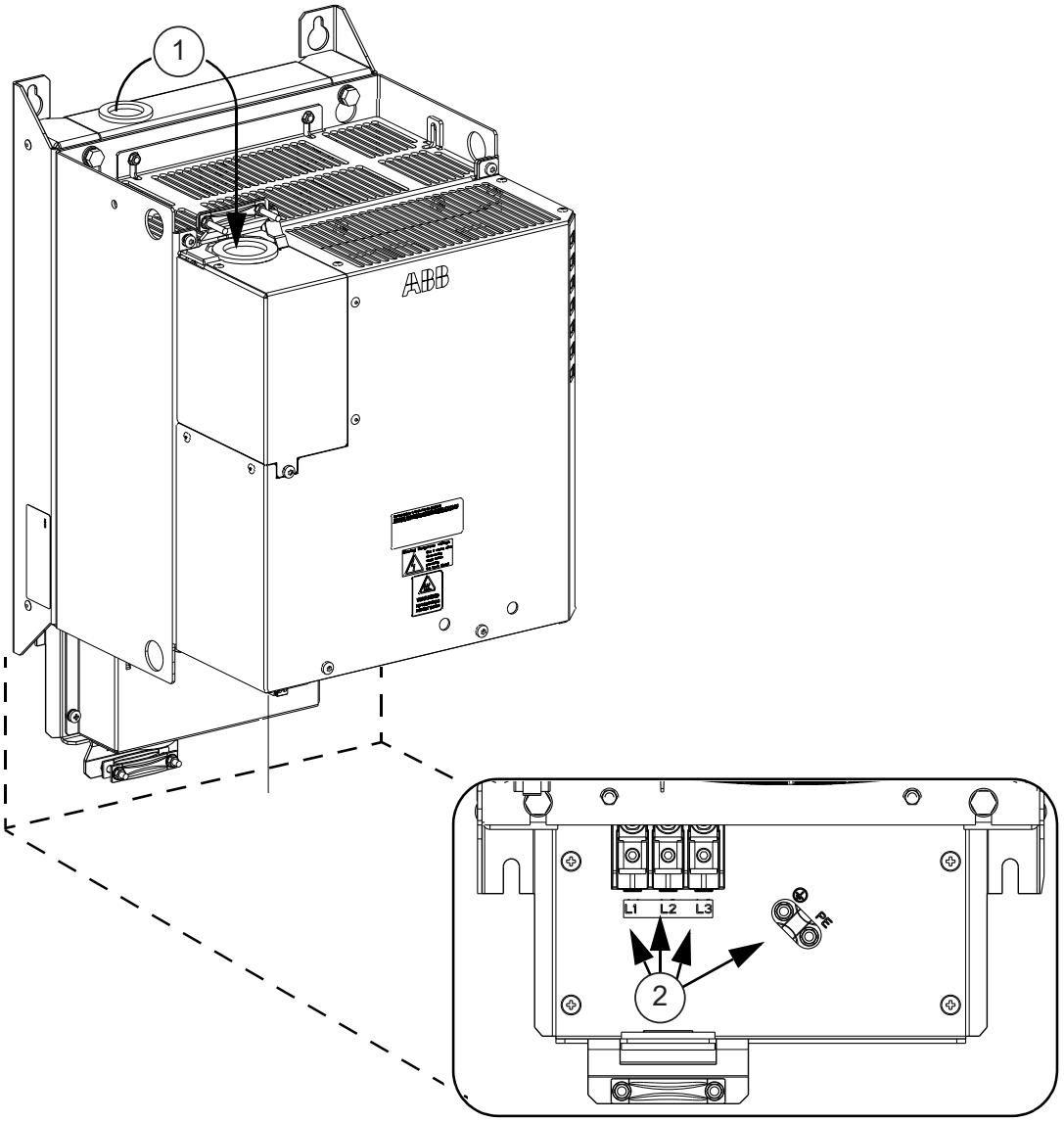
WARNING!
If the overheating protection is removed with parameter settings, the filter may be damaged permanently or cause a fire.

Frames R1i…R4i only: The 24 V DC power supply needed for the cooling fan is not included in the delivery. For selecting a supply, see the auxiliary circuit current consumption in the technical data.

WARNING!
Use the LCL filter only with an ACS880-204 IGBT supply module. Use the filter only with an IGBT supply module of an appropriate frame size.

WARNING!
Do not lengthen the output cables.

Connecting the WBCA adapter to the LCL filter (frames R1i…R4i)



1.	Connect the cable (included) of the WBCA adapter to the L1/L2/L3 input terminals of the WFU-xx LCL filter module.
2.	Connect the power input to the L1/L2/L3/PE terminals of the WBCA adapter.

Tightening torques:

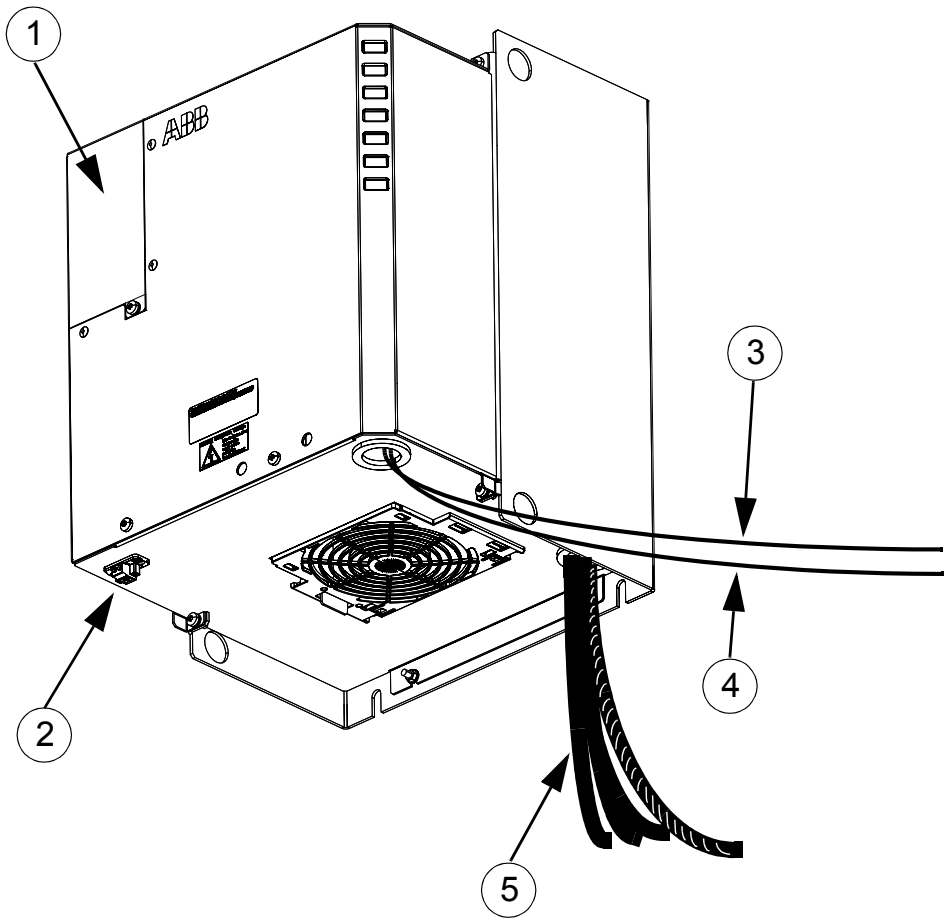
WFU-01: 1.7 … 1.8 N·m (15…16 lbf·in)

WFU-11, -21, -22: 15 N·m (11 lbf·ft)

WBCA-01: 1.7 … 1.8 N·m (15…16 lbf·in)

WBCA-11, -21: 15 N·m (11 lbf·ft)

Connecting WFU-xx LCL filter module (frames R1i...R4i)

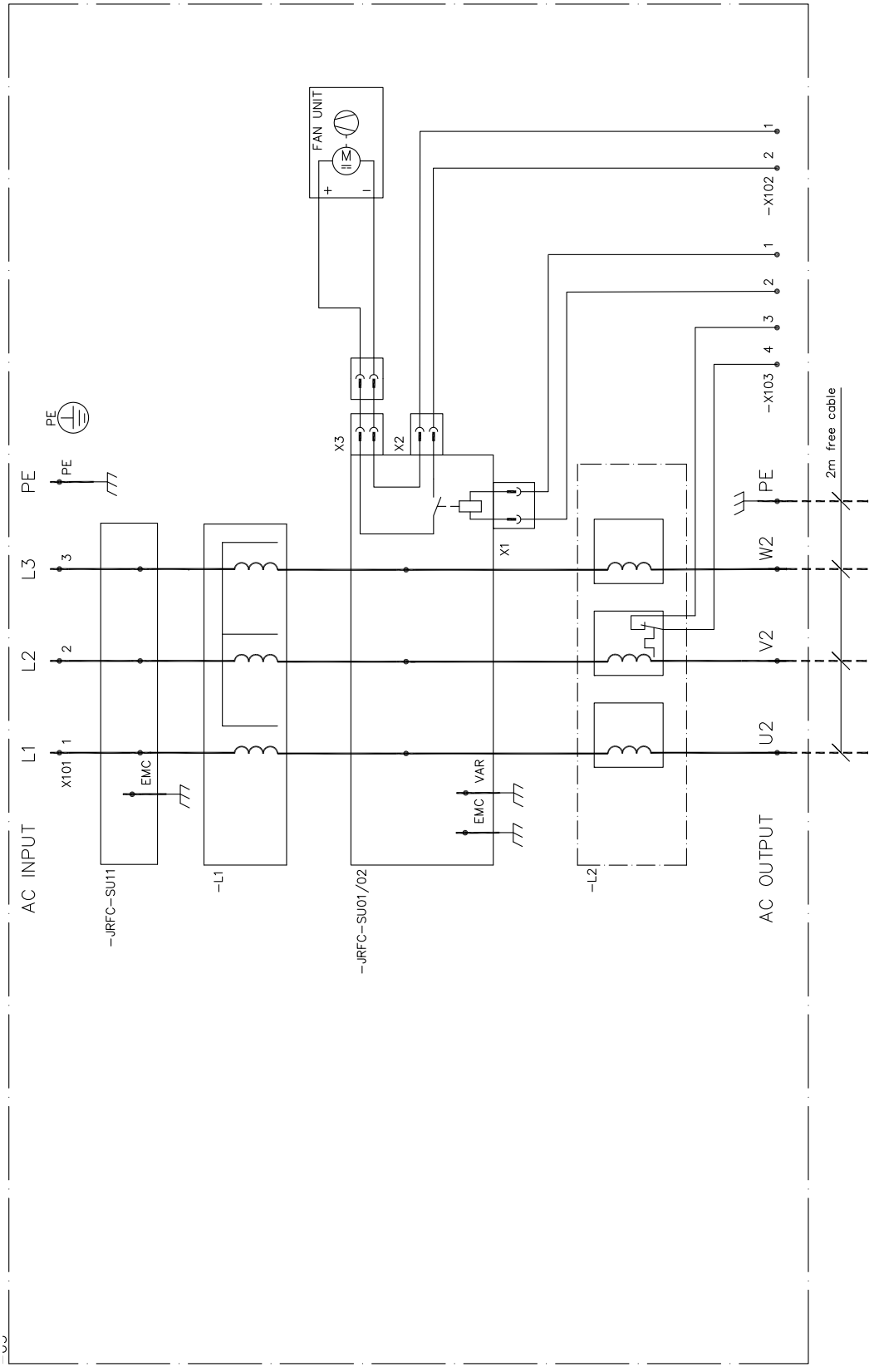


1	**Input terminals (L1, L2, L3 and PE)** Connection from the WBCA adapter and the main contactor Q2.
2	**Cooling fan power supply connection** No fan supply is included in the delivery. Use a supply that meets the requirements given in the technical data.
3	**Fan control cable** (24 V = on / 0 V = off) Length: 1 m (3.3 ft) Connect to XRO3 on the ZCU control unit.
4	**Filter temperature sensor cable** Length: 1 m (3.3 ft) Connect to the thermistor input XDI1 on the ZCU control unit.
5	**Connection to the IGBT supply module** Length: 1 m (3.3 ft) Connect to the AC input terminals (U2, V2, W2 and PE) of the IGBT supply module.

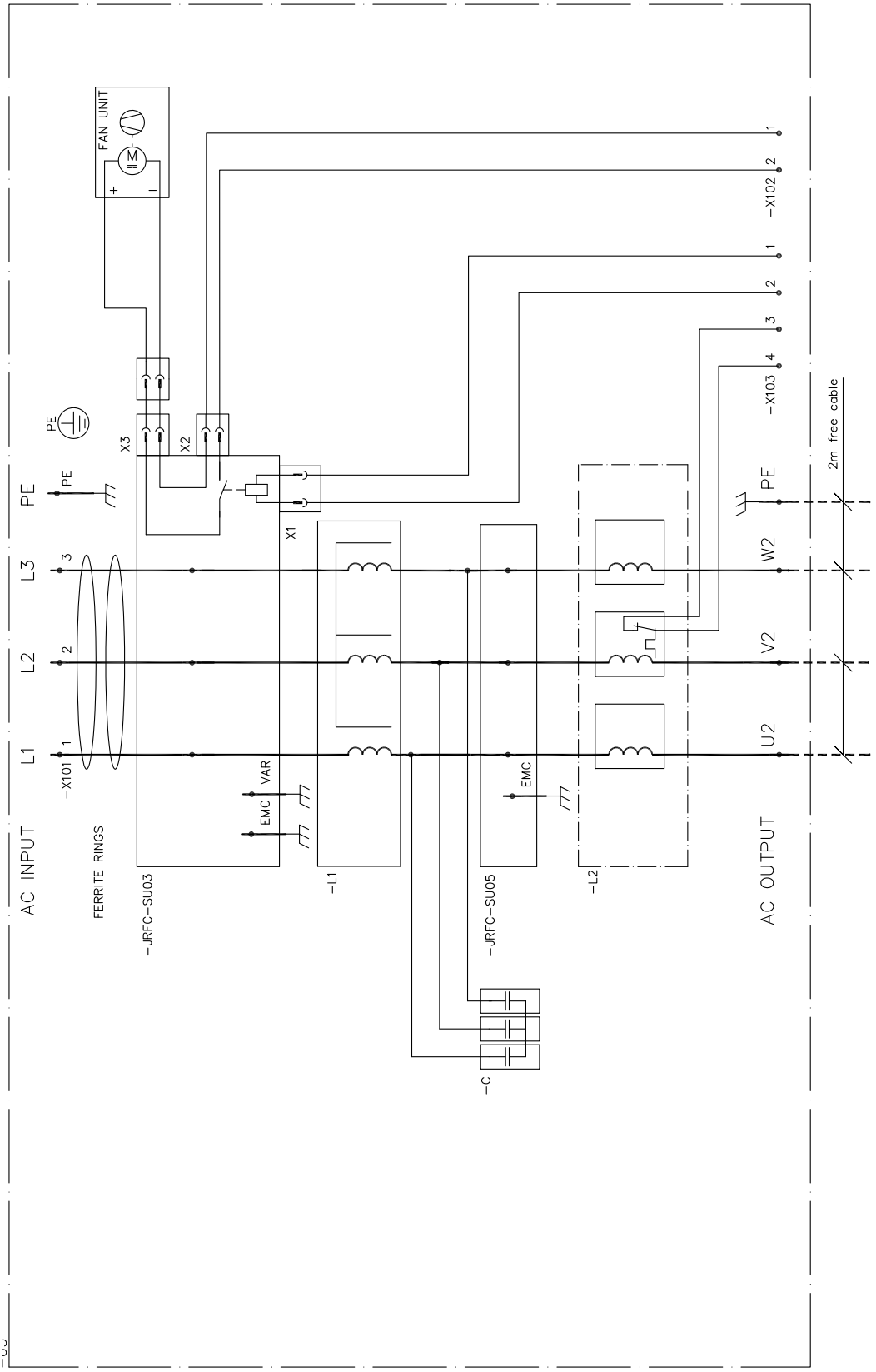
Internal circuit diagrams for LCL filters

The following circuit diagrams show the internal connections of the LCL filter modules.

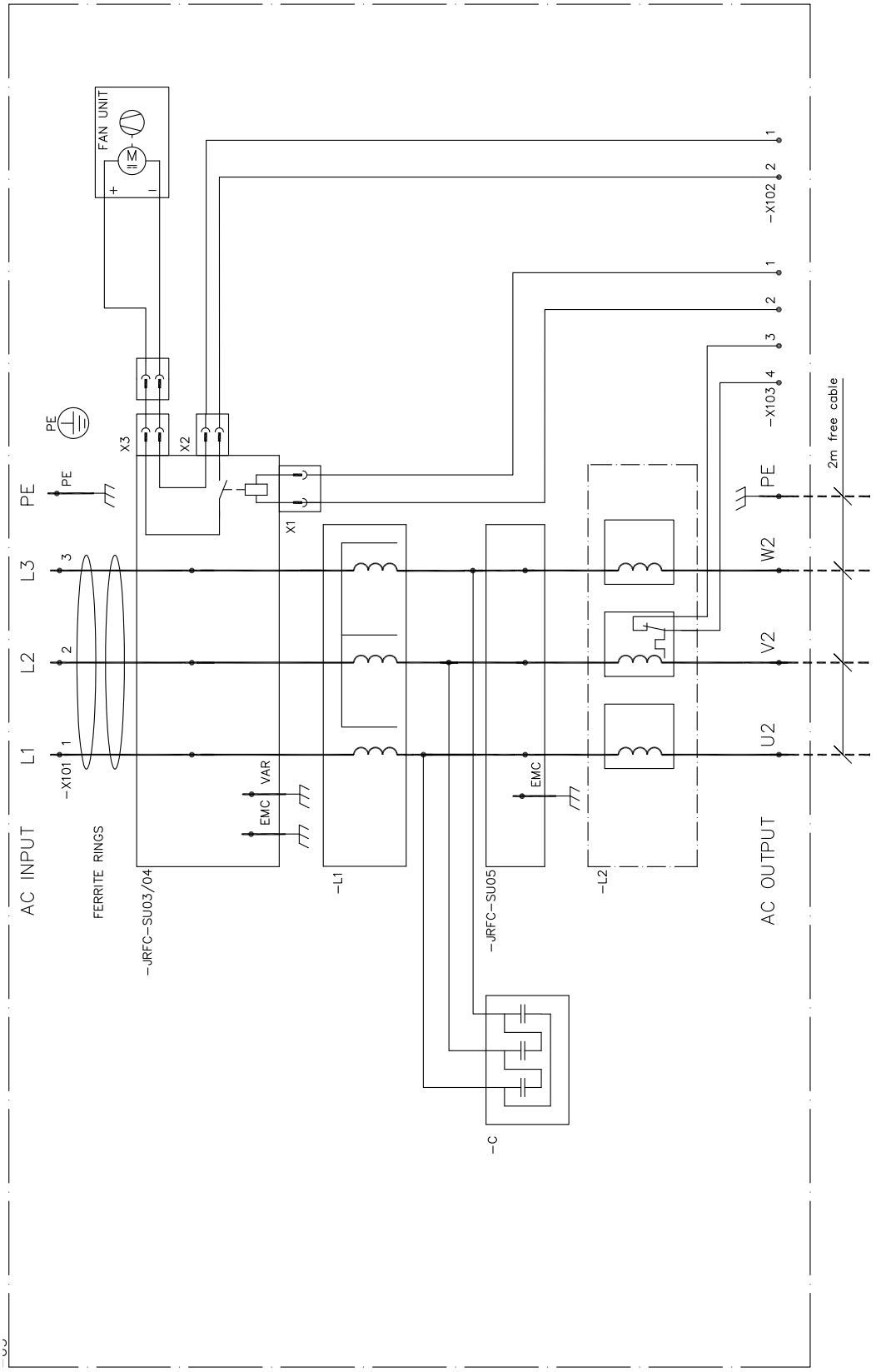
WFU-01 and WFU-02



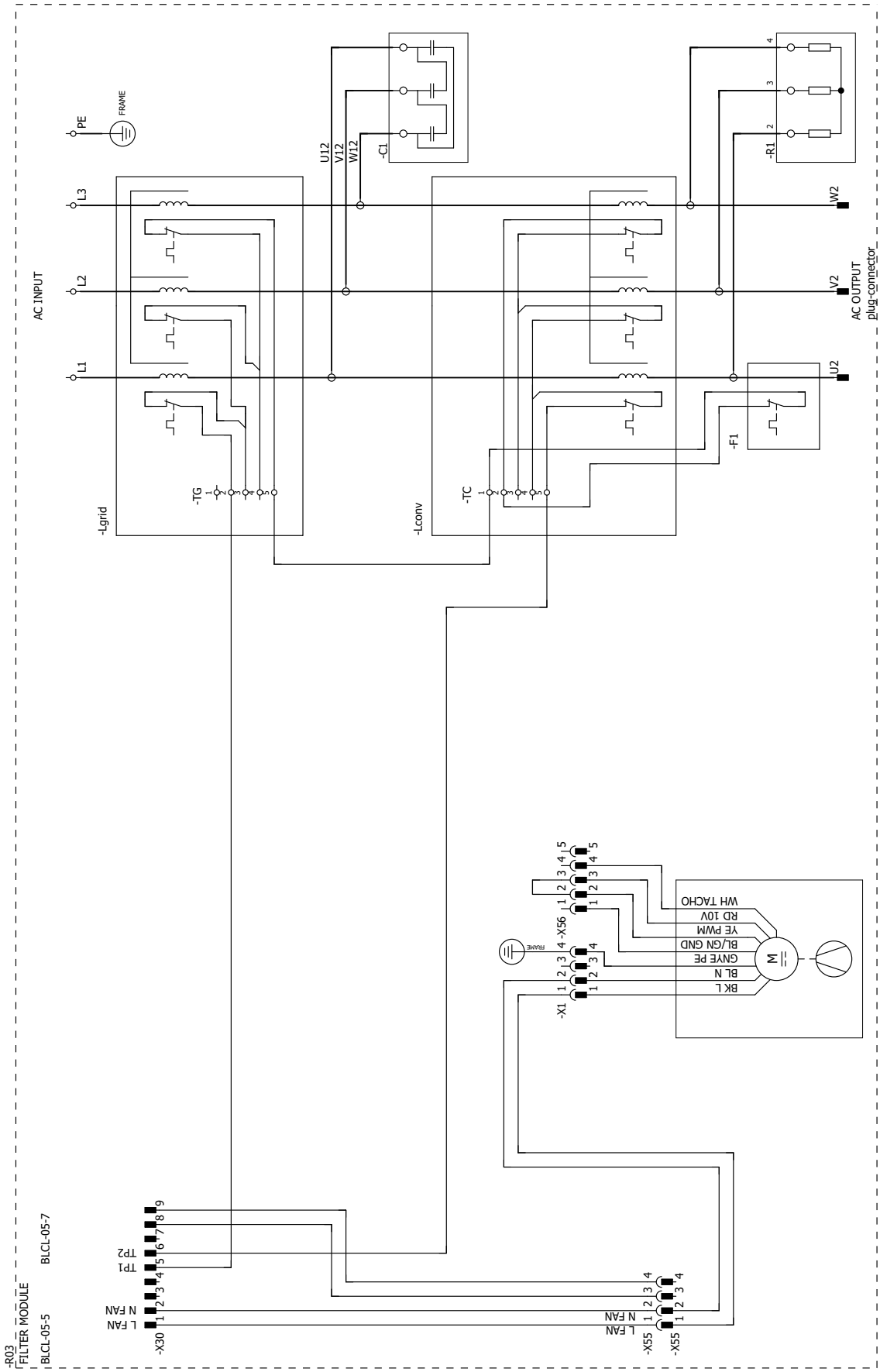
WFU-11


FAN UNIT
M
+
-
-X102
1
2
-X103
1
2
3
4
2m free cable
PE
PE
X3
X2
X1
PE
L3
L2
L1
3
2
1
-X101
W2
V2
U2
VAR
EMC
EMC
AC INPUT
FERRITE RINGS
-JRFC-SU03
-L1
-JRFC-SU05
-L2
-C
AC OUTPUT

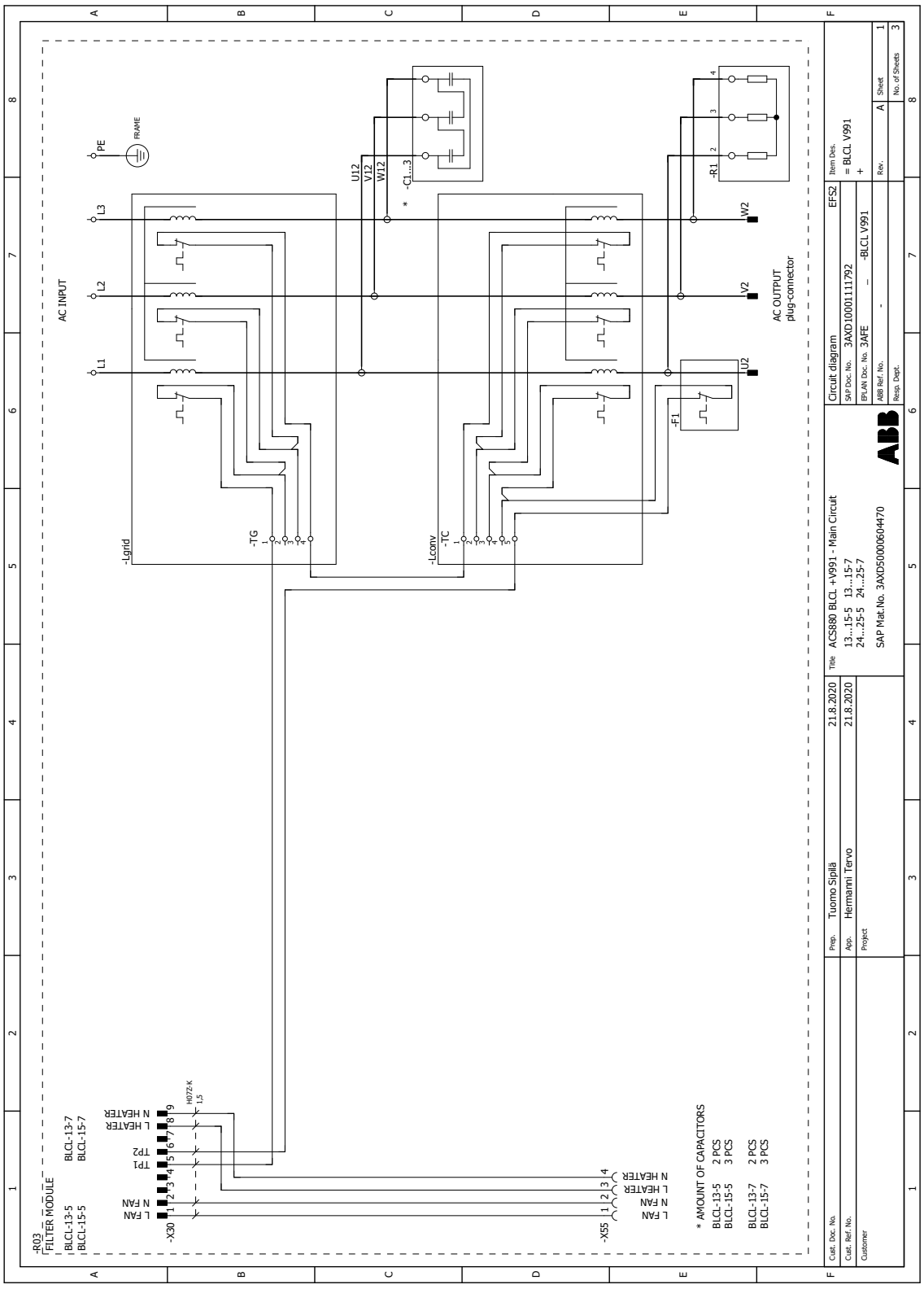
WFU-21 and WFU-22



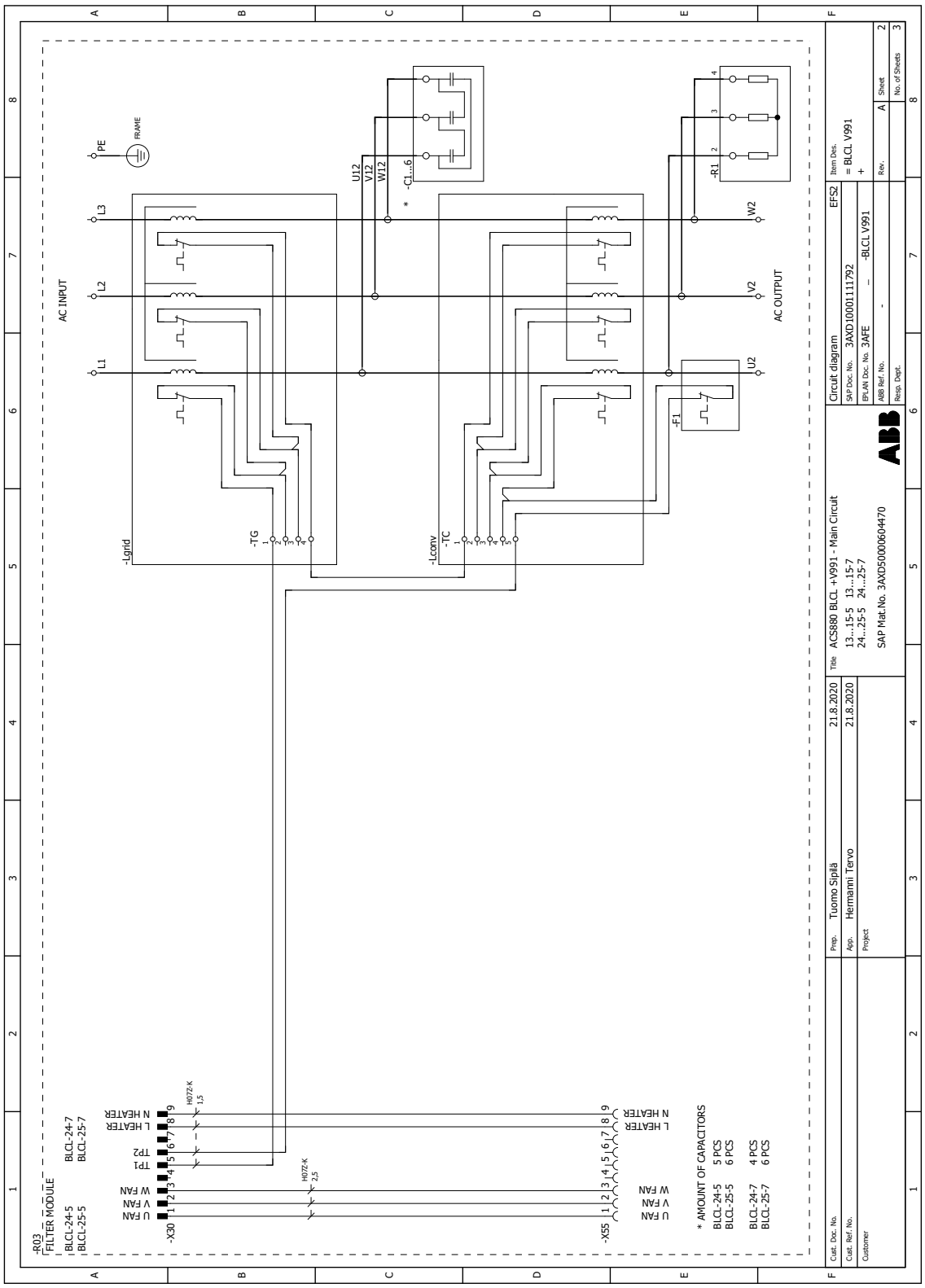
BLCL-0x-x


-R03
FILTER MODULE
BLCL-05-5
BLCL-05-7
-X30
L FAN
N FAN
TP1
TP2
-X55
-X56
-X1
BK L
BL N
GNYE PE
BL/GN GND
YE PWM
RD 10V
WH TACHO
M
FRAME
-Lgrid
-Lconv
-TG
-TC
-F1
-C1
-R1
U12
V12
W12
AC INPUT
L1
L2
L3
PE
FRAME
AC OUTPUT
plug-connector
U2
V2
W2

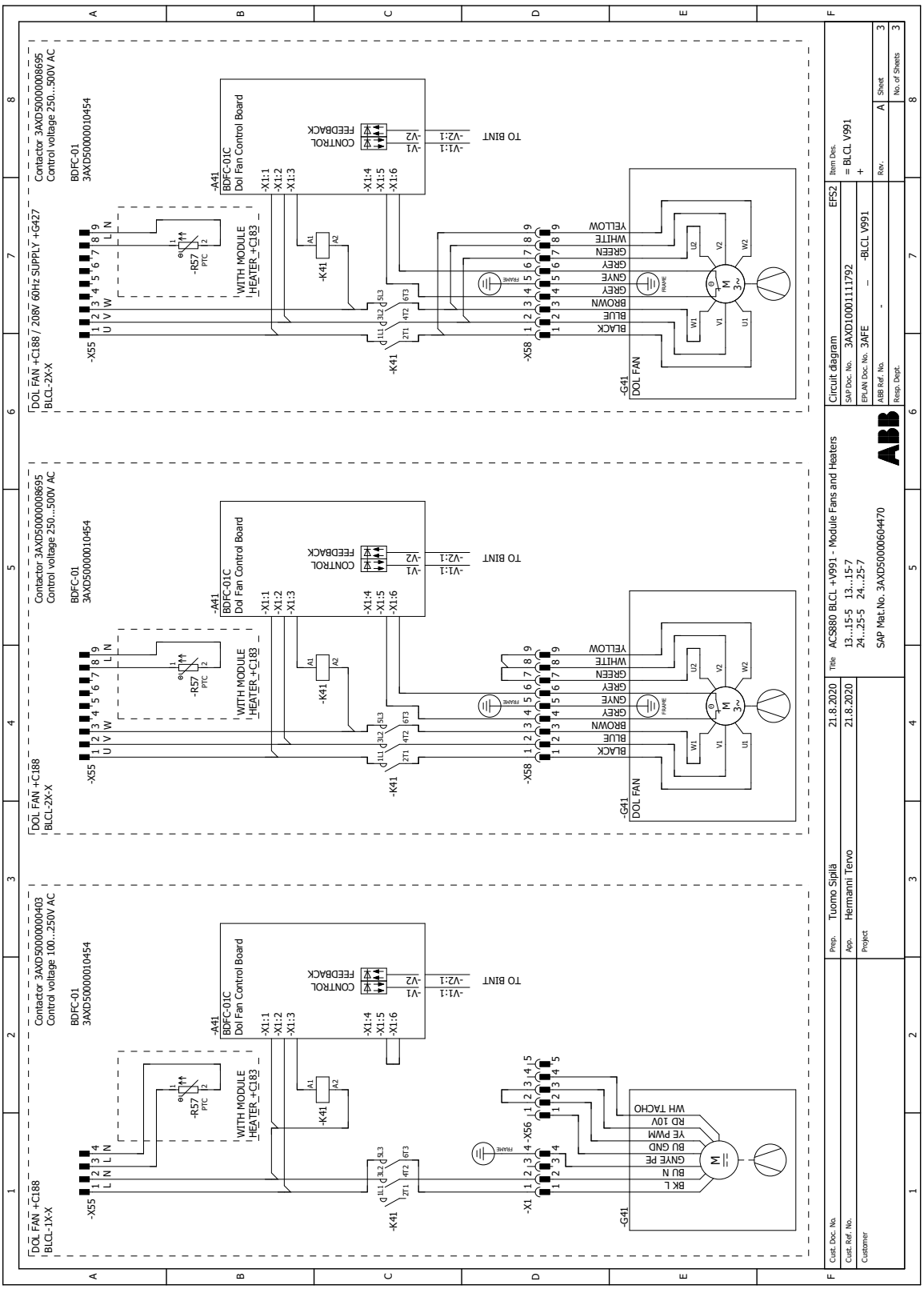
BLCL-1x-x


AC INPUT
AC OUTPUT
plug-connector
-Lgrid
-Lconv
-TG
-TC
-Cl...3
-R1
-F1
-X30
-X55
PE
FRAME
L1
L2
L3
U2
V2
W2
U12
V12
W12
L FAN
N FAN
TP1
TP2
L HEATER
N HEATER
H07Z-K 1,5
* AMOUNT OF CAPACITORS
BLCL-13-5 2 PCS
BLCL-15-5 3 PCS
BLCL-13-7 2 PCS
BLCL-15-7 3 PCS
-R03
FILTER MODULE
BLCL-13-5
BLCL-15-5
BLCL-13-7
BLCL-15-7
Circuit diagram
EFS2
SAP Doc. No. 3AXD10001111792
EPLAN Doc. No. 3AFE – -BLCL V991
ABB Ref. No. - Rev. A
Resp. Dept.
Item Des.
= BLCL V991
+
Sheet 1
No. of Sheets 3
Prep. Tuomo Sipilä 21.8.2020
Appr. Hermanni Tervo 21.8.2020
Project
Title ACS880 BLCL +V991 - Main Circuit
13...15-5 13...15-7
24...25-5 24...25-7
SAP Mat.No. 3AXD50000604470
Cust. Doc. No.
Cust. Ref. No.
Customer

BLCL-2x-x


AC INPUT
AC OUTPUT
PE
FRAME
L1
L2
L3
U2
V2
W2
U12
V12
W12
-C1...6
-R1
-F1
-Lgrid
-Lconv
-TG
-TC
-R03
FILTER MODULE
BLCL-24-5
BLCL-25-5
BLCL-24-7
BLCL-25-7
-X30
-X55
U FAN
V FAN
W FAN
TP1
TP2
L HEATER
N HEATER
H07Z-K 1,5
H07Z-K 2,5
* AMOUNT OF CAPACITORS
BLCL-24-5 5 PCS
BLCL-25-5 6 PCS
BLCL-24-7 4 PCS
BLCL-25-7 6 PCS
Circuit diagram
EFS2
3AXD10001111792
3AFE – -BLCL V991
ACS880 BLCL +V991 - Main Circuit
13...15-5 13...15-7
24...25-5 24...25-7
SAP Mat.No. 3AXD50000604470
Prep. Tuomo Sipilä 21.8.2020
Appr. Hermanni Tervo 21.8.2020
Project
Customer
Cust. Doc. No.
Cust. Ref. No.

BLCL with DOL Fan



Main contactor

A main contactor is needed for the following reasons:

- If the filter module is connected to the AC input power supply while the supply/regenerative rectifier module is not modulating/active, there is a risk that the filter responds to disturbance frequencies in a distorted AC input and starts resonating, which may cause permanent damage to the supply/rectifier module, filter and equipment connected to the DC bus. If the supply/rectifier module is stopped, faulty or otherwise inactive, it cannot counteract the resonance of the filter.
- The supply/rectifier module and the filter module cannot prevent power flow from the AC input to the DC bus and further to the ACS880-104 inverter module(s). Even if the modulation of the supply/rectifier module is stopped, the anti-parallel diodes in it enable power flow to the DC bus and to the inverter(s). In other words, merely stopping the supply/rectifier module does not stop the system.
- The supply/rectifier module is not protected against excessive current drawn from the DC bus. If the motoring power (power demanded from the DC bus) exceeds the supplying capability of the supply/rectifier module, it trips. If the current demand remains or increases, the supply/rectifier module is damaged.

See also *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).

Checking the charging capacity (frames R1i...R4i)

IGBT supply modules of frames R1i…R4i have internal charging circuit. When the power is switched on in the common DC system, the DC link capacitors in each inverter and supply module are charged. The charging current is fed through the supply module(s) connected to the AC. Due to this, the charging capacity of the supply module(s) has to be checked.

The ACS880 inverter and supply modules of frame sizes R1i…R4i have a charging circuit in series with the capacitor bank.

- In common DC connection, the charging circuits act in parallel.
- The sum of the charging currents is fed from the supply.

Note: IGBT supply modules of frames R1i…R4i are allowed to be used only with inverter modules that have charging circuit (eg, ABB inverter modules ACS880-104).

The charging circuit data for each IGBT supply module (ACS880-204) and inverter module (ACS880-104) are shown in the following tables.

ACS880-204-		Frame	*R*	R_{min}
			ohm	ohm
008A0-3	006A6-5	R1i	50	25
0018A-3	0015A-5	R2i	130	20
0035A-3	0029A-5	R3i	66	15
0050A-3	0041A-5	R3i	66	10
0093A-3	0077A-5	R4i	33	5

ACS880-104-	Frame	*R*
		ohm
004A8-3, 006A0-3, 008A0-3, 003A6-5, 004A8-5, 006A0-5, 008A0-5	R1i	50
0011A-3, 0014A-3, 0018A-3, 0011A-5, 0014A-5, 0018A-5	R2i	130
0025A-3, 0035A-3, 0044A-3, 0050A-3, 0025A-5, 0030A-5, 0035A-5, 0050A-5	R3i	66
0061A-3, 0078A-3, 0094A-3, 0100A-3, 0061A-5, 0078A-5, 0094A-5	R4i	33

R	Charging resistance of the supply or inverter module.
R_{min}	The minimum value of the total effective charging resistance allowed for the supply or inverter module.

The user must activate and tune the charging function in the control program. For information on tuning the parameters, see *ACS880 IGBT supply control program firmware manual* (3AUA0000131562 [English]).

Single AC input

Calculate the total effective charging resistance R_{tot} from the inverter/supply modules connected to the DC link.

$$R_{tot} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \ldots + \frac{1}{R_n}}$$

$R_1 \ldots R_n$ are the charging resistance values of each module. The following condition must be fulfilled: $R_{tot} > R_{min}$

Installing the charging circuit (frames R6i...R8i)

The cabinet builder must install and connect the charging circuit. For connections, see the example circuit diagrams. Consult ABB for more information on the components and wirings needed.

Activate and tune the charging function in the control program. For information on tuning the parameters, see the firmware manual.

Connecting the external power supply cable for the auxiliary circuit

IGBT supply module (frames R1i...R4i)

The cabinet builder must arrange an auxiliary voltage of 24 V DC to power up the ZCU control unit. For more information, see chapter The control unit.

IGBT supply module (frames R6i...R8i) and LCL filter module (frames R6i...R8i)

Connectors are described in chapter Operation principle and hardware description.

Connecting the control cables

Default I/O connection diagrams

See chapter The control unit.

Connection procedure

Note: The instructions below are based on an example cabinet construction. They are not applicable to all possible solutions but only clarify the principles.

Note: The I/O of the supply/rectifier unit is mostly reserved for the internal use.

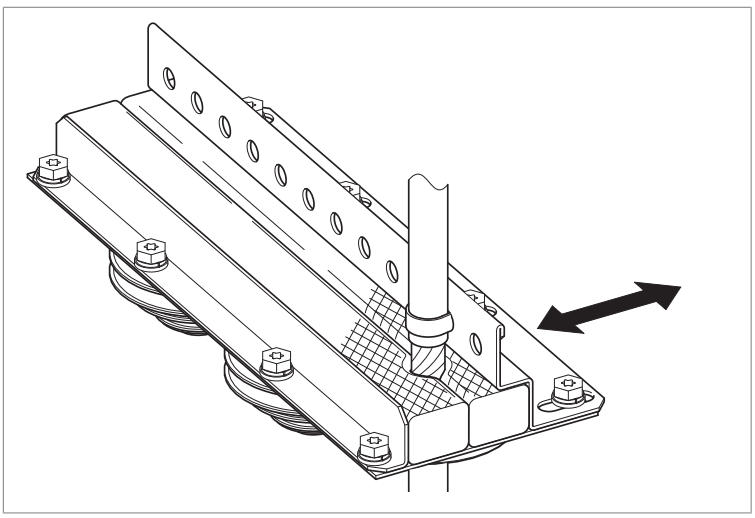
The following procedure instructs how to connect the control cables. In the example, the power cables are routed to the cabinet through the bottom. Note that the figures in the procedure are examples.

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.
3. Remove the shrouds (if any) from the cubicle.
4. Run the cables into the inside of the cabinet through a cable gland or grommet.
   - 360° grounding of the cable shield is recommended to suppress interference. In case a grounding cable gland is available, remove the outer jacket of the cable where it passes through the cable gland.
   - Seal the cable with a grommet.

   Note: The figure is an example of a control cable lead-through that has to be acquired by the customer.



5. Run the cables to the appropriate terminals. Wherever possible:
   - Use the existing cable trunking in the cabinet.
   - Use sleeving wherever the cables are laid against sharp edges.
   - Tie the cables to provide strain relief.
6. Cut the cables to suitable length. Strip the cables and conductors.
7. Twist the cable shields into bundles and connect them to the ground terminal nearest to the terminal block. Keep the unshielded portion of the cables as short as possible.
8. Connect the conductors to appropriate terminals.
9. Fasten the shrouds (if any).
10. Close the doors.

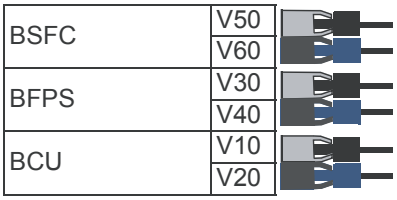
Module fiber optic connectors (frame R6i and R7i)

The following figure shows the R6i and R7i module fiber optic connections.

	Description
	Control unit connection. Must be done by the user.

Module fiber optic connectors (frame R8i)

The following figure shows the R8i module fiber optic connections.

	**Name**	**Description**
	BSFC	Control connection for the direct-on-line cooling fan of the LCL filter. Must be done by the user.
	BFPS	Control connection of the speed-controlled cooling fan Connected at the factory.
	BCU	Control unit connection. Must be done by the user.

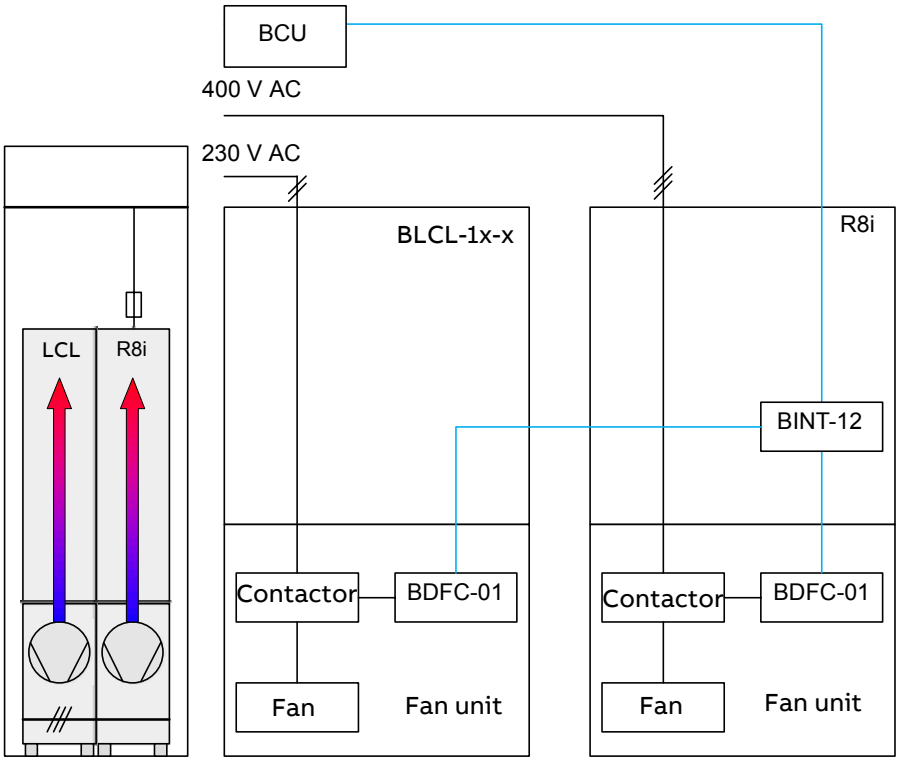
The following figure shows the filter module fiber optic connections.

BLCL-1x-x		
Fan control signal	V2	
Fan control signal feedback	V1	

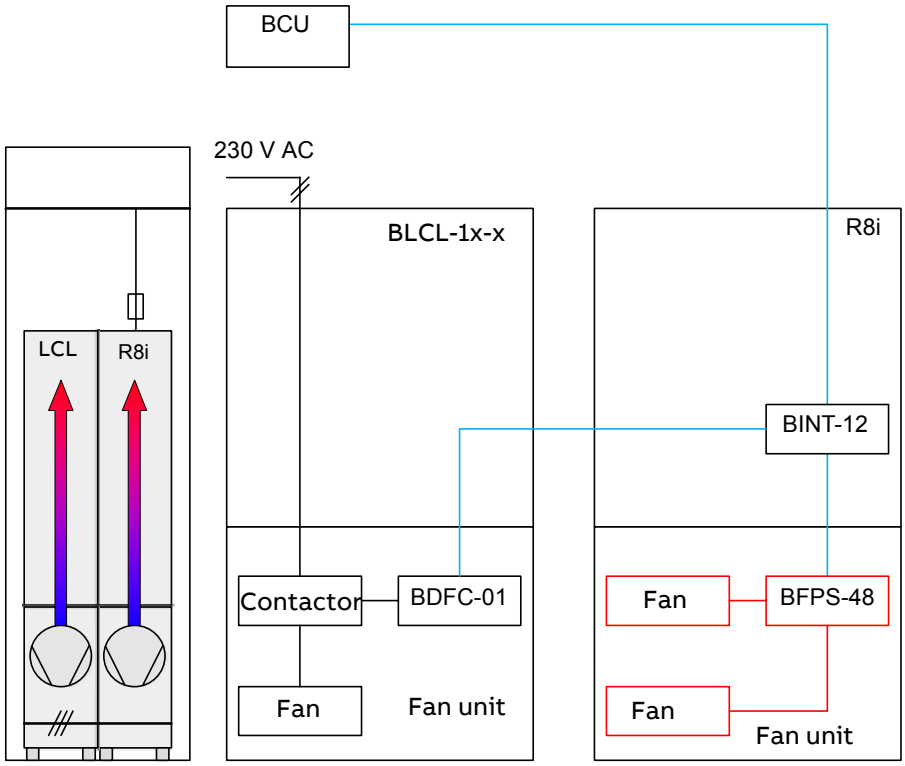
BLCL-2x-x		
Fan control signal	V2	
Fan control signal feedback	V1	

The following figures show example fiber optic connections related to fan control.

Direct-on-line cooling fan (option +C188) in IGBT supply module and LCL filter module



Direct-on-line cooling fan (option +C188) in LCL filter module and speed-controlled fan (standard) in IGBT supply module



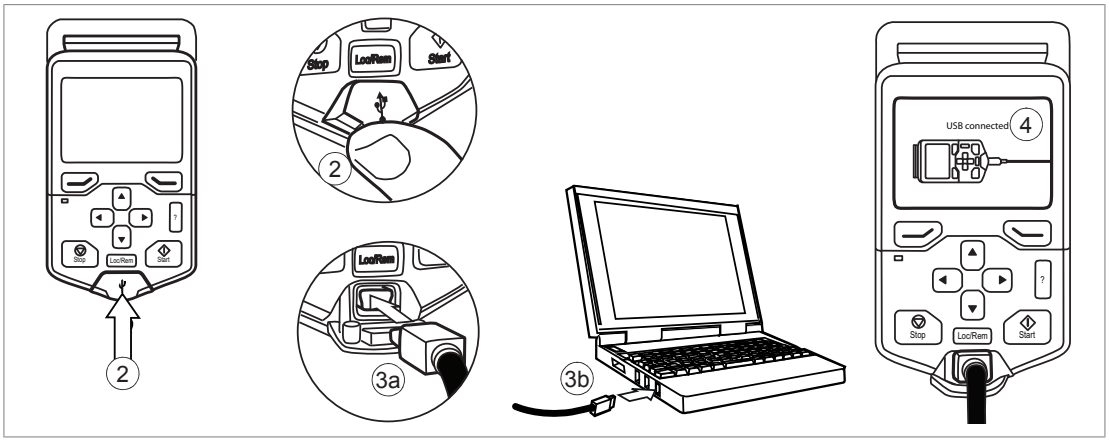
Note: Connection between BINT board and BDFC board in the module is ready-made at the factory.

Connecting a PC

WARNING!
Do not connect the PC directly to the control panel connector of the control unit as this can cause damage.

A PC (with, for example, the Drive composer PC tool) can be connected as follows:

1. To connect a control panel to the unit, either
   - insert the control panel into the panel holder or platform, or
   - use an Ethernet (eg, Cat 5e) networking cable.
2. Remove the USB connector cover on the front of the control panel.
3. Connect an USB cable (Type A to Type Mini-B) between the USB connector on the control panel (3a) and a free USB port on the PC (3b).
4. The panel will display an indication whenever the connection is active.
5. See the documentation of the PC tool for setup instructions.



Installing option modules

WARNING!
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur.

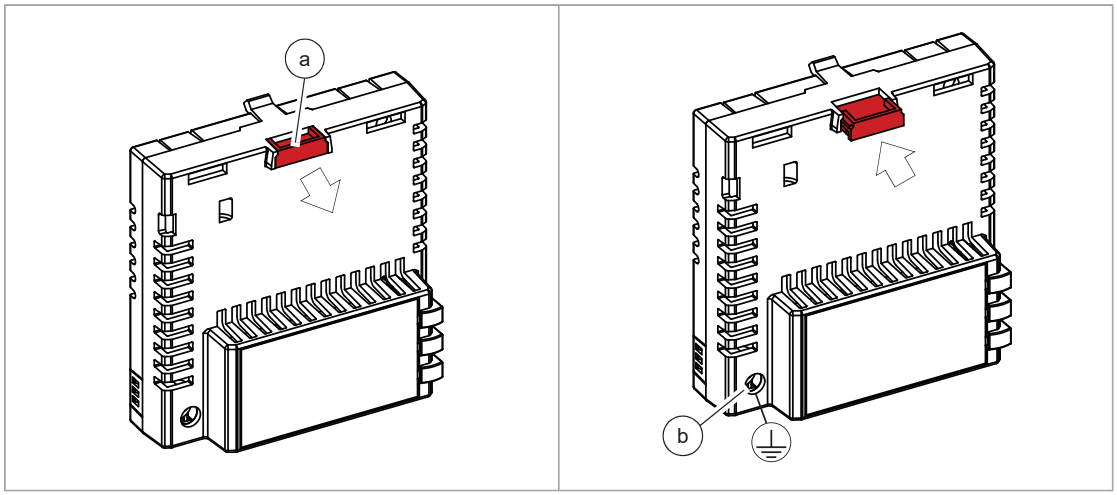
Pay attention to the free space required by the cabling or terminals coming to the option modules.

1. Repeat the steps described in Electrical safety precautions (page 121).
2. Pull out the lock (a) with a screw driver.

   Note: The location of the lock depends on the module type.
3. Install the module to a free option module slot on the control unit.
4. Push in the lock (a).
5. Tighten the grounding screw (b) to a torque of 0.8 N·m (7 lbf·in).

   Note: The screw tightens the connections and grounds the module. It is essential for fulfilling the EMC requirements and for proper operation of the module.

   WARNING!
   Do not use excessive force, or leave the screw too loose. Over-tightening can damage the screw or module. A loose screw can cause an operation failure.



6. Connect the wiring to the module. Obey the instructions given in the documentation of the module.

If you need to remove the adapter module after it has been installed into the drive, use a suitable tool (e.g. small pliers) to carefully pull out the lock.

8

Installation checklist

Contents of this chapter

This chapter contains a checklist for the mechanical and electrical installation of the drive.

Checklist

Examine the mechanical and electrical installation of the drive before start-up. Go through the checklist together with another person.

WARNING!
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

WARNING!
Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.

Make sure that ...	☑
The ambient operating conditions meet the drive ambient conditions specification and enclosure rating (IP code).	☐
The supply voltage matches the nominal input voltage of the drive. See the type designation label.	☐
The insulation resistance of the input power cable, motor cable and motor is measured according to local regulations and the manuals of the drive.	☐
The drive cabinet is attached to the floor, and if necessary due to vibration etc, also by its top to the wall or roof.	☐

Make sure that ...	☑
The drive module is fastened properly to the enclosure.	☐
The cooling air can flow freely in and out of the drive. Air recirculation inside the cabinet is not possible (air baffle plates are installed, or there is another air guiding solution).	☐
If the drive is connected to a network other than a symmetrically grounded TN-S system: You have done all the required modifications (for example, you may need to disconnect the EMC filter or ground-to-phase varistor). See the electrical installation instructions in the supply unit manual.	☐
The enclosures of the equipment in the cabinet have proper galvanic connection to the cabinet protective earth (ground) busbar; The connection surfaces at the fastening points are bare (un-painted) and the connections are tight, or separate grounding conductors have been installed.	☐
The main circuit connections inside the drive cabinet correspond to the circuit diagrams.	☐
The control unit has been connected. See the circuit diagrams.	☐
Appropriate AC fuses and main disconnecting device are installed.	☐
There is an adequately sized protective earth (ground) conductor(s) between the drive and the switchboard, the conductor is connected to correct terminal, and the terminal is tightened to the correct torque. Grounding has also been measured according to the regulations.	☐
If the drive is equipped with a DC/DC converter unit: There is an adequately sized protective earth (ground) conductor between the energy storage and the DC/DC converter, the conductor has been connected to appropriate terminal, and the terminal has been tightened to the proper torque. Proper grounding has also been measured according to the regulations.	☐
If the drive is equipped with a DC/DC converter unit: The energy storage cable has been connected to the correct terminals of the DC/DC converter and energy storage, and the terminals have been tightened to the proper torque.	☐
If the drive is equipped with a DC/DC converter unit: The energy storage has been equipped with fuses for protecting energy storage cable in a cable short-circuit situation.	☐
If the drive is equipped with a DC/DC converter unit: The energy storage has been equipped with a disconnecting device.	☐
The input power cable is connected to the correct terminals, the phase order is correct, and the terminals are tightened to the correct torque.	☐
There is an adequately sized protective earth (ground) conductor between the motor and the drive. The conductor is connected to the correct terminal, and the terminal is tightened to the correct torque. Grounding has also been measured according to the regulations.	☐
The motor cable is connected to the correct terminals, the phase order is correct, and the terminals are tightened to the correct torque.	☐
The motor cable is routed away from other cables.	☐
No power factor compensation capacitors are connected to the motor cable.	☐
If an external brake resistor is connected to the drive: There is an adequately sized protective earth (ground) conductor between the brake resistor and the drive, and the conductor is connected to the correct terminal, and the terminals are tightened to the correct torque. Grounding has also been measured according to the regulations.	☐
If an external brake resistor is connected to the drive: The brake resistor cable is connected to the correct terminals, and the terminals are tightened to the correct torque.	☐
If an external brake resistor is connected to the drive: The brake resistor cable is routed away from other cables.	☐
The control cables are connected to the correct terminals, and the terminals are tightened to the correct torque.	☐
If a drive bypass connection will be used: The direct-on-line contactor of the motor and the drive output contactor are either mechanically and/or electrically interlocked, that is, they cannot be closed at the same time. A thermal overload device must be used for protection when bypassing the drive. Refer to local codes and regulations.	☐

Make sure that ...	☑
There are no tools, foreign objects or dust from drilling inside the drive.	☐
The area in front of the drive is clean: the drive cooling fan cannot draw any dust or dirt inside.	☐
The terminal box cover of the motor is in place. Cabinet shrouds are in place and doors are closed.	☐
The motor and the driven equipment are ready for power-up.	☐

9

Start-up

Contents of this chapter

This chapter instructs how to start up the IGBT supply unit.

The instructions are valid for the example IGBT supply unit with ACS880-204 IGBT supply modules. The default device designations (if any) are given in square brackets, for example, main contactor [Q2]. The same device designations are also used in the circuit diagrams, typically. They refer to the circuit diagram of the example installation by ABB.

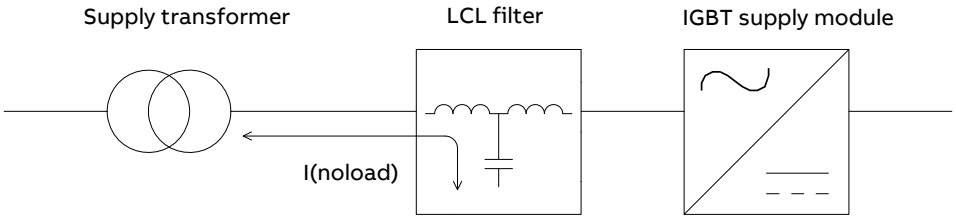
Note: The instructions do not cover all possible cabinet constructions.

WARNING!
Only qualified electricians are allowed to do the work described in this chapter. Read the complete safety instructions and repeat the steps described in section Electrical safety precautions (page 121). The complete safety instructions are given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). Ignoring the instructions can cause physical injury or death, or damage to the equipment.

WARNING!
Before you activate the automatic fault reset or automatic restart functions of the drive control program, make sure that no dangerous situations can occur. These functions reset the drive automatically and continue operation after a fault or supply break. If these functions are activated, the installation must be clearly marked as defined in IEC/EN 61800-5-1, subclause 6.5.3, for example, "THIS MACHINE STARTS AUTOMATICALLY".

If you select an external source for the start command and it is on, the drive will start immediately after fault reset. See the firmware manual.

Start-up procedure

Tasks	☑
Safety	
WARNING! Follow the safety instructions during the start-up procedure. See *Safety instructions* for *ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). Only qualified electricians are allowed to start-up the drive.	☐
Checks/Settings with no voltage connected	
WARNING! Make sure that the disconnector of the supply transformer is locked to the off (0) position, that means no voltage is, or can not be, connected to drive inadvertently. The no-load current of the IGBT supply unit must be taken into account if pretests (eg, factory tests) are made on the IGBT supply unit by using a temporary main AC supply. The no-load current circulates between the supply network and the LCL filter capacitors and therefore stresses the supply transformer. To avoid supply transformer overload, the supply transformer must be dimensioned according to 15% of IGBT supply unit nominal current. The transformer should be dedicated for the IGBT supply unit only, no other (sensitive) load shall be connected in same transformer secondary to avoid disturbance and malfunction.  In case a generator is used as a supply, it should be dimensioned according to the nominal current of the IGBT supply unit.	☐
<u>If a generator is used as a supply:</u> The recommendation for ACS880 IGBT supply unit with generator supply is: • always use BAMU auxiliary measurement unit • short-circuit ratio of the grid > 3 • short-circuit ratio of the generator 1/xk > 2 • generator nominal power P_{gen} > 0.3 × P_{ISU}	☐
<u>Drives with a main switch-disconnector [Q1]:</u> Make sure the main switch-disconnector is switched off. <u>Drives with a main circuit breaker [Q1]:</u> Crank the main circuit breaker to DISCONNECTED position.	☐
Open the auxiliary voltage switch [Q21].	☐
Open the charging circuit switch [Q3].	☐

Tasks	☑
Supply unit with a main circuit breaker: Set the current trip limits of the breaker. The trip limits have been preset to generic values by the breaker manufacturer. The generic limits do not correspond the protection requirements of the application. For the limit rules, see below. **General rule** Make sure that the selectivity condition is fulfilled, that is the breaker trips at a lower current than the protection device of the supplying network, and that the limit is high enough not to cause unnecessary trips during the intermediate DC circuit load peak at start. **Long term current limit** Rule of thumb: Set to the rated AC current of the module. **Peak current limit** Rule of thumb: Set to a value 3…4 times the rated AC current of the module.	☐
Check the mechanical and electrical installation.	☐
Check the settings of breakers/switches in the auxiliary circuits.	☐
If time relays, or relays with delayed make contact or break contact are used in emergency stop circuits, check the relay time settings. See delivery-specific circuit diagrams and safety function specific documentation (if applicable).	☐
Check the voltage settings of the auxiliary voltage transformers (if any) are according to the actual power line voltage. See the final circuit diagrams by the designer of the cabinet-installed drive.	☐
Disconnect the unfinished or unchecked 230/115 V AC cables that lead from the terminal blocks to the outside of the equipment.	☐
Check that both circuits of STO terminals on the supply control unit are closed (IN1 and IN2 must be connected to OUT). The supply unit cannot start if either circuit is open. See the wiring diagrams delivered with the drive and chapterThe control unit.	☐
Frame R8i: Check that both channels of STO IN (X52) connector on IGBT supply module are connected to 24 V DC for the supply unit to start.	☐
Frames R1i…R4i: Connect the relay outputs XRO1 and XRO3 in parallel on the ZCU control unit, since the IGBT supply modules have internal charging circuit. See chapter Example circuit diagrams.	
Powering up the auxiliary circuit of the drive	
Make sure that it is safe to connect voltage. Make sure that: • nobody is working on the unit or circuits that are wired from outside into the cabinets, • covers of the motor terminal boxes are on.	☐
Close the circuit breakers supplying the auxiliary circuits [F22,…, F26].	☐
Close the cabinet doors.	☐
Close the main breaker of the supply transformer.	☐
Switch the auxiliary voltage switch [Q21] on.	☐

Tasks	☑
Setting up the supply unit parameters	
Check the correct voltage range, parameter *195.01 Supply voltage*. Supply modules with option +C188 (direct-on-line cooling fan): Set bit 14 of *195.20 HW options word 1*. If your supply unit consists of more than one module OR if it is one of the listed R6i or R7i units, parameter *195.31 Parallel connection rating id* needs to be set first. • Select the correct voltage range with parameter *195.30 Parallel type filter*. • Then select the correct supply unit type with parameter *195.31 Parallel connection rating id*. • Reboot the control unit by parameter *196.08 Control board boot*. • Check the correct voltage range, parameter *195.01 Supply voltage*. • Reboot the control unit by parameter *196.08 Control board boot*.	☐
Switch the control panel to the remote mode (Loc/Rem key) to enable control of the supply unit with the operating switch [S21].	☐
Powering up the main circuit of the drive	

ACS880-204-...	Frame	Parameter 195.31 selection
0210A-3+V992+C249	R6i	ACS880-204-0210A-3+V992+C249(3094)
0270A-3+V992+C249	R7i	ACS880-204-0270A-3+V992+C249(3096)
1130A-3	2×R8i	ACS880-20X-1130A-3 (7072)
1330A-3	2×R8i	ACS880-20X-1330A-3 (7082)
1580A-3	2×R8i	ACS880-20X-1580A-3 (7102)
2350A-3	3×R8i	ACS880-20X-2350A-3 (7103)
3110A-3	4×R8i	ACS880-20X-3110A-3 (7104)
4620A-3	6×R8i	ACS880-20X-4620A-3 (7106)
0210A-5+V992+C249	R6i	ACS880-204-0210A-5+V992+C249(8094)
0260A-5+V992+C249	R7i	ACS880-204-0210A-5+V992+C249(8096)
1040A-5	2×R8i	ACS880-20X-1040A-5 (7172)
1420A-5	2×R8i	ACS880-20X-1420A-5 (7202)
2120A-5	3×R8i	ACS880-20X-2120A-5 (7203)
2800A-5	4×R8i	ACS880-20X-2800A-5 (7204)
4150A-5	6×R8i	ACS880-20X-4150A-5 (7206)
0150A-7+V992+C249	R6i	ACS880-204-0150A-7+V992+C249(6095)
0170A-7+V992+C249	R7i	ACS880-204-0170A-7+V992+C249(6097)
0720A-7	2×R8i	ACS880-20X-0720A-7 (7272)
1050A-7	2×R8i	ACS880-20X-1050A-7 (7302)
1570A-7	3×R8i	ACS880-20X-1570A-7 (7303)
2070A-7	4×R8i	ACS880-20X-2070A-7 (7304)
3080A-7	6×R8i	ACS880-20X-3080A-7 (7306)

If you need more information on the use of the control panel, see *ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels user's manual* (3AUA0000085685 [English]).

Tasks	☑
WARNING! If the drive is equipped with a brake unit, make sure there are inverters connected to the intermediate circuit before closing the main contactor [Q2]. A rule of thumb: The sum capacitance of the inverters connected must be at least 50% of the sum capacitance of all inverters. If there is not enough capacitive load at start, the DC voltage will overshoot the overvoltage limit, causing immediate start of the brake unit. Constant braking will overload brake choppers and resistors and cause overheating.	☐
Drives with a main switch-disconnector [Q1]: Close the main switch-disconnector.	☐
Drives with a main circuit breaker [Q1]: Crank the breaker in. **WARNING!** Start button of the main circuit breaker bypasses charging circuit and may damage the module.	☐
Drives with a charging switch [Q3]: Close the charging switch.	☐
Turn the operating switch [S21] to on (1) position to activate the Run enable signal and switch the main contactor [Q2] on.	☐
Validating the safety functions	
Validate the operation of safety functions (for example, emergency stop). **WARNING!** The safety functions are not safe before they are validated according to the instructions. See the function-specific manual for the validation tasks. Safety functions are optional. See the function-specific manual for the validation tasks.	☐
On-load checks	
Check that the supply module cooling fan rotates freely in the right direction.	☐
Validate the operation of safety functions (for example, emergency stop). **WARNING!** The safety functions are not safe before they are validated according to the instructions. Safety functions are optional. See the function-specific manual for the validation tasks.	☐

Switching the supply unit off

1. Stop the motors connected to inverter units.
2. Deactivate the Run enable signal to open the main contactor [Q2]. This can be done, for example, with an operating switch [S21].

10

Maintenance

Contents of this chapter

This chapter instructs how to maintain the IGBT supply module and how to interpret its fault indications. The information is valid for ACS880-204 IGBT supply modules and example cabinet installations of the modules.

Note: The instructions do not cover all possible cabinet constructions.

WARNING!
Only qualified electricians are allowed to do the work described in this chapter. Read the complete safety instructions before you install, commission, use or service the converter. The complete safety instructions are given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]).

Maintenance intervals

The tables below show the maintenance tasks which can be done by the end user. The complete maintenance schedule is available on the Internet (https://new.abb.com/drives/services/maintenance/preventive-maintenance). For more information, consult your local ABB Service representative (www.abb.com/searchchannels).

Description of symbols

Action	Description
I	Inspection (visual inspection and maintenance action if needed)
P	Performance of on/off-site work (commissioning, tests, measurements or other work)

Action	Description
R	Replacement

Recommended maintenance intervals after start-up

Maintenance task/object	Years from start-up												
	1	2	3	4	5	6	7	8	9	10	11	12	...
Cooling fans													
Cooling fan of supply module (frames R1i…R4i, R6i and R7i)									R				
Cooling fan of supply module (frame R8i, speed-controlled)									R				
Cooling fan of supply module (frame R8i, 50 Hz, direct-on-line (option +C188))									R				
Cooling fan of supply module (frame R8i, 60 Hz, direct-on-line (option +C188))									R				
Cooling fan of LCL filter (50 Hz, direct-on-line)									R				
Cooling fan of LCL filter (60 Hz, direct-on-line)						R[1)]			R			R[1)]	
Internal circuit board compartment fan									R				
Cabinet cooling fans (internal, door, IP54) 50 Hz									R				
Cabinet cooling fans (internal, IP54) 60 Hz						R						R	
Cabinet cooling fan (door) 60 Hz									R				
Batteries													
Control panel battery									R				
Control unit battery						R						R	
Connections and environment													
Cabinet door filters IP54	R	R	R	R	R	R	R	R	R	R	R	R	R
Quality of supply voltage	P	P	P	P	P	P	P	P	P	P	P	P	P
Spare parts													
Spare parts	I	I	I	I	I	I	I	I	I	I	I	I	I
Reforming of DC circuit capacitors (spare modules and spare capacitors)	P	P	P	P	P	P	P	P	P	P	P	P	P
Inspections by user													
Cleaning IP22 and IP42 air inlet and outlet meshes	I	I	I	I	I	I	I	I	I	I	I	I	I
Checking tightness of cable and busbar terminals. Tightening if needed.	I	I	I	I	I	I	I	I	I	I	I	I	I

Maintenance task/object	Years from start-up												
	1	2	3	4	5	6	7	8	9	10	11	12	...
Checking ambient conditions (dustiness, corrosion, temperature)	I	I	I	I	I	I	I	I	I	I	I	I	I
Cleaning the heatsink of the supply module	I	I	I	I	I	I	I	I	I	I	I	I	I
Other													
ABB-SACE main circuit breaker maintenance	I	I	I	I	I	I	I	I	I	I	I	I	I
Functional safety													
Safety function test	I See the maintenance information of the safety function.												
Safety component expiry (Mission time, T_M)	20 years												

1) 6 years interval if fan supply voltage is 400 V instead of 320 V.

Note:

- Maintenance and component replacement intervals are based on the assumption that the equipment is operated within the specified ratings and ambient conditions. ABB recommends annual drive inspections to ensure the highest reliability and optimum performance.
- Long term operation near the specified maximum ratings or ambient conditions may require shorter maintenance intervals for certain components. Consult your local ABB Service representative for additional maintenance recommendations.

Maintenance timers and counters

The control program has maintenance timers and counters that can be configured to generate a warning when a pre-defined limit is reached. Each timer/counter can be set to monitor any parameter. This feature is especially useful as a service reminder. For more information, see the firmware manual.

Cabinet

Cleaning the interior of the cabinet

WARNING!
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

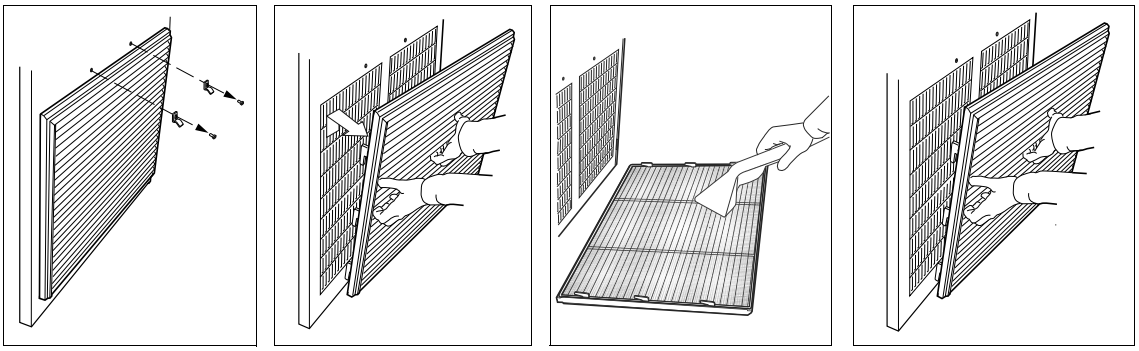
WARNING!
Use a vacuum cleaner with antistatic hose and nozzle, and wear a grounding wristband. Using a normal vacuum cleaner creates static discharges which can damage circuit boards.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cabinet door.
3. Clean the interior of the cabinet. Use a vacuum cleaner and a soft brush.
4. Clean the air inlets of the fans and air outlets of the modules (top).
5. Clean the air inlet gratings (if any) on the door.
6. Close the door.

Cleaning the door air inlets (IP22 and IP42)

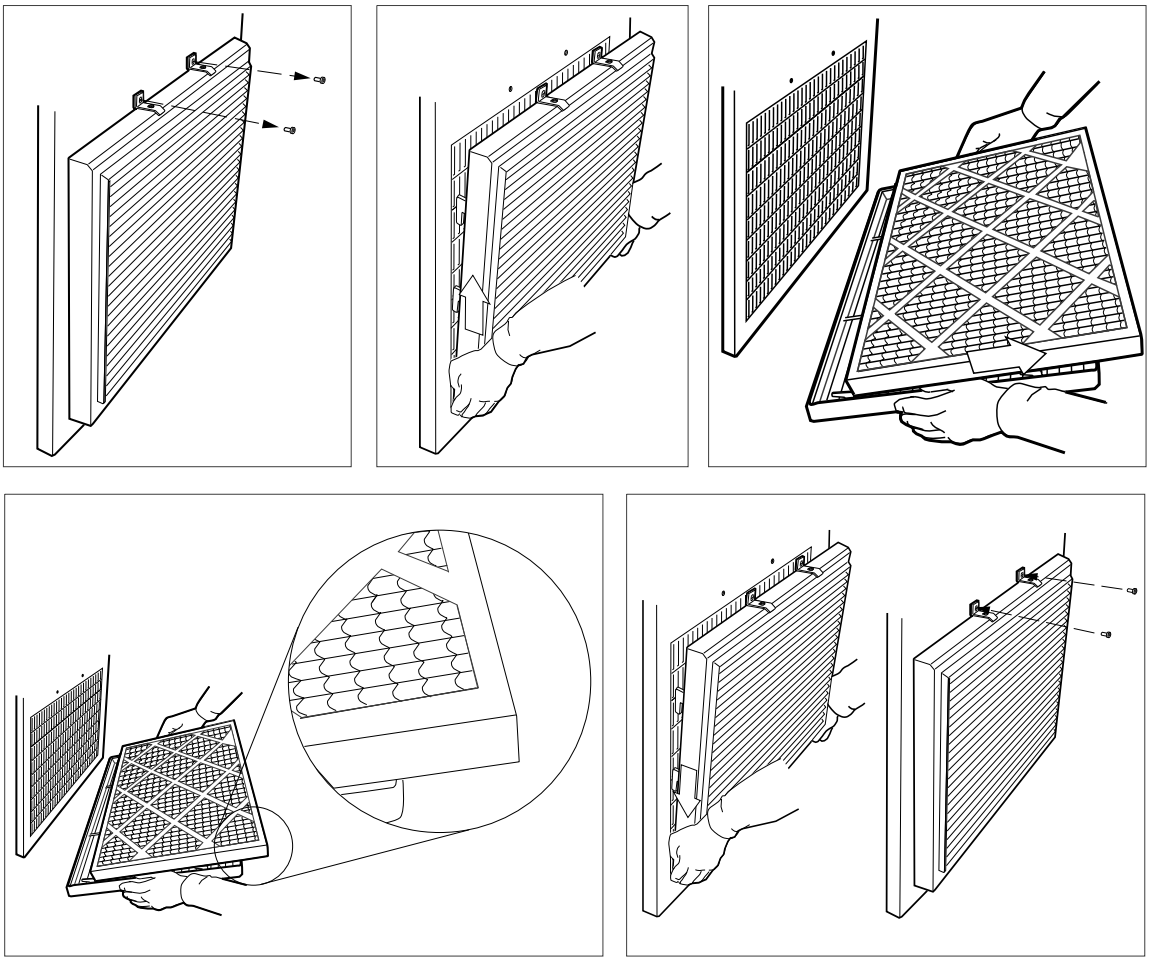
Check the dustiness of the air inlet meshes. If the dust cannot be removed by vacuum cleaning from outside through the grating holes with a small nozzle, proceed as follows:

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Remove the fasteners at the top of the grating.
3. Lift the grating and pull it away from the door.
4. Vacuum clean or wash the grating on both sides.
5. Reinstall the grating in reverse order.



Replacing the inlet door filters (IP54)

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Remove the fasteners at the top of the grating.
3. Lift the grating and pull it away from the door.
4. Remove the air filter mat.
5. Place the new filter mat in the grating the metal wire side facing the door.
6. Reinstall the grating in reverse order.



Cleaning the roof outlet filters (IP54)

The outlet filters on the roof of IP54 units can be accessed by pulling the gratings upwards.

Power connections

Retightening the power connections

WARNING!
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Examine the tightness of the cable connections. Use the tightening torques given in the technical data.

Fans

The lifespan of the cooling fans of the drive depends on running time, ambient temperature and dust concentration. See the firmware manual for the actual signal which indicates the running time of the cooling fan. Reset the running time signal after fan replacement.

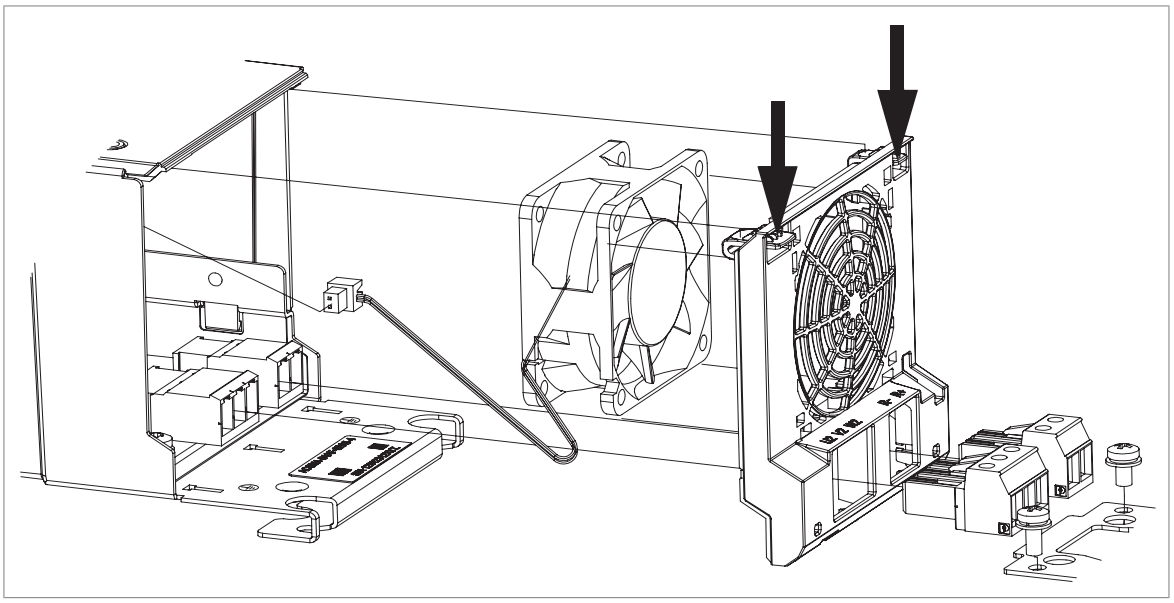
Replacement fans are available from ABB. Do not use other than ABB-specified spare parts.

Replacing the R1i and R2i module cooling fan

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Detach the power cable clamp plate and terminal blocks.
3. Release the retaining clips (arrowed) carefully using a screwdriver.
4. Pull the fan holder out.
5. Disconnect the fan cable.
6. Carefully bend the clips on the fan holder to free the fan.
7. Install new fan in reverse order.

Note: The airflow direction is bottom-to-top. Install the fan so that the arrow on it points up.



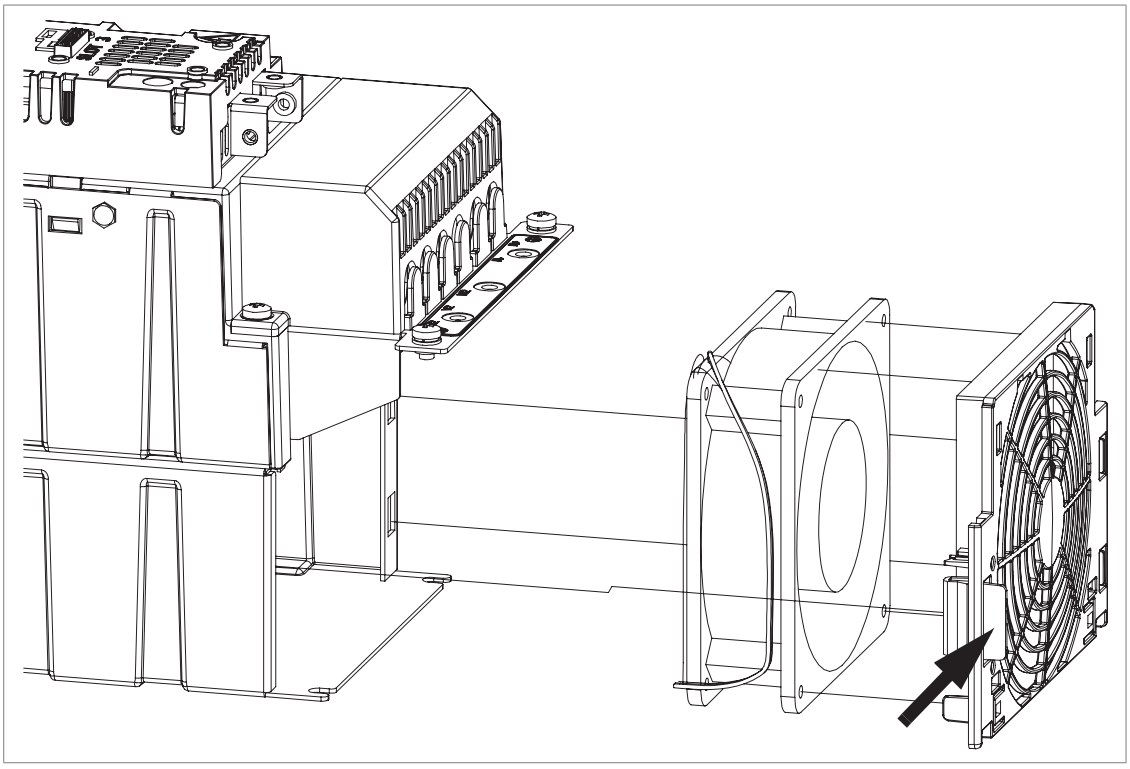
In the drawing, the direction of airflow is from right to left.

Replacing the R3i and R4i module cooling fan

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. To remove the fan, release the retaining clip (arrowed) carefully using a screwdriver.
3. Pull the fan holder out.
4. Disconnect the fan cable.
5. Carefully bend the clips on the fan holder to free the fan.
6. Install new fan in reverse order.

Note: The airflow direction is bottom-to-top. Install the fan so that the airflow arrow points up.



In the picture diretion of airflow is from right to left.

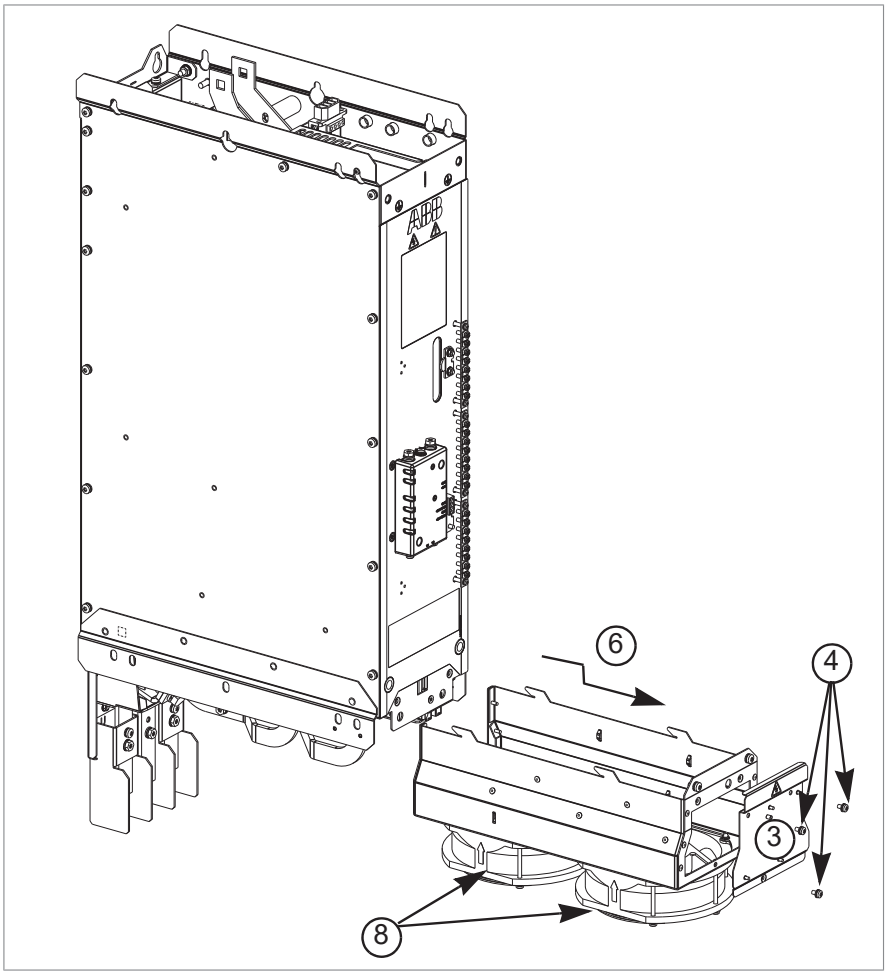
Replacing the R6i and R7i module cooling fan

Frame R6i modules have one fan, R7i modules have two.

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the door. Remove any shrouding in front of the fan unit.
3. Remove the front plate.
4. Remove the two screws that lock the fan unit(for R7i is three screws).
5. Unplug the power supply wire(s) of the fan(s).
6. To free the fan holder, pull it slightly outwards (about 5 mm), then downwards.
7. Detach the fan(s) from the fan holder.
8. Install new fan(s) in reverse order to the above.

Note: The airflow direction is bottom-to-top. Make sure that the airflow direction arrow on the fan points upward.



Replacing R8i module cooling fan (speed-controlled version)

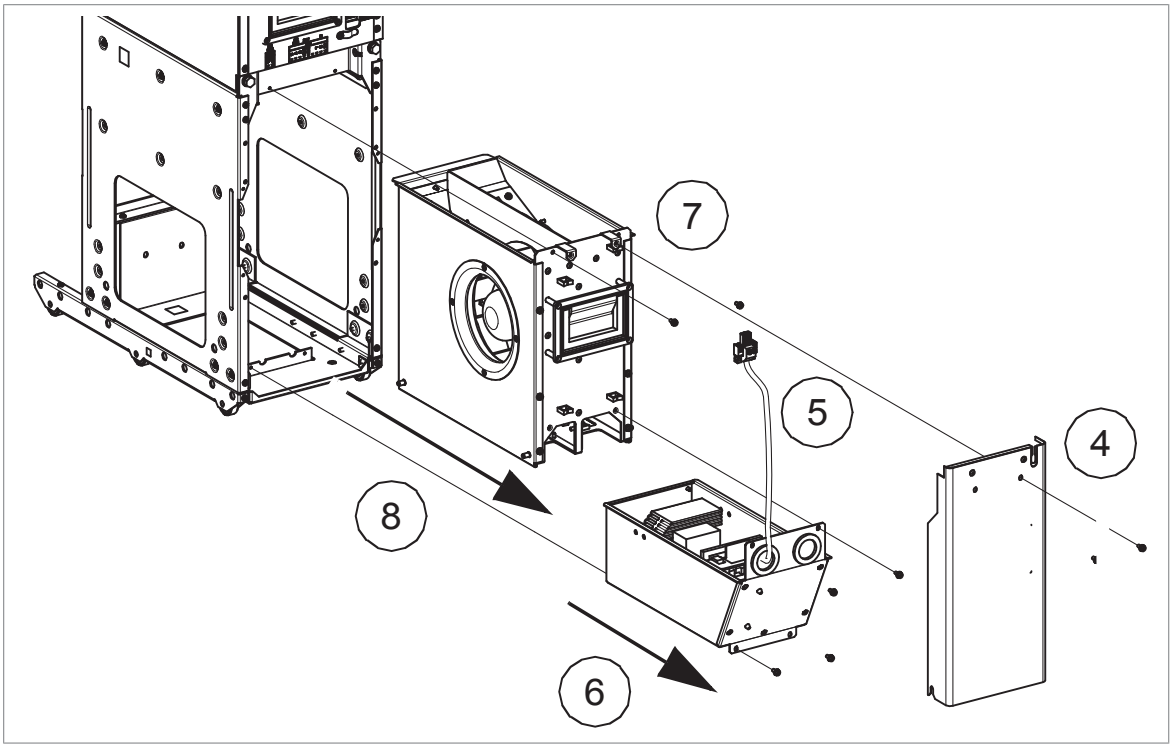
The module is equipped with a fan unit that contains two cooling fans.

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

WARNING!
Use the required personal protective equipment. Wear protective gloves and long sleeves. Some parts have sharp edges.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.
3. Remove the shroud in front of the fan (if any).
4. Remove the screws holding the front cover plate. Lift the cover plate somewhat to release it.
5. Disconnect the fan wiring.
6. Remove the unit below the fan.
7. Remove the screws of the fan unit.
8. Pull out the fan unit.
9. Install a new fan in reverse order.



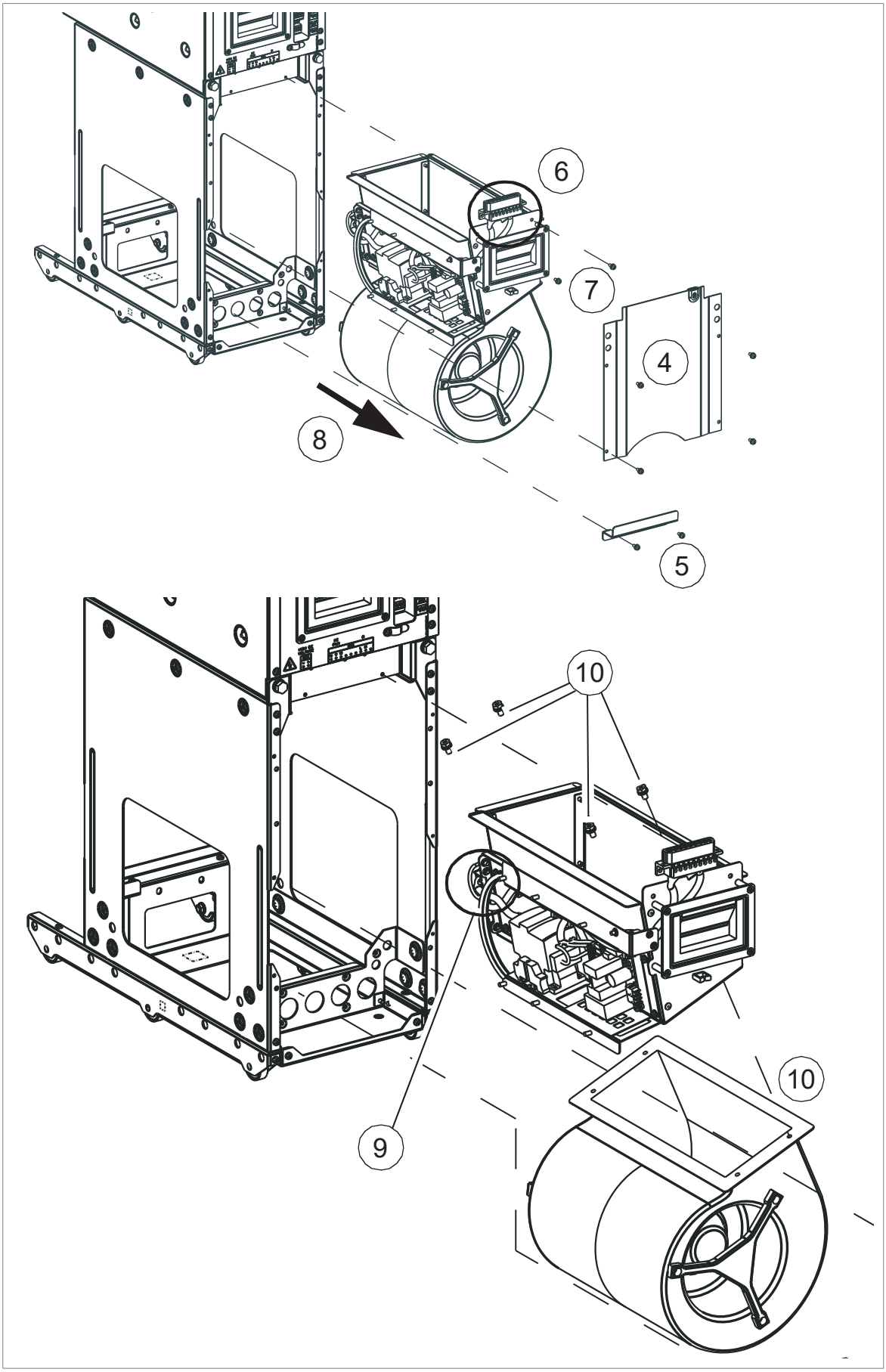
Replacing R8i module cooling fan (direct-on-line version)

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

WARNING!
Use the required personal protective equipment. Wear protective gloves and long sleeves. Some parts have sharp edges.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the door.
3. Remove the shroud in front of the fan (if any).
4. Remove the screws holding the front cover plate. Lift the cover plate somewhat to release it.
5. Remove the bracket.
6. Disconnect the wiring of the fan unit.
7. Remove the screws of the fan unit.
8. Pull out the fan unit.
9. Disconnect the fan wire from the fan unit.
10. Remove the screws of the fan.
11. Install a new fan in reverse order.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Replacing the circuit board compartment fan

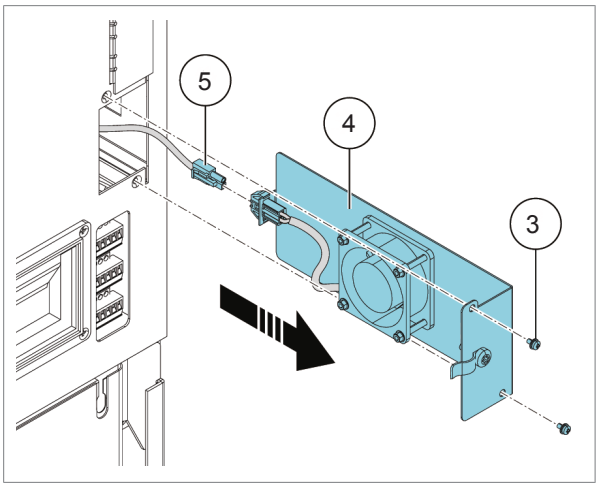
Frame R8i modules are equipped with a fan blowing air through the circuit board compartment.

The fan is accessible from the front of the module.

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

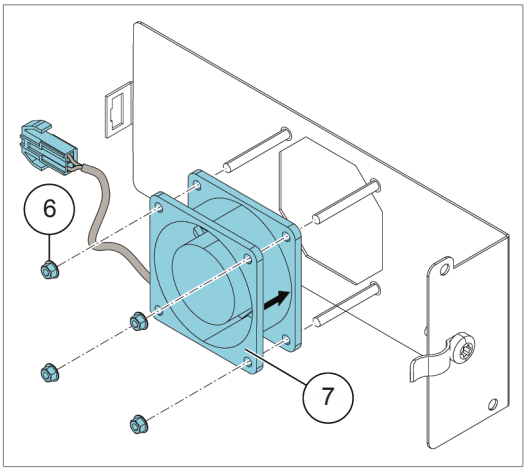
If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the door of the module cubicle.
3. Remove the two M4×12 (T20) screws which lock the fan holder.
4. Pull the fan holder out of the module.
5. Disconnect the fan cable.

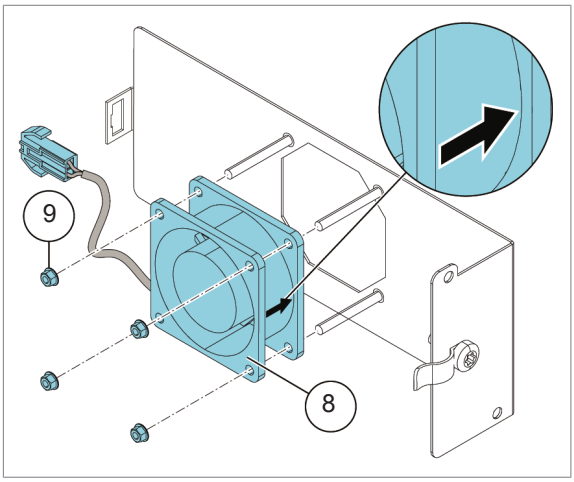


6. Remove the four M3 (5.5 mm) nuts which hold the fan.

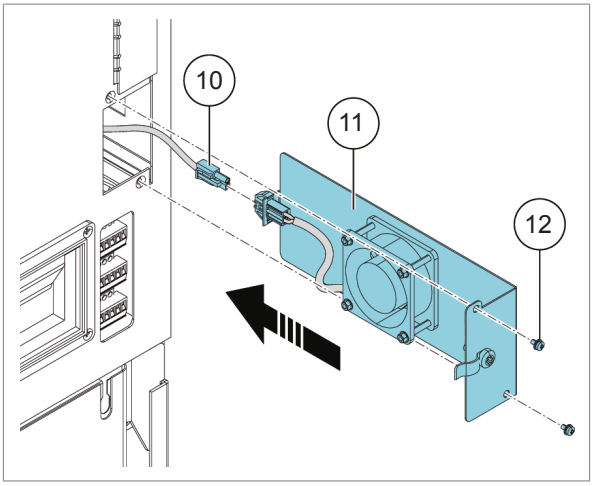
7. Remove the fan from the fan holder.



8. Put the fan onto the threaded studs on the fan holder with the airflow direction arrow pointing towards the fan holder.
9. Install and tighten the four nuts removed earlier.



10. Connect the fan cable.
11. Align and push the fan holder into the module.
12. Install and tighten the two M4×12 (T20) screws.



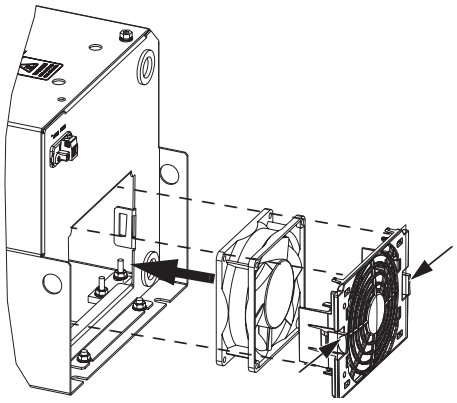
Replacing the fan of the LCL filter (filter for frames R1i...R4i)

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

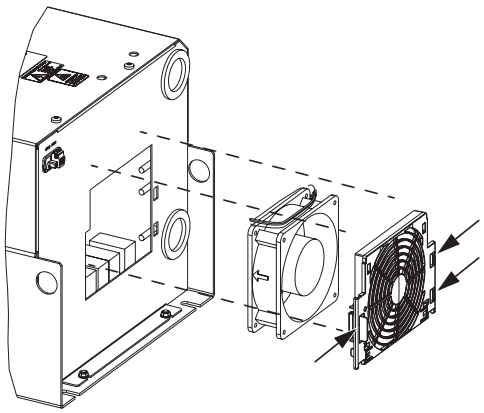
1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the door.
3. Release the retaining clips (arrowed, see the figures below).
4. Pull the fan holder out.
5. Disconnect the fan cable.
6. Carefully bend the clips on the fan holder to free the fan.
7. Install a new fan in reverse order.

Note: The airflow direction is bottom-to-top. Install the fan so that the airflow arrow points up.

WFU-01, WFU-02



WFU-11, WFU-21, WFU-22

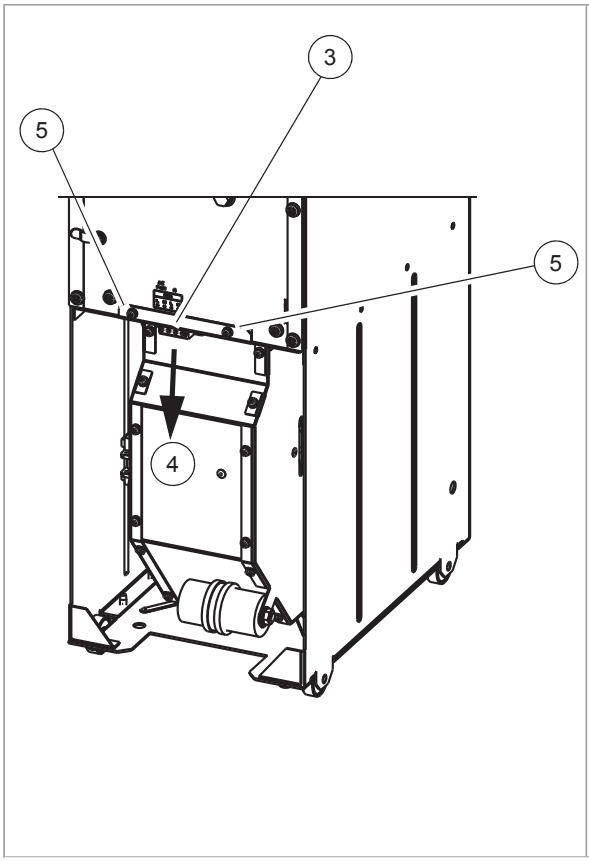


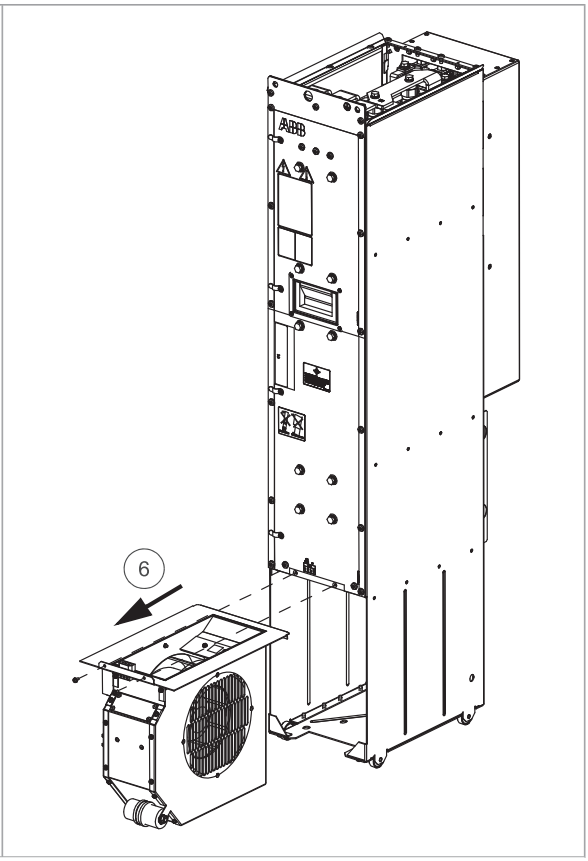
Replacing the fan of the LCL filter (BLCL-0x-x and BLCL-1x-x)

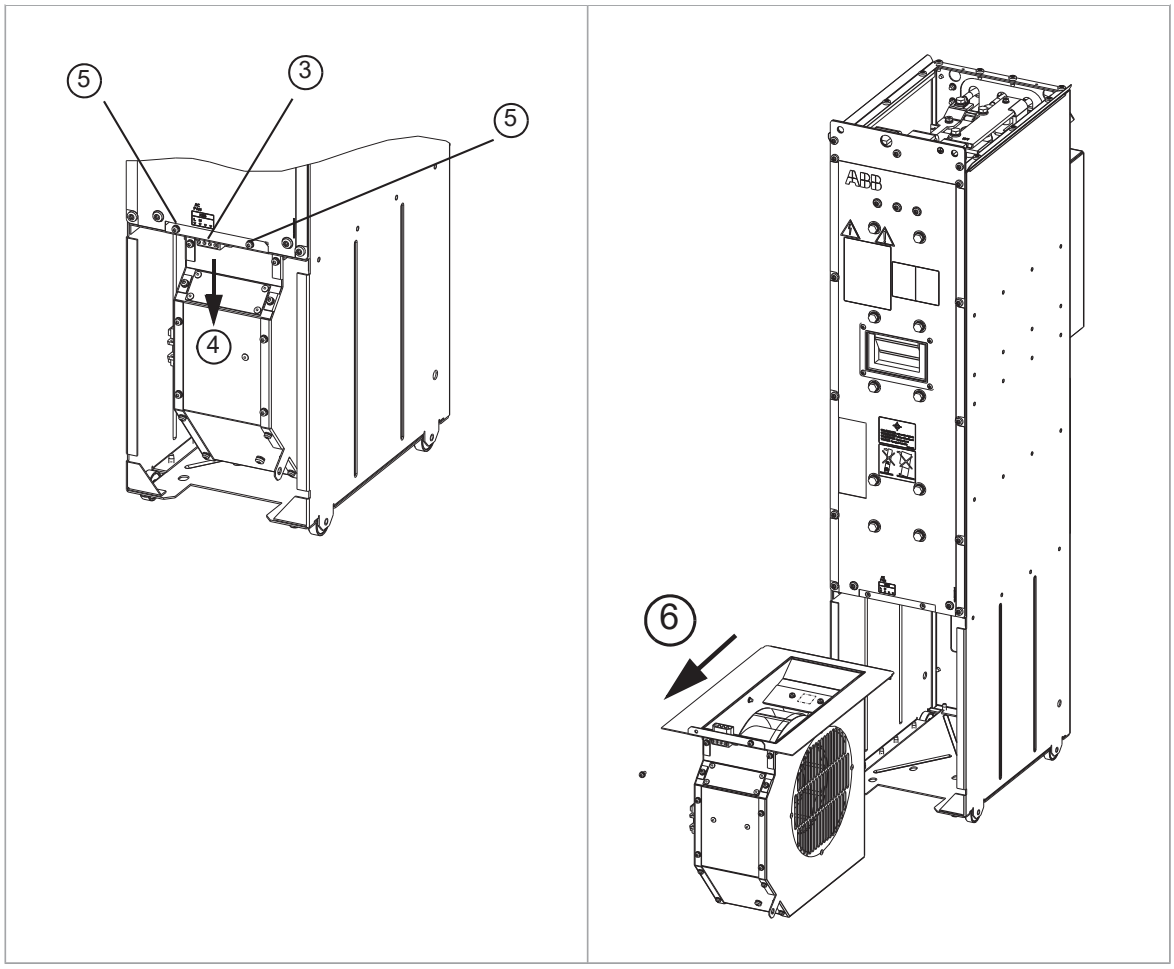
WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the door.
3. Remove the two locking screws of fan supply plug connector.
4. Pull the plug connector downwards to unplug the fan wiring.
5. Remove two screws in front of the fan unit.
6. Pull the fan unit out.
7. Install a new fan in reverse order.



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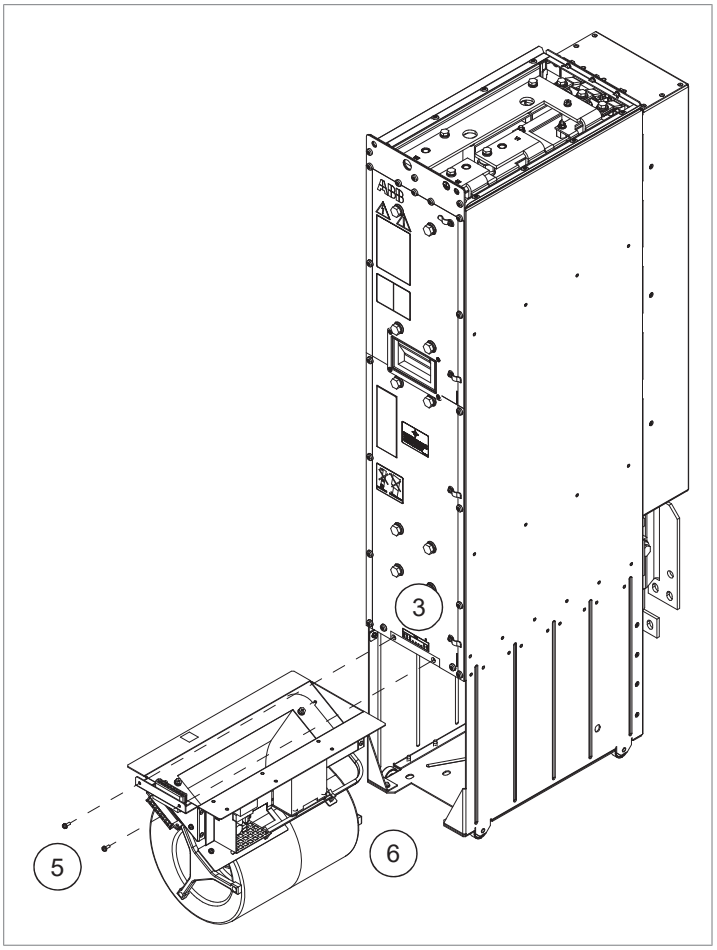
Replacing the fan of the LCL filter (BLCL-2x-x)

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the door.
3. Remove the two locking screws of fan supply plug connector.
4. Pull the plug connector downwards to unplug the fan wiring.
5. Remove the screws in front of the fan unit.
6. Pull the fan unit out.
7. Replace the fan of the fan unit. Install the fan unit in reverse order.



Replacing the cabinet cooling fans

Cabinets with ABB air outlet kits

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. The instruction mentioned at each air outlet kit in chapter Ordering information contains an exploded view of the outlet. Remove all gratings and filters, and finally remove the plate on top of the outlet. Unscrew all necessary screws securing the fan and remove it.
3. Install new fan in reverse order.

Cabinets with other fan types

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Follow the instructions of the manufacturer of the air outlet or enclosure system.

IGBT supply module

Cleaning the heatsink

The drive module heatsink fins pick up dust from the cooling air. The drive runs into overtemperature warnings and faults if the heatsink is not clean. When necessary, clean the heatsink as follows.

WARNING!
Use the required personal protective equipment. Wear protective gloves and long sleeves. Some parts have sharp edges.

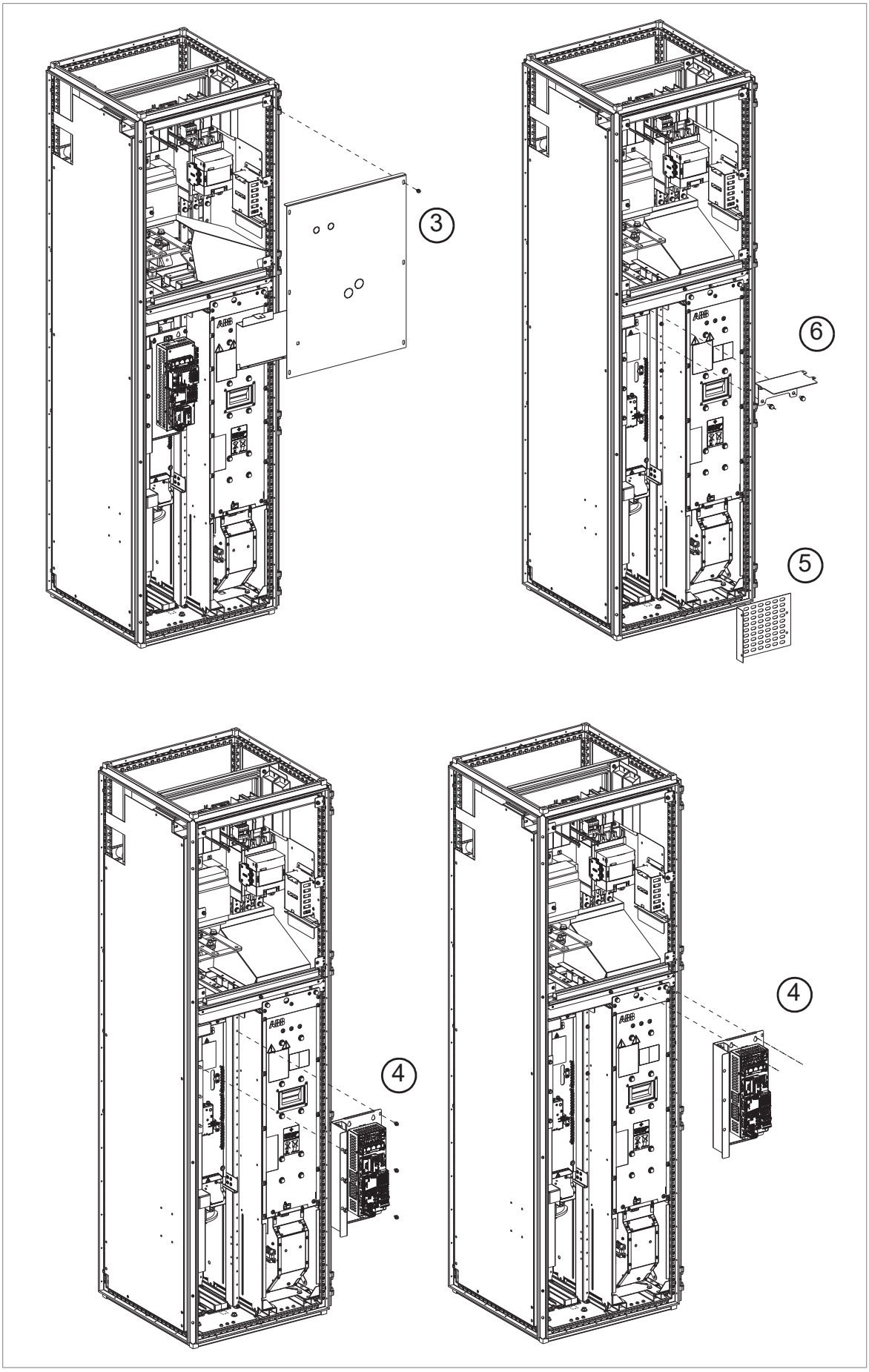
WARNING!
Use a vacuum cleaner with antistatic hose and nozzle, and wear a grounding wristband. Using a normal vacuum cleaner creates static discharges which can damage circuit boards.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Remove the module cooling fan(s). See the separate instructions.
3. Blow dry, clean and oil-free compressed air from bottom to top and simultaneously use a vacuum cleaner at the air outlet to trap the dust. If there is a risk of dust entering adjoining equipment, do the cleaning in another room.
4. Reinstall the cooling fan.

Replacing the R6i and R7i module

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.
3. Undo the screws of the shrouds and remove the shrouds.
4. Undo the screws of the BCU control plate and hang it to the right assemble beam.
5. Undo the screws of the bottom shroud and remove the shroud.
6. Undo the screws of the sheet metal plate located in front of the module. Remove the plate.
7. Undo the screws of the PE cable (in front of the module, on left side). Remove the PE cable.
8. Undo the module screws.
9. Remove the fastening bolts of the DC busbars.
10. Remove the fastening bolts of the AC cables.
11. Unplug the signal connector cable (if any) in front of the module.
12. Pull the module out enough to attach a lifting chain to chain holes on top of the module. A lifting device for R6i module is available from ABB (order code: 3AXD50000196661, instruction code: 3AXD50000210268). Pull the module out.
13. To replace the module, perform the steps 1...12 in reverse order.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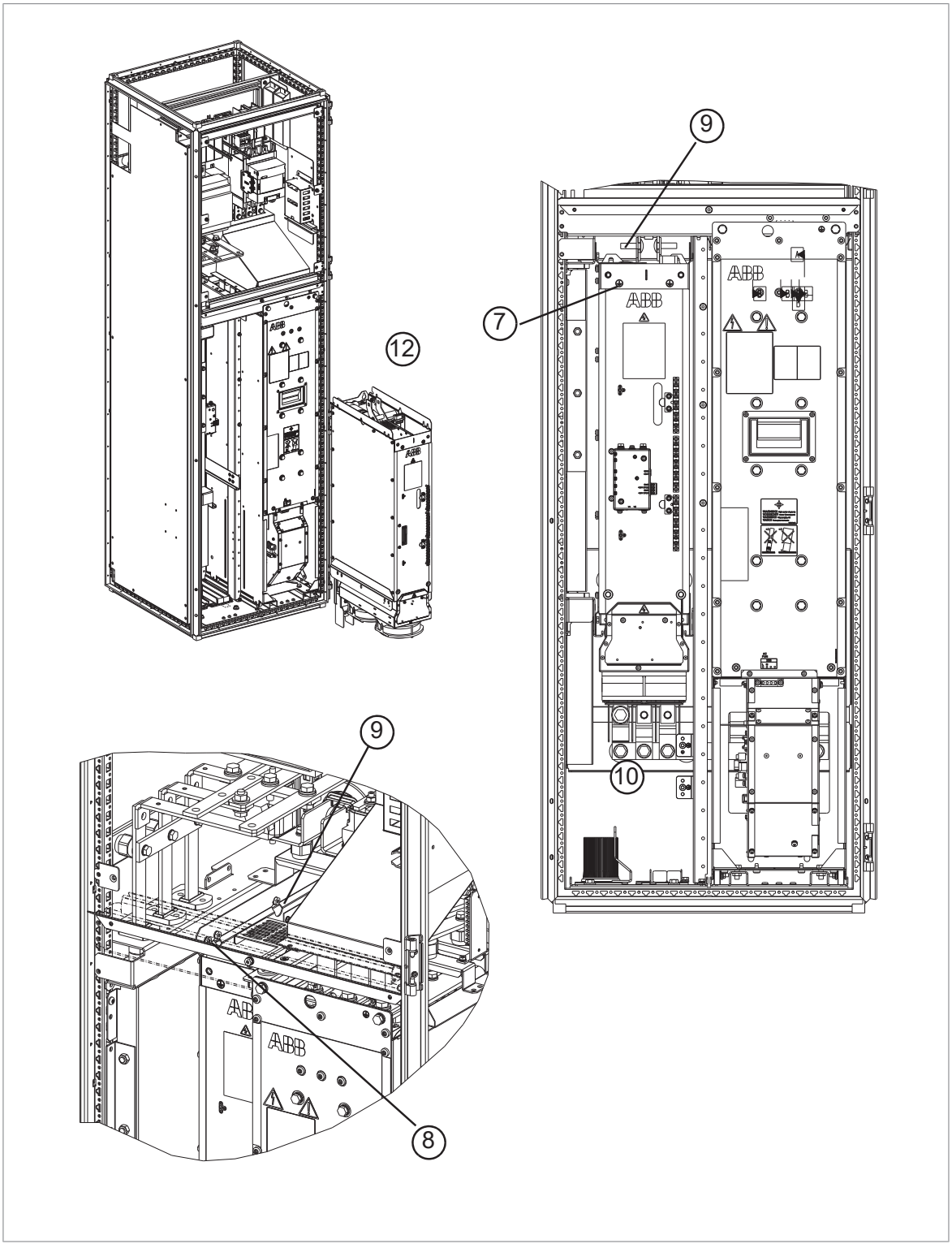
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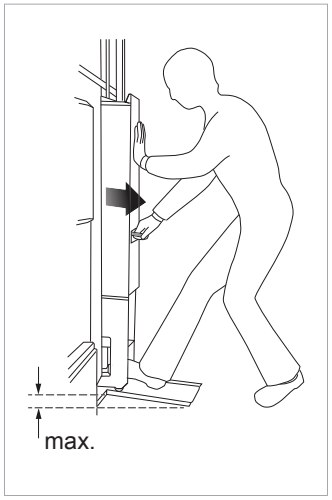
Replacing R8i module

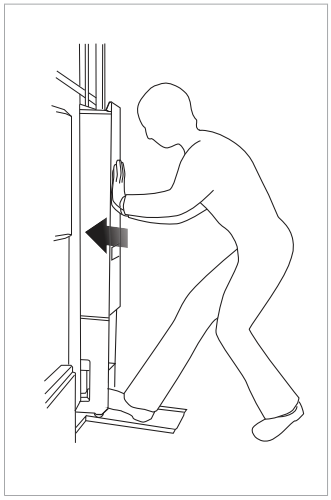
WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

WARNING!

- Do not use the module extraction/installation ramp with plinth heights which exceeds the maximum allowed height.
- Secure the module extraction/installation ramp carefully.
- Push the module into the cabinet and pull it from the cabinet carefully preferably with help from another person. Keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back. Keep your fingers away from the edges of the front flange of the module.



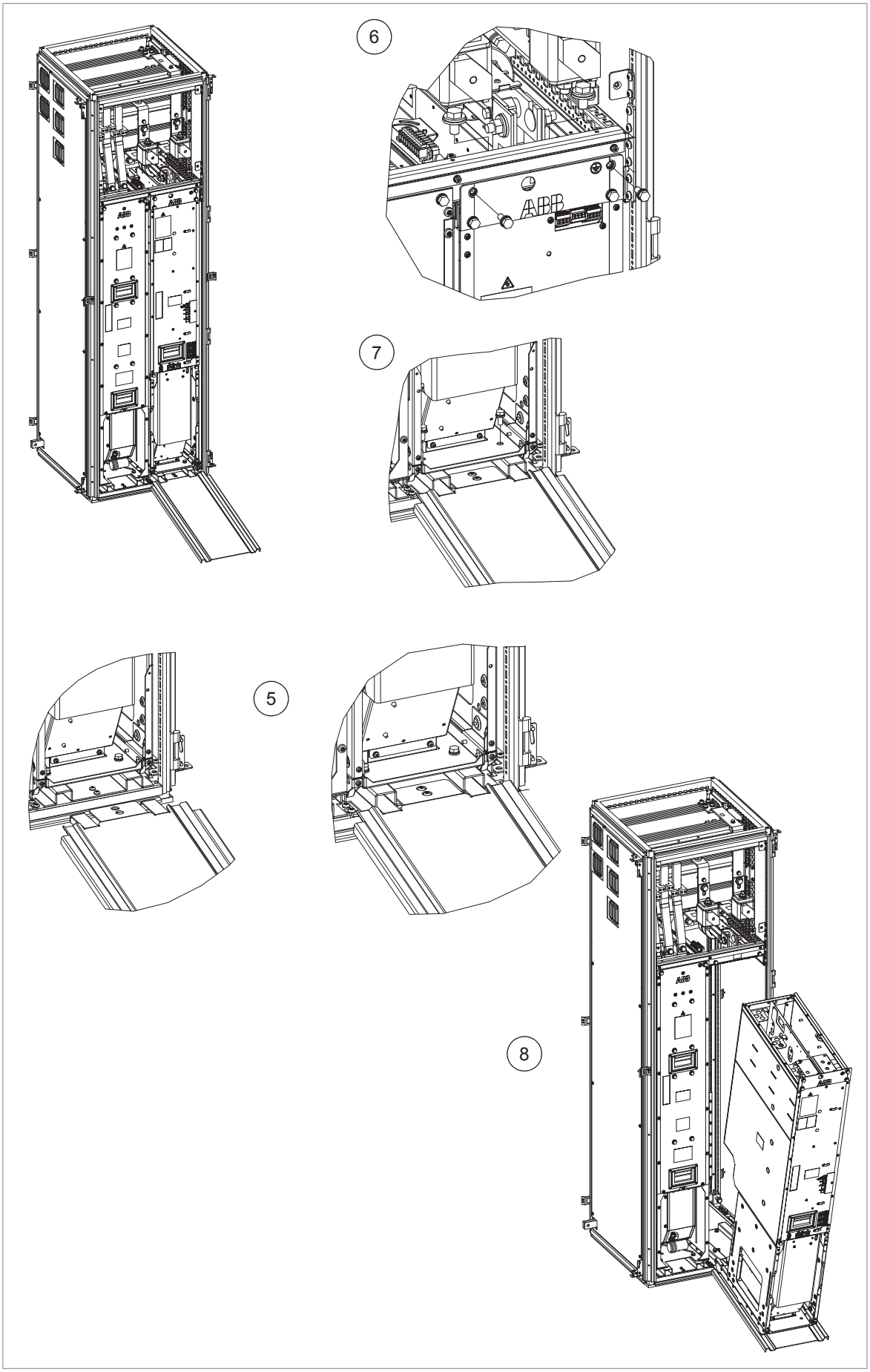


- Do not roll the module on its wheels for a longer distance than what is required for inserting or extracting the module. To move the module to or from the vicinity of the cabinet, lay the module on its side on a pallet or equivalent, and use a forklift or pallet truck.
- Be careful when handling a tall module. The module overturns easily because it is heavy and has a high center of gravity. Whenever possible, secure the module with chains. Do not leave an unsupported module unattended especially on a sloping floor.

- Wear protective gloves and long sleeves! Some parts have sharp edges.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.

3. Remove the shrouds (if any).
4. Unplug the wiring on the front of the module. Unplug the connector (X50) at the top of the module. Move the wires aside.
5. Use a module pull out ramp or other lifting device to remove the module from the cabinet. If the ramp designed for Rittal enclosures is used, install it by placing the hooks of the ramp between the bottom plate and enclosure frame.
6. Remove the two fastening bolts in the DC output busbars. Remove the two fastening screws on the top part of the module.
7. Remove the module fastening screws on the lower part of the module.
8. Pull the module carefully out of the cabinet along the ramp, or use another lifting device to remove the module.
9. Replace the module:
   - Push the module back in and fasten. Tighten the fastening screws of the module to 22 N·m (16.2 lbf·ft) and fastening bolts of the DC input busbars to 70 N·m (51.6 lbf·ft).
   - Reconnect connector X50 at the top of the module.
   - Reconnect the wiring and fiber optic cables to their respective terminals on the front of the module.
   - Remove the module pull-out ramp, attach the shrouds (if any) and close the cabinet doors.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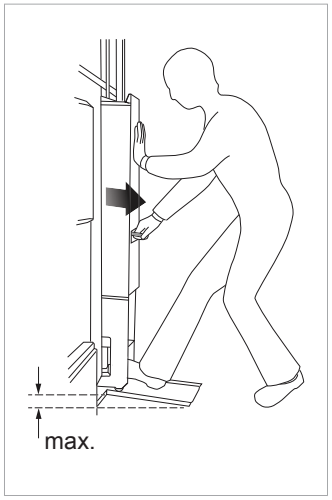
LCL filter

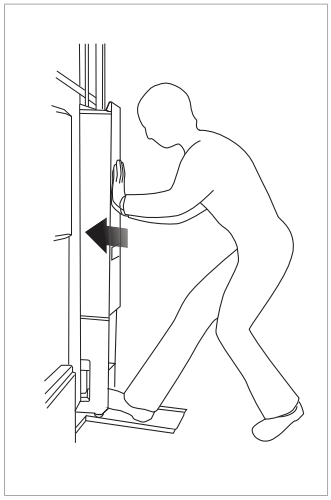
Replacing the LCL filter (frame R6i and R7i)

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

WARNING!

- Do not use the module extraction/installation ramp with plinth heights which exceeds the maximum allowed height.
- Secure the module extraction/installation ramp carefully.
- Push the module into the cabinet and pull it from the cabinet carefully preferably with help from another person. Keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back. Keep your fingers away from the edges of the front flange of the module.

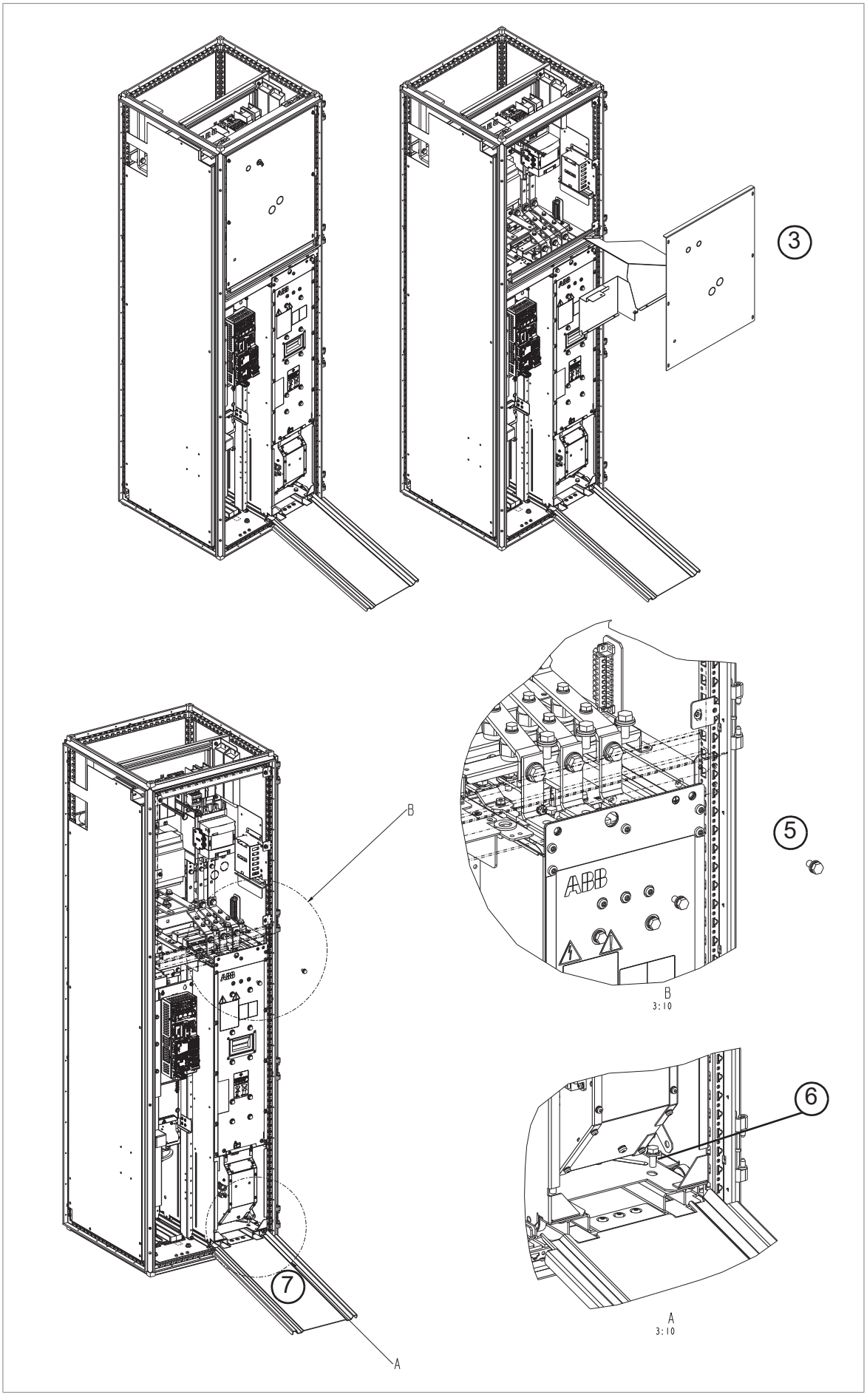




- Do not roll the module on its wheels for a longer distance than what is required for inserting or extracting the module. To move the module to or from the vicinity of the cabinet, lay the module on its side on a pallet or equivalent, and use a forklift or pallet truck.
- Be careful when handling a tall module. The module overturns easily because it is heavy and has a high center of gravity. Whenever possible, secure the module with chains. Do not leave an unsupported module unattended especially on a sloping floor.

- Wear protective gloves and long sleeves! Some parts have sharp edges.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.
3. Remove the shrouds (if any).
4. Unplug the signal connector cable on top part of the LCL filter module.
5. Remove the five screws in the upper part of the LCL filter module.
6. Remove the two screws in the lower part of the LCL filter module.
7. Use a module pull out ramp or other lifting device to remove the module from the cabinet. If the ramp is used, install it by placing the hooks of the ramp between the bottom plate and Rittal frame.
8. Pull the module carefully out of the cabinet along the ramp or use any other lifting device to remove the module.
9. Replace the module:
   - Push the module back in and fasten. Be careful not to break the fastening screws: tighten the fastening screws to 22 N·m (16.2 lbf·ft) and fastening bolts to 70 N·m (51.6 lbf·ft).
   - Plug the module signal wire set to the module signal connector.
   - Remove the module pull-out ramp, attach the shrouds (if any) and close the cabinet doors.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5
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B
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A
3:10

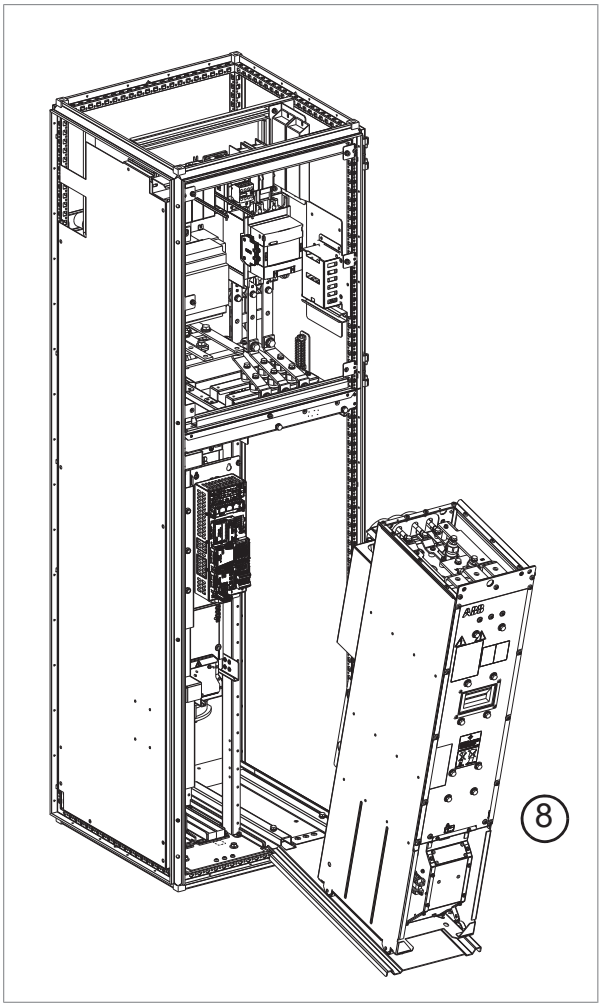


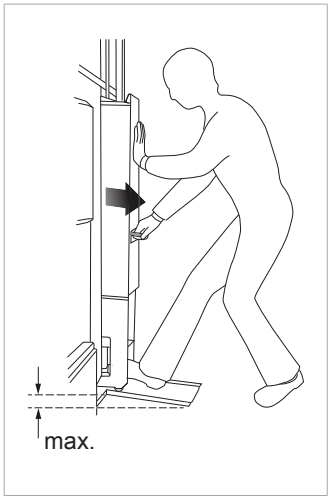
ABB
8

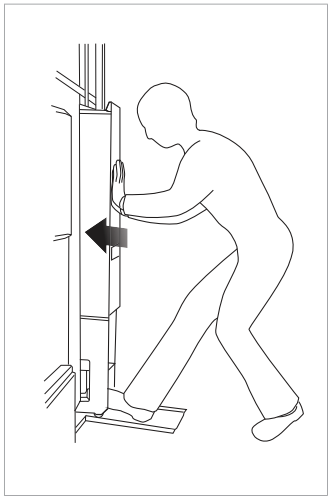
Replacing the LCL filter (frame R8i)

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

WARNING!

- Do not use the module extraction/installation ramp with plinth heights which exceeds the maximum allowed height.
- Secure the module extraction/installation ramp carefully.
- Push the module into the cabinet and pull it from the cabinet carefully preferably with help from another person. Keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back. Keep your fingers away from the edges of the front flange of the module.



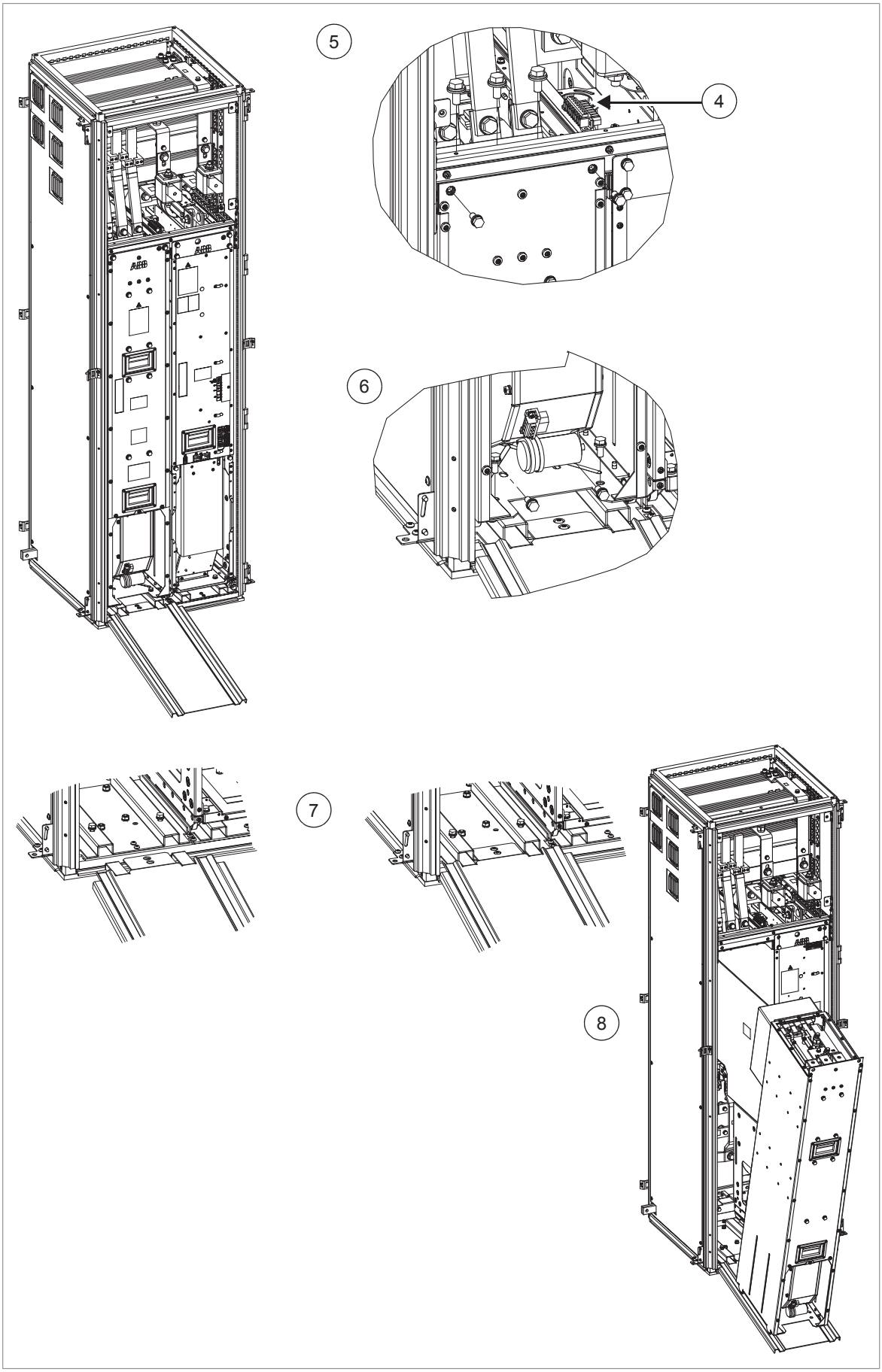


- Do not roll the module on its wheels for a longer distance than what is required for inserting or extracting the module. To move the module to or from the vicinity of the cabinet, lay the module on its side on a pallet or equivalent, and use a forklift or pallet truck.
- Be careful when handling a tall module. The module overturns easily because it is heavy and has a high center of gravity. Whenever possible, secure the module with chains. Do not leave an unsupported module unattended especially on a sloping floor.

- Wear protective gloves and long sleeves! Some parts have sharp edges.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.

3. Remove the shrouds (if any).
4. Unplug the signal connector cable on top of the LCL filter module.
5. Remove the five screws in the upper part of the LCL filter module.
6. Remove the four screws in the lower part of the LCL filter module.
7. Use a module pull out ramp or other lifting device to remove the module from the cabinet. If the ramp is used, install it by placing the hooks of the ramp between the bottom plate and Rittal frame.
8. Pull the module carefully out of the cabinet along the ramp or use any other lifting device to remove the module.
9. Replace the module:
   - Push the module back in and fasten. Be careful not to break the fastening screws: tighten the fastening screws to 22 N·m (16.2 lbf·ft) and fastening bolts to 70 N·m (51.6 lbf·ft).
   - Plug the module signal wire set to the module signal connector.
   - Remove the module pull-out ramp, attach the shrouds (if any) and close the cabinet doors.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Capacitors

The intermediate DC circuit of the drive contains several electrolytic capacitors. Operating time, load, and surrounding air temperature have an effect on the life of the capacitors. Capacitor life can be extended by decreasing the surrounding air temperature.

Capacitor failure is usually followed by damage to the unit and an input cable fuse failure, or a fault trip. If you think that any capacitors in the drive have failed, contact ABB.

Reforming the capacitors

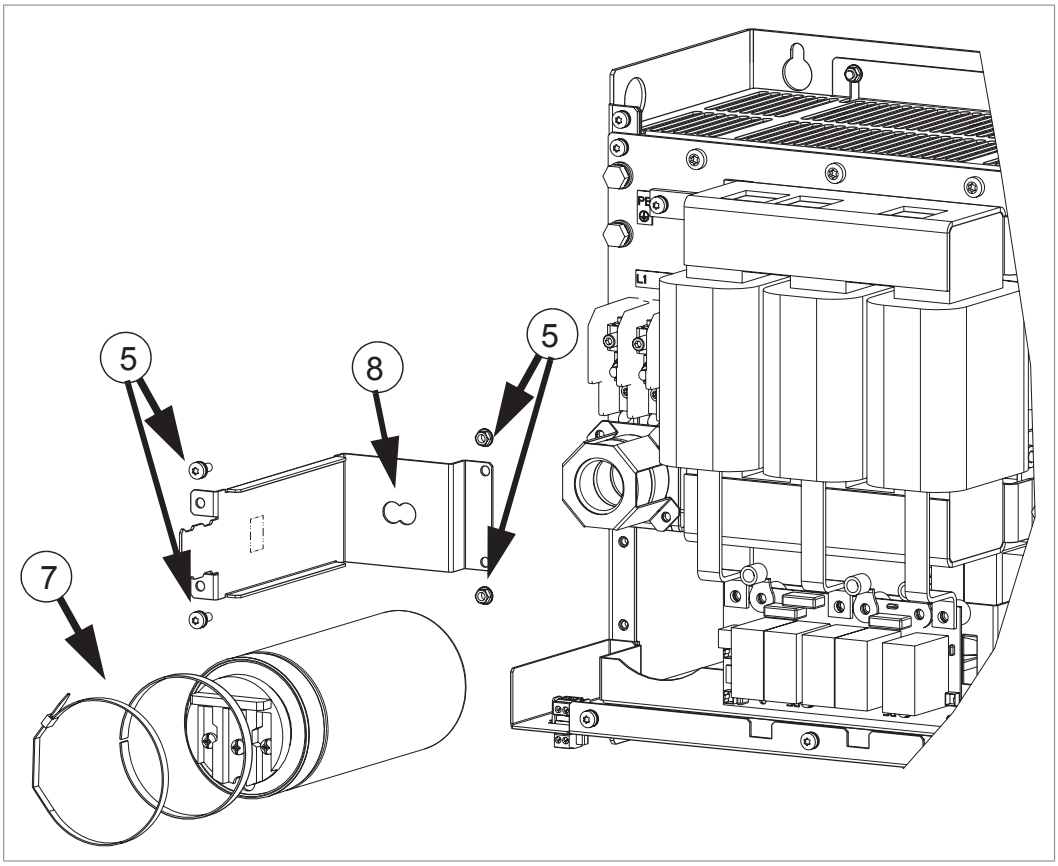
The capacitors must be reformed if the drive has not been powered (either in storage or unused) for a year or more. The manufacturing date is on the type designation label. For information on reforming the capacitors, refer to Capacitor reforming instructions (3BFE64059629 [English]).

Replacing the LCL filter capacitor (frames R3i and R4i)

WARNING!
Read the safety instructions given in *Safety instructions for ACS880 multidrive cabinets and modules* (3AUA0000102301 [English]). If you ignore them, injury or death, or damage to the equipment can occur.

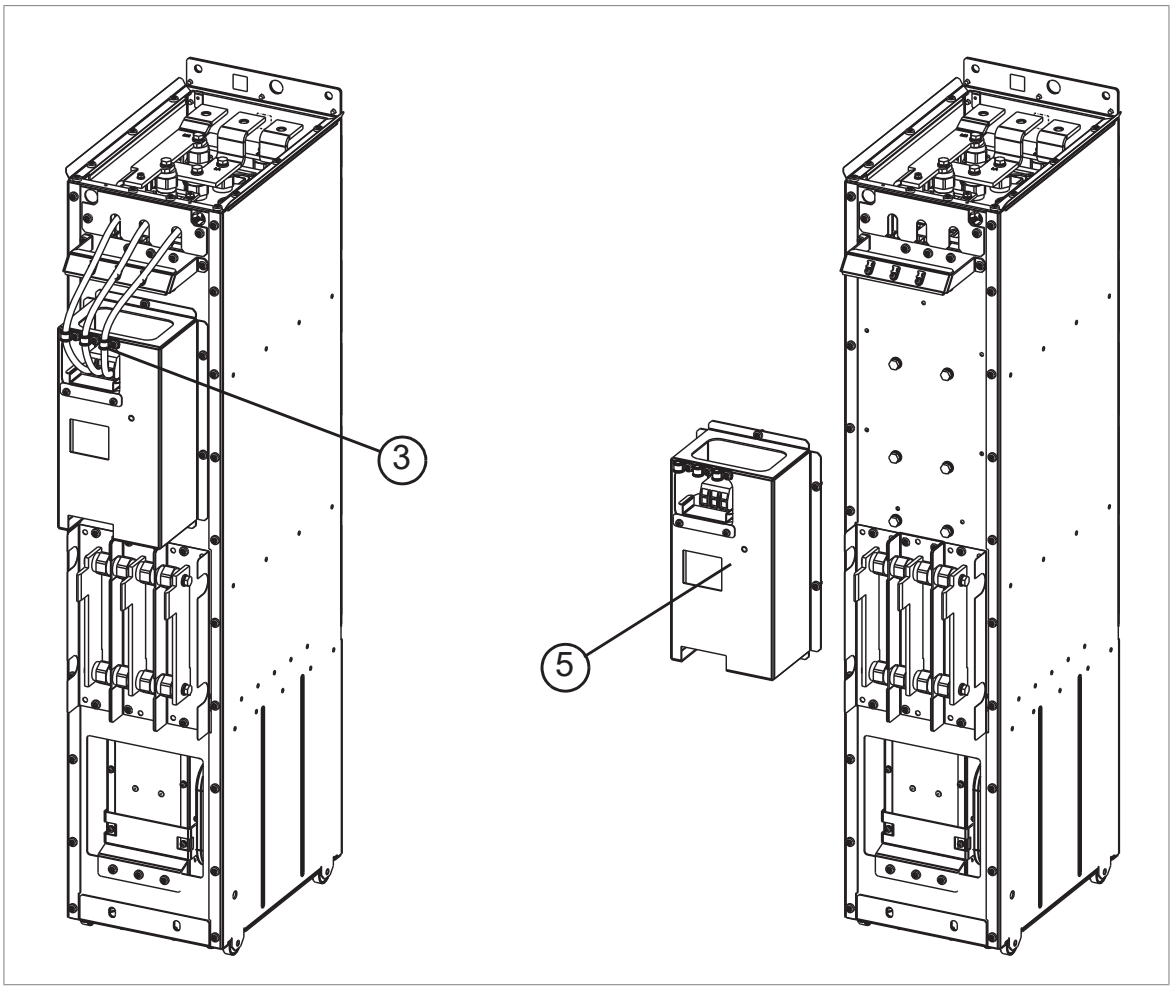
1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Open the cubicle door.
3. Remove the filter cover.
4. Disconnect the three cables.
5. Unfasten the four screws.
6. Lift the capacitor out of the filter module.
7. Remove the rings.
8. Unfasten the nut at the bottom of the capacitor so you can detach the capacitor from the plate.
9. Install a new capacitor in reverse order.

Note: When installing a new capacitor, you can connect the three cables in any order.



Replacing the LCL filter capacitor (frames R6i and R7i)

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before
   you start the work.
2. Do the steps 1-8 for Replacing the LCL filter (frame R6i and R7i) (page 196) to pull the BLCL out.
3. Remove the 3 screws for fixing parts, loosen the fixing screws for cables.
4. Pull the wireline out from the terminal block.
5. Remove the 7 screws and remove the capacitor kit.
6. Install a new capacitor in reverse order.



Control panel

Refer to ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels user's manual (3AUA0000085685 [English]).

Control units

BCU control unit types

There are three variants of the BCU control unit used in ACS880: BCU-02, BCU-12 and BCU-22. These have a different number of converter module connections (2, 7 and 12

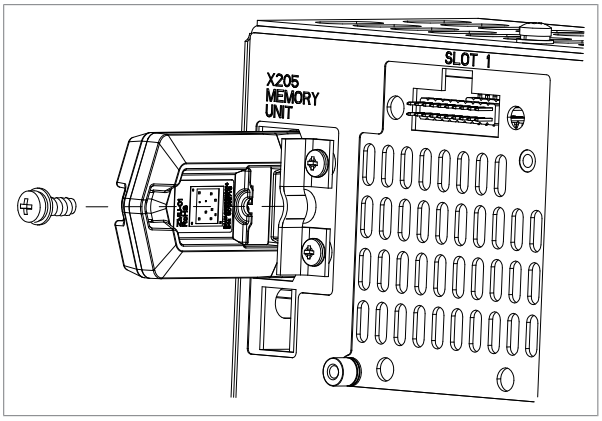
respectively) but are otherwise identical. The three BCU types are interchangeable as long as the number of connections is sufficient. For example, the BCU-22 can be used as a direct replacement for both BCU-02 and BCU-12.

Replacing the memory unit

After replacing a control unit, you can keep the existing parameter settings by transferring the memory unit from the defective control unit to the new control unit.

WARNING!
Do not remove or insert the memory unit when the control unit is powered.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Make sure that the control unit is not powered.
3. Remove the fastening screw and pull the memory unit out.
4. Install a memory unit in reverse order.

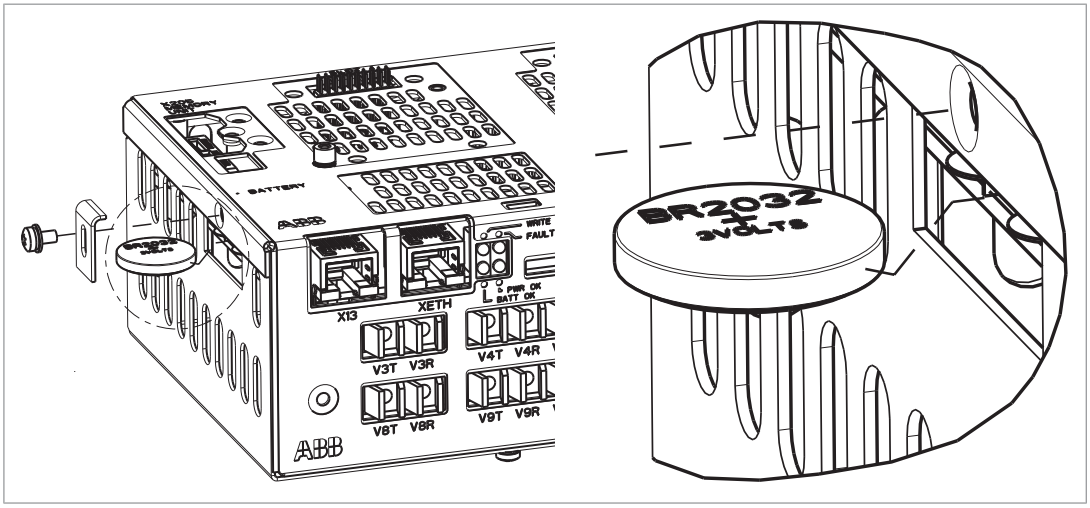


Replacing the BCU control unit battery

Replace the real-time clock battery if the BATT OK LED is not illuminated when the control unit is powered.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Undo the fastening screw and remove the battery.
3. Replace the battery with a new BR2032 battery.

4. Dispose of the old battery according to local disposal rules or applicable laws.
5. Set the real-time clock.



LEDs and other status indicators

Warnings and faults reported by the control program are displayed on the control panel or in the Drive composer PC tool. For further information, see the firmware manual delivered with the supply module.

Control panel and panel platform/holder LEDs

The ACS-AP-… control panel has a status LED. The control panel mounting platform or holder has two status LEDs. For their indications, see the following table.

Location	LED	Indication
Control panel	Continuous green	The unit is functioning normally.
	Flickering green	Data is transferred between the PC and the unit through the USB connection of the control panel.
	Blinking green	There is an active warning in the unit.
	Continuous red	There is an active fault in the unit.
	Blinking red	There is a fault that requires the stopping and restarting of the drive/converter/inverter.
	Blinking blue (ACS-AP-W only)	The Bluetooth interface is enabled, in discoverable mode, and ready for pairing.
	Flickering blue (ACS-AP-W only)	Data is being transferred through the Bluetooth interface of the control panel.
Control panel mounting platform or holder (with the control panel removed)	Red	There is an active fault in the unit.
	Green	Power supply for the control unit is OK.

R8i module LEDs

LED	Color	Indication
FAULT	Continuous red	There is an active fault in the module.
ENABLE / STO	Continuous green	The module is ready for use.
ENABLE / STO	Continuous yellow	XSTO connectors are de-energized.
POWER OK	Continuous green	Supply voltage of the internal circuit boards is OK (> 21 V).

Reduced run

A “reduced run” function is available for supply/rectifier units consisting of parallel-connected modules. The function makes it possible to continue operation with limited current even if one (or more) module is out of service, for example, because of maintenance work.

In principle, reduced run is possible with only one module, but the physical requirements of operating the motor still apply; for example, the modules remaining in use must be able to provide enough current. For allowed configurations when using reduced run function, see ACS880 IGBT supply control program firmware manual (3AUA0000131562 [English]).

Starting reduced run operation

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

WARNING!
Use the required personal protective equipment. Wear protective gloves and long sleeves. Some parts have sharp edges.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. If the control unit is powered from the faulty module, connect the control unit to another 24 V DC power supply. ABB strongly recommends using an external power supply with supply/rectifier units consisting of parallel-connected modules.
3. Remove the module to be serviced from its bay.
4. Install an air baffle (for example, plexiglass) to the top module guide to block the airflow through the empty module bay.
5. Switch on the power to the supply/rectifier unit.

6. Enter the number of supply/rectifier modules present into parameter 195.13 Reduced run mode.
7. Reset all faults and start the supply/rectifier unit. The maximum current limit is now automatically set according to the new configuration. A mismatch between the number of detected modules (parameter 195.14) and the value set in 195.13 will generate a fault.

Resuming normal operation

WARNING!
Obey the safety instructions given in ACS880 multidrive cabinets and modules safety instructions (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section Electrical safety precautions (page 121) before you start the work.
2. Remove the air baffle from the module bay.
3. Reinstall the module into its bay.
4. Switch on the power to the supply/rectifier unit.
5. Enter "0" into parameter 195.13 Reduced run mode.

Functional safety components

The mission time of functional safety components is 20 years which equals the time during which failure rates of electronic components remain constant. This applies to the components of the standard Safe torque off circuit as well as any modules, relays and, typically, any other components that are part of functional safety circuits.

The expiry of mission time terminates the certification and SIL/PL classification of the safety function. The following options exist:

- Renewal of the whole drive and all optional functional safety module(s) and components.
- Renewal of the components in the safety function circuit. In practice, this is economical only with larger drives that have replaceable circuit boards and other components such as relays.

Note that some of the components may already have been renewed earlier, restarting their mission time. The remaining mission time of the whole circuit is however determined by its oldest component.

Contact your local ABB service representative for more information.

11

Ordering information

Contents of this chapter

This chapter lists the types and ordering codes of the unit components.

You can find the kit-specific assembly drawings, step-by-step instructions and detailed kit information on the Internet. Go to https://sites-apps.abb.com/sites/lvacdrivesengineeringsupport/content. If necessary, contact your local ABB representative.

Note:

- This chapter only lists the installation accessories available from ABB. All other parts must be sourced from a third party (such as Rittal) by the system integrator. For a listing, refer to the kit-specific installation instructions available at https://sites-apps.abb.com/sites/lvacdrivesengineeringsupport/content. For access, contact your local ABB representative.
- Parts that are labeled suitable for generic enclosures are not designed for any specific enclosure system. These parts are intended as a basis for further engineering, and may require additional parts to be fully usable.
  Installation accessories designed for generic enclosures are in fact designed for an inside width of 50 mm less than the nominal width of the enclosure. For example, a mechanical kit intended for 800 mm wide generic enclosure is designed for an inside width of 750 mm, and will not fit a 800 mm wide Rittal VX25 enclosure.

Kit code key

The kit codes shown in this chapter break down as follows.

The format of the kit code is x-w-s-yyy(-VX), for example, L-6-8-401 where:

- x = cooling method

  - A = air-cooled (some of these kits are also used with liquid-cooled drives)
  - L = liquid-cooled
- w = cabinet width
  - 4 = 400 mm
  - 6 = 600 mm
  - 8 = 800 mm
- s = module frame size / sizes
  - 1 = R1i
  - 2 = R2i
  - 3 = R3i
  - 4 = R4i
  - 5 = R5i
  - 6 = R6i/D6D
  - 7 = R7i/D7D/D7T
  - 8 = R8i/D8D/D8T
  - X = any, or not defined.
- yyy = consecutive numbering
  - 001…099 = Kits related to cabinets, for example, adapter plates

001…019	Common AC- and DC-related kits
020…049	Cabinet mechanics kits
050…059	Swing frame kits

  - 100…199 = Kits related to AC connection, for example, busbars

100…129	Kits with connection to AC
130…149	Kits with connection to module
150…199	Other kits related to AC connection

  - 200…299 = Kits related to DC connection, for example, busbars

200…229	Kits with connection to common DC
230…249	Kits with connection to module
250…299	Other kits related to DC connection

  - 300…399 = Kits related to module installation, for example, mechanical supports

300…330	Module supporting kits, basic mechanical support
350…379	Shroud kits

  - 400…499 = Other kits

400…419	Fan kits
420…439	Air guides
440…459	Cooling circuit kits

- VX = Kit specifically designed for the Rittal VX25 enclosure system. Many kits without this designation are also used with the VX25 system.

Frames R1i...R4i

IGBT supply modules

As standard, IGBT supply modules come with IGBT supply control program (+N2200). As standard, frame R1i…R4i IGBT supply modules come with a cover that also acts as a control panel holder. The modules can be ordered without the cover by specifying option code +0J414.

IGBT supply unit		Modules used		
Type	**Frame size**	**Qty**	**Ordering code (see below for options)**	**Contents**
U_N = 400 V (Range 380 … 415 V):				• IGBT supply module with ZCU control unit (the module cooling fan has internal power supply) • ZMU memory unit with IGBT supply control program (+N2200) • Module cover with control panel holder
ACS880-204-008A0-3	R1i	1	ACS880-104-008A0-3+N2200	
ACS880-204-0018A-3	R2i	1	ACS880-104-0018A-3+N2200	
ACS880-204-0035A-3	R3i	1	ACS880-104-0035A-3+N2200	
ACS880-204-0050A-3	R3i	1	ACS880-104-0050A-3+N2200	
ACS880-204-0093A-3	R4i	1	ACS880-104-0094A-3+N2200	
U_N = 500 V (Range 380 … 500 V):				
ACS880-204-006A6-5	R1i	1	ACS880-104-008A0-5+N2200	
ACS880-204-0015A-5	R2i	1	ACS880-104-0018A-5+N2200	
ACS880-204-0029A-5	R3i	1	ACS880-104-0035A-5+N2200	
ACS880-204-0041A-5	R3i	1	ACS880-104-0050A-5+N2200	
ACS880-204-0077A-5	R4i	1	ACS880-104-0094A-5+N2200	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-104-008A0-3+N2200**	**+N2200:** IGBT supply control program **+0J414:** No control panel holder

Note: The following components are always required to construct a working unit and must be ordered separately:

- LCL filter module. For more information, see LCL filters (page 216).
- 3AXD50000003308 cabinet cooling fan wire with connector.

The other parts listed in this chapter

- may be required by the application, or
- make the installation or use of the module easier.

LCL filters

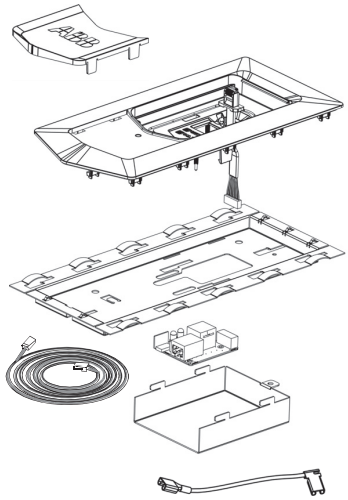
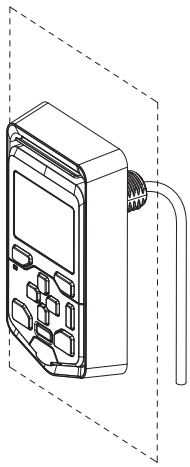
LCL filter module has to be ordered separately.

IGBT supply unit type ACS880-204-...	Frame size	LCL filter			
		Type	Qty	Ordering code	Contents
U_N = 400 V (Range 380 ... 415 V):					• WFU-xx filter module
008A0-3	R1i	WFU-01	1	3AUA0000049816	
0018A-3	R2i	WFU-02	1	3AUA0000049815	
0035A-3	R3i	WFU-11	1	3AUA0000066536	
0050A-3	R3i	WFU-21	1	3AUA0000049814	
0093A-3	R4i	WFU-22	1	3AUA0000049812	
U_N = 500 V (Range 380 ... 500 V):					
006A6-5	R1i	WFU-01	1	3AUA0000049816	
0015A-5	R2i	WFU-02	1	3AUA0000049815	
0029A-5	R3i	WFU-11	1	3AUA0000066536	
0041A-5	R3i	WFU-21	1	3AUA0000049814	
0077A-5	R4i	WFU-22	1	3AUA0000049812	

Control panel

The control panel is not included with the module but must be ordered separately. One control panel is required for the commissioning of an ACS880 drive system, even if the Drive Composer PC tool is used.

The control panel can be flush mounted on the cabinet door with the help of a door mounting kit. For more information on the control panel, see ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels user's manual (3AUA0000085685 [English]).

Type	Description	Ordering code	Illustration
ACS-AP-W	Control panel with Bluetooth	3AXD50000025965	
DPMP-01	Door mounting kit (IP55)	3AUA0000108878	
DPMP-02	Door mounting kit (IP65)	3AXD50000009374	

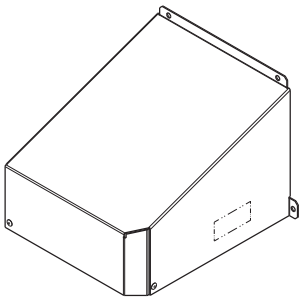
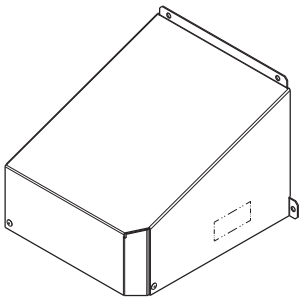
For more information on the door mounting kits, such as the contents of the kit, see the installation manuals:

- DPMP-01 mounting platform for control panels installation guide (3AUA0000100140 [English])
- DPMP-02/03 mounting platform for control panels installations guide (3AUA0000136205 [English]).

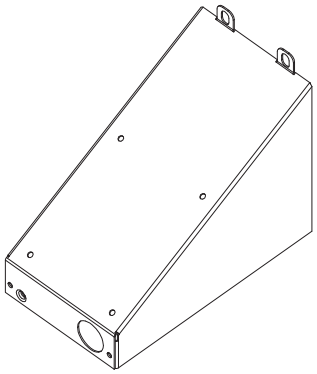
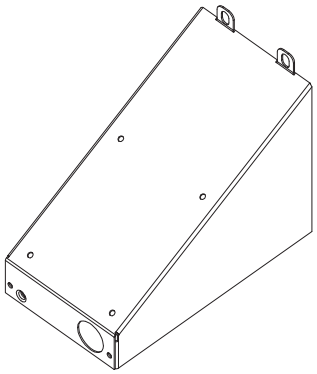
Mechanical installation accessories and tools

Air guide kits for LCL filter modules

Air guide kits are used on top of the modules to guide cooling air. WFU filter air guides are designed to be used together with WFU filter and WBCA bottom connection adapter.

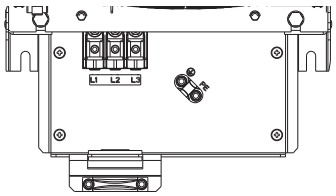
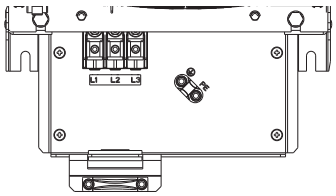
ACS880-204-...	LCL filter type	Qty	Ordering code	Kit code	Illustration
U_N = 400 V (Range 380 ...415 V):					
008A0-3	WFU-01	1	3AXD50000008728	A-468-12-426	
0018A-3	WFU-02	1	3AXD50000008728	A-468-12-426	
0035A-3	WFU-11	1	3AXD50000008730	A-468-3-427	
0050A-3	WFU-21	1	3AXD50000008741	A-68-34-428	
0093A-3	WFU-22	1	3AXD50000008741	A-68-34-428	
U_N = 500 V (Range 380 ... 500 V):					
006A6-5	WFU-01	1	3AXD50000008728	A-468-12-426	
0015A-5	WFU-02	1	3AXD50000008728	A-468-12-426	
0029A-5	WFU-11	1	3AXD50000008730	A-468-3-427	
0041A-5	WFU-21	1	3AXD50000008741	A-68-34-428	
0077A-5	WFU-22	1	3AXD50000008741	A-68-34-428	

Air guide kits for IGBT supply modules

ACS880-204-...	Qty	Ordering code	Kit code	Illustration
U_N = 400 V (Range 380 ... 415 V):				
008A0-3	1	3AUA0000114398	A-468-1-422	
0018A-3	1	3AUA0000114330	A-468-2-423	
0035A-3	1	3AUA0000114404	A-468-3-424	
0050A-3	1	3AUA0000114404	A-468-3-424	
0093A-3	1	3AUA0000114405	A-468-4-425	
U_N = 500 V (Range 380 ... 500 V):				
006A6-5	1	3AUA0000114398	A-468-1-422	
0015A-5	1	3AUA0000114330	A-468-2-423	
0029A-5	1	3AUA0000114404	A-468-3-424	
0041A-5	1	3AUA0000114404	A-468-3-424	
0077A-5	1	3AUA0000114405	A-468-4-425	

WBCA-xx bottom connection adapters

The WBCA-xx bottom connection adapter enables the supply connection from the bottom side of the WFU-xx filter module mounted onto it.

IGBT supply module type ACS880-204-...	LCL filter type	Adapter type	Qty	Ordering code	Illustration
U_N = 400 V (Range 380 ... 415 V):					
008A0-3	WFU-01	WBCA-01	1	3AUA0000070424	
0018A-3	WFU-02	WBCA-01	1	3AUA0000070424	
0035A-3	WFU-11	WBCA-11	1	3AUA0000070423	
0050A-3	WFU-21	WBCA-21	1	3AUA0000070422	
0093A-3	WFU-22	WBCA-21	1	3AUA0000070422	
U_N = 500 V (Range 380 ... 500 V):					
006A6-5	WFU-01	WBCA-01	1	3AUA0000070424	
0015A-5	WFU-02	WBCA-01	1	3AUA0000070424	
0029A-5	WFU-11	WBCA-11	1	3AUA0000070423	
0041A-5	WFU-21	WBCA-21	1	3AUA0000070422	
0077A-5	WFU-22	WBCA-21	1	3AUA0000070422	

AC-side components

Main switch-disconnector kits

You must equip the electric supply of a machinery with a main disconnecting device (IEC/EN60204-1). The main power line is equipped with a main switch-disconnector or a main circuit breaker [Q1]. This section lists suitable main switch-disconnectors.

Frame size	Main switch-disconnector (IEC)		Qty	Ordering code
	Type	Data		
R1i...R4i	Switch kit OS-type IEC 160 GD03	160 A, 690 V, 5 kA, 1 kV	1	3AXD50000014449

Frame size	Main switch-disconnector (UL, CSA)		Qty	Ordering code
	Type	Data		
R1i...R4i	Switch kit OT-type UL 160 E03	125 A, 600 V	1	3AXD50000014450

The main switch-disconnector kit contains:

- main switch disconnector unit
- auxiliary contact (N.O.), type OA1G10

AC fuses

The AC fuses protect the input cables, main contactor [Q2] and the module against short circuits.

ACS880-204-...	Fuse (IEC)			Fuse (UL, CSA)			Qty
	Type	Data	Ordering code	Type	Data	Ordering code	
U_N = 400 V (Range 380 ... 415 V):							
008A0-3	170M1559D	16 A, 690 V, gR, size 000	3AUA0000115358	DFJ-12	12 A, 600 V, class J	Not available from ABB	3
0018A-3	170M1562D	32 A, 690 V, gR, size 000	10008131	DFJ-25	25 A, 600 V, class J	Not available from ABB	3
0035A-3	170M1565D	63 A, 690 V, gR, size 000	09838775	DFJ-50	50 A, 600 V, class J	Not available from ABB	3
0050A-3	170M1566D	80 A, 690 V, aR, size 000	09838791	DFJ-70	70 A, 600 V, class J	Not available from ABB	3
0093A-3	170M1569D	160 A, 690 V, aR size 000	10003521	DFJ-125	125 A, 600 V, class J	Not available from ABB	3
U_N = 500 V (Range 380 ... 500 V):							
006A6-5	170M1559D	16 A, 690 V, gR, size 000	3AUA0000115358	DFJ-12	12 A, 600 V, class J	Not available from ABB	3
0015A-5	170M1562D	32 A, 690 V, gR, size 000	10008131	DFJ-25	25 A, 600 V, class J	Not available from ABB	3
0029A-5	170M1565D	63 A, 690 V, gR, size 000	09838775	DFJ-50	50 A, 600 V, class J	Not available from ABB	3
0041A-5	170M1566D	80 A, 690 V, aR, size 000	09838791	DFJ-70	70 A, 600 V, class J	Not available from ABB	3
0077A-5	170M1569D	160 A, 690 V, aR size 000	10003521	DFJ-125	125 A, 600 V, class J	Not available from ABB	3

Fuse bases for AC fuses (UL, CSA)

ACS880-204-...	Fuse base (UL, CSA)			Qty
	Type	Data	Ordering code	
U_N = 400 V (Range 380 ... 415 V):				
008A0-3	J60030-1CR	0.5 ... 30 A	68394619	3
0018A-3	J60030-1CR	0.5 ... 30 A	68394619	3
0035A-3	J60030-1CR	31 ... 60 A	68394627	3
0050A-3	JM60100-1CR	70 ... 100 A	68394635	3
0093A-3	J60200-1CR	101 ... 200 A	68551579	3
U_N = 500 V (Range 380 ... 500 V):				
006A6-5	J60030-1CR	0.5 ... 30 A	68394619	3
0015A-5	J60030-1CR	0.5 ... 30 A	68394619	3
0029A-5	J60030-1CR	31 ... 60 A	68394627	3
0041A-5	JM60100-1CR	70 ... 100 A	68394635	3
0077A-5	J60200-1CR	101 ... 200 A	68551579	3

EMC/RFI filter

EMC is the ability of electrical/electronic equipment to operate without problems within an electromagnetic environment. Likewise, the equipment must not disturb or interfere with any other product or system within its locality.

EMC/RFI filters are used to attenuate conducted disturbances in a line connecting point where the filter leads the disturbances to earth.

The recommended filter types are given in the following table.

ACS880-204-...	RFI filter (IEC, UL, CSA)			
	Type	Data	Qty	Ordering code
U_N = 400 V (Range 380 ... 415 V):				
008A0-3	SCHAFFNER FN 3120H-25-33	25 A (50 °C) 520 V AC	1	RFI filters are not available from ABB. They must be acquired by the customer. For more specific information about the EMC/RFI filters, see www.schaffner.com (SCHAFFNER FN 3120 brochure). See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).
0018A-3	SCHAFFNER FN 3120H-25-33	25 A (50 °C) 520 V AC	1	
0035A-3	SCHAFFNER FN 3120H-50-53	50 A (50 °C) 520 V AC	1	
0050A-3	SCHAFFNER FN 3120H-80-35	80 A (50 °C) 520 V AC	1	
0093A-3	SCHAFFNER FN 3120H-110-35	110 A (50 °C) 520 V AC	1	
U_N = 500 V (Range 380 ... 500 V):				
006A6-5	SCHAFFNER FN 3120H-25-33	25 A (50 °C) 520 V AC	1	RFI filters are not available from ABB. They must be acquired by the customer. For more specific information about the EMC/RFI filters, see www.schaffner.com (SCHAFFNER FN 3120 brochure). See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).
0015A-5	SCHAFFNER FN 3120H-25-33	25 A (50 °C) 520 V AC	1	
0029A-5	SCHAFFNER FN 3120H-50-53	50 A (50 °C) 520 V AC	1	
0041A-5	SCHAFFNER FN 3120H-80-35	80 A (50 °C) 520 V AC	1	
0077A-5	SCHAFFNER FN 3120H-110-35	110 A (50 °C) 520 V AC	1	

Main contactors

The main power line is equipped with main contactors [Q2]. Contactors are used for the on-off control of the main AC input power. Contactors are suitable for both IEC and UL/CSA installations.

ACS880-204-...	Main contactor (IEC, UL, CSA)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
008A0-3	AF09-30-10-13	I_{th} = 35 A, 690 V	1	3AXD50000000401
0018A-3	AF09-30-10-13	I_{th} = 35 A, 690 V	1	3AXD50000000401
0035A-3	AF26-30-00-13	I_{th} = 50 A, 690 V	1	3AXD50000003269
0050A-3	AF96-30-22-13	I_{th} = 125 A, 690 V	1	3AUA0000144904
0093A-3	AF96-30-22-13	I_{th} = 125 A, 690 V	1	3AUA0000144904
U_N = 500 V (Range 380 ... 500 V):				
006A6-5	AF09-30-10-13	I_{th} = 35 A, 690 V	1	3AXD50000000401
0015A-5	AF09-30-10-13	I_{th} = 35 A, 690 V	1	3AXD50000000401
0029A-5	AF26-30-00-13	I_{th} = 50 A, 690 V	1	3AXD50000003269
0041A-5	AF96-30-22-13	I_{th} = 125 A, 690 V	1	3AUA0000144904
0077A-5	AF96-30-22-13	I_{th}= 125 A, 690 V	1	3AUA0000144904

Definitions

I_{Th}	Conventional free-air thermal current
U_E	Rated operational voltage

The contactor package includes:

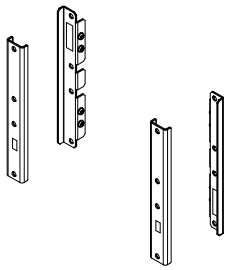
- contactor unit.

DC-side components

DC bus installation parts (for Rittal VX25 enclosures)

The brackets in this kit act as a mounting base for the busbar supports of the Rittal Flat-PLS DC bus and ensure its correct placement and alignment inside the cabinet line-up.

Note: The designs presented in this manual for Rittal VX25 enclosures employ the Rittal Flat-PLS busbar system. Make sure that the current carrying capability of the busbars is not exceeded at any point of the drive system.

Used with ...	Qty	Ordering code	Kit code	Illustration
400/600/800 mm VX25 enclosure	1 kit per cubicle	3AXD50000333387	A-468-X-001-VX	 Instruction code: 3AXD50000333639

DC fuses

DC fuses protect the module and drive DC bus against short circuits.

ACS880-204-...	Fuse (IEC, UL, CSA)			Qty
	Type	Data	Ordering code	
U_N = 400 V (Range 380 ... 415 V):				
008A0-3	FWP-15A14F	15 A, 660 V	3AUA0000089116	2
0018A-3	FWP-32A14F	32 A, 660 V	3AUA0000089119	2
0035A-3	6,921 CP URQ 27x60/63	63 A, 690 V	3AXD50000000211	2
0050A-3	6,921 CP URQ 27x60/100	100 A, 690 V	3AXD50000000215	2
0093A-3	6,921 CP URQ 27x60/200	200 A, 690 V	3AXD50000000221	2
U_N = 500 V (Range 380 ... 500 V):				
006A6-5	FWP-20A14F	20 A, 660 V	3AUA0000089117	2
0015A-5	6,921 CP URQ 27x60/50	50 A, 690 V	3AXD50000000189	2
0029A-5	6,921 CP URQ 27x60/80	80 A, 690 V	3AXD50000000213	2
0041A-5	6,921 CP URQ 27x60/100	100 A, 690 V	3AXD50000000215	2
0077A-5	6,921 CP URQ 27x60/200	200 A, 690 V	3AXD50000000221	2

Fuse bases for DC fuses (IEC, UL, CSA)

ACS880-204-...	Fuse (IEC, UL, CSA)			Qty
	Type	Data	Ordering code	
U_N = 400 V (Range 380 ... 415 V):				
008A0-3	US141 (Z331153F) USMSW1	14 × 51 mm, 50 A, 690 V Microswitch	3AUA0000089224 3AUA0000089228	2
0018A-3	US141 (Z331153F) USMSW1	14 × 51 mm 50 A, 690 V Microswitch	3AUA0000089224 3AUA0000089228	2
0035A-3	US271MI (R227600C) *	27 × 60 mm, 140 A, 800 V	3AUA0000089227	2
0050A-3	US271MI (R227600C) *	27 × 60 mm, 140 A, 800 V	3AUA0000089227	2
0093A-3	US271MI (R227600C) *	27 × 60 mm, 140 A, 800 V	3AUA0000089227	2
U_N = 500 V (Range 380 ... 500 V):				
006A6-5	US141 (Z331153F) USMSW1	14 × 51 mm, 50 A, 690 V Microswitch	3AUA0000089224 3AUA0000089228	2
0015A-5	US141 (Z331153F) USMSW1	14 × 51 mm 50 A, 690 V Microswitch	3AUA0000089224 3AUA0000089228	2
0029A-5	US271MI (R227600C) *	27 × 60 mm, 140 A, 800 V	3AUA0000089227	2
0041A-5	US271MI (R227600C) *	27 × 60 mm, 140 A, 800 V	3AUA0000089227	2
0077A-5	US271MI (R227600C) *	27 × 60 mm, 140 A, 800 V	3AUA0000089227	2

* Microswitch is included.

Frame R6i and R7i

IGBT supply modules

IGBT supply unit		Modules used		
Type	**Frame size**	**Qty**	**Ordering code (see below for options)**	**Contents**
U_N = 400 V (Range 380…415 V):				IGBT supply module, current hardware variant. Interface for connection of external BCU control unit. Module cooling fan(s) supplied internally from module.
ACS880-204-0210A-3	R6i	1	ACS880-104-0250A-3 +C249+V992	
ACS880-204-0270A-3	R7i	1	ACS880-104-0350A-3 +C249+V992	
U_N = 500 V (Range 380…500 V):				
ACS880-204-0210A-5	R6i	1	ACS880-104-0240A-5 +C249+V992	
ACS880-204-0260A-5	R7i	1	ACS880-104-0340A-5 +C249+V992	
U_N = 690 V (Range 525…690 V):				
ACS880-204-0150A-7	R6i	1	ACS880-104-0190A-7 +C249+V992	
ACS880-204-0170A-7	R7i	1	ACS880-104-0270A-7 +C249+V992	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-104-0250A-3+C249+V992**	**+C249**: Interface for optical fiber cable connection for BCU control unit (control unit and optic cables to be ordered separately) **+V992**: Current hardware variant

Note: The following components are always required to construct a working unit and must be ordered separately:

- LCL filter module. For more information, see LCL filter modules (page 228).
- Common mode filter (toroidal cores), 2/4 × 3AUA0000032859). For more information, see Common mode filters (page 241).
- BCU control unit kit. For the contents of the kit, see Control unit (page 231).
- Pair of fiber optic cables for connecting the BCU control unit to module. See Fiber optic cables (page 231).
- 1 × control circuit plug connector (3AXD500000960248)
- 1 × quick connector (3AUA0000119227).

The other parts listed in this chapter

- may be required by the application, or
- make the installation or use of the module easier.

LCL filter modules

The LCL filter module has to be ordered separately. LCL filter modules have a direct-on-line cooling fan for single-phase 230 V or 115 V supply.

LCL filter module (230 V fan supply)

IGBT supply unit type ACS880-204-...	Frame size	LCL filter			
		Type	Qty	Ordering code	Contents
U_N = 400 V (Range 380...415 V):					LCL filter with direct-on-line (DOL) 1-phase 230 V cooling fan
0210A-3	R6i	BLCL-05-5+C188	1	3AXD50000863044	
0270A-3	R7i	BLCL-05-5+C188	1	3AXD50000863044	
U_N = 500 V (Range 380...500 V):					
0210A-5	R6i	BLCL-05-5+C188	1	3AXD50000863044	
0260A-5	R7i	BLCL-05-5+C188	1	3AXD50000863044	
U_N = 690 V (Range 525...690 V):					
0150A-7	R6i	BLCL-05-7+C188	1	3AXD50000863051	
0170A-7	R7i	BLCL-05-7+C188	1	3AXD50000863051	

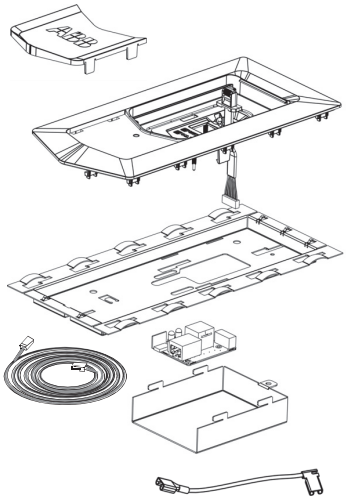
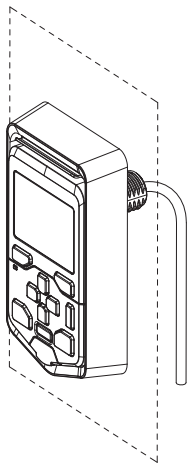
LCL filter module (115 V fan supply)

IGBT supply unit type ACS880-204-...	Frame size	LCL filter			
		Type	Qty	Ordering code	Contents
U_N = 400 V (Range 380...415 V):					LCL filter with direct-on-line (DOL) 1-phase 115 V cooling fan
0210A-3	R6i	BLCL-05-5+C188+G304	1	3AXD50000863068	
0270A-3	R7i	BLCL-05-5+C188+G304	1	3AXD50000863068	
U_N = 500 V (Range 380...500 V):					
0210A-5	R6i	BLCL-05-5+C188+G304	1	3AXD50000863068	
0260A-5	R7i	BLCL-05-5+C188+G304	1	3AXD50000863068	
U_N = 690 V (Range 525...690 V):					
0150A-7	R6i	BLCL-05-7+C188+G304	1	3AXD50000863075	
0170A-7	R7i	BLCL-05-7+C188+G304	1	3AXD50000863075	

Control panel

The control panel is not included with the module but must be ordered separately. One control panel is required for the commissioning of an ACS880 drive system, even if the Drive Composer PC tool is used.

The control panel can be flush mounted on the cabinet door with the help of a door mounting kit. For more information on the control panel, see ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels user's manual (3AUA0000085685 [English]).

Type	Description	Ordering code	Illustration
ACS-AP-W	Control panel with Bluetooth	3AXD50000025965	
DPMP-01	Door mounting kit (IP55)	3AUA0000108878	
DPMP-02	Door mounting kit (IP65)	3AXD50000009374	

For more information on the door mounting kits, such as the contents of the kit, see the installation manuals:

- DPMP-01 mounting platform for control panels installation guide (3AUA0000100140 [English])
- DPMP-02/03 mounting platform for control panels installations guide (3AUA0000136205 [English]).

Control electronics

Cabling of the electronics outside the module must be done by the customer. For the current consumption of the main components in the auxiliary circuit, see Technical data (page 293).

Control unit

Each IGBT supply unit requires a BCU control unit kit.

IGBT supply unit type ACS880-204-...	Type	Qty	Ordering code
All	BCU-02 ISU KIT	1 per unit	3ADX50000002937

The BCU control unit kit contains:

- BCU control unit
- ZMU-02 memory unit with ACS880 IGBT supply control program.

Fiber optic cables

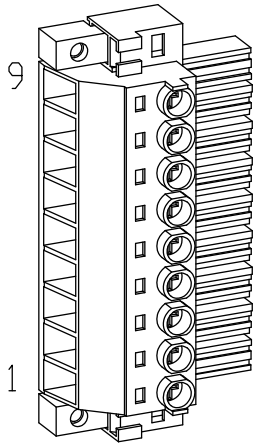
A pair of fiber optic cables is needed to connect the BCU control unit to the module. Select a kit with suitable length. (With the mechanical design presented in this manual, the 2-meter set is sufficient.) The following kits, each consisting of a pair of cables, are available:

The following kits, each consisting of a pair of plastic fiber optic cables, are available from ABB:

Length	Kit type designation	Ordering code
2 m	NLWC-02	58988821
3 m	NLWC-03	58948233
5 m	NLWC-05	58948250
7 m	NLWC-07	58948268
10 m	NLWC-10	58948276

Control circuit plug connectors

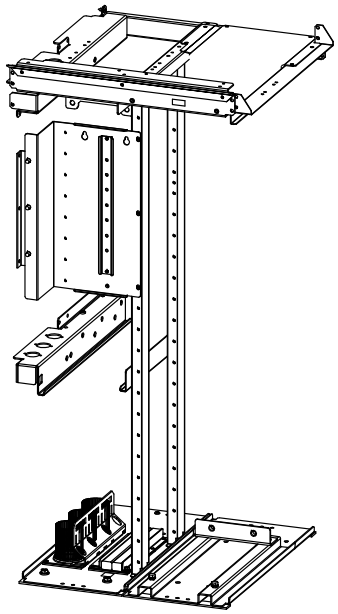
The control circuit plug connector X30 is not included in the module kit and you must order it separately.

Connector	Data	Qty	Ordering code	Illustration
X30 for LCL filter module	BVZ 7.62HP/09/180FC SN BK BX LRP 9-pole (female) 10 mm², 1000 V, 57 A (UL/CSA: 600 V, 40.5 A)	1 per module	3AXD50000960248	

Mechanical installation accessories and tools

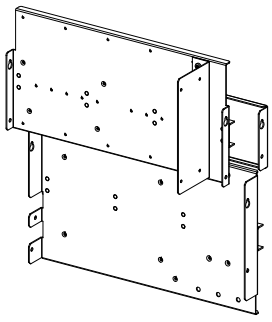
Module installation parts

Module installation parts include, for example, top and bottom supports and air baffles for the supply module.

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm Rittal VX25	1	3AXD50000645664	A-6-67-311-VX	 Instruction code: 3AXD50000644735

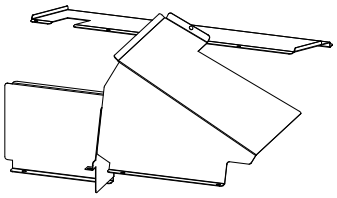
Mounting plates for main switch and charging components

These kits contain the mounting plates for the switching and charging components in the cabinet.

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm VX25	1	3AXD50000649969	A-6-67-406-VX	 Instruction code: 3AXD50000649921

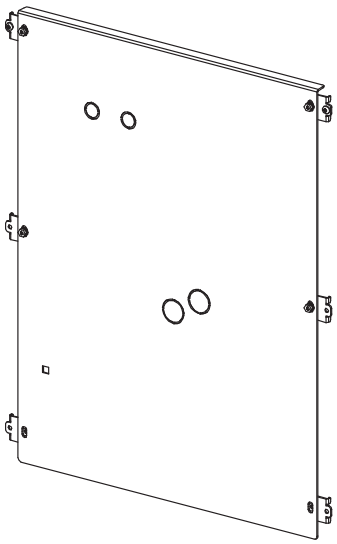
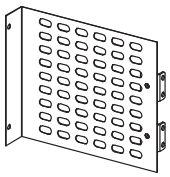
Airflow guides

This kit includes airflow guides to be installed in the cabinet for optimal cooling.

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm VX25	1	3AXD50000695614	A-6-67-364-VX	 Instruction code: 3AXD50000955619

Shrouding

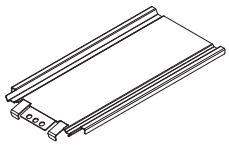
The shrouds in this kit provide IP20 touch protection with the cabinet doors open.

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm VX25	1	3AXD50000645206	A-6-67-357-VX	  Instruction code: 3AXD50000957293

Ramp

The ramp can be used when installing or removing the BLCL filter module.

Note: Do not use the ramp with plinth heights over 100 mm. The ramp is designed for a plinth height of 100 mm (the standard plinth height of Rittal VX25 enclosures).

Used with ...	Qty	Ordering code	Kit code	Illustration
All VX25 enclosures	1	3AXD50000438037	A-468-8-304-VX	

Lifting device

The lifting device is used for replacing converter modules in Rittal VX25 enclosure.

Used with ...	Qty	Ordering code	Instruction code
R6i/R7i; 600 mm Rittal VX25	1	3AXD50000439997	3AXD50000210268

AC-side components

Main switch-disconnector kits

You must equip the electric supply of a machinery with a main disconnecting device (IEC/EN60204-1) such as a main switch-disconnector or main circuit breaker. This section lists suitable main switch-disconnectors.

Unit type ACS880-204-...	Frame size	Main switch-disconnector (IEC)		Qty	Ordering code
		Type	Data		
Any	R6i/R7i	Switch kit OS-type IEC 400 D03	50 kA, 690V, 400A	1	3AXD50000002801

The main switch-disconnector kit contains:

- Main switch fuse unit
- OXP12X185 shaft (diameter 12 mm, length 185 mm)
- OHB95J12 handle with ON/OFF indication
- N.O. auxiliary contact OA1G10
- terminal shroud for input terminals.

AC fuses

The AC fuses protect the input cables, main contactor [Q2] and the module against short circuits.

ACS880-204-...	Frame size	Fuse (IEC)			Qty
		Type	Data	Ordering code	
U_N = 400 V (Range 380 ... 415 V):					
0210A-3	R6i	Bussmann 170M5808D	400A, 690V	64683926	3
0270A-3	R7i	Bussmann 170M5809D	450A, 690V	68316031	3
U_N = 500 V (Range 380 ... 500 V):					
0210A-5	R6i	Bussmann 170M5808D	400A, 690V	64683926	3
0260A-5	R7i	Bussmann 170M5809D	450A, 690V	68316031	3
U_N = 690 V (Range 525 ... 690 V):					
0150A-7	R6i	Bussmann 170M3816D	250A, 690V	10028574	3
0170A-7	R7i	Bussmann 170M3817D	315A, 690V	68316049	3

RFI filters

RFI filter is used for improving the EMC characteristics of the unit and to fulfill category C2 requirements. See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

ACS880-204-...	RFI filter				
	Frame size	Type	Data	Qty	Ordering code
U_N = 400 V (Range 380 ... 415 V):					
0210A-3	R6i	B84143B0250S080	250A, 500V	1	3AUA0000133608
0270A-3	R7i	B84143B1250S080	1250A, 500V	1	3AXD50000009256
U_N = 500 V (Range 380 ... 500 V):					
0210A-5	R6i	B84143B0250S080	250A, 500V	1	3AUA0000133608
0260A-5	R7i	B84143B1250S080	1250A, 500V	1	3AXD50000009256

When using RFI filter and related accessories, check the number of common mode filters to be used.

Main contactors

The main power line is equipped with a main contactor [Q2]. Contactors are used for the on-off control of the main AC input power. The contactors listed are suitable for IEC installations.

ACS880-204-...	Main contactor (IEC)			Qty	Ordering code
	Frame size	Type	Data		
U_N = 400 V (Range 380 ... 415 V):					
0210A-3	1×R6i	AF265-30-22-13	350 A(I_{Th}) 1000 V(U_E), 100...250V / 50...60 Hz	1	3AUA0000145463
0270A-3	1×R7i	AF265-30-22-13	350 A(I_{Th}) 1000 V(U_E), 100...250V / 50...60 Hz	1	3AUA0000145463
U_N = 500 V (Range 380 ... 500 V):					
0210A-5	1×R6i	AF265-30-22-13	350 A(I_{Th}) 1000 V(U_E), 100...250V / 50...60 Hz	1	3AUA0000145463
0260A-5	1×R7i	AF265-30-22-13	350 A(I_{Th}) 1000 V(U_E), 100...250V / 50...60 Hz	1	3AUA0000145463
U_N = 690 V (Range 525 ... 690 V):					
0150A-7	1×R6i	AF265-30-22-13	350 A(I_{Th}) 1000 V(U_E), 100...250V / 50...60 Hz	1	3AUA0000145463
0170A-7	1×R7i	AF265-30-22-13	350 A(I_{Th}) 1000 V(U_E), 100...250V / 50...60 Hz	1	3AUA0000145463

Definitions

I_{Th}	Conventional free-air thermal current
U_E	Rated operational voltage

The contactor package includes:

- contactor unit.

Charging kits

The capacitor bank of the IGBT supply module needs to be charged during the start-up before connecting the module to a three-phase power line.

Note: The charging components are dimensioned for DC link capacitances equal to 3 × IGBT supply unit DC capacitance (1×ISU + 2×INU), 5 × IGBT supply unit DC capacitance (1×ISU + 4×INU) and 7 × IGBT supply unit DC capacitance (1×ISU + 6×INU). If the total DC link capacitance (including IGBT supply and inverter module DC capacitances) exceeds these limits (C_{max}), the components must be redimensioned. Contact ABB representative for more information. The capacitances of the IGBT supply module types and the inverter module types are specified in their technical data tables. Two chargings in five minutes are allowed to prevent charging circuit overheating.

Dimensioning of these charging kits is based on the assumptions that the modules are supplied with 230/115 V AC auxiliary voltage in connector X50. The following tables show the charging kits available for each module type.

ACS880-204-...	Frame size	1×ISU + 2×INU		1×ISU + 4×INU		1×ISU + 6×INU	
		Ordering code (IEC)	C_{max} (mF)	Ordering code (IEC)	C_{max} (mF)	Ordering code (IEC)	C_{max} (mF)
U_N = 400 V (Range 380 ... 415 V):							
0210A-3	R6i	3AXD50000558193	20.4	3AXD50000558193	34.0	3AXD50000558193	47.6
0270A-3	R7i	3AXD50000558193	27.0	3AXD50000558193	45.0	3AXD50000558209	63.0
U_N = 500 V (Range 380 ... 500 V):							
0210A-5	R6i	3AXD50000558513	20.4	3AXD50000558537	34.0	3AXD50000558537	47.6
0260A-5	R7i	3AXD50000558513	27.0	3AXD50000558537	45.0	3AXD50000558544	63.0
U_N = 690 V (Range 525 ... 690 V):							
0150A-7	R6i	3AXD50000558551	9.0	3AXD50000558551	15.0	3AXD50000558551	21.0
0170A-7	R7i	3AXD50000558551	13.5	3AXD50000558568	22.5	3AXD50000558568	31.5

The charging kit contains:

- charging switch (switch fuse type)
- terminal covers for the switch disconnector (4 pcs)
- contactor
- fuses (4 pcs, IEC: gG)
- resistor
- fuse holders
- N.O. auxiliary contact
- shaft OXP6X360
- handle OHB65J6 with ON/OFF indication.

Minimum recommended wire sizes for the charging kits:

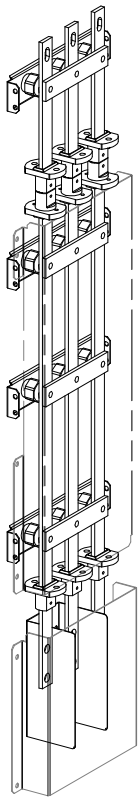
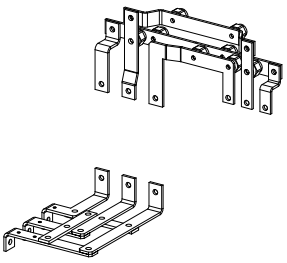
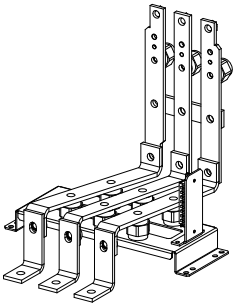
- Consult ABB.

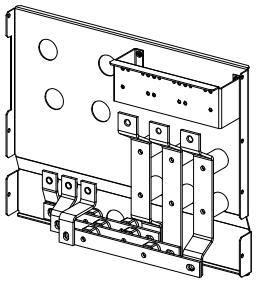
Use reinforced wire insulation.

For more detailed information on the charging components, see the technical data.

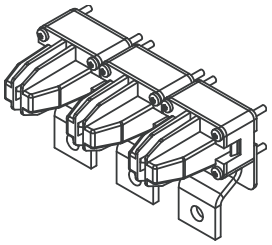
AC busbars

These kits contain the AC busbars from the cable terminals (via the main switch and LCL filter) to the supply module.

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm VX25	1	3AXD50000645398	A-6-67-151-VX	 Instruction code: 3AXD50000645381
R6i/R7i; 600 mm VX25	1	3AXD50000652525	A-6-67-152-VX	 Instruction code: 3AXD50000650156
R6i/R7i; 600 mm VX25	1	3AXD50000648337	A-6-67-106-VX	 Instruction code: 3AXD50000648436

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm Rittal VX25	1	3AXD50000648559	A-6-67-131-VX	 Instruction code: 3AXD50000648566

Quick connector

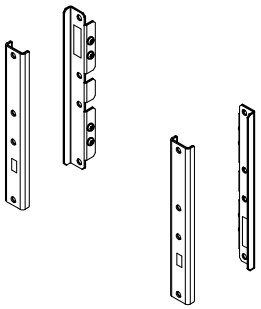
Used with	Qty	Ordering code	Kit code	Illustration
All enclosure types	1 per module	3AUA0000119227	A-468-8-100	 Instruction code: 3AUA0000118667

DC-side components

DC bus installation parts (for Rittal VX25 enclosures)

The brackets in this kit act as a mounting base for the busbar supports of the Rittal Flat-PLS DC bus and ensure its correct placement and alignment inside the cabinet line-up.

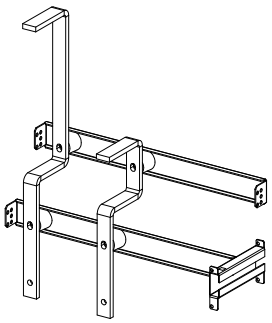
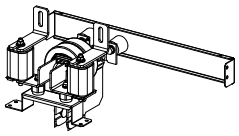
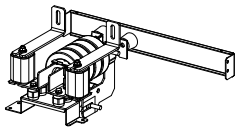
The designs shown in this manual for Rittal VX25 enclosures use the Rittal Flat-PLS busbar system. Make sure that the current in the drive system does not exceed the current-carrying capacity of the busbars.

Used with ...	Qty	Ordering code	Kit code	Illustration
VX25 enclosure	1 kit per cubicle	3AXD50000333387	A-468-X-001-VX	 Instruction code: 3AXD50000333639

Busbars from supply module to DC bus

These kits contain the DC busbars from the supply module to the common DC bus, including holders for common mode filters (CMF) (toroidal cores). A common mode filter is needed with an IGBT supply module. There are alternate kits for either two or four toroidal cores.

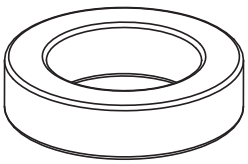
Note that the toroidal cores are not included in the kit.

Used with ...	Qty	Ordering code	Kit code	Illustration
R6i/R7i; 600 mm VX25	1	3AXD50000656653	A-6-67-294-VX	 Instruction code: 3AXD50000653263
R6i/R7i; 600 mm VX25 CMF with 2 cores	1	3AXD50000653232	A-6-67-292-VX	 Instruction code: 3AXD50000654055
R6i/R7i; 600 mm VX25 CMF with 4 cores	1	3AXD50000883981	A-6-67-293-VX	 Instruction code: 3AXD50000883950

Common mode filters

You must equip each module with a common mode filter.

Common mode filtering reduces bearing currents and is required for electromagnetic compatibility (EMC). The filtering is implemented by installing two toroidal cores onto the DC busbars. The cores must be ordered separately.

Used with	Qty	Ordering code	Kit code	Illustration
All enclosure types	2 per module*	3AUA0000032859	-	 Instruction code: 3AUA0000123359

* For EMC category C2 in case of R6i, R7i or 1×R8i, 4 pcs. As standard, 2 pcs per module.

DC fuses

DC fuses protect the module and drive DC bus against short circuits.

ACS880-204-...	Fuse (IEC)			Qty
	Type	Data	Ordering code	
U_N = 400 V (Range 380 ... 415 V):				
0210A-3	Bussmann 170M4413	450A, 690 V, size 1	68731623	2
0270-A-5	Bussmann 170M4415	550A,690V, size 1	68731631	2
U_N = 500 V (Range 380 ... 500 V):				
0210A-5	Bussmann 170M4413	450A, 690 V, size 1	68731623	2
0260A-5	Bussmann 170M4415	550A,690V, size 1	68731631	2
U_N = 690 V (Range 625 ... 690 V):				
0150A-7	Bussmann 170M4391	315A,1250V, size 1	3AXD50000010196	2
0170A-7	Bussmann 170M4392	350A,1250V, size 1	3AXD50000010197	2

Frame R8i and multiples

IGBT supply modules

IGBT supply units consisting of frame R8i supply modules are to be ordered as separate modules.

IGBT supply unit		Modules used		
Type	**Frame size**	**Qty**	**Ordering code (see below for options)**	**Contents**
U_N = 400 V (Range 380 … 415 V):				• IGBT supply module(s) (frame R8i) with speed-controlled cooling fan(s) • **+E205:** (internal du/dt filters) • **+V112:** X50 connector version
ACS880-204-0420A-3	R8i	1	ACS880-104-0470A-3+E205+V112	
ACS880-204-0580A-3	R8i	1	ACS880-104-0640A-3+E205+V112	
ACS880-204-0810A-3	R8i	1	ACS880-104-0900A-3+E205+V112	
ACS880-204-1130A-3	2×R8i	2	ACS880-104-0640A-3+E205+V112	
ACS880-204-1330A-3	2×R8i	2	ACS880-104-0760A-3+E205+V112	
ACS880-204-1580A-3	2×R8i	2	ACS880-104-0900A-3+E205+V112	
ACS880-204-2350A-3	3×R8i	3	ACS880-104-0900A-3+E205+V112	
ACS880-204-3110A-3	4×R8i	4	ACS880-104-0900A-3+E205+V112	
ACS880-204-4620A-3	6×R8i	6	ACS880-104-0900A-3+E205+V112	
U_N = 500 V (Range 380 … 500 V):				
ACS880-204-0400A-5	R8i	1	ACS880-104-0440A-5+E205+V112	
ACS880-204-0530A-5	R8i	1	ACS880-104-0590A-5+E205+V112	
ACS880-204-0730A-5	R8i	1	ACS880-104-0810A-5+E205+V112	
ACS880-204-1040A-5	2×R8i	2	ACS880-104-0590A-5+E205+V112	
ACS880-204-1420A-5	2×R8i	2	ACS880-104-0810A-5+E205+V112	
ACS880-204-2120A-5	3×R8i	3	ACS880-104-0810A-5+E205+V112	
ACS880-204-2800A-5	4×R8i	4	ACS880-104-0810A-5+E205+V112	
ACS880-204-4150A-5	6×R8i	6	ACS880-104-0810A-5+E205+V112	
U_N = 690 V (Range 525 … 690 V):				
ACS880-204-0310A-7	R8i	1	ACS880-104-0340A-7+E205+V112	
ACS880-204-0370A-7	R8i	1	ACS880-104-0410A-7+E205+V112	
ACS880-204-0540A-7	R8i	1	ACS880-104-0600A-7+E205+V112	
ACS880-204-0720A-7	2×R8i	2	ACS880-104-0410A-7+E205+V112	
ACS880-204-1050A-7	2×R8i	2	ACS880-104-0600A-7+E205+V112	
ACS880-204-1570A-7	3×R8i	3	ACS880-104-0600A-7+E205+V112	
ACS880-204-2070A-7	4×R8i	4	ACS880-104-0600A-7+E205+V112	
ACS880-204-3080A-7	6×R8i	6	ACS880-104-0600A-7+E205+V112	

Ordering code format	Option codes
[Module type] +code [+code] … For example, **ACS880-104-0470A-3 +E205 +C188 +V112**	**+C132:** Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C183:** Heating element mounted to module base **+C188:** Direct-on-line cooling fan **+E205:** Internal du/dt filters (When the module is used as an IGBT supply module, it must always be ordered with +E205.) **+G304:** 115 V auxiliary voltage supply **+V112:** X50 connector version

Note: The following components are always required to construct a working unit and must be ordered separately (amounts given here are for one IGBT supply module):

- LCL filter module(s). For more information, see LCL filters (+C183+C188) (page 245), and LCL filters (+C183+C188 and +G304 or +G427) (page 246).
- Common mode filter (consists of two toroidal cores, 2 × 3AUA0000032859). For more information, see Common mode filters (page 279).
- BCU control unit kit. For the contents of the kit, see Control unit (page 250).
- Fiber optic cables (page 250)
- 1 × Control circuit plug connector (3AXD50000960248)
- 2 × Quick connectors (3AUA0000119227). For the contents of the kit, see Busbars and quick connectors (page 275).

The other parts listed in this chapter

- may be required by the application, or
- make the installation or use of the module easier.

LCL filters (+C183+C188)

LCL filter modules have to be ordered separately.

IGBT supply unit type ACS880-204-...	Frame size	LCL filter			
		Type ACS880-BLCL-...	Qty	Ordering code	Contents
U_N = 400 V (Range 380 ... 415 V):					• **+C183:** Internal heating element • **+C188:** Direct-on-line (DOL) cooling fan with 230 V supply for BLCL-1x-x / 400 V AC supply for BLCL-2x-x • **+V112**: X30/X55 connector version • **+V991:** Hardware version
0420A-3	1×R8i	13-5+C183+C188+V112+V991	1	3AXD50000986323	
0580A-3	1×R8i	13-5+C183+C188+V112+V991	1	3AXD50000986323	
0810A-3	1×R8i	15-5+C183+C188+V112+V991	1	3AXD50000986446	
1130A-3	2×R8i	24-5+C183+C188+V112+V991	1	3AXD50000986606	
1330A-3	2×R8i	24-5+C183+C188+V112+V991	1	3AXD50000986606	
1580A-3	2×R8i	25-5+C183+C188+V112+V991	1	3AXD50000986743	
2350A-3	3×R8i	24-5+C183+C188+V112+V991	2	3AXD50000986606	
3110A-3	4×R8i	25-5+C183+C188+V112+V991	2	3AXD50000986743	
4620A-3	6×R8i	25-5+C183+C188+V112+V991	3	3AXD50000986743	
U_N = 500 V (Range 380 ... 500 V):					
0400A-5	1×R8i	13-5+C183+C188+V112+V991	1	3AXD50000986323	
0530A-5	1×R8i	13-5+C183+C188+V112+V991	1	3AXD50000986323	
0730A-5	1×R8i	15-5+C183+C188+V112+V991	1	3AXD50000986446	
1040A-5	2×R8i	24-5+C183+C188+V112+V991	1	3AXD50000986606	
1420A-5	2×R8i	25-5+C183+C188+V112+V991	1	3AXD50000986743	
2120A-5	3×R8i	24-5+C183+C188+V112+V991	2	3AXD50000986606	
2800A-5	4×R8i	25-5+C183+C188+V112+V991	2	3AXD50000986743	
4150A-5	6×R8i	25-5+C183+C188+V112+V991	3	3AXD50000986743	
U_N = 690 V (Range 525 ... 690 V):					
0310A-7	1×R8i	13-7+C183+C188+V112+V991	1	3AXD50000986361	
0370A-7	1×R8i	13-7+C183+C188+V112+V991	1	3AXD50000986361	
0540A-7	1×R8i	15-7+C183+C188+V112+V991	1	3AXD50000986521	
0720A-7	2×R8i	24-7+C183+C188+V112+V991	1	3AXD50000986668	
1050A-7	2×R8i	25-7+C183+C188+V112+V991	1	3AXD50000986828	
1570A-7	3×R8i	24-7+C183+C188+V112+V991	2	3AXD50000986668	
2070A-7	4×R8i	25-7+C183+C188+V112+V991	2	3AXD50000986828	
3080A-7	6×R8i	25-7+C183+C188+V112+V991	3	3AXD50000986828	

LCL filters (+C183+C188 and +G304 or +G427)

LCL filter modules have to be ordered separately.

IGBT supply unit type ACS880-204-...	Frame size	LCL filter			
		Type ACS880-BLCL-...	Qty	Ordering code	Contents
U_N = 400 V (Range 380 ... 415 V):					• **+C183:** Internal heating element • **+C188:** Direct-on-line (DOL) cooling fan • **+G304:** 115 V AC 1-phase fan supply for BLCL-1x-x • **+G427:** 208 V AC 3-phase fan supply for BLCL-2x-x • **+V112**: X30/X55 connector version • **+V991:** Hardware version
0420A-3	1×R8i	13-5+C183+C188+G304+V112+V991	1	3AXD50000985104	
0580A-3	1×R8i	13-5+C183+C188+G304+V112+V991	1	3AXD50000985104	
0810A-3	1×R8i	15-5+C183+C188+G304+V112+V991	1	3AXD50000986422	
1130A-3	2×R8i	24-5+C183+C188+G427+V112+V991	1	3AXD50000986583	
1330A-3	2×R8i	24-5+C183+C188+G427+V112+V991	1	3AXD50000986583	
1580A-3	2×R8i	25-5+C183+C188+G427+V112+V991	1	3AXD50000986729	
2350A-3	3×R8i	24-5+C183+C188+G427+V112+V991	2	3AXD50000986583	
3110A-3	4×R8i	25-5+C183+C188+G427+V112+V991	2	3AXD50000986729	
4620A-3	6×R8i	25-5+C183+C188+G427+V112+V991	3	3AXD50000986729	
U_N = 500 V (Range 380 ... 500 V):					
0400A-5	1×R8i	13-5+C183+C188+G304+V112+V991	1	3AXD50000985104	
0530A-5	1×R8i	13-5+C183+C188+G304+V112+V991	1	3AXD50000985104	
0730A-5	1×R8i	15-5+C183+C188+G304+V112+V991	1	3AXD50000986422	
1040A-5	2×R8i	24-5+C183+C188+G427+V112+V991	1	3AXD50000986583	
1420A-5	2×R8i	25-5+C183+C188+G427+V112+V991	1	3AXD50000986729	
2120A-5	3×R8i	24-5+C183+C188+G427+V112+V991	2	3AXD50000986583	
2800A-5	4×R8i	25-5+C183+C188+G427+V112+V991	2	3AXD50000986729	
4150A-5	6×R8i	25-5+C183+C188+G427+V112+V991	3	3AXD50000986729	
U_N = 690 V (Range 525 ... 690 V):					
0310A-7	1×R8i	13-7+C183+C188+G304+V112+V991	1	3AXD50000986347	
0370A-7	1×R8i	13-7+C183+C188+G304+V112+V991	1	3AXD50000986347	
0540A-7	1×R8i	15-7+C183+C188+G304+V112+V991	1	3AXD50000986507	
0720A-7	2×R8i	24-7+C183+C188+G427+V112+V991	1	3AXD50000986644	
1050A-7	2×R8i	25-7+C183+C188+G427+V112+V991	1	3AXD50000986804	
1570A-7	3×R8i	24-7+C183+C188+G427+V112+V991	2	3AXD50000986644	
2070A-7	4×R8i	25-7+C183+C188+G427+V112+V991	2	3AXD50000986804	
3080A-7	6×R8i	25-7+C183+C188+G427+V112+V991	3	3AXD50000986804	

RFI filters

RFI filter is used for improving the EMC characteristics of the unit and to fulfill category C2 requirements. See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

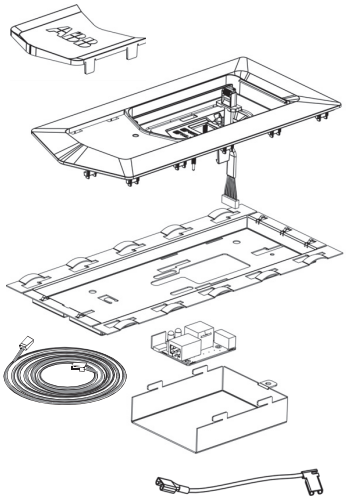
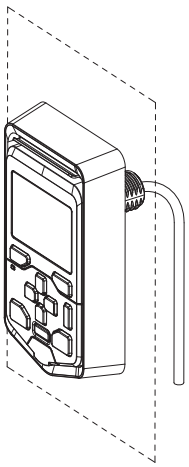
ACS880-204-...	RFI filter				Assembly kit for toroid		
	Type	Data	Qty	Ordering code	Type	Qty	Ordering code
U_N = 400 V (Range 380 ... 415 V):							
0420A-3	B84143B 1250S080	1250 A, 500 V	1	3AXD50000009256	Assembly kit including 20 µH toroid	1	3AUA0000094324
0580A-3							
0810A-3							
U_N = 500 V (Range 380 ... 500 V):							
0400A-5	B84143B 1250S080	1250 A, 500 V	1	3AXD50000009256	Assembly kit including 20 µH toroid	1	3AUA0000094324
0530A-5							
0730A-5							

For more information, see the dimension drawings. When using RFI filter and related accessories, check the number of common mode filters to be used.

Control panel

The control panel is not included with the module but must be ordered separately. One control panel is required for the commissioning of an ACS880 drive system, even if the Drive Composer PC tool is used.

The control panel can be flush mounted on the cabinet door with the help of a door mounting kit. For more information on the control panel, see ACS-AP-I, -S, -W and ACH-AP-H, -W Assistant control panels user's manual (3AUA0000085685 [English]).

Type	Description	Ordering code	Illustration
ACS-AP-W	Control panel with Bluetooth	3AXD50000025965	
DPMP-01	Door mounting kit (IP55)	3AUA0000108878	
DPMP-02	Door mounting kit (IP65)	3AXD50000009374	

For more information on the door mounting kits, such as the contents of the kit, see the installation manuals:

- DPMP-01 mounting platform for control panels installation guide (3AUA0000100140 [English])
- DPMP-02/03 mounting platform for control panels installations guide (3AUA0000136205 [English]).

Control electronics

Cabling of the electronics outside the module must be done by the customer. For the current consumption of the main components in the auxiliary circuit, see the technical data.

Control unit

You must equip each IGBT supply unit with one control unit (and memory unit). The delivery includes control unit.

	Type	Qty	Ordering code
U_N = 400 V (Range 380 ... 415 V):			
0420A-3	BCU-02 ISU KIT	1	3AXD50000002937
0580A-3	BCU-02 ISU KIT	1	3AXD50000002937
0810A-3	BCU-02 ISU KIT	1	3AXD50000002937
1130A-3	BCU-02 ISU KIT	1	3AXD50000002937
1330A-3	BCU-02 ISU KIT	1	3AXD50000002937
1580A-3	BCU-02 ISU KIT	1	3AXD50000002937
2350A-3	BCU-12 ISU KIT	1	3AXD50000015806
3110A-3	BCU-12 ISU KIT	1	3AXD50000015806
4620A-3	BCU-12 ISU KIT	1	3AXD50000015806
U_N = 500 V (Range 380 ... 500 V):			
0400A-5	BCU-02 ISU KIT	1	3AXD50000002937
0530A-5	BCU-02 ISU KIT	1	3AXD50000002937
0730A-5	BCU-02 ISU KIT	1	3AXD50000002937
1040A-5	BCU-02 ISU KIT	1	3AXD50000002937
1420A-5	BCU-02 ISU KIT	1	3AXD50000002937
2120A-5	BCU-12 ISU KIT	1	3AXD50000015806
2800A-5	BCU-12 ISU KIT	1	3AXD50000015806
4150A-5	BCU-12 ISU KIT	1	3AXD50000015806
U_N = 690 V (Range 525 ... 690 V):			
0310A-7	BCU-02 ISU KIT	1	3AXD50000002937
0370A-7	BCU-02 ISU KIT	1	3AXD50000002937
0540A-7	BCU-02 ISU KIT	1	3AXD50000002937
0720A-7	BCU-02 ISU KIT	1	3AXD50000002937
1050A-7	BCU-02 ISU KIT	1	3AXD50000002937
1570A-7	BCU-12 ISU KIT	1	3AXD50000015806
2070A-7	BCU-12 ISU KIT	1	3AXD50000015806
3080A-7	BCU-12 ISU KIT	1	3AXD50000015806

The BCU control unit kit contains:

- BCU control unit
- ZMU-02 memory unit with ACS880 IGBT supply control program.

Fiber optic cables

The fiber optic cables are needed for supply modules and LCL filters. You need one pair of cables (kit) per each module. Select a kit with suitable length.

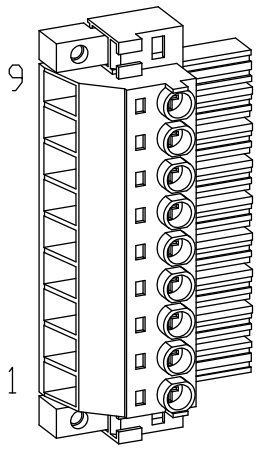
The following kits, each consisting of a pair of plastic fiber optic cables, are available from ABB:

Length	Kit type designation	Ordering code
2 m	NLWC-02	58988821
3 m	NLWC-03	58948233
5 m	NLWC-05	58948250
7 m	NLWC-07	58948268
10 m	NLWC-10	58948276

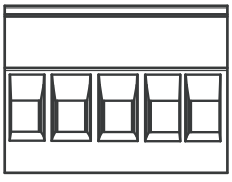
Control circuit plug connectors

The control circuit plug connector X50 is not included in the module kit and you must order it separately.

Note: Plug connectors for X51, X52 and X53 are included in the module kit.

Connector	Data	Qty	Ordering code	Illustration
X50 for R8i modules with +V112 X30 for LCL filter module with +V112	BVZ 7.62HP/09/180FC SN BK BX LRP 9-pole (female) 10 mm², 1000 V, 57 A (UL/CSA: 600 V, 40.5 A)	1 per module	3AXD50000960248	

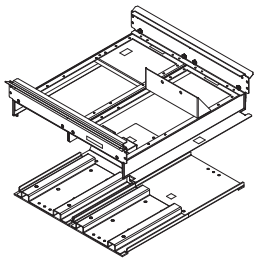
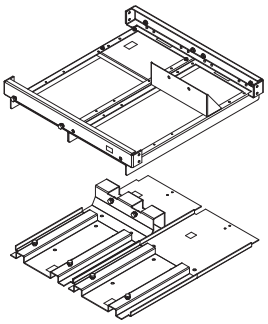
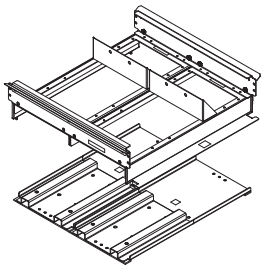
Plug connectors for X51, X52 and X53 are included in the module kit. Plug connectors can be ordered separately as spare parts.

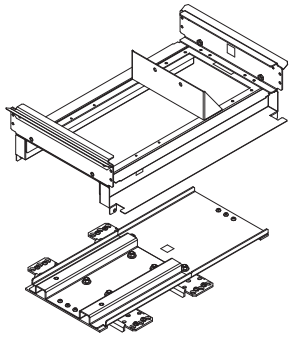
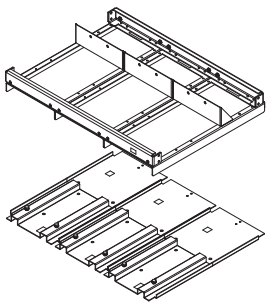
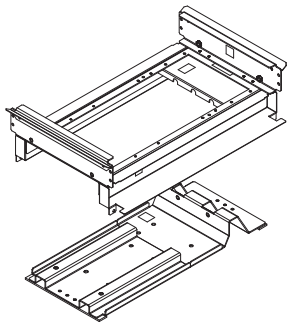
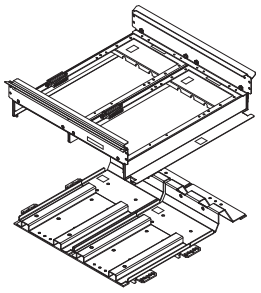
Connector	Data	Qty	Ordering code	Illustration
X51-X53	1 × MSTB 2,5/5-ST-5,08 BK 2 × MSTB 2,5/5-ST-5,08 YE 2.50 mm², 320 V, 12 A	1 per module	3AXD50000003541	

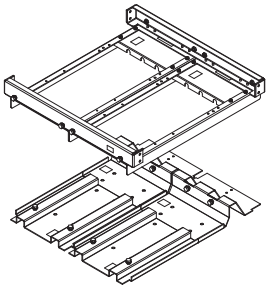
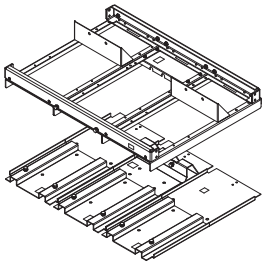
Mechanical installation accessories and tools

Module installation parts

Module installation parts include, for example, top and bottom supports and air baffles for the supply and LCL filter modules.

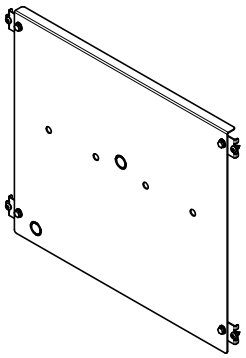
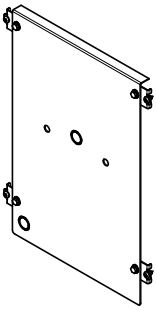
Used with ...	Qty	Ordering code	Kit code	Illustration
1×R8i; 600 mm Rittal	1	3AXD50000416486	A-6-8-306-VX	 Instruction code: 3AXD50000384914
1×R8i; 600 mm generic	1	3AXD50000013842	A-6-8-328	 Instruction code: 3AXD50000013903
2×R8i, 3×R8i; 600 mm Rittal	1	3AXD50000361670	A-6-8-323-VX	 Instruction code: 3AXD50000351756

Used with ...	Qty	Ordering code	Kit code	Illustration
3×R8i; 400 mm Rittal	1	3AXD50000371112	A-4-8-324-VX	 Instruction code: 3AXD50000372935
3×R8i; 800 mm generic	1	3AXD50000011160	A-8-8-327	 Instruction code: 3AXD50000013813
2×R8i; 400 mm Rittal	1	3AXD50000360802	A-4-8-321-VX	 Instruction code: 3AXD50000349982
3×R8i; 600 mm Rittal	1	3AXD50000361700	A-6-8-322-VX	 Instruction code: 3AXD50000351930

Used with ...	Qty	Ordering code	Kit code	Illustration
3×R8i; 600 mm generic	1	3AXD50000011159	A-6-8-326	 Instruction code: 3AXD50000013812
2×R8i; 800 mm generic	1	3AXD50000011158	A-8-8-325	 Instruction code: 3AXD50000013143

Shrouds

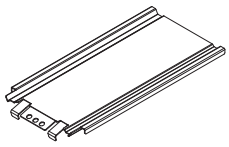
Shrouds are used for IP20 touch protection with the cabinet doors open.

Used with ...	Qty	Ordering code	Kit code	Illustration
R8i; 600 mm enclosure	1 per cubicle	3AXD50000337378	A-6-8-360-VX	 Instruction code: 3AXD50000335022
R8i; 400 mm enclosure	1 per cubicle	3AXD50000337484	A-4-8-359-VX	 Instruction code: 3AXD50000335169

Ramp

The ramp can be used when installing or removing an R8i module.

Note: Do not use the ramp with plinth heights over 100 mm. The ramp is designed for a plinth height of 100 mm (the standard plinth height of Rittal VX25 enclosures.

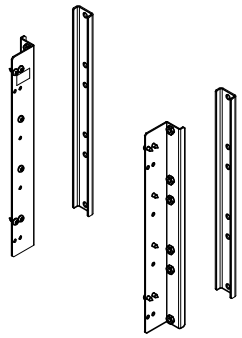
Used with ...	Qty	Ordering code	Kit code	Illustration
All VX25 enclosures	1	3AXD50000438037	A-468-8-304-VX	

AC-side components

AC bus installation parts (for Rittal VX25 enclosures)

The brackets in this kit act as a mounting base for the busbar supports of the Rittal Flat-PLS AC bus and ensure its correct placement and alignment inside the cabinet line-up.

Note: The designs presented in this manual for Rittal VX25 enclosures employ the Rittal Flat-PLS busbar system. Make sure that the current carrying capability of the busbars is not exceeded at any point of the drive system.

Used with ...	Qty	Ordering code	Kit code	Illustration
400/600/800 mm Rittal VX25 enclosure	1 kit per cubicle	3AXD50000360772	A-468-X-011-VX	 Instruction code: 3AXD50000372782

Main switch-disconnector kits

You must equip the electric supply of a machinery with a main disconnecting device (IEC/EN60204-1). The main power line is equipped with a main switch-disconnector or a main circuit breaker [Q1]. This section lists suitable main switch-disconnectors.

Note: For some of the IEC and UL high power units, you can use withdrawable main circuit breaker instead of the main switch-disconnector. In the table below, these high power units are marked with *. See section Main circuit breakers and wagons (page 258).

ACS880-204-...	Main switch-disconnector (IEC)		Ordering code	Qty
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
0420A-3	Switch kit OT-type IEC 1000 E03	50 kA, 690 V, 1000 A	3AXD50000000894	1
0580A-3	Switch kit OT-type IEC 1000 E03	50 kA, 690 V, 1000 A	3AXD50000000894	1
0810A-3	Switch kit OT-type IEC 1000 E03	50 kA, 690 V, 1000 A	3AXD50000000894	1
1130A-3*	Switch kit OT-type IEC 2000 E12	55 kA, 1000 V, 2000 A	3AXD50000006186	1
1330A-3*	Switch kit OT-type IEC 2000 E12	55 kA, 1000 V, 2000 A	3AXD50000006186	1
1580A-3*	Switch kit OT-type IEC 2000 E12	55 kA, 1000 V, 2000 A	3AXD50000006186	1
U_N = 500 V (Range 380 ... 500 V):				
0400A-5	Switch kit OT-type IEC 1000 E03	50 kA, 690 V, 1000 A	3AXD50000000894	1
0530A-5	Switch kit OT-type IEC 1000 E03	50 kA, 690 V, 1000 A	3AXD50000000894	1
0730A-5	Switch kit OT-type IEC 1000 E03	50 kA, 690 V, 1000 A	3AXD50000000894	1
1040A-5	Switch kit OT-type IEC 1250 E12	50 kA, 1000 V, 1250 A	3AXD50000006185	1
1420A-5*	Switch kit OT-type IEC 2000 E12	55 kA, 1000 V, 2000 A	3AXD50000006186	1
U_N = 690 V (Range 525 ... 690 V):				
0310A-7	Switch kit OT-type IEC 1250 E12	50 kA, 1000 V, 1250 A	3AXD50000006185	1
0370A-7	Switch kit OT-type IEC 1250 E12	50 kA, 1000 V, 1250 A	3AXD50000006185	1
0540A-7	Switch kit OT-type IEC 1250 E12	50 kA, 1000 V, 1250 A	3AXD50000006185	1
0720A-7	Switch kit OT-type IEC 1250 E12	50 kA, 1000 V, 1250 A	3AXD50000006185	1
1050A-7	Switch kit OT-type IEC 1250 E12	50 kA, 1000 V, 1250 A	3AXD50000006185	1
1570A-7*	Switch kit OT-type IEC 2000 E12	55 kA, 1000 V, 2000 A	3AXD50000006186	1

ACS880-204-...	Main switch-disconnector (UL, CSA)		Ordering code	Qty
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
0420A-3	Switch kit OT-type UL 1200 U03	50 kA, 600 V, 1200 A	3AXD50000002795	1
0580A-3	Switch kit OT-type UL 1200 U03	50 kA, 600 V, 1200 A	3AXD50000002795	1
0810A-3	Switch kit OT-type UL 1200 U03	50 kA, 600 V, 1200 A	3AXD50000002795	1
U_N = 500 V (Range 380 ... 500 V):				
0400A-5	Switch kit OT-type UL 1200 U03	50 kA, 600 V, 1200 A	3AXD50000002795	1
0530A-5	Switch kit OT-type UL 1200 U03	50 kA, 600 V, 1200 A	3AXD50000002795	1
0730A-5	Switch kit OT-type UL 1200 U03	50 kA, 600 V, 1200 A	3AXD50000002795	1
1040A-5	Switch kit OT-type UL 1200 U12	50 kA, 600 V, 1200 A	3AXD50000010814	1
U_N = 690 V (Range 525 ... 690 V):				
0310A-7	Switch kit OT-type UL 1200 U12	50 kA, 600 V, 1200 A	3AXD50000010814	1

ACS880-204-...	Main switch-disconnector (UL, CSA)		Ordering code	Qty
	Type	Data		
0370A-7	Switch kit OT-type UL 1200 U12	50 kA, 600 V, 1200 A	3AXD50000010814	1
0540A-7	Switch kit OT-type UL 1200 U12	50 kA, 600 V, 1200 A	3AXD50000010814	1
0720A-7	Switch kit OT-type UL 1200 U12	50 kA, 600 V, 1200 A	3AXD50000010814	1
1050A-7	Switch kit OT-type UL 1200 U12	50 kA, 600 V, 1200 A	3AXD50000010814	1

The main switch-disconnector kit contains:

- main switch disconnector unit
- OXP12X465 shaft (diameter 12 mm, length 465 mm)
- OHB150J12P handle with ON/OFF indication
- OA1G10 normally-open auxiliary contact.

Main circuit breakers and wagons

You can use the main circuit breakers below for the on-off control of the AC input power. The breakers can make and break the full load current and also break a fault current. When installed in a wagon, the breakers are withdrawable and operate as main disconnecting device for the supply units.

You must equip the electric supply of a machinery with a main disconnecting device (IEC/EN60204-1). The main power line is equipped with a main switch-disconnector or a main circuit breaker [Q1]. This section lists suitable main circuit breakers. For illustrations and dimensions, see the ABB SACE catalogs in the Internet https://new.abb.com/low-voltage/products/circuit-breakers/emax2.

Note: For some of the IEC lower power units, you can use either the main switch-disconnector or the main circuit breaker. In the table, these lower power units are marked with * in the first column.

ACS880-204-...	Main circuit breaker (IEC, 230 V)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
1130A-3*	E2.2S-1250	1250 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000902941
1330A-3*	E2.2S-1600	1600 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000902965
1580A-3*	E2.2S-2000	2000 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903375
2350A-3	E2.2S-2500	2500 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903399
3110A-3	E4.2S-3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346
4620A-3	E6.2H-5000	5000 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000903658
U_N = 500 V (Range 380 ... 500 V):				
1420A-5*	E2.2S-1600	1600 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000902965
2120A-5	E2.2S-2500	2500 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903399
2800A-5	E4.2S-3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346
4150A-5	E6.2H-5000	5000 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000903658
U_N = 690 V (Range 525 ... 690 V):				
1570A-7*	E2.2S-2000	2000 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903375
2070A-7	E2.2S-2500	2500 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903399
3080A-7	E4.2S-3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346

Content of the 230 V main circuit breakers:

- Ekip Dip LI 3p WMP — 1SDA072311R1 (E2.2S 1250), 1SDA072351R1 (E2.2S 1600), 1SDA072391R1 (E2.2S 2000), 1SDA072421R1 (E2.2S 2500), 1SDA072501R1 (E4.2S 3200), 1SDA072611R1 (E6.2H 5000)
- YO E1.2..E6.2 220-240 Vac/dc — 1SDA073674R1
- YC E1.2..E6.2 220-240 Vac/dc — 1SDA073687R1
- YU E1.2..E6.2 220-240 Vac/dc — 1SDA073700R1
- M E2.2..E6.2 220-250 Vac/dc — 1SDA073725R1

- MOC E2.2..E6.2 1SDA073781R1
- AUX 6Q 400V E2.2..E6.2 1SDA073756R1
- KLC-S Key lock open N.20005 E2.2..E6.2 1SDA073792R1
- KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key 1SDA073807R1
- RTC 250V E2.2...E6.2 1SDA073773R1

ACS880-204-...	Main circuit breaker (IEC, 115 V)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
1130A-3*	E2.2S-1250	1250 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000902958
1330A-3*	E2.2S-1600	1600 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000904259
1580A-3*	E2.2S-2000	2000 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903382
2350A-3	E2.2S-2500	2500 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903405
3110A-3	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341
4620A-3	E6.2H-5000	5000 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000903665
U_N = 500 V (Range 380 ... 500 V):				
1420A-5*	E2.2S-1600	1600 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000904259
2120A-5	E2.2S-2500	2500 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903405
2800A-5	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341
4150A-5	E6.2H-5000	5000 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000903665
U_N = 690 V (Range 525 ... 690 V):				
1570A-7*	E2.2S-2000	2000 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903382
2070A-7	E2.2S-2500	2500 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000903405
3080A-7	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341

Content of the 115 V main circuit breakers:

- Ekip Dip LI 3p WMP — 1SDA072311R1 (E2.2S 1250)
1SDA072351R1 (E2.2S 1600)
1SDA072391R1 (E2.2S 2000)
1SDA072421R1 (E2.2S 2500)
1SDA072501R1 (E4.2S 3200)
1SDA072611R1 (E6.2H 5000)
- YO E1.2..E6.2 110-120 Vac/dc — 1SDA073672R1
- YC E1.2..E6.2 110-120 Vac/dc — 1SDA073685R1
- YU E1.2..E6.2 110-120 Vac/dc — 1SDA073698R1
- M E2.2...E6.2 100-130 Vac/dc — 1SDA073724R1
- MOC E2.2..E6.2 — 1SDA073781R1
- AUX 6Q 400V E2.2..E6.2 — 1SDA073756R1
- KLC-S Key lock open N.20005 E2.2..E6.2 — 1SDA073792R1
- KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key — 1SDA073807R1
- RTC 250V E2.2...E6.2 — 1SDA073773R1

ACS880-204-...	Wagon (IEC)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
1130A-3*	E2.2_W_FP_2000	3-pole, rear hor. term.	1	3AXD50000893485
1330A-3*	E2.2_W_FP_2000	3-pole, rear hor. term.	1	3AXD50000893485
1580A-3*	E2.2_W_FP_2000	3-pole, rear hor. term.	1	3AXD50000893485
2350A-3	E2.2_W_FP_2500	3-pole, rear hor. term.	1	3AXD50000903610
3110A-3	E4.2_W_FP_3200	3-pole, rear hor. term.	1	3AXD50000048356
4620A-3	E6.2_W_FP_5000	3-pole, rear hor. term.	1	3AXD50000903627
U_N = 500 V (Range 380 ... 500 V):				
1420A-5*	E2.2_W_FP_2000	3-pole, rear hor. term.	1	3AXD50000893485
2120A-5	E2.2_W_FP_2500	3-pole, rear hor. term.	1	3AXD50000903610
2800A-5	E4.2_W_FP_3200	3-pole, rear hor. term.	1	3AXD50000048356
4150A-5	E6.2_W_FP_5000	3-pole, rear hor. term.	1	3AXD50000903627
U_N = 690 V (Range 525 ... 690 V):				
1570A-7*	E2.2_W_FP_2000	3-pole, rear hor. term.	1	3AXD50000893485
2070A-7	E2.2_W_FP_2500	3-pole, rear hor. term.	1	3AXD50000903610
3080A-7	E4.2_W_FP_3200	3-pole, rear hor. term.	1	3AXD50000048356

Content of the IEC wagons:

- W FP Iu=2000 3p HR HR / W FP Iu=2500 3p HR HR / W FP Iu=3200 3p HR HR / W FP Iu=5000 3p HR HR / — 1SDA073909R1 (E2.2 W FP 2000) 1SDA073911R1 (E2.2 W FP 2500) 1SDA073913R1 (E4.2 W FP 3200) 1SDA073917R1 (E6.2 W FP 5000)
- AUP 5 contacts 400Vac SX E2.2...E6.2 — 1SDA073764R1

ACS880-204-...	Main circuit breaker (UL, CSA: 230 V)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
1130A-3	E2.2V-A 1200	1200 A, 600 V, 100 kA, UL	1	3AXD50000850389
1330A-3	E2.2V-A 1600	1600 A, 600 V, 100 kA, UL	1	3AXD50000850396
1580A-3	E2.2V-A 2000	2000 A, 600 V, 100 kA, UL	1	3AXD50000850402
2350A-3	E4.2V-A 2500	2500 A, 600 V, 100 kA, UL	1	3AXD50000826049
3110A-3	E6.2V-A 4000	4000 A, 600 V, 100 kA, UL	1	3AXD50000048348
4620A-3	E6.2V-A 5000	5000 A, 600 V, 100 kA, UL	1	3AXD50000048352
U_N = 500 V (Range 380 ... 500 V):				
1420A-5	E2.2V-A 1600	1600 A, 600 V, 100 kA, UL	1	3AXD50000850396
2120A-5	E4.2V-A 2500	2500 A, 600 V, 100 kA, UL	1	3AXD50000826049
2800A-5	E6.2V-A 4000	4000 A, 600 V, 100 kA, UL	1	3AXD50000048348
4150A-5	E6.2V-A 5000	5000 A, 600 V, 100 kA, UL	1	3AXD50000048352
U_N = 690 V (Range 525 ... 690 V):				
1570A-7	E4.2V-A 2000	2000 A, 600 V, 100 kA, UL	1	3AXD50000828128
2070A-7	E4.2V-A 2500	2500 A, 600 V, 100 kA, UL	1	3AXD50000826049
3080A-7	E6.2V-A 4000	4000 A, 600 V, 100 kA, UL	1	3AXD50000048348

Content of the 230 V main circuit breakers:

- Ekip Dip LI 3p WMP — 1SDA077708R1 (E2.2V-A 1200)
1SDA077718R1 (E2.2V-A 1600)
1SDA077728R1 (E2.2V-A 2000)
1SDA078518R1-1 (E4.2V-A 2500)
1SDA079128R1 (E6.2V-A 4000)
1SDA079138R1 (E6.2V-A 5000)
- YO E1.2..E6.2 220-240 Vac/dc — 1SDA073674R1
- YC E1.2..E6.2 220-240 Vac/dc — 1SDA073687R1
- YU E1.2..E6.2 220-240 Vac/dc — 1SDA073700R1
- M E2.2..E6.2 220-250 Vac/dc — 1SDA073725R1
- MOC E2.2..E6.2 — 1SDA073781R1
- AUX 6Q 400V E2.2..E6.2 — 1SDA073756R1
- KLC-S Key lock open N.20005 E2.2..E6.2 — 1SDA073792R1
- KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key — 1SDA073807R1
- RTC 250V E2.2...E6.2 — 1SDA073773R1
- TRIPLE CERTIFIC: UL/IEC/CCC — 1SDA083024R1 (E2.2V),
1SDA083027R1-1 (E4.2V),
1SDA083028R1 (E6.2V)

ACS880-204-...	Main circuit breaker (UL, CSA: 115 V)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
1130A-3	E2.2V-A 1200	1200 A, 600 V, 100 kA, UL	1	3AXD50000850624
1330A-3	E2.2V-A 1600	1600 A, 600 V, 100 kA, UL	1	3AXD50000850631
1580A-3	E2.2V-A 2000	2000 A, 600 V, 100 kA, UL	1	3AXD50000850655
2350A-3	E4.2V-A 2500	2500 A, 600 V, 100 kA, UL	1	3AXD50000826179
3110A-3	E6.2V-A 4000	4000 A, 600 V, 100 kA, UL	1	3AXD50000048347
4620A-3	E6.2V-A 5000	5000 A, 600 V, 100 kA, UL	1	3AXD50000048349
U_N = 500 V (Range 380 ... 500 V):				
1420A-5	E2.2V-A 1600	1600 A, 600 V, 100 kA, UL	1	3AXD50000850631
2120A-5	E4.2V-A 2500	2500 A, 600 V, 100 kA, UL	1	3AXD50000826179
2800A-5	E6.2V-A 4000	4000 A, 600 V, 100 kA, UL	1	3AXD50000048347
4150A-5	E6.2V-A 5000	5000 A, 600 V, 100 kA, UL	1	3AXD50000048349
U_N = 690 V (Range 525 ... 690 V):				
1570A-7	E4.2V-A 2000	2000 A, 600 V, 100 kA, UL	1	3AXD50000826162
2070A-7	E4.2V-A 2500	2500 A, 600 V, 100 kA, UL	1	3AXD50000826179
3080A-7	E6.2V-A 4000	4000 A, 600 V, 100 kA, UL	1	3AXD50000048347

Content of the 115 V main circuit breakers:

- Ekip Dip LI 3p WMP — 1SDA077708R1 (E2.2V-A 1200)
1SDA077718R1 (E2.2V-A 1600)
1SDA077728R1 (E2.2V-A 2000)
1SDA078518R1-1 (E4.2V-A 2500)
1SDA079128R1 (E6.2V-A 4000)
1SDA079138R1 (E6.2V-A 5000)
- YO E1.2..E6.2 110-120 Vac/dc — 1SDA073672R1
- YC E1.2..E6.2 110-120 Vac/dc — 1SDA073685R1
- YU E1.2..E6.2 110-120 Vac/dc — 1SDA073698R1
- M E2.2...E6.2 100-130 Vac/dc — 1SDA073724R1
- MOC E2.2..E6.2 — 1SDA073781R1
- AUX 6Q 400V E2.2..E6.2 — 1SDA073756R1
- KLC-S Key lock open N.20005 E2.2..E6.2 — 1SDA073792R1
- KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key — 1SDA073807R1
- RTC 250V E2.2...E6.2 — 1SDA073773R1
- TRIPLE CERTIFIC: UL/IEC/CCC — 1SDA083024R1 (E2.2V),
1SDA083027R1-1 (E4.2V),
1SDA083028R1 (E6.2V)

ACS880-204-...	Wagon (UL, CSA)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
1130A-3	E2.2-A_W_2000	3-pole, rear hor. term., UL	1	3AXD50000048354
1330A-3	E2.2-A_W_2000	3-pole, rear hor. term., UL	1	3AXD50000048354
1580A-3	E2.2-A_W_2000	3-pole, rear hor. term., UL	1	3AXD50000048354
2350A-3	E4.2-A_W_2500	3-pole, rear hor. term., UL	1	3AXD50000039281
3110A-3	E6.2-A_W_5000	3-pole, rear hor. term., UL	1	3AXD50000048402
4620A-3	E6.2-A_W_5000	3-pole, rear hor. term., UL	1	3AXD50000048402
U_N = 500 V (Range 380 ... 500 V):				
1420A-5	E2.2-A_W_2000	3-pole, rear hor. term., UL	1	3AXD50000048354
2120A-5	E4.2-A_W_2500	3-pole, rear hor. term., UL	1	3AXD50000039281
2800A-5	E6.2-A_W_5000	3-pole, rear hor. term., UL	1	3AXD50000048402
4150A-5	E6.2-A_W_5000	3-pole, rear hor. term., UL	1	3AXD50000048402
U_N = 690 V (Range 525 ... 690 V):				
1570A-7	E4.2-A_W_2500	3-pole, rear hor. term., UL	1	3AXD50000048354
2070A-7	E4.2-A_W_2500	3-pole, rear hor. term., UL	1	3AXD50000039281
3080A-7	E6.2-A_W_5000	3-pole, rear hor. term., UL	1	3AXD50000048402

Content of the UL/CSA wagons:

• W FP Iu=2000 3p HR HR UL / W FP Iu=2500 3p HR HR UL / WAGON W FP Iu=5000 HR HR UL	1SDA079698R1 (E2.2-A W FP 2000) 1SDA079700R1 (E4.2-A W FP 2500) 1SDA079706R1 (E6.2-A W FP 5000)
• AUP 5 contacts 400V E2.2...E6.2 - left set	1SDA080373R1

Main circuit breaker and wagon cover

One cover is needed for each main circuit breaker/wagon pair. See *ACS880 multidrive modules cabinet design and construction instructions* (3AUA0000107668 [English]) for further details regarding arc protection.

IEC: IP54 flange, key N.20005 E2.2…E6.2, 1SDA073869R1, ordering code: 3AXD50000049760

UL: Hinged Window, APWK2016H, ordering code 3AUA0000222786

Main AC fuses in incoming cubicle

The AC fuses protect the input cables, main contactor [Q2] and the module against short circuits. Main AC fuses are used only with the main contactor [Q2] solution. Module-specific AC fuses are used with the main circuit breaker [Q1] solution.

ACS880-204-...	Frame size	Fuse (IEC)		Qty	Ordering code
		Type	Data		
U_N = 400 V (Range 380 ... 415 V):					
0420A-3	1×R8i	170M6410	630 A, 690 V	3	68335418
0580A-3	1×R8i	170M6414	1000 A, 690 V	3	68333296
0810A-3	1×R8i	170M6416	1250 A, 690 V	3	68244463
1130A-3	2×R8i	170M7062 (OT[1)])	2000 A, 690 V	3	68689589
1330A-3	2×R8i	170M7063 (OT[1)])	2500 A, 690 V	3	68752591
1580A-3	2×R8i	170M7063 (OT[1)])	2500 A, 690 V	3	68752591
U_N = 500 V (Range 380 ... 500 V):					
0400A-5	1×R8i	170M6410	630 A, 690 V	3	68335418
0530A-5	1×R8i	170M6414	1000 A, 690 V	3	68333296
0730A-5	1×R8i	170M6416	1250 A, 690 V	3	68244463
1040A-5	2×R8i	170M6419	1600 A, 690 V	3	68393108
1420A-5	2×R8i	170M7063 (OT[1)])	2500 A, 690 V	3	68752591
U_N = 690 V (Range 525 ... 690 V):					
0310A-7	1×R8i	170M6408	500 A, 690 V	3	3AUA0000136232
0370A-7	1×R8i	170M6410	630 A, 690 V	3	68335418
0540A-7	1×R8i	170M6413	900 A, 690 V	3	3AXD50000000148
0720A-7	2×R8i	170M6416	1250 A, 690 V	3	68244463
1050A-7	2×R8i	170M6419	1600 A, 690 V	3	68393108
1570A-7	3×R8i	170M7063 (OT[1)])	2500 A, 690 V	3	68752591

[1)] When there is OT-type main switch-disconnector in use.

ACS880-204-...	Frame size	Fuse (UL, CSA)		Qty	Ordering code
		Type	Data		
U_N = 400 V (Range 380 ... 415 V):					
0420A-3	1×R8i	170M6410	630 A, 690 V	3	68335418
0580A-3	1×R8i	170M6414	1000 A, 690 V	3	68333296
0810A-3	1×R8i	170M6416	1250 A, 690 V	3	68244463
U_N = 500 V (Range 380 ... 500 V):					
0400A-5	1×R8i	170M6410	630 A, 690 V	3	68335418
0530A-5	1×R8i	170M6414	1000 A, 690 V	3	68333296
0730A-5	1×R8i	170M6416	1250 A, 690 V	3	68244463
1040A-5	2×R8i	170M6419	1600 A, 690 V	3	68393108

ACS880-204-...	Frame size	Fuse (UL, CSA)		Qty	Ordering code
		Type	Data		
U_N = 690 V (Range 525 ... 690 V):					
0310A-7	1×R8i	170M6408	500 A, 690 V	3	3AUA0000136232
0370A-7	1×R8i	170M6410	630 A, 690 V	3	68335418
0540A-7	1×R8i	170M6413	900 A, 690 V	3	3AXD50000000148
0720A-7	2×R8i	170M6416	1250 A, 690 V	3	68244463
1050A-7	2×R8i	170M6419	1600 A, 690 V	3	68393108

AC fuses in IGBT supply module cubicle or LCL filter cubicle

When using main circuit breaker, the AC fuses protect the modules against short circuits.

ACS880-204-...	Frame size	Fuse (IEC)		Qty	Ordering code
		Type	Data		
U_N = 400 V (Range 380 ... 415 V):					
1130A-3	2×R8i	170M7062 (MCB[2)])	2000 A, 690 V	3	68689589
1330A-3	2×R8i	170M7063 (MCB[2)])	2500 A, 690 V	3	68752591
1580A-3	2×R8i	170M7063 (MCB[2)])	2500 A, 690 V	3	68752591
2350A-3	3×R8i	170M7062	2000 A, 690 V	6	68689589
3110A-3	4×R8i	170M7063	2500 A, 690 V	6	68752591
4620A-3	6×R8i	170M7063	2500 A, 690 V	9	68752591
U_N = 500 V (Range 380 ... 500 V):					
1420A-5	2×R8i	170M7063 (MCB[2)])	2500 A, 690 V	3	68752591
2120A-5	3×R8i	170M7062	2000 A, 690 V	6	68689589
2800A-5	4×R8i	170M7063	2500 A, 690 V	6	68752591
4150A-5	6×R8i	170M7063	2500 A, 690 V	9	68752591
U_N = 690 V (Range 525 ... 690 V):					
1570A-7	3×R8i	170M7059	1250 A, 690 V	6	68704227
2070A-7	4×R8i	170M7062	2000 A, 690 V	6	68689589
3080A-7	6×R8i	170M7062	2000 A, 690 V	9	68689589

[2)] When there is a main circuit breaker in use.

ACS880-204-...	Frame size	Fuse (UL, CSA)		Qty	Ordering code
		Type	Data		
U_N = 400 V (Range 380 ... 415 V):					
1130A-3	2×R8i	170M7062	2000 A, 690 V	3	68689589
1330A-3	2×R8i	170M7063	2500 A, 690 V	3	68752591
1580A-3	2×R8i	170M7063	2500 A, 690 V	3	68752591
2350A-3	3×R8i	170M7062	2000 A, 690 V	6	68689589
3110A-3	4×R8i	170M7063	2500 A, 690 V	6	68752591
4620A-3	6×R8i	170M7063	2500 A, 690 V	9	68752591
U_N = 500 V (Range 380 ... 500 V):					
1420A-5	2×R8i	170M7063	2500 A, 690 V	3	68752591
2120A-5	3×R8i	170M7062	2000 A, 690 V	6	68689589
2800A-5	4×R8i	170M7063	2500 A, 690 V	6	68752591
4150A-5	6×R8i	170M7063	2500 A, 690 V	9	68752591
U_N = 690 V (Range 525 ... 690 V):					
1570A-7	3×R8i	170M7059	1250 A, 690 V	6	68704227
2070A-7	4×R8i	170M7062	2000 A, 690 V	6	68689589
3080A-7	6×R8i	170M7062	2000 A, 690 V	9	68689589

Main contactors

The main power line is equipped with a main contactor [Q2]. Contactors are used for the on-off control of the main AC input power.

Note: For the high power units, you can use a withdrawable main circuit breaker instead of the main contactor and main switch-disconnector.

See also Main switch-disconnector kits (page 256) and Main circuit breakers and wagons (page 258).

ACS880-204-...	Main contactor (IEC)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 ... 415 V):				
0420A-3	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399756
0580A-3	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399756
0810A-3	AF750-30-22-70	1050 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399772
1130A-3	AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64731378
1330A-3	AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64731378
1580A-3	AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	3AUA0000051805
U_N = 500 V (Range 380 ... 500 V):				
0400A-5	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50...60 Hz	1	64399756
0530A-5	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399756
0730A-5	AF750-30-22-70	1050 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399772
1040A-5	AF1250-30-22-70	1250 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	68687284
1420A-5	AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64731378
U_N = 690 V (Range 525 ... 690 V):				
0310A-7	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399756
0370A-7	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399756
0540A-7	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399756
0720A-7	AF750-30-22-70	1050 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	64399772
1050A-7	AF1250-30-22-70	1250 A (I_{Th}), 1000 V (U_E), 100 ... 250 V/50 ... 60 Hz	1	68687284

ACS880-204-...	Main contactor (IEC)		Qty	Ordering code
	Type	Data		
1570A-7	AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	3AUA0000051805

ACS880-204-...	Main contactor (UL/CSA)		Qty	Ordering code
	Type	Data		
U_N = 400 V (Range 380 … 415 V):				
0420A-3	AF580-30-22-70	800 A(I_{Th}),1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	64399756
0580A-3	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	64399756
0810A-3	AF750-30-22-70	1050 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	64399772
U_N = 500 V (Range 380 … 500 V):				
0400A-5	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	64399756
0530A-5	AF580-30-22-70	800 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	64399756
0730A-5	AF750-30-22-70	1050 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	64399772
1040A-5	AF1250-30-22-70	1250 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	68687284
U_N = 690 V (Range 525 … 690 V):				
0310A-7	AF1250-30-22-70	1250 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	68687284
0370A-7	AF1250-30-22-70	1250 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	68687284
0540A-7	AF1250-30-22-70	1250 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	68687284
0720A-7	AF1250-30-22-70	1250 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	68687284
1050A-7	AF1250-30-22-70	1250 A(I_{Th}), 1000 V (U_E), 100 … 250 V/50 … 60 Hz	1	68687284

Definitions

I_{Th} Conventional free-air thermal current

U_E Rated operational voltage

The contactor package includes:

- contactor unit.

Charging kits

The capacitor bank of the IGBT supply module needs to be charged during the start-up before connecting the module to a three-phase power line.

Note: The charging components are dimensioned for DC link capacitances equal to 3 × IGBT supply unit DC capacitance (1×ISU + 2×INU), 5 × IGBT supply unit DC capacitance (1×ISU + 4×INU) and 7 × IGBT supply unit DC capacitance (1×ISU + 6×INU). If the total DC link capacitance (including IGBT supply and inverter module DC capacitances) exceeds these limits (C_{max}), the components must be redimensioned. Contact ABB representative for more information. The capacitances of the IGBT supply module types and the inverter module types are specified in their technical data tables. The maximum allowed number of charging cycles of the DC capacitors (ie, power-ups by applying power) is two in five minutes.

Dimensioning of these charging kits is based on the assumptions that the modules are supplied with 230/115 V AC auxiliary voltage in connector X50. The following tables show the charging kits available for each module type.

ACS880-204-...	1×ISU + 2×INU		1×ISU + 4×INU		1×ISU + 6×INU	
	Ordering code (IEC)	C_{max} (mF)	Ordering code (IEC)	C_{max} (mF)	Ordering code (IEC)	C_{max} (mF)
U_N = 400 V (Range 380 ... 415 V):						
0420A-3	3AXD50000022533	33.75	3AXD50000022533	56.25	3AXD50000025574	78.75
0580A-3	3AXD50000022533	40.50	3AXD50000025574	67.50	3AXD50000025574	94.50
0810A-3	3AXD50000025575	54.00	3AXD50000025575	90.00	3AXD50000022525	126.00
1130A-3	3AXD50000002845	81.00	3AXD50000015667	135.00	3AXD50000015667	189.00
1330A-3	3AXD50000002845	108.00	3AXD50000015667	180.00	3AXD50000016052	252.00
1580A-3	3AXD50000015667	108.00	3AXD50000016052	180.00	3AXD50000016052	252.00
2350A-3	3AXD50000016058	162.00	3AXD50000016058	270.00	3AXD50000016060	378.00
3110A-3	3AXD50000016058	216.00	3AXD50000016059	360.00	3AXD50000016059	504.00
4620A-3	3AXD50000016137	324.00	3AXD50000016137	540.00	3AXD50000016138	756.00
U_N = 500 V (Range 380 ... 500 V):						
0400A-5	3AXD50000025575	33.75	3AXD50000025575	56.25	3AXD50000022529	78.75
0530A-5	3AXD50000025575	40.50	3AXD50000025575	67.50	3AXD50000022529	94.50
0730A-5	3AXD50000022535	54.00	3AXD50000022535	90.00	3AXD50000022535	126.00
1040A-5	3AXD50000016056	81.00	3AXD50000016054	135.00	3AXD50000016054	189.00
1420A-5	3AXD50000016054	108.00	3AXD50000016054	180.00	3AXD50000016060	252.00
2120A-5	3AXD50000016081	162.00	3AXD50000016134	270.00	3AXD50000016134	378.00
2800A-5	3AXD50000016135	216.00	3AXD50000016135	360.00	3AXD50000016136	504.00
4150A-5	3AXD50000016139	324.00	3AXD50000016140	540.00	3AXD50000016161	756.00
U_N = 690 V (Range 525 ... 690 V):						
0310A-7	3AXD50000015666	18.00	3AXD50000016053	30.00	3AXD50000002845	42.00
0370A-7	3AXD50000015666	18.00	3AXD50000016053	30.00	3AXD50000002845	42.00
0540A-7	3AXD50000002845	27.00	3AXD50000002845	45.00	3AXD50000015668	63.00
0720A-7	3AXD50000016056	36.00	3AXD50000016055	60.00	3AXD50000016055	84.00
1050A-7	3AXD50000016056	54.00	3AXD50000016057	90.00	3AXD50000016057	126.00
1570A-7	3AXD50000016081	81.00	3AXD50000016134	135.00	3AXD50000016134	189.00

ACS880-204-...	1×ISU + 2×INU		1×ISU + 4×INU		1×ISU + 6×INU	
	Ordering code (IEC)	C_{max} (mF)	Ordering code (IEC)	C_{max} (mF)	Ordering code (IEC)	C_{max} (mF)
2070A-7	3AXD50000016134	108.00	3AXD50000016134	180.00	3AXD50000016134	252.00
3080A-7	3AXD50000016135	162.00	3AXD50000016136	270.00	3AXD50000016162	378.00

ACS880-204-...	1×ISU + 2×INU		1×ISU + 4×INU		1×ISU + 6×INU	
	Ordering code (UL, CSA)	Max. capacitance (mF)	Ordering code (UL, CSA)	Max. capacitance (mF)	Ordering code (UL, CSA)	Max. capacitance (mF)
U_N = 400 V (Range 380 ... 415 V):						
0420A-3	3AXD50000003928	33.75	3AXD50000003928	56.25	3AXD50000003928	78.75
0580A-3	3AXD50000003928	40.50	3AXD50000003928	67.50	3AXD50000003928	94.50
0810A-3	3AXD50000003928	54.00	3AXD50000003928	90.00	3AXD50000003928	126.00
1130A-3	3AXD50000003929	81.00	3AXD50000003929	135.00	3AXD50000017038	189.00
1330A-3	3AXD50000003929	108.00	3AXD50000003929	180.00	3AXD50000017038	252.00
1580A-3	3AXD50000003929	108.00	3AXD50000003929	180.00	3AXD50000017038	252.00
2350A-3	3AXD50000017072	162.00	3AXD50000017072	270.00	3AXD50000017072	378.00
3110A-3	3AXD50000017072	216.00	3AXD50000017072	360.00	3AXD50000017072	504.00
4620A-3	3AXD50000017077	324.00	3AXD50000017081	540.00	3AXD50000017082	756.00
U_N = 500 V (Range 380 ... 500 V):						
0400A-5	3AXD50000003928	33.75	3AXD50000003928	56.25	3AXD50000003928	78.75
0530A-5	3AXD50000003928	40.50	3AXD50000003928	67.50	3AXD50000003928	94.50
0730A-5	3AXD50000003928	54.00	3AXD50000003929	90.00	3AXD50000003929	126.00
1040A-5	3AXD50000017039	81.00	3AXD50000017039	135.00	3AXD50000017039	189.00
1420A-5	3AXD50000017039	108.00	3AXD50000017039	180.00	3AXD50000017039	252.00
2120A-5	3AXD50000017058	162.00	3AXD50000017074	270.00	3AXD50000017074	378.00
2800A-5	3AXD50000017078	216.00	3AXD50000017078	360.00	3AXD50000017079	504.00
4150A-5	3AXD50000017084	324.00	3AXD50000017085	540.00	3AXD50000017086	756.00
U_N = 690 V (Range 525 ... 690 V):						
0310A-7	3AXD50000016163	18.00	3AXD50000017037	30.00	3AXD50000003928	42.00
0370A-7	3AXD50000017037	18.00	3AXD50000003928	30.00	3AXD50000003928	42.00
0540A-7	3AXD50000003928	27.00	3AXD50000003928	45.00	3AXD50000003928	63.00
0720A-7	3AXD50000017040	36.00	3AXD50000017071	60.00	3AXD50000017071	84.00
1050A-7	3AXD50000017071	54.00	3AXD50000017071	90.00	3AXD50000017071	126.00
1570A-7	3AXD50000017073	81.00	3AXD50000017073	135.00	3AXD50000017075	189.00
2070A-7	3AXD50000017076	108.00	3AXD50000017076	180.00	3AXD50000017080	252.00
3080A-7	3AXD50000017080	162.00	3AXD50000017083	270.00	3AXD50000017087	378.00

The charging kit contains:

- switch disconnector unit (switch fuse type)
- terminal covers for the switch disconnector (2 × 4 pcs)
- contactor
- fuses (4 pcs, IEC: gG type, UL: class J)
- resistors
- N.O. auxiliary contact
- shaft OXP6X161 or OXP6X210, see also content of OS_P switches
- handle OHB65J6 or OHB45J6 with ON/OFF indication, see also content of OS_P switches.

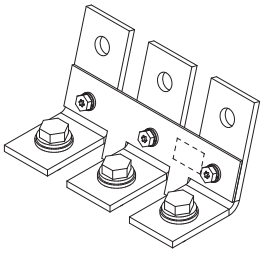
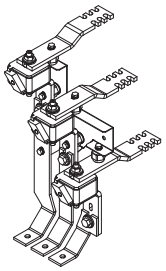
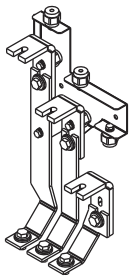
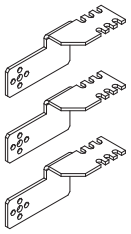
Minimum recommended wire sizes for the charging kits:

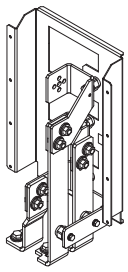
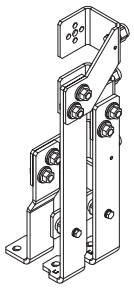
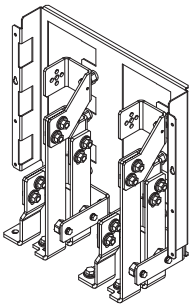
- Consult ABB.

Use double-insulated wire.

For more detailed information on the charging components, see the technical data.

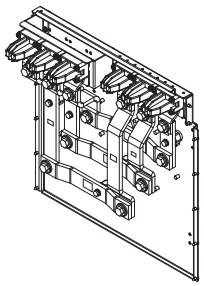
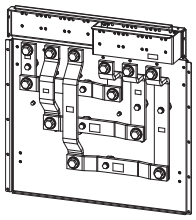
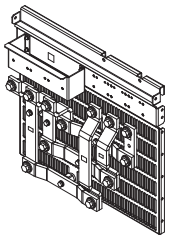
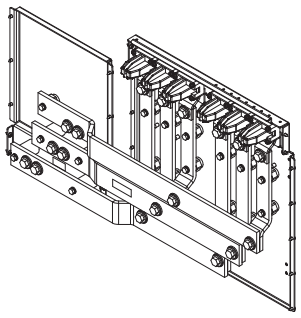
AC connection of the LCL filter

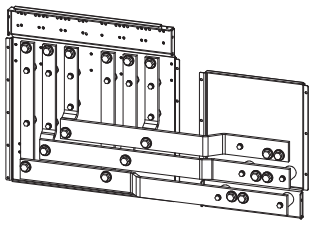
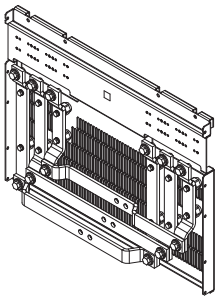
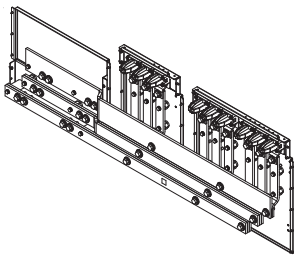
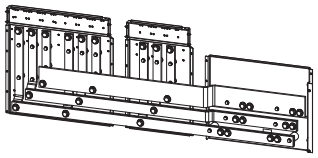
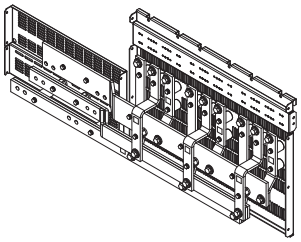
Used with ...	Qty	Ordering code	Kit code	Illustration
BLCL-xx-x; All enclosures	1 per module	3AXD50000002576	A-468-8-131	 Instruction code: 3AXD50000002577
BLCL-1x-x; Rittal	1 per module	3AXD50000416509 **Note:** This kit is not included in ABB's standard design but may be used if you wish to have AC fuses on top of the LCL filter module.	A-6-8-110-VX	 Instruction code: 3AXD50000416332
BLCL-1x-x; generic	1 per module	3AXD50000019279 **Note:** This kit is not included in ABB's standard design but may be used if you wish to have AC fuses on top of the LCL filter module.	A-6-8-111	 Instruction code: 3AXD50000019280
BLCL-2x-x; All enclosures	1 per module	3AXD50000011084	A-468-8-106	 Instruction code: 3AXD50000012934

Used with ...	Qty	Ordering code	Kit code	Illustration
BLCL-2x-x; Rittal	1 per module	3AXD50000360796	A-4-8-107-VX	 Instruction code: 3AXD50000353491
BLCL-2x-x; generic	1 per module	3AXD50000011155	A-468-8-109	 Instruction code: 3AXD50000013246
BLCL-2x-x; 3×R8i Rittal	1 per module	3AXD50000371143	A-6-8-108-VX	 Instruction code: 3AXD50000352999

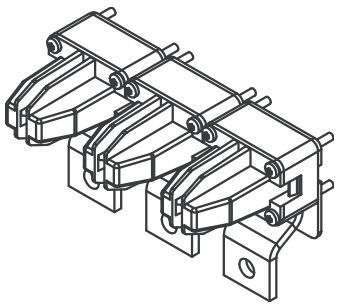
Busbars and quick connectors

The power input of the supply module is connected to the module through a quick connector.

Used with ...	Qty	Ordering code	Kit code	Illustration
1×R8i; 600 mm Rittal	1	3AXD50000416493	A-6-8-130-VX	 Instruction code: 3AXD50000384945
1×R8i; 600 mm Rittal	1	3AXD50000702251 **Note:** This kit is mirror image of kit A-6-8-130-VX.	A-6-8-154-VX	 Instruction code: 3AXD50000700998
1×R8i; 600 mm generic	1	3AXD50000013790	A-6-8-146	 Instruction code: 3AXD50000013902
2×R8i; 1000 mm Rittal	1	3AXD50000361687	A-X-8-142-VX	 Instruction code: 3AXD50000353477

Used with ...	Qty	Ordering code	Kit code	Illustration
2×R8i; 1000 mm Rittal	1	3AXD50000702268 **Note:** This kit is mirror image of kit A-X-8-142-VX.	A-X-8-155-VX	 Instruction code: 3AXD50000701674
2×R8i; 800 mm generic	1	3AXD50000011156	A-8-8-144	 Instruction code: 3AXD50000013187
3×R8i; 1600 mm Rittal	1	3AXD50000371129	A-X-8-143-VX	 Instruction code: 3AXD50000360444
3×R8i; 1600 mm Rittal	1	3AXD50000702275 **Note:** This kit is mirror image of kit A-X-8-143-VX.	A-X-8-156-VX	 Instruction code: 3AXD50000701773
3×R8i; 1400 mm generic	1	3AXD50000011157	A-X-8-145	 Instruction code: 3AXD50000013810

Quick connector

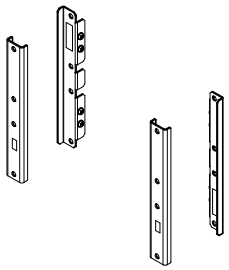
Used with	Qty	Ordering code	Kit code	Illustration
All enclosure types	1 per module	3AUA0000119227	A-468-8-100	 Instruction code: 3AUA0000118667

DC-side components

DC bus installation parts

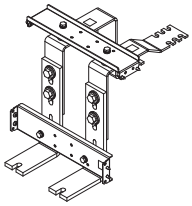
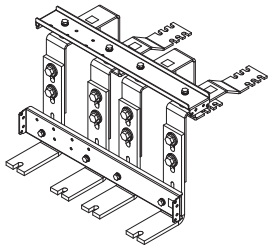
The brackets in this kit act as a mounting base for the busbar supports of the Rittal Flat-PLS DC bus and ensure its correct placement and alignment inside the cabinet line-up.

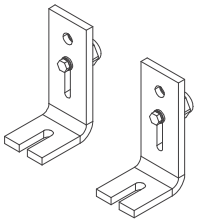
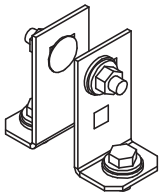
Note: The designs presented in this manual for Rittal VX25 enclosures employ the Rittal Flat-PLS busbar system. Make sure that the current carrying capability of the busbars is not exceeded at any point of the drive system.

Used with ...	Qty	Ordering code	Kit code	Illustration
400/600/800 mm VX25 enclosure	1 kit per cubicle	3AXD50000333387	A-468-X-001-VX	 Instruction code: 3AXD50000333639

DC busbars

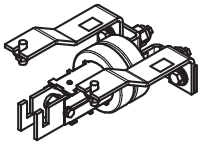
DC busbars connect the Flat-PLS busbars to the DC fuses.

Used with ...	Qty	Ordering code	Kit code	Illustration
3×R8i; 400 mm Rittal	1	3AXD50000371136	A-4-8-205-VX	 Instruction code: 3AXD50000360987
2×R8i, 3×R8i; 600 mm Rittal	1	3AXD50000361663	A-6-8-212-VX	 Instruction code: 3AXD50000353507

Used with ...	Qty	Ordering code	Kit code	Illustration
R8i; generic	1	3AXD50000025659	A-468-8-245	 Instruction code: 3AXD50000025693
R8i; All enclosures	1	3AXD50000003411	A-468-8-232	 Instruction code: 3AXD50000003403

Module and common mode filter busbars

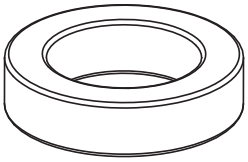
A common mode filter is needed with each IGBT supply module. There is space for up to four toroidal cores.

Used with ...	Qty	Ordering code	Kit code	Illustration
R8i; All enclosures	1 per module	3AXD50000002492	A-468-8-231	 Instruction code: 3AXD50000002502

Common mode filters

You must equip each module with a common mode filter.

Common mode filtering reduces bearing currents and is required for electromagnetic compatibility (EMC). The filtering is implemented by installing two toroidal cores onto the DC busbars. The cores must be ordered separately.

Used with	Qty	Ordering code	Kit code	Illustration
All enclosure types	2 per module*	3AUA0000032859	-	 Instruction code: 3AUA0000123359

* For EMC category C2 in case of R6i, R7i or 1×R8i, 4 pcs. As standard, 2 pcs per module.

DC fuses

DC fuses protect the module and drive DC bus against short circuits.

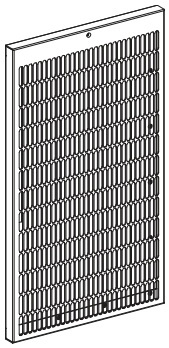
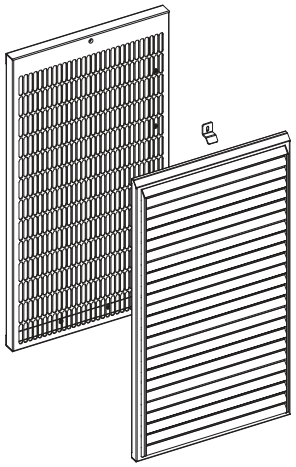
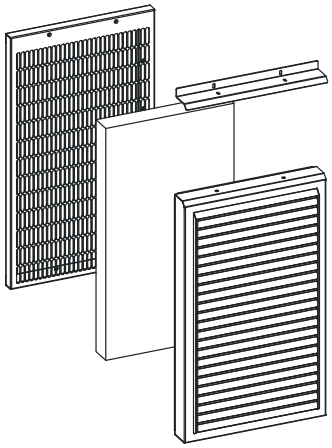
ACS880-204-...	Fuse (IEC, UL, CSA)		Qty	Ordering code	2nd type fuse
	Type	Data			
U_N = 400 V (Range 380 ... 415 V):					
0420A-3	Bussmann 170M6413	900 A, 690 V, size 3	2	3AXD50000000148	-
0580A-3	Bussmann 170M6415	1100 A, 690 V, size 3	2	68731658	-
0810A-3	Bussmann 170M6419	1600 A, 690 V, size 3*	2	68393108	Mersen (Ferraz-Shawmut) 6,9URD73TTF1600
1130A-3	Bussmann 170M6415	1100 A, 690 V, size 3	4	68731658	-
1330A-3	Bussmann 170M6417	1400 A, 690 V, size 3	4	3AXD50000000150	-
1580A-3	Bussmann 170M6419	1600 A, 690 V, size 3*	4	68393108	-
2350A-3	Bussmann 170M6419	1600 A, 690 V, size 3*	6	68393108	-
3110A-3	Bussmann 170M6419	1600 A, 690 V, size 3*	8	68393108	-
4620A-3	Bussmann 170M6419	1600 A, 690 V, size 3*	12	68393108	-
U_N = 500 V (Range 380 ... 500 V):					
0400A-5	Bussmann 170M6413	900 A, 690 V, size 3	2	3AXD50000000148	-
0530A-5	Bussmann 170M6415	1100 A, 690 V, size 3	2	68731658	-
0730A-5	Bussmann 170M6419	1600 A, 690 V, size 3*	2	68393108	Mersen (Ferraz-Shawmut) 6,9URD73TTF1600
1040A-5	Bussmann 170M6415	1100 A, 690 V, size 3	4	68731658	-
1420A-5	Bussmann 170M6417	1400 A, 690 V, size 3	4	3AXD50000000150	-
2120A-5	Bussmann 170M6417	1400 A, 690 V, size 3	6	3AXD50000000150	-
2800A-5	Bussmann 170M6417	1400 A, 690 V, size 3	8	3AXD50000000150	-
4150A-5	Bussmann 170M6417	1400 A, 690 V, size 3	12	3AXD50000000150	-
U_N = 690 V (Range 525 ... 690 V)					
0310A-7	Bussmann 170M6544	630 A, 1250 V, size 3	2	63903167	-
0370A-7	Bussmann 170M6546	800 A, 1250 V, size 3	2	63919128	-
0540A-7	Bussmann 170M6549	1100 A, 1000 V, size 3	2	68736021	-

ACS880-204-...	Fuse (IEC, UL, CSA)		Qty	Ordering code	2nd type fuse
	Type	Data			
0720A-7	Bussmann 170M6546	800 A, 1250 V, size 3	4	63919128	-
1050A-7	Bussmann 170M6549	1100 A, 1000 V, size 3	4	68736021	-
1570A-7	Bussmann 170M6549	1100 A, 1000 V, size 3	6	68736021	-
2070A-7	Bussmann 170M6549	1100 A, 1000 V, size 3	8	68736021	-
3080A-7	Bussmann 170M6549	1100 A, 1000 V, size 3	12	68736021	-

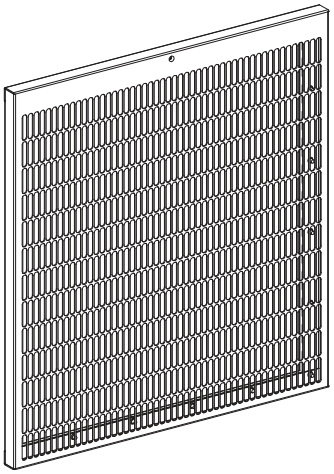
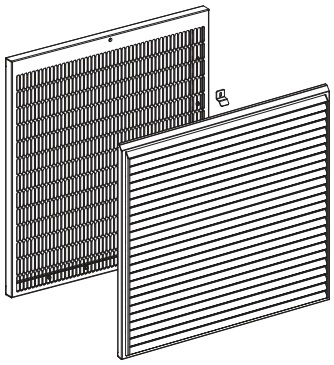
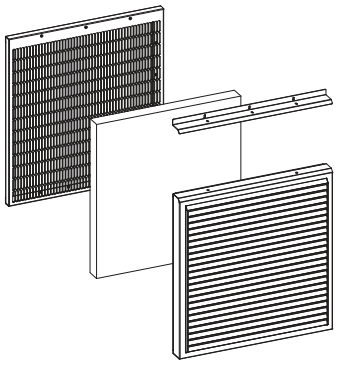
Cabinet ventilation

Air inlet kits

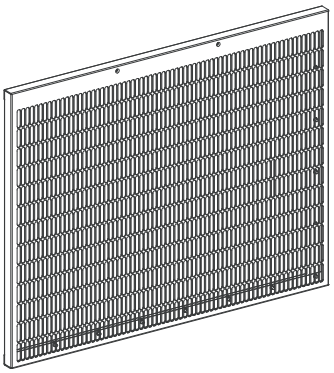
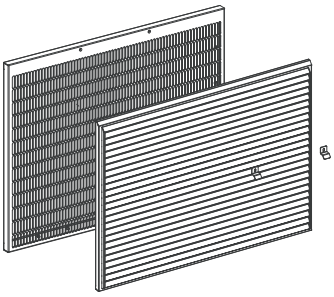
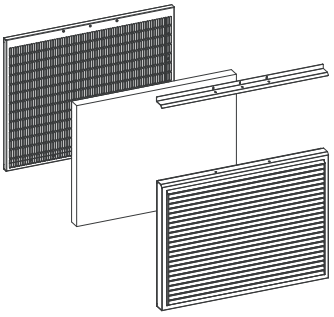
Air inlet kits 400 mm cabinet

Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117002	A-4-X-021	 Instruction code: 3AUA0000116879
IP42	1	3AUA0000117007	A-4-X-024	 Instruction code: 3AUA0000116873
IP54	1	3AXD50000009184	A-4-X-027	 Instruction code: 3AXD50000009989

Air inlet kits 600 mm cabinet

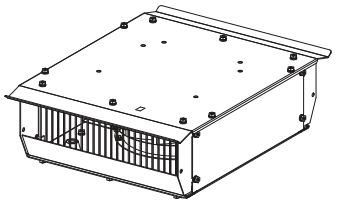
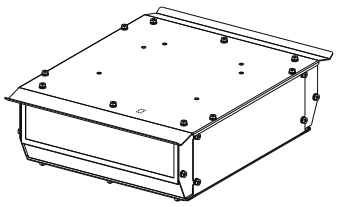
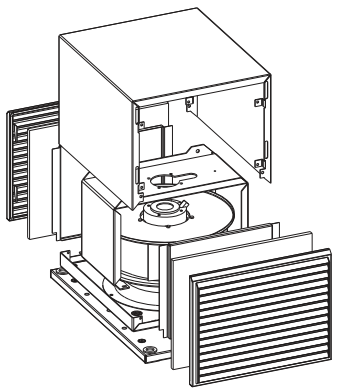
Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117003	A-6-X-022	 Instruction code: 3AUA0000116880
IP42	1	3AUA0000117008	A-6-X-025	 Instruction code: 3AUA0000116874
IP54	1	3AXD50000009185	A-6-X-028	 Instruction code: 3AXD50000009990

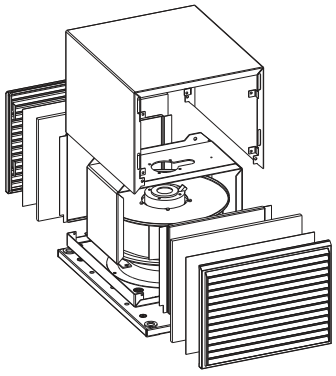
Air inlet kits 800 mm cabinet

Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117005	A-8-X-023	 Instruction code: 3AUA0000116887
IP42	1	3AUA0000117009	A-8-X-026	 Instruction code: 3AUA0000116875
IP54	1	3AXD50000009186	A-8-X-029	 Instruction code: 3AXD50000010001

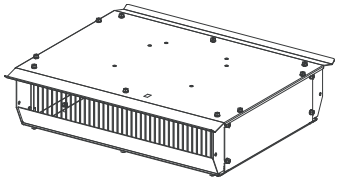
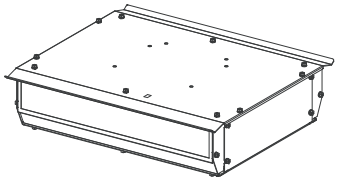
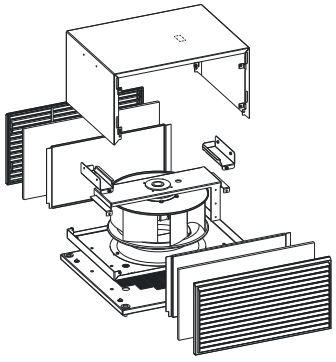
Air outlet kits

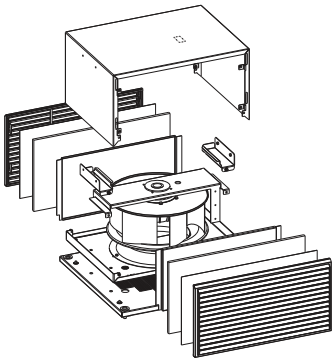
Air outlet kits 400 mm cabinet

Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000125201	A-4-X-062	 Instruction code: 3AXD50000001982 **Note:** Fan to be ordered separately
IP42	1	3AUA0000114967	A-4-X-060	 Instruction code: 3AUA0000115290 **Note:** Fan to be ordered separately
IP54 (230 V)	1	3AXD50000009187	A-4-X-064	 Instruction code: 3AXD50000010284 **Note:** Fan to be ordered separately

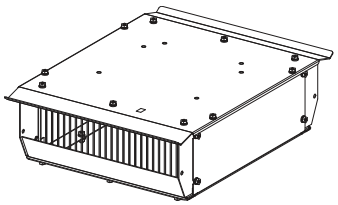
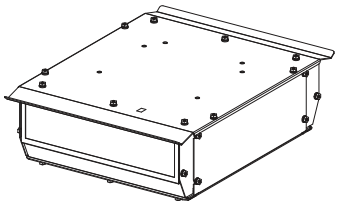
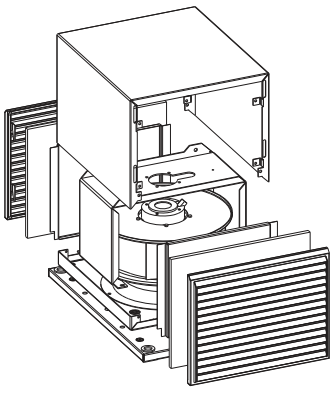
Used with ...	Qty	Ordering code	Kit code	Illustration
IP54 (115 V)	1	3AXD50000010362	A-4-X-067	 Instruction code: 3AXD50000010284 **Note:** Fan to be ordered separately

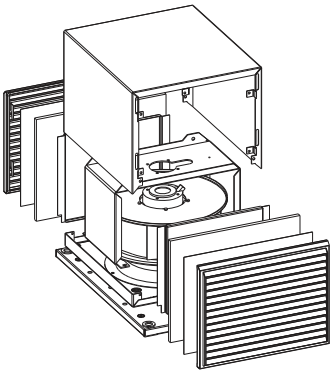
Air outlet kits 600 mm cabinet

Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000125204	A-6-X-043	 Instruction code: 3AXD50000001981
IP42	1	3AUA0000114789	A-6-X-041	 Instruction code: 3AUA0000115166
IP54 (230 V)	1	3AXD50000009189	A-6-X-065	 Instruction code: 3AXD50000010004 **Note:** Fan to be ordered separately

Used with ...	Qty	Ordering code	Kit code	Illustration
IP54 (115 V)	1	3AXD50000010327	A-6-X-066	 Instruction code: 3AXD50000010004 **Note:** Fan to be ordered separately

Air outlet kits 800 mm cabinet

Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	2	3AUA0000125203	A-4-X-042	 Instruction code: 3AXD50000001983
IP42	2	3AUA0000114968	A-4-X-040	 Instruction code: 3AUA0000116875
IP54 (230 V)	2	3AXD50000009187	A-4-X-064	 Instruction code: 3AXD50000010284 **Note:** Fan to be ordered separately

Used with ...	Qty	Ordering code	Kit code	Illustration
IP54 (115 V)	2	3AXD50000010362	A-4-X-067	 Instruction code: 3AXD50000010284 **Note:** Fan to be ordered separately

Cooling fans (frames R1i...R4i)

IEC				
Enclosure / Degree of protection	**Component**		**Qty**	**Ordering code**
	Name	**Data**		
400 mm, 600 mm / IP20, IP42 / 230 V, 50/60 Hz	Fan	0.77 A; 230 V; 96 W; 50/60 Hz	1	3AXD50000000592
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724
400 mm / IP54 / 230 V, 50/60 Hz	Fan	1.1 A; 230 V; 240 W; 50 Hz 1.45 A; 230 V; 350 W; 60 Hz	1	3AXD50000006934
	Capacitor	6 µF, 600 V	1	3AXD50000006959
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724

UL, CSA				
Enclosure / Degree of protection	**Component**		**Qty**	**Ordering code**
	Name	**Data**		
400 mm, 600 mm / IP20, IP42 / 230 V, 50/60 Hz	Fan	0.7 A; 230 V; 155 W; 50 Hz 0.9 A; 230 V; 210 W; 60 Hz	1	3AXD50000000592
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724
400 mm, 600 mm / IP20, IP42 / 115 V, 60 Hz	Fan	1.68 A; 115 V; 200 W; 60 Hz	1	3AXD50000700288
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724
400 mm / IP54 / 230 V, 50/60 Hz	Fan	1.1 A; 230 V; 240 W; 50 Hz 1.45 A; 230 V; 350 W; 60 Hz	1	3AXD50000006934
	Capacitor	6 µF, 600 V	1	3AXD50000006959
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724
400 mm / IP54 / 115 V, 50/60 Hz	Fan	3.1 A; 115 V; 300 W; 50 Hz 3.9 A; 115 V; 430 W; 60 Hz	1	64750062
	Capacitor	25 µF; 220 V	1	68713188
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724

The example circuit diagrams show a cabinet cooling fan circuit that energizes the fan when at least one module installed in the cabinet is running. The fan will continue to run for 20 minutes after all modules have been stopped.

The following parts (or equivalent) are used to implement the circuit. These parts are to be sourced by the customer.

- Phoenix Contact ST 2,5-DIO/L-R - 3036262 spring cage component terminal block with a 1N4007 diode
- Relpol PI84-24DC-M41G relay

  - Rated load (capacity): 8 A / 24 V DC
  - Rated power consumption: 0.4 … 0.48 W DC
  - GZT80 relay socket
- 600 mm of AWG24, 300 V, UL1569 (or equivalent material, valid for PVC insulation only) wire
- Favier SEP-4 light brown 4 kV fiberglass sleeving.

Cooling fans (frame R6i and R7i)

IEC				
Enclosure / Degree of protection	**Component**		**Qty**	**Ordering code**
	Name	**Data**		
600 mm / IP54 / 230 V, 50/60 Hz	Fan	2.3 A; 230 V; 540 W; 50 Hz 3 A; 230 V; 690 W; 60 Hz	1	3AXD50000006111
	Capacitor	12 µF, 600 V	1	3AXD50000006885
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724

UL, CSA				
Enclosure / Degree of protection	**Component**		**Qty**	**Ordering code**
	Name	**Data**		
600 mm / IP54 / 230 V, 50/60 Hz	Fan	2.3 A; 230 V; 540 W; 50 Hz 3 A; 230 V; 690 W; 60 Hz	1	3AXD50000006111
	Capacitor	12 µF, 600 V	1	3AXD50000006885
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724
600 mm / IP54 / 115 V, 50/60 Hz	Fan	6.3 A; 115 V; 680 W; 60 Hz	1	64750038
	Capacitor	25 µF; 220 V	2	68713188
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724

Cooling fans (frame R8i)

IEC				
Enclosure / Degree of protection	Component		Qty	Ordering code
	Name	Data		
400 mm / IP54 / 230 V, 50/60 Hz	Fan	1.1 A; 230 V; 240 W; 50 Hz 1.45 A; 230 V; 350 W; 60 Hz	2	3AXD50000006934
	Capacitor	6 µF, 600 V	2	3AXD50000006959
	Connector	PLUG; 12 AWG; 2.50 mm^2	2	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	2	3AXD50000000724

UL, CSA				
Enclosure / Degree of protection	Component		Qty	Ordering code
	Name	Data		
400 mm / IP54 / 230 V, 50/60 Hz	Fan	1.1 A; 230 V; 240 W; 50 Hz 1.45 A; 230 V; 350 W; 60 Hz	2	3AXD50000006934
	Capacitor	6 µF, 600 V	2	3AXD50000006959
	Connector	PLUG; 12 AWG; 2.50 mm^2	2	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	2	3AXD50000000724
400 mm / IP54 / 115 V, 50/60 Hz	Fan	3.1 A; 115 V; 300 W; 50 Hz 3.9 A; 115 V; 430 W; 60 Hz	2	64750062
	Capacitor	25 µF; 220 V	2	68713188
	Connector	PLUG; 12 AWG; 2.50 mm^2	2	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	2	3AXD50000000724

Miscellaneous

Auxiliary measurement unit (BAMU)

The BAMU is a measurement unit for precise voltage and current measurements. It is highly recommended for use with a weak network, and mandatory when used in a grid converter (i.e. when the optional optimal grid control functionality is used).

Frame size	Unit type	Ordering code
All	BAMU-12C	3AXD50000045879

For more information, see

- section Weak supply networks (page 50)
- Optimal grid control (option +N8053) for ACS880 multidrives (3AXD50000220717 [English])
- BAMU-12C auxiliary measurement unit hardware manual (3AXD50000117840 [English])

Note: You must have BCU-12 control unit to have enough fiber optic connections if you use a BAMU auxiliary measurement unit with 2×R8i IGBT supply modules.

12

Technical data

Contents of this chapter

This chapter contains the technical data for ACS880-204 IGBT supply modules.

Ratings

ACS880-204-...	Frame	No-overload use					Light-overload use		Heavy-duty use		Capa-citance
		I_N	I_N	I_{max}	P_N	S_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}	C
		A (DC)	A (AC)	A (DC)	kW	kVA	A (DC)	kW (DC)	A (DC)	kW (DC)	mF
U_N = 400 V (with U_{input} = 3~400 V AC and U_{output} = 566 V DC)											
008A0-3	R1i	9.7	8	12.6	5.5	5.5	9.3	5.3	7.3	4.1	0.28
0018A-3	R2i	22	18	28	12	12	21	12	16	9	0.87
0035A-3	R3i	42	35	55	24	24	41	23	32	18	0.79
0050A-3	R3i	61	50	79	34	35	58	33	45	26	1.18
0093A-3	R4i	113	93	147	64	64	108	61	84	48	2.36
0210A-3	R6i	255	210	331	144	145	244	138	190	108	6.80
0270A-3	R7i	327	270	426	185	187	314	178	245	139	9.00
0420A-3	R8i	513	423	667	290	293	492	279	384	217	11.25
0580A-3	R8i	698	576	908	395	399	670	379	522	296	13.50
0810A-3	R8i	982	810	1277	556	561	943	533	735	416	18.00
1130A-3	2×R8i	1364	1125	1773	772	779	1309	741	1020	577	27.00
1330A-3	2×R8i	1615	1332	2100	914	923	1550	877	1208	683	36.00
1580A-3	2×R8i	1921	1584	2497	1086	1097	1844	1043	1437	813	36.00
2350A-3	3×R8i	2848	2349	3703	1611	1627	2734	1547	2130	1205	54.00
3110A-3	4×R8i	3765	3105	4894	2130	2151	3614	2045	2816	1593	72.00
4620A-3	6×R8i	5598	4617	7278	3167	3199	5374	3040	4187	2369	108.00
U_N = 500 V (with U_{input} = 3~400/480/500 V AC and U_{output} = 566/679/707 V DC)											
006A6-5	R1i	8	6.6	10.4	6	5.7	7.7	5.4	6	4.2	0.28
0015A-5	R2i	18	15	24	13	13	17	12	14	10	0.87
0029A-5	R3i	35	29	46	25	25	34	24	26	19	0.79
0041A-5	R3i	50	41	65	35	36	48	34	37	26	1.18
0077A-5	R4i	93	77	121	66	67	90	63	70	49	2.36
0210A-5	R6i	255	210	331	180	182	244	173	190	135	6.80
0260A-5	R7i	315	260	410	223	225	303	214	236	167	9.00
0400A-5	R8i	480	396	624	340	343	461	326	359	254	11.25
0530A-5	R8i	644	531	837	455	460	618	437	482	341	13.50
0730A-5	R8i	884	729	1149	625	631	849	600	661	468	18.00
1040A-5	2×R8i	1255	1035	1631	887	896	1205	852	939	664	27.00
1420A-5	2×R8i	1724	1422	2241	1219	1231	1655	1170	1290	912	36.00
2120A-5	3×R8i	2564	2115	3334	1813	1832	2462	1741	1918	1356	54.00
2800A-5	4×R8i	3394	2799	4412	2400	2424	3258	2304	2539	1795	72.00
4150A-5	6×R8i	5031	4149	6540	3557	3593	4829	3415	3763	2661	108.00
U_N = 690 V (with U_{input} = 3~525/600/690 V AC and U_{output} = 742/849/976 V DC)											
0150A-7	R6i	176	145	229	172	173	169	165	132	128	3.00
0170A-7	R7i	206	170	268	201	203	198	193	154	150	4.50
0310A-7	1×R8i	371	306	557	362	366	356	348	278	271	6.00

ACS880-204-...	Frame	No-overload use					Light-overload use		Heavy-duty use		Capa-citance
		I_N	I_N	I_{max}	P_N	S_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}	C
		A (DC)	A (AC)	A (DC)	kW	kVA	A (DC)	kW (DC)	A (DC)	kW (DC)	mF
0370A-7	1×R8i	447	369	671	437	441	430	419	335	327	6.00
0540A-7	1×R8i	655	540	982	639	645	629	613	490	478	9.00
0720A-7	2×R8i	873	720	1309	852	860	838	818	653	637	12.00
1050A-7	2×R8i	1277	1053	1915	1246	1258	1226	1196	955	932	18.00
1570A-7	3×R8i	1899	1566	2848	1853	1872	1823	1779	1420	1386	27.00
2070A-7	4×R8i	2510	2070	3765	2449	2474	2409	2351	1877	1832	36.00
3080A-7	6×R8i	3732	3078	5598	3642	3679	3583	3496	2792	2724	54.00

Definitions

Nominal ratings

U_N supply voltage range (see the technical data)

I_N nominal output current (available continuously with no over-loading)

I_{max} maximum output current. Available for 10 s at start, otherwise as long as allowed by module temperature.

P_N nominal output power

S_N nominal apparent power

Light-overload use (10% overload capability) ratings

I_{Ld} continuous rms current. 10% overload is allowed for one minute every 5 minutes.

P_{Ld} output power in light-overload use

Heavy-duty use (50% overload capability) ratings

I_{Hd} continuous rms current. 50% overload is allowed for one minute every 5 minutes.

P_{Hd} output power in heavy-duty use

Capacitance

C Nominal DC link capacitance

Note: The ratings apply to units without option +C132 (marine type approval). For ratings of units with option +C132, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]).

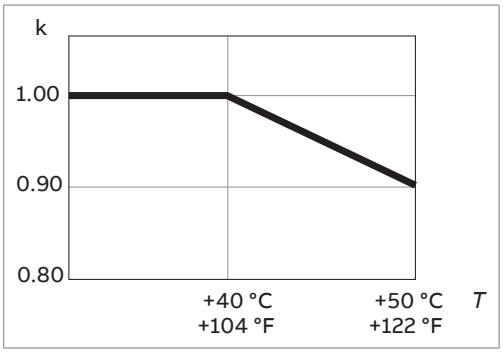
For input frequency f_1, see Electrical power network specification (page 316).

Note: The ratings apply at an ambient temperature of 40 °C (104 °F).

Derating

Surrounding air temperature derating

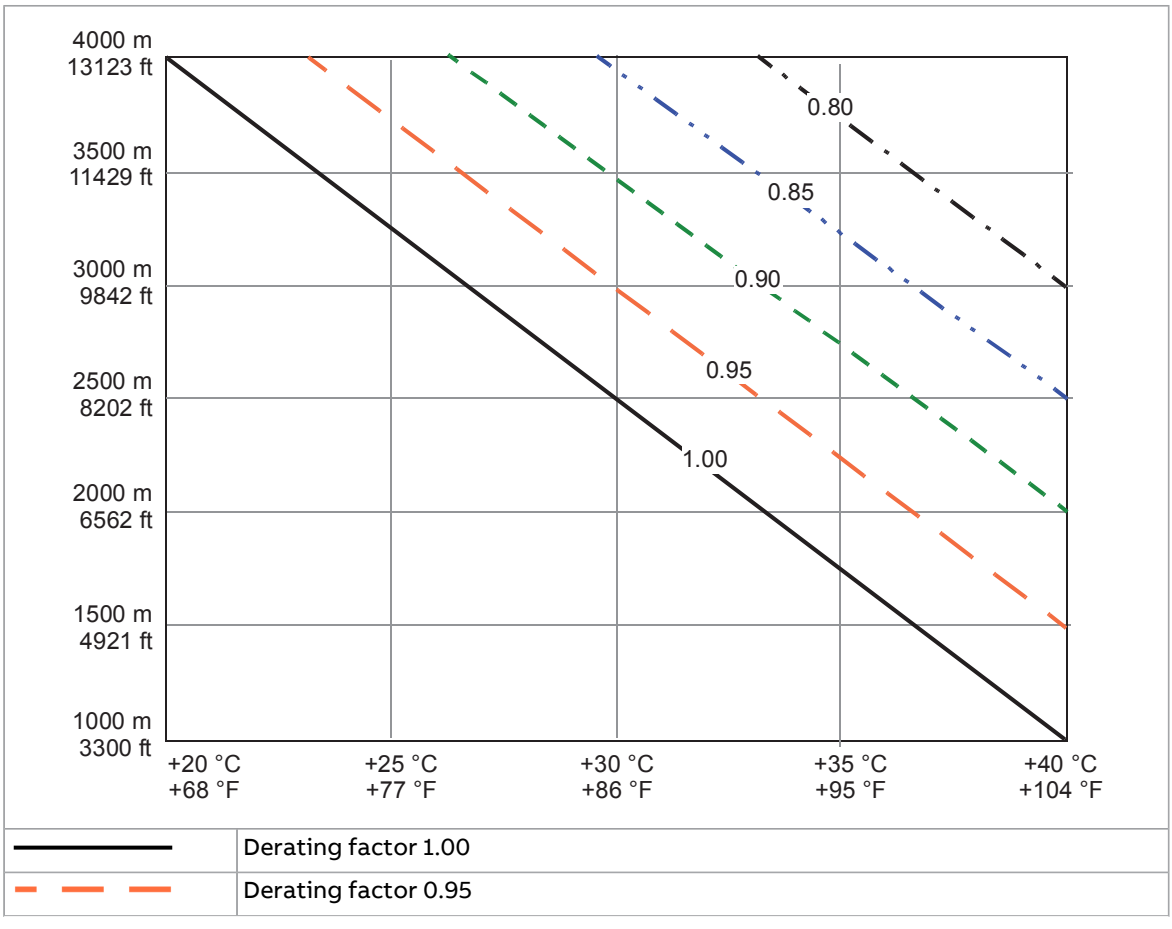
In the temperature range +40…50 °C (+104…122 °F), the rated output current is derated by 1 percentage point for every added 1 °C (1.8 °F). The output current can be calculated by multiplying the current given in the rating table by the derating factor *(k)*:



Altitude derating

At altitudes more than 1000 m (3281 ft) above sea level, the output current derating is 1 percentage point for every added 100 m (328 ft). For example, the derating factor for 1500 m (4921 ft) is 0.95. The maximum permitted installation altitude is given in the technical data.

If the surrounding air temperature is less than +40 °C (104 °F), the derating can be reduced by 1.5 percentage points for every 1 °C (1.8 °F) reduction in temperature. A few altitude derating curves are shown below.



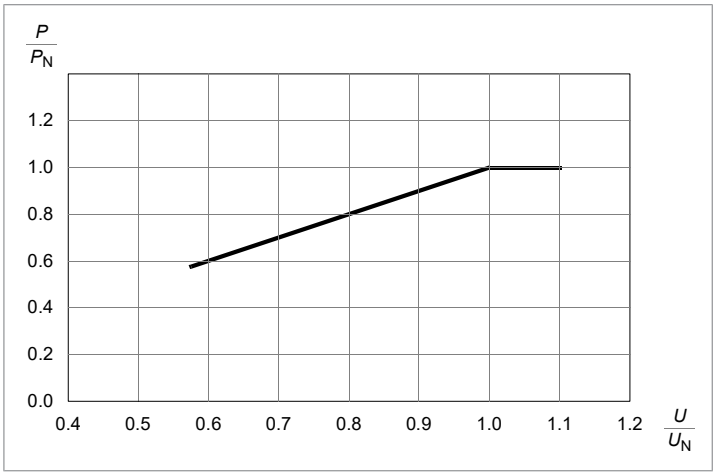
	Derating factor 0.90
	Derating factor 0.85
	Derating factor 0.80

For a more accurate derating, use the DriveSize PC tool.

Derating for output voltage boosting

The drive can output a higher motor voltage than the supply voltage. This can require derating of the drive output power depending on the difference between the supply voltage and the output voltage to the motor for continuous operation.

This drawing shows the required derating. It is valid for all supply voltage ranges.



Note: The drive voltage rating must always be selected according to the boosted voltage value.

Note: Auxiliary voltage transformer must be set according to supply voltage levels. If drive selection based on boosted voltage level causes an unsuitable tap setting of the auxiliary voltage transformer, consult your local ABB representative.

Type equivalence table

Cabinet-installed type ACS880-207-... [1]	IGBT supply unit type ACS880-204-... [2]	Basic module type ACS880-104... [3]	Frame
U_N = 400 V (Range 380 ... 415 V)			
-	008A0-3	ACS880-104-008A0-3	1×R1i
-	0018A-3	ACS880-104-0018A-3	1×R2i
-	0035A-3	ACS880-104-0035A-3	1×R3i
-	0050A-3	ACS880-104-0050A-3	1×R3i
-	0093A-3	ACS880-104-0094A-3	1×R4i
-	0210A-3	ACS880-104-0250A-3	1×R6i
-	0270A-3	ACS880-104-0350A-3	1×R7i
0420A-3	0420A-3	ACS880-104-0470A-3	1×R8i
0580A-3	0580A-3	ACS880-104-0640A-3	1×R8i
0810A-3	0810A-3	ACS880-104-0900A-3	1×R8i
1130A-3	1130A-3	ACS880-104-0640A-3	2×R8i
1330A-3	1330A-3	ACS880-104-0760A-3	2×R8i
1580A-3	1580A-3	ACS880-104-0900A-3	2×R8i
2350A-3	2350A-3	ACS880-104-0900A-3	3×R8i
3110A-3	3110A-3	ACS880-104-0900A-3	4×R8i
4620A-3	4620A-3	ACS880-104-0900A-3	6×R8i
U_N = 500 V (Range 380 ... 500 V)			
-	006A6-5	ACS880-104-008A0-5	1×R1i
-	0015A-5	ACS880-104-0018A-5	1×R2i
-	0029A-5	ACS880-104-0035A-5	1×R3i
-	0041A-5	ACS880-104-0050A-5	1×R3i
-	0077A-5	ACS880-104-0094A-5	1×R4i
-	0210A-5	ACS880-104-0240A-5	1×R6i
-	0260A-5	ACS880-104-0340A-5	1×R7i
0400A-5	0400A-5	ACS880-104-0440A-5	1×R8i
0530A-5	0530A-5	ACS880-104-0590A-5	1×R8i
0730A-5	0730A-5	ACS880-104-0810A-5	1×R8i
1040A-5	1040A-5	ACS880-104-0590A-5	2×R8i
1420A-5	1420A-5	ACS880-104-0810A-5	2×R8i
2120A-5	2120A-5	ACS880-104-0810A-5	3×R8i
2800A-5	2800A-5	ACS880-104-0810A-5	4×R8i
4150A-5	4150A-5	ACS880-104-0810A-5	6×R8i
U_N = 690 V (Range 525 ... 690 V)			
-	0150A-7	ACS880-104-0190A-7	1×R6i
-	0170A-7	ACS880-104-0270A-7	1×R7i
0310A-7	0310A-7	ACS880-104-0340A-7	1×R8i
0370A-7	0370A-7	ACS880-104-0410A-7	1×R8i
0540A-7	0540A-7	ACS880-104-0600A-7	1×R8i

Cabinet-installed type ACS880-207-... [1]	IGBT supply unit type ACS880-204-... [2]	Basic module type ACS880-104... [3]	Frame
0720A-7	0720A-7	ACS880-104-0410A-7	2×R8i
1050A-7	1050A-7	ACS880-104-0600A-7	2×R8i
1570A-7	1570A-7	ACS880-104-0600A-7	3×R8i
2070A-7	2070A-7	ACS880-104-0600A-7	4×R8i
3080A-7	3080A-7	ACS880-104-0600A-7	6×R8i

[1] Cabinet-installed units available from ABB

[2] IGBT supply unit types available from ABB as modules

[3] IGBT supply modules used. The quantity of the modules is shown in the Frame column.

Fuses

For fuse types, see the ordering information.

Note: The recommended fuses are for branch circuit protection per NEC as required for the UL/CSA approval.

Forced cooling is recommended for the AC fuses of the R8i supply modules to keep the fuse temperature under 100 °C. Monitoring of cooling fan status or fuse temperature is also recommended.

If the AC fuses are located in another cabinet (eg. ICU), the suitable fan unit for AC fuse cooling depends on the cabinet design. It is recommended to install the fan in such a way that it directly cools the fuses.

Fuses on BFPS board

The fuse type is Mersen (Ferraz-Shawmut) A070GRB05T13 (5 A 690 V AC).

Fuses on BDFC board

1 A, 400 V DC, 500 V AC.

Charging kit contents

IEC

Charging kit code	Charging fuses			Charging contactor	
	Type	Rating	Info	Type	Rating
3AXD50000558193	OFAA000GG20 C14G20 CH141B	20 A, 690 V, IEC 000 20 A, 690 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF26-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558209	OFAA000GG25 C14G25 CH141B	25 A, 690 V, IEC 000 25 A, 690 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF26-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558513	OFAA000GG20 C14G20 CH141B	20 A, 690 V, IEC 000 20 A, 690 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF52-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558537	OFAA000GG25 C14G25 CH141B	25 A, 690 V, IEC 000 25 A, 690 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF52-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558544	OFAA000GG32 C14G32 CH141B	32 A, 690 V, IEC 000 32 A, 500 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF52-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558551	OFAA000GG16 C14G16 CH141B	16 A, 690 V, IEC 000 16 A, 690 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF30-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558568	OFAA000GG20 C14G20 CH141B	20 A, 690 V, IEC 000 20 A, 690 V 50 A, 690 V	HRC fuse link Cartridge fuse fuse holder	AF30-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000002845	OFAA000GG35	35 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000002846	OFAA000GG50	50 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000015666	OFAA000GG16	16 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000015667	OFAA000GG40	40 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000015668	OFAA000GG40	40 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016052	OFAA000GG50	50 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016053	OFAA000GG25	25 A, 690 V, IEC 000	HRC fuse link	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016054	OFAA000GG50	50 A, 690 V, IEC 000	HRC fuse link	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz

Charging kit code	Charging fuses			Charging contactor	
	Type	Rating	Info	Type	Rating
3AXD50000016055	OFAA000GG50	50 A, 690 V, IEC 000	HRC fuse link	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016056	OFAA000GG40	40 A, 690 V, IEC 000	HRC fuse link	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016057	OFAA000GG63	63 A, 690 V, IEC 000	HRC fuse link	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016058	OFAA000GG63	63 A, 690 V, IEC 000	HRC fuse link	AF146-30-22(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016059	OFAA00GG80	80 A, 690 V, IEC 00	HRC fuse link	AF146-30-22(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016060	OFAA00GG80	80 A, 690 V, IEC 00	HRC fuse link	AF146-30-22(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016081	OFAA00GG80	80 A, 690 V, IEC 00	HRC fuse link	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016134	OFAA00GG80	80 A, 690 V, IEC 00	HRC fuse link	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016135	OFAA00GG100	100 A, 690 V, IEC 00	HRC fuse link	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016136	OFAA00GG100	100 A, 690 V, IEC 00	HRC fuse link	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016137	OFAA00GG80	80 A, 690 V, IEC 00	HRC fuse link	AF265-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016138	OFAA00GG100	100 A, 690 V, IEC 00	HRC fuse link	AF265-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016139	OFAA00GG80	80 A, 690 V, IEC 00	HRC fuse link	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016140	OFAA00GG100	100 A, 690 V, IEC 00	HRC fuse link	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016161	NH00GG69V125	125 A, 690 V, IEC 00	HRC fuse link	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016162	NH0GG69V160	160 A, 690 V, IEC 0	HRC fuse link	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000022525	OFAA000GG40	40 A, 690 V, IEC 000	HRC fuse link	AF52-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000022529	OFAA000GG35	35 A, 690 V, IEC 000	HRC fuse link	AF52-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000022533	OFAA000GG16	16 A, 690 V, IEC 000	HRC fuse link	AF30-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000022535	OFAA000GG35	35 A, 690 V, IEC 000	HRC fuse link	AF65-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000025574	OFAA000GG25	25 A, 690 V, IEC 000	HRC fuse link	AF30-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000025575	OFAA000GG25	25 A, 690 V, IEC 000	HRC fuse link	AF52-30-22-13	100 … 250 V AC/DC, 50/60 Hz

Charging kit code	Charging switch		Charging resistor	
	Type	Rating	Rating	Qty
3AXD50000558193	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000558209	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000558513	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000558537	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000558544	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	3
3AXD50000558551	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	1
3AXD50000558568	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	1
3AXD50000002845	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000002846	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	3
3AXD50000015666	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	1
3AXD50000015667	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	3
3AXD50000015668	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000016052	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	5
3AXD50000016053	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	1
3AXD50000016054	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	4
3AXD50000016055	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	3
3AXD50000016056	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	3
3AXD50000016057	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	4
3AXD50000016058	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	5
3AXD50000016059	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	9
3AXD50000016060	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	7
3AXD50000016081	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	5
3AXD50000016134	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	8
3AXD50000016135	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	8
3AXD50000016136	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	10
3AXD50000016137	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	10
3AXD50000016138	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	11
3AXD50000016139	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	9
3AXD50000016140	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	11
3AXD50000016161	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	14
3AXD50000016162	OS200D22FP	200 A, 690 V, 50 kA, 4-pole	5 ohm	14
3AXD50000022525	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	3
3AXD50000022529	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000022533	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	1
3AXD50000022535	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000025574	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2
3AXD50000025575	OS160GD04F	160 A, 690 V, 50 kA, 4-pole	5 ohm	2

UL, CSA

Charging kit code	Charging fuses			Charging contactor	
	Type	Rating	Info	Type	Rating
3AXD50000558834	LPJ-10SP CH30J2	10 A, 600V AC	Class J Fuse holder	AF52-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558841	LPJ-20SP CH30J1	20 A, 600V AC	HRC fuse link Cartridge fuse fuse holder	AF52-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558858	LPJ-20SP CH30J0	20 A, 600V AC	HRC fuse link Cartridge fuse fuse holder	AF30-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000558865	LPJ-10SP CH30J1	10 A, 600V AC	HRC fuse link Cartridge fuse fuse holder	AF30-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000559084	LPJ-15SP CH30J2	15 A, 600V AC	HRC fuse link Cartridge fuse fuse holder	AF26-30-00-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000003928	LPJ-30SP	30 A, 600 V	Class J	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000003929	LPJ-30SP	30 A, 600 V	Class J	AF96-30-22-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000016163	LPJ-10SP	10 A, 600 V AC	Class J	AF96-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017037	LPJ-15SP	15 A, 600 V AC	Class J	AF96-30-11-13	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017038	LPJ-60SP	60 A, 600 V AC	Class J	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017039	LPJ-60SP	60 A, 600 V AC	Class J	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017040	LPJ-30SP	30 A, 600 V	Class J	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017071	LPJ-60SP	60 A, 600 V AC	Class J	AF116-30-11(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017072	LPJ-60SP	60 A, 600 V AC	Class J	AF146-30-22(B)	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017073	LPJ-80SP	80 A, 600 V AC	Class J	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017074	LPJ-80SP	80 A, 600 V AC	Class J	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017075	LPJ-125SP	125 A, 600 V AC	Class J	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017076	LPJ-100SP	100 A, 600 V AC	Class J	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017077	LPJ-60SP	60 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017078	LPJ-80SP	80 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017079	LPJ-100SP	100 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz

Charging kit code	Charging fuses			Charging contactor	
	Type	Rating	Info	Type	Rating
3AXD50000017080	LPJ-125SP	125 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017081	LPJ-80SP	80 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017082	LPJ-100SP	100 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017083	LPJ-200SP	200 A, 600 V AC	Class J	AF205-30-22	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017084	LPJ-100SP	100 A, 600 V AC	Class J	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017085	LPJ-125SP	125 A, 600 V AC	Class J	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017086	LPJ-200SP	200 A, 600 V AC	Class J	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017087	LPJ-200SP	200 A, 600 V AC	Class J	AF305-30-11	100 … 250 V AC/DC, 50/60 Hz
3AXD50000017058	LPJ-60SP	60 A, 600 V AC	Class J	AF190-30-22	100 … 250 V AC/DC, 50/60 Hz

Charging kit code	Charging switch		Charging resistor	
	Type	Rating	Rating	Qty
3AXD50000558834	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	3
3AXD50000558841	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	2
3AXD50000558858	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	2
3AXD50000558865	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	1
3AXD50000559084	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	2
3AXD50000003928	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	2
3AXD50000003929	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	3
3AXD50000016163	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	1
3AXD50000017037	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	1
3AXD50000017038	OS60GJ22FP	60 A, 600 V, 4-pole	5 ohm	7
3AXD50000017039	OS60GJ22FP	60 A, 600 V, 4-pole	5 ohm	6
3AXD50000017040	OS30FAJ22F	30 A, 600 V, 4-pole	5 ohm	2
3AXD50000017071	OS60GJ22FP	60 A, 600 V, 4-pole	5 ohm	4
3AXD50000017072	OS60GJ22FP	60 A, 600 V, 4-pole	5 ohm	7
3AXD50000017073	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	6
3AXD50000017074	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	7
3AXD50000017075	OS200J04FP	200 A, 600 V, 4-pole	5 ohm	8
3AXD50000017076	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	8
3AXD50000017077	OS60GJ22FP	60 A, 600 V, 4-pole	5 ohm	7
3AXD50000017078	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	7
3AXD50000017079	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	9
3AXD50000017080	OS200J04FP	200 A, 600 V, 4-pole	5 ohm	9
3AXD50000017081	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	9

Charging kit code	Charging switch		Charging resistor	
	Type	Rating	Rating	Qty
3AXD50000017082	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	11
3AXD50000017083	OS200J04FP	200 A, 600 V, 4-pole	5 ohm	12
3AXD50000017084	OS100GJ22FP	100 A, 600 V, 4-pole	5 ohm	9
3AXD50000017085	OS200J04FP	200 A, 600 V, 4-pole	5 ohm	11
3AXD50000017086	OS200J04FP	200 A, 600 V, 4-pole	5 ohm	15
3AXD50000017087	OS200J04FP	200 A, 600 V, 4-pole	5 ohm	12
3AXD50000017058	OS60GJ22FP	60 A, 600 V, 4-pole	5 ohm	6

Dimensions and weights

IGBT supply module

ACS880-204-...	Height		Width		Depth		Weight	
	mm	in	mm	in	mm	in	kg	lb
U_N = 400 V (Range 380 ... 415 V)								
008A0-3	364	14.3	90	3.5	234	9.2	4	8.8
0018A-3	380	15.0	100	3.9	312	12.3	6	13.2
0035A-3	467	18.4	165	6.5	313	12.3	11	24.3
0050A-3	467	18.4	165	6.5	313	12.3	11	24.3
0093A-3	467	18.4	220	8.7	313	12.3	18	39.7
0210A-3	900	35.4	170	6.7	456	18.0	38	84
0270A-3	900	35.4	170	6.7	456	18.0	42	93
0420A-3	1397	55	240	9.45	583	22.95	125	276
0580A-3	1397	55	240	9.45	583	22.95	125	276
0810A-3	1397	55	240	9.45	583	22.95	125	276
1130A-3	1397	55	240	9.45	583	22.95	125	276
1330A-3	1397	55	240	9.45	583	22.95	125	276
1580A-3	1397	55	240	9.45	583	22.95	125	276
2350A-3	1397	55	240	9.45	583	22.95	125	276
3110A-3	1397	55	240	9.45	583	22.95	125	276
4620A-3	1397	55	240	9.45	583	22.95	125	276
U_N = 500 V (Range 380 ... 500 V)								
006A6-5	364	14.3	90	3.5	234	9.2	4	8.8
0015A-5	380	15.0	100	3.9	312	12.3	6	13.2
0029A-5	467	18.4	165	6.5	313	12.3	11	24.3
0041A-5	467	18.4	165	6.5	313	12.3	11	24.3
0077A-5	467	18.4	220	8.7	313	12.3	18	39.7
0210A-5	900	35.4	170	6.7	456	18.0	38	84
0260A-5	900	35.4	170	6.7	456	18.0	42	93
0400A-5	1397	55	240	9.45	583	22.95	125	276
0530A-5	1397	55	240	9.45	583	22.95	125	276

ACS880-204-...	Height		Width		Depth		Weight	
	mm	in	mm	in	mm	in	kg	lb
0730A-5	1397	55	240	9.45	583	22.95	125	276
1040A-5	1397	55	240	9.45	583	22.95	125	276
1420A-5	1397	55	240	9.45	583	22.95	125	276
2120A-5	1397	55	240	9.45	583	22.95	125	276
2800A-5	1397	55	240	9.45	583	22.95	125	276
4150A-5	1397	55	240	9.45	583	22.95	125	276
U_N = 690 V (Range 525 ... 690 V)								
0150A-7	900	35.4	170	6.7	456	18.0	38	84
0170A-7	900	35.4	170	6.7	456	18.0	42	93
0310A-7	1397	55	240	9.45	583	22.95	125	276
0370A-7	1397	55	240	9.45	583	22.95	125	276
0540A-7	1397	55	240	9.45	583	22.95	125	276
0720A-7	1397	55	240	9.45	583	22.95	125	276
1050A-7	1397	55	240	9.45	583	22.95	125	276
1570A-7	1397	55	240	9.45	583	22.95	125	276
2070A-7	1397	55	240	9.45	583	22.95	125	276
3080A-7	1397	55	240	9.45	583	22.95	125	276

With module covers and without strain relief clamps (R1i to R4i).

LCL filter module

LCL filter type	Height		Width		Depth		Weight	
	mm	in	mm	in	mm	in	kg	lb
U_N = 400 V (Range 380 ... 415 V) or 500 V (Range 380 ... 500 V)								
WFU-01	315	12.40	213	8.39	218	8.58	11	24.5
WFU-02	315	12.40	213	8.39	218	8.58	11	24.5
WFU-11	386	15.20	288	11.34	256	10.08	34	75
WFU-21	406	15.98	318	12.52	299	11.77	45	99
WFU-22	406	15.98	318	12.52	299	11.77	51	112
BLCL-05-5+C188	1182	46.54	240	9.45	487	19.17	133	293
BLCL-13-5+C183+C188+V991	1397	55.00	240	9.45	492	19.37	195	430
BLCL-15-5+C183+C188+V991	1397	55.00	240	9.45	492	19.37	220	485
BLCL-24-5+C183+C188+V991	1397	55.00	240	9.45	568	22.36	321	708
BLCL-25-5+C183+C188+V991	1397	55.00	240	9.45	568	22.36	329	725
U_N = 690 V (Range 525 ... 690 V)								
BLCL-05-7+C188	1182	46.54	240	9.45	487	19.17	133	293
BLCL-13-7+C183+C188+V991	1397	55.00	240	9.45	492	19.37	202	445

LCL filter type	Height		Width		Depth		Weight	
	mm	in	mm	in	mm	in	kg	lb
BLCL-15-7+C183+C188+V991	1397	55.00	240	9.45	492	19.37	215	474
BLCL-24-7+C183+C188+V991	1397	55.00	240	9.45	568	22.36	307	677
BLCL-25-7+C183+C188+V991	1397	55.00	240	9.45	568	22.36	325	717

Free space requirements

ACS880-204-...	Above		Front		Left		Right	
	mm	in	mm	in	mm	in	mm	in
U_N = 400 V (Range 380 ... 415 V)								
008A0-3	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0018A-3	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0035A-3	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0050A-3	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0093A-3	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0210A-3	200	7.9	10	0.4	10	0.4	10	0.4
0270A-3	200	7.9	10	0.4	10	0.4	10	0.4
0420A-3	200	7.9	10	0.4	10	0.4	10	0.4
0580A-3	200	7.9	10	0.4	10	0.4	10	0.4
0810A-3	200	7.9	10	0.4	10	0.4	10	0.4
1130A-3	200	7.9	10	0.4	10	0.4	10	0.4
1330A-3	200	7.9	10	0.4	10	0.4	10	0.4
1580A-3	200	7.9	10	0.4	10	0.4	10	0.4
2350A-3	200	7.9	10	0.4	10	0.4	10	0.4
3110A-3	200	7.9	10	0.4	10	0.4	10	0.4
4620A-3	200	7.9	10	0.4	10	0.4	10	0.4
U_N = 500 V (Range 380 ... 500 V)								
006A6-5	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0015A-5	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0029A-5	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0041A-5	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0077A-5	150	5.9	0	0.0	2.5	0.1	2.5	0.1
0210A-5	200	7.9	10	0.4	10	0.4	10	0.4
0260A-5	200	7.9	10	0.4	10	0.4	10	0.4
0400A-5	200	7.9	10	0.4	10	0.4	10	0.4
0530A-5	200	7.9	10	0.4	10	0.4	10	0.4
0730A-5	200	7.9	10	0.4	10	0.4	10	0.4
1040A-5	200	7.9	10	0.4	10	0.4	10	0.4
1420A-5	200	7.9	10	0.4	10	0.4	10	0.4
2120A-5	200	7.9	10	0.4	10	0.4	10	0.4
2800A-5	200	7.9	10	0.4	10	0.4	10	0.4
4150A-5	200	7.9	10	0.4	10	0.4	10	0.4
U_N = 690 V (Range 525 ... 690 V)								
0150A-7	200	7.9	10	0.4	10	0.4	10	0.4
0190A-7	200	7.9	10	0.4	10	0.4	10	0.4
0310A-7	200	7.9	10	0.4	10	0.4	10	0.4
0370A-7	200	7.9	10	0.4	10	0.4	10	0.4
0540A-7	200	7.9	10	0.4	10	0.4	10	0.4

ACS880-204-...	Above		Front		Left		Right	
	mm	in	mm	in	mm	in	mm	in
0720A-7	200	7.9	10	0.4	10	0.4	10	0.4
1050A-7	200	7.9	10	0.4	10	0.4	10	0.4
1570A-7	200	7.9	10	0.4	10	0.4	10	0.4
2070A-7	200	7.9	10	0.4	10	0.4	10	0.4
3080A-7	200	7.9	10	0.4	10	0.4	10	0.4

Definitions

Above Free space to enable cooling air flow

Front Free space for cabling

Left Free space for smooth installation

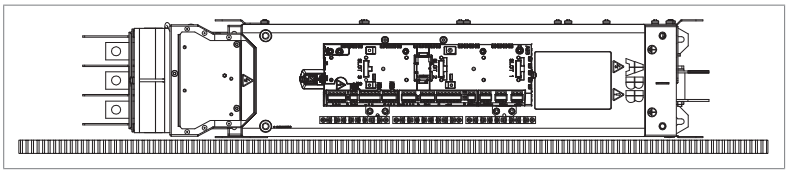
Right Free space for smooth installation

Allowable mounting orientations

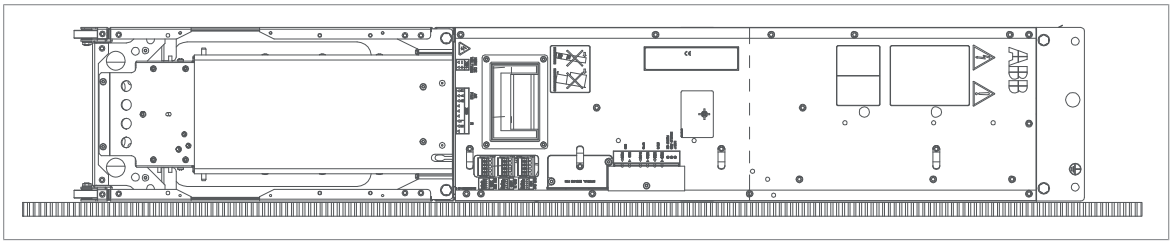
The modules must be mounted upright unless other orientations are expressly allowed below.

Note: The vibration limits stated under Ambient conditions have been verified by ABB for the upright mounting position only. The vibration conditions of the site must be evaluated case-by-case whenever a module is installed in a non-upright position.

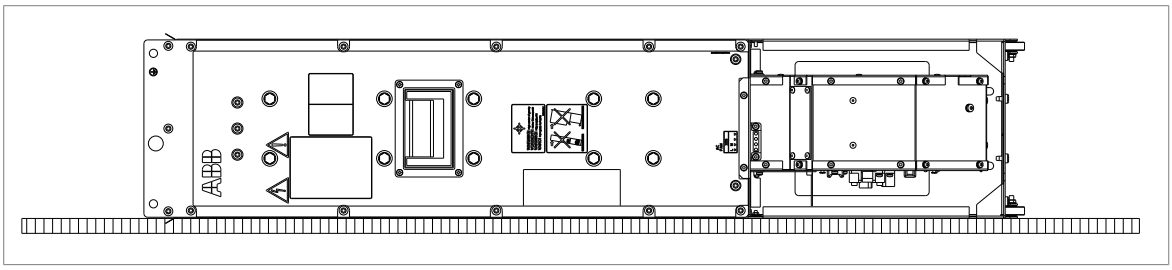
Frame R6i and R7i: Installation on right-hand side (viewed from the front) allowed.



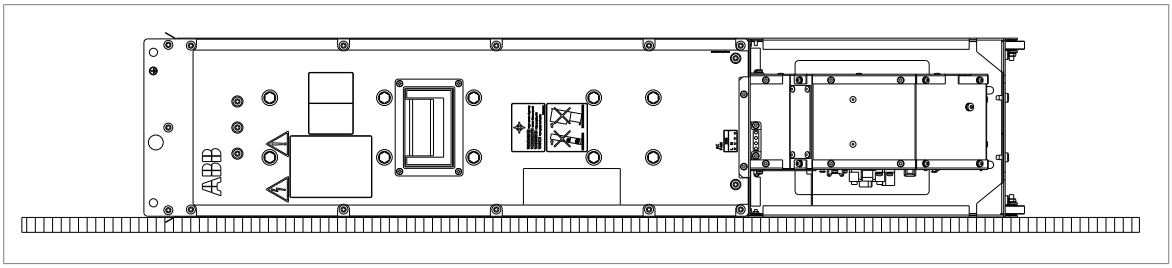
Frame R8i: Installation on right-hand side (viewed from the front) allowed.



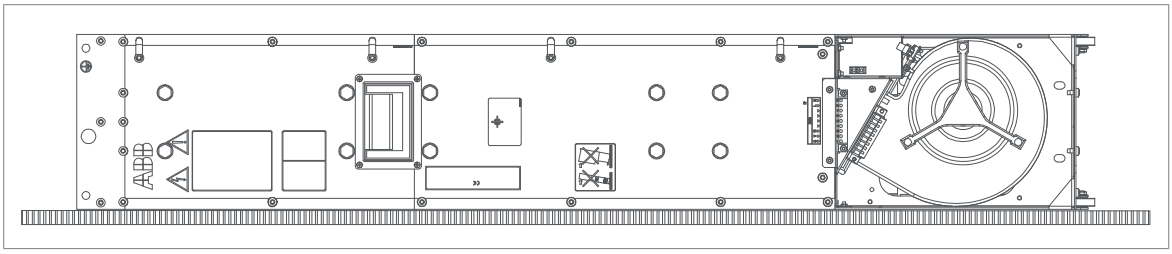
BLCL-0x-x modules: Installation on left-hand side (viewed from the front) allowed.



BLCL-1x-x modules: Installation on left-hand side (viewed from the front) allowed.



BLCL-2x-x modules: Installation on left-hand side (viewed from the front) allowed.



Losses, cooling data and noise

ACS880-204-...	$P_{lossISU}$	$P_{lossLCL}$	Air flow for IGBT supply module		Noise
	kW	kW	m^3/h	ft^3/min	dB
U_N = 400 V (Range 380 … 415 V)					
008A0-3	0.09	0.13	24	14	47
0018A-3	0.17	0.33	48	28	39
0035A-3	0.30	0.67	63	37	63
0050A-3	0.41	0.98	200	118	71
0093A-3	0.74	1.84	290	171	70
0210A-3	1.9	1.3	1550	912	72
0270A-3	2.6	1.9	1840	1083	72
0420A-3	4.4	2.2	2200	1295	72
0580A-3	6.1	3.2	2200	1295	72
0810A-3	9.4	3.9	2200	1295	72
1130A-3	12.2	5.0	4100	2413	74
1330A-3	13.6	5.9	4100	2413	74
1580A-3	18.7	7.3	4100	2413	74
2350A-3	28.1	11.9	6900	4061	76
3110A-3	37.5	14.6	8200	4826	76
4620A-3	56.2	21.9	12300	7240	78
U_N = 500 V (Range 380 … 500 V)					
006A6-5	0.09	0.13	24	14	47
0015A-5	0.17	0.33	48	28	39
0029A-5	0.32	0.65	63	37	63
0041A-5	0.48	0.91	200	118	71
0077A-5	0.80	1.78	290	171	70
0210A-5	2.1	1.4	1550	912	72
0260A-5	2.7	1.9	1840	1083	72
0400A-5	4.5	2.1	2200	1295	72
0530A-5	6.0	2.9	2200	1295	72
0730A-5	8.6	3.4	2200	1295	72
1040A-5	11.9	4.5	4100	2413	74
1420A-5	17.3	6.6	4100	2413	74
2120A-5	25.9	9.1	6900	4061	76
2800A-5	34.6	13.1	8200	4826	76
4150A-5	51.9	19.7	12300	7240	78
U_N = 690 V (Range 525 … 690 V)					
0150A-7	2.1	1.3	1550	912	72
0170A-7	2.4	1.6	1840	1083	72
0310A-7	6.1	2.5	2200	1295	72
0370A-7	7.1	3.0	2200	1295	72

ACS880-204-...	$P_{lossISU}$	$P_{lossLCL}$	Air flow for IGBT supply module		Noise
	kW	kW	m^3/h	ft^3/min	dB
0540A-7	10.2	4.5	2200	1295	72
0720A-7	14.3	4.1	4100	2413	74
1050A-7	20.3	7.6	4100	2413	74
1570A-7	30.5	9.1	6900	4061	76
2070A-7	40.6	15.2	8200	4826	76
3080A-7	60.9	22.9	12300	7240	78

These losses are not calculated according to the ecodesign standard IEC 61800-9-2.

Definitions

$P_{lossISU}$ Heat dissipation. Total losses of the ISU module at nominal power

$P_{lossLCL}$ Heat dissipation. Total losses of the LCL filter module at nominal power

Noise Noise with direct-on-line fans running at nominal speed

LCL filter modules	Air flow for LCL filter module	
Type	m^3/h	ft^3/min
BLCL-0x-x	900	530
BLCL-1x-x	900	530
BLCL-2x-x	1500	883

Tightening torques

Unless a tightening torque is specified in the text, the following torques can be used.

Electrical connections

Size	Torque	Strength class
M3	0.5 N·m (4.4 lbf·in)	4.6...8.8
M4	1 N·m (9 lbf·in)	4.6...8.8
M5	4 N·m (35 lbf·in)	8.8
M6	9 N·m (6.6 lbf·ft)	8.8
M8	22 N·m (16 lbf·ft)	8.8
M10	42 N·m (31 lbf·ft)	8.8
M12	70 N·m (52 lbf·ft)	8.8
M16	120 N·m (90 lbf·ft)	8.8

Mechanical connections

Size	Max. torque	Strength class
M5	6 N·m (53 lbf·in)	8.8
M6	10 N·m (7.4 lbf·ft)	8.8
M8	24 N·m (17.7 lbf·ft)	8.8

Insulation supports

Size	Max. torque	Strength class
M6	5 N·m (44 lbf·in)	8.8
M8	9 N·m (6.6 lbf·ft)	8.8
M10	18 N·m (13.3 lbf·ft)	8.8
M12	31 N·m (23 lbf·ft)	8.8

Cable lugs

Size	Max. torque	Strength class
M8	15 N·m (11 lbf·ft)	8.8 (A2-70 or A4-70)
M10	32 N·m (23.5 lbf·ft)	8.8
M12	50 N·m (37 lbf·ft)	8.8

Typical power cable sizes

The tables below give current carrying capacity (I_{Lmax}) for aluminum and copper PVC/XLPE insulated cables. A correction factor K = 0.70 is used. Time const is the temperature time constant of the cable.

The cable sizing is based on max. 9 cables laid on the cable trays side by side, three ladder type trays one on top of the other, ambient temperature 30 °C (EN 60204-1 and IEC 60364-5-52).

Aluminum cable		**PVC insulation Conductor temperature 70 °C**		**XLPE insulation Conductor temperature 90 °C**	
Size	**Ø [mm]**	**I_{Lmax} [A]**	**Time const. [s]**	**I_{Lmax} [A]**	**Time const. [s]**
3 × 35 + 10 Cu	26	67	736	84	669
3 × 50 + 15 Cu	29	82	959	102	874
3 × 70 + 21 Cu	32	105	1182	131	1079
3 × 95 + 29 Cu	38	128	1492	159	1376
3 × 120 + 41 Cu	41	148	1776	184	1637
3 × 150 + 41 Cu	44	171	2042	213	1881
3 × 185 + 57 Cu	49	196	2422	243	2237
3 × 240 + 72 Cu	54	231	2967	286	2740
3 × 300 + 88 Cu	58	267	3478	330	3229
2 × (3 × 70 + 21 Cu)	2 × 32	210	1182	262	1079
2 × (3 × 95 + 29 Cu)	2 × 38	256	1492	318	1376
2 × (3 × 120 + 41 Cu)	2 × 41	297	1776	368	1637
2 × (3 × 150 + 41 Cu)	2 × 44	343	2042	425	1881
2 × (3 × 185 + 57 Cu)	2 × 49	392	2422	486	2237
2 × (3 × 240 + 72 Cu)	2 × 54	462	2967	572	2740
2 × (3 × 300 + 88 Cu)	2 × 58	533	3478	659	3229
3 × (3 × 150 + 41 Cu)	3 × 44	514	2042	638	1881
3 × (3 × 185 + 57 Cu)	3 × 49	588	2422	728	2237
3 × (3 × 240 + 72 Cu)	3 × 54	693	2967	859	2740
3 × (3 × 300 + 88 Cu)	3 × 58	800	3478	989	3229
4 × (3 × 185 + 57 Cu)	4 × 49	784	2422	971	2237
4 × (3 × 240 + 72 Cu)	4 × 54	924	2967	1145	2740
4 × (3 × 300 + 88 Cu)	4 × 58	1067	3478	1319	3229
5 × (3 × 185 + 57 Cu)	5 × 49	980	2422	1214	2237
5 × (3 × 240 + 72 Cu)	5 × 54	1155	2967	1431	2740
5 × (3 × 300 + 88 Cu)	5 × 58	1333	3478	1648	3229
6 × (3 × 240 + 72 Cu)	6 × 54	1386	2967	1718	2740
6 × (3 × 300 + 88 Cu)	6 × 58	1600	3478	1978	3229
7 × (3 × 240 + 72 Cu)	7 × 54	1617	2967	2004	2740
7 × (3 × 300 + 88 Cu)	7 × 58	1867	3478	2308	3229
8 × (3 × 240 + 72 Cu)	8 × 54	1848	2967	2290	2740
8 × (3 × 300 + 88 Cu)	8 × 58	2133	3478	2637	3229
9 × (3 × 240 + 72 Cu)	9 × 54	2079	2967	2577	2740
9 × (3 × 300 + 88 Cu)	9 × 58	2400	3478	2967	3229
10 × (3 × 240 + 72 Cu)	10 × 54	2310	2967	2867	2740
10 × (3 × 300 + 88 Cu)	10 × 58	2667	3478	3297	3229

Copper cable		PVC insulation Conductor temperature 70 °C		XLPE insulation Conductor temperature 90 °C	
Size	**Ø [mm]**	**I_{Lmax} [A]**	**Time const. [s]**	**I_{Lmax} [A]**	**Time const. [s]**
3 × 1.5 + 1.5	13	13	85	16	67
3 × 2.5 + 2.5	14	18	121	23	88
(3 × 4 + 4)	16	24	175	30	133
3 × 6 + 6	18	30	251	38	186
3 × 10 + 10	21	42	359	53	268
3 × 16 + 16	23	56	514	70	391
3 × 25 + 16	24	71	791	89	598
3 × 35 + 16	26	88	1000	110	760
3 × 50 + 25	29	107	1308	134	990
3 × 70 + 35	32	137	1613	171	1230
3 × 95 + 50	38	167	2046	209	1551
3 × 120 + 70	41	193	2441	241	1859
3 × 150 + 70	44	223	2820	279	2139
3 × 185 + 95	50	255	3329	319	2525
3 × 240 + 120	55	301	4073	376	3099
3 × 300 + 150	58	348	4779	435	3636
2 × (3 × 70 + 35)	2 × 32	274	1613	342	1230
2 × (3 × 95 + 50)	2 × 38	334	2046	418	1551
2 × (3 × 120 + 70)	2 × 41	386	2441	482	1859
2 × (3 × 150 + 70)	2 × 44	446	2820	558	2139
2 × (3 × 185 + 95)	2 × 50	510	3329	638	2525
2 × (3 × 240 + 120)	2 × 55	602	4073	752	3099
2 × (3 × 300 + 150)	2 × 58	696	4779	869	3636
3 × (3 × 120 + 70)	3 × 41	579	2441	723	1859
3 × (3 × 150 + 70)	3 × 44	669	2820	837	2139
3 × (3 × 185 + 95)	3 × 50	765	3329	957	2525
3 × (3 × 240 + 120)	3 × 55	903	4073	1128	3099
3 × (3 × 300 + 150)	3 × 58	1044	4779	1304	3636
4 × (3 × 150 + 70)	4 × 44	892	2820	1116	2139
4 × (3 × 185 + 95)	4 × 50	1020	3329	1276	2525
4 × (3 × 240 + 120)	4 × 55	1204	4073	1504	3099
4 × (3 × 300 + 150)	4 × 58	1391	4779	1304	3636
5 × (3 × 185 + 95)	5 × 50	1275	3329	1595	2525
5 × (3 × 240 + 120)	5 × 55	1505	4073	1880	3099
5 × (3 × 300 + 150)	5 × 58	1739	4779	2173	3636
6 × (3 × 185 + 95)	6 × 50	1530	3329	1914	2525
6 × (3 × 240 + 120)	6 × 55	1806	4073	2256	3099
6 × (3 × 300 + 150)	6 × 58	2087	4779	2608	3636
7 × (3 × 240 + 120)	7 × 55	2107	4073	2632	3099
7 × (3 × 300 + 150)	7 × 58	2435	4779	3043	3636
8 × (3 × 240 + 120)	8 × 55	2408	4073	3008	3099
8 × (3 × 300 + 150)	8 × 58	2783	4779	3477	3636

Electrical power network specification

Specifications in this section are valid for modules installed in Rittal VX25 or generic cabinets with kits and components defined in the manual or corresponding cabinet structure. Cabinet construction and busbars placement must be dimensioned according to the short-circuit requirements indicated in this manual.

Voltage (U_1)	400 V units: 380…415 V AC 3-phase ± 10%. This is indicated in the type designation label as typical input voltage level (3~ 400 V AC). 500 V units: 380…500 V AC 3-phase ± 10%. This is indicated in the type designation label as typical input voltage levels (3~ 400/480/500 V AC). 690 V units: IEC: 525…690 V AC 3-phase ± 10% In corner-grounded TN systems: 525…600 V AC UL/CSA: 525…600 V AC This is indicated in the type designation label as typical input voltage levels (3~ 525/600/690 V AC).
Network type	TN (grounded) and IT (ungrounded) systems
Frequency	50/60 Hz, variation ± 5% of nominal frequency
Imbalance	Max. ± 3% of nominal phase-to-phase input voltage
Short-circuit withstand strength (IEC/EN 61439-1)	**For supply units with one R1i…R4i module:** Maximum allowable prospective shortcircuit current I_{cc} is 65 kA. In this case, the input cable must be equipped with fuses as follows: • maximum 10 A gG* for frame size R1i (basic module type ACS880-104-008A0) • maximum 25 A gG* for frame size R2i (basic module type ACS880-104-0018A) • maximum 50 A gG* for frame size R3i (basic module type ACS880-104-0035A) • maximum 63 A gG* for frame size R3i (basic module type ACS880-104-0050A) • maximum 125 A gG* for frame size R4i (basic module type ACS880-104-0035A) *) Type gG according to IEC 60269 Maximum allowed operating time is <0.1 s for fuses mentioned above. **For supply units with one R6i and R7i module:** Maximum allowable prospective shortcircuit current Icc is 65 kA. In this case, the input cable must be equipped with fuses as follows: • maximum 400 A gG* for frame size R6i and R7i (basic module type ACS880-104-0210A-3+V992, ACS880-104-0210A-5+V992, ACS880-104-0350A-3+V992, ACS880-104-0340A-5+V992,) • maximum 315 A gG* for frame size R6i and R7i (basic module type ACS880-104-0190A-7+V992, ACS880-104-0270A-7+V992) *) Type gG according to IEC 60269 Maximum allowed operating time is <0.1 s for fuses mentioned above. **For supply units with R8i module(s):** Supply units with the ABB-defined main switch-disconnector and fuses: • Rated peak withstand current I_{pk} = 105 kA • Rated short-time withstand current I_{cw} = 50 kA/1 s Supply units with ABB-defined main circuit breaker and fuses: • Rated peak withstand current I_{pk} = 143 kA • Rated short-time withstand current I_{cw} = 65 kA/1 s

Short-circuit current protection (UL 508A, CSA C22.2 No. 14-13)	The drive is suitable for use on a circuit capable of delivering not more than 100,000 rms symmetrical amperes at 600 V maximum when the input cable is protected with class T fuses.
Fundamental power factor (cos phi$_1$)	0.99
Harmonic distortion	Harmonics are below the limits defined in IEEE519.

R_{sc}	THD Voltage [%]	THD Current [%]
20	3	2.5 [1)]
100	0.8	2.5 [1)]

$$THD = \sqrt{\sum_{2}^{50}\left(\frac{I_n}{I_N}\right)^2}$$

1) Other loads may influence the THD value.

THD = Total Harmonic Distortion (THD). The voltage THD depends on the short-circuit ratio (R_{sc}). The spectrum of the distortion also contains interharmonics.

$R_{sc} = I_{sc} / I_N$

I_{sc} = short-circuit current at point of common coupling (PCC)

I_N = supply unit nominal current

I_n = n^{th} harmonic current component

DC connection data

Voltage (U_2)	ACS880-204-xxxxA-3: 513…560 V DC. This is indicated in the type designation label as typical output voltage level 540 V DC. ACS880-204-xxxxA-5: 513…675 V DC. This is indicated in the type designation label as typical output voltage levels 540/648/675 V DC ACS880-204-xxxxA-7: 709…932 V DC (709…810 V DC for UL/CSA). This is indicated in the type designation label as typical output voltage levels 709/810/932 V DC (810 V DC for UL/CSA).
Output terminals	Frame R1i UDC+, UDC-: 0.25 … 4 mm^2, 0.5 … 0.6 N·m (4.4 … 5.3 lbf·in) PE: 1.5 N·m (13 lbf·in) Frame R2i UDC+, UDC-: 0.5 … 6 mm^2, 1.2 … 1.5 N·m (10.6 … 13.3 lbf·in) PE: 1.5 N·m (13 lbf·in) Frames R3i and R4i UDC+, UDC-: 6…70 mm^2. Allen screw torque 15 N·m (11 lbf·ft), connection post torque 4 N·m (30 lbf·in). Other conductor sizes can be used by replacing the original lug with a suitable crimp ring terminal. PE: Screw size M5, torque 3 N·m (25 lbf·in) Connector cover screws: Torque 3 N·m (25 lbf·in) Frame R6i and R7i See the dimension drawings. Frame R8i and multiples M12, maximum intrusion into module 20 mm (0.8 in). See also the dimension drawings.

Control unit connection data (ZCU/BCU)

See chapter The control unit.

Efficiency

96.0…98.2% at nominal power level depending on drive type.

The efficiency is not calculated according to the ecodesign standard IEC 61800-9-2.

Energy efficiency data (ecodesign)

Energy efficiency data is not provided for the drive/unit. Multidrives and multidrive modules are not in the scope of the EU ecodesign requirements (Regulation EU/2019/1781) or the UK ecodesign requirements (Regulation SI 2021 No. 745).

Protection classes for module

Degrees of protection (IEC/EN 60529)	IP00 (frames R6i...R8i) IP20 (frames R1i…R4i)
Enclosure types (UL 50/50E)	UL Open Type
Overvoltage category (IEC/EN 60664-1)	III
Protective class (IEC/EN 61800-5-1)	I

Optical components

The specifications of the optic cable are as follows:

- Storage temperature: -55 … +85 °C (-67 … +185 °F)
- Installation temperature: -20 … +70 °C (-4 … +158 °F)
- Maximum short-term tensile force: 50 N (11.2 lbf)
- Minimum short-term bend radius: 25 mm (1.0 in)
- Minimum long-term bend radius: 35 mm (1.4 in)
- Maximum long-term tensile load: 1 N (3.6 ozf)
- Flexing: Max. 1000 cycles

ABB drive products in general utilize 5 and 10 MBd (megabaud) optical components from Avago Technologies' Versatile Link range. Note that the optical component type is not directly related to the actual communication speed.

Note: The optical components (transmitter and receiver) on a fiber optic link must be of the same type.

Plastic optical fiber (POF) cables can be used with both 5 MBd and 10 MBd optical components. 10 MBd components also enable the use of Hard Clad Silica (HCS®) cables, which allow longer connection distances thanks to their lower attenuation. HCS® cables cannot be used with 5 MBd optical components.

The maximum lengths of fiber optic links for POF and HCS® cables are 20 and 200 meters (65.6 ft and 656 ft) respectively.

Ambient conditions

The unit is to be used in a heated, indoor, controlled environment.

	Operation installed for stationary use	**Storage** in the protective package	**Transportation** in the protective package
Installation site altitude above sea level	1. 0 … 4000 m (13123 ft) 2. 0 … 2000 m (6561 ft)) Output derated above 1000 m (3281 ft). See Altitude derating (page 296).	-	-
	1. Frames R1i…R8i: Neutral-grounded TN and TT network systems, non-corner-grounded IT network systems Frame R6i…R8i: Corner-grounded TN, TT and IT network systems up to 600 V 2. Frame R1i…R4i: Corner-grounded TN, TT and IT network systems up to 500 V		
Air temperature	0 … +40 °C (+32 … +104 °F), no condensation allowed	-40 … +70 °C (-40 … +158 °F)	-40 … +70 °C (-40 … +158 °F)
	+40 … +50 °C (+104 … +122 °F) derating 1% /1 °C (+1.8 °F) above 40 °C (+104 °F). For more information, see Surrounding air temperature derating (page 296).		
Relative humidity	Maximum 95%, no condensation allowed	Maximum 95%, no condensation allowed	Maximum 95%, no condensation allowed
Vibration IEC/EN 61800-5-1 IEC 60068-2-6:2007, EN 60068-2-6:2008 Environmental testing Part 2-6: Tests -Test Fc: Vibration (sinusoidal)	10…57 Hz, max. 0.075 mm amplitude 58 … 150 Hz 1 g Tested in ABB multidrive cabinet (ACS880-x07) according to: Max. 1 mm (0.04 in) (5 … 13.2 Hz), max. 0.7 g, (13.2 … 100 Hz) sinusoidal	For modules and cabinets in packages: IEC/EN 60721-3-1:1997 Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 1: Storage	For module package: IEC/EN 60721-3-1:1997 Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 2: Transportation
Shock IEC 60068-2-27:2008 EN 60068-2-27:2009 Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	Not allowed	With packing max. 100 m/s² (330 ft./s²) 11 ms	With packing max. 100 m/s² (330 ft./s²) 11 ms

Contamination	IEC/EN 60721-3-3:2002: Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities Stationary use of weather protected locations	IEC 60721-3-1	IEC 60721-3-2
	Chemical gases: Class 3C2	Chemical gases: Class 1C2	Chemical gases: Class 2C2
	Solid particles: Class 3S1 with IP20/21, 3S2 with higher IP class	Solid particles: Class 1S3 (packing must support this, otherwise 1S2)	Solid particles: Class 2S2
	No conductive dust allowed.		

Colors

RAL 9002 / PMS 1C Cool Gray, RAL 9017, NCS 1502-Y

Materials

Module

Refer to *Recycling instructions and environmental information for ACS880 cabinet-installed drives and multidrive modules* (3AXD50000153909 [English]).

Packaging of module

This is a complete list of the package materials. The materials vary depending on the frame size (packages do not contain all materials listed below).

- Cardboard (heavy duty quality with wet strength glue in large modules)
- Molded pulp
- Plywood
- Wood
- PP (strapping)
- EPP (foam)
- PE (plastic bag and/or VCI film)
- Metal (fixing clamps, screws).

Packaging of options

- Cardboard
- Kraft paper
- PP (straps)
- PE (film, bubble wrap)
- Plywood, wood (only for heavy components).

Materials vary according to the item type, size and shape. Typical package consists of a cardboard box with paper filling or bubble wrap. ESD-safe packing materials are used for printed circuit boards and similar items.

Manuals

Printed product manuals are made of recyclable paper. Product manuals are available on the Internet.

Disposal

The main parts of the drive can be recycled to preserve natural resources and energy. Product parts and materials should be dismantled and separated.

Generally all metals, such as steel, aluminum, copper and its alloys, and precious metals can be recycled as material. Plastics, rubber, cardboard and other packaging material can be used in energy recovery. Printed circuit boards and large electrolytic capacitors need selective treatment according to IEC 62635 guidelines. To aid recycling, plastic parts are marked with an appropriate identification code.

Contact your local ABB distributor for further information on environmental aspects and recycling instructions for professional recyclers. End of life treatment must follow international and local regulations. See ACS880 cabinet-installed drives and multidrives modules recycling instructions and environmental information (3AXD50000153909 [English]).

Auxiliary circuit current consumption

Type	U_N V	f Hz	I_{cont} A	I_{start} A	P_{cont} W
ZCU/BCU control unit	24 V DC ±10%	-	2.0	-	48
R8i module: internal electronics • Option +G304	230 V AC (+15%/-20%)	50/60	0.45	-	105
	115 V AC (+15%/-20%)	50/60	0.90	-	105
R8i module: direct-on-line fan (option +C188)	400 V AC	50	1.50	3.00	-
	400 V AC	60	1.90	3.80	-
	320 V AC	60	1.50	4.40	-
R8i module: heating element (option +C183)	230 V AC	50/60	-	-	40
	115 V AC	60	-	-	40
LCL filter module (WFU-01/02) fan	24 V DC	-	0.32	-	-
LCL filter module (WFU-11/21/22) fan	24 V DC	-	1.67	-	-
LCL filter module (BLCL-0x-x) fan (+C188) • Options +C188+G304	230 V AC	50	0.60	1.20	-
	230 V AC	60	0.88	1.76	
	115 V AC	60	1.80	3.60	-
LCL filter module (BLCL-1x-x) fan (+C188) • Options +C188+G304	230 V AC	50	1.40	-	-
	230 V AC	60	1.40	-	-
	115 V AC	60	2.40	-	-

Type	U_N V	f Hz	I_{cont} A	I_{start} A	P_{cont} W
LCL filter module (BLCL-2x-x) fan (+C188) • Options +C188+G427	400 V AC	50	1.50	3.00	-
	400 V AC	60	1.90	3.80	-
	320 V AC	60	-	4.40	-
	208 V AC	60	2.88	-	-
LCL filter module: heating element (option +C183)	230 V AC	50/60	-	-	13
	115 V AC	60	-	-	13

Cooling fans

Cabinet fans	Enclosure width (IEC, UL)	U_N V AC	f Hz	I_{cont} A
R1i…R4i (IP20/IP42 roof fan)	400/600 mm (UL)	230	50	0.7
	400/600/800 mm (IEC)		60	0.9
	400/600/800 mm (UL)	115	60	1.8
R1i…R8i (IP54 roof fan)	400/800 mm (IEC/UL)	230	50	1.10
			60	1.45
	600 mm (IEC/UL)	230	50	2.3
			60	3.0
	400/800 mm (UL)	115	50	3.1
			60	3.9
	600 mm (UL)	115	50	5.5
			60	6.3

f	Supply frequency
I_{cont}	Continuous current consumption
I_{start}	Calculated load current at start
P_{cont}	Continuous input power
U_N	Voltage requirement

Applicable standards

See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

Markings

See *Electrical planning instructions for ACS880 multidrive cabinets and modules* (3AUA0000102324 [English]).

Disclaimers

Generic disclaimer

The manufacturer shall have no obligation with respect to any product which (i) has been improperly repaired or altered; (ii) has been subjected to misuse, negligence or accident; (iii) has been used in a manner contrary to the manufacturer’s instructions; or (iv) has failed as a result of ordinary wear and tear.

Cybersecurity disclaimer

This product can be connected to and communicate information and data via a network interface. The HTTP protocol, which is used between the commissioning tool (Drive Composer) and the product, is an unsecured protocol. For independent and continuous operation of product such connection via network to commissioning tool is not necessary. However it is Customer's sole responsibility to provide and continuously ensure a secure connection between the product and Customer network or any other network (as the case may be). Customer shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, prevention of physical access, application of authentication measures, encryption of data, installation of anti-virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

Notwithstanding any other provision to the contrary and regardless of whether the contract is terminated or not, ABB and its affiliates are under no circumstances liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

13

The control unit

Contents of this chapter

This chapter

- describes the connections of the control unit
- contains the specifications of the inputs and outputs of the control unit.

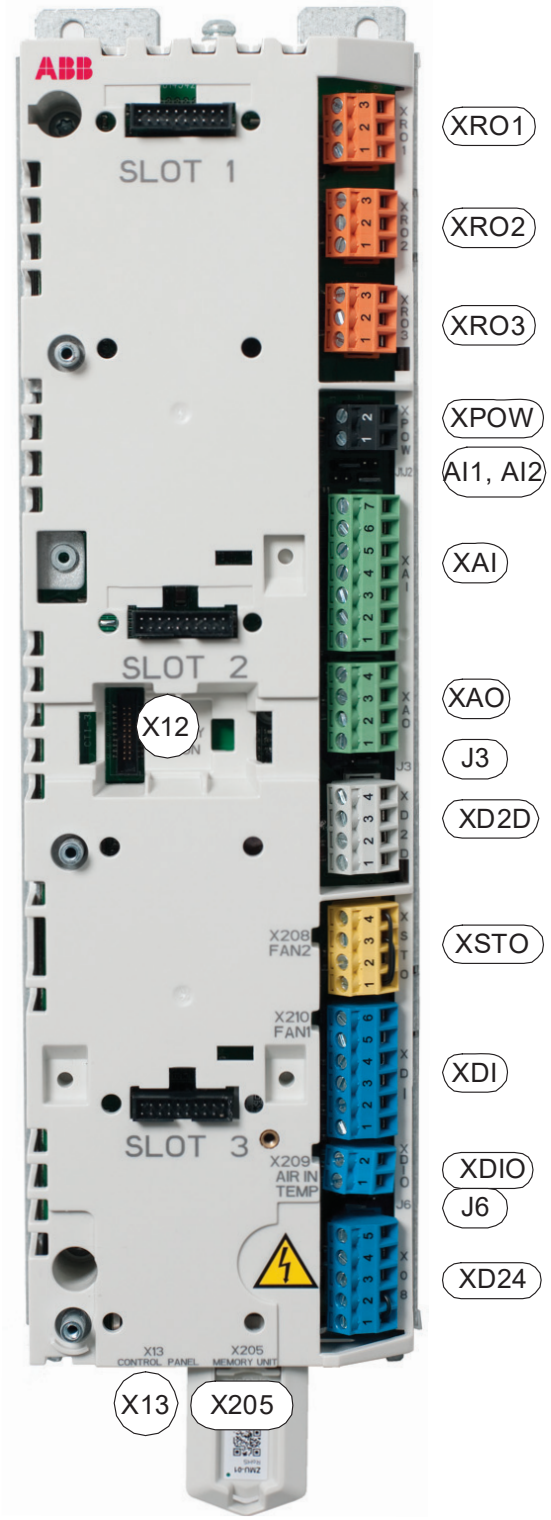
General

The ZCU-14 control unit is used with IGBT supply module frame sizes R1i…R4i .The ZCU units consists of a ZCON control board contained in a plastic housing. The control unit is mounted on the IGBT supply module.

The BCU-x2 control unit is used with frame size R6i...R8i and multiples. The BCU-x2 consists of a BCON-12 control board (and a BIOC-01 I/O connector board and power supply board) built in a metal housing. The control unit is connected to the IGBT supply module(s) by fiber optic cables.

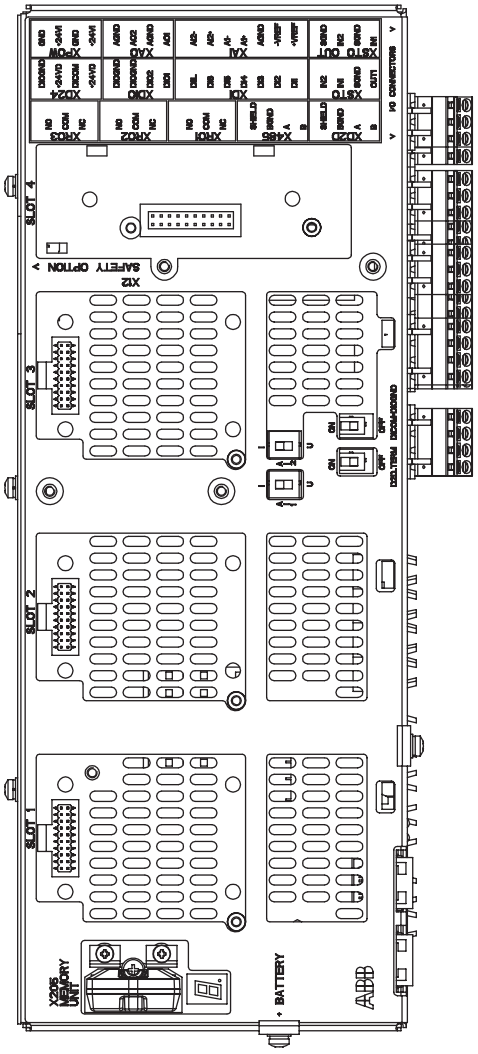
In this manual, the name “BCU-x2” represents the control unit types BCU-02, BCU-12 and BCU-22. These have a different number of power module connections (2, 7 and 12 respectively) but are otherwise similar.

ZCU-14 layout

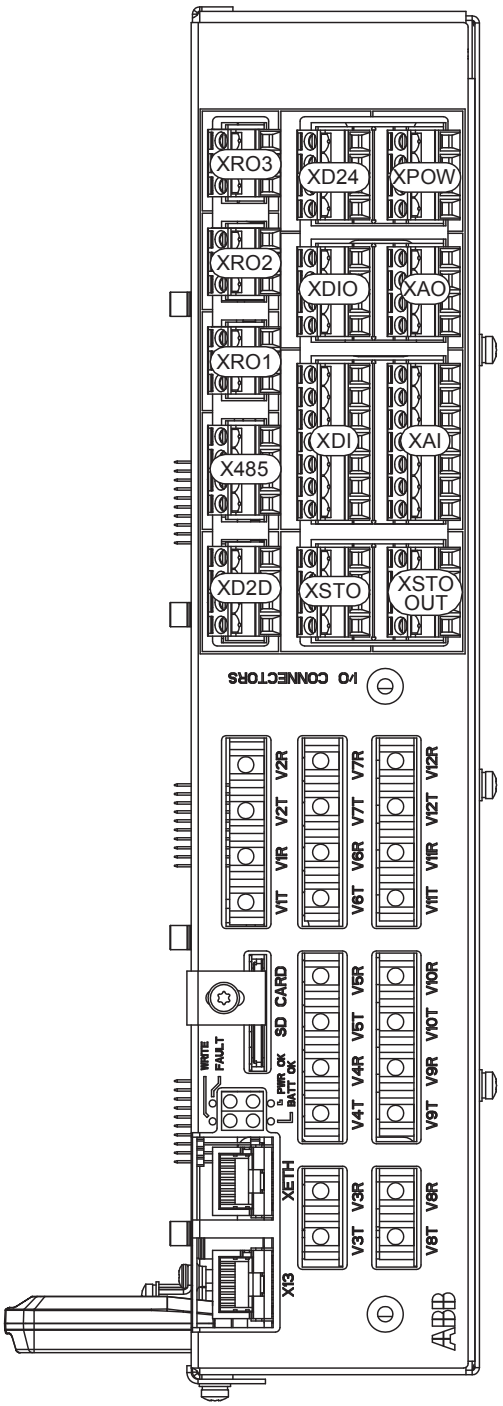


	Description
XPOW	External power input
XAI	Analog inputs
XAO	Analog outputs
XD2D	Drive-to-drive link
XRO1	Relay output RO1
XRO2	Relay output RO2
XRO3	Relay output RO3
XD24	Digital input interlock (DIIL) and +24 V output
XDIO	Digital input/outputs
XDI	Digital inputs
XSTO	Safe torque off connection (inverter unit only). **Note:** This connection only acts as a true Safe torque off input when the ZCU is controlling an inverter unit. When the ZCU is controlling a supply unit, de-energizing the inputs will stop the unit but will not constitute a true safety function.
X12	Connection for FSO-xx safety functions module (inverter unit only).
X13	Control panel connection
X202	Option slot 1
X203	Option slot 2
X204	Option slot 3
X205	Memory unit connection (memory unit inserted in the drawing)
AI1, AI2	Voltage/Current selection jumpers (AI1, AI2) for analog inputs
J3	Drive-to-drive link termination switch (J3)
J6	Common digital input ground selection jumper (J6).

BCU-x2 layout



	Description
I/O	I/O terminals (see following diagram)
SLOT 1	I/O extension, encoder interface or fieldbus adapter module connection. (This is the sole location for an FDPI-02 diagnostics and panel interface.)
SLOT 2	I/O extension, encoder interface or fieldbus adapter module connection
SLOT 3	I/O extension, encoder interface, field-bus adapter or FSO safety functions module connection
SLOT 4	RDCO-0x DDCS communication option module connection
X205	Memory unit connection
BATTERY	Holder for real-time clock battery (BR2032)
AI1	Mode selector for analog input AI1 (I = current, U = voltage)
AI2	Mode selector for analog input AI2 (I = current, U = voltage)
D2D TERM	Termination switch for drive-to-drive link (D2D)
DICOM= DIOGND	Ground selection. Determines whether DICOM is separated from DIOGND (ie. the common reference for the digital inputs floats). See the ground isolation diagram.
7-segment display Multicharacter indications are displayed as repeated sequences of characters	
	(“U” is indicated briefly before “o”.) Control program running
	Control program startup in progress
	(Flashing) Firmware cannot be started. Memory unit missing or corrupted
	Firmware download from PC to control unit in progress
	At power-up, the display may show short indications of eg. “1”, “2”, “b” or “U”. These are normal indications immediately after power-up. If the display ends up showing any other value than those described, it indicates a hardware failure.



	Description
XAI	Analog inputs
XAO	Analog outputs
XDI	Digital inputs, Digital input interlock (DIIL)
XDIO	Digital input/outputs
XD2D	Drive-to-drive link
XD24	+24 V output (for digital inputs)
XETH	Ethernet port – Not in use
XPOW	External power input
XRO1	Relay output RO1
XRO2	Relay output RO2
XRO3	Relay output RO3
XSTO	Safe torque off connection (input signals)
XSTO OUT	Safe torque off connection (to inverter modules)
X12	(On the opposite side) Connection for FSO safety functions module (optional)
X13	Control panel / PC connection
X485	Not in use
V1T/V1R, V2T/V2R	Fiber optic connection to modules 1 and 2 (VxT = transmitter, VxR = receiver)
V3T/V3R … V7T/V7R	Fiber optic connection to modules 3…7 (BCU-12/22 only) (VxT = transmitter, VxR = receiver)
V8T/V8R … V12T/V12R	Fiber optic connection to modules 8…12 (BCU-22 only) (VxT = transmitter, VxR = receiver)
SD CARD	Data logger memory card for inverter module communication
BATT OK	Real-time clock battery voltage is higher than 2.8 V. If the LED is off when the control unit is powered, replace the battery.
FAULT	The control program has generated a fault. See the firmware manual of the supply/inverter unit.
PWR OK	Internal voltage supply is OK
WRITE	Writing to memory card in progress. Do not remove the memory card.

Default I/O diagram of the supply control unit (BCU-x2)

The diagram below shows the default I/O connections on the supply control unit (A51), and describes the use of the connections in the supply unit.

The wire size accepted by all screw terminals (for both stranded and solid wire) is 0.5 … 2.5 mm² (22 … 12 AWG). The tightening torque is 0.45 N·m (4 lbf·in).

Terminal			Description	
XD2D			Drive-to-drive link	
1 2 3 4	1	B	Not in use by default	
	2	A		
	3	BGND		
	4	Shield		
ON OFF	D2D.TERM		Drive-to-drive link termination switch [1]	
X485			RS485 connection	
5 6 7 8	5	B	Not in use by default	
	6	A		
	7	BGND		
	8	Shield		
XRO1, XRO2, XRO3			Relay outputs	
11 12 13 21 22 23 31 32 33	11	NC	Norm. closed	XRO1: **Charging** [2] (Energized = Closes charging contactor.) 250 V AC / 30 V DC, 2 A
	12	COM	Common	
	13	NO	Norm. open	
	21	NC	Norm. closed	XRO2: **Fault (-1)** [3] (Energized = Indicates no fault.) 250 V AC / 30 V DC, 2 A
	22	COM	Common	
	23	NO	Norm. open	
	31	NC	Norm. closed	XRO3: **MCB ctrl** [2] (Energized = Closes main contactor/breaker.) 250 V AC / 30 V DC, 2 A
	32	COM	Common	
	33	NO	Norm. open	
XSTO, XSTO OUT			Safe torque off [4]	
1 2 3 4 5 6 7 8	1	OUT	XSTO: Factory connection. Both circuits (power module, control unit) must be closed for the supply unit to start (IN1 and IN2 must be connected to OUT).	
	2	SGND		
	3	IN1		
	4	IN2		
	5	IN1	XSTO OUT: Not in use.	
	6	SGND		
	7	IN2		
	8	SGND		
XDI			Digital inputs	

Terminal			Description
1 2 3 4 5 6 7	1	DI1	**Temp fault**[3] (0 = overtemperature)
	2	DI2	**Run / enable**[3] (1 = run / enable)
	3	DI3	**MCB feedback**[2] (0 = main contactor/breaker open)
	4	DI4	Not in use by default. Can be used for eg, auxiliary circuit breaker fault.
	5	DI5	Not in use by default. Can be used for eg, earth fault monitoring.
	6	DI6	**Reset**[3] (0 -> 1 = fault reset)
	7	DIIL	Not in use by default. Can be used for eg, emergency stop.
XDIO			Digital input/outputs
1 2 3 4	1	DIO1	Not in use by default
	2	DIO2	Not in use by default
	3	DIOGND	Digital input/output ground
	4	DIOGND	Digital input/output ground
XD24			Auxiliary voltage output
5 6 7 8	1	+24VD	+24 V DC 200 mA[5]
	2	DICOM	Digital input ground
	3	+24VD	+24 V DC 200 mA[5]
	4	DIOGND	Digital input/output ground
ON OFF	DICOM=DIOGND		Ground selection switch[6]
XAI			Analog inputs, reference voltage output
1 2 3 4 5 6 7	1	+VREF	10 V DC, R_L 1…10 kohm
	2	-VREF	-10 V DC, R_L 1…10 kohm
	3	AGND	Ground
	4	AI1+	Not in use by default. 0(2)…10 V, R_{in} > 200 kohm[7]
	5	AI1-	
	6	AI2+	Not in use by default. 0(4)…20 mA, R_{in} = 100 ohm[8]
	7	AI2-	
– ⊃	AI1		AI1 current/voltage selection switch
– ⊃	AI2		AI2 current/voltage selection switch
XAO			Analog outputs
1 2 3 4	1	AO1	**Zero** (no signal indicated)[3] 0…20 mA, R_L < 500 ohm
	2	AGND	
	3	AO2	**Zero** (not signal indicated)[3] 0…20 mA, R_L < 500 ohm
	4	AGND	
XPOW			External power input
1 2 3 4	1	+24VI	24 V DC, 2.05 A
	2	GND	
	3	+24VI	
	4	GND	
X12			Safety functions module connection (not in use in supply units)
X13			Control panel connection

Terminal	Description
X205	Memory unit connection

1) Must be set to ON when the supply unit is the first or last unit on the drive-to-drive (D2D) link. On intermediate units, set termination to OFF.
2) Use of the signal in the control program. When parameter 120.30 External charge enable has value Yes (default setting), the control program reserves this I/O terminal for external charging circuit control and monitoring, and parameters 110.24 RO1 source and 110.30 RO3 source are write-protected. If the value is No, you can use the I/O terminal for other purposes.
3) Use of the signal in the control program (fixed). See also the delivery-specific circuit diagrams.
4) This input only acts as a true Safe torque off input in inverter units. In other applications (such as a supply or brake unit), de-energizing the IN1 and/or IN2 terminal will stop the unit but not constitute a true safety function.
5) Total load capacity of these outputs is 4.8 W (200 mA at 24 V) minus the power taken by DIO1 and DIO2.
6) Determines whether DICOM is separated from DIOGND (ie, common reference for digital inputs floats). ON: DICOM connected to DIOGND. OFF: DICOM and DIOGND separate.
7) Current [0(4)…20 mA, R_{in} = 100 ohm] or voltage [0(2)…10 V, R_{in} > 200 kohm] input selected by switch AI1. Change of setting requires reboot of control unit.
8) Current [0(4)…20 mA, R_{in} = 100 ohm] or voltage [0(2)…10 V, R_{in} > 200 kohm] input selected by switch AI2. Change of setting requires reboot of control unit.

Connecting motor temperature sensors to the drive

IEC/EN 60664 requires double or reinforced insulation between the control unit and the live parts of the motor. To achieve this, use an FPTC-01 or FPTC-02 protection module or an FAIO-01 extension module. See ACS880 multidrives cabinets and modules electrical planning instructions (3AUA0000102324) and the module manuals.

External power supply for the control unit (XPOW)

The control unit is powered from a 24 V DC, 2 A supply through terminal block XPOW. With a type BCU/UCU control unit, a second supply can be connected to the same terminal block for redundancy.

Using an external supply is recommended, if:

- the control unit needs to be kept operational during input power breaks, for example, because of continuous fieldbus communication
- immediate restart is needed after a power break (that is, no control unit power-up delay is allowed).

Safe torque off (XSTO, XSTO OUT)

Note: The XSTO input only acts as a true Safe torque off input on the inverter control unit. De-energizing the STO input terminals of other units (supply, DC/DC converter, or brake unit) will stop the unit but not constitute a true safety function.

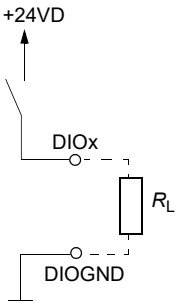
FSO safety functions module connection (X12)

Refer to the applicable FSO module user's manual. Note that the FSO safety functions module is not used in supply, DC/DC converter or brake units.

SDHC memory card slot

The BCU-x2 has an on-board data logger that collects real-time data from the power modules to help fault tracing and analysis. The data is stored onto the SDHC memory card inserted into the SD CARD slot and can be analyzed by ABB service personnel.

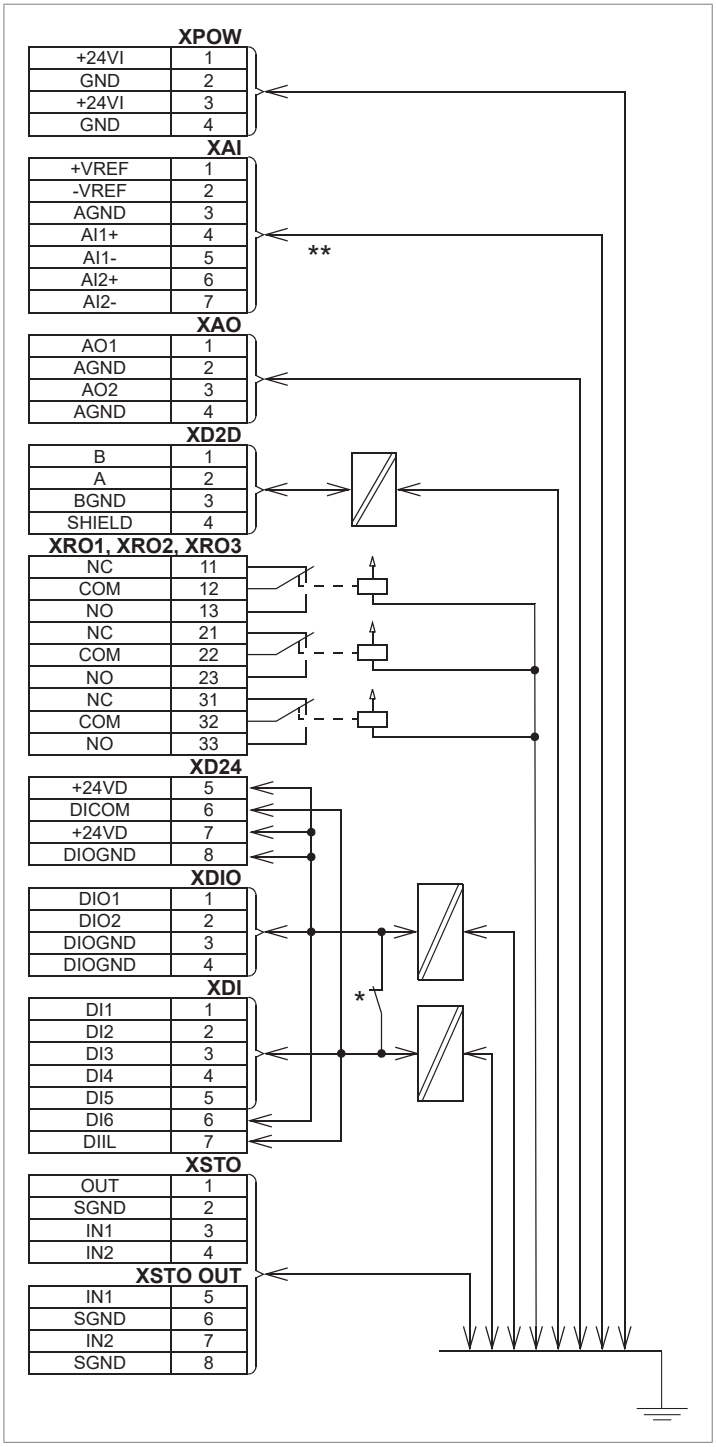
Connector data

Power supply (XPOW)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) 24 V (±10%) DC, 2 A (BCU-x2) 24 V (±10%) DC, 2 A (ZCU-1x) External power input. Two supplies can be connected to the BCU-x2 for redundancy.
Relay outputs RO1…RO3 (XRO1…XRO3)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) 250 V AC / 30 V DC, 2 A Protected by varistors
+24 V output (XD24:2 and XD24:4)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) Total load capacity of these outputs is 4.8 W (200 mA / 24 V) minus the power taken by DIO1 and DIO2.
Digital inputs DI1…DI6 (XDI:1…XDI:6)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) 24 V logic levels: “0” < 5 V, “1” > 15 V R_{in}: 2.0 kohm Input type: NPN/PNP (DI1…DI5), PNP (DI6) Hardware filtering: 0.04 ms, digital filtering up to 8 ms DI6 (XDI:6) can alternatively be used as an input for a PTC sensor. "0" > 4 kohm, "1" < 1.5 kohm. I_{max}: 15 mA (DI1…DI5), 5 mA (DI6)
Start interlock input DIIL (XD24:1 [ZCU-1x], XDI:7 [BCU-x2])	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) 24 V logic levels: "0" < 5 V, "1" > 15 V R_{in}: 2.0 kohm Input type: NPN/PNP Hardware filtering: 0.04 ms, digital filtering up to 8 ms
Digital inputs/outputs DIO1 and DIO2 (XDIO:1 and XDIO:2) Input/output mode selection by parameters. DIO1 can be configured as a frequency input (0…16 kHz with hardware filtering of 4 microseconds) for 24 V level square wave signal (sinusoidal or other wave form cannot be used). DIO2 can be configured as a 24 V level square wave frequency output. See the firmware manual, parameter group 111/11.	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) As inputs: 24 V logic levels: "0" < 5 V, "1" > 15 V. R_{in}: 2.0 kohm. Filtering: 1 ms. As outputs: Total output current from +24VD is limited to 200 mA 
Reference voltage for analog inputs +VREF and -VREF (XAI:1 and XAI:2)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm² (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) 10 V ±1% and -10 V ±1%, R_{load} 1…10 kohm Maximum output current: 10 mA

Analog inputs AI1 and AI2 (XAI:4 … XAI:7). Current/voltage input mode selection by jumpers (ZCU-1x) or switches (BCU-x2)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm^2 (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) Current input: -20…20 mA, R_{in} = 100 ohm Voltage input: -10…10 V, R_{in} > 200 kohm Differential inputs, common mode range ±30 V Sampling interval per channel: 0.25 ms Hardware filtering: 0.25 ms, adjustable digital filtering up to 8 ms Resolution: 11 bit + sign bit Inaccuracy: 1% of full scale range
Analog outputs AO1 and AO2 (XAO)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm^2 (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) 0…20 mA, R_{load} < 500 ohm Frequency range: 0…300 Hz (ZCU-1x), 0…500 Hz (BCU-x2) Resolution: 11 bit + sign bit Inaccuracy: 2% of full scale range
XD2D connector	Connector pitch 5 mm, wire size 0.5 … 2.5 mm^2 (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) Physical layer: RS-485 Transmission rate: 8 Mbit/s Cable type: Shielded twisted-pair cable with a twisted pair for data and a wire or another pair for signal ground (nominal impedance 100 … 165 ohm, for example Belden 9842) Maximum length of link: 50 m (164 ft) Termination by jumper (ZCU-1x) or switch (BCU-x2)
RS-485 connection (X485 [BCU-x2])	Connector pitch 5 mm, wire size 0.5 … 2.5 mm^2 (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) Physical layer: RS-485 Cable type: Shielded twisted-pair cable with a twisted pair for data and a wire or another pair for signal ground (nominal impedance 100 … 165 ohm, for example Belden 9842) Maximum length of link: 50 m (164 ft)
Safe torque off connection (XSTO)	Connector pitch 5 mm, wire size 0.5 … 2.5 mm^2 (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) Input voltage range: -3…30 V DC Logic levels: "0" < 5 V, "1" > 17 V. **Note:** For the unit to start, both connections must be “1”. This applies to all control units (including drive, inverter, supply, brake, DC/DC converter etc. control units), but true Safe torque off functionality is only achieved through the XSTO connector of the drive/inverter control unit. Current consumption: 66 mA (continuous) per STO channel per inverter module (BCU-x2) EMC (immunity) according to IEC 61326-3-1 and IEC 61800-5-2
Safe torque off output (XSTO OUT [BCU-x2])	Connector pitch 5 mm, wire size 0.5 … 2.5 mm^2 (22…12 AWG) Maximum tightening torque 0.45 N·m (4 lbf·in[BCU-x2]) To STO connector of inverter module.
Control panel connection (X13)	Connector: RJ-45 Cable length < 100 m (328 ft)
Ethernet connection (XETH [BCU-x2])	Connector: RJ-45 This connection is not supported by the firmware

SDHC memory card slot (SD CARD [BCU-x2])	Memory card type: SDHC Maximum memory size: 4 GB
Battery	Real-time clock battery type: BR2032
The terminals of the control unit fulfill the Protective Extra Low Voltage (PELV) requirements. The PELV requirements of a relay output are not fulfilled if a voltage higher than 48 V is connected to the relay output.	

BCU-x2 ground isolation diagram

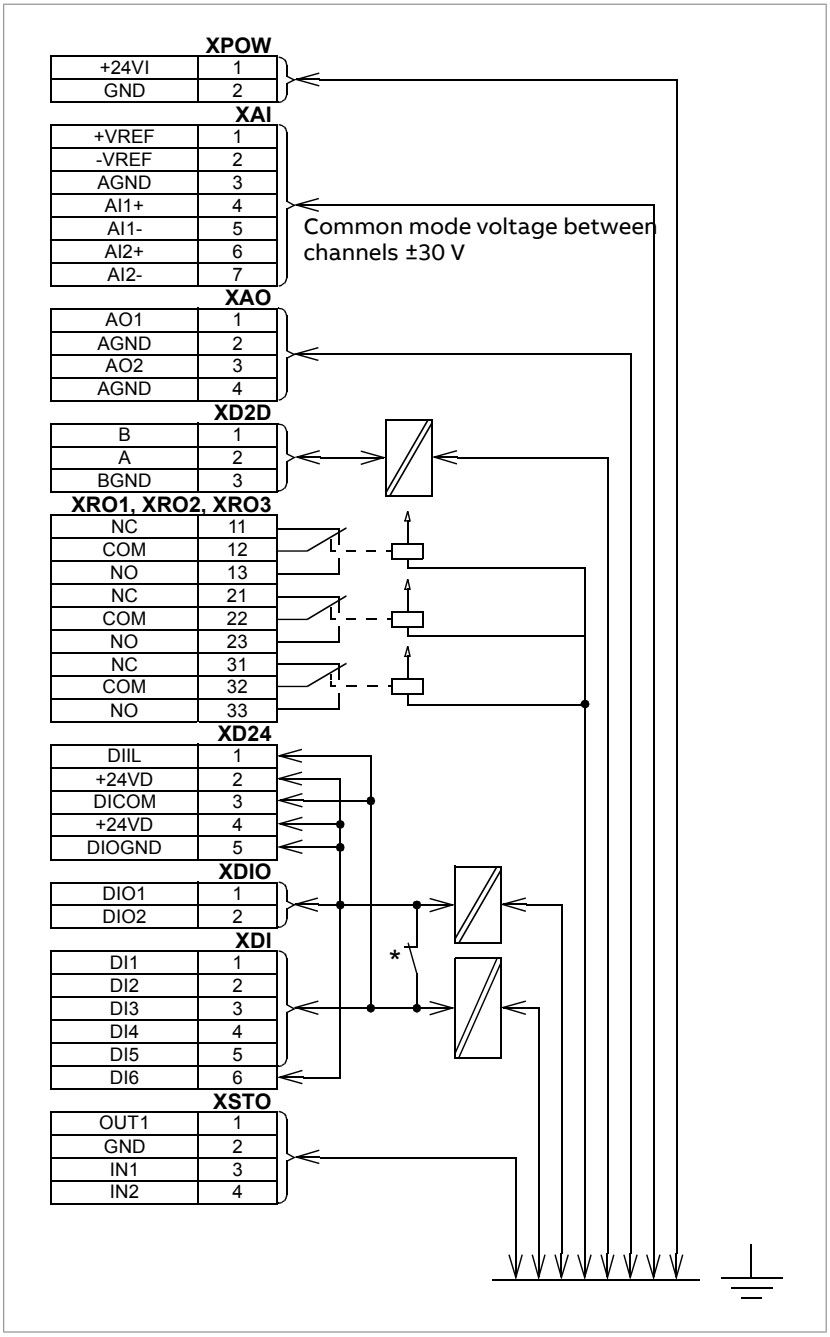


*Ground selector (DICOM=DIOGND) settings

DICOM=DIOGND: ON All digital inputs share a common ground (DICOM connected to DIOGND). This is the default setting.
DICOM=DIOGND: OFF Ground of digital inputs DI1…DI5 and DIIL (DICOM) is isolated from DIO signal ground (DIOGND). Isolation voltage 50 V.

**The maximum common mode voltage between each AI input and AGND is +30 V

ZCU-1x ground isolation diagram



* Ground selector (J6) settings

•

All digital inputs share a common ground (DICOM connected to DIOGND). This is the default setting.

•

Ground of digital inputs DI1…DI5 and DIIL (DICOM) is isolated from DIO signal ground (DIOGND). Isolation voltage 50 V.

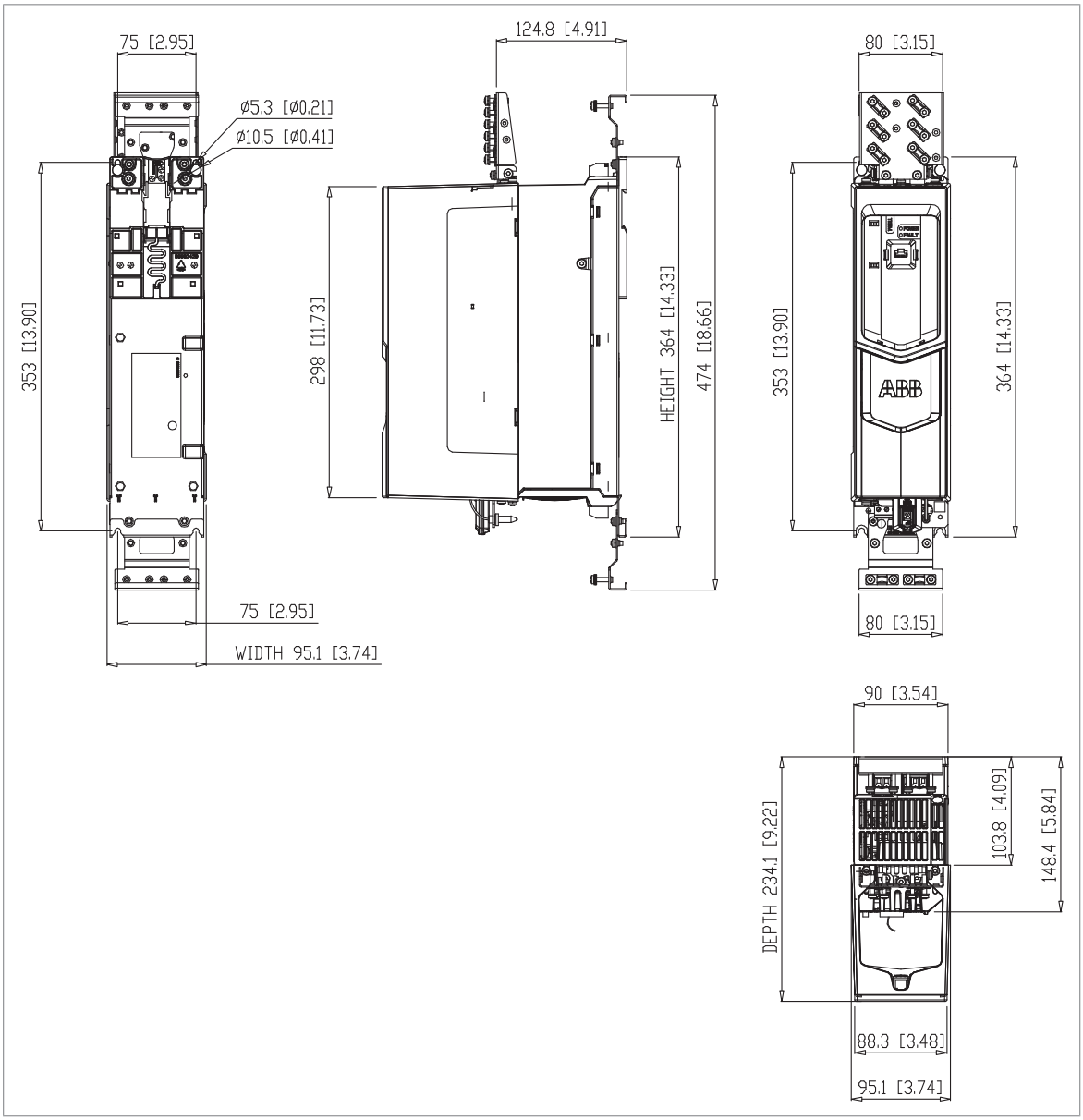
14

Dimension drawings

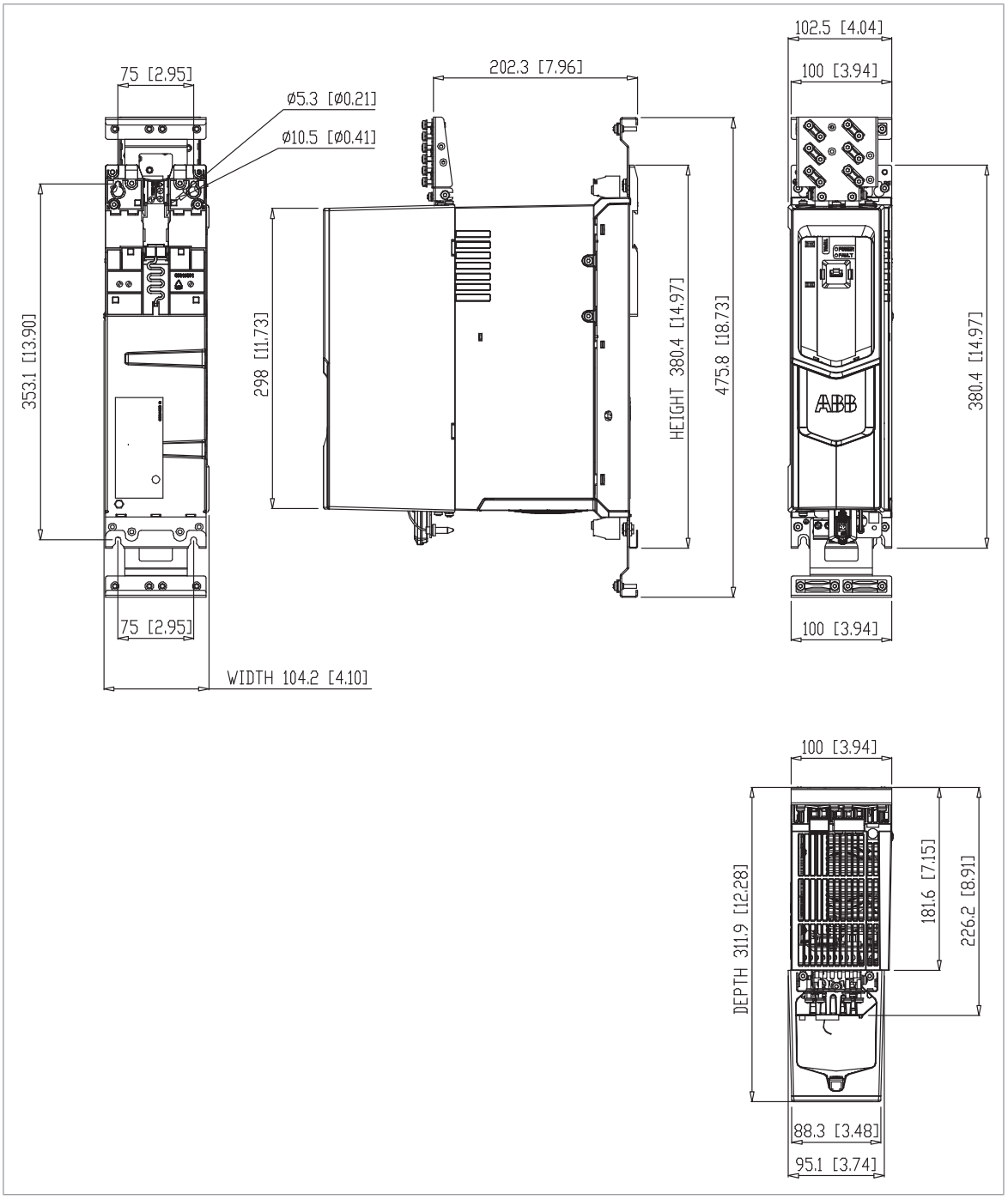
Contents of this chapter

This chapter shows dimensions of the ACS880-204 IGBT supply modules and accessories.

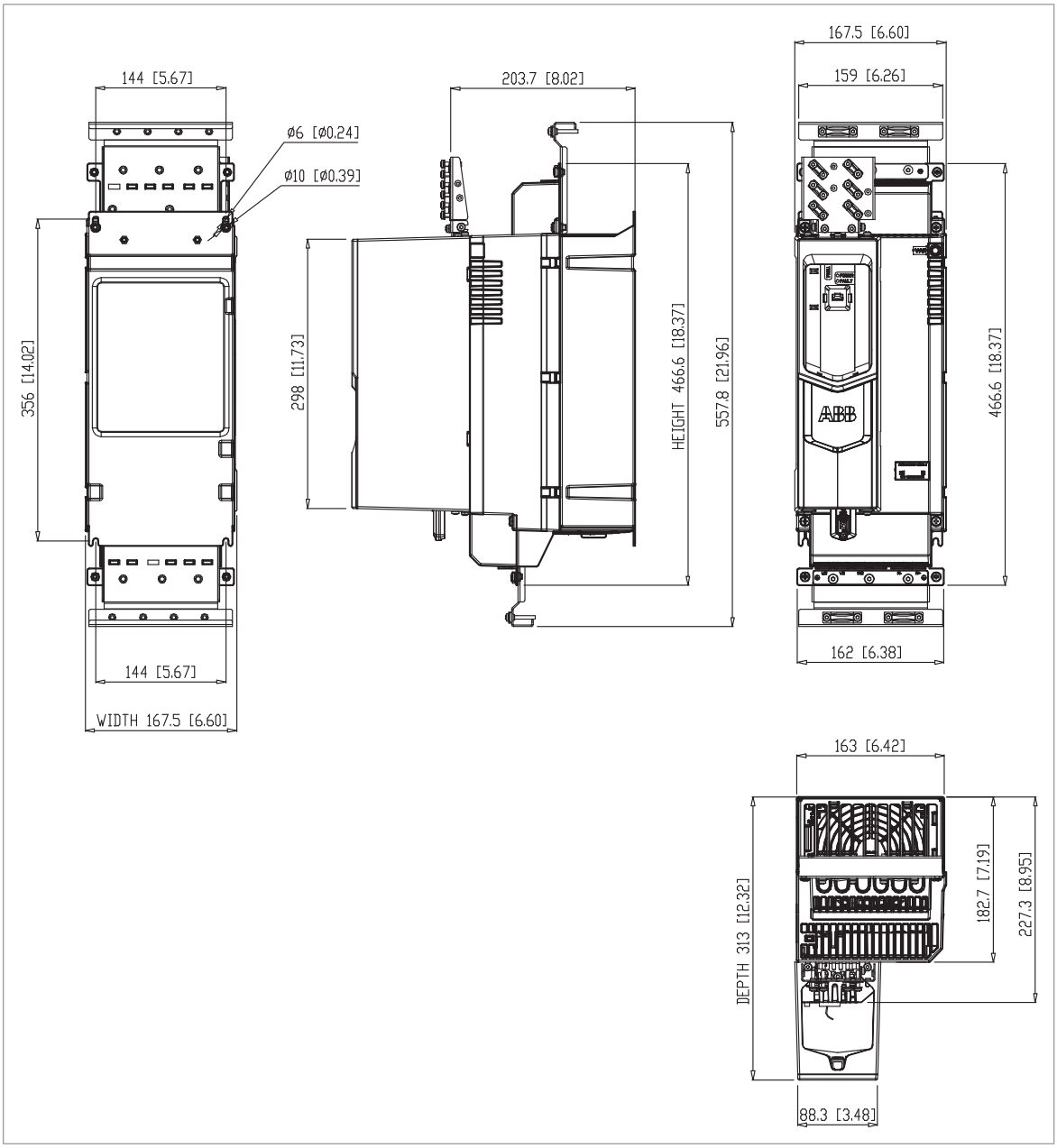
IGBT supply module (frame R1i)



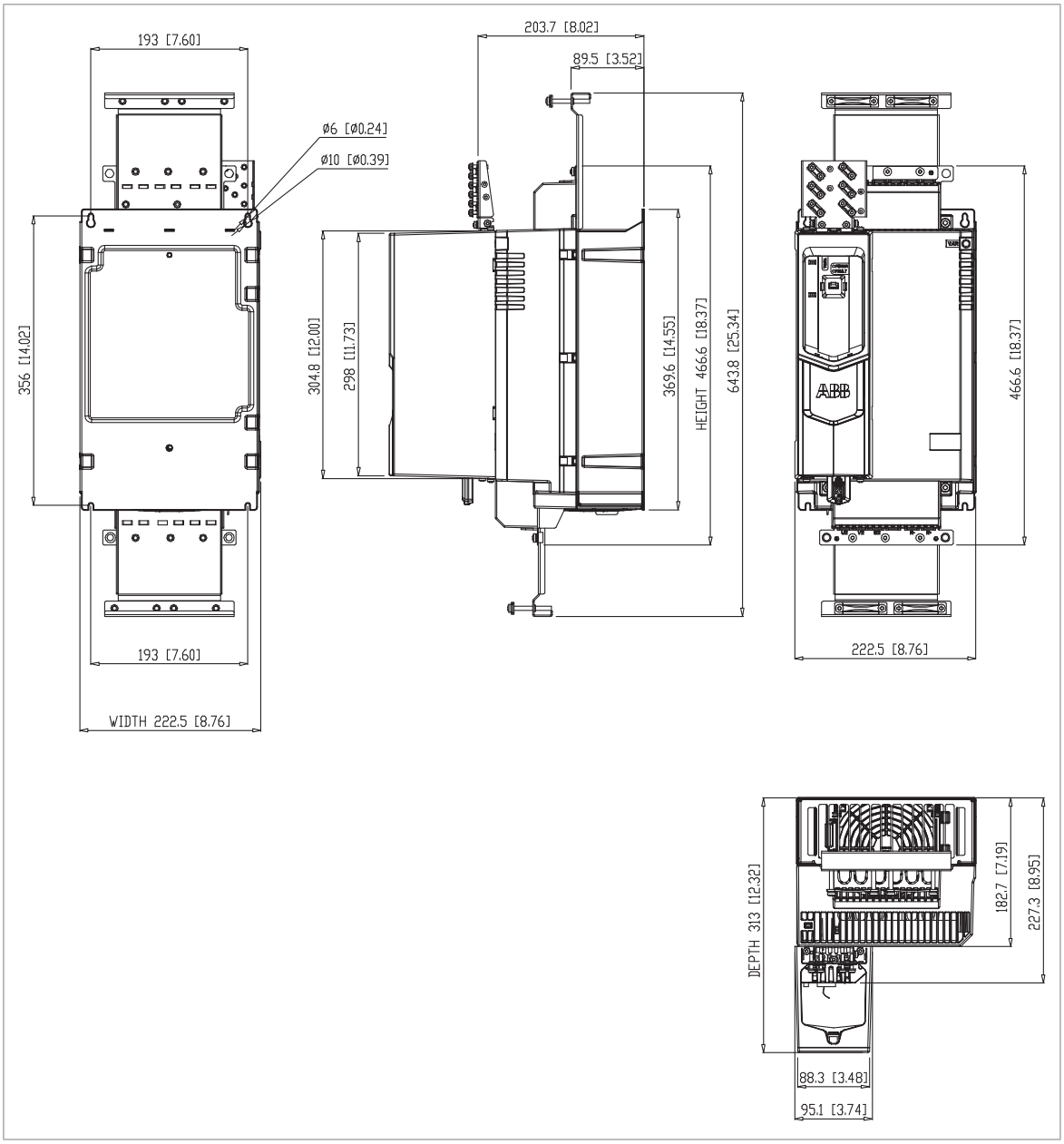
IGBT supply module (frame R2i)



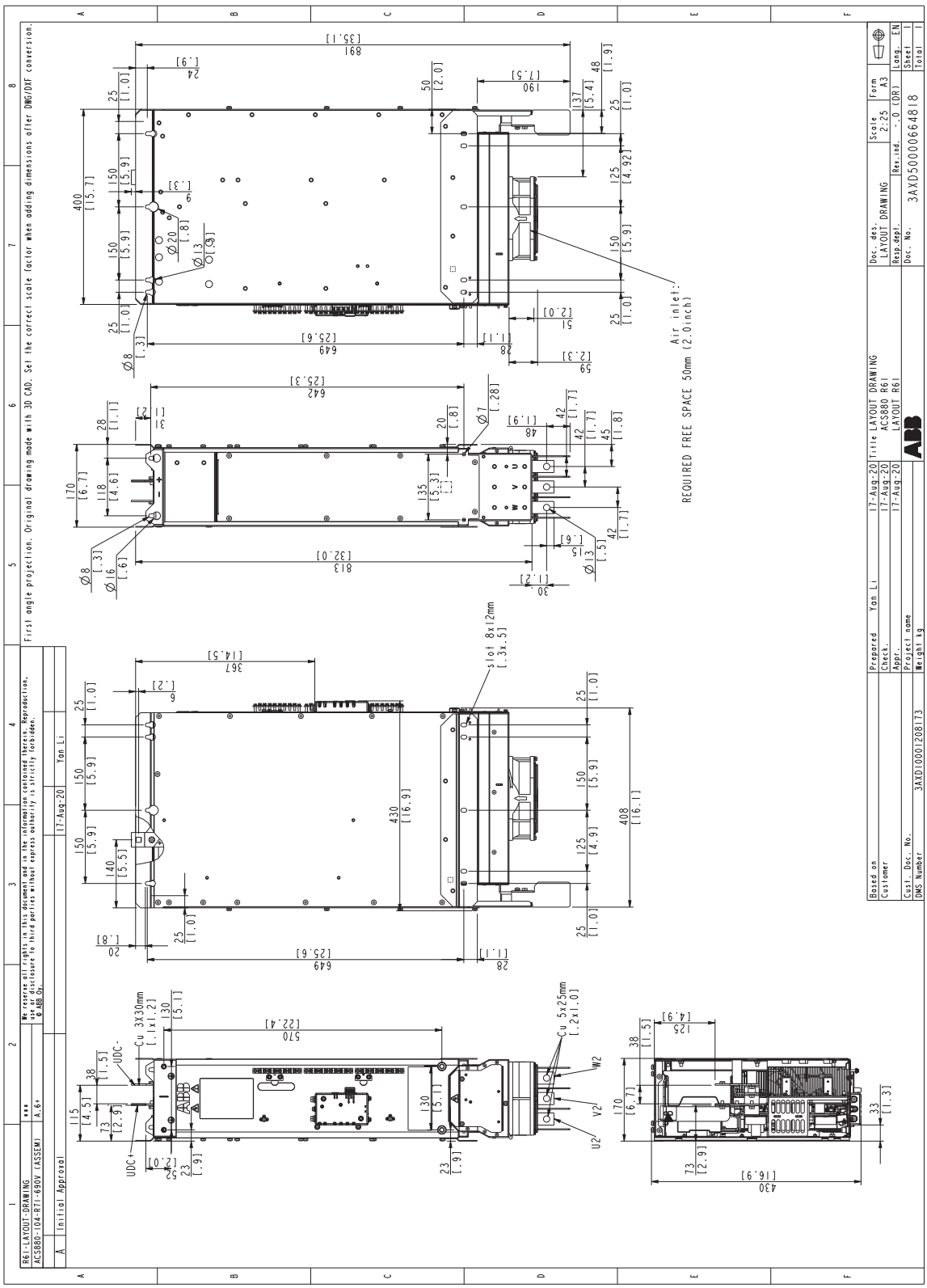
IGBT supply module (frame R3i)



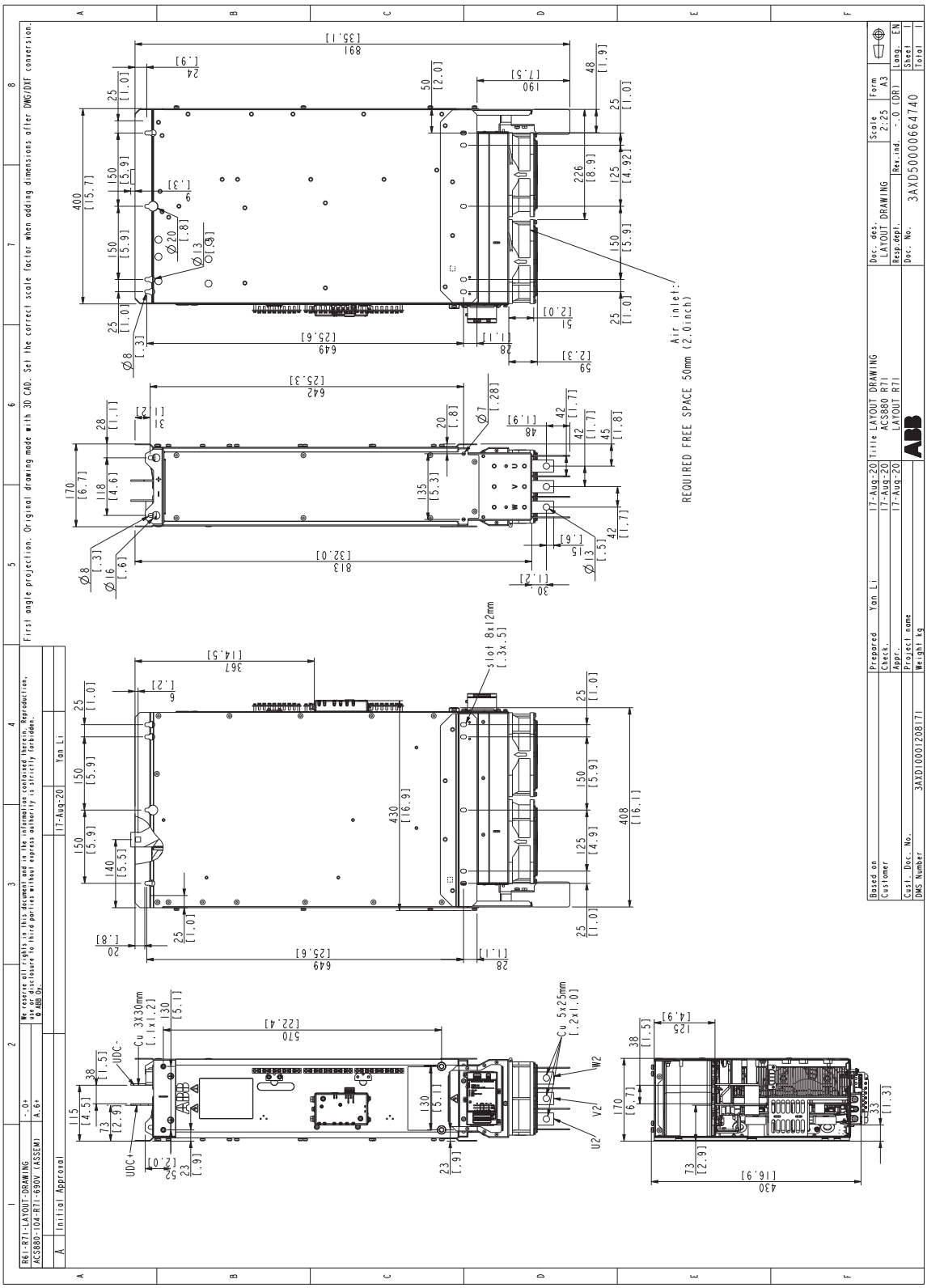
IGBT supply module (frame R4i)



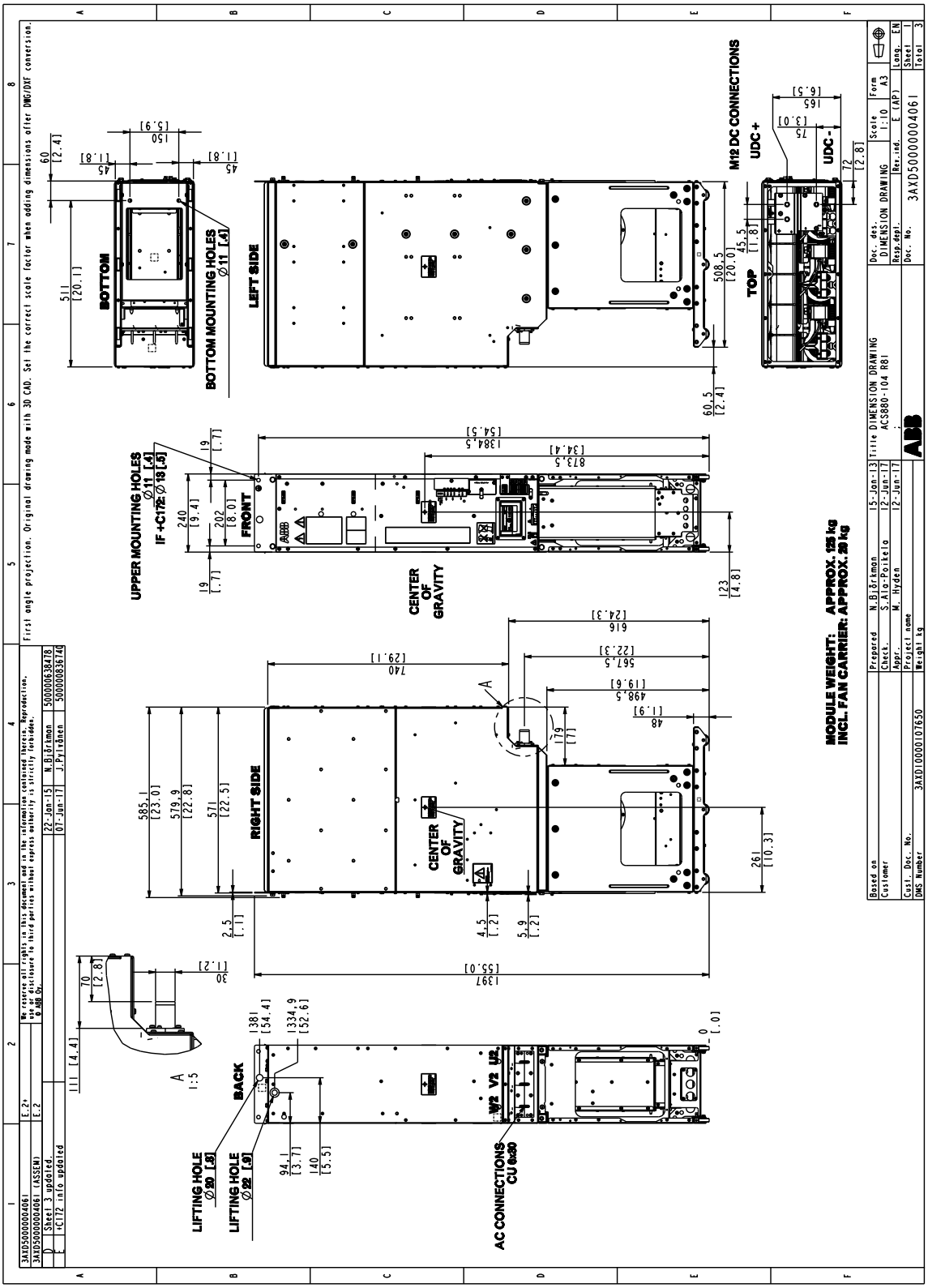
IGBT supply module (frame R6i)

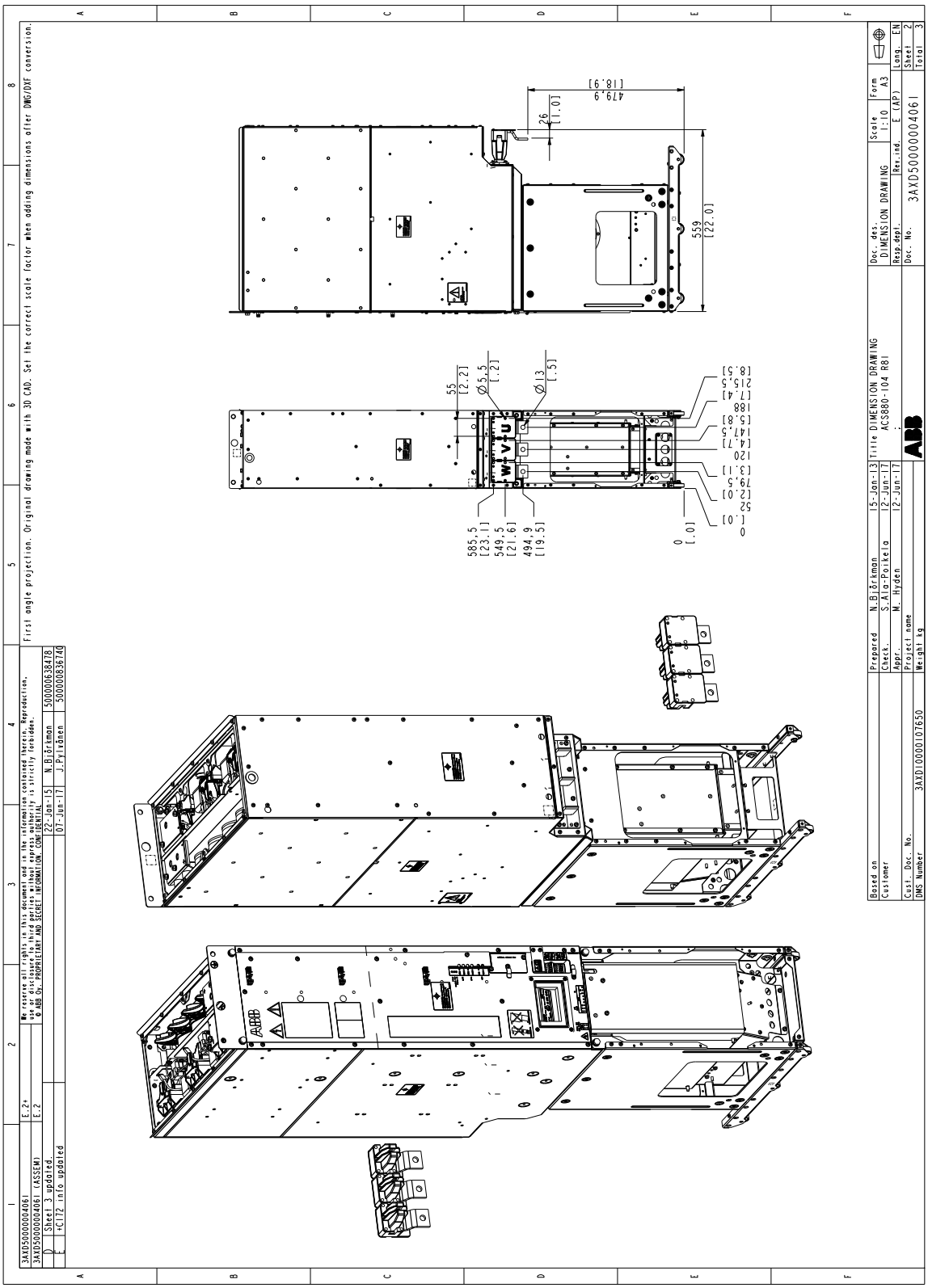


IGBT supply module (frame R7i)



IGBT supply module (frame R8i)




First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
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3AXD50000004061 E.2* 22-Jan-15 N.Björkman 5000000638478
3AXD50000004061 (ASSEM) E.2 07-Jun-17 J.Pylvänen 5000000836740
D Sheet 3 updated.
E +C172 info updated
Based on Prepared N.Björkman 15-Jan-13
Customer Check. S.Ala-Poikela 12-Jun-17
Appr. M. Hyden 12-Jun-17
Cust. Doc. No. Project name
DMS Number 3AXD10000107650 Weight kg
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ACS880-104 R81
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Resp.dept.
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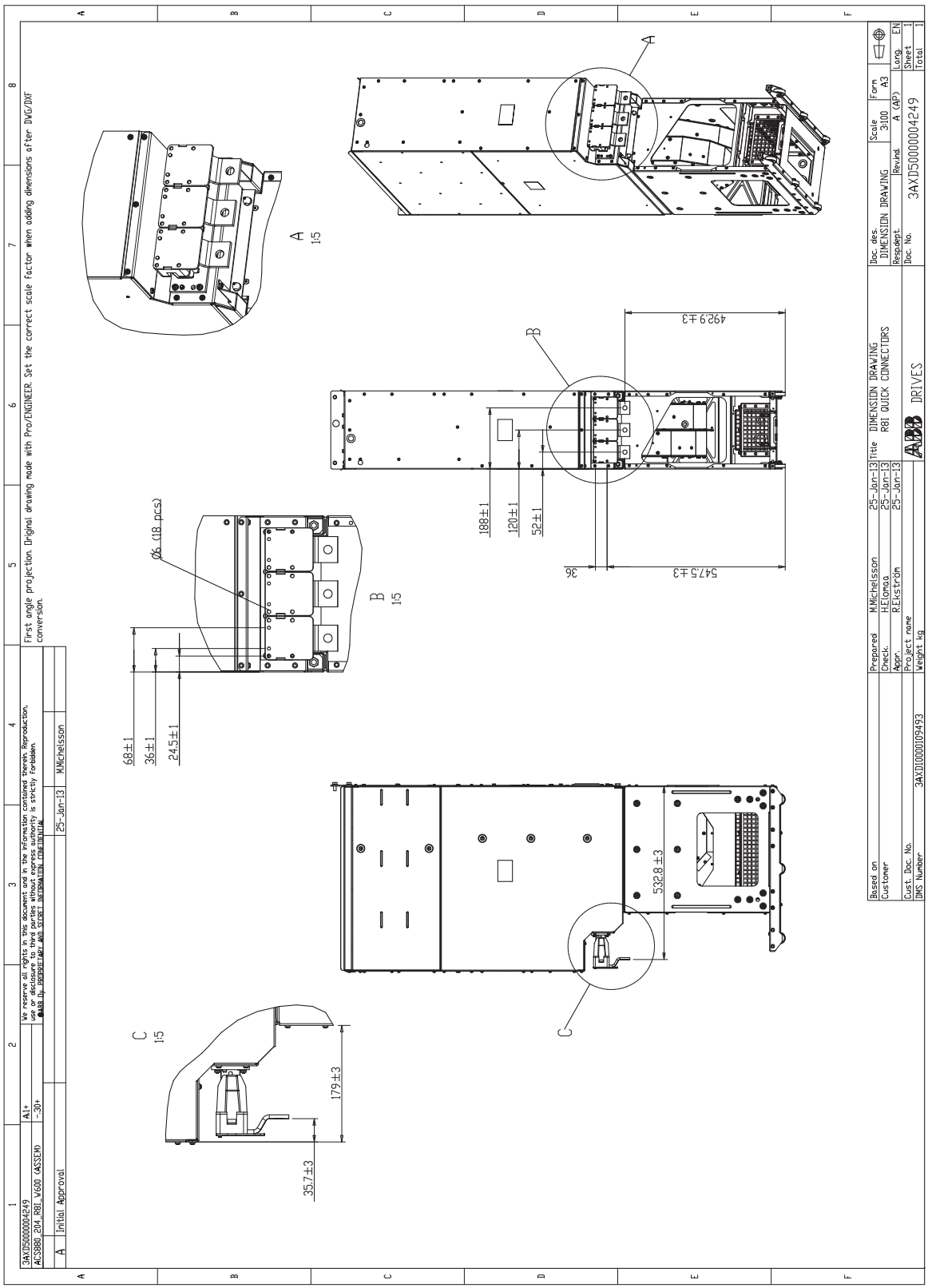
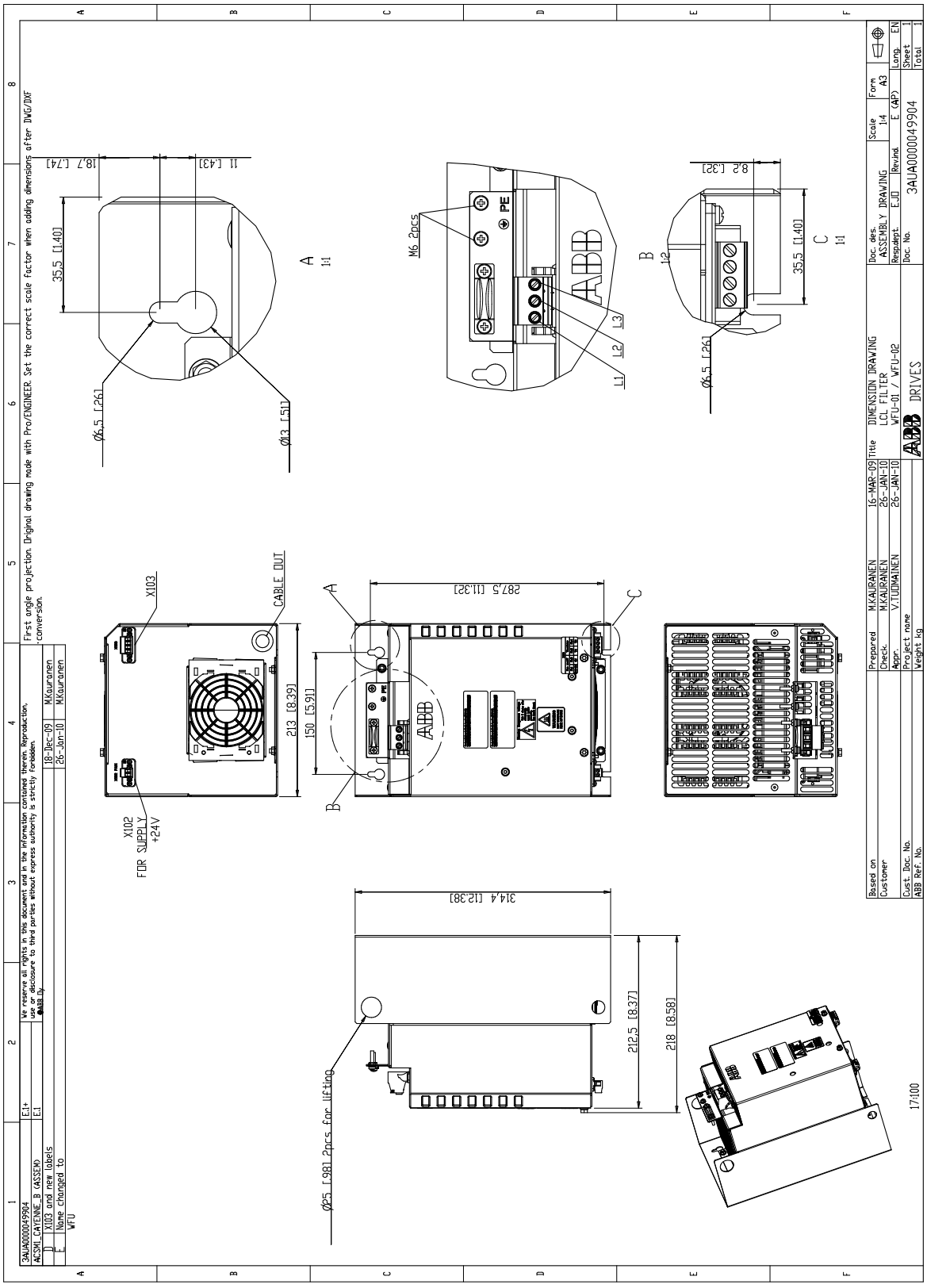
120 [4.7]
147,5 [5.8]
188 [7.4]
215,5 [8.5]

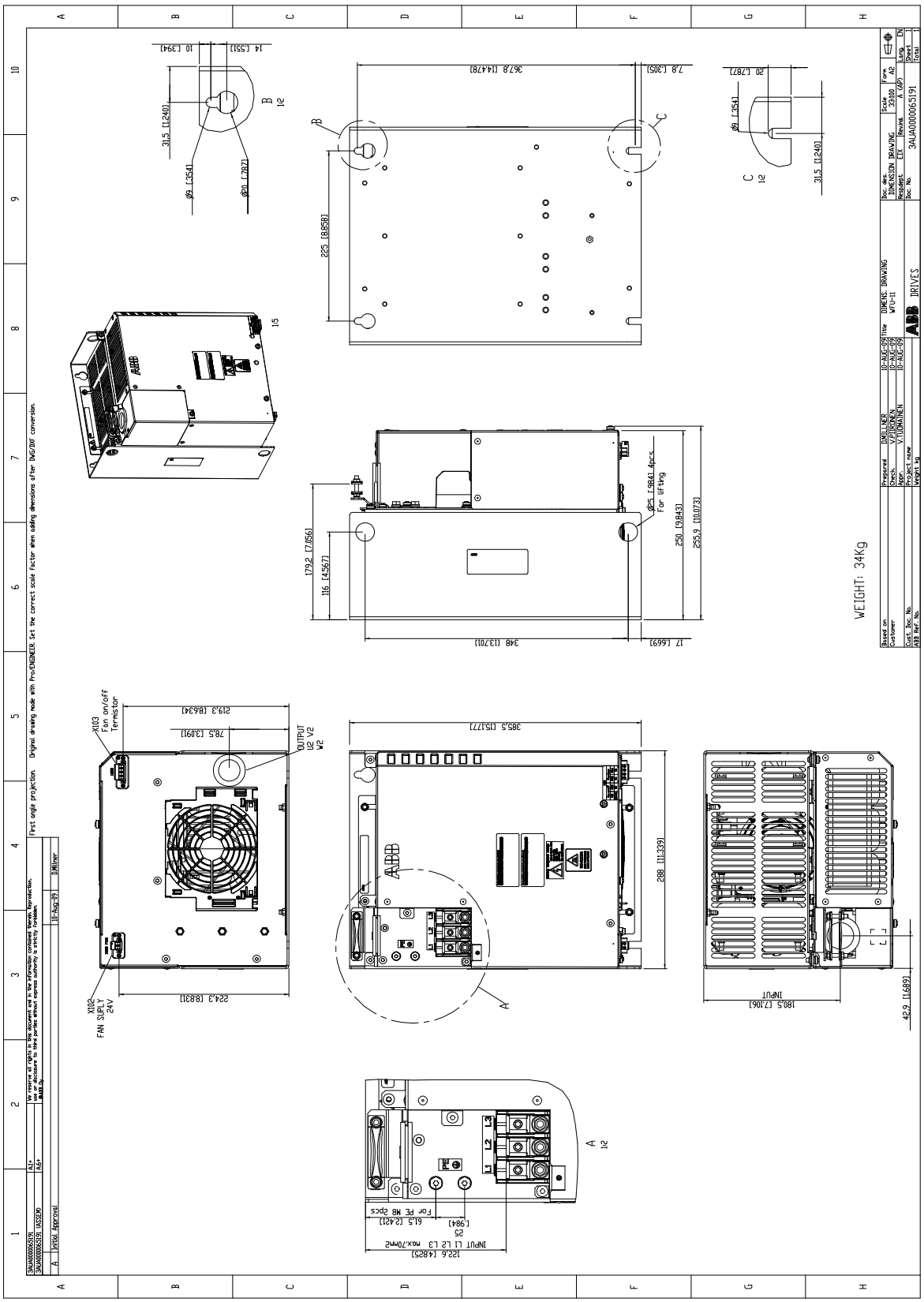
Quick connector placement (frame R8i)



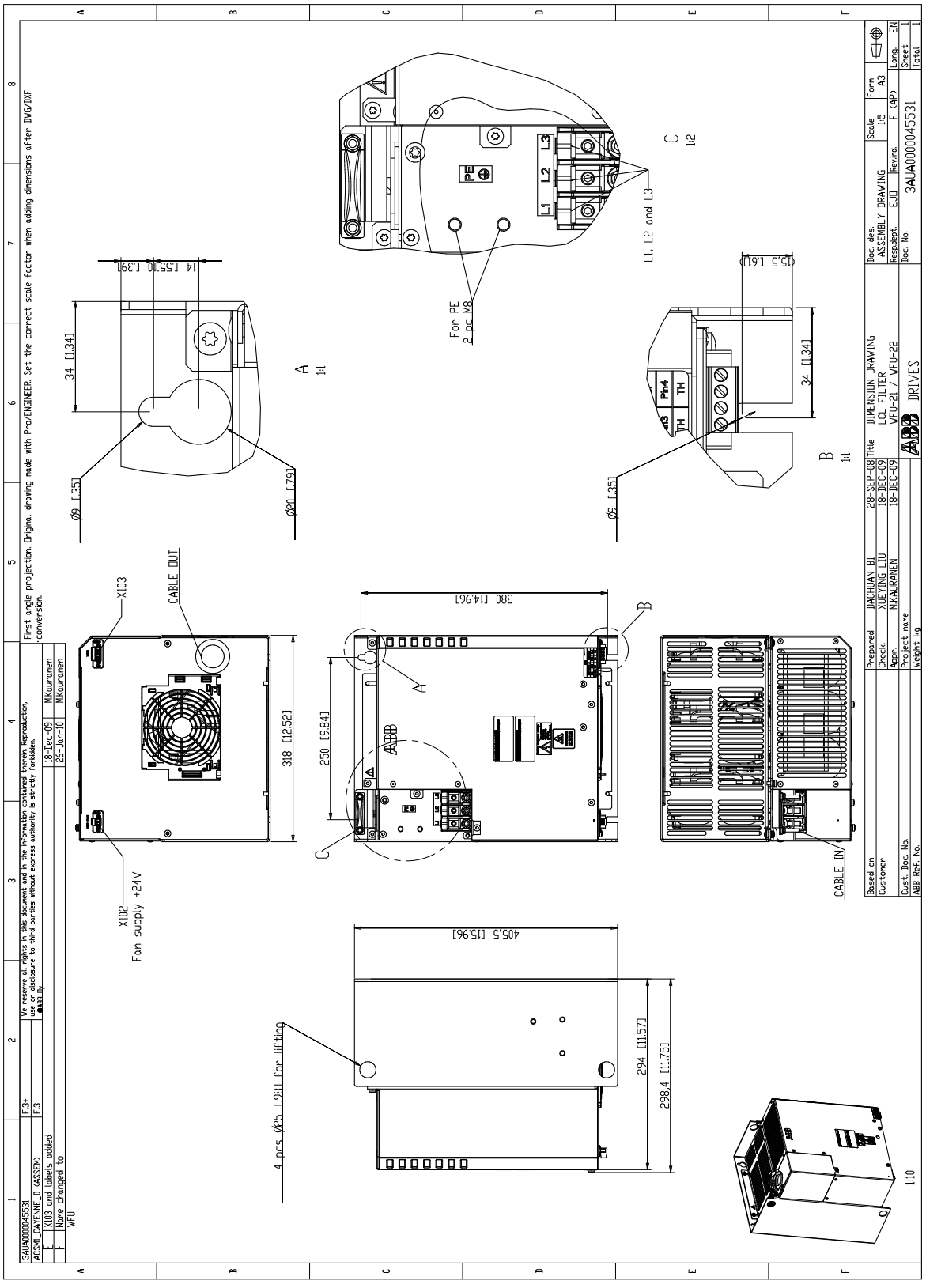
LCL filter module (filter for frames R1i and R2i)



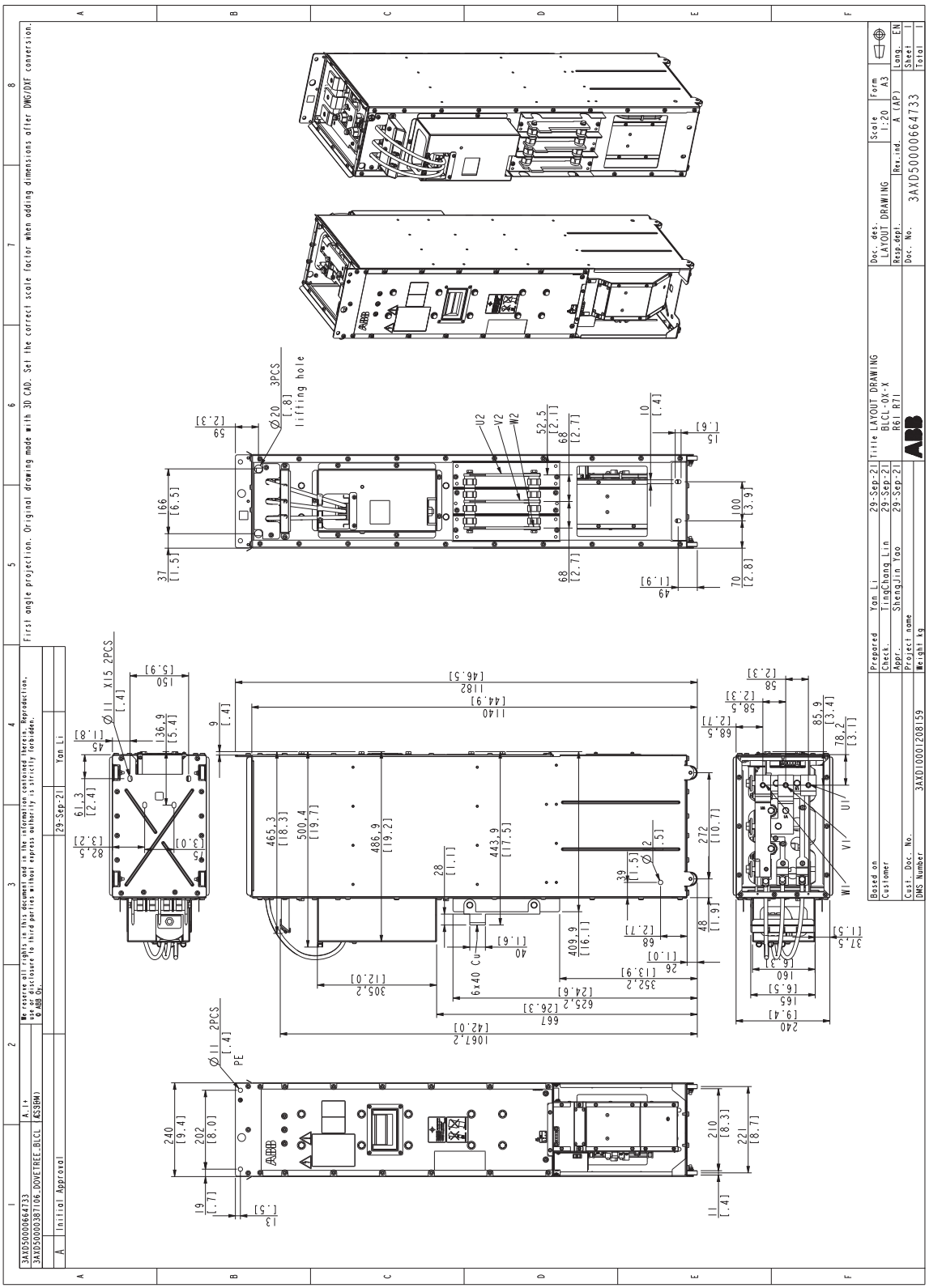
LCL filter module (filter for frame R3i)



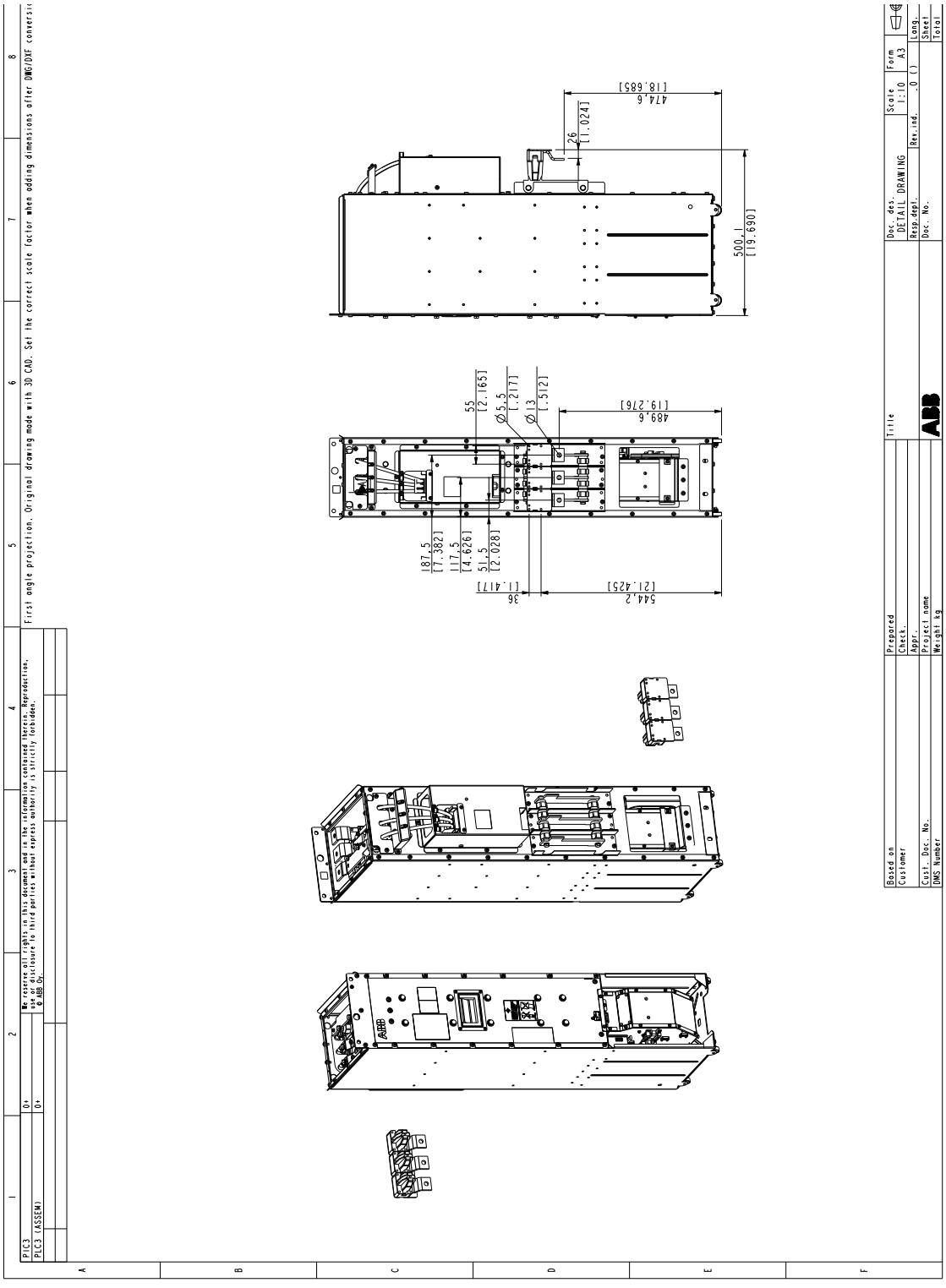
LCL filter module (filter for frames R3i and R4i)



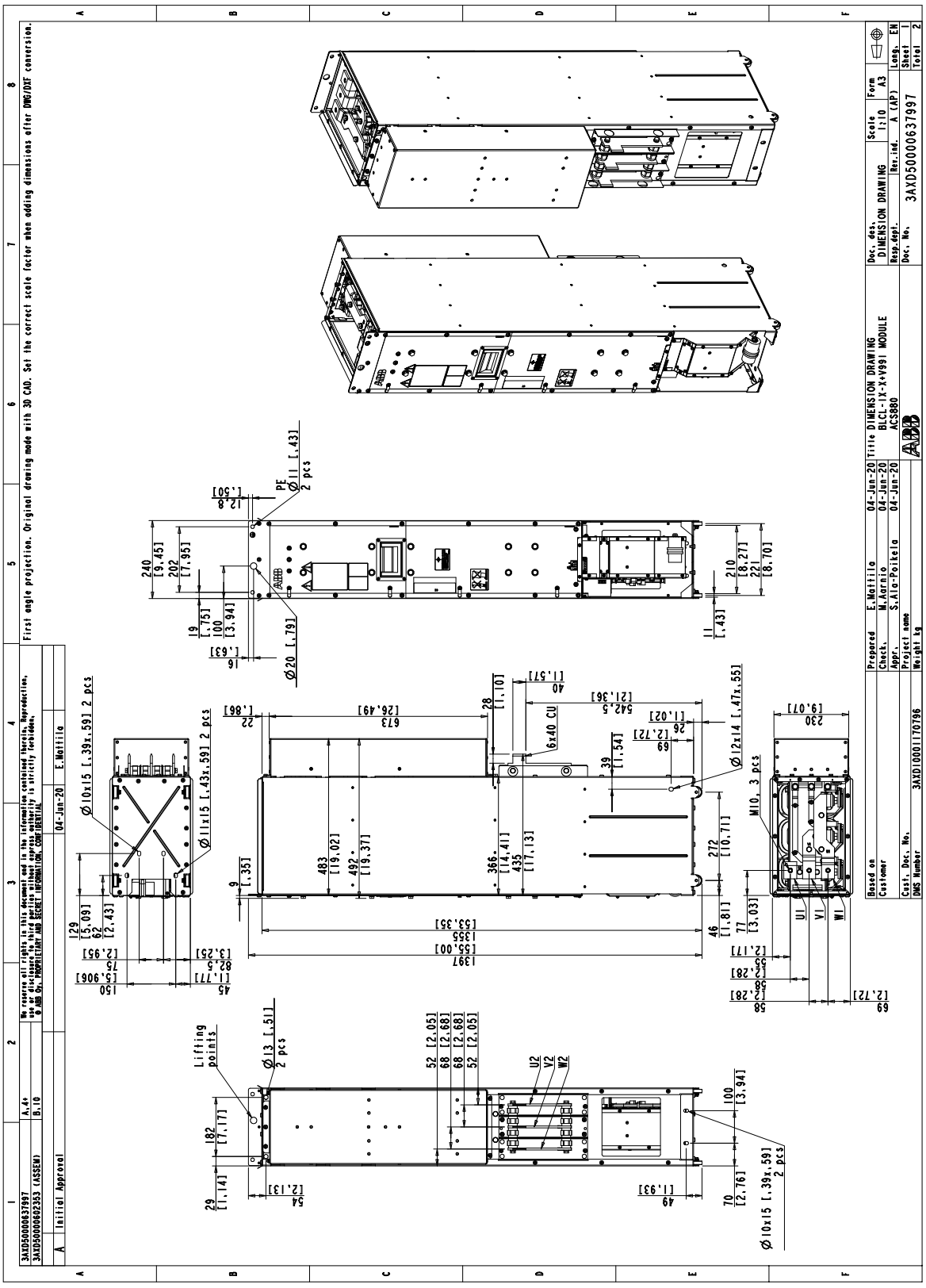
LCL filter module (filter for frame R6i and R7i)



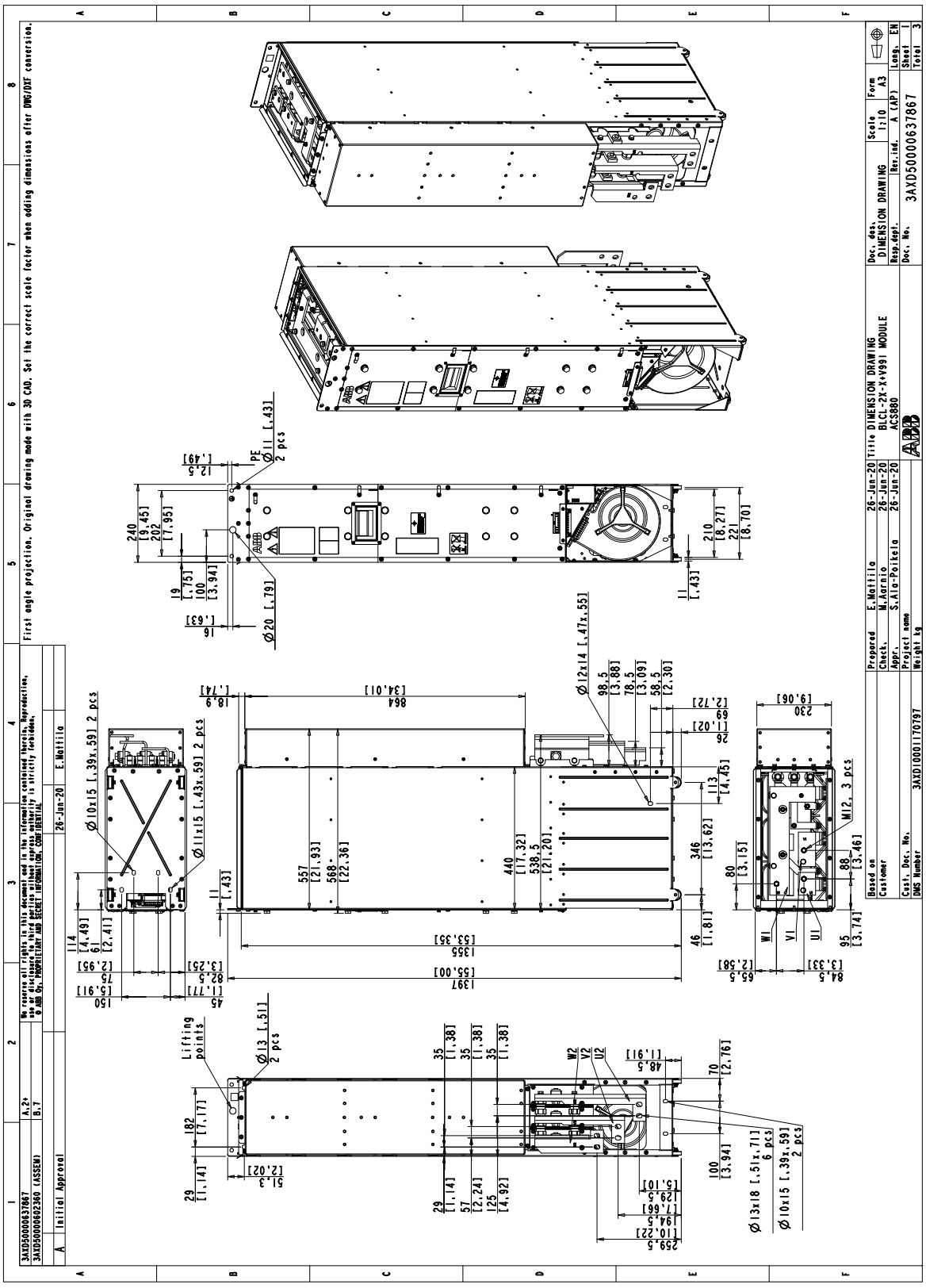
Quick connector placement (BLCL-05-x)



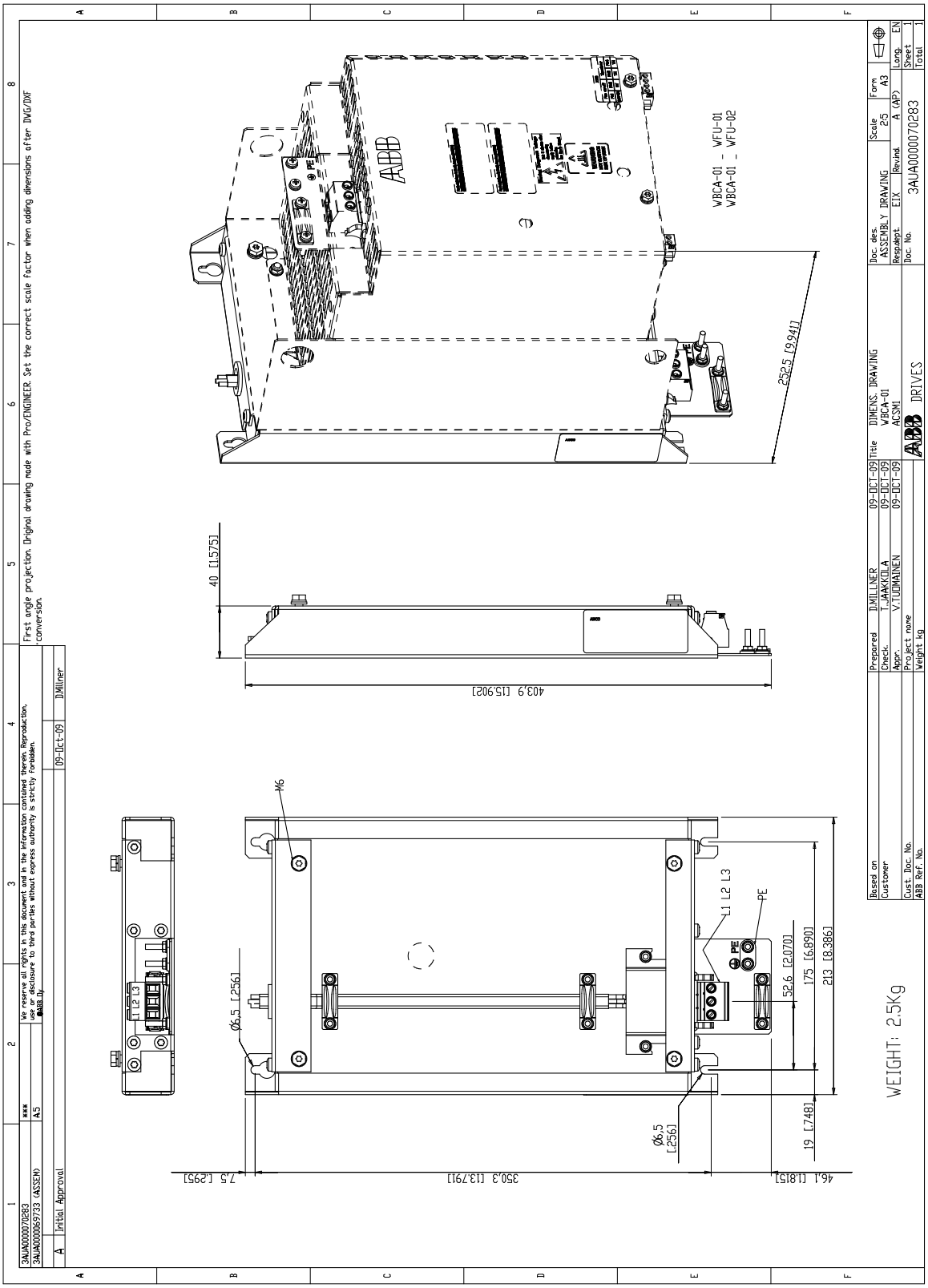
LCL filter module (filter for frame 1×R8i)



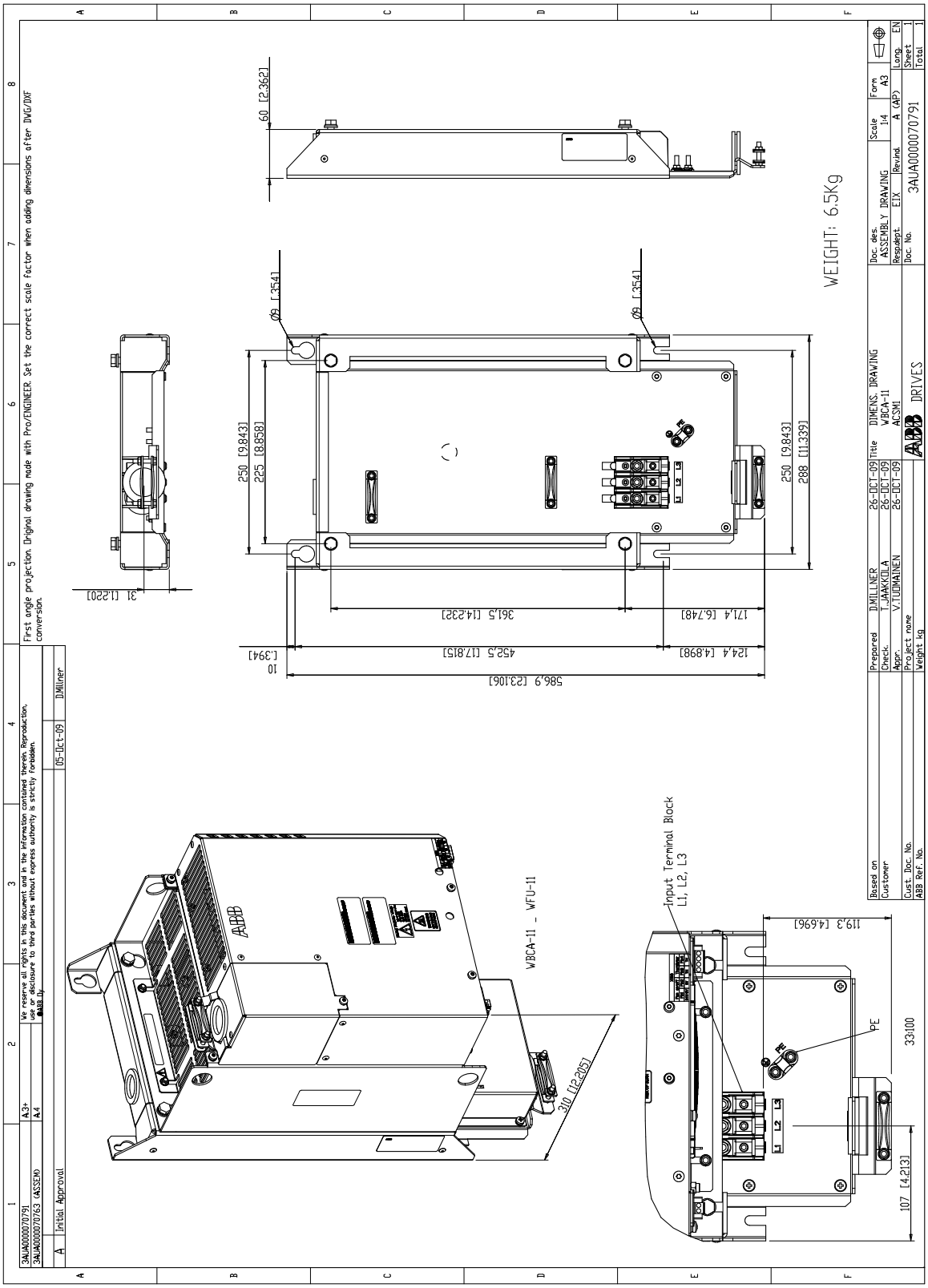
LCL filter module (filter for frame R8i multiples)



WBCA-01


WBCA-01 - WFU-01
WBCA-01 - WFU-02
252.5 [9.941]
40 [1.575]
403.9 [15.902]
M6
Ø6.5 [.256]
L1 L2 L3
PE
52.6 [2.070]
175 [6.890]
213 [8.386]
Ø6.5 [.256]
19 [.748]
46.1 [1.815]
350.3 [13.791]
7.5 [.295]
WEIGHT: 2.5Kg
DRIVES

WBCA-11


WEIGHT: 6.5Kg
60 [2.362]
Ø9 [.354]
Ø9 [.354]
250 [9.843]
225 [8.858]
250 [9.843]
288 [11.339]
31 [1.220]
361.5 [14.232]
171.4 [6.748]
10 [.394]
452.5 [17.815]
124.4 [4.898]
586.9 [23.106]
WBCA-11 _ WFU-11
300 [12.205]
Input Terminal Block
L1, L2, L3
119.3 [4.696]
PE
107 [4.213]
33:100
DIMENS. DRAWING
WBCA-11
ACSM1
ASSEMBLY DRAWING
3AUA0000070791
DRIVES
First angle projection. Original drawing made with Pro/ENGINEER. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
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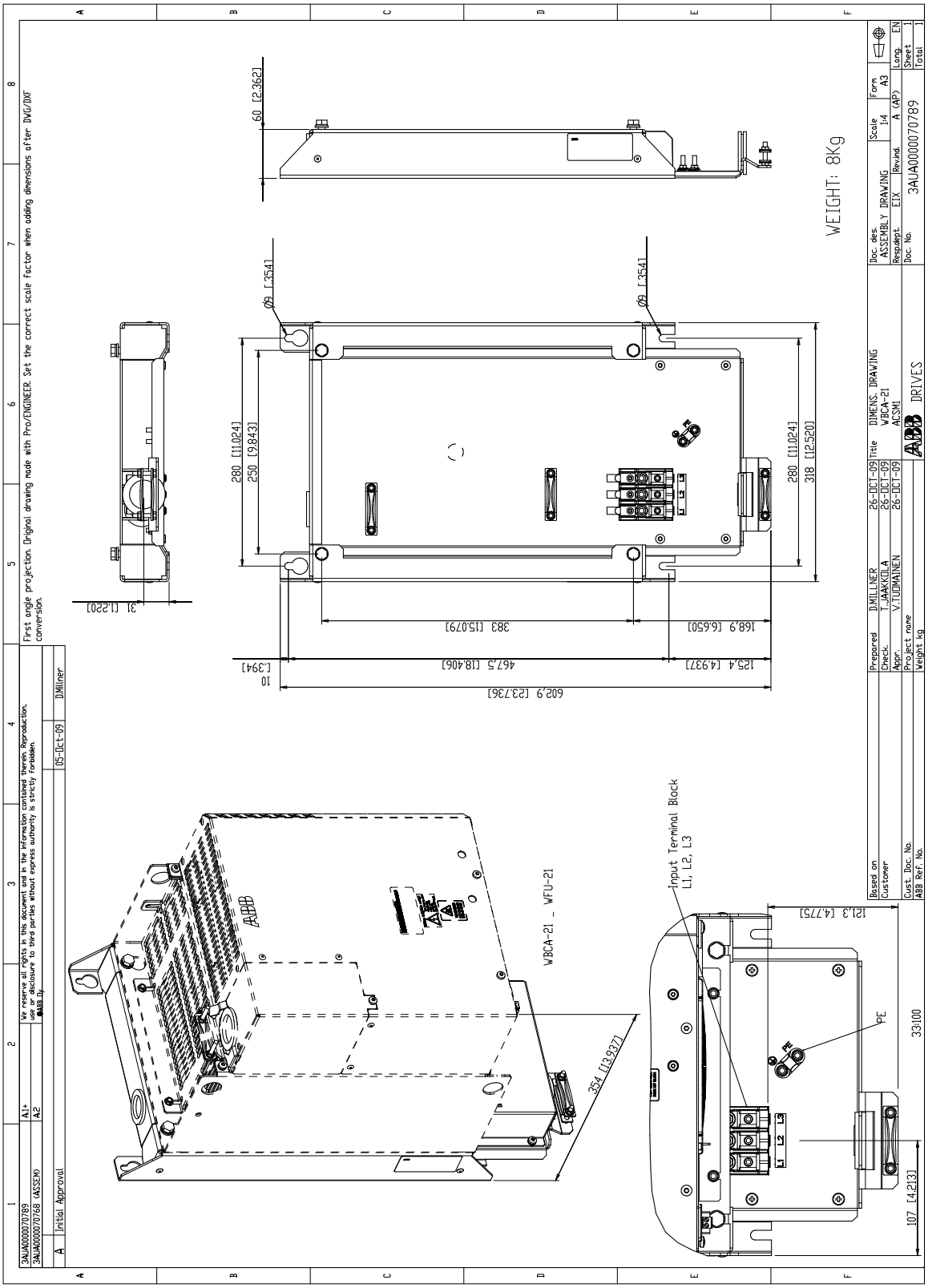
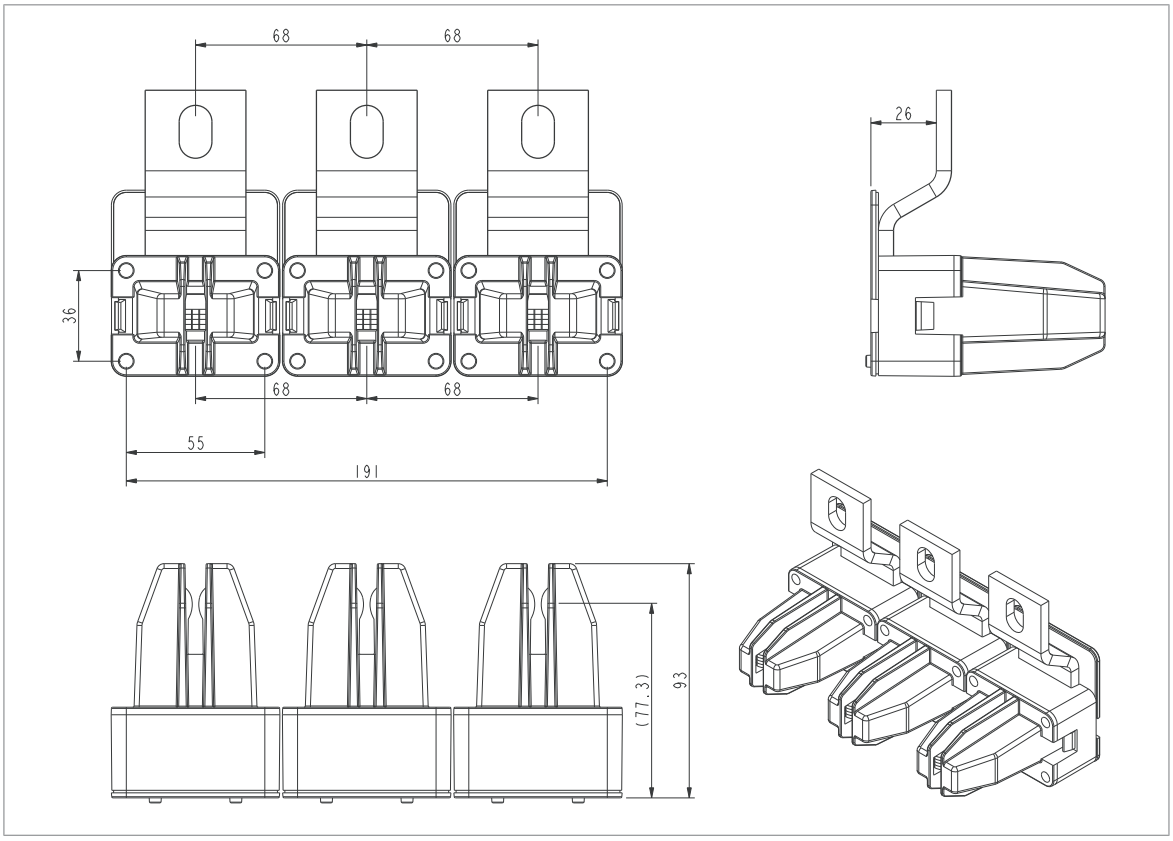
Initial Approval
05-Dec-09
DMillner

WBCA-21


WEIGHT: 8Kg
60 [2.362]
Ø9 [.354]
Ø9 [.354]
280 [11.024]
250 [9.843]
280 [11.024]
318 [12.520]
31 [1.220]
383 [15.079]
168,9 [6.650]
10 [.394]
467,5 [18.406]
125,4 [4.937]
602,9 [23.736]
WBCA-21 _ WFU-21
Input Terminal Block
L1, L2, L3
121,3 [4.775]
PE
L1 L2 L3
354 [13.937]
33100
107 [4.213]
DRIVES

Quick connector dimensions



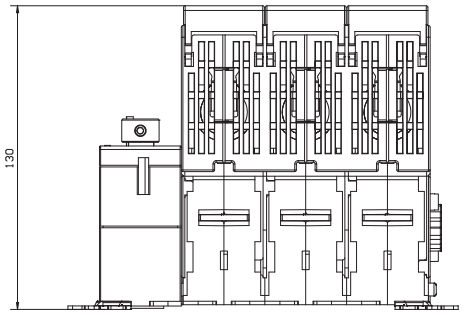
Main switch-disconnector

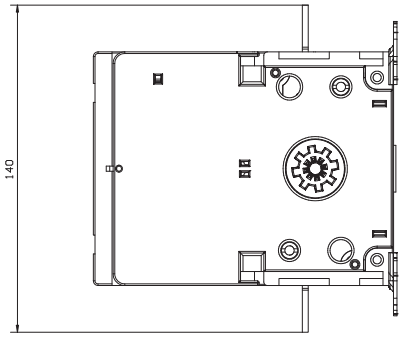
R1i...R4i

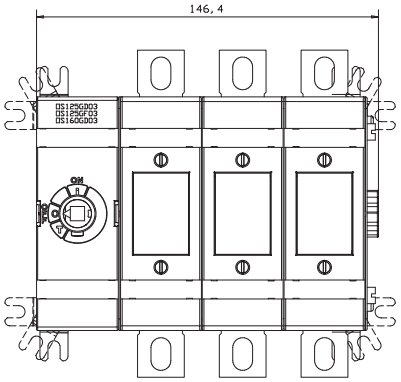
OS160GD03 (IEC)

www.abb.com

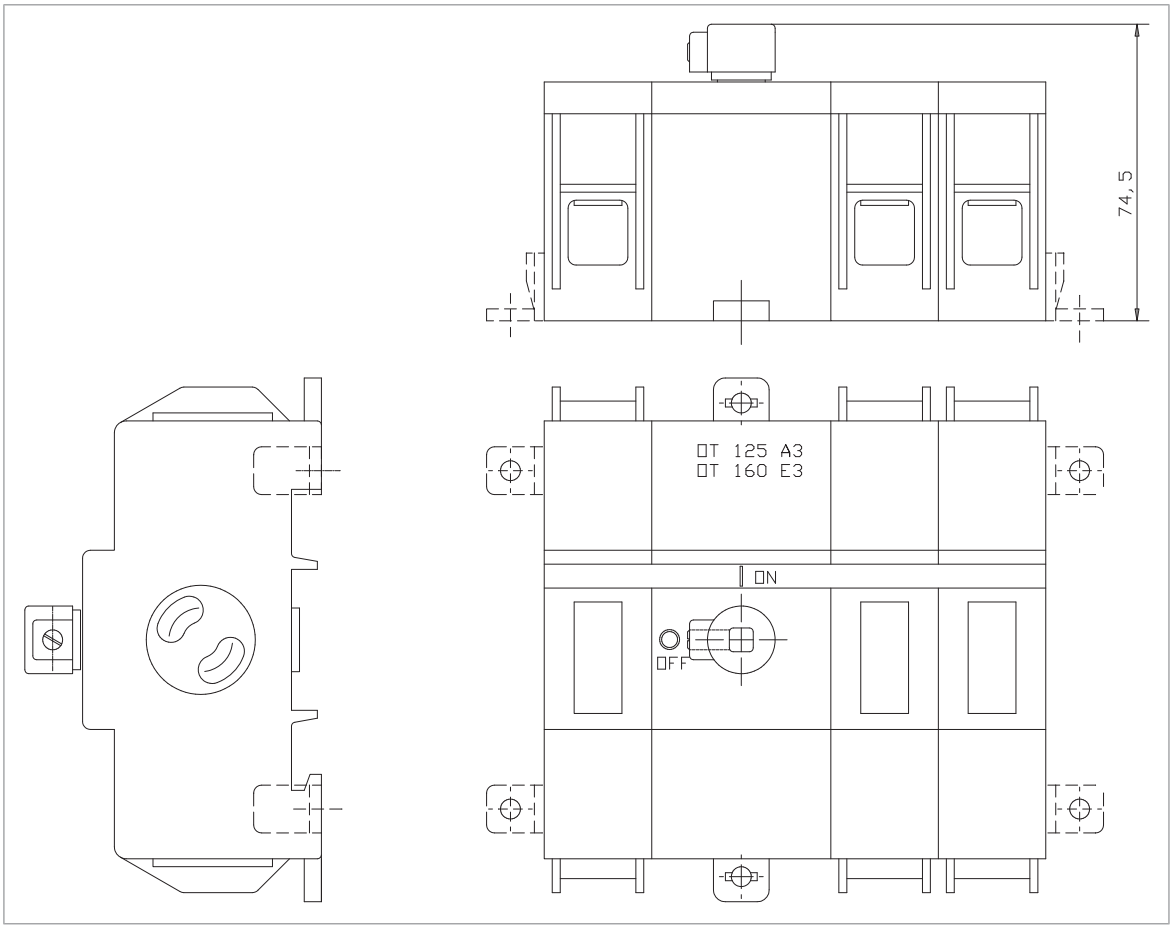
Dimensions in mm
1 mm = 0.0394 in





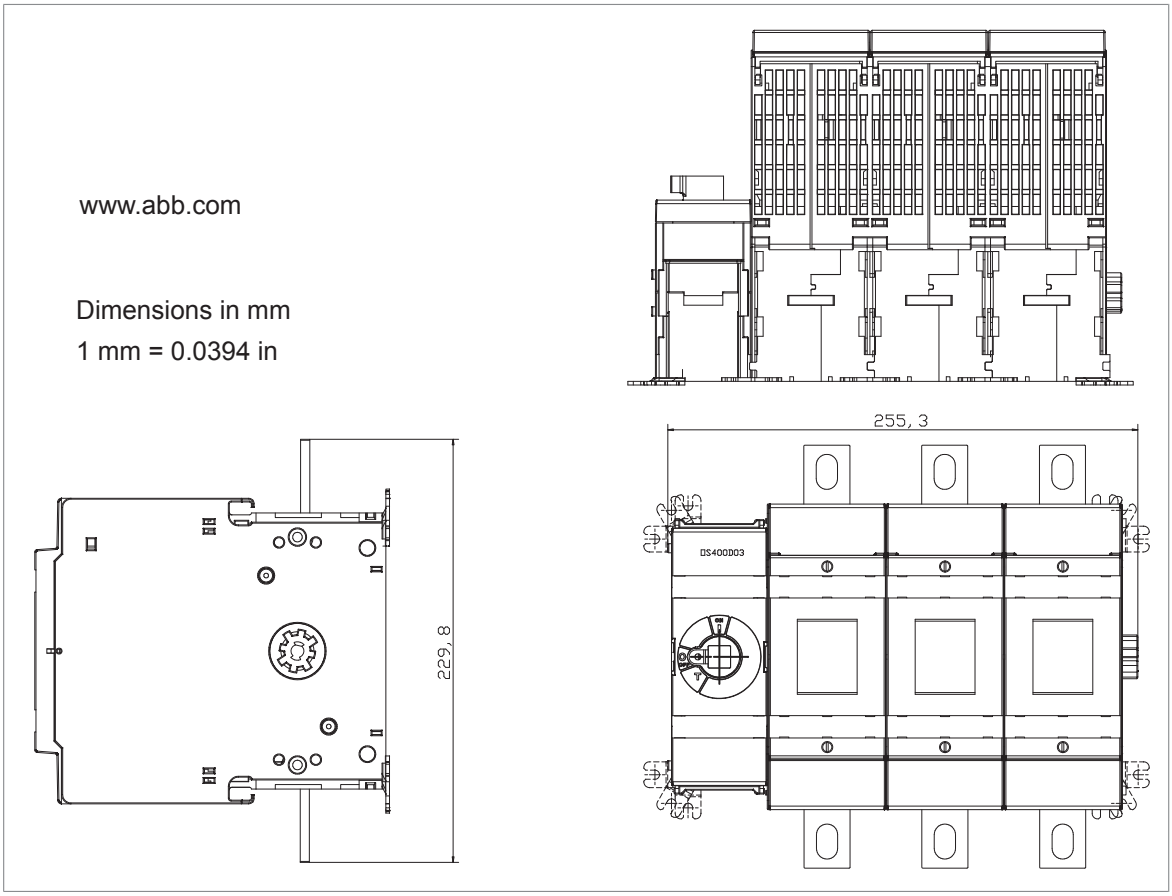


OT160E3 (UL, CSA)

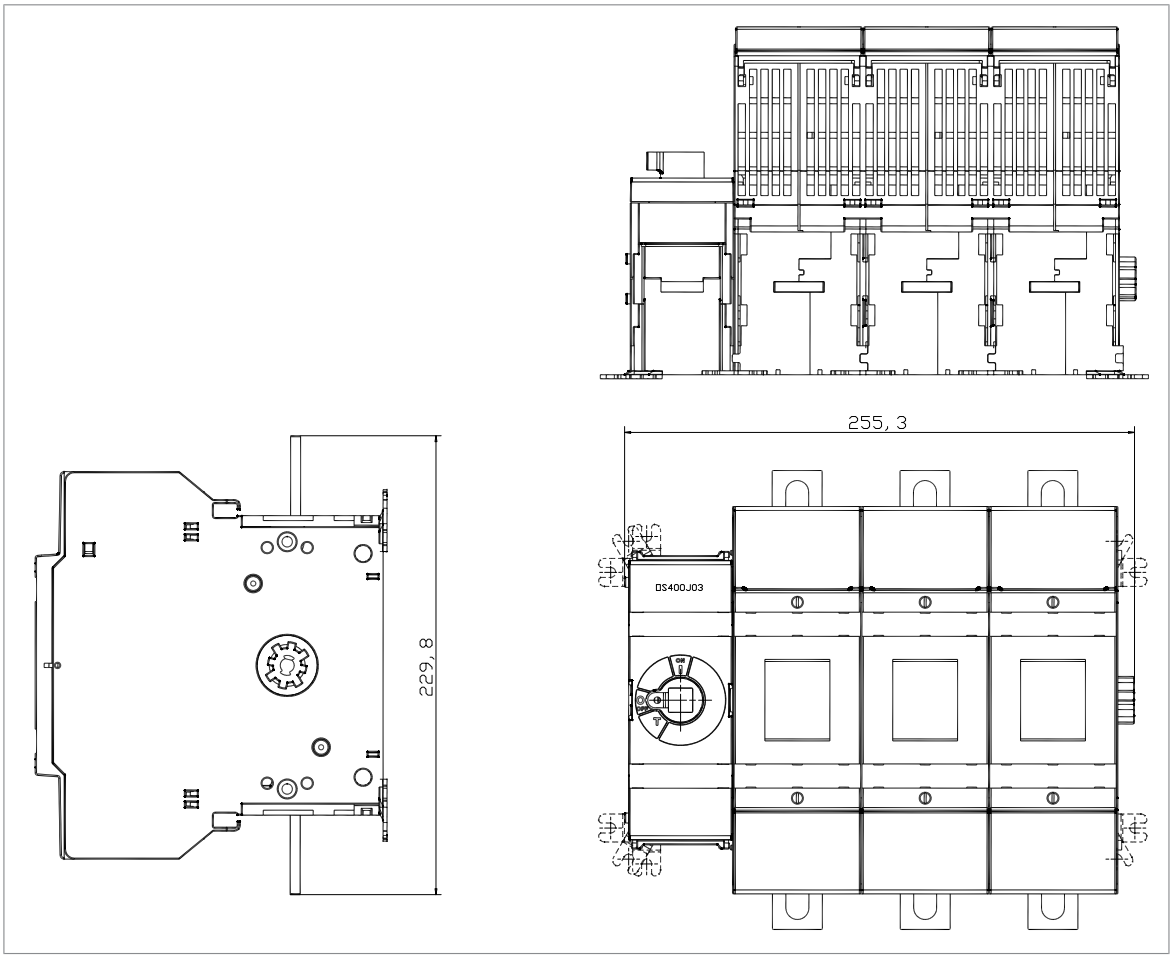


R6i and R7i

OS400D03 (IEC)

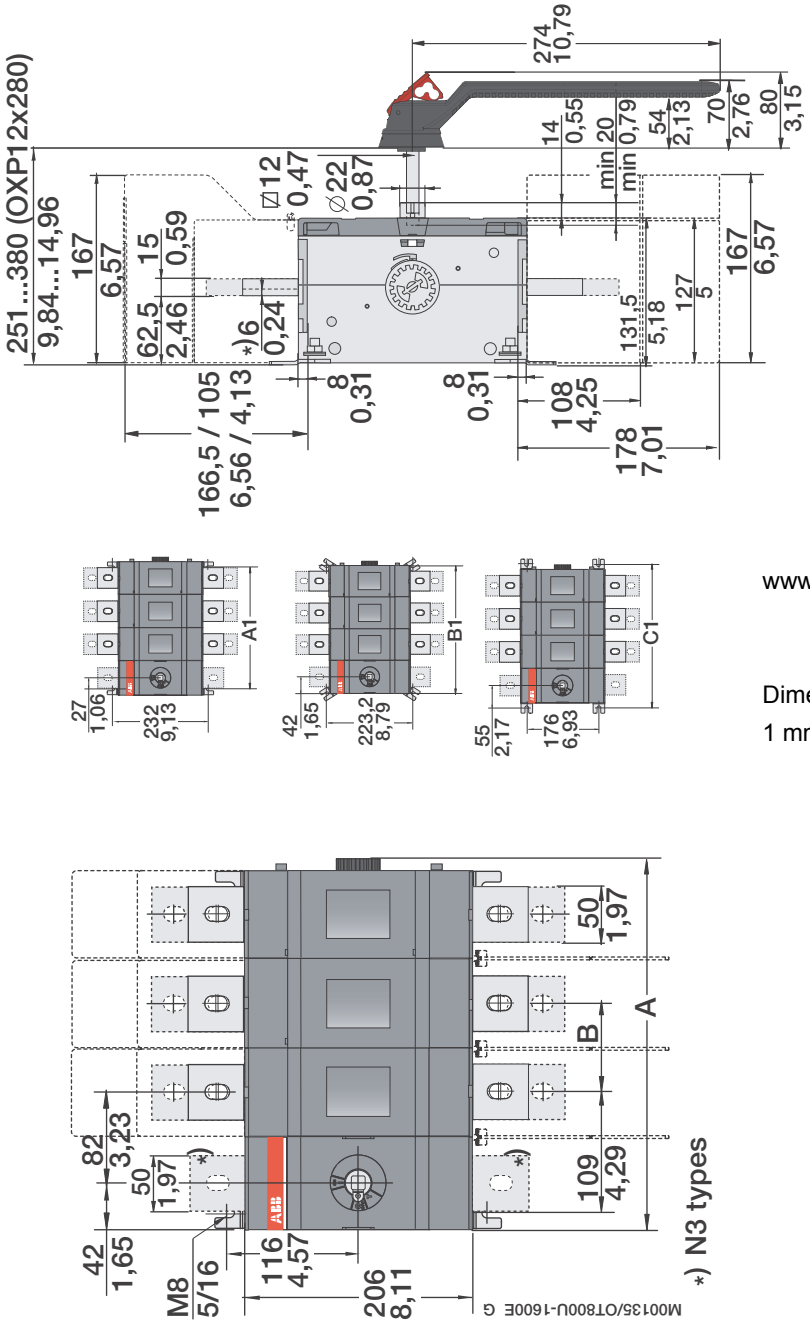


OS400J03 (UL, CSA)



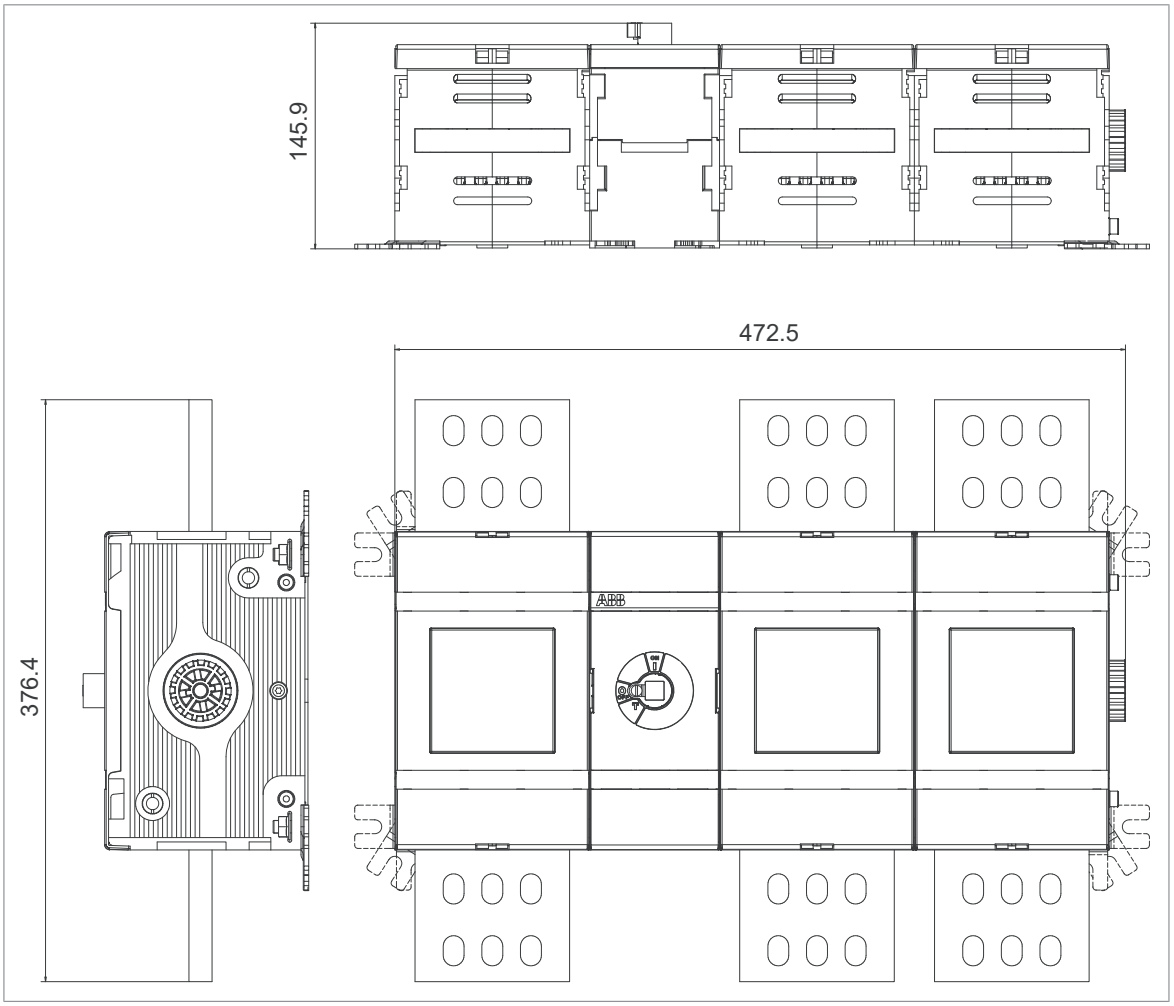
R8i

OT1000E03 (IEC), OT1200U03 (UL, CSA)



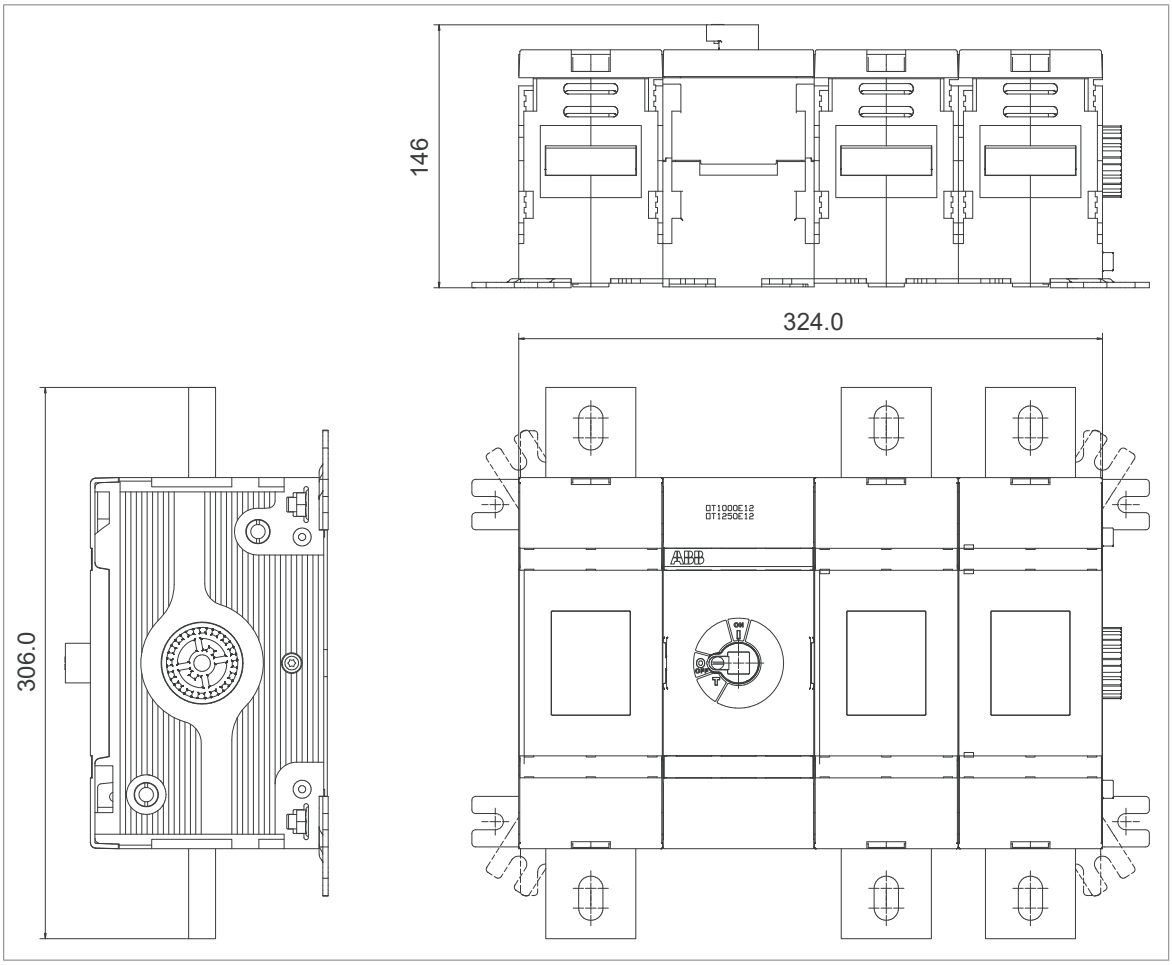
OT 1000/ 1250/ 1600E_ OT 800/ 1200U_													
		01	02	03	04	11	12	13	22	03W4	04W4	03W8	04W8
A	mm in	174,50 6,87	254,50 10,02	334,50 13,17	414,50 16,32	254,50 10,02	334,50 13,17	414,50 16,32	414,50 16,32	454,50 17,89	594,50 23,41	544,50 21,44	729,50 28,72
B	mm in		80 3,15	80 3,15	80 3,15		80 3,15	80 3,15	80 3,15	140 5,51	140 5,51	185 7,28	185 7,28
A1	mm in	134 5,28	214 8,43	294 11,57	374 14,72	214 8,43	294 11,57	374 14,72	374 14,72	414 16,30	554 21,81	504 19,84	689 27,13
B1	mm in	164 6,46	244 9,61	324 12,76	404 15,91	244 9,61	324 12,76	404 15,91	404 15,91	444 17,48	584 22,99	534 21,02	719 28,31
C1	mm in	190 7,48	270 10,63	350 13,78	430 16,93	270 10,63	350 13,78	430 16,93	430 16,93	470 18,50	610 24,02	560 22,05	745 29,33

OT2000E12 (IEC)



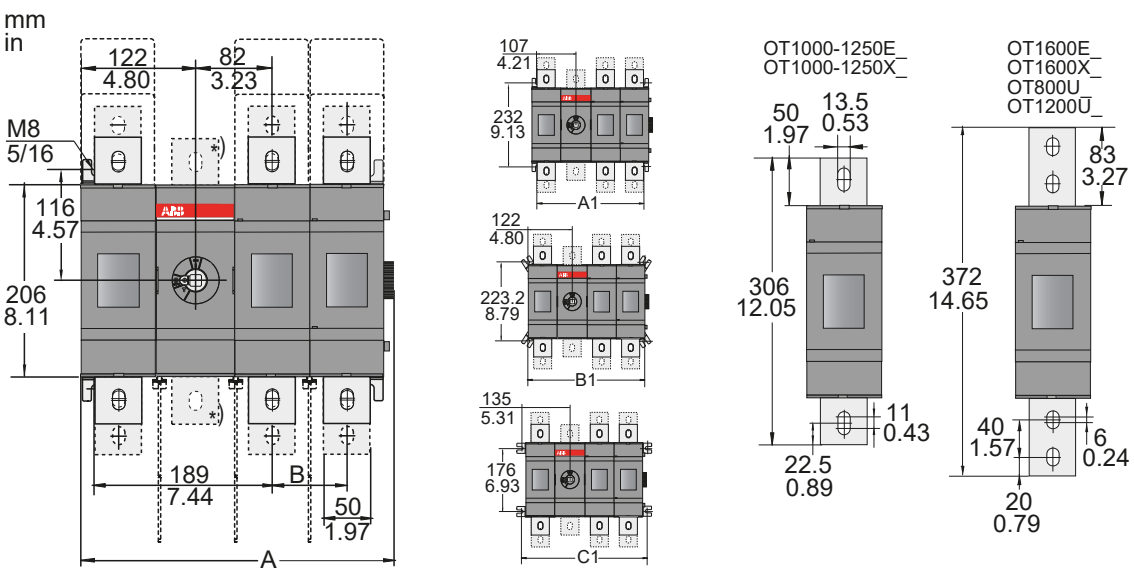
Dimensions in mm (1 mm = 0.0394 in)

OT1250E12 (IEC)



Dimensions in mm (1 mm = 0.0394 in)

OT1200U12 (UL, CSA)

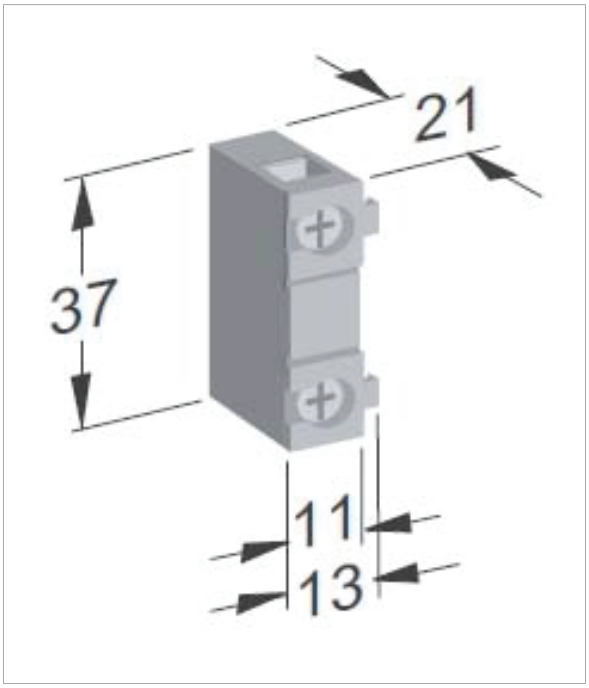


A	334.5
B	80
A1	294
B1	324
C1	350

www.abb.com

Dimensions in mm
1 mm = 0.0394 in

Auxiliary contact OA1G10



2×0.75…2.5 mm² (2×18…14 AWG)

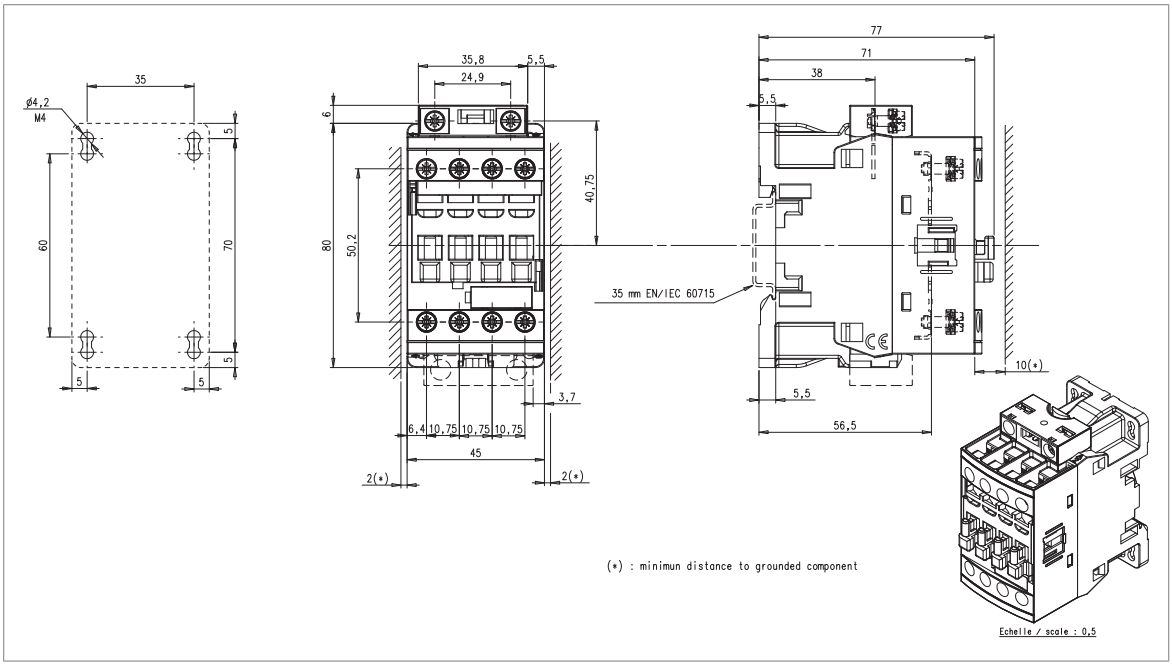
0.8 N·m (7 lbf·in)

Pozidriv M3.5 Form 2

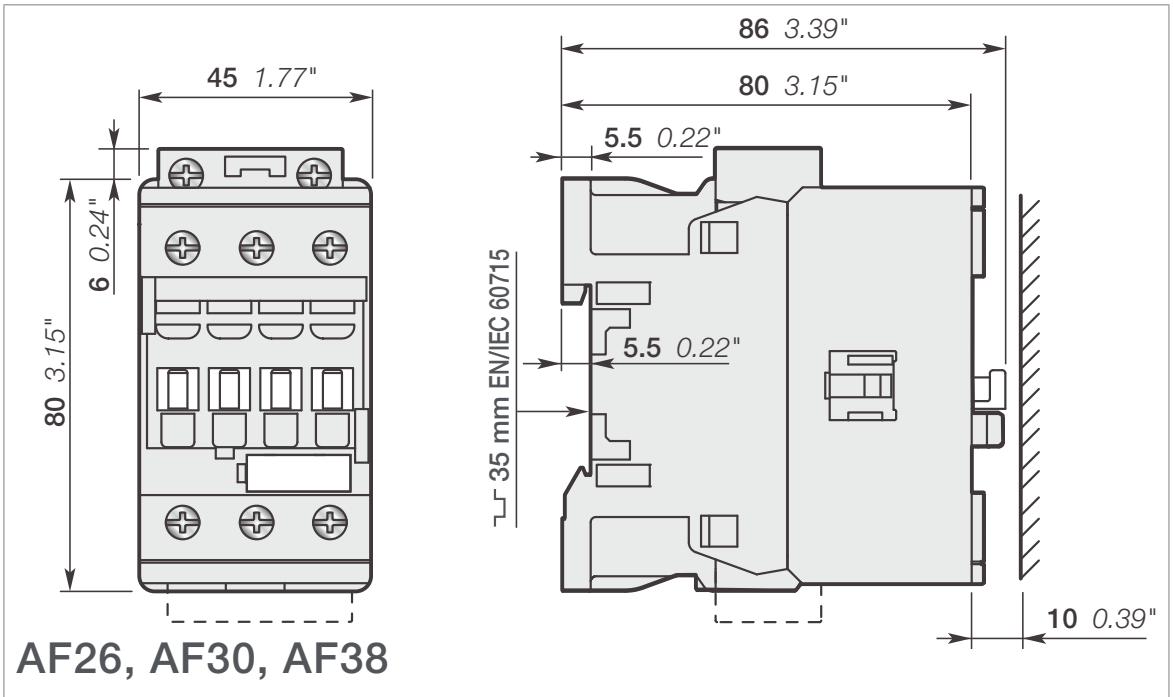
Main contactor

R1i...R4i

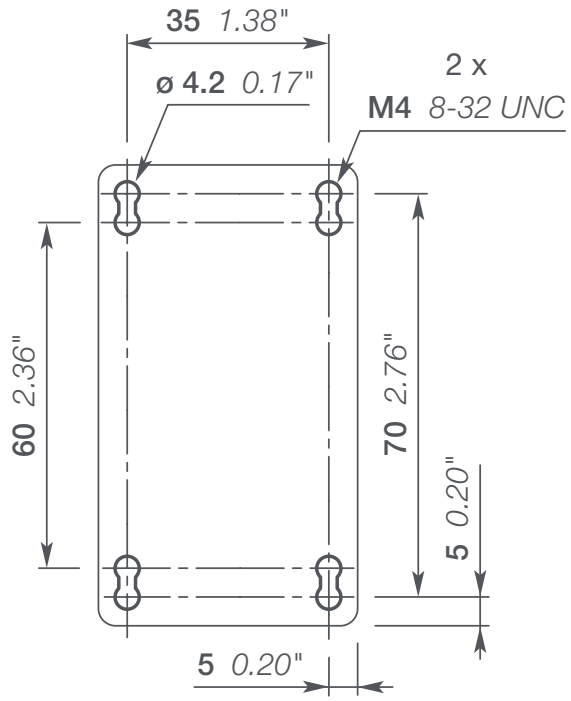
AF09-30-10-13 (IEC, UL, CSA)



AF26-30-00-13 (IEC, UL, CSA)



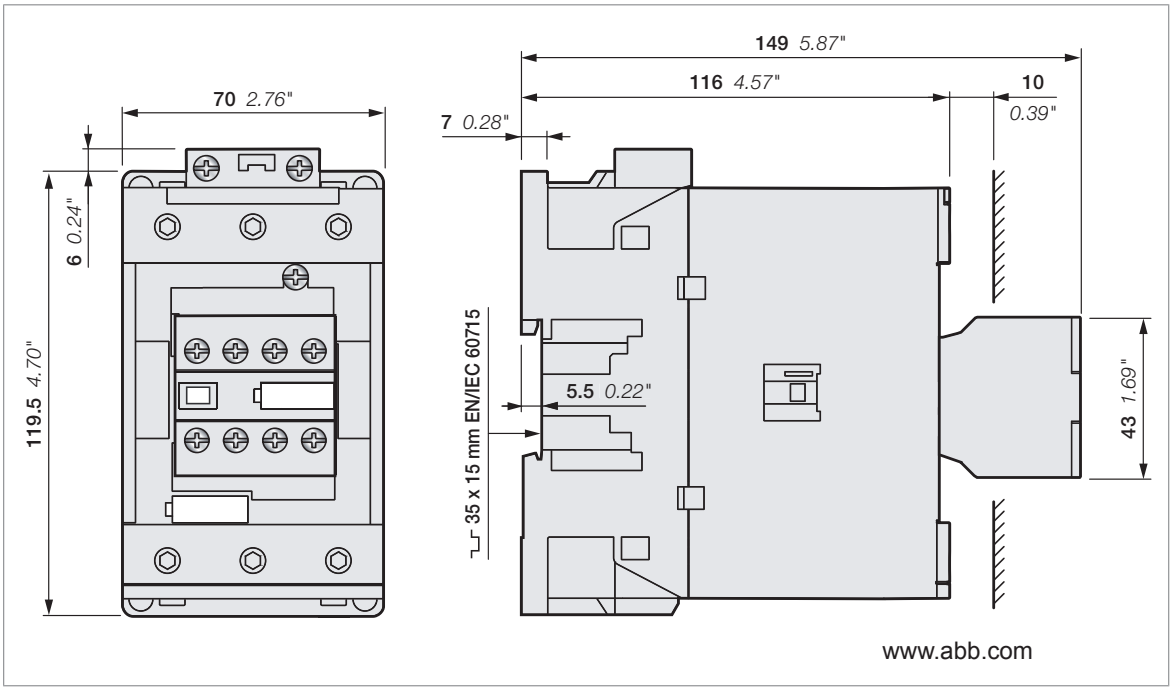
AF26, AF30, AF38



Drilling pattern

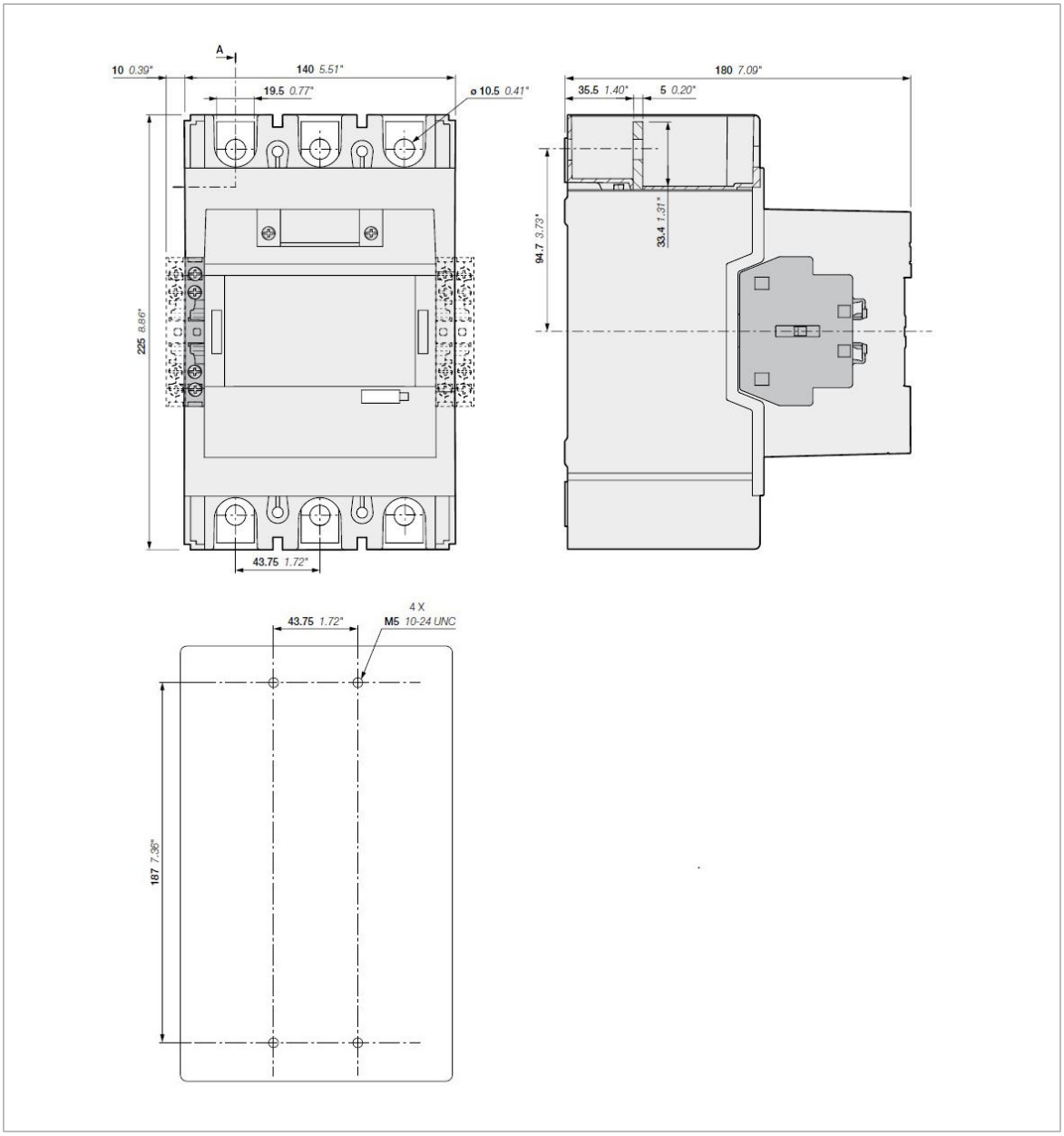
AF26, AF30, AF38

AF96-30-22-13 (IEC, UL, CSA)



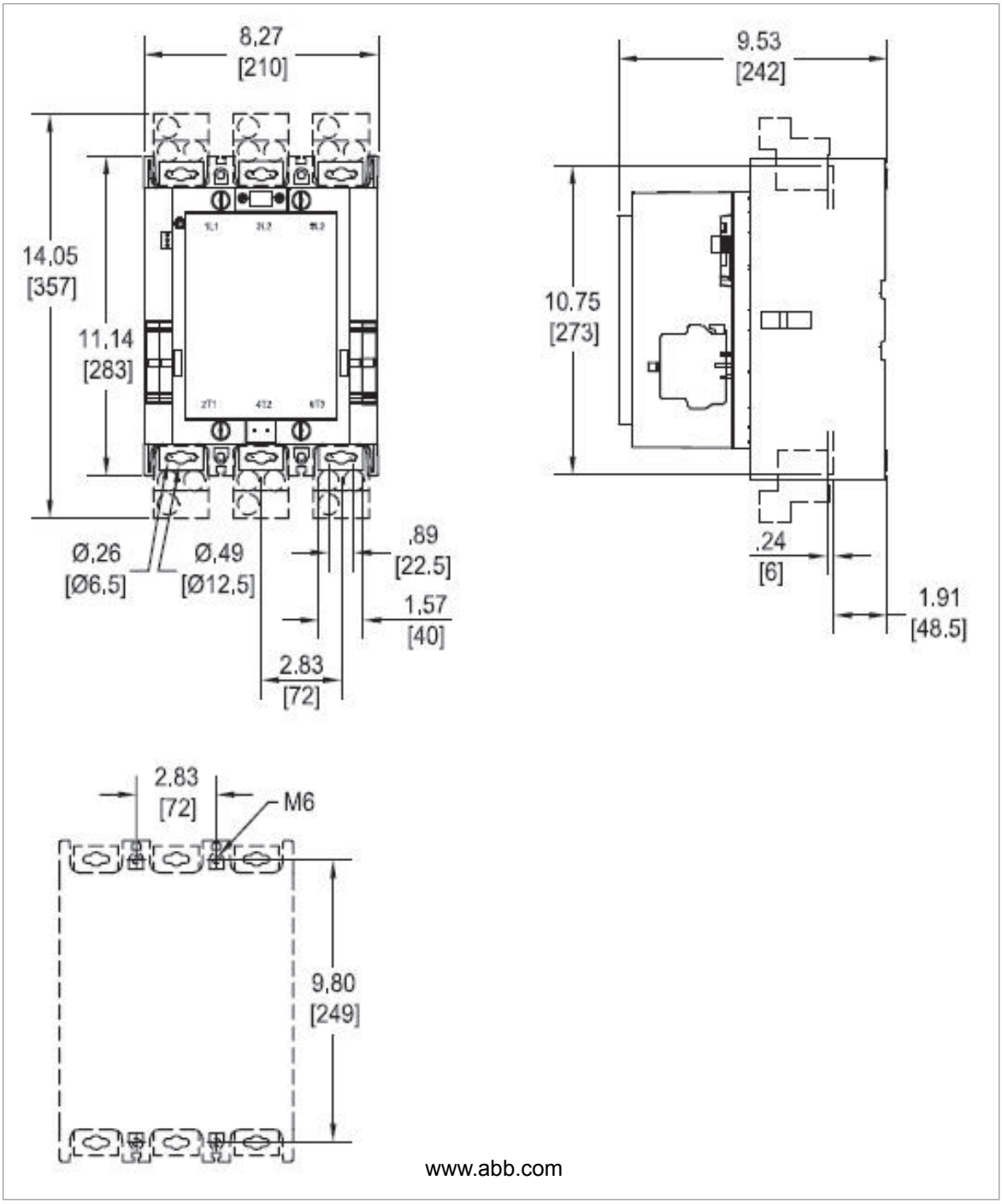
R6i and R7i

AF265-30-22-13 (IEC, UL, CSA)

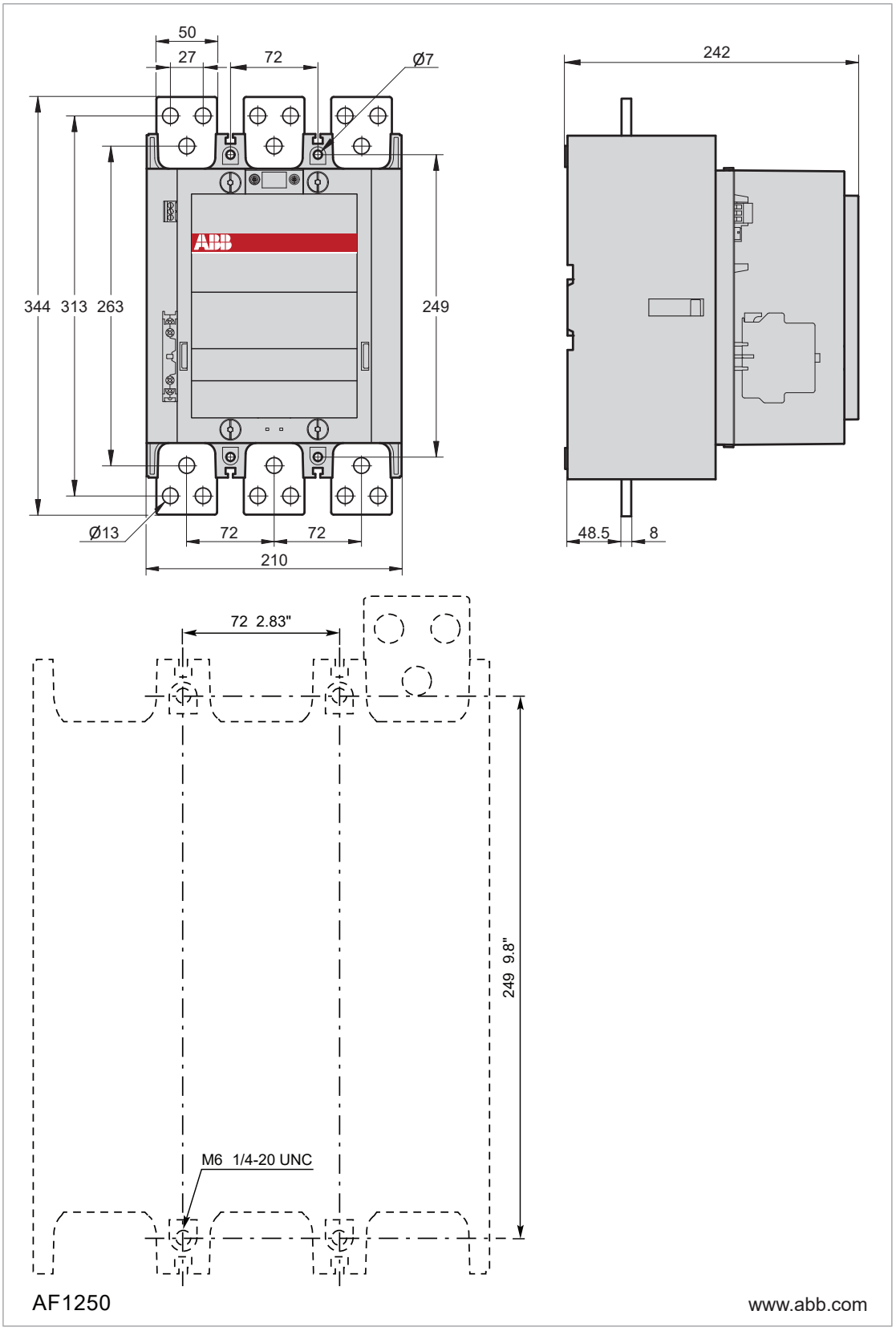


R8i

AF580-30-22-70 and AF750-30-22-70 (IEC, UL, CSA)



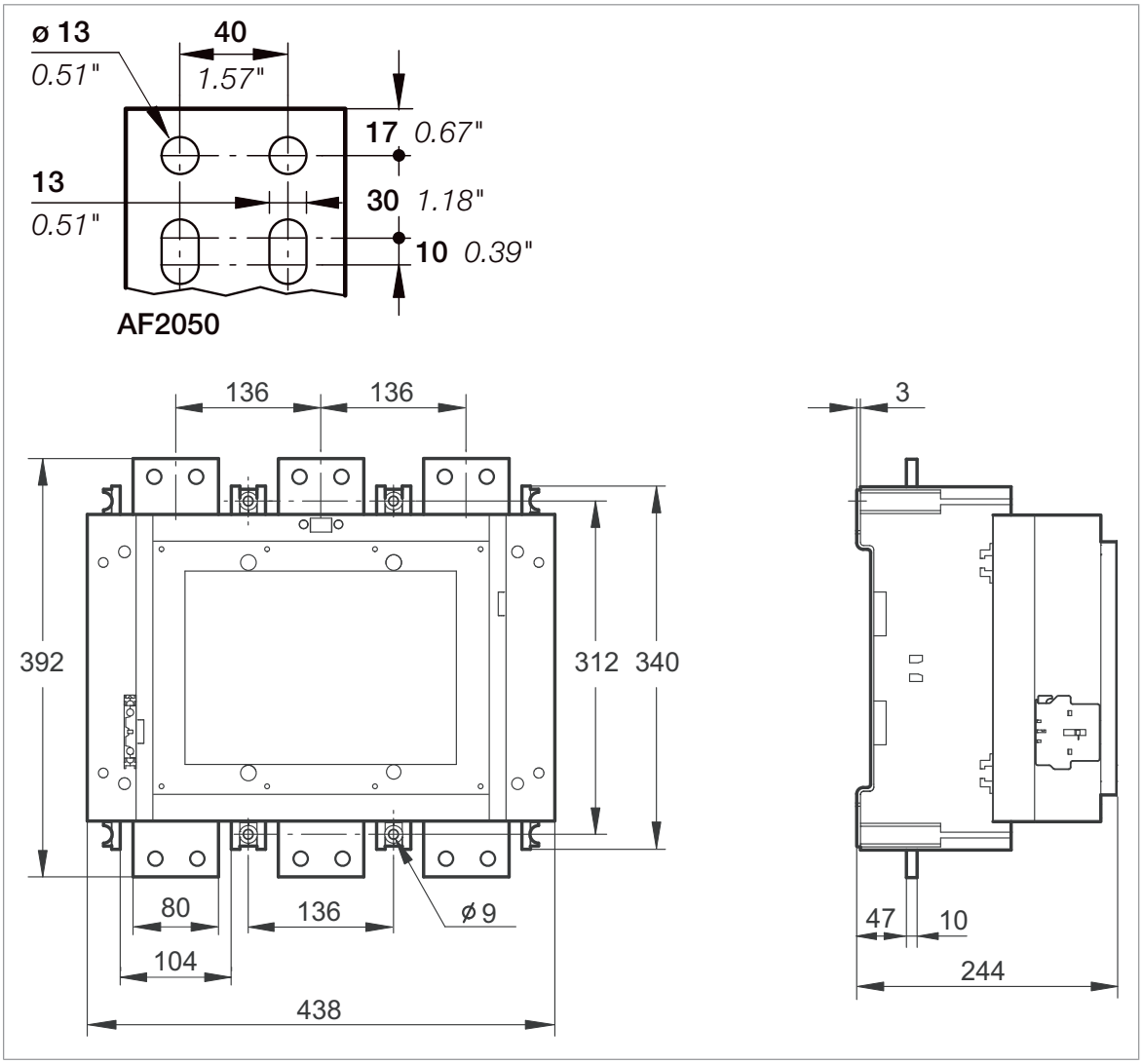
AF1250-30-22-70 (IEC, UL, CSA)



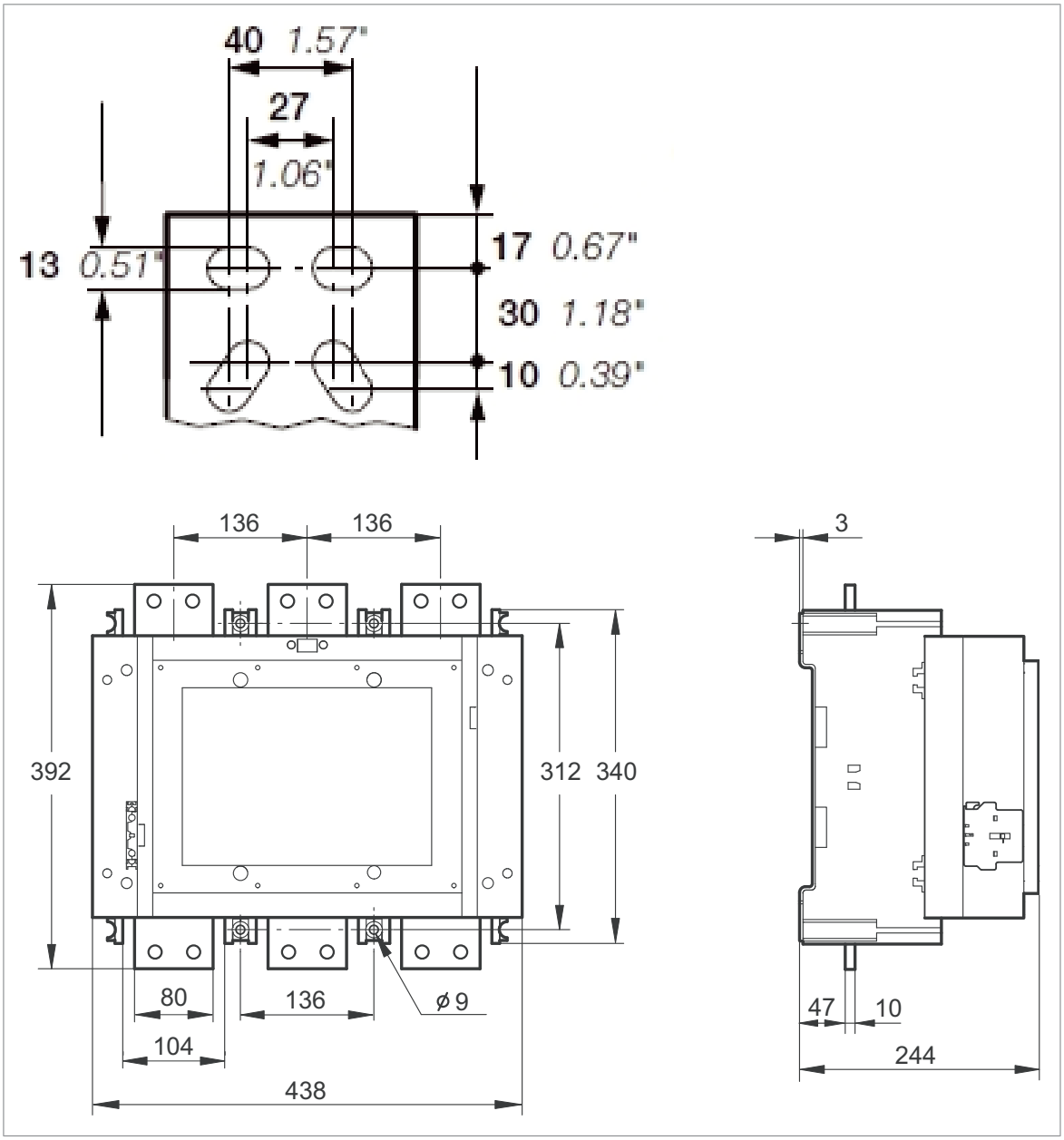
Dimensions in mm

1 mm = 0.0394 in

AF2050-30-22-70 (IEC, UL, CSA)

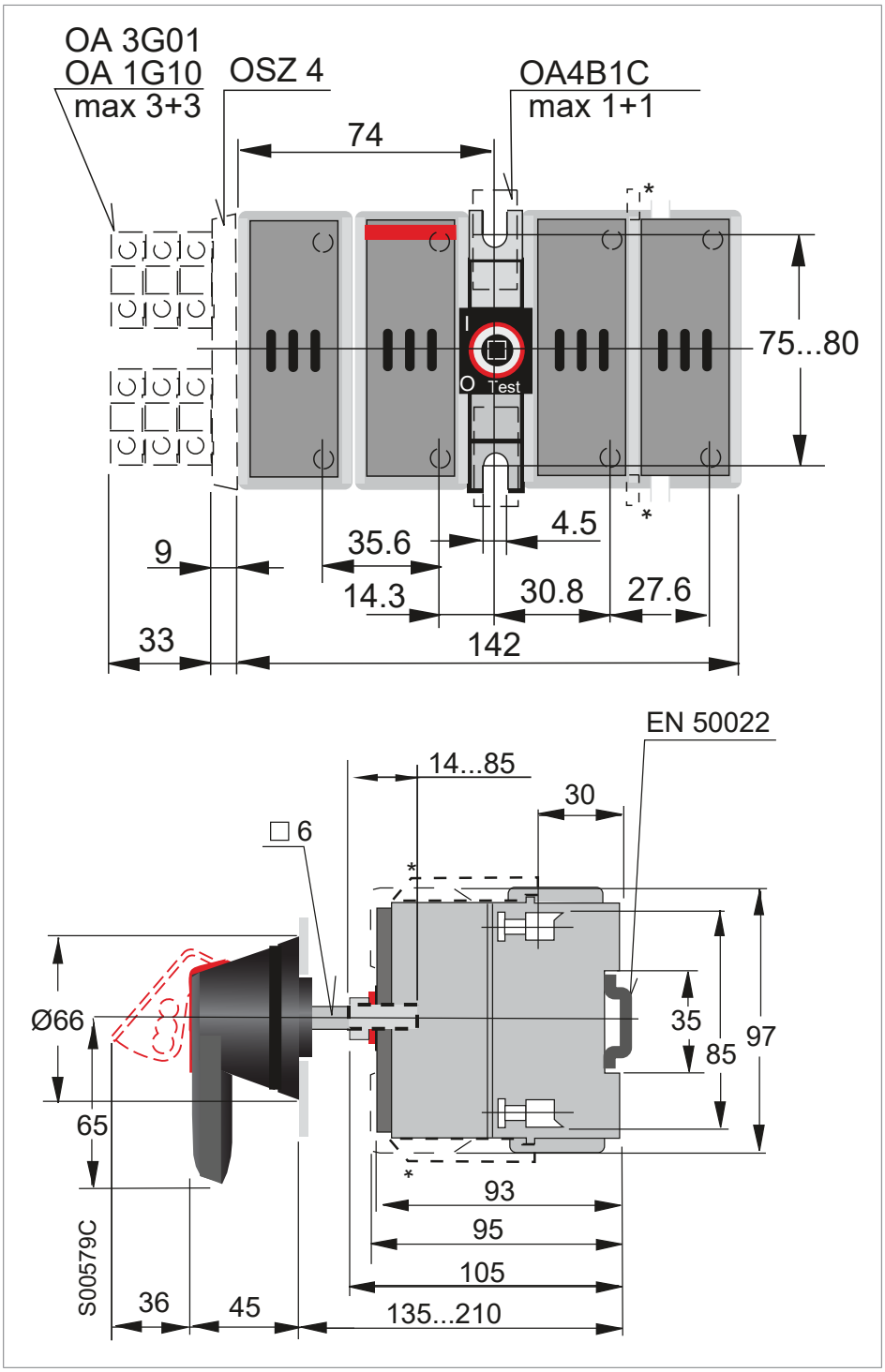


AF1650-30-22-70 (IEC, UL, CSA)



Charging switches

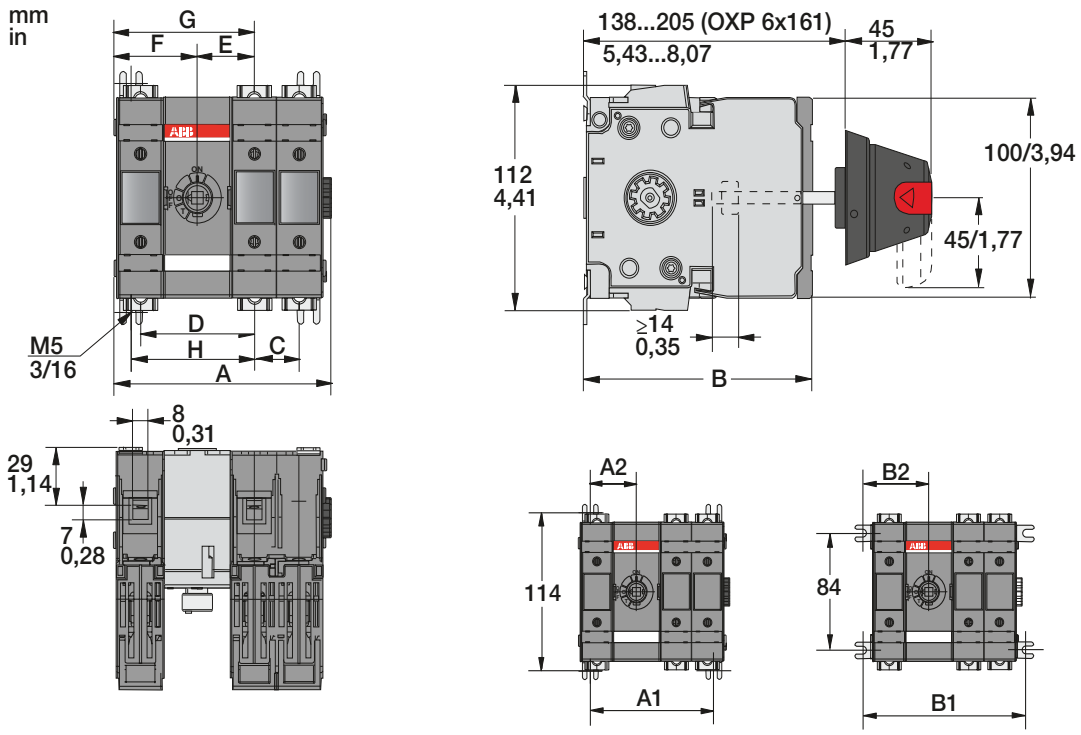
OS30FAJ22F



Dimensions in mm

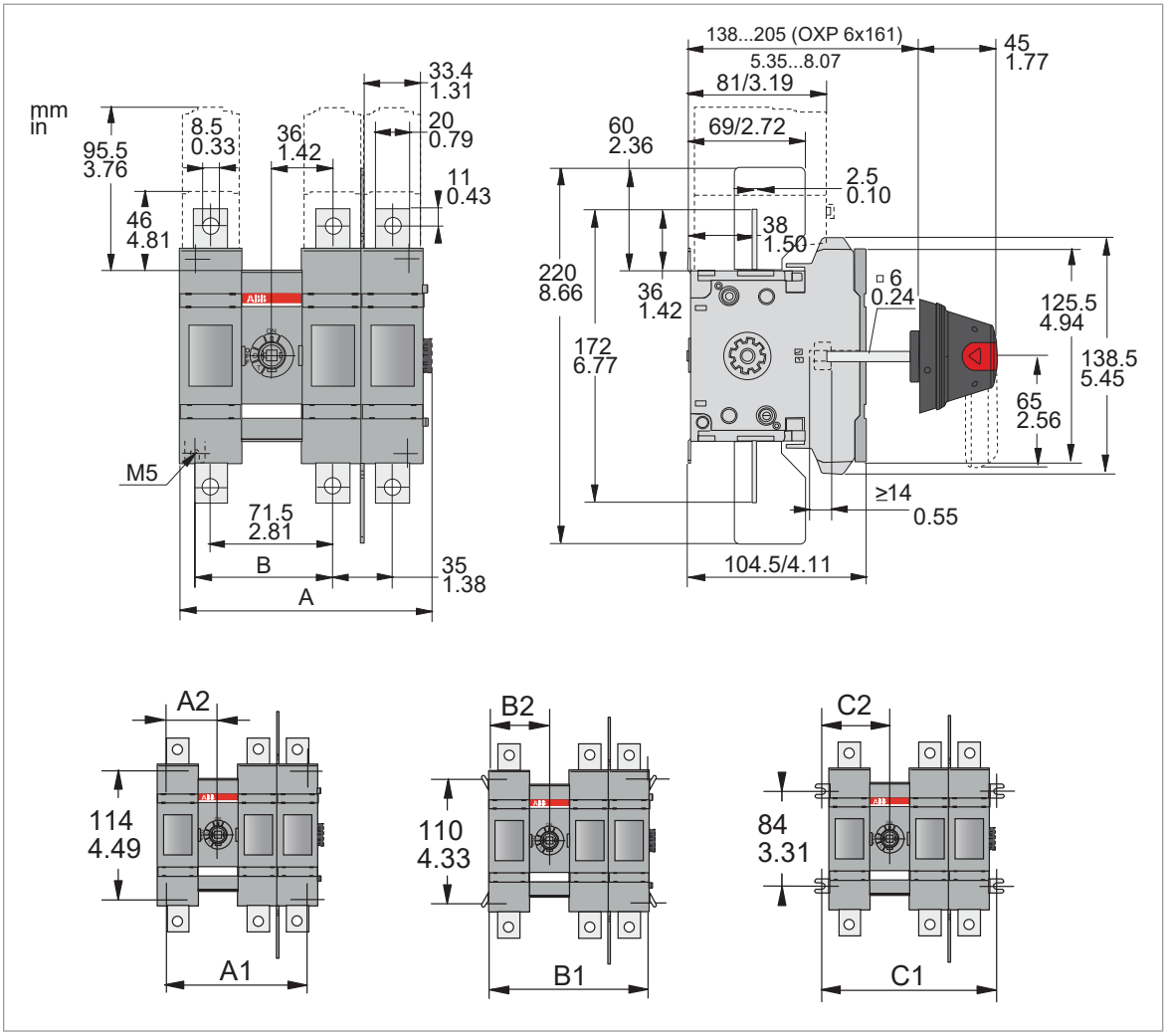
1 mm = 0.0394 in

OS60GJ22FP



OS60GJ				
mm (in)	**J11**	**J12**	**J13**	**J22**
A	74.5 (2.93)	148 (5.82)	183.5 (7.20)	179.5/8.58
B	118 (4.65)	118 (4.65)	118 (4.65)	118 (4.65)
C	-	35 (1.38)	35 (1.38)	35 (1.38)
D	71.5 (2.81)	71.5 (2.81)	71.5 (2.81)	71.5 (2.81)
E	36 (1.41)	36 (1.41)	36 (1.41)	36 (1.41)
F	55.5 (2.19)	55.5 (2.19)	55.5 (2.19)	90.5 (3.56)
G	91.5 (3.6)	91.5 (3.6)	91.5 (3.6)	126.5 (4.98)
A1	81.5 (3.21)	116.5 (4.59)	151.5 (5.96)	151.5 (5.96)
A2	40.5 (1.59)	40.5 (1.59)	40.5 (1.59)	75.5 (2.97)
B1	111.5 (4.39)	146.5 (5.77)	181.5 (7.15)	181.5 (7.15)
B2	70.5 (2.78)	70.5 (2.78)	70.5 (2.78)	105.5 (4.15)

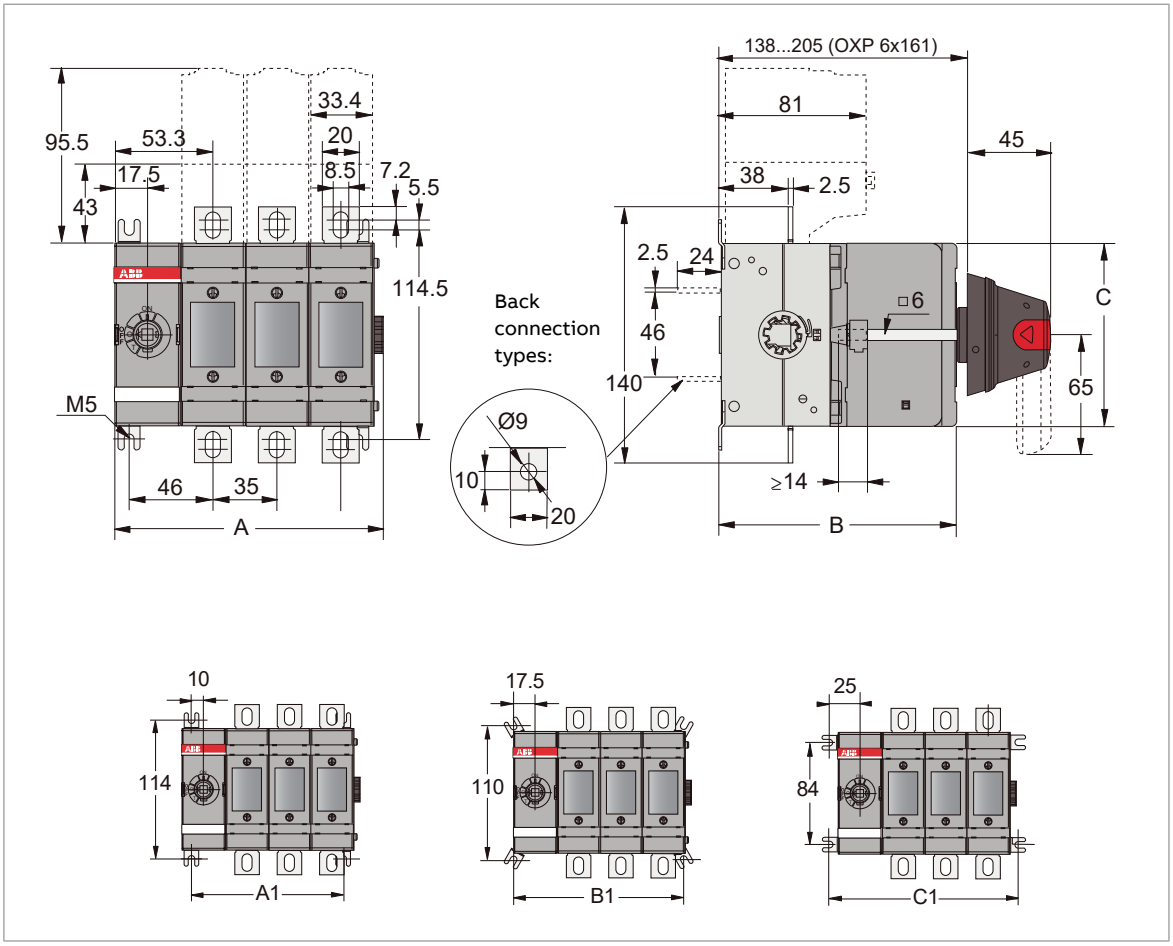
OS100GJ22FP



OS100GJ				
mm (in)	**J11**	**J12**	**J13**	**J22**
A	113 (4.45)	148 (5.83)	183 (7.20)	183 (7.20)
B	81 (3.19)	81 (3.19)	81 (3.19)	116 (4.57)
A1	90 (3.54)	125 (4.92)	160 (6.30)	160 (3.15)
A2	45 (1.77)	45 (1.77)	45 (1.77)	80 (3.15)
B1	105 (4.13)	140 (5.51)	175 (6.89)	175 (6.89)
B2	52.5 (2.07)	52.5 (2.07)	52.5 (2.07)	160 (3.44)
C1	120 (4.72)	155 (6.10)	190 (7.48)	190 (7.48)
C2	60 (2.36)	60 (2.36)	60 (2.36)	95 (3.74)

The measurements in the dimension drawings are preliminary and may be altered.

OS160GD04F

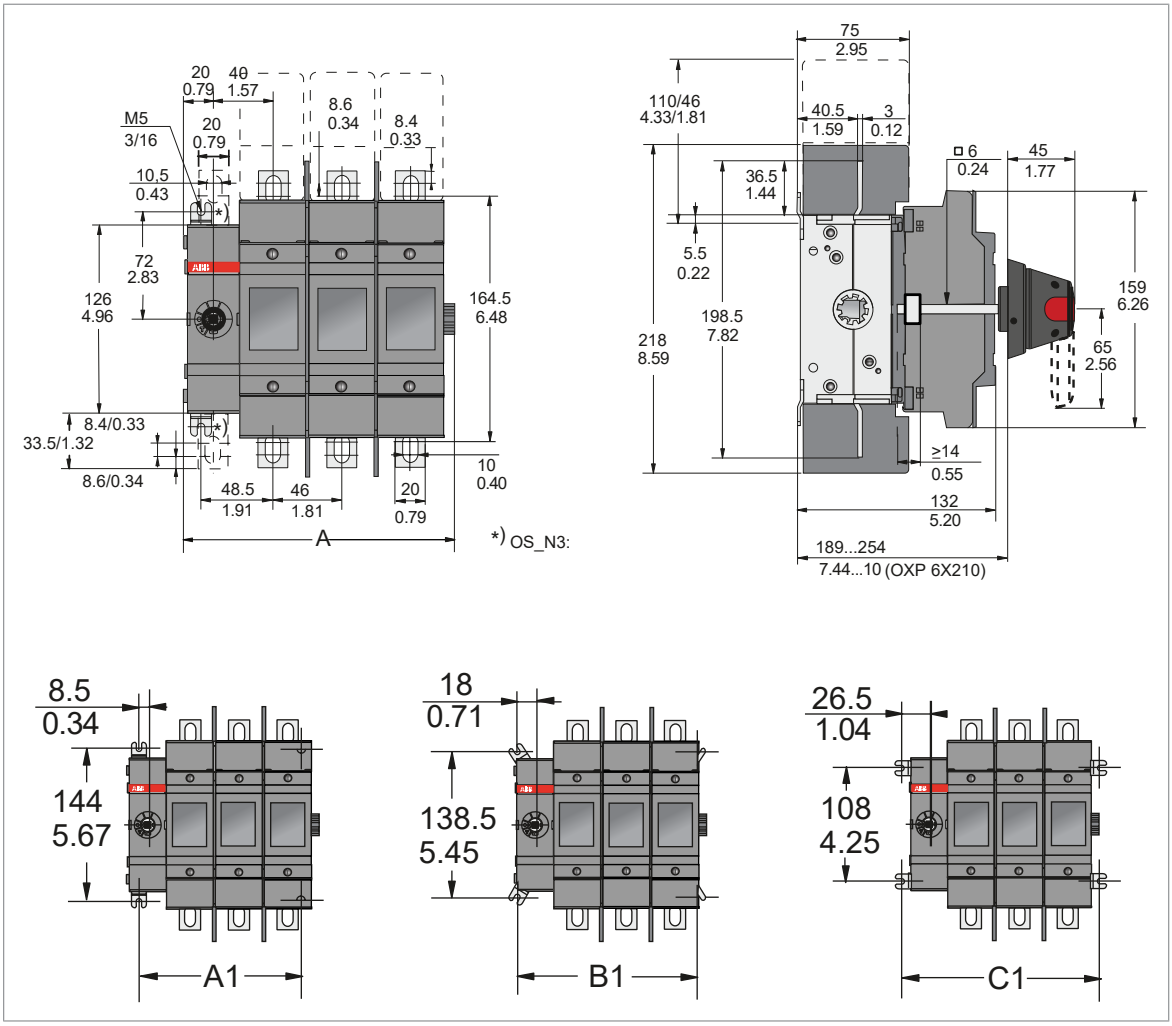


OS160GD04F					
A	**B**	**C**	**A1**	**B1**	**C1**
181.5 mm	130 mm	100 mm	160 mm	175 mm	190 mm

Dimensions in mm

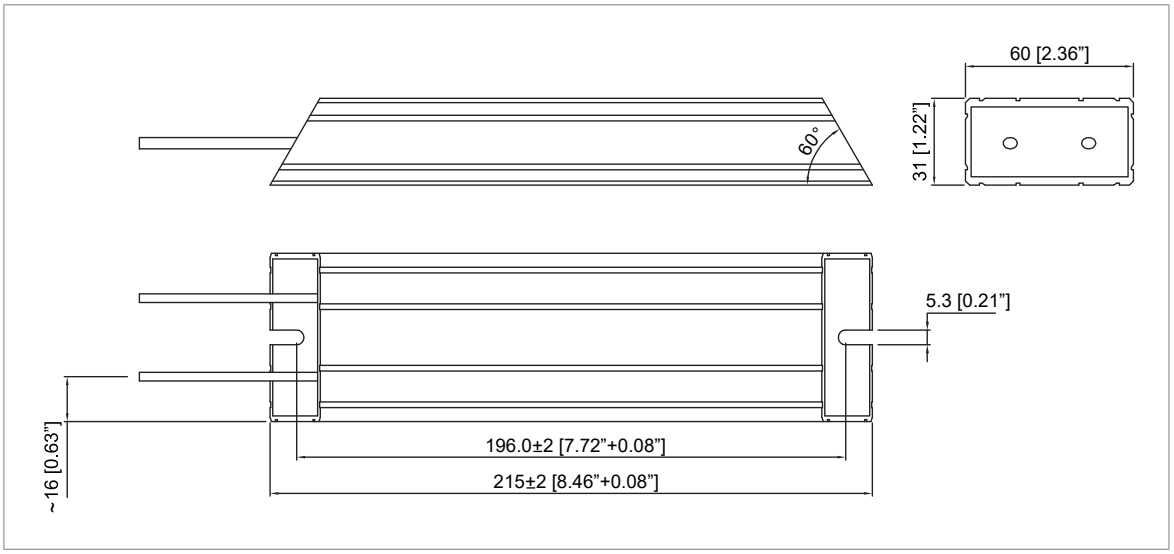
1 mm = 0.0394 in

OS200J04FP



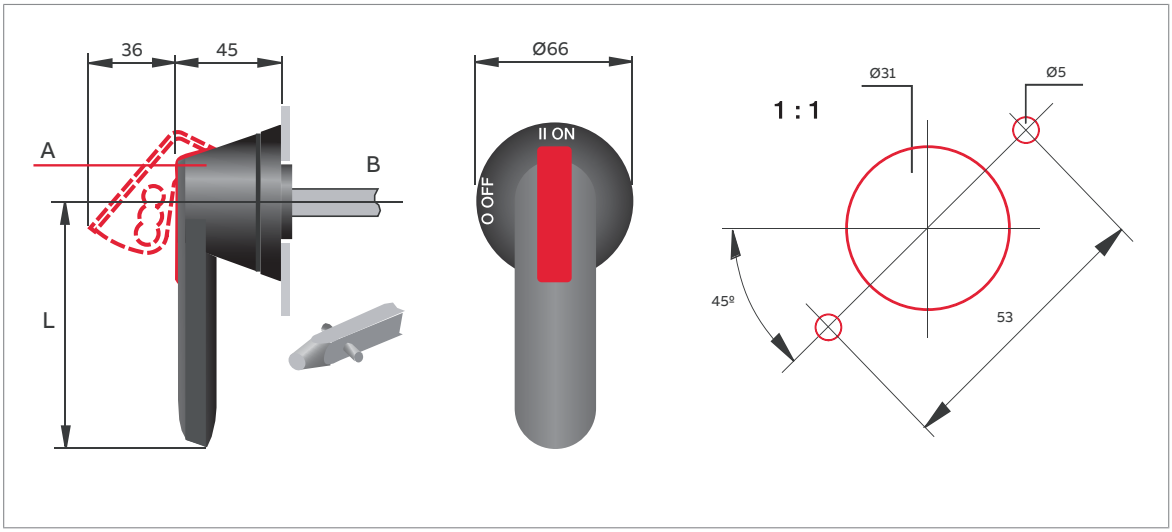
OS200				
mm (in)	**J01**	**J02**	**J03**	**J04**
A	89.5 (3.52)	135.5 (5.34)	181.5 (7.15)	227.5 (8.96)
A1	60.5 (2.38)	106.5 (4.19)	152.5 (6.00)	198.5 (7.82)
B1	79.5 (3.13)	125.5 (4.94)	171.5 (6.75)	217.5 (8.56)
C1	96.5 (3.80)	142.5 (5.61)	188.5 (7.42)	234.5 (9.23)

Charging resistors



Handles

OHB45-275

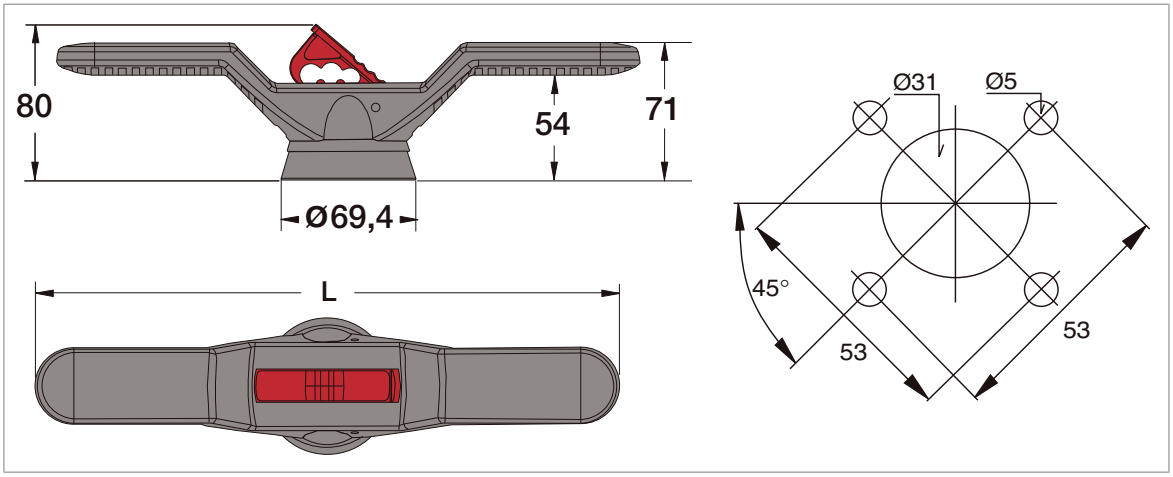


Handle type (A)	L (mm)	B (mm)
OHB45J6	45	6
OHB45J10	45	10
OHB65J6	64	6
OHB65J8	64	8
OHB65J10	64	10
OHB80J6	80	6
OHB80J8	80	8
OHB80J10	80	10
OHB95J10	95	10
OHB95J12	95	12
OHB125J10	125	10
OHB125J12	125	12
OHB145J12	145	12
OHB175J12	175	12
OHB274J12	274	12
OHB275J12	275	12

Dimensions in mm

1 mm = 0.0394 in

OHB150J12P



Handle type	L (mm)	Shaft (mm)	Notes
OHB150J12P	300	* (12 × 395 mm) or ** (12 × 465 mm)	Used with OT1250E12 *, OT2000E12 ** and OT1200U12 *

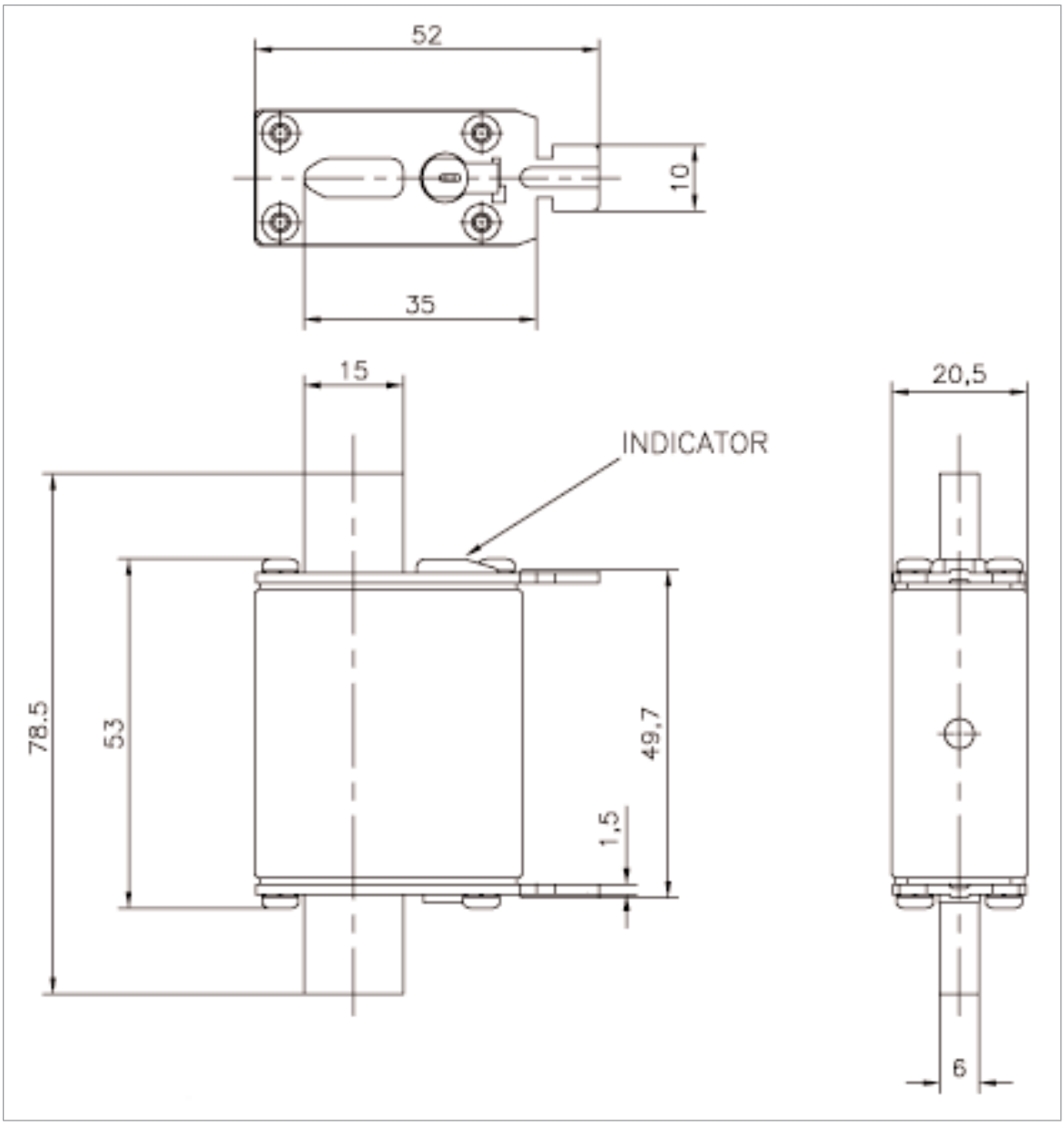
Dimensions in mm

1 mm = 0.0394 in

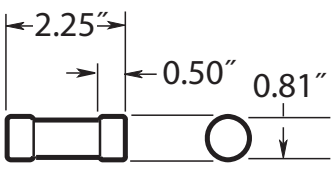
AC fuses

- **R1i...R4i**

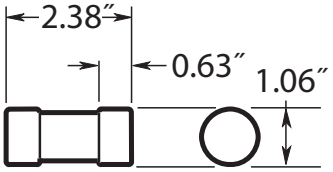
170M1559D, 170M1562D, 170M1565D, 170M1566D, 170M1569D (IEC)



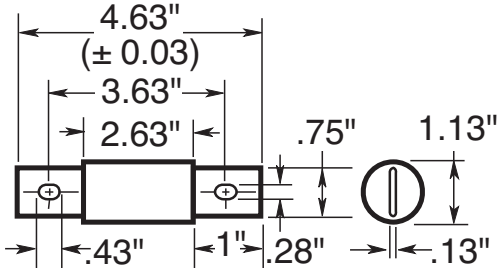
DFJ-12, DFJ-25, DFJ-50, DFJ-70, DFJ-125 (UL, CSA)



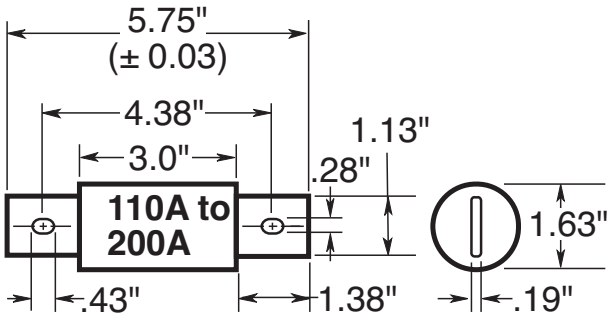
1A to 30A



35A to 60A



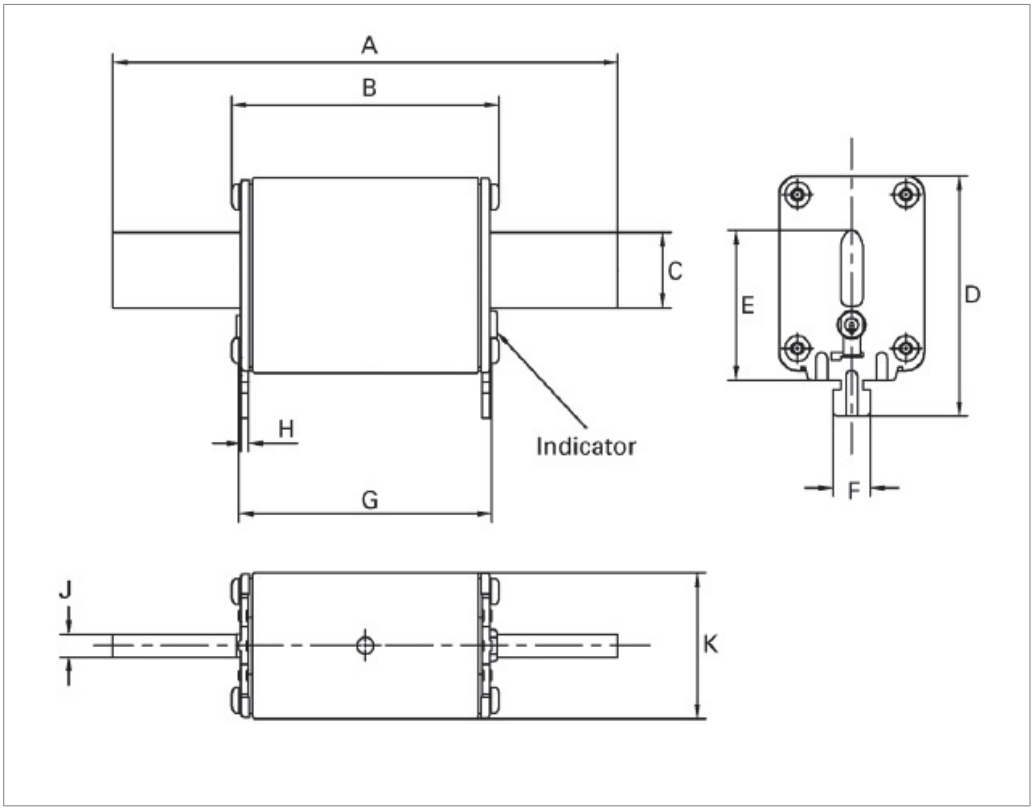
70A to 100A



1 in = 25.4 mm

R6i and R7i

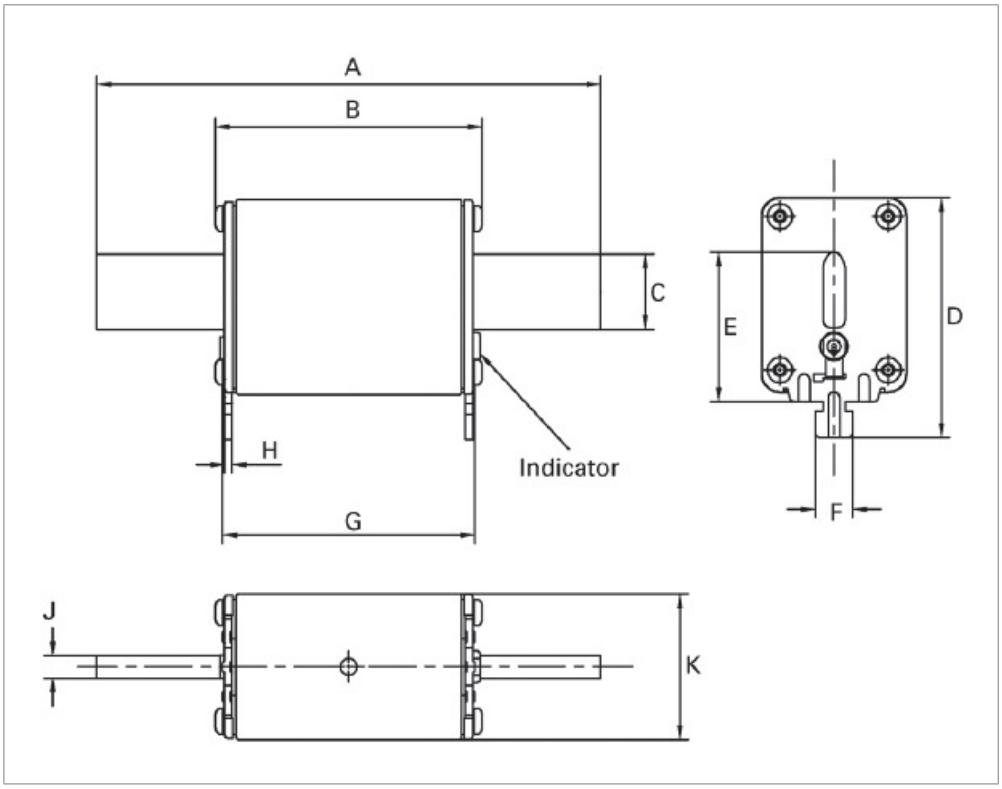
170M3816D, 170M3817D



Size	A	B	C	D	E	F	G	H	J	K
1	135.0	71.4	20.0	64	40	10	67.5	2.0	6	40

1 mm = 0.0394 in

170M5808D, 170M5809D



Size	A	B	C	D	E	F	G	H	J	K
2	135.0	71.4	25.1	72	48	10	67.5	2.0	6	54.0

1 mm = 0.0394 in

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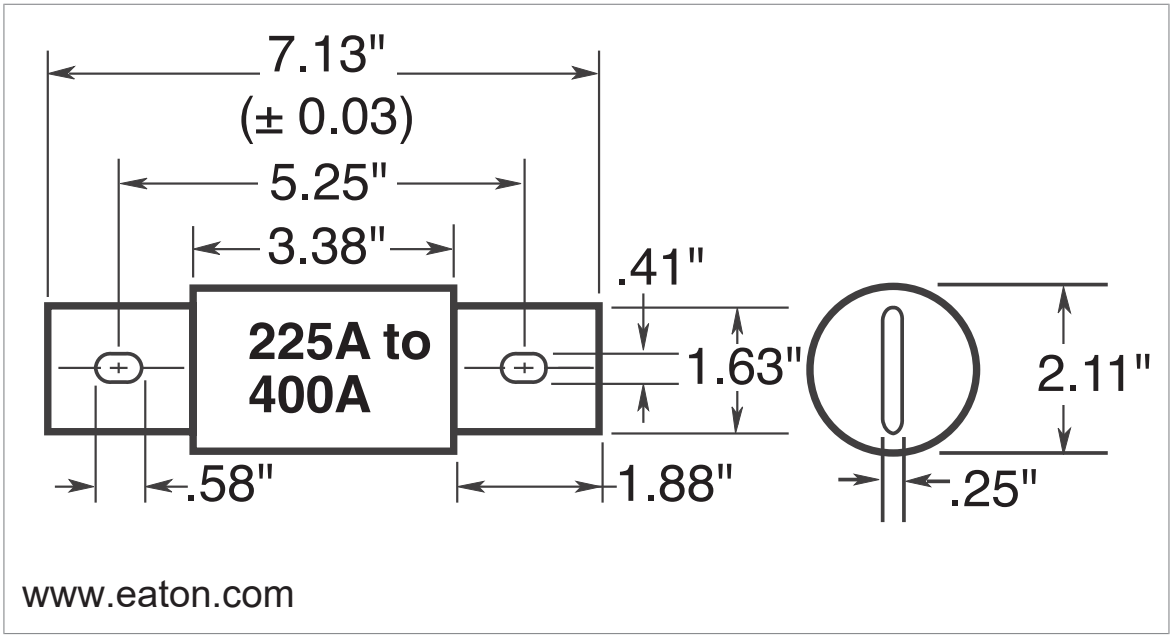
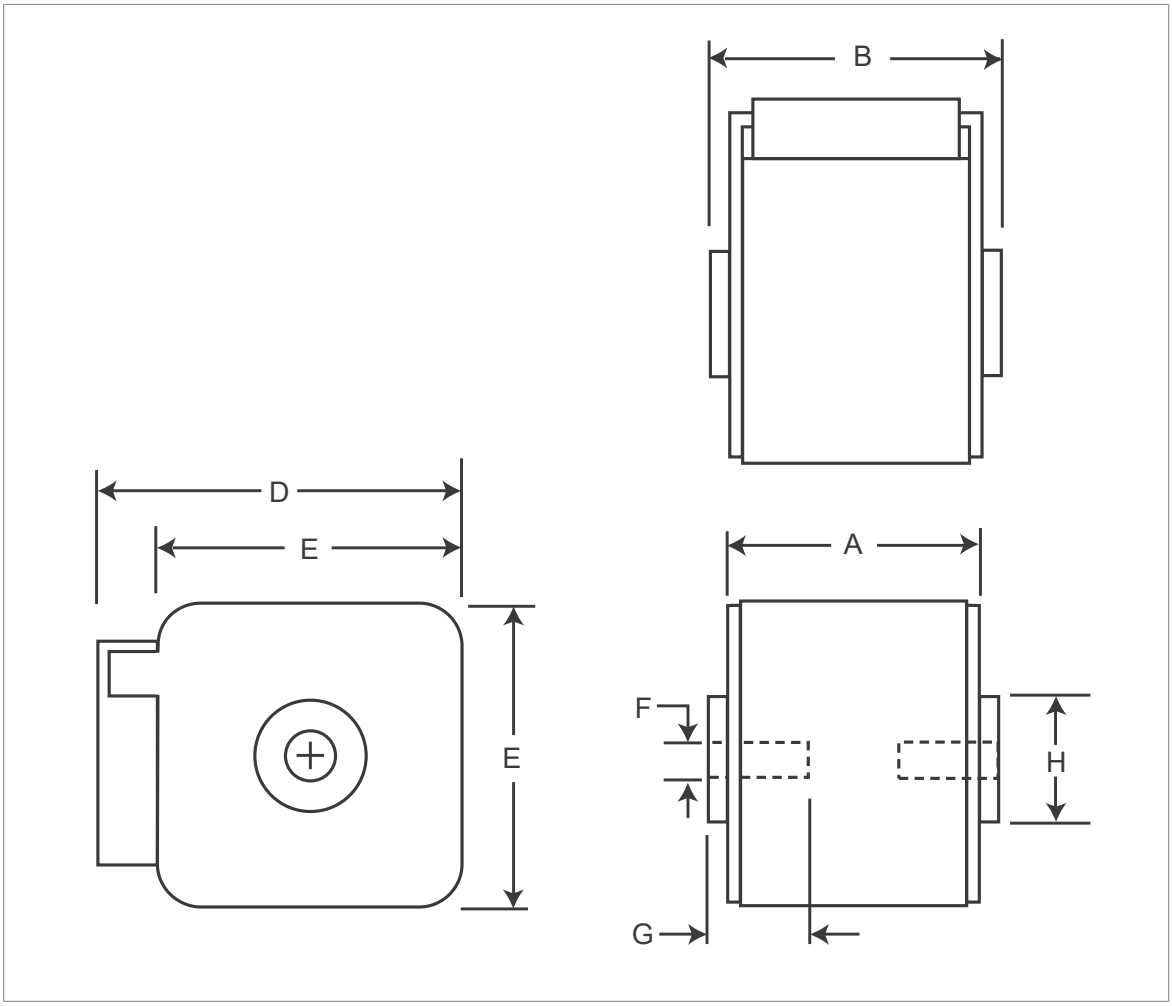
DFJ-225, DFJ300, DFJ400 (UL, CSA)



R8i

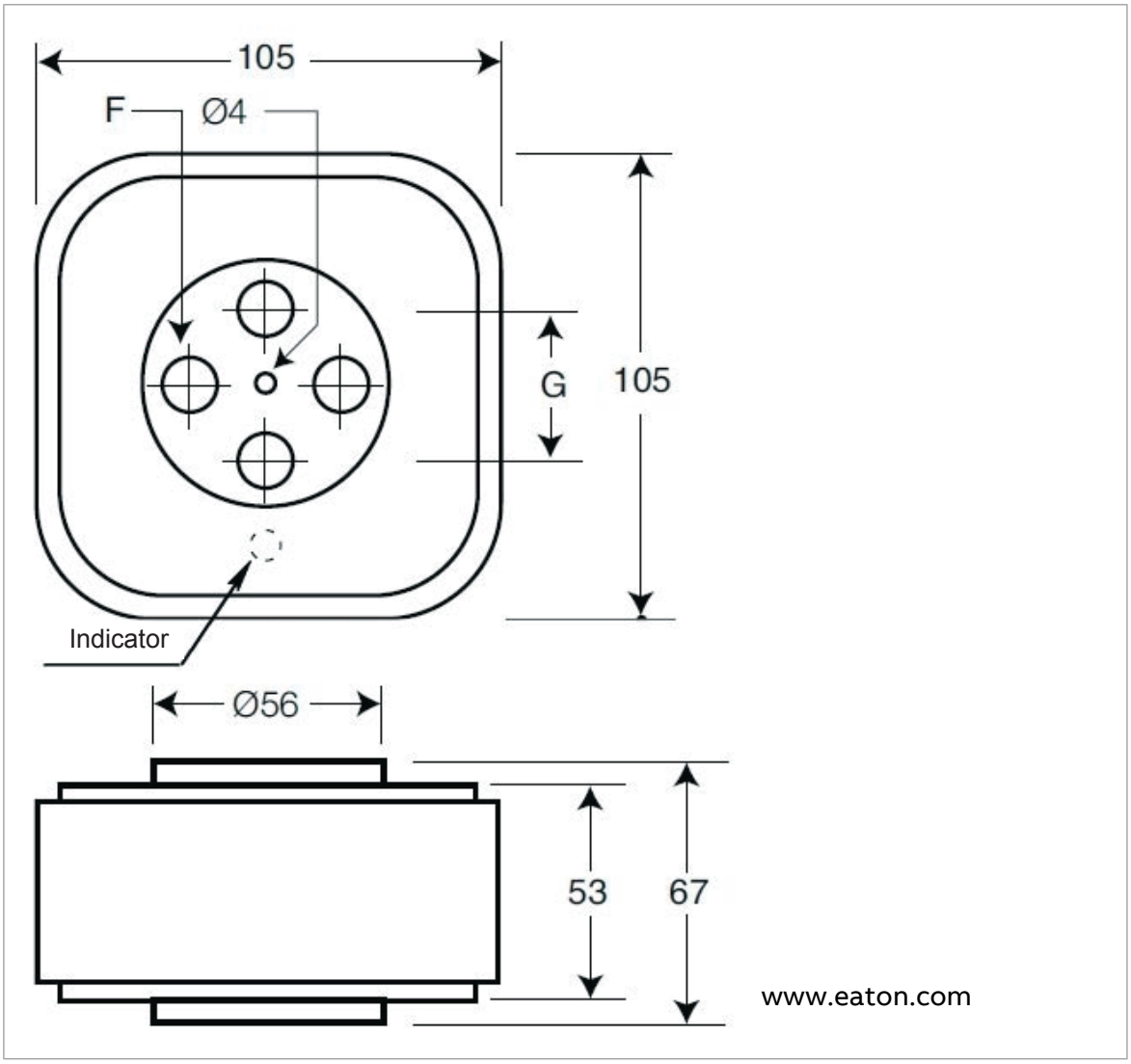
170M6408, 170M6410, 170M6414, 170M6416



Size	A	B	D	E	F	G	H
3	51	53	92	76	M12	10	ø30

1 mm = 0.0394 in

170M7059, 170M7062, 170M7063



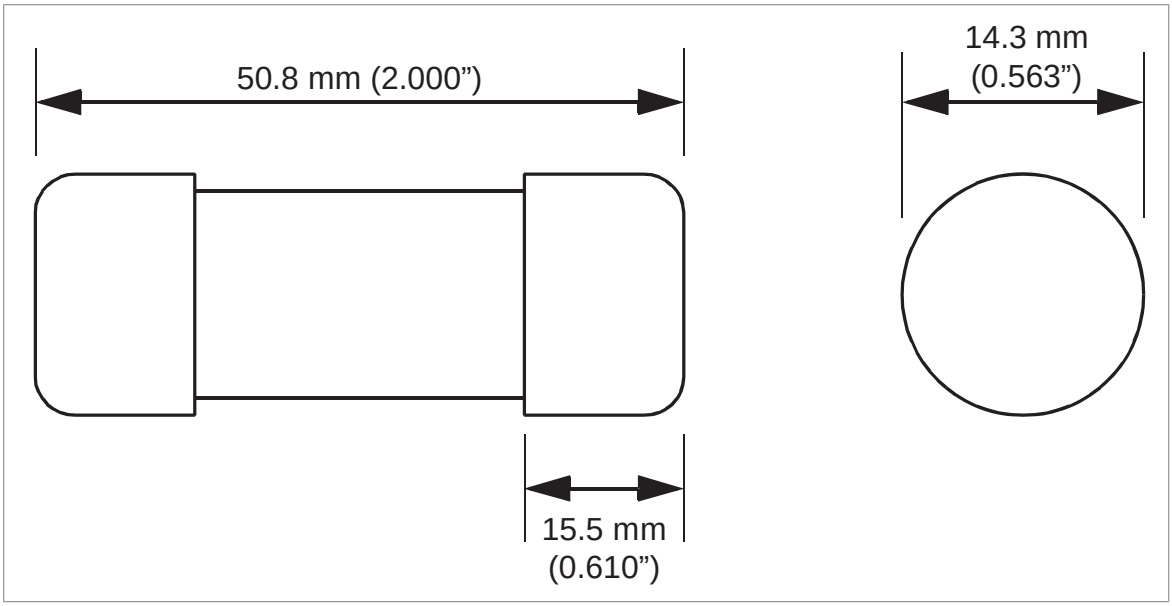
Size	F	G
4B	M10	33

1 mm = 0.0394 in

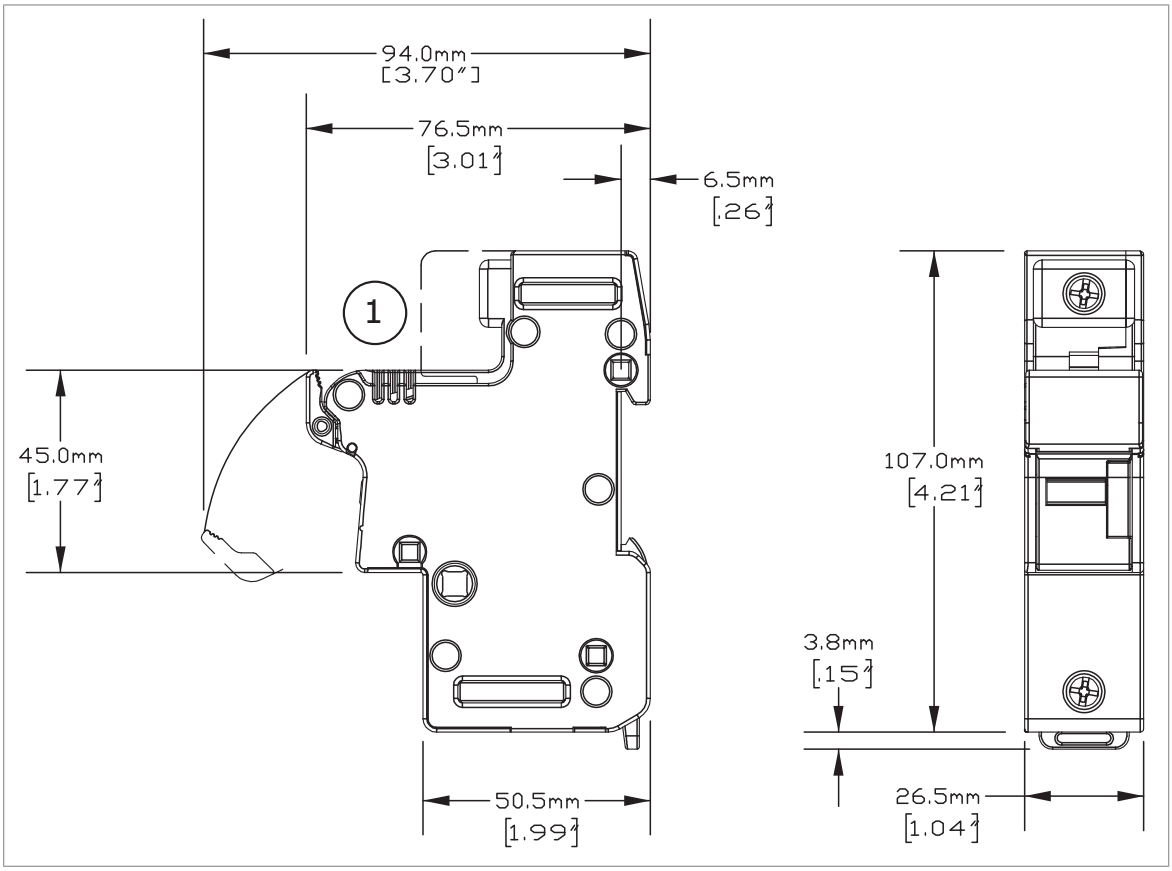
DC fuses

R1i...R4i

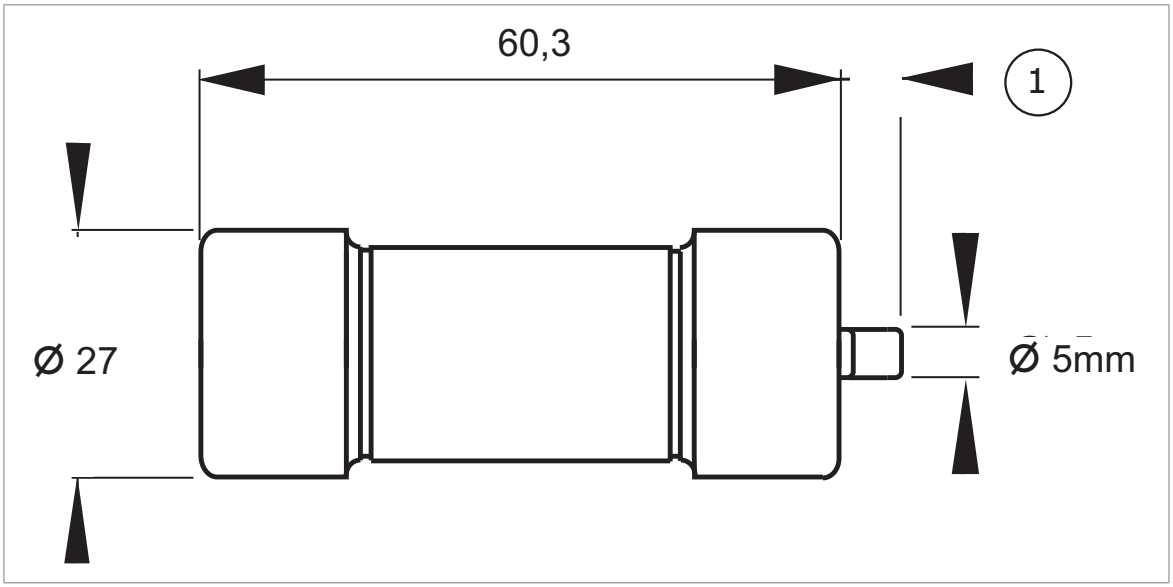
Fuse, 14 × 51 mm (IEC, UL, CSA)



Mersen (Ferraz-Shawmut) US141 (Z331153F) fuse disconnector (for 14 × 51 mm fuses) (IEC, UL, CSA)

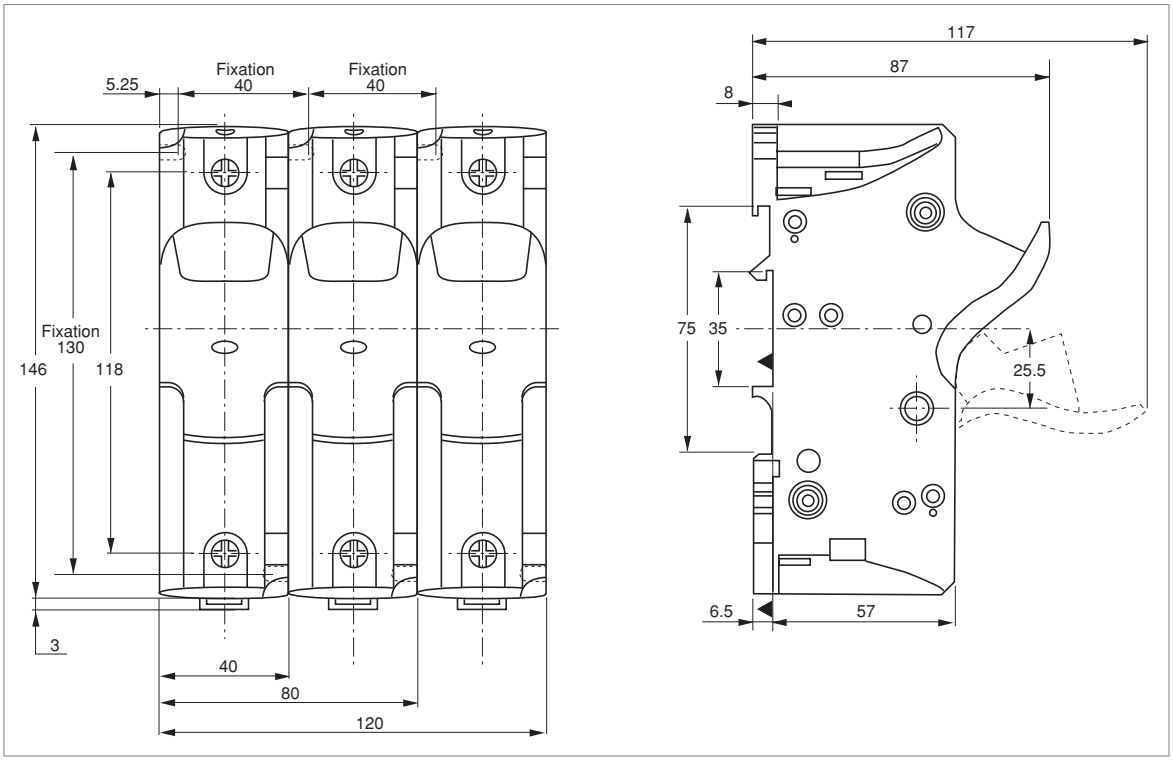


Fuse, 27 × 60 mm (IEC, UL, CSA)



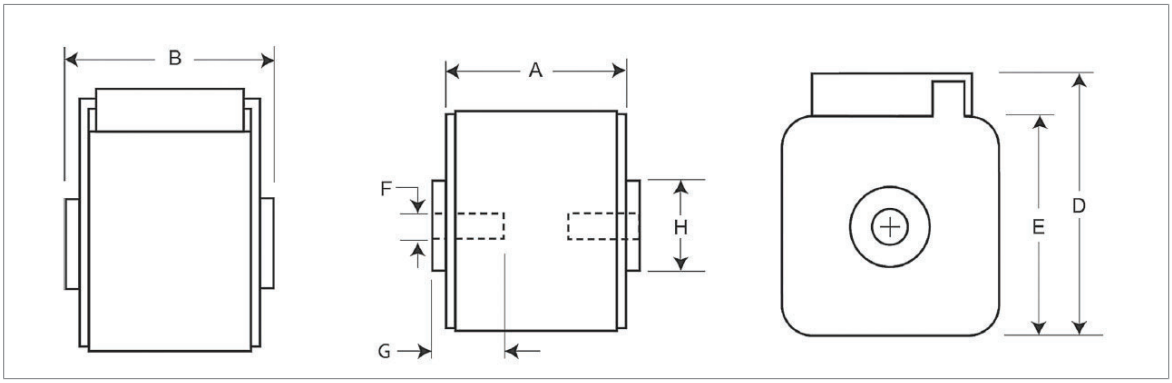
1	7 mm indicator travel

Mersen (Ferraz-Shawmut) US271MI (R227600C) fuse disconnector (for 27 × 60 mm fuses) (IEC, UL, CSA)



R6i and R7i

170M4393, 170M4391 (IEC, UL, CSA)



Size	A	B	D	E	F	F[1] (in)	Min G	Hø
1	74	75	69	93	M8	5/16-18 UNC-2B	8	20

1 mm = 0.0394 in

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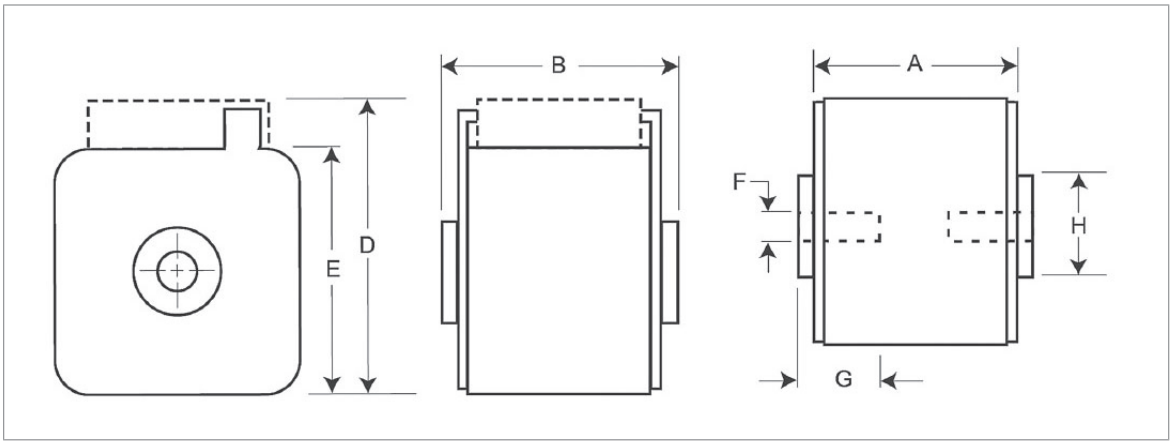
170M4413, 170M4415 (IEC, UL, CSA)



Size	A	B	D	E	F	F[2] (in)	G	H
1	50	51	69	53	M8	5/16-18 UNC-2B	8	N20

1 mm = 0.0394 in

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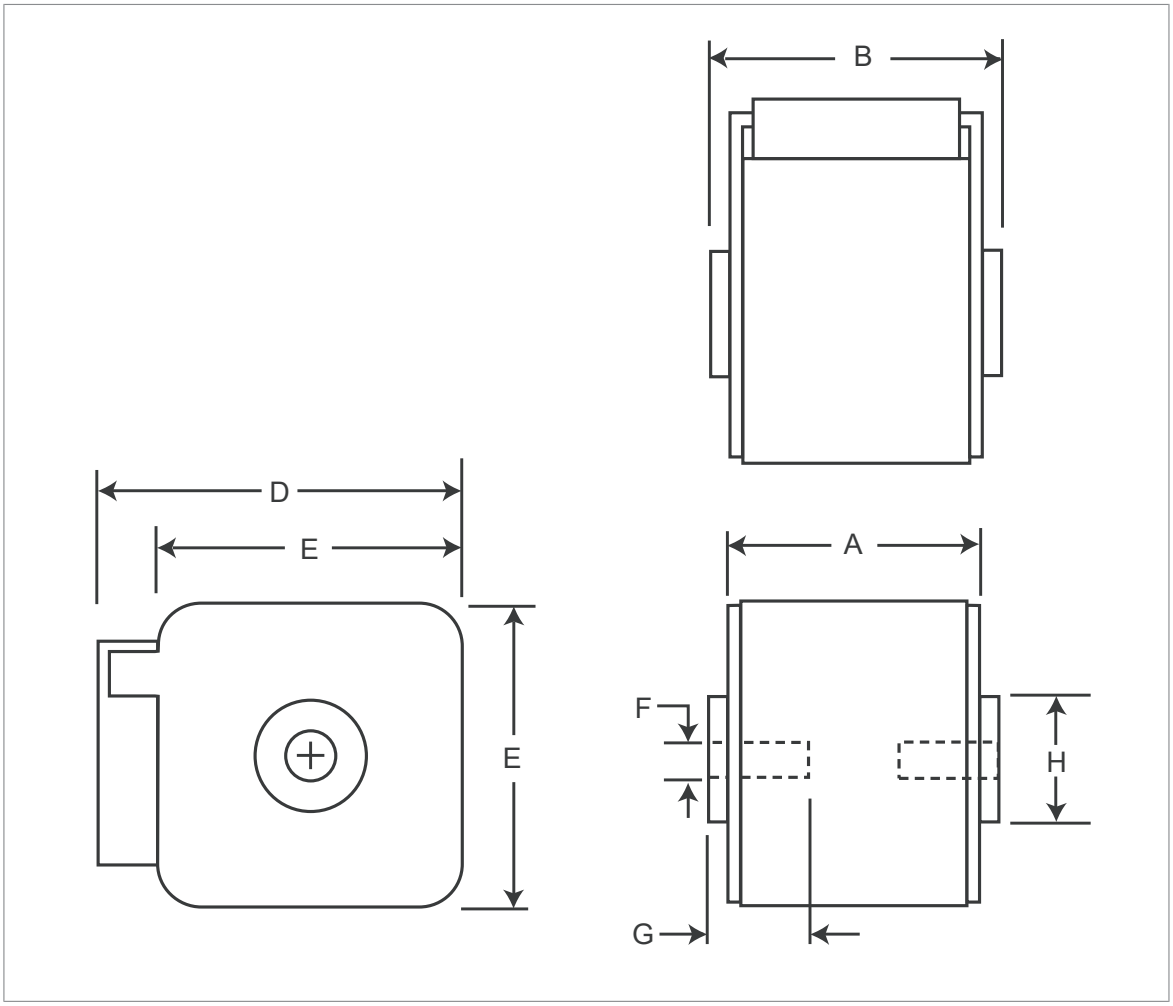
R8i

170M6413, 170M6415, 170M6417, 170M6419 (IEC, UL, CSA)



Size	A	B	D	E	F	G	H
3	51	53	92	76	M12	10	ø30
3*	51	65	92	76	M12	10	ø30

*For size 3 1600 … 2000 A

1 mm = 0.0394 in

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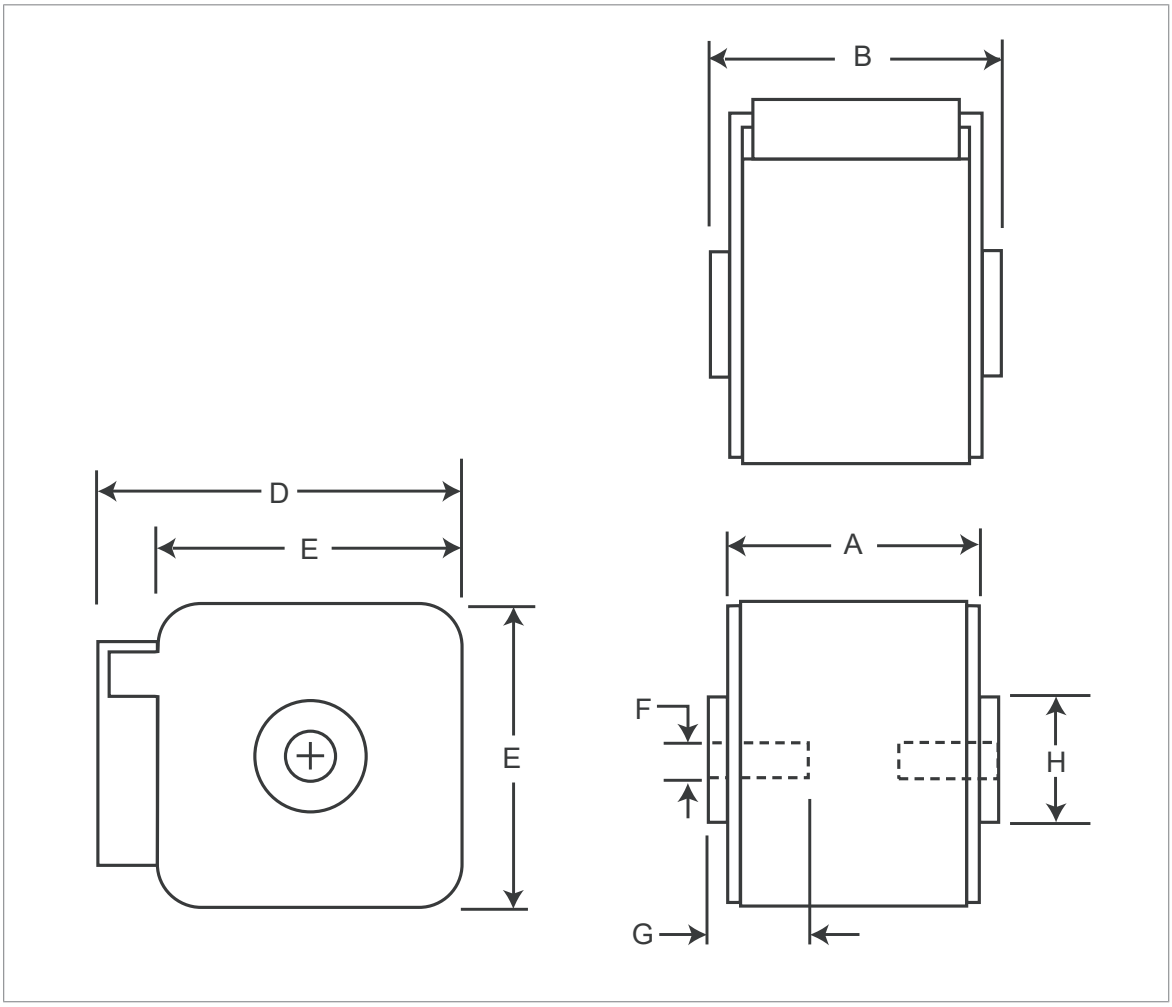
170M6544, 170M6546, 170M6549 (IEC, UL, CSA)



Size	A	B	D	E	F	G	H
3	81	83	92	76	M12	10	ø30

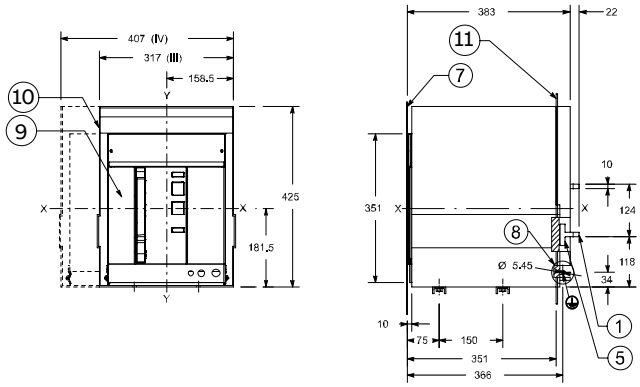
1 mm = 0.0394 in

www.eaton.com

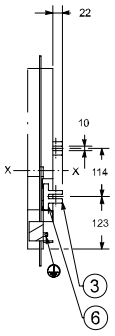
Main circuit breakers

E2.2S (IEC)

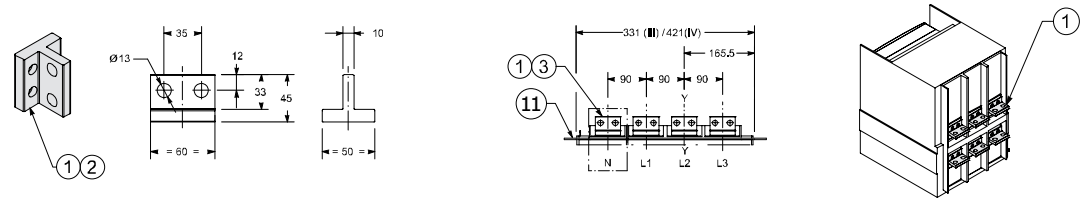
E2.2 B/N/S/H 2000A



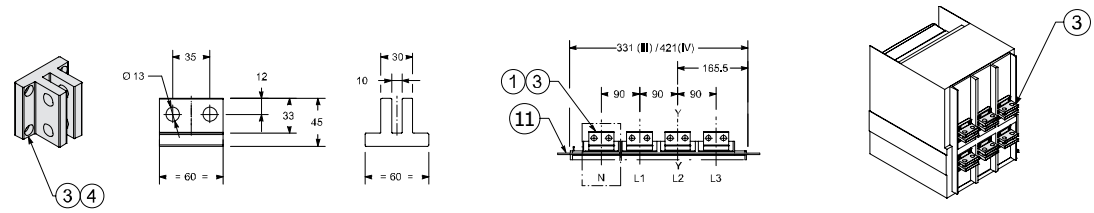
E2.2 N/S/H 2500A



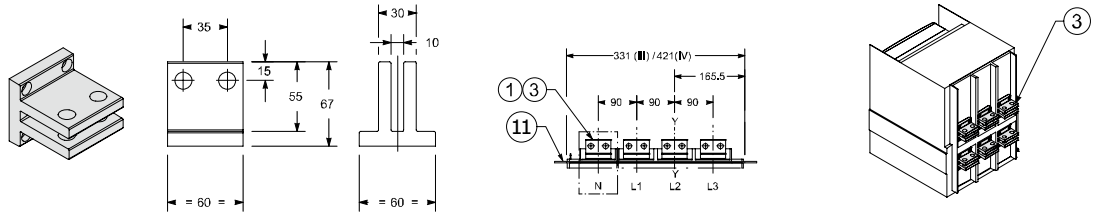
E2.2 B/N/S/H 2000A



E2.2 N/S/H 2500A



E2.2 N/S/H 2500A LHR/LVR

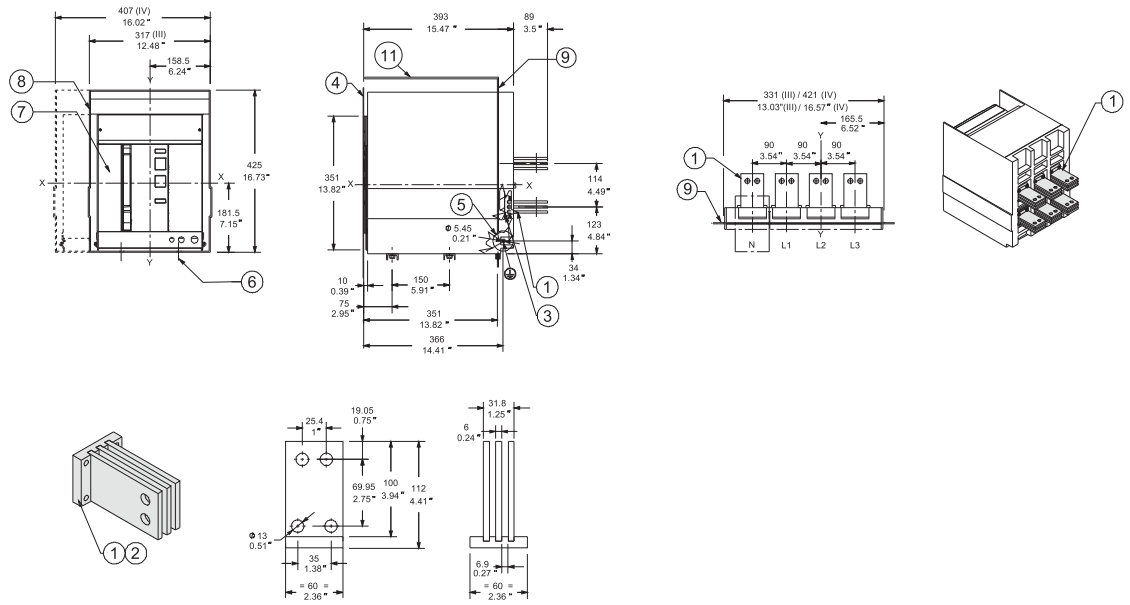


1	Horizontal terminals 2000 A	7	Door position
2	Vertical terminals 2000 A (not in use in the design presented in this manual)	8	Earthing device
3	Horizontal terminals 2500 A	9	Mobile part
4	Vertical terminals 2500 A (not in use in the design presented in this manual)	10	Fixed part
5	Tightening torque 2000 A 8.6 N·m (6.3 lbf·ft)	11	Segregation (where envisaged)
6	Tightening torque 2500 A 8.6 N·m (6.3 lbf·ft)		

E2.2S-A (UL/CSA)

E2.2 B-A, N-A, S-A, H-A, V-A 250A - 2000A

HR

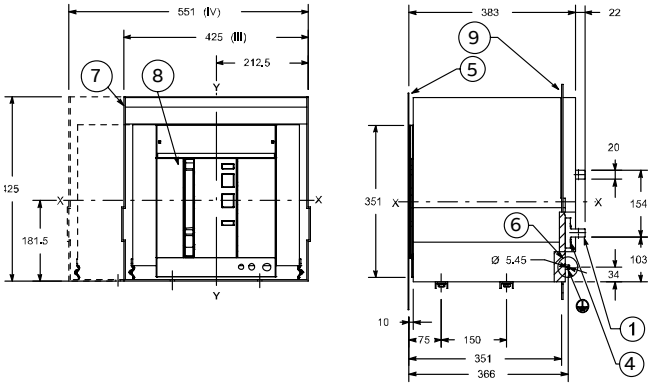


1	Horizontal terminals 1600 A … 2000 A	7	Moving part
2	Vertical terminals 1600 A … 2000 A (not in use in the design presented in this manual)	8	Fixed part
3	Tightening torque 8.6 N·m (6.3 lbf·ft)	9	Segregation
4	Door position	10	Connected, test, disconnected distances
5	Grounding	11	Roof insulation or insulated material
6	Mounting fixed part screws		

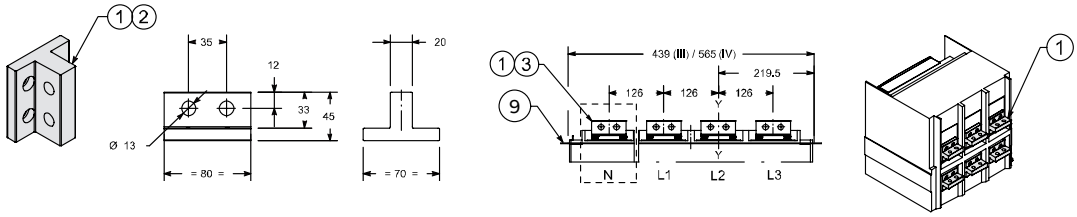
E4.2S (IEC)

HR

E4.2 N/S/H 3200A



E4.2 N/S/H 3200A

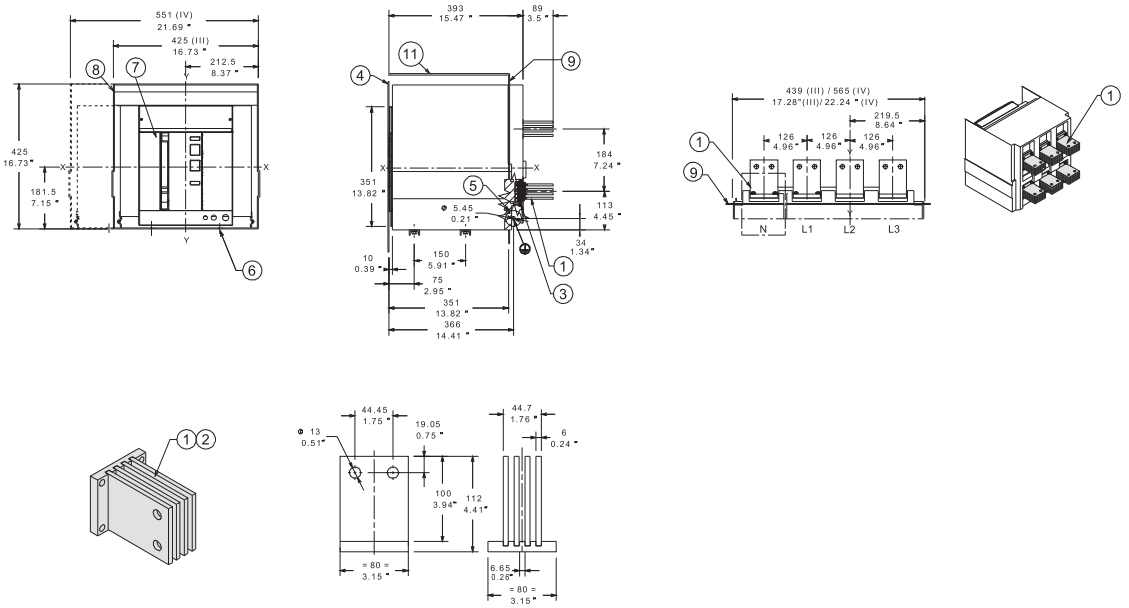


1	Horizontal terminals 3200 A	7	Mobile part
2	Vertical terminals 3200 A (not in use in the design presented in this manual)	8	Fixed part
3	Horizontal terminals 4000 A	9	Segregation (where envisaged)
4	Tightening torque 3200 A 20 N·m (15 lbf·ft)		
5	Door position		
6	Earthing device		

E4.2S-A (UL/CSA)

E4.2 S-A, H-A, V-A 800A - 2500A

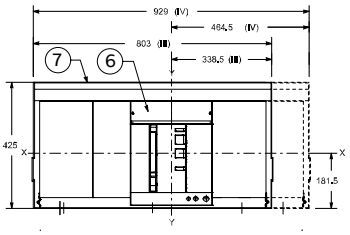
HR



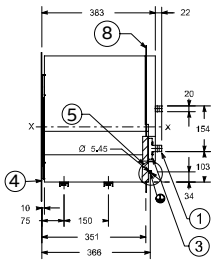
1	Horizontal terminals 2500 A	7	Moving part
2	Vertical terminals 2500 A (not in use in the design presented in this manual)	8	Fixed part
3	Tightening torque 20 N·m (15 lbf·ft)	9	Segregation
4	Door position	10	Connected, test, disconnected distances
5	Grounding	11	Roof insulation or insulated material
6	Mounting fixed part screws		

E6.2H (IEC)

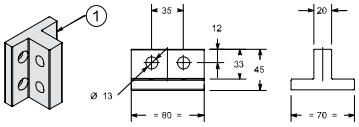
HR

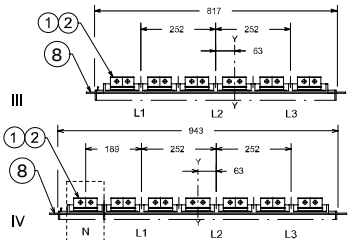


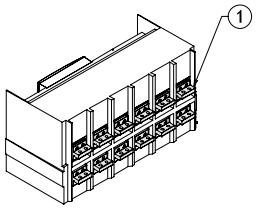
E6.2 H/V 4000-5000A



E6.2 H/V 4000-5000A



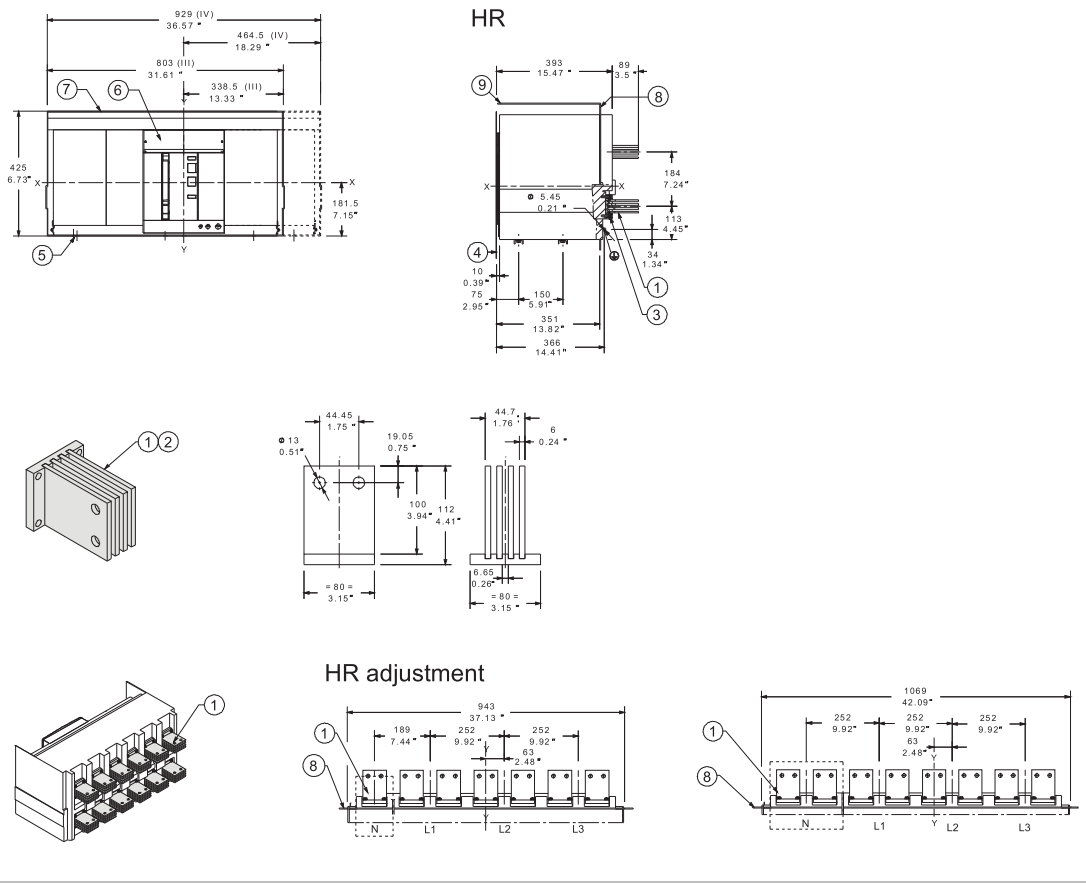




1	Horizontal terminals 4000-5000 A	6	Mobile part
2	Horizontal terminals 6300 A	7	Fixed part
3	Tightening torque 4000-5000 A 20 N·m (15 lbf·ft)	8	Segregation
4	Door position		
5	Earthing device		

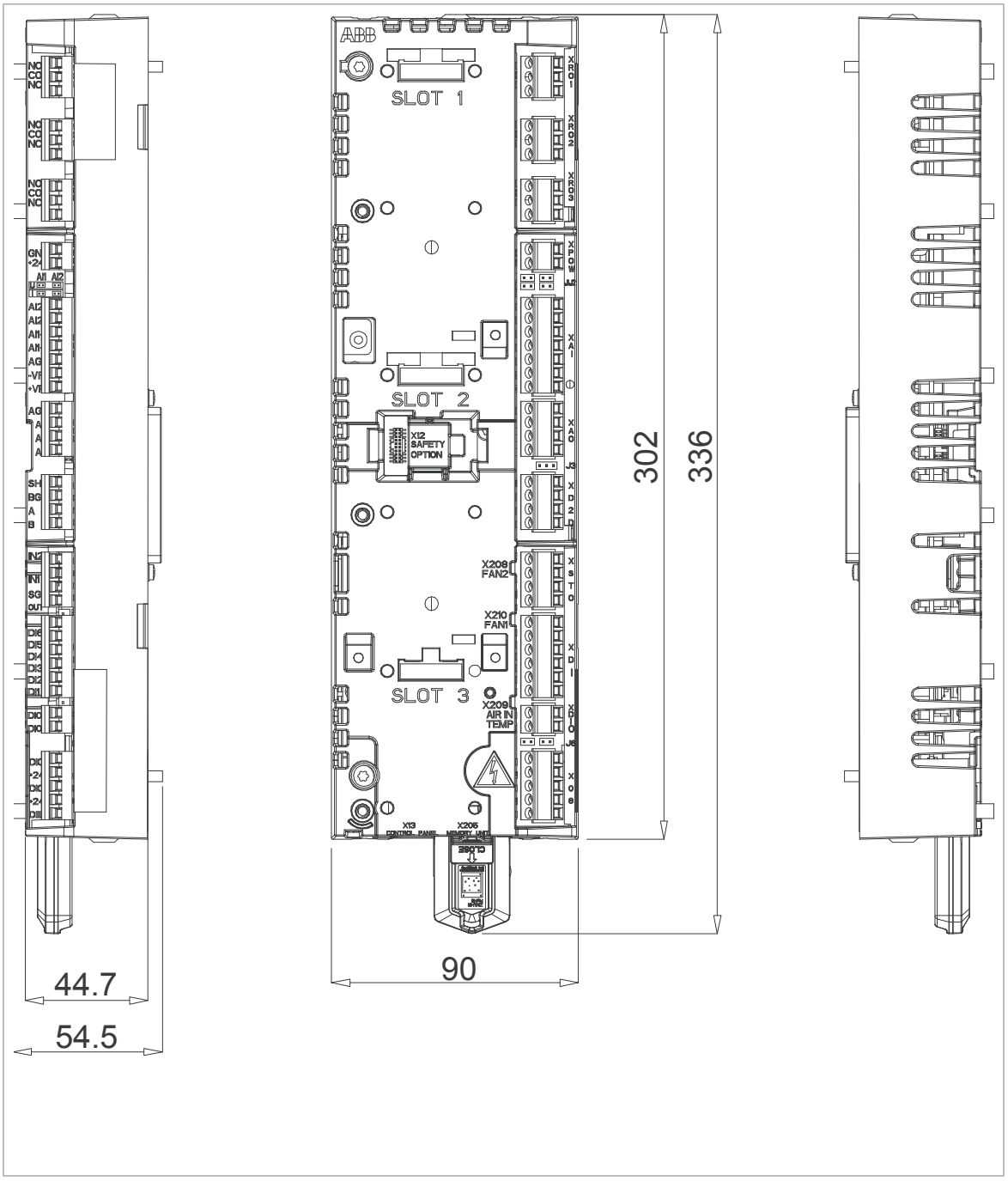
E6.2V-A (UL/CSA)

E6.2 H-A, V-A, L-A 4000A - 5000A

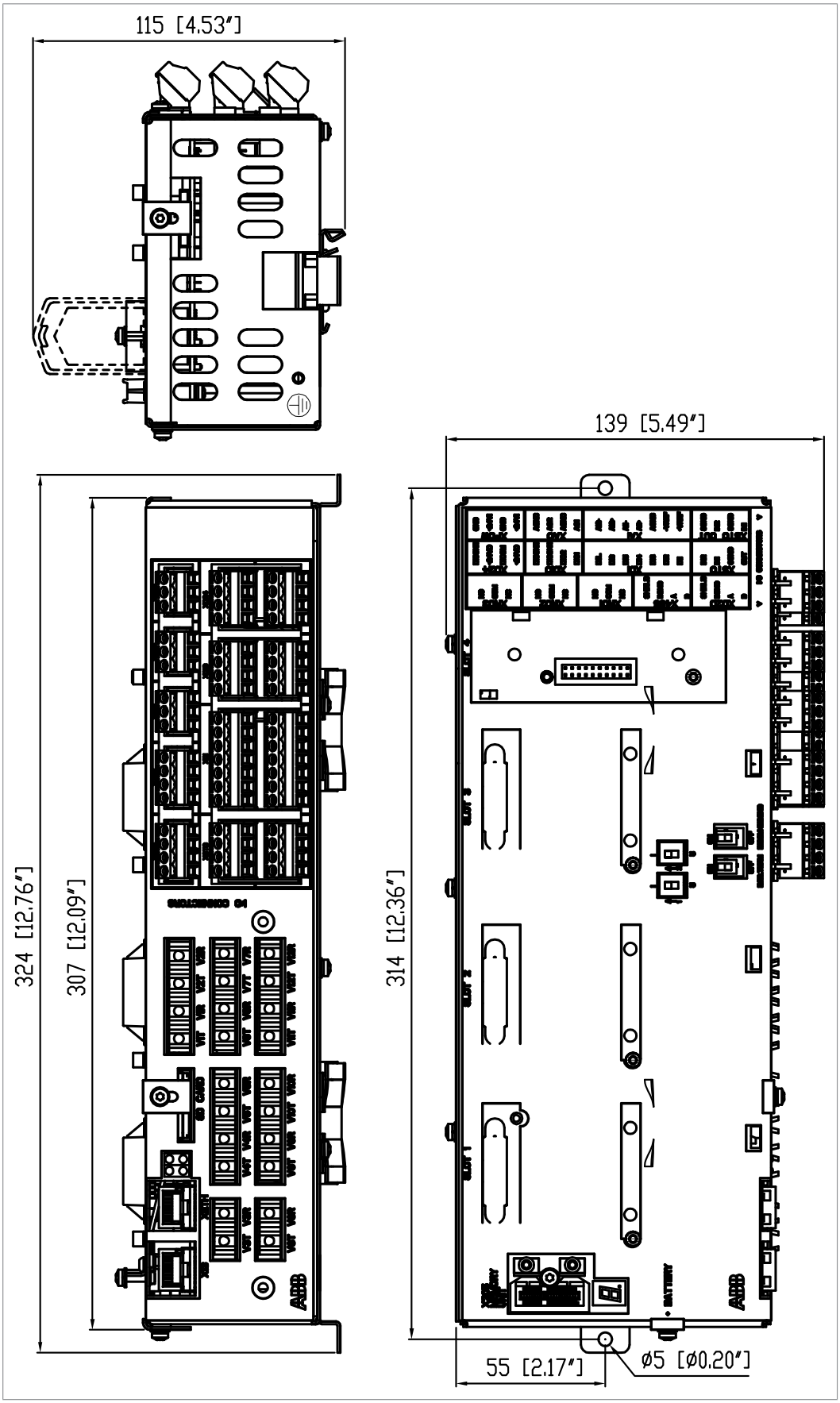


1	Horizontal terminals 5000 A	6	Moving part
2	Vertical terminals 5000 A (not in use in the design presented in this manual)	7	Fixed part
3	Tightening torque 20 N·m (15 lbf·ft)	8	Segregation
4	Door position	9	Roof insulation or insulated material
5	Mounting fixed part screws M8×25 provided Tightening torque 20 N·m (15 lbf·ft)		

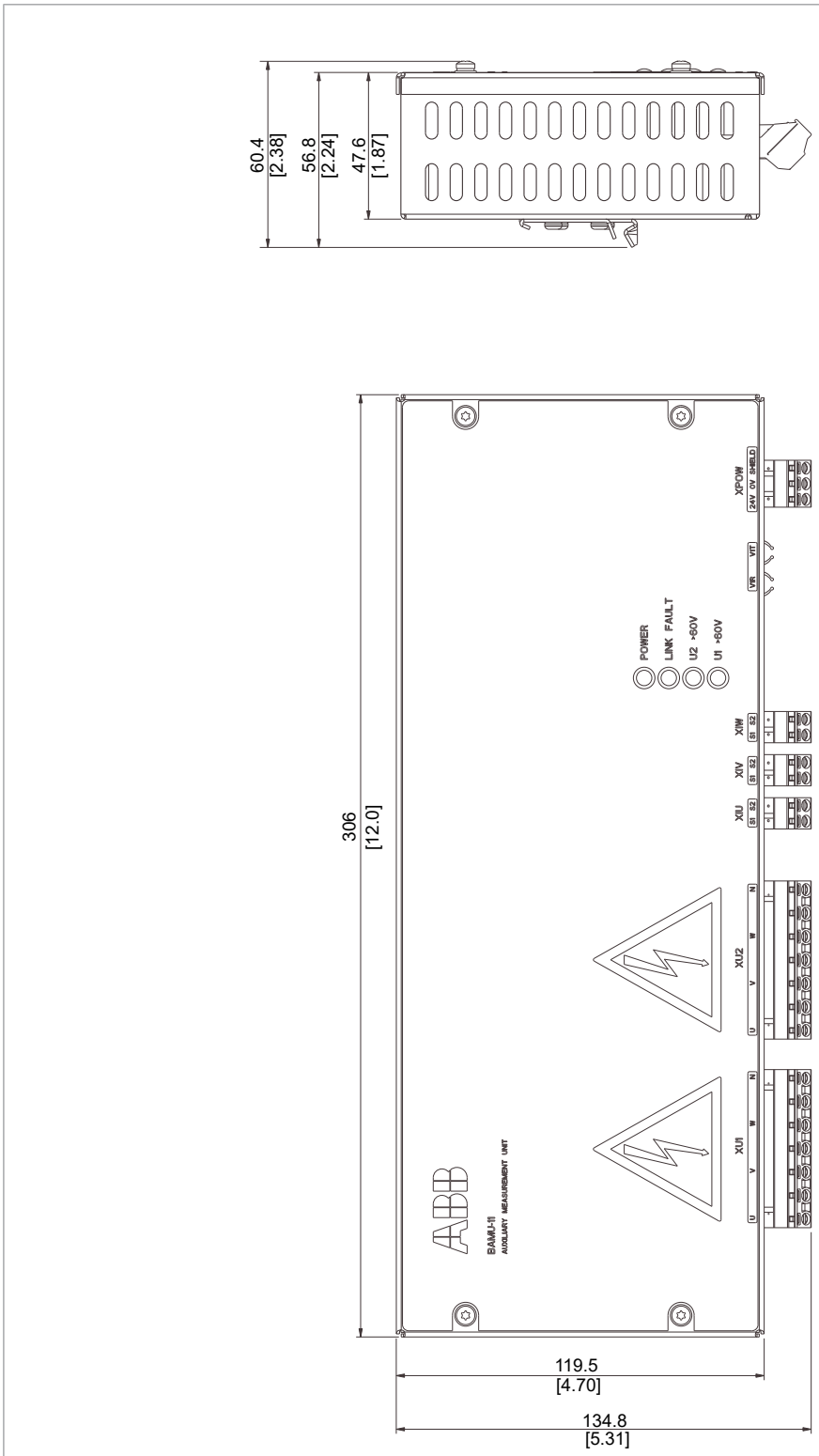
ZCU control unit



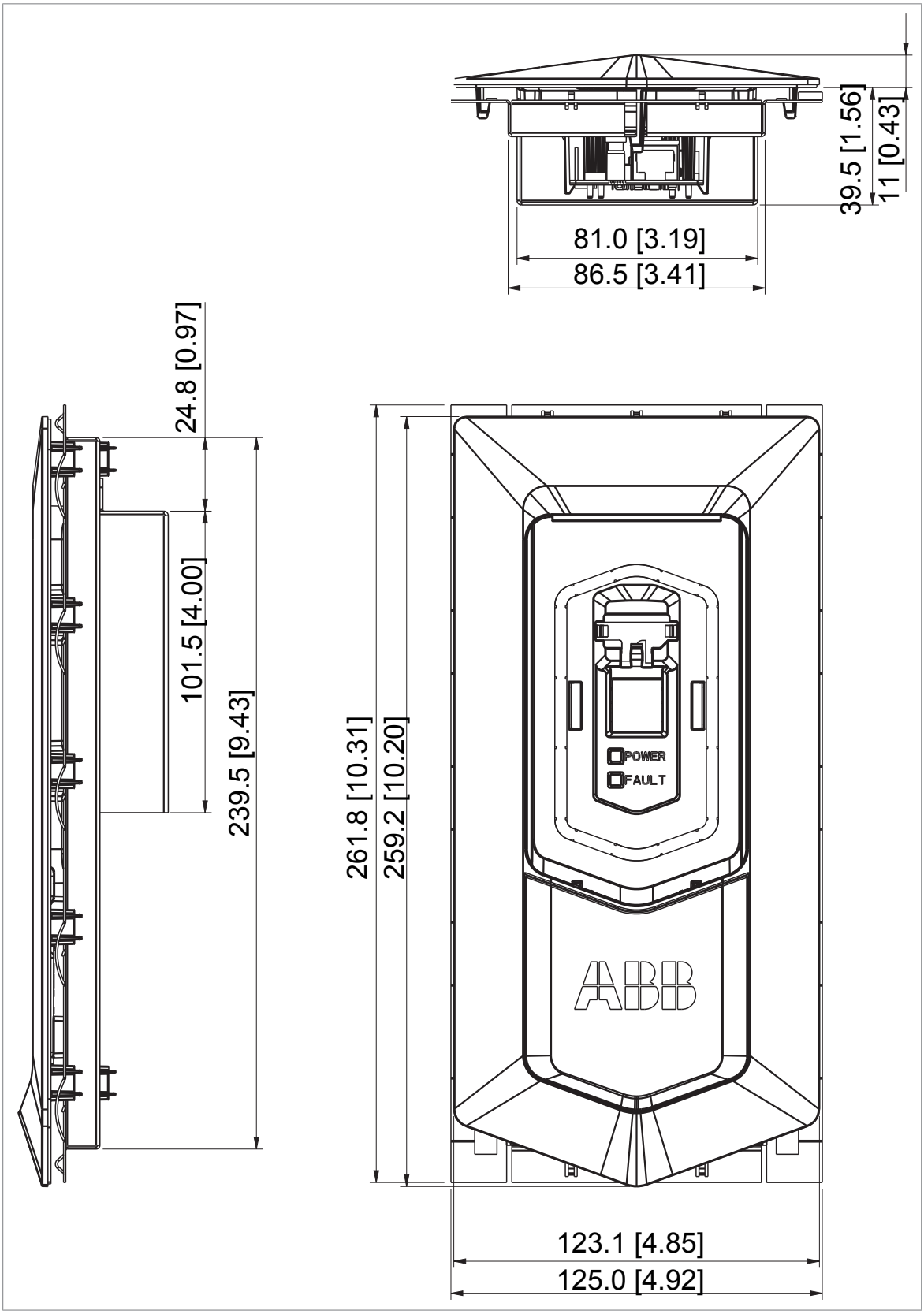
BCU control unit



BAMU voltage/current measurement unit



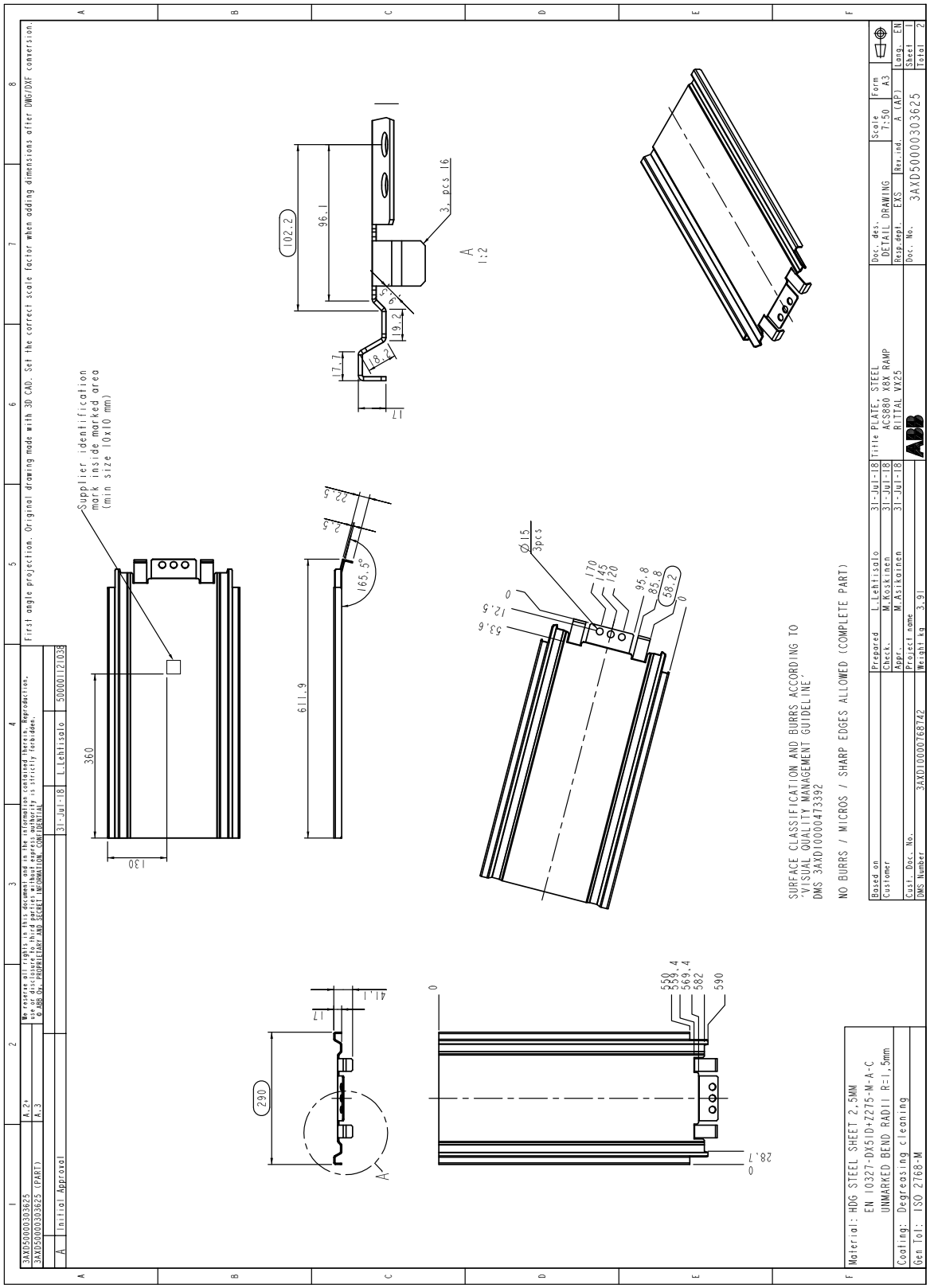
ACS-AP-x control panel with DPMP-01 door mounting kit



Cutting in the cabinet door: 109 mm × 223 mm (4.29 in × 8.78 in)

Plate thickness: 1.5 … 2.5 mm (0.06 … 0.10 in)

Ramp


Supplier identification
mark inside marked area
(min size 10x10 mm)
360
130
611.9
165.5°
22.5
22.5
102.2
96.1
3. pcs 16
19.2
18.4
17.7
17
A
1:2
Ø15
3pcs
170
145
120
95.8
85.8
58.2
53.6
12.5
0
41.1
290
550
559.4
569.4
582
590
28.7
SURFACE CLASSIFICATION AND BURRS ACCORDING TO
'VISUAL QUALITY MANAGEMENT GUIDELINE'.
DMS 3AXD10000473392
NO BURRS / MICROS / SHARP EDGES ALLOWED (COMPLETE PART)
Material: HDG STEEL SHEET 2,5MM
EN 10327-DX51D+Z275-M-A-C
UNMARKED BEND RADII R=1,5mm
Coating: Degreasing cleaning
Gen Tol.: ISO 2768-M
Prepared L.Lehtisalo 31-Jul-18
Check. M.Koskinen 31-Jul-18
Appr. M.Asikainen 31-Jul-18
Project name 3,91
Weight kg
Title PLATE, STEEL
ACS880 X8X RAMP
RITTAL VX25
Based on
Customer
Cust. Doc. No.
DMS Number 3AXD10000760742
Doc. des. DETAIL DRAWING
Resp.dept. EKS
Doc. No. 3AXD50000303625
Scale 7:50
Rev.ind. A (AP)
Form A3
Lang. EN
Sheet 1
Total 2
3AXD50000303625 A.2+
3AXD50000303625 (PART) A.3
A Initial Approval
31-Jul-18 L.Lehtisalo 5000012038
First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
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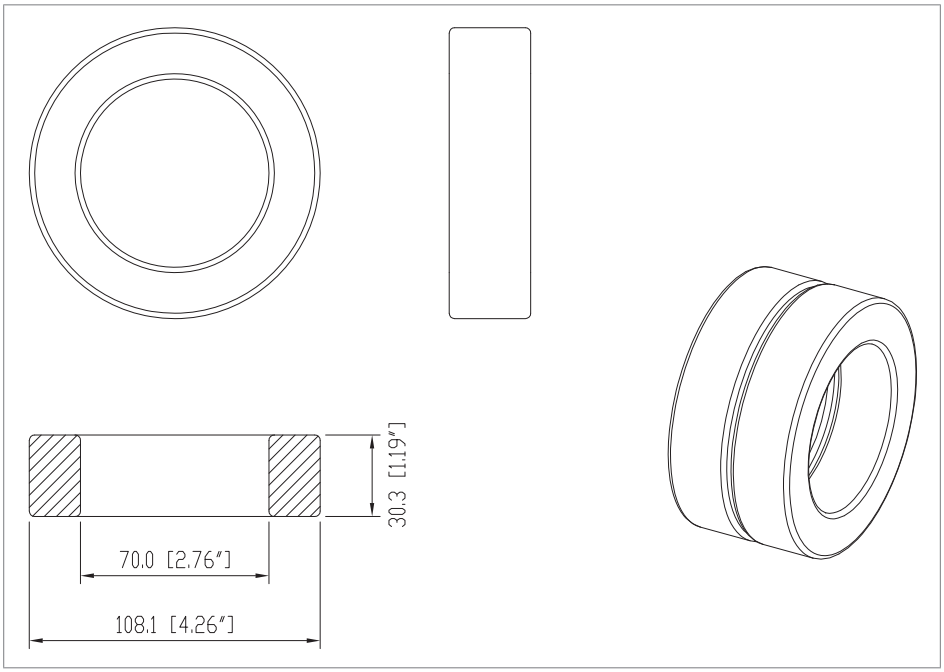
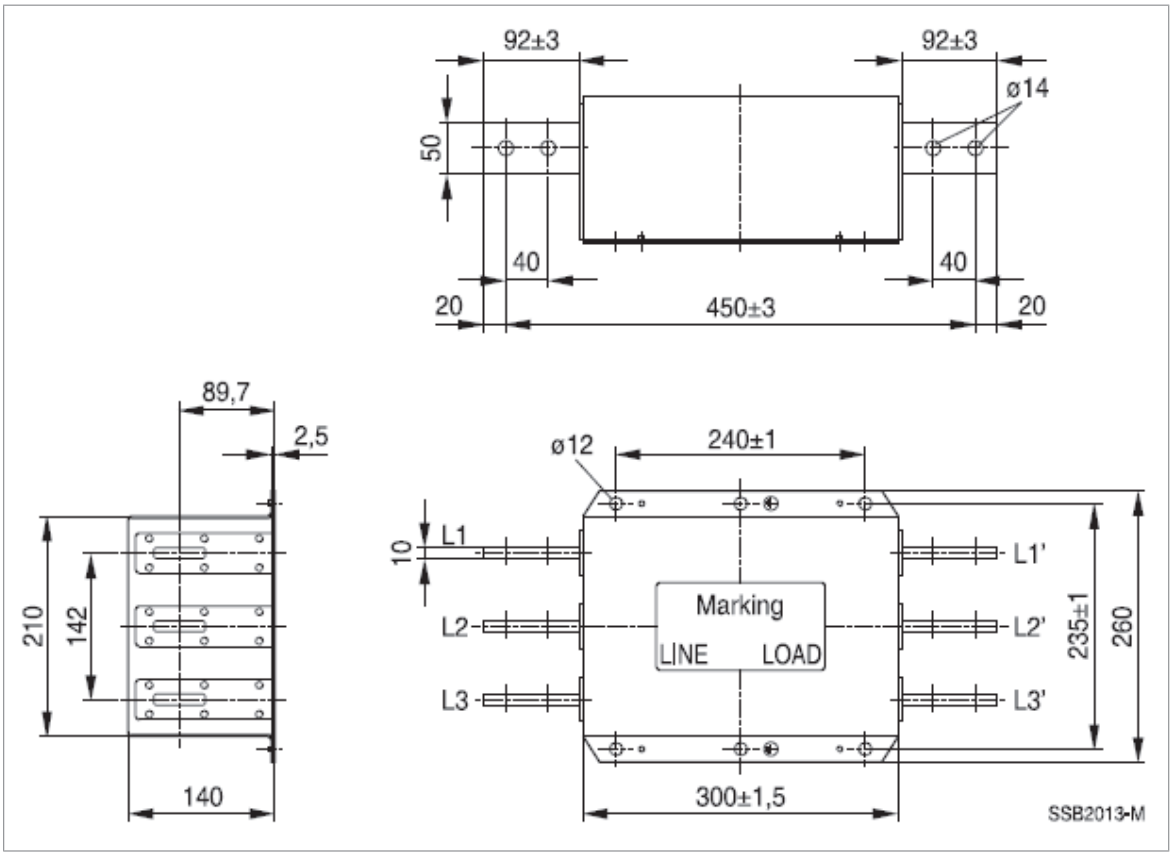
Common mode filter

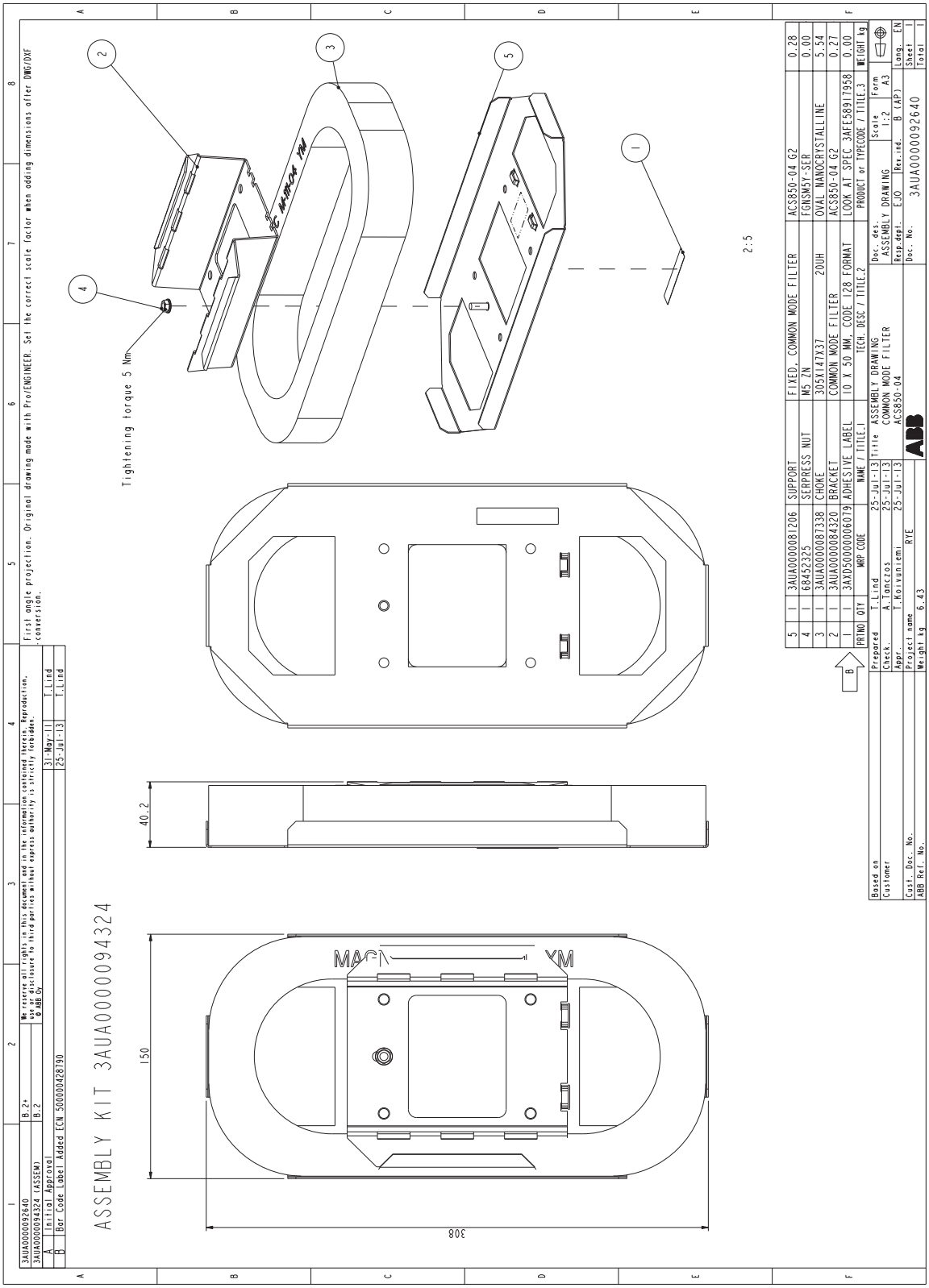


RFI filter and related accessories

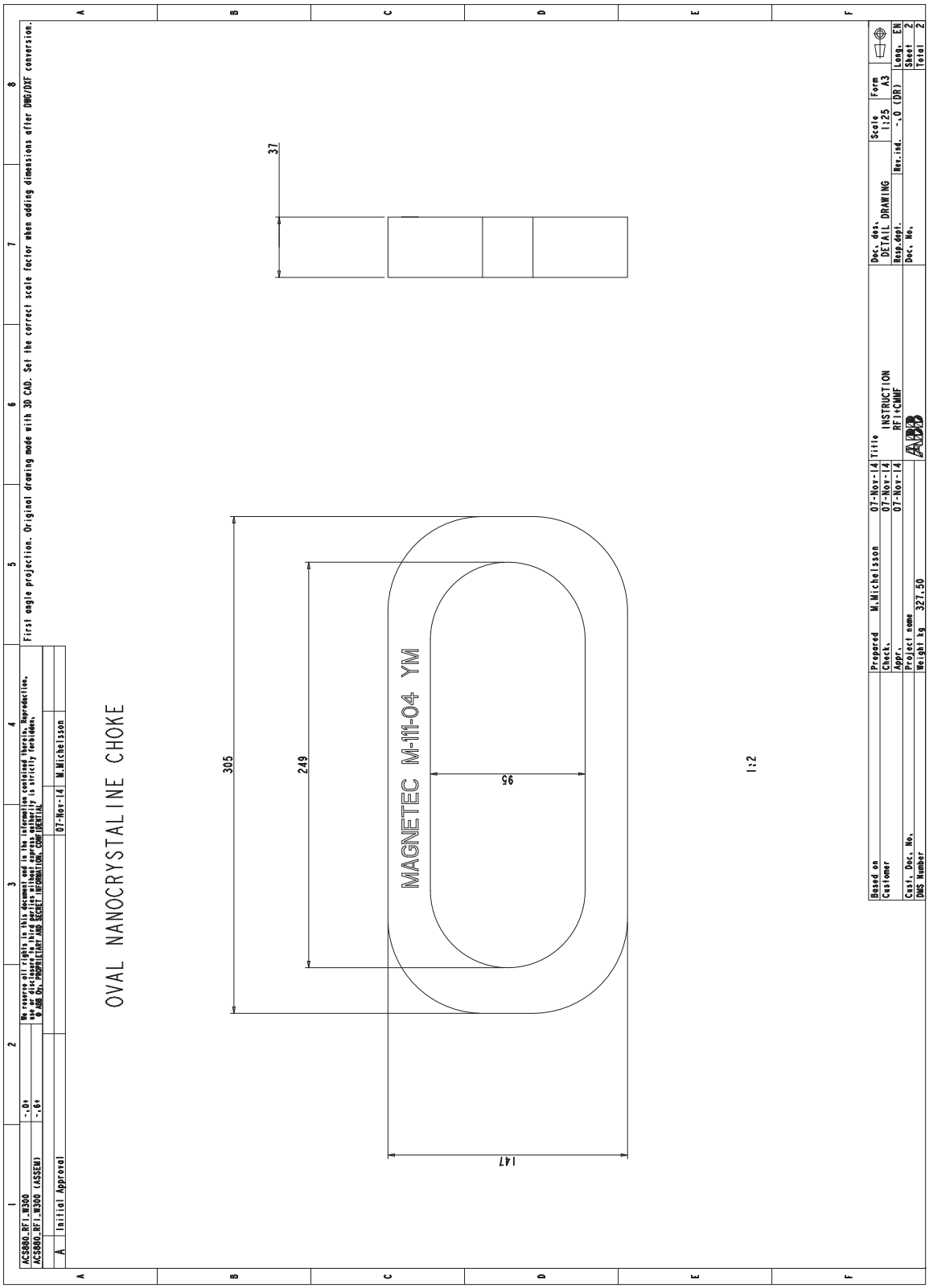
RFI filter



Oval toroid kit



Oval toroid


OVAL NANOCRYSTALINE CHOKE
MAGNETEC M-111-04 YM
305
249
95
147
37
1:2
First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.
ACS880_RFI_IN300
ACS880_RFI_IN300 (ASSEM)
Initial Approval
07-Nov-14 M.Michelsson
Prepared M.Michelsson 07-Nov-14
Check. 07-Nov-14
Appr. 07-Nov-14
Project name
Weight kg 327.50
Based on
Customer
Cust. Doc. No.
DMS Number
Title
INSTRUCTION
RFI+CMMF
Doc. des. DETAIL DRAWING
Resp.dept.
Doc. No.
Scale 1:25
Rev.ind. -.0 (DR)
Form A3
Lang. EN
Sheet 2
Total 2

15

Example circuit diagrams

Contents of this chapter

This chapter contains example circuit diagrams of a IGBT supply module.

Note: These diagrams do not necessarily match the installation-specific circuit diagrams of a tailor-made cabinet-installed unit.

The purpose of these diagrams is to help in:

- understanding the internal connections and operation of the cabinet-installed drive with an IGBT supply unit, and
- learning how to wire an (ACS880-204) IGBT supply module when installed in a user-defined cabinet.

Component designations used in the diagrams

Frames R1i...R4i

Designation	Component
A11	RFI filter
A51	ZCU control unit
A59	ACS-AP-x control panel
Fxx.xx	Fuses
Q1	Main switch-disconnector
Q2	Main contactor
R03	LCL filter module (type WFU-xx)
T01	Supply module (type ACS880-204)

Frame R6i and R7i

Designation	Component
A51	BCU control unit
A59	ACS-AP-x control panel
Fxx.xx	Fuses
Q1	Main switch-disconnector/main circuit breaker
Q2	Main contactor
Q3	Charging switch
Q4	Charging contactor
Rx.x	Common mode filter
R4.x	Charging resistors
R03	LCL filter module(s) (type BLCL-0x-x for frame R6i and R7i)
T01	Supply module(s) (type ACS880-204)

Frame R8i and multiples

Designation	Component
A51	BCU control unit
A59	ACS-AP-x control panel
Fxx.xx	Fuses
Q1	Main switch-disconnector / main circuit breaker
Q2	Main contactor
Q3	Charging switch
Q4	Charging contactor
Rx.x	Common mode filter
R4.x	Charging resistors
R03	LCL filter module(s) (type BLCL-1x-x for frame 1×R8i, and type BLCL-2x-x for frame R8i multiples)
T01	Supply module(s) (type ACS880-204)

The main difference between 1×R8i and 4×R8i is that in 4×R8i, the main AC fuses [F1.x], main switch-disconnector [Q1] and main contactor [Q2] are replaced with one component, main circuit breaker [Q1].

Circuit diagram set contents

The contents of each circuit diagram set are listed below:

ACS880-204 IGBT supply unit R1i…R4i with one supply module (3AXD10001261175)

- Main fuse switch
- IGBT supply module
- LCL filter module WFU-xx
- Internal auxiliary voltage supply
- IEC/UL roof fan unit
- ZCU-14 control unit
- Control panel

ACS880-204 IGBT supply unit R6i (3AXD10001639407) and R7i (3AXD10001639409)

- Main fuse switch
- IGBT supply module
- LCL filter module
- Internal auxiliary voltage supply
- BCU-02 control unit
- Control panel

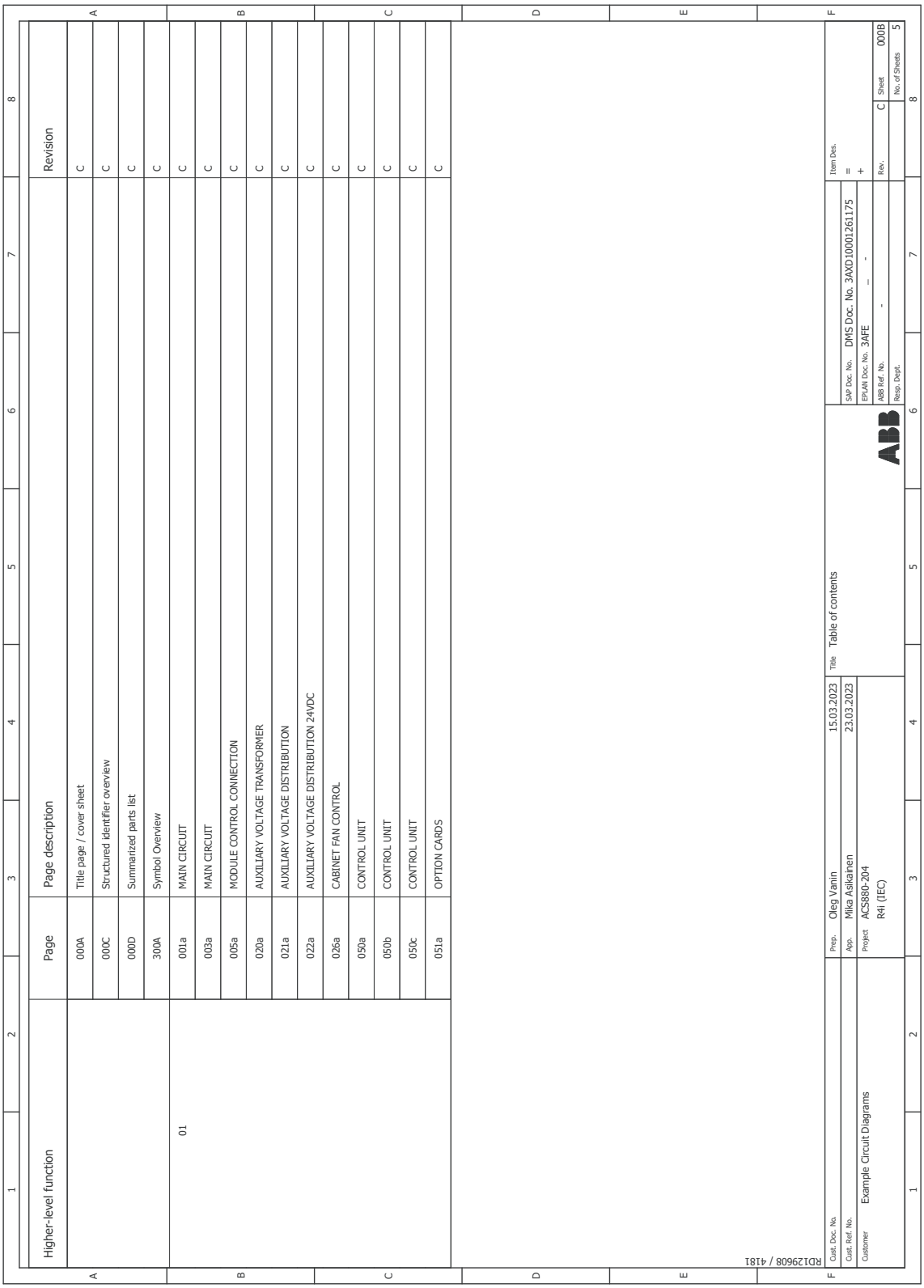
ACS880-204 IGBT supply unit 1×R8i (3AXD10001239966)

- Main switch-disconnector
- Charging circuit
- IGBT supply module
- LCL filter module
- Module heaters (+C183)
- Internal auxiliary voltage supply
- BCU-02 control unit
- Control panel
- EMC filters Cat. C2 1st Env.

ACS880-204 IGBT supply unit 4×R8i (3AXD10001090391)

- Main circuit breaker
- Charging circuit
- IGBT supply module
- LCL filter module
- Internal auxiliary voltage supply
- BCU-12 control unit
- Control panel

Frames R1i...R4i



Higher-level function	Page	Page description	Revision
	000A	Title page / cover sheet	C
	000C	Structured identifier overview	C
	000D	Summarized parts list	C
	300A	Symbol Overview	C
01	001a	MAIN CIRCUIT	C
	003a	MAIN CIRCUIT	C
	005a	MODULE CONTROL CONNECTION	C
	020a	AUXILIARY VOLTAGE TRANSFORMER	C
	021a	AUXILIARY VOLTAGE DISTRIBUTION	C
	022a	AUXILIARY VOLTAGE DISTRIBUTION 24VDC	C
	026a	CABINET FAN CONTROL	C
	050a	CONTROL UNIT	C
	050b	CONTROL UNIT	C
	050c	CONTROL UNIT	C
	051a	OPTION CARDS	C

Function designations

Designation	Structure description
=01	IGBT Supply Unit

Location designations

Designation	Structure description
+01.1	IGBT Supply Cubicle

Electrical option designations

Designation	Material Code	Quantity
#Cabinet fan	3AXD50000000592	1
#Control Panel	3AXD50000025965	1
#Fan control wire	3AXD50000003308	1
#Filter Module	3AUA0000049812	1
#Fuse	10003521, 3AXD50000000221	5
#Main Contactor	3AUA0000144904	1
#Panel Interface	3AUA0000108650	1
#Panel mounting kit	3AUA0000108878	1
#Supply Module	ACS880-104-0094A-5	1
#Switch Kit	3AXD50000014449	1

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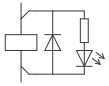
Cust. Doc. No.	Prep. Oleg Vanin 15.03.2023	Title Structured identifier overview		Item Des.	
Cust. Ref. No.	App. Mika Asikainen 23.03.2023		SAP Doc. No. DMS Doc. No. 3AXD10001261175	=	
Customer Example Circuit Diagrams	Project ACS880-204 R4i (IEC)		EPLAN Doc. No. 3AFE _ -	+	
			ABB Ref. No. -	Rev. C	Sheet 000C
			Resp. Dept.		No. of Sheets 5

GENERAL/RELAY COIL, WITH PROTECTIVE CIRCUIT DIODE AND R+LED



GENERAL/RELAY COIL

COIL WITH PICK-UP DELAY

COIL WITH OFF-DELAY

NO CONTACT

NC CONTACT

CHANGE OVER CONTACT

NO CONTACT, WITH CLOSING DELAY

TWO NO CONTACTS ONE INPUT, TWO OUTPUTS

TWO CONNECTED CHANGE OVER CONTACTS

POWER NO CONTACT OF A CONTACTOR

PUSH BUTTON WITH NO CONTACT

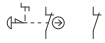
PUSH BUTTON WITH NC CONTACT

NO SWITCH, OPERATED BY TURNING, 2 POSITIONS

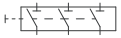
LIMIT SWITCH NC CONTACT MECHANICALLY OPERATED

NC SWITCH, TEMPERATURE OPERATED

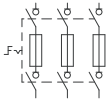
EMERGENCY STOP PUSH BUTTON



DISCONNECT SWITCH, THREE-POLE



SWITCH DISCONNECTOR WITH FUSES, THREE-POLE

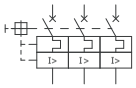


FUSE

FUSE DISCONNECTOR

CIRCUIT BREAKER

MOTOR OVERLOAD SWITCH WITH SWITCH MECHANISM



COMMON MODE FILTER FOR HIGH FREQUENCY CURRENTS

PROTECTIVE EARTH CONNECTED TO FRAME

PROTECTIVE EARTH CONNECTED TO TERMINAL / PE BUSBAR

FUNCTIONAL EARTHING CONNECTED TO TERMINAL

FUNCTIONAL BONDING TO FRAME

LIGHT

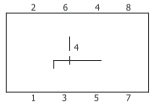
INDUCTOR

CAPACITOR

RESISTOR

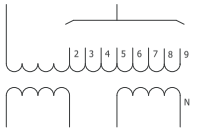
POWER RESISTOR WITH FUSE

PHASE SELECTING SWITCH

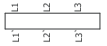


PRIMARY, VOLTAGE SELECTION

TRANSFORMER



EMC FILTER



TERMINAL, FOUR POLE

PLUG AND SOCKET TERMINAL BLOCK WITH 4 CONNECTION POINTS

FEMALE AND MALE PLUG

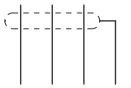
AMPERE METER

CURRENT TRANSFORMER

VOLTAGE METER

WIRE TERMINATION, INSULATED

SHIELDED CABLE



THERMAL OPERATION

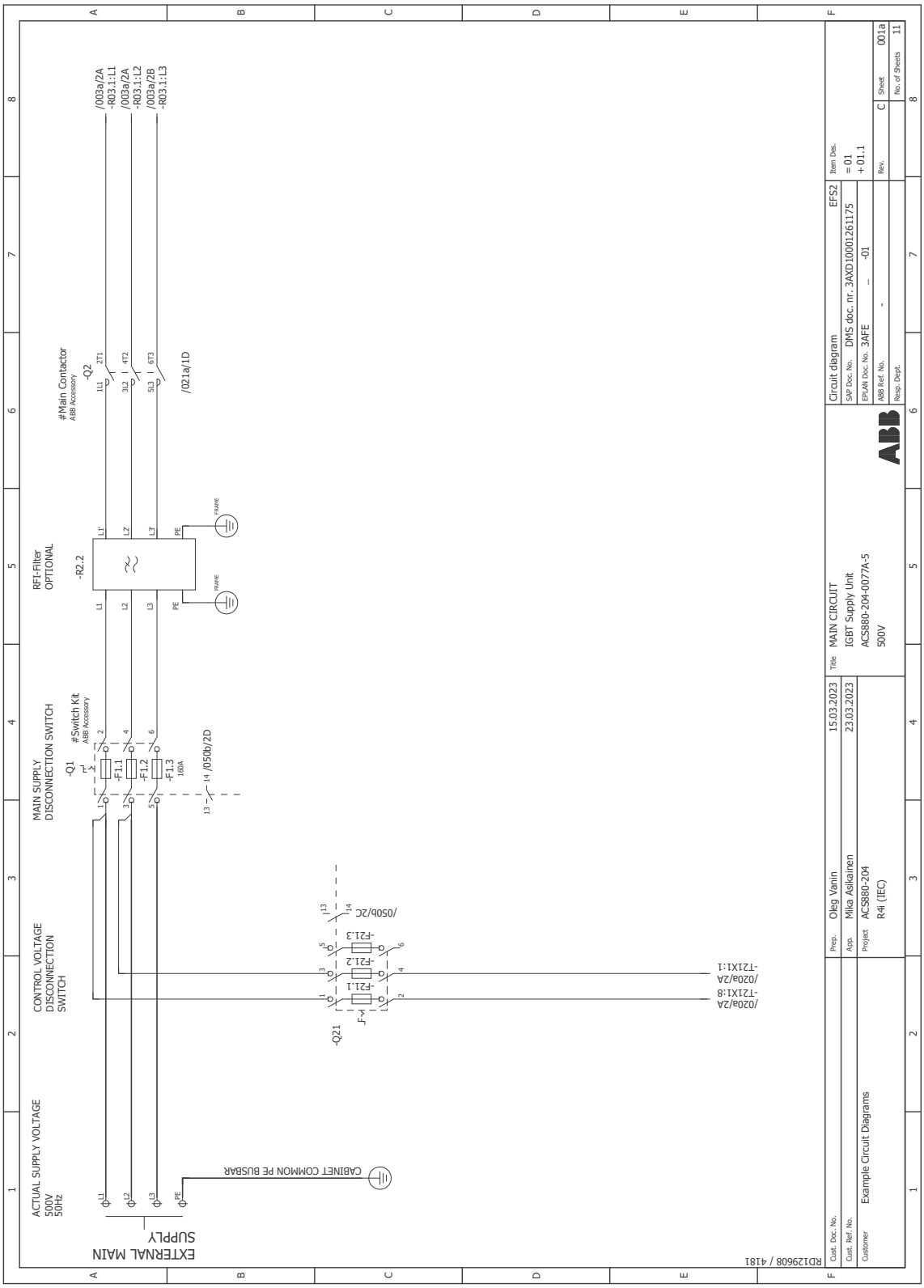
DISCONNECT

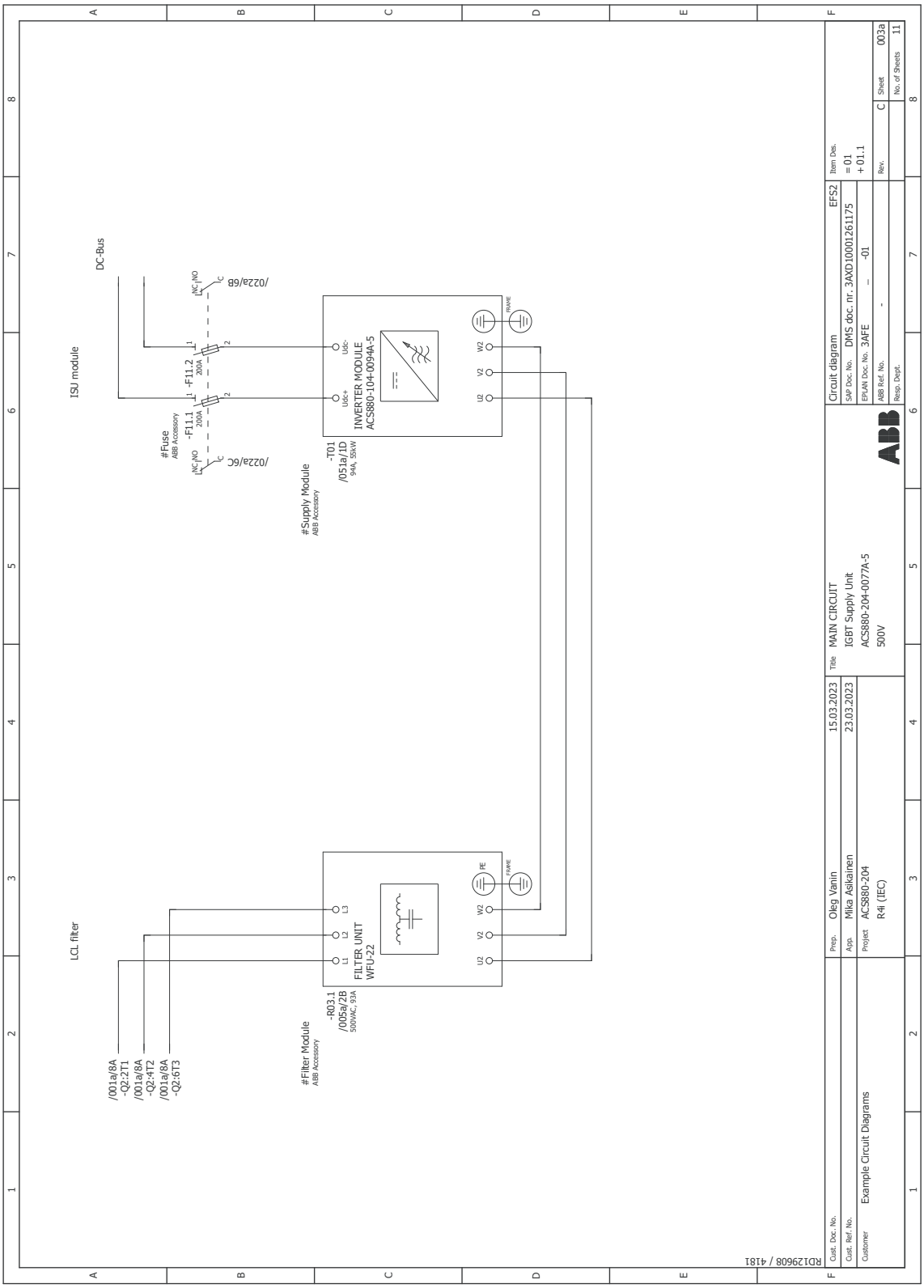
DISCONNECT, CAN BE OPERATED WHILE NOMINAL CURRENT IS APPLIED

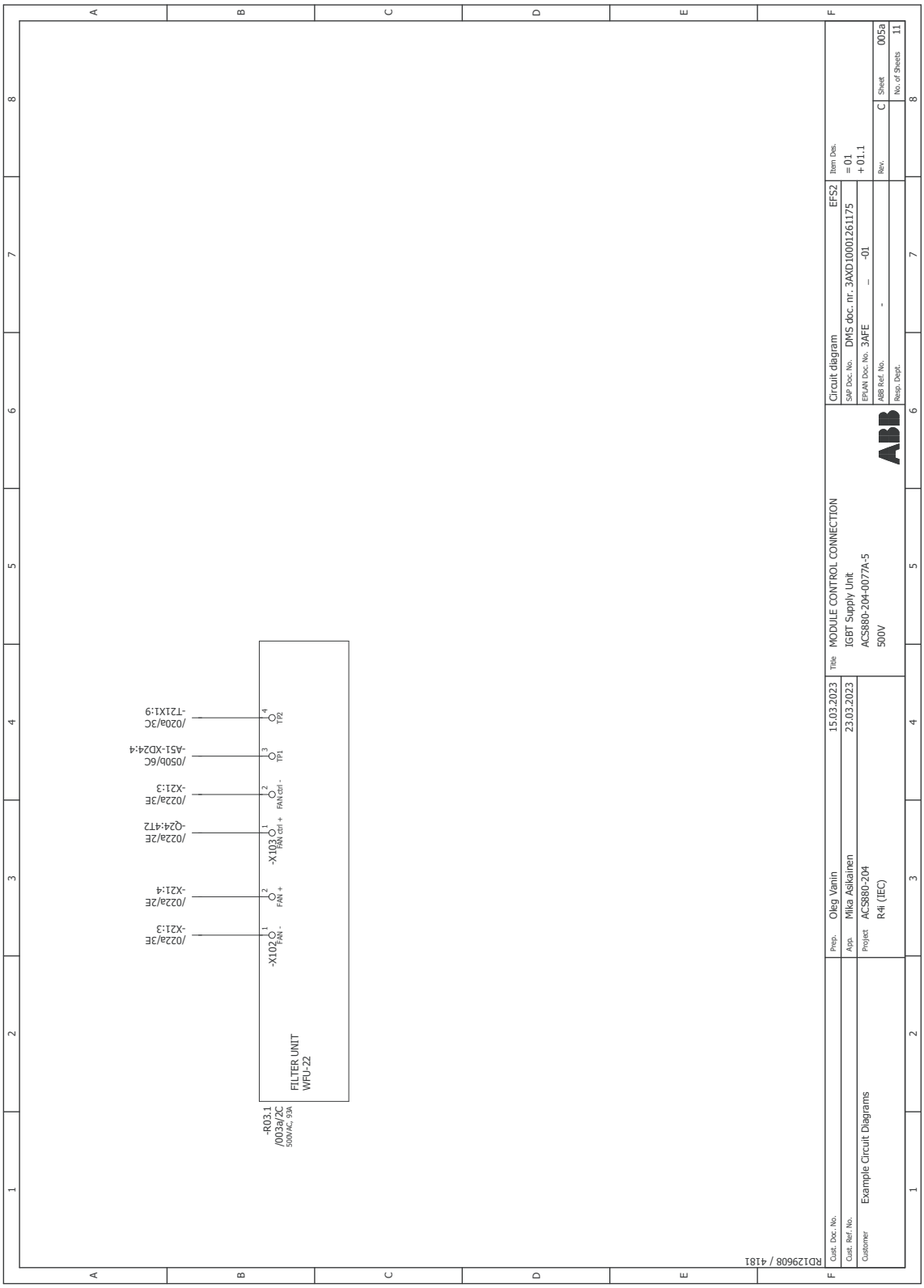
BREAKER, SHORTCIRCUIT BREAKING CAPABILITY

RD129608 / 4181

Cust. Doc. No.	Prep. Oleg Vanin 15.03.2023	Title Symbol Overview	Item Des. = +
Cust. Ref. No.	App. Mika Asikainen 23.03.2023	SAP Doc. No. DMS Doc. No. 3AXD10001261175	
Customer Example Circuit Diagrams	Project ACS880-204 R4i (IEC)	EPLAN Doc. No. 3AFE _ -	Rev. C Sheet 300A
		ABB Ref. No. -	No. of Sheets 5
		Resp. Dept.	


ACTUAL SUPPLY VOLTAGE
500V
50Hz
CONTROL VOLTAGE
DISCONNECTION
SWITCH
MAIN SUPPLY
DISCONNECTION SWITCH
RFI-Filter
OPTIONAL
#Main Contactor
ABB Accessory
#Switch Kit
ABB Accessory
-Q1
-F1.1
-F1.2
-F1.3
160A
-R2.2
-Q2
-Q21
-F21.1
-F21.2
-F21.3
/003a/2A
-R03.1:L1
/003a/2A
-R03.1:L2
/003a/2B
-R03.1:L3
/021a/1D
/050b/2D
/050b/2C
/020a/2A
-T2IX1:8
/020a/2A
-T2IX1:1
CABINET COMMON PE BUSBAR
EXTERNAL MAIN
SUPPLY
RD12960B / 4181
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
C
Sheet
001a
No. of Sheets
11
Prep.
Oleg Vanin
15.03.2023
Appr.
Mika Aslkainen
23.03.2023
Project
ACS880-204
R4i (IEC)
Title
MAIN CIRCUIT
IGBT Supply Unit
ACS880-204-0077A-5
500V
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams


LCL filter
ISU module
DC-Bus
/001a/8A
-Q2:2T1
/001a/8A
-Q2:4T2
/001a/8A
-Q2:6T3
#Filter Module
ABB Accessory
-R03.1
/005a/2B
500VAC, 93A
FILTER UNIT
WFU-22
#Fuse
ABB Accessory
-F11.1
200A
-F11.2
200A
/022a/6C
/022a/6B
#Supply Module
ABB Accessory
-T01
/051a/1D
94A, 55kW
INVERTER MODULE
ACS880-104-0094A-5
Prep. Oleg Vanin 15.03.2023
Chk'd Mika Askainen 23.03.2023
Appr.
Project ACS880-204
R4i (IEC)
Title MAIN CIRCUIT
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - Resp. Dept.
Item Des. = 01 + 01.1
Rev. C Sheet 003a
No. of Sheets 11
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
RD12960B / 4181


-R03.1
/003a/2C
500VAC, 93A
FILTER UNIT
WFU-22
-X102
FAN -
-X103
FAN ctrl +
FAN ctrl -
TP1
TP2
-X21:3
-X21:4
-Q24:4T2
-A51-XD24:4
-T21X1:9
/022a/3E
/022a/2E
/050b/6C
/020a/3C
RDI29608 / 4181
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
15.03.2023
Appr.
Mika Aalkainen
23.03.2023
Project
ACS880-204
R4i (IEC)
Title
MODULE CONTROL CONNECTION
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001261175
EPLAN Doc. No.
3AFE
–
-01
ABB Ref. No.
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Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
C
Sheet
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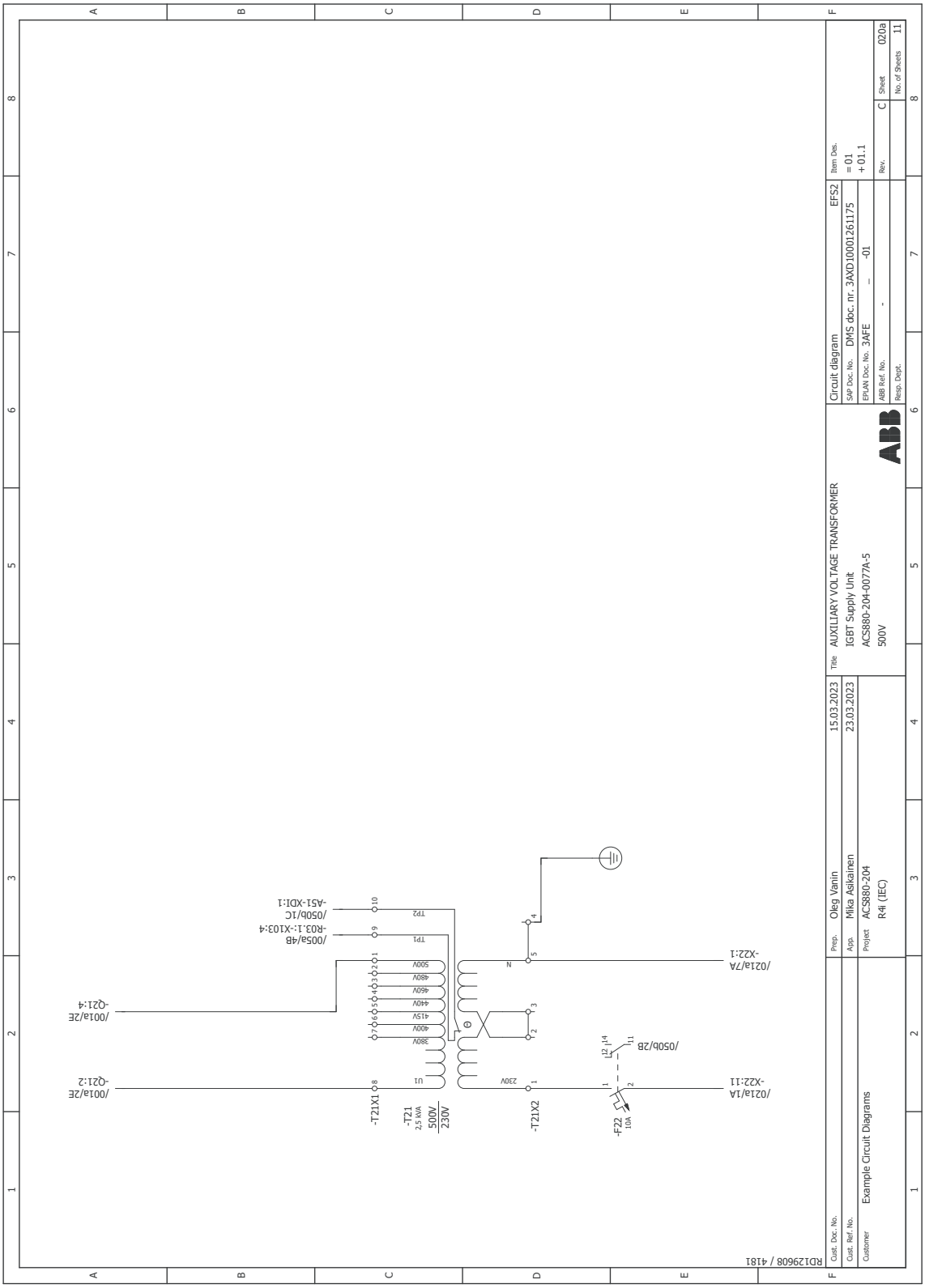
No. of Sheets
11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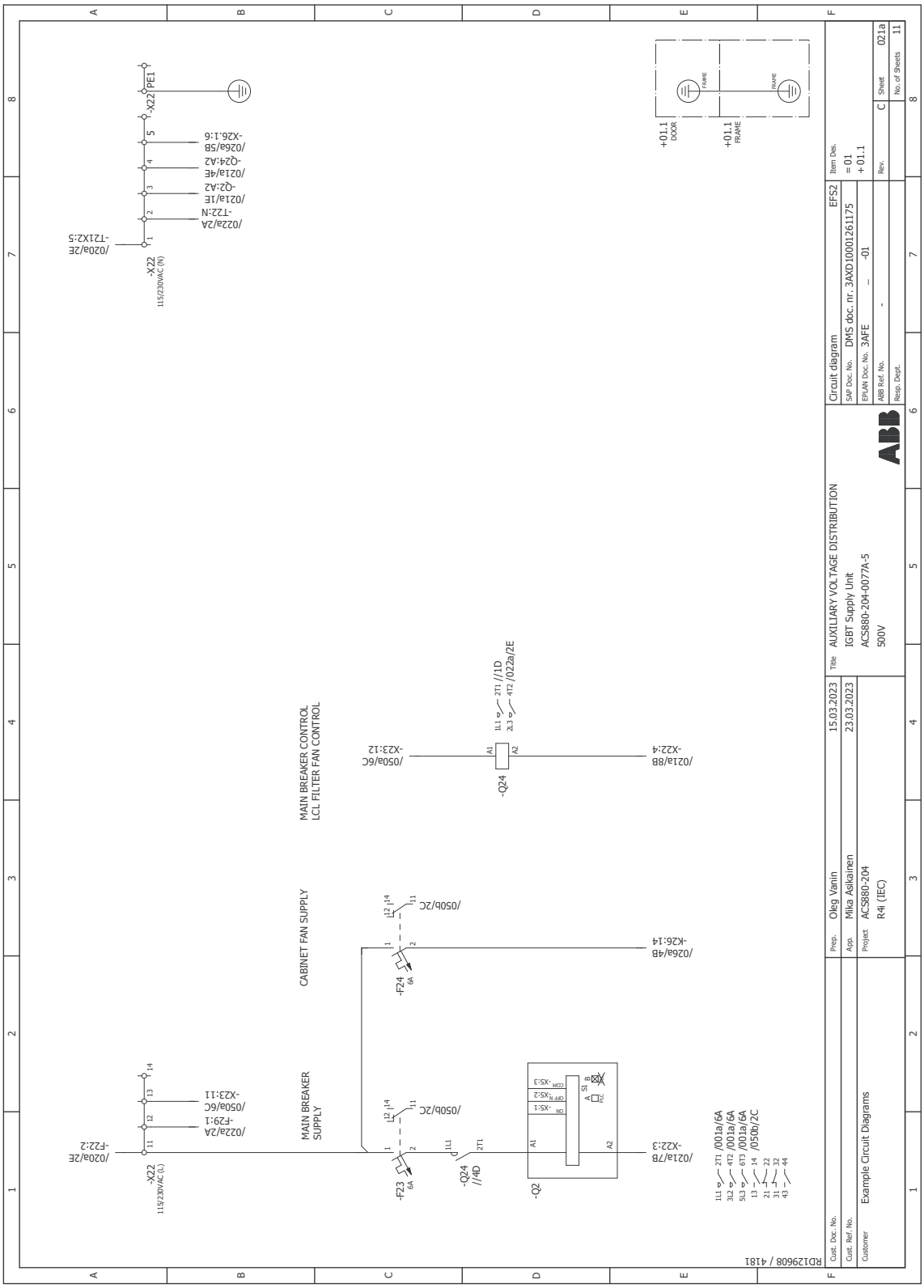
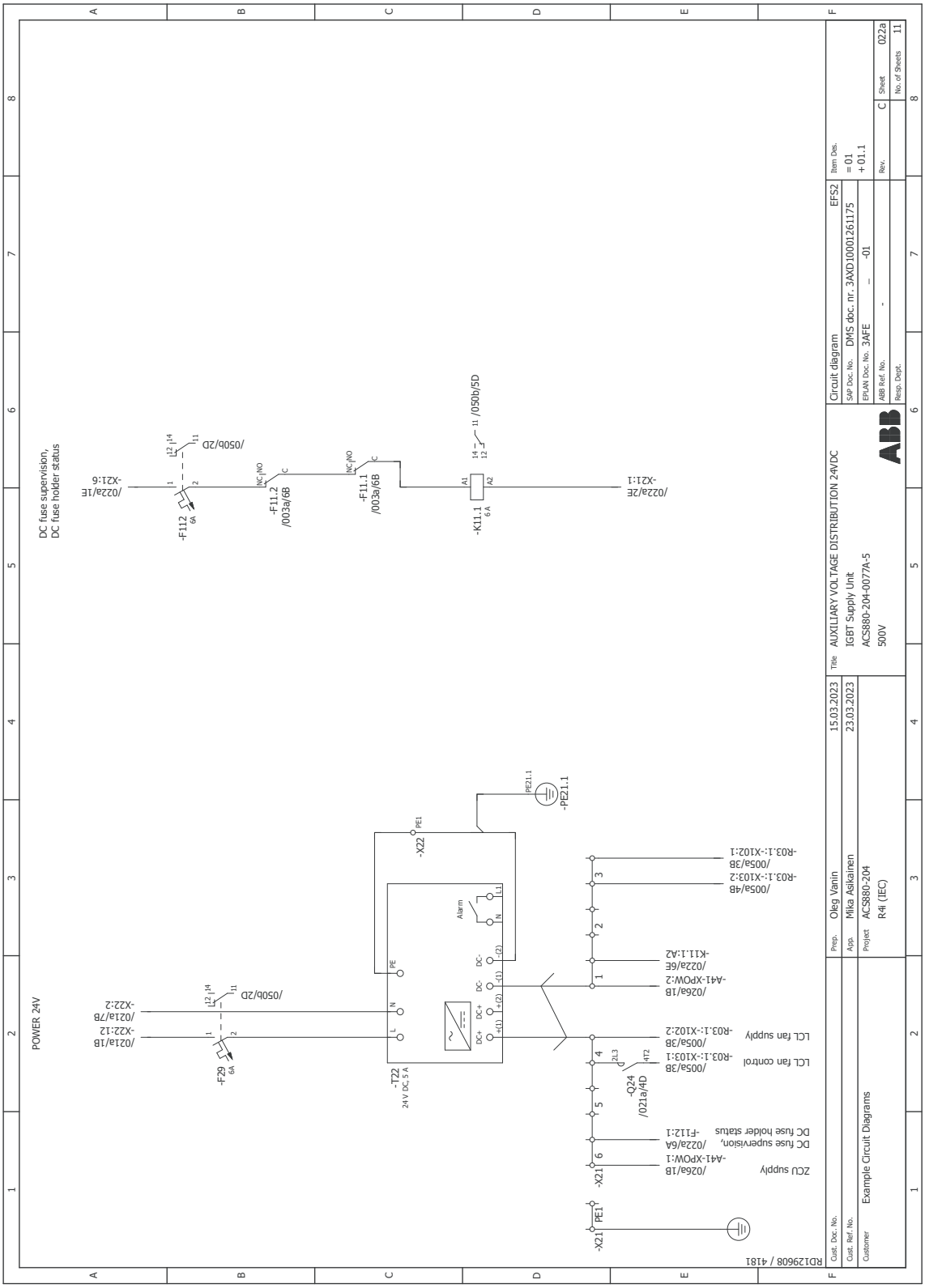
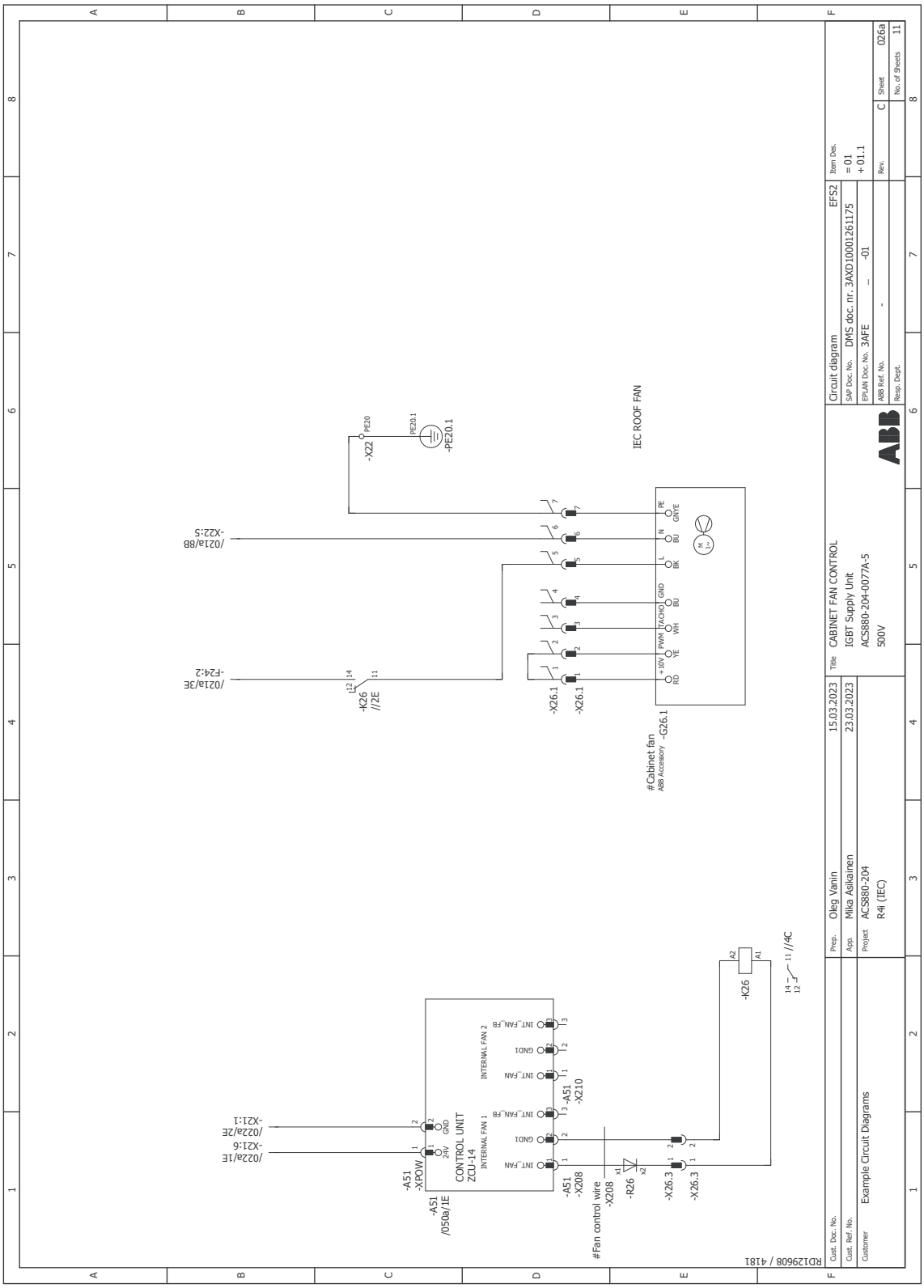
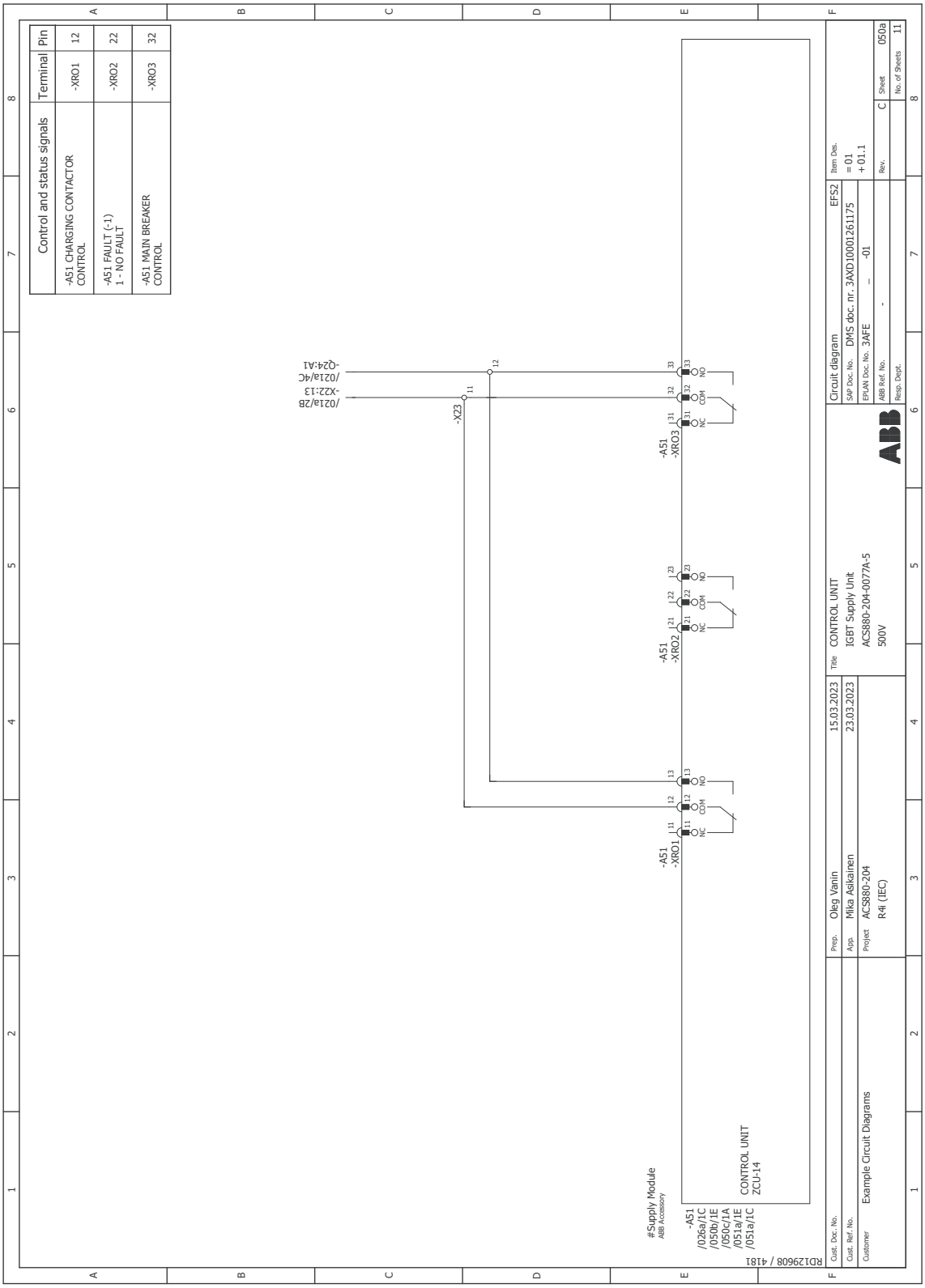
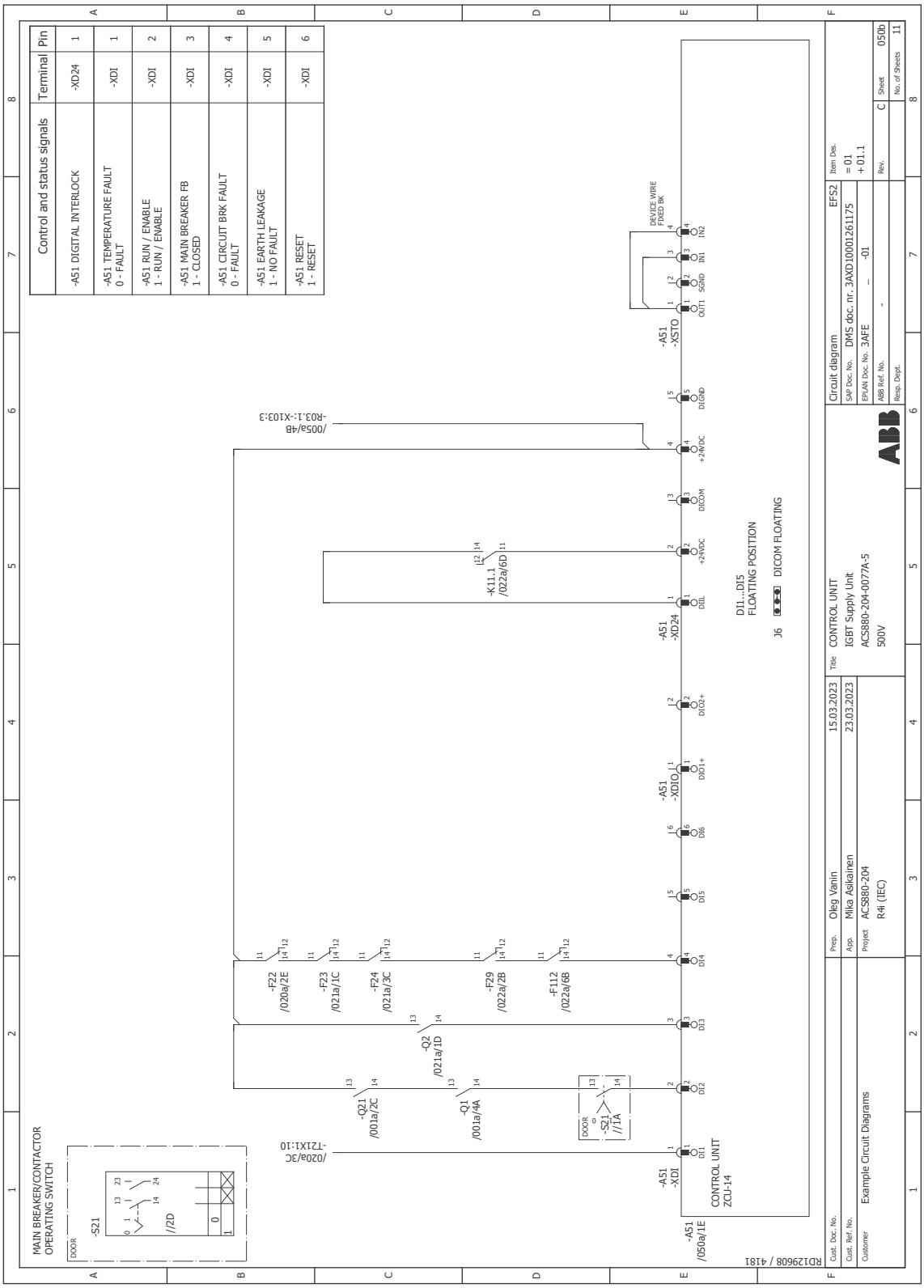
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.1
Rev. C
Sheet 020a
No. of Sheets 11
Title AUXILLARY VOLTAGE TRANSFORMER
IGBT Supply Unit
ACS880-204-0077A-5
500V
Prep. Oleg Vanin 15.03.2023
Appr. Mika Askainen 23.03.2023
Project ACS880-204
R4i (IEC)
Customer Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
RD12960B / 4181
-T21X1
-T21
2,5 kVA
500V
230V
-T21X2
+F22
10A
/001a/2E
-Q21:2
/001a/2E
-Q21:4
/005a/4B
-R03.1:-X103:4
/050b/1C
-A51-XDI:1
/021a/7A
-X22:1
/021a/1A
-X22:11
/050b/2B
500V
480V
460V
440V
415V
400V
380V
230V
TP1
TP2
N
U1

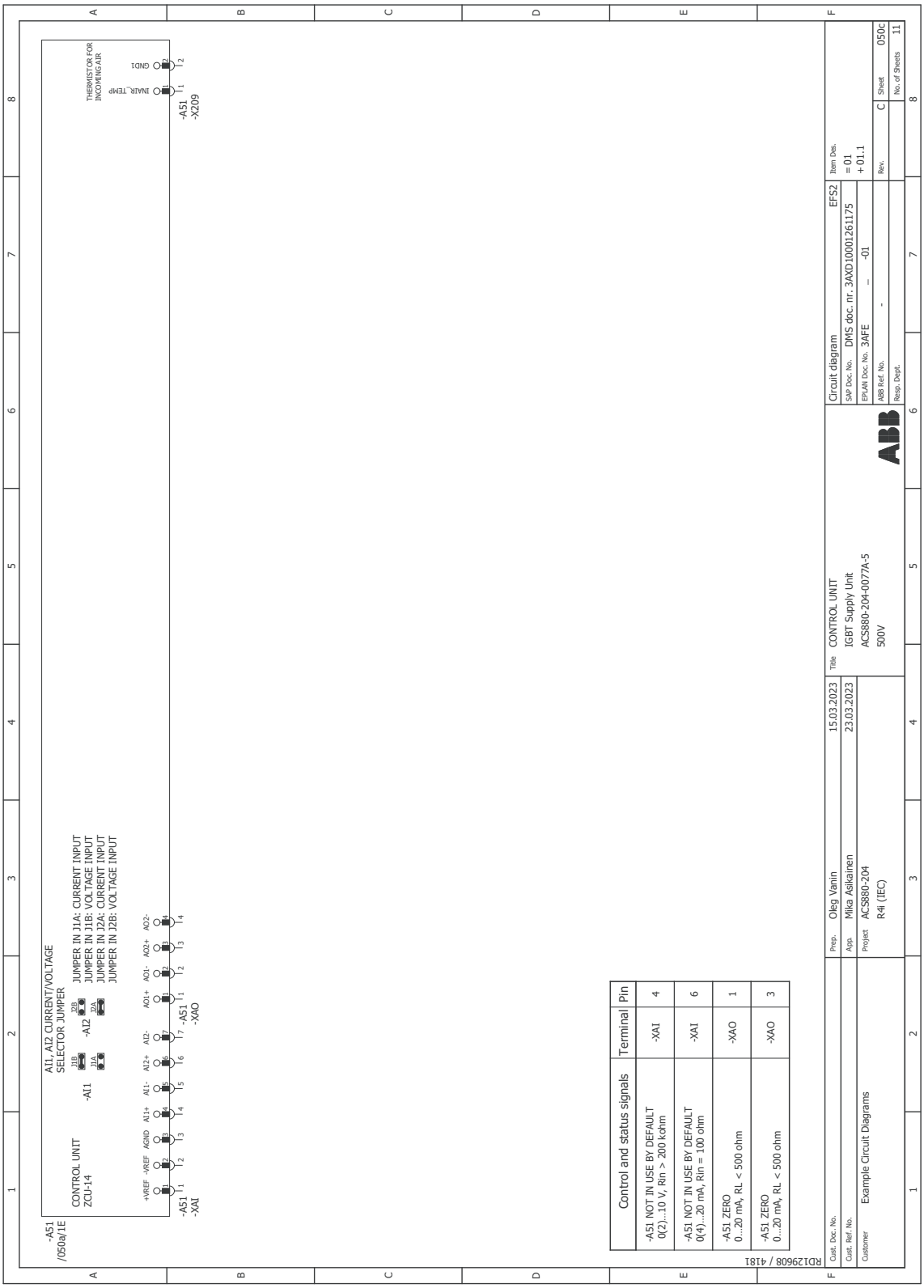

MAIN BREAKER SUPPLY
CABINET FAN SUPPLY
MAIN BREAKER CONTROL
LCL FILTER FAN CONTROL
-X22
115/230VAC (L)
-X22
115/230VAC (N)
-F23
6A
-F24
6A
-Q24
-Q2
-X22:3
-X22:4
-K26:14
-X23:12
-X23:11
-F29:1
-F22:2
-T21X2:5
-T22:N
-Q2:A2
-Q24:A2
-X26.1:6
-X22
PE1
+01.1
DOOR
+01.1
FRAME
AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram
EFS2
DMS doc. nr. 3AXD10001261175
3AFE
-01
Oleg Vanin
Mika Aslkainen
ACS880-204
R4i (IEC)
Example Circuit Diagrams
15.03.2023
23.03.2023
RDI2960B / 4181

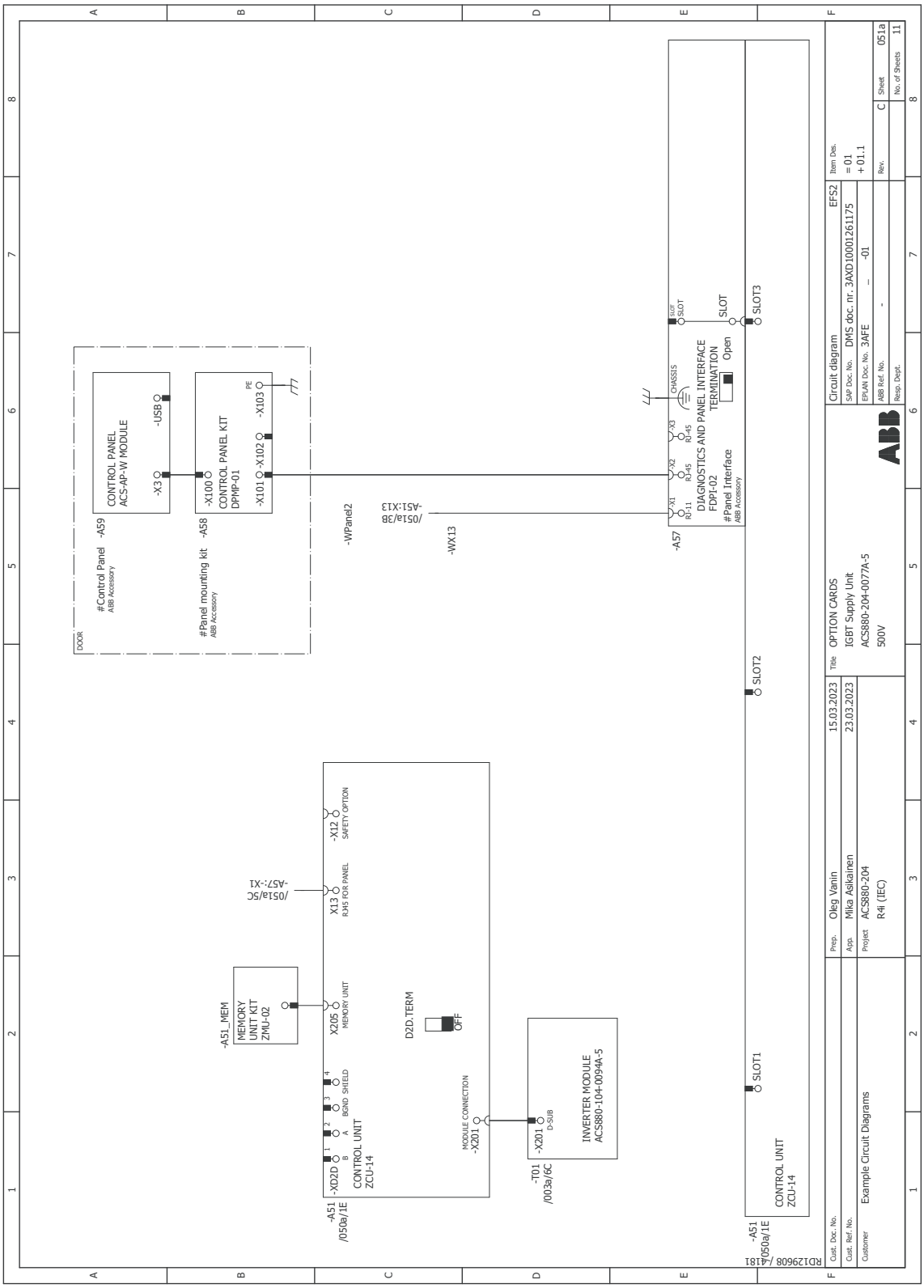

DC fuse supervision,
DC fuse holder status
-X21:6
/022a/1E
-F112
6A
/050b/2D
-F11.2
/003a/6B
-F11.1
/003a/6B
-K11.1
6 A
/050b/5D
-X21:1
/022a/2E
POWER 24V
-F29
6A
/050b/2D
/021a/1B
-X22:1
/021a/7B
-X22:2
-T22
24 V DC, 5 A
Alarm
-X22
-PE21.1
-X21
PE1
ZCU supply
/026a/1B
-A41-XPOW:1
DC fuse supervision,
DC fuse holder status
/022a/6A
-F112:1
-Q24
/021a/4D
LCL fan control
/005a/3B
-R03.1:-X103:1
LCL fan supply
/005a/3B
-R03.1:-X102:2
/026a/1B
-A41-XPOW:2
/022a/6E
-K11.1:A2
/005a/4B
-R03.1:-X103:2
/005a/3B
-R03.1:-X102:1
RD12960B / 4181
Prep. Oleg Vanin 15.03.2023
Appr. Mika Askainen 23.03.2023
Project ACS880-204
R4i (IEC)
Customer Example Circuit Diagrams
Title AUXILIARY VOLTAGE DISTRIBUTION 24VDC
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.1
Rev. C Sheet 022a
No. of Sheets 11


IEC ROOF FAN
-X22
PE20
PE20.1
-PE20.1
/021a/8B
-X22:5
/021a/3E
-F24:2
-K26
//2E
-X26.1
-X26.1
-G26.1
#Cabinet fan
ABB Accessory
-A51
-XPOW
/050a/1E
CONTROL UNIT
ZCU-14
INTERNAL FAN 1
INTERNAL FAN 2
-A51
-X210
-A51
-X208
/022a/1E
-X21:6
/022a/2E
-X21:1
#Fan control wire
-X208
-R26
-X26.3
-X26.3
-K26
Circuit diagram
EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - -
Resp. Dept.
Item Des. = 01 + 01.1
Rev. C
Sheet 026a
No. of Sheets 11
Title CABINET FAN CONTROL
IGBT Supply Unit
ACS880-204-0077A-5
500V
Prep. Oleg Vanin 15.03.2023
Appr. Mika Asikainen 23.03.2023
Project ACS880-204
R4i (IEC)
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
RDI29608 / 4181


Control and status signals
Terminal
Pin
-A51 CHARGING CONTACTOR CONTROL
-XRO1
12
-A51 FAULT (-1) 1 - NO FAULT
-XRO2
22
-A51 MAIN BREAKER CONTROL
-XRO3
32
-A51 -XRO1
-A51 -XRO2
-A51 -XRO3
-X23
/021a/2B -X22:13 /021a/4C -Q24:A1
-A51 /026a/1C /050b/1E /050c/1A /051a/1E /051a/1C
CONTROL UNIT ZCU-14
#Supply Module ABB Accessory
RDI29608 / 4181
Prep. Oleg Vanin 15.03.2023
Chk. Mika Asikainen 23.03.2023
Appr.
Project ACS880-204 R4i (IEC)
Title CONTROL UNIT IGBT Supply Unit ACS880-204-0077A-5 500V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.1
Rev. C
Sheet 050a
No. of Sheets 11


Control and status signals
Terminal
Pin
-A51 DIGITAL INTERLOCK
-XD24
1
-A51 TEMPERATURE FAULT
0 - FAULT
-XDI
1
-A51 RUN / ENABLE
1 - RUN / ENABLE
-XDI
2
-A51 MAIN BREAKER FB
1 - CLOSED
-XDI
3
-A51 CIRCUIT BRK FAULT
0 - FAULT
-XDI
4
-A51 EARTH LEAKAGE
1 - NO FAULT
-XDI
5
-A51 RESET
1 - RESET
-XDI
6
MAIN BREAKER/CONTACTOR
OPERATING SWITCH
-S21
//2D
CONTROL UNIT
ZCU-14
-A51
-XDI
-A51
-XD24
-A51
-XDIO
-A51
-XSTO
-A51
/050a/1E
-T2.1X1:10
/020a/3C
-R03.1:-X103:3
/005a/4B
-K11.1
/022a/6D
-F22
/020a/2E
-F23
/021a/1C
-F24
/021a/3C
-F29
/022a/2B
-F112
/022a/6B
-Q2
/021a/1D
-Q21
/001a/2C
-Q1
/001a/4A
-S21
//1A
DEVICE WIRE
FIXED BK
DI1...DI5
FLOATING POSITION
J6
DICOM FLOATING
RDI29608 / 4181
Prep.
Oleg Vanin
15.03.2023
Chk.
Mika Aslkainen
23.03.2023
Appr.
ACS880-204
Project
R4i (IEC)
Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
Customer
Title
CONTROL UNIT
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. – -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
C
Sheet
050b
No. of Sheets
11


-A51
/050a/1E
CONTROL UNIT
ZCU-14
A11, A12 CURRENT/VOLTAGE
SELECTOR JUMPER
-A11
J1B
J1A
-A12
J2B
J2A
JUMPER IN J1A: CURRENT INPUT
JUMPER IN J1B: VOLTAGE INPUT
JUMPER IN J2A: CURRENT INPUT
JUMPER IN J2B: VOLTAGE INPUT
+VREF -VREF AGND AI1+ AI1- AI2+ AI2- AO1+ AO1- AO2+ AO2-
-A51
-XAI
-A51
-XAO
THERMISTOR FOR
INCOMING AIR
INAIR_TEMP GND1
-A51
-XZ09
Control and status signals
Terminal
Pin
-A51 NOT IN USE BY DEFAULT
0(2)...10 V, Rin > 200 kohm
-XAI
4
-A51 NOT IN USE BY DEFAULT
0(4)...20 mA, Rin = 100 ohm
-XAI
6
-A51 ZERO
0...20 mA, RL < 500 ohm
-XAO
1
-A51 ZERO
0...20 mA, RL < 500 ohm
-XAO
3
RDI29608 / 4181
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
15.03.2023
Appr.
Mika Askainen
23.03.2023
Project
ACS880-204
R4i (IEC)
Title
CONTROL UNIT
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001261175
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
C
Sheet
050c
No. of Sheets
11


DOOR
#Control Panel
ABB Accessory
-A59
CONTROL PANEL
ACS-AP-W MODULE
-X3
-USB
#Panel mounting kit
ABB Accessory
-A58
CONTROL PANEL KIT
DPMP-01
-X100
-X101
-X102
-X103
PE
-WPanel2
/051a/3B
-A51:X13
-WX13
-A57
DIAGNOSTICS AND PANEL INTERFACE
FDPI-02
#Panel Interface
ABB Accessory
TERMINATION
Open
CHASSIS
-X1
-X2
-X3
RJ-11
RJ-45
RJ-45
SLOT
SLOT3
SLOT2
SLOT1
-A51_MEM
MEMORY
UNIT KIT
ZMU-02
/051a/5C
-A57:-X1
-A51
/050a/1E
-XD2D
CONTROL UNIT
ZCU-14
X13
RJ45 FOR PANEL
-X12
SAFETY OPTION
X2D5
MEMORY UNIT
D2D.TERM
OFF
MODULE CONNECTION
-X201
-T01
/003a/6C
-X201
D-SUB
INVERTER MODULE
ACS880-104-0094A-5
-A51
/050a/1E
CONTROL UNIT
ZCU-14
RDI29608 /-A1B1
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
15.03.2023
Appr.
Mika Aalkainen
23.03.2023
Project
ACS880-204
R4i (IEC)
Title
OPTION CARDS
IGBT Supply Unit
ACS880-204-0077A-5
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001261175
EPLAN Doc. No.
3AFE
–
-01
ABB Ref. No.
-
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
C
Sheet
051a
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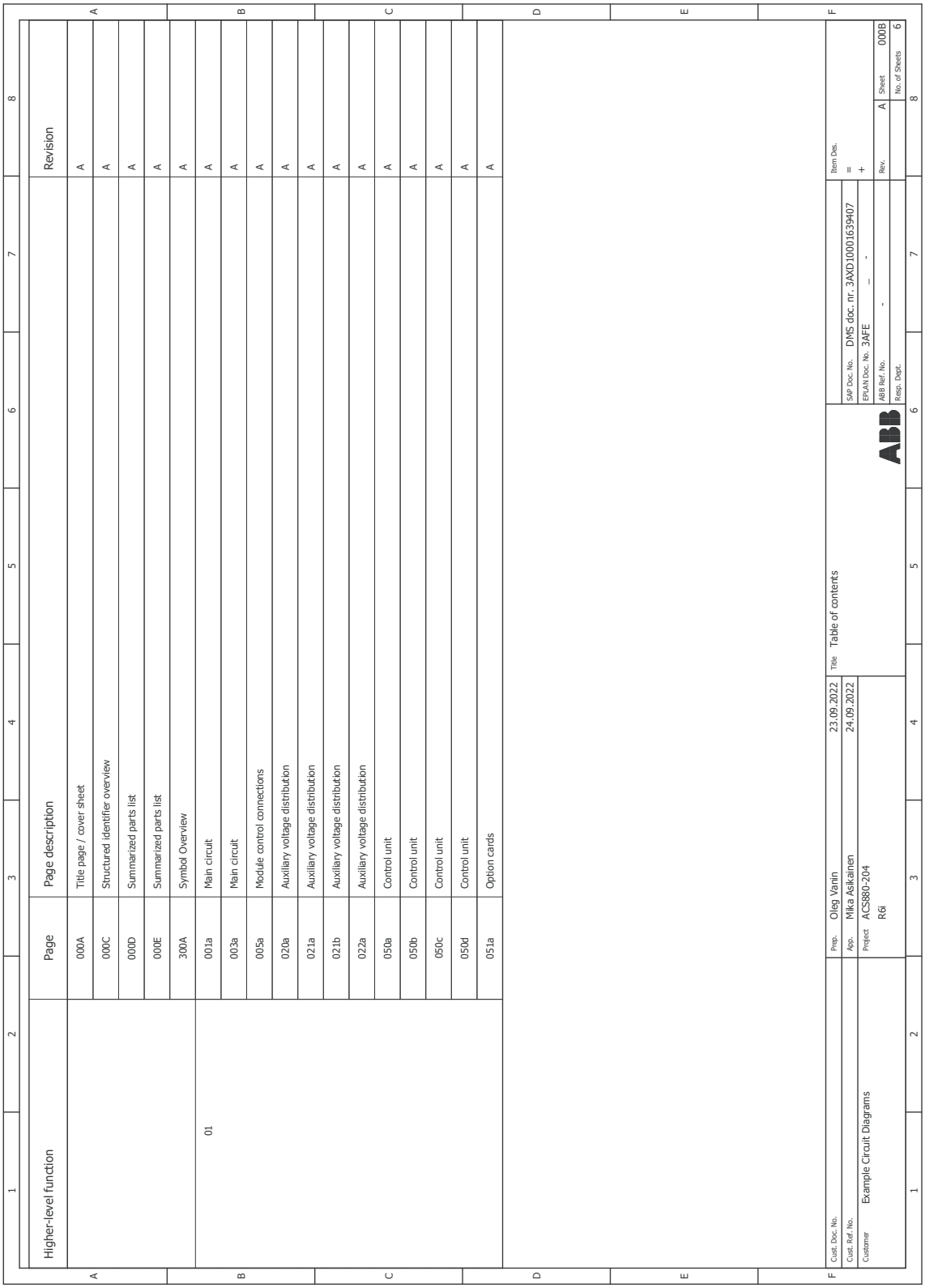
11

Frame R6i



Higher-level function	Page	Page description	Revision
	000A	Title page / cover sheet	A
	000C	Structured identifier overview	A
	000D	Summarized parts list	A
	000E	Summarized parts list	A
	300A	Symbol Overview	A
01	001a	Main circuit	A
	003a	Main circuit	A
	005a	Module control connections	A
	020a	Auxiliary voltage distribution	A
	021a	Auxiliary voltage distribution	A
	021b	Auxiliary voltage distribution	A
	022a	Auxiliary voltage distribution	A
	050a	Control unit	A
	050b	Control unit	A
	050c	Control unit	A
	050d	Control unit	A
	051a	Option cards	A

Function designations

Designation	Structure description
=01	IGBT supply unit

Location designations

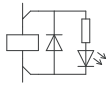
Designation	Structure description
+01.1	Auxiliary control unit (External)
+01.2	Incoming unit & IGBT supply cubicle

Electrical option designations

Designation	Material Code	Quantity
#CM Filter	3AUA0000032859	2
#Charging Kit	3AXD50000558551	1
#Control Panel Kit	3AXD50000025965	1
#Control Unit Kit	3ADX50000002937	1
#Filter Module	3AXD50000863051	1
#Fuse	10028574, 3AXD50000010196	5
#Main Contactor	3AUA0000145463	1
#Panel Interface Kit	3AUA0000108650	1
#Panel Mounting Kit	3AUA0000108878	1
#Supply Module	ACS880-204-0150A-7	1
#Switch Kit	3AXD50000002801	1

Cust. Doc. No.	Prep. Oleg Vanin 23.09.2022	Title Structured identifier overview		Item Des.	
Cust. Ref. No.	App. Mika Asikainen 24.09.2022		SAP Doc. No. DMS doc. nr. 3AXD10001639407	=	
Customer Example Circuit Diagrams	Project ACS880-204 R6i		EPLAN Doc. No. 3AFE _ -	+	
		ABB	ABB Ref. No. -	Rev. A	Sheet 000C
			Resp. Dept.		No. of Sheets 6

GENERAL/RELAY COIL, WITH PROTECTIVE CIRCUIT DIODE AND R+LED



GENERAL/RELAY COIL

COIL WITH PICK-UP DELAY

COIL WITH OFF-DELAY

NO CONTACT

NC CONTACT

CHANGE OVER CONTACT

NO CONTACT, WITH CLOSING DELAY

TWO NO CONTACTS ONE INPUT, TWO OUTPUTS

TWO CONNECTED CHANGE OVER CONTACTS

POWER NO CONTACT OF A CONTACTOR

PUSH BUTTON WITH NO CONTACT

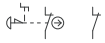
PUSH BUTTON WITH NC CONTACT

NO SWITCH, OPERATED BY TURNING, 2 POSITIONS

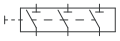
LIMIT SWITCH NC CONTACT MECHANICALLY OPERATED

NC SWITCH, TEMPERATURE OPERATED

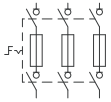
EMERGENCY STOP PUSH BUTTON



DISCONNECT SWITCH, THREE-POLE



SWITCH DISCONNECTOR WITH FUSES, THREE-POLE

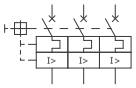


FUSE

FUSE DISCONNECTOR

CIRCUIT BREAKER

MOTOR OVERLOAD SWITCH WITH SWITCH MECHANISM



COMMON MODE FILTER FOR HIGH FREQUENCY CURRENTS

PROTECTIVE EARTH CONNECTED TO FRAME

PROTECTIVE EARTH CONNECTED TO TERMINAL / PE BUSBAR

FUNCTIONAL EARTHING CONNECTED TO TERMINAL

FUNCTIONAL BONDING TO FRAME

LIGHT

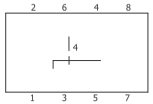
INDUCTOR

CAPACITOR

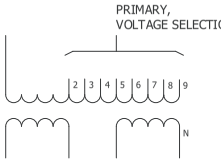
RESISTOR

POWER RESISTOR WITH FUSE

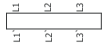
PHASE SELECTING SWITCH



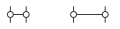
TRANSFORMER



EMC FILTER



TERMINAL, FOUR POLE



PLUG AND SOCKET TERMINAL BLOCK WITH 4 CONNECTION POINTS

FEMALE AND MALE PLUG

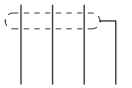
AMPERE METER

CURRENT TRANSFORMER

VOLTAGE METER

WIRE TERMINATION, INSULATED

SHIELDED CABLE



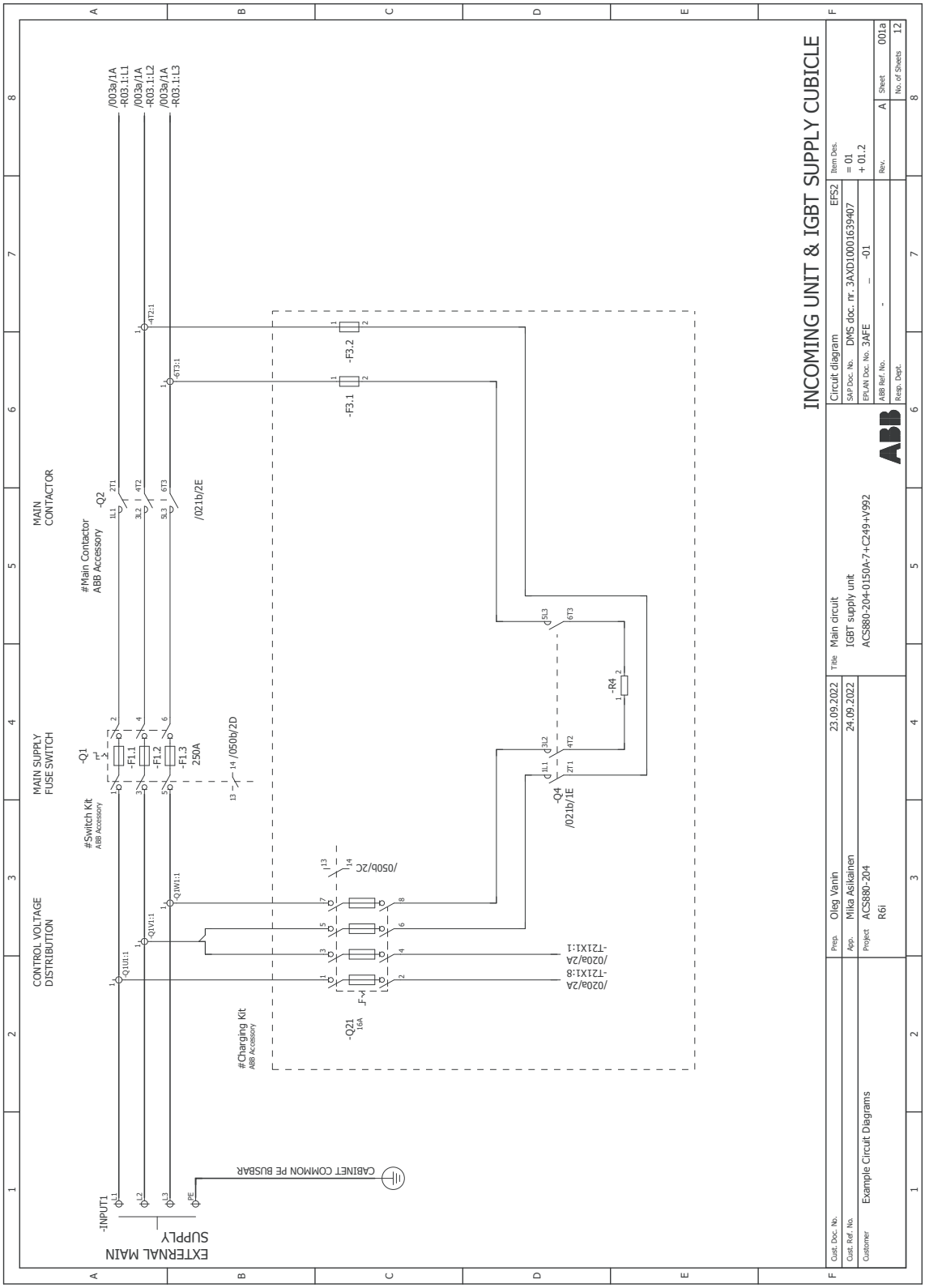
THERMAL OPERATION

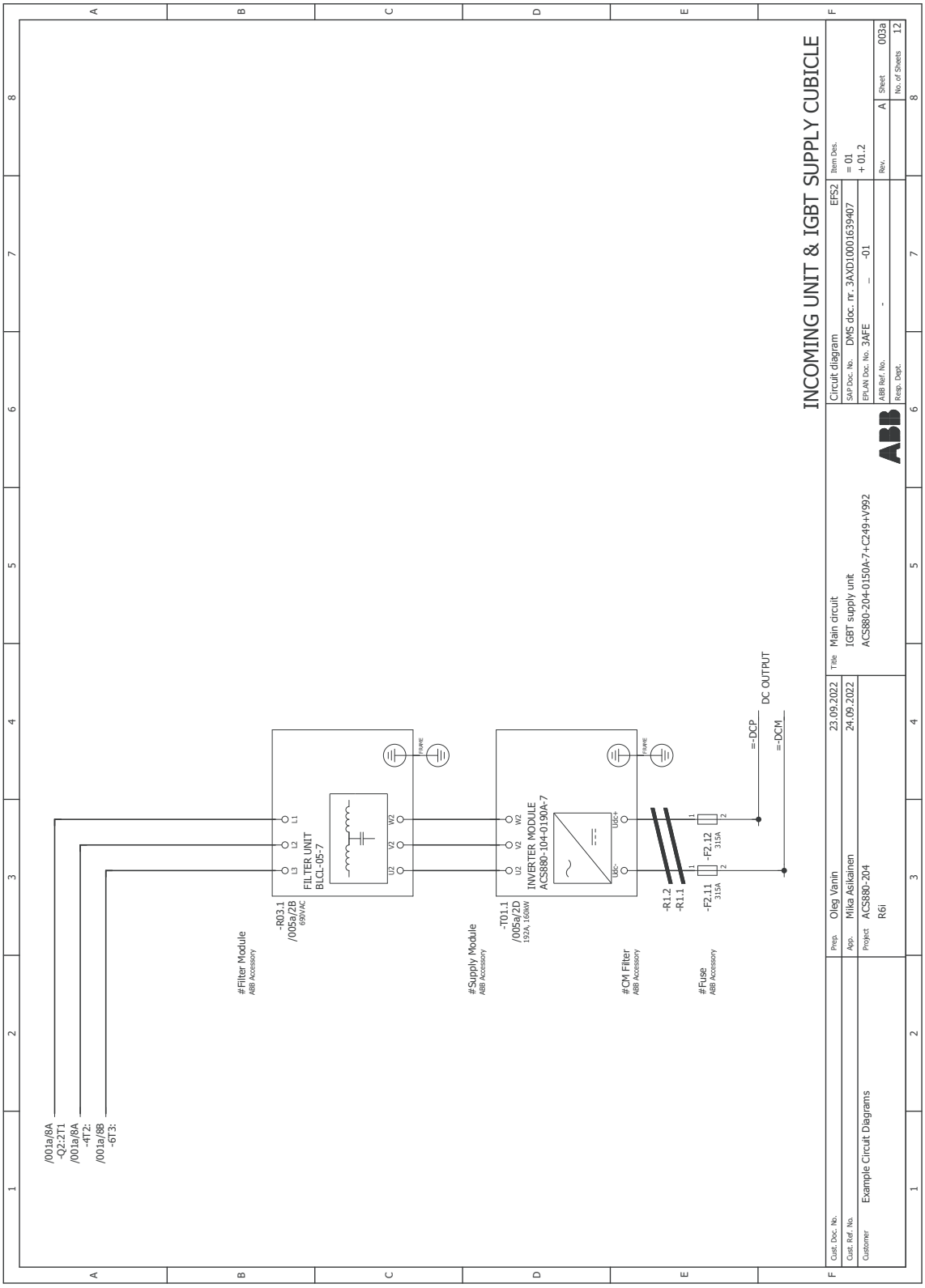
DISCONNECT

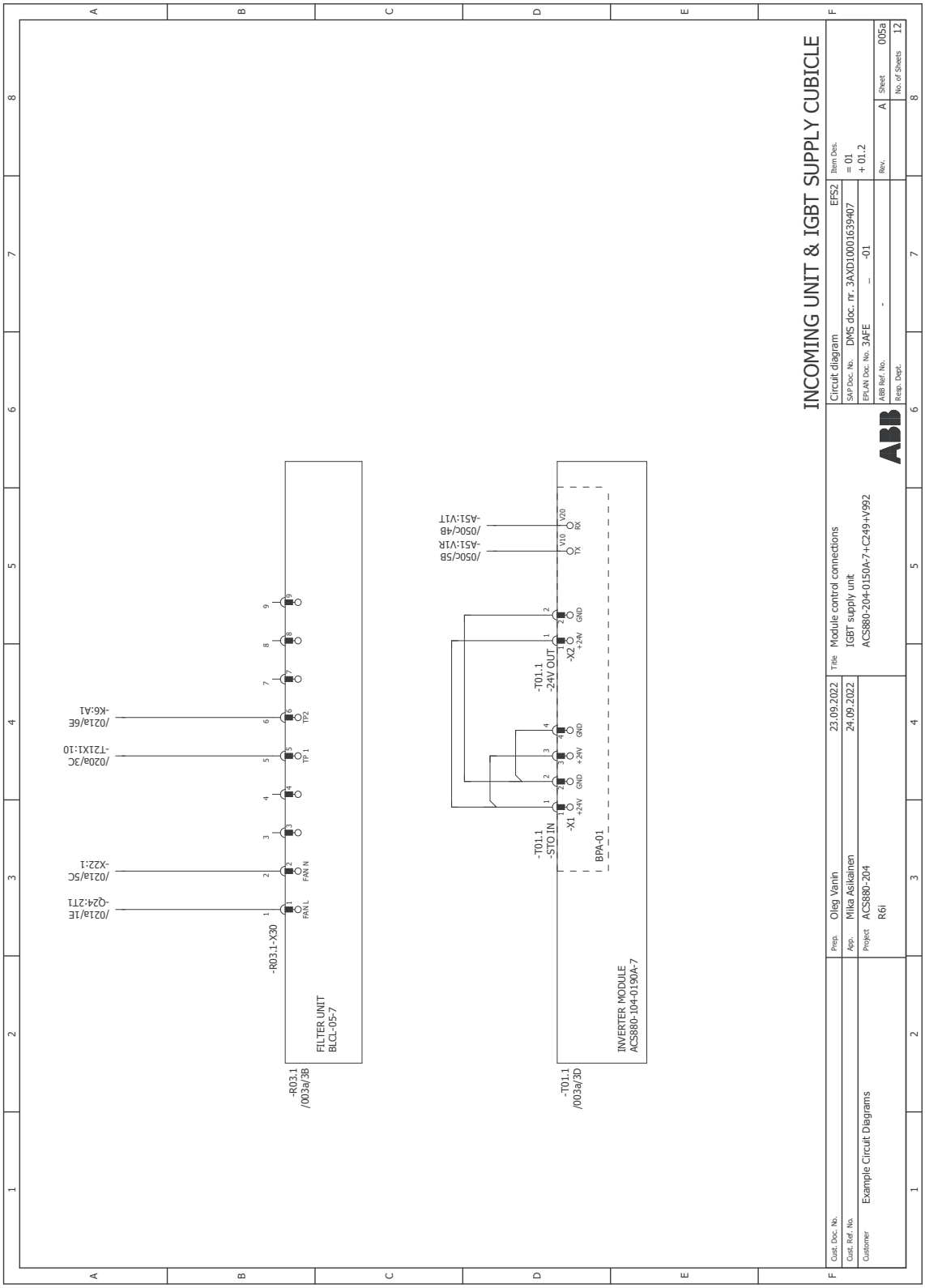
DISCONNECT, CAN BE OPERATED WHILE NOMINAL CURRENT IS APPLIED

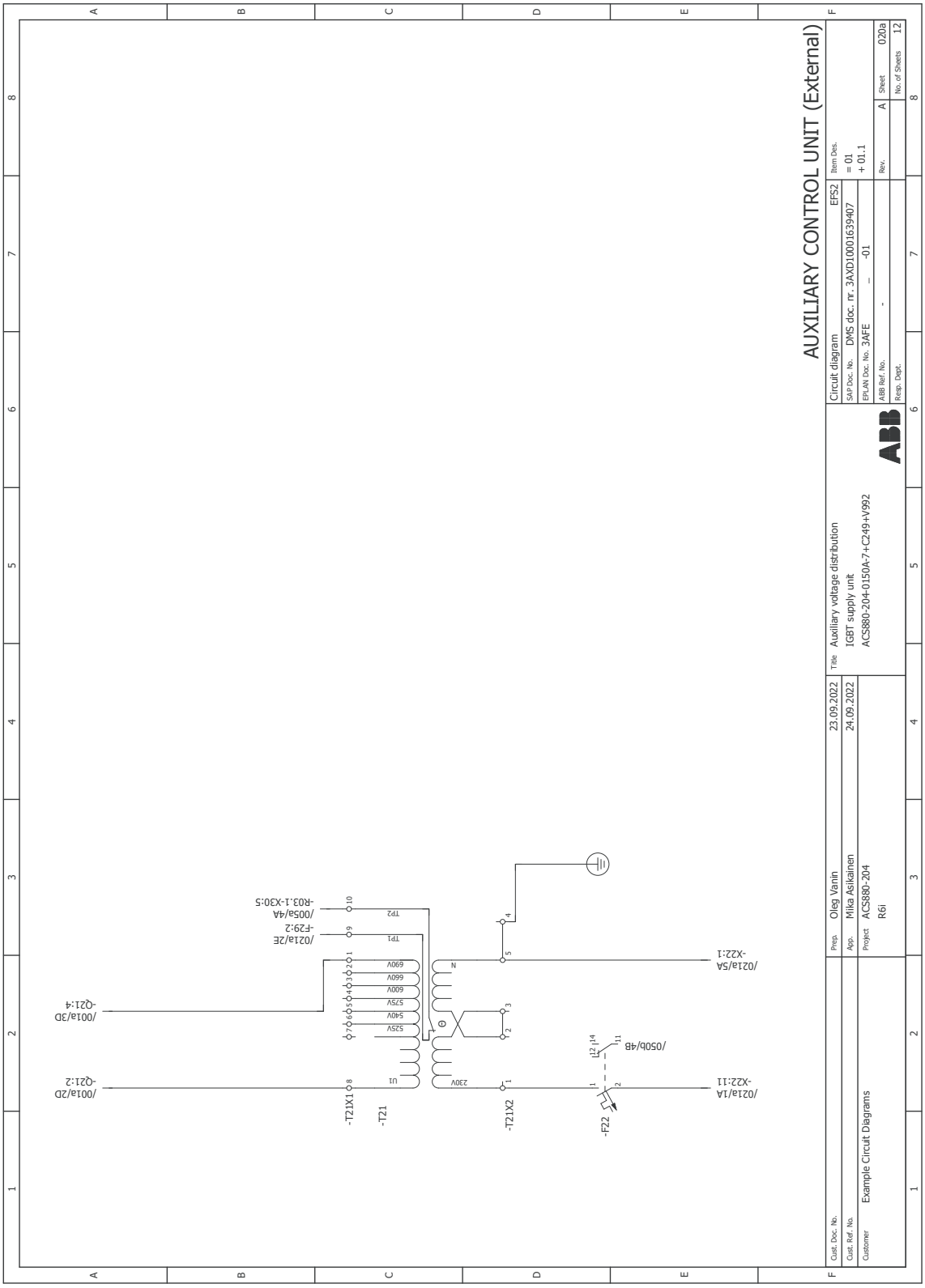
BREAKER, SHORTCIRCUIT BREAKING CAPABILITY

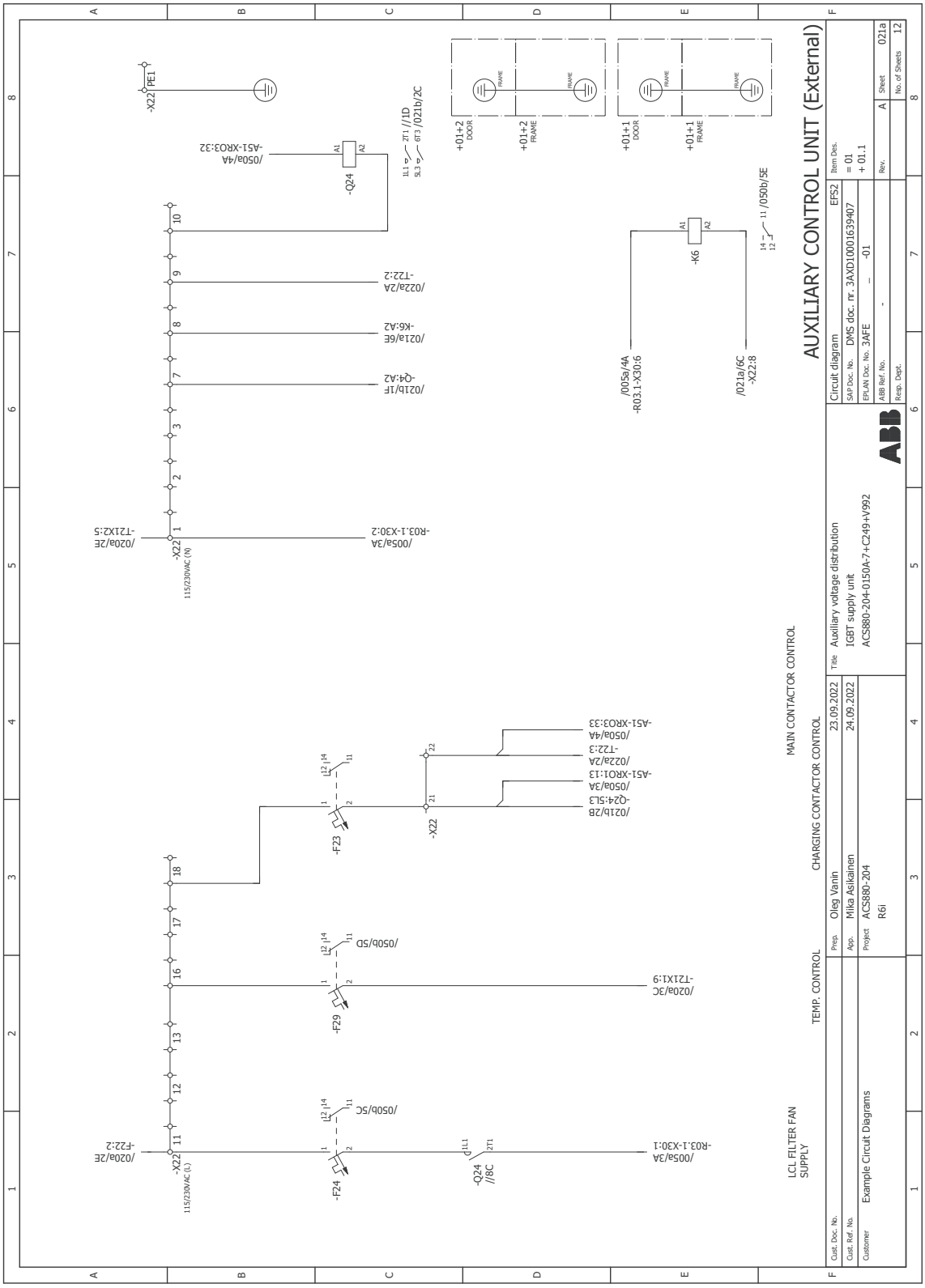
Cust. Doc. No.	Prep. Oleg Vanin 23.09.2022	Title Symbol Overview	Item Des.
Cust. Ref. No.	App. Mika Asikainen 24.09.2022		=
Customer Example Circuit Diagrams	Project ACS880-204 R6i		+
		SAP Doc. No. DMS doc. nr. 3AXD10001639407	
		EPLAN Doc. No. 3AFE _ -	
		ABB Ref. No. -	Rev. A / Sheet 300A
		Resp. Dept.	No. of Sheets 6


INCOMING UNIT & IGBT SUPPLY CUBICLE
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - -
Resp. Dept.
Item Dss.
= 01
+ 01.2
Rev. A
Sheet 001a
No. of Sheets 12
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204 R6i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Title Main circuit
IGBT supply unit
ACS880-204-0150A-7+C249+V992
EXTERNAL MAIN SUPPLY
-INPUT1
CABINET COMMON PE BUSBAR
CONTROL VOLTAGE DISTRIBUTION
MAIN SUPPLY FUSE SWITCH
MAIN CONTACTOR
#Switch Kit ABB Accessory
#Main Contactor ABB Accessory
#Charging Kit ABB Accessory
-Q1
-F1.1
-F1.2
-F1.3
250A
-Q2
-Q4
-Q21
16A
-F3.1
-F3.2
-R4
/003a/1A -R03.1:L1
/003a/1A -R03.1:L2
/003a/1A -R03.1:L3
/021b/2E
/050b/2D
/050b/2C
/021b/1E
/020a/2A -T21X1:1
/020a/2A -T21X1:8


INCOMING UNIT & IGBT SUPPLY CUBICLE
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.2
Rev. A
Sheet 003a
No. of Sheets 12
Title Main circuit
IGBT supply unit
ACS880-204-0150A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R6i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
/001a/8A
-Q2:2T1
/001a/8A
-4T2:
/001a/8B
-6T3:
#Filter Module
ABB Accessory
-R03.1
/005a/2B
690VAC
FILTER UNIT
BLCL-05-7
#Supply Module
ABB Accessory
-T01.1
/005a/2D
192A, 136kW
INVERTER MODULE
ACS880-104-0190A-7
#CM Filter
ABB Accessory
-R1.2
-R1.1
#Fuse
ABB Accessory
-F2.11
315A
-F2.12
315A
=-DCP
=-DCM
DC OUTPUT
FRAME
L1
L2
L3
W2
V2
U2
UDC+
UDC-


INCOMING UNIT & IGBT SUPPLY CUBICLE
Circuit diagram
EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept. -
Item Des. = 01 + 01.2
Rev. A
Sheet 005a
No. of Sheets 12
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204 R6i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Title Module control connections IGBT supply unit ACS880-204-0150A-7+C249+V992
-R03.1->X30
/021a/1E -Q24:2T1
/021a/5C -X22:1
/020a/3C -T21X1:10
/021a/6E -K6:A1
FILTER UNIT BLCL-05-7
-R03.1 /003a/3B
-T01.1 -STO IN
-X1
-T01.1 -24V OUT
-X2
BPA-01
/050c/5B -A51:V1R
/050c/4B -A51:V1T
INVERTER MODULE ACS880-104-0190A-7
-T01.1 /003a/3D


AUXILIARY CONTROL UNIT (External)
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev. A
Sheet 020a
No. of Sheets 1.2
Title Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0150A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R6i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
-T21X1
-T21
-T21X2
-F22
-R03.1-X30:5
/005a/4A
-F29:2
/021a/2E
/001a/3D
-Q21:4
/001a/2D
-Q21:2
/021a/5A
-XZ2:1
/050b/4B
/021a/1A
-XZ2:11
TP2
TP1
690V
660V
600V
575V
540V
525V
230V
N
U1


AUXILIARY CONTROL UNIT (External)
EFS2
Circuit diagram
SAP Doc. No.
DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
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Item Dss.
= 01
+ 01.1
Rev.
A
Sheet 021a
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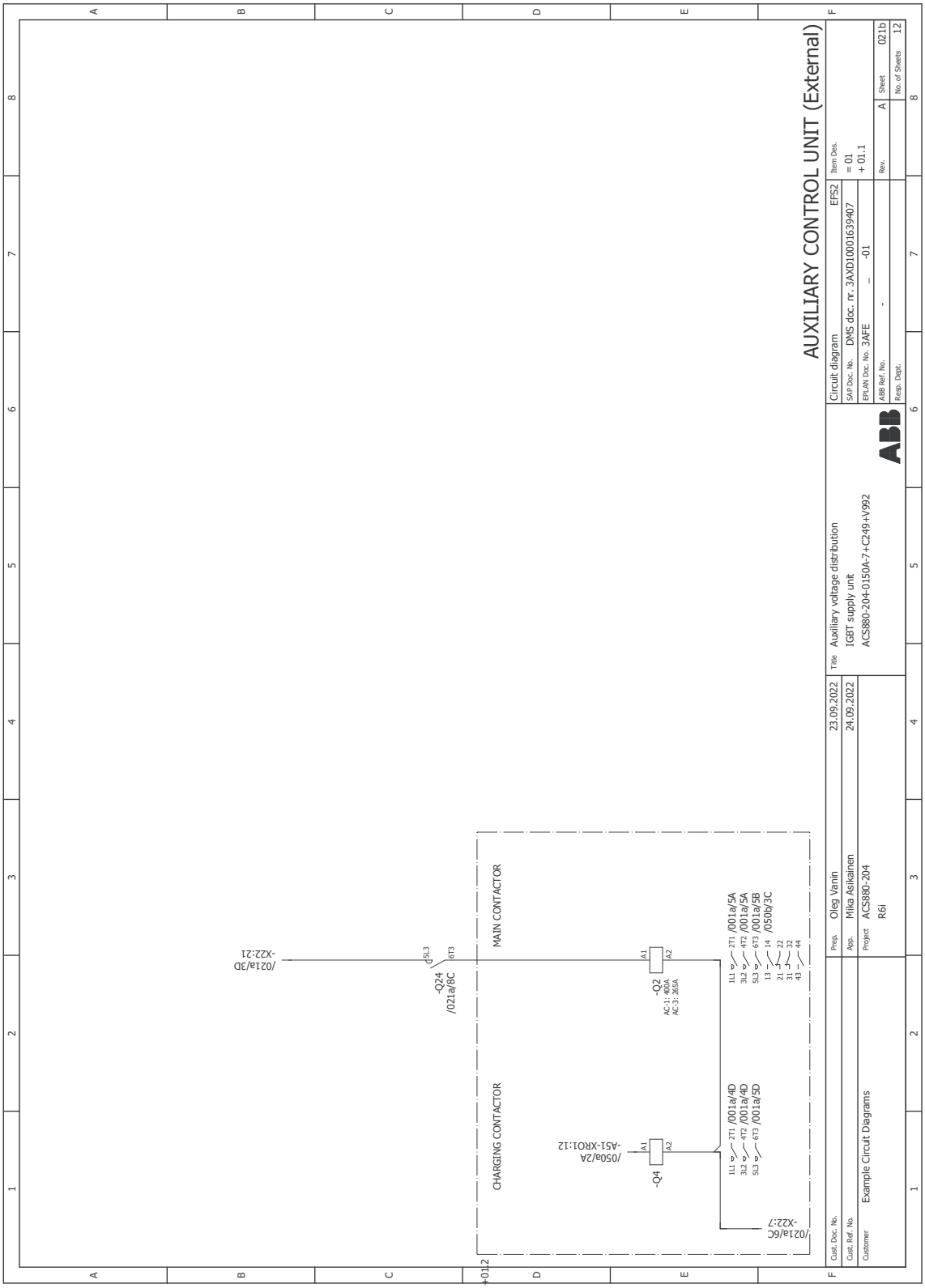
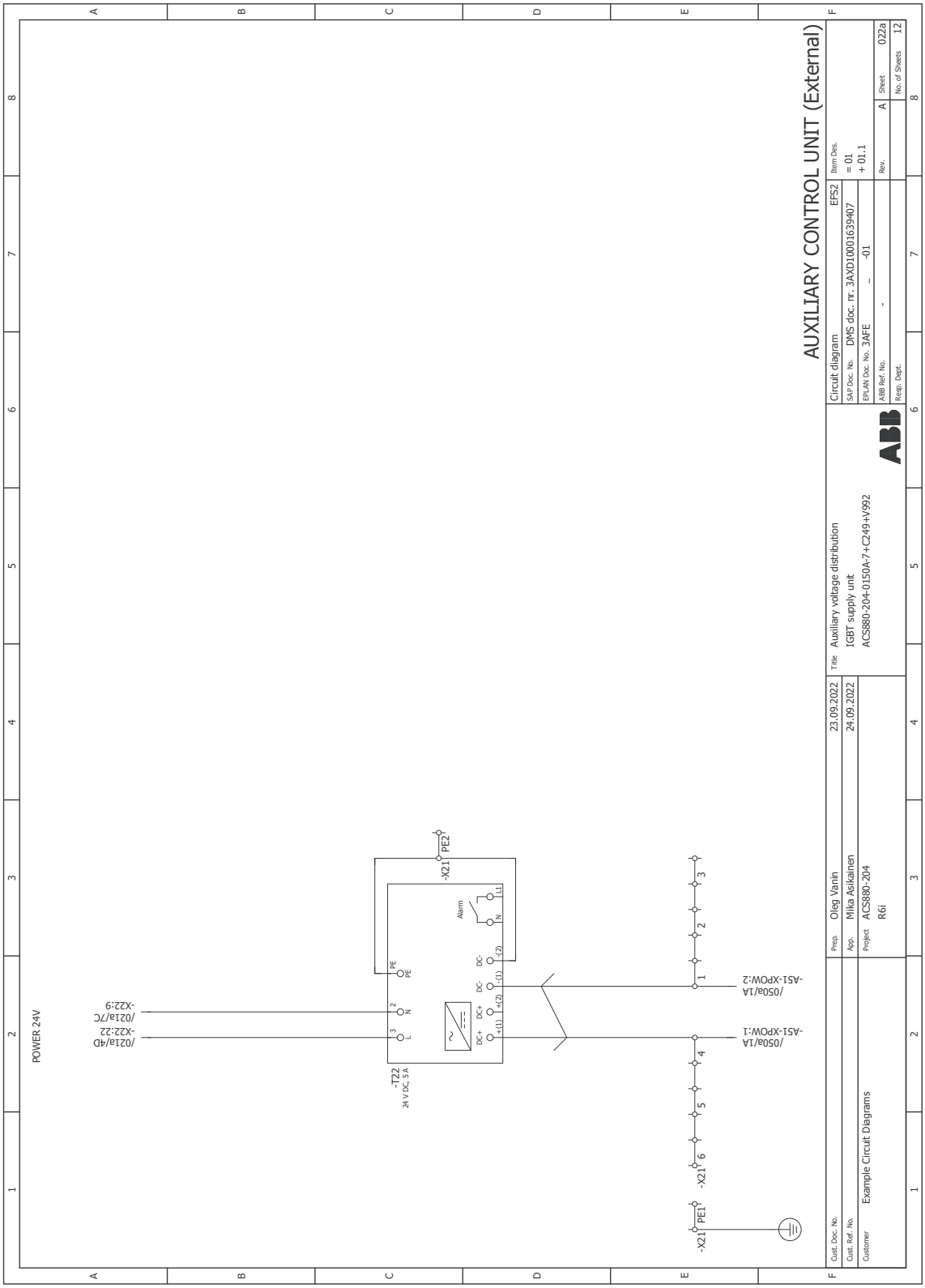
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204 R6i
Title Auxiliary voltage distribution IGBT supply unit ACS880-204-0150A-7+C249+V992
TEMP. CONTROL
CHARGING CONTACTOR CONTROL
MAIN CONTACTOR CONTROL
LCL FILTER FAN SUPPLY
-X22 PE1
-Q24 -A51-XRO3:32 /050a/4A
-X22 115/230VAC (N) -T2XI2:5 /020a/2E
-R03.1-X30:2 /005a/3A
-T2:2 /022a/2A
-K6:A2 /021a/6E
-Q4:A2 /021b/1F
-X22 115/230VAC (L) -F22:2 /020a/2E
-R03.1-X30:1 /005a/3A
-T2XI:9 /020a/3C
-F24 /050b/5C
-Q24 //8C
-F29 /050b/5D
-F23 -X22
-Q24:5L3 /021b/2B
-A51-XRO1:13 /050a/3A
-T2:3 /022a/2A
-A51-XRO3:33 /050a/4A
-R03.1-X30:6 /005a/4A
-X22:8 /021a/6C
-K6 /050b/5E
-Q24 /021b/2C
+01+2 DOOR
+01+2 FRAME
+01+1 DOOR
+01+1 FRAME


AUXILIARY CONTROL UNIT (External)
MAIN CONTACTOR
CHARGING CONTACTOR
-Q24
/021a/8C
/021a/3D
-XZ2:21
-Q2
AC-1: 400A
AC-3: 265A
-Q4
/050a/2A
-A51-XRO1:12
/021a/6C
-XZ2:7
/001a/5A
/001a/5A
/001a/5B
/050b/3C
/001a/4D
/001a/4D
/001a/5D
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
A
Sheet
021b
No. of Sheets
1.2
Title
Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0150A-7+C249+V992
Prep.
Oleg Vanin
23.09.2022
App.
Mika Asikainen
24.09.2022
Project
ACS880-204
R6i
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
+01.2


AUXILIARY CONTROL UNIT (External)
POWER 24V
-T22
24 V DC, 5 A
-X21
PE2
PE1
Alarm
-A51-XPOW:1
-A51-XPOW:2
/050a/1A
/021a/4D
/021a/7C
-XZ2:22
-XZ2:9
Circuit diagram
EF52
Item Des.
= 01
+ 01.1
SAP Doc. No. DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept. -
Rev. A
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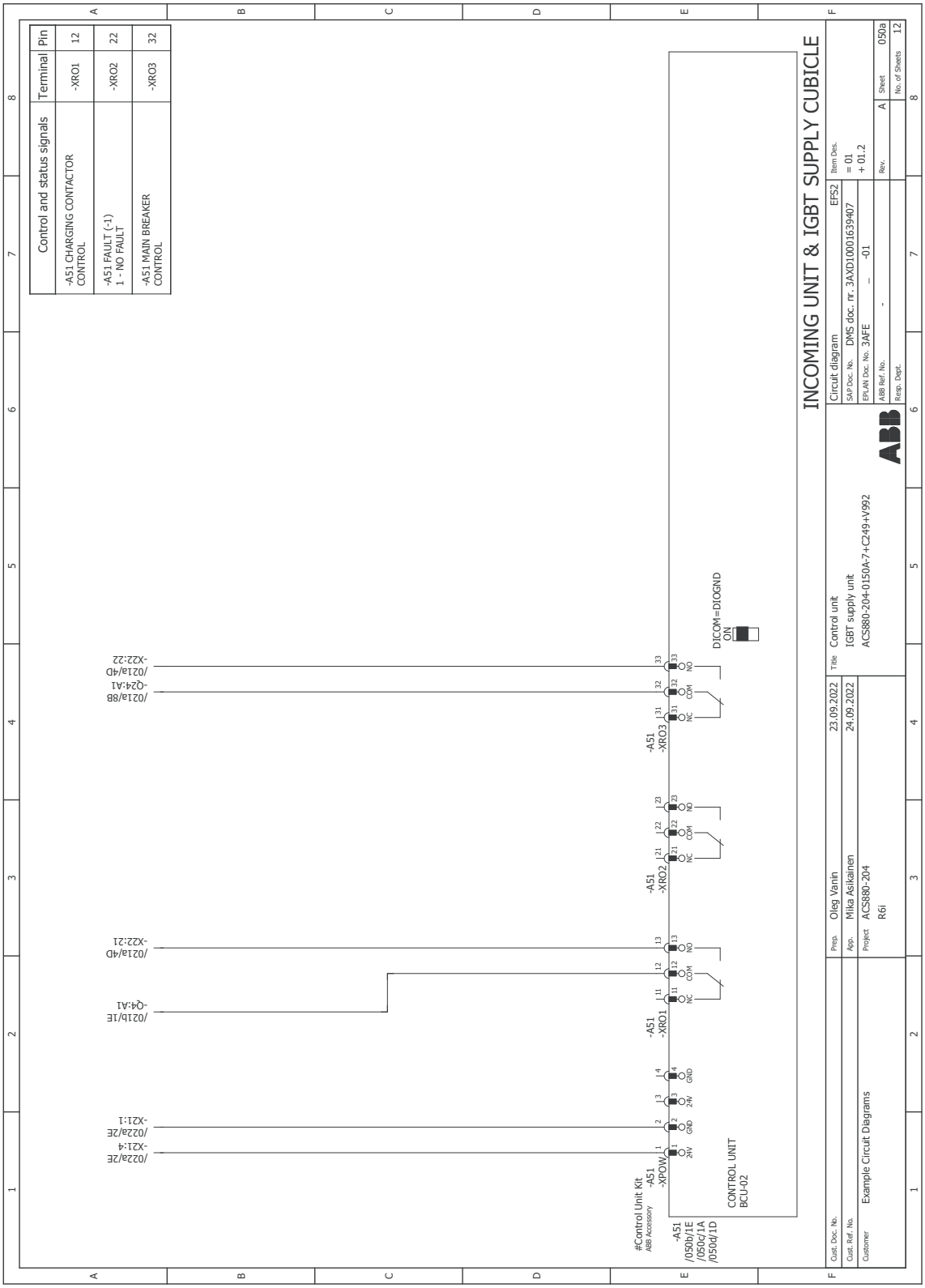
No. of Sheets 12
Title Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0150A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204
R6i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams


INCOMING UNIT & IGBT SUPPLY CUBICLE
Control and status signals
-A51 CHARGING CONTACTOR CONTROL
-A51 FAULT (-1) 1 - NO FAULT
-A51 MAIN BREAKER CONTROL
Terminal
-XRO1
-XRO2
-XRO3
Pin
12
22
32
CONTROL UNIT BCU-02
#Control Unit Kit
ABB Accessory
-A51 -XPOW
-A51 -XRO1
-A51 -XRO2
-A51 -XRO3
DICOM=DIOGND
ON
/022a/ZE -X21:4
/022a/ZE -X21:1
/021b/1E -Q4:A1
/021a/4D -X22:21
/021a/4D -X22:22
/021a/8B -Q24:A1
/021a/4D -X22:33
-A51 /050b/1E /050d/1A /050d/1D
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204 R6i
Customer Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
Title Control unit IGBT supply unit ACS880-204-0150A-7+C249+V992
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
EFS2
Item Des. = 01 + 01.2
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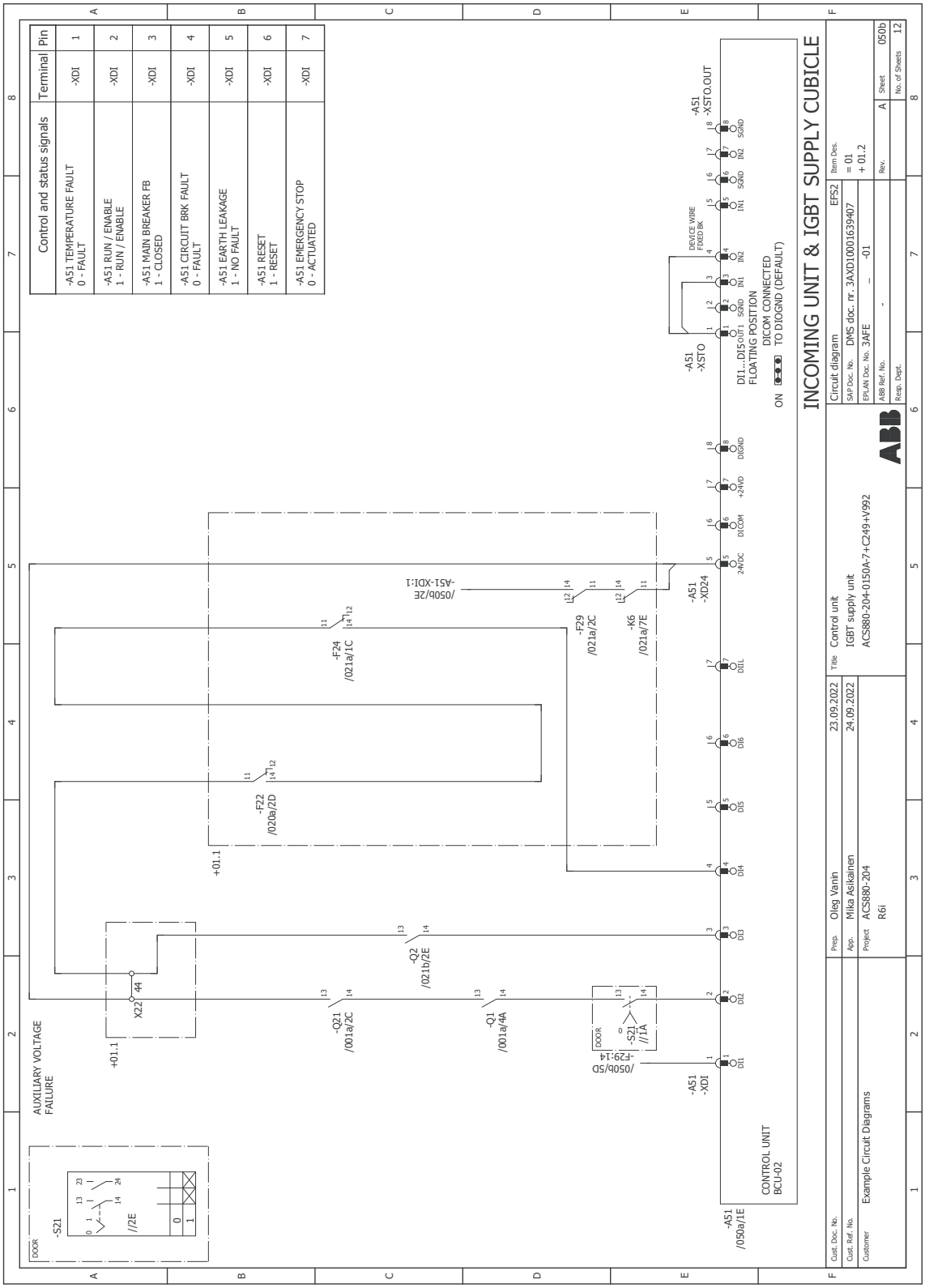
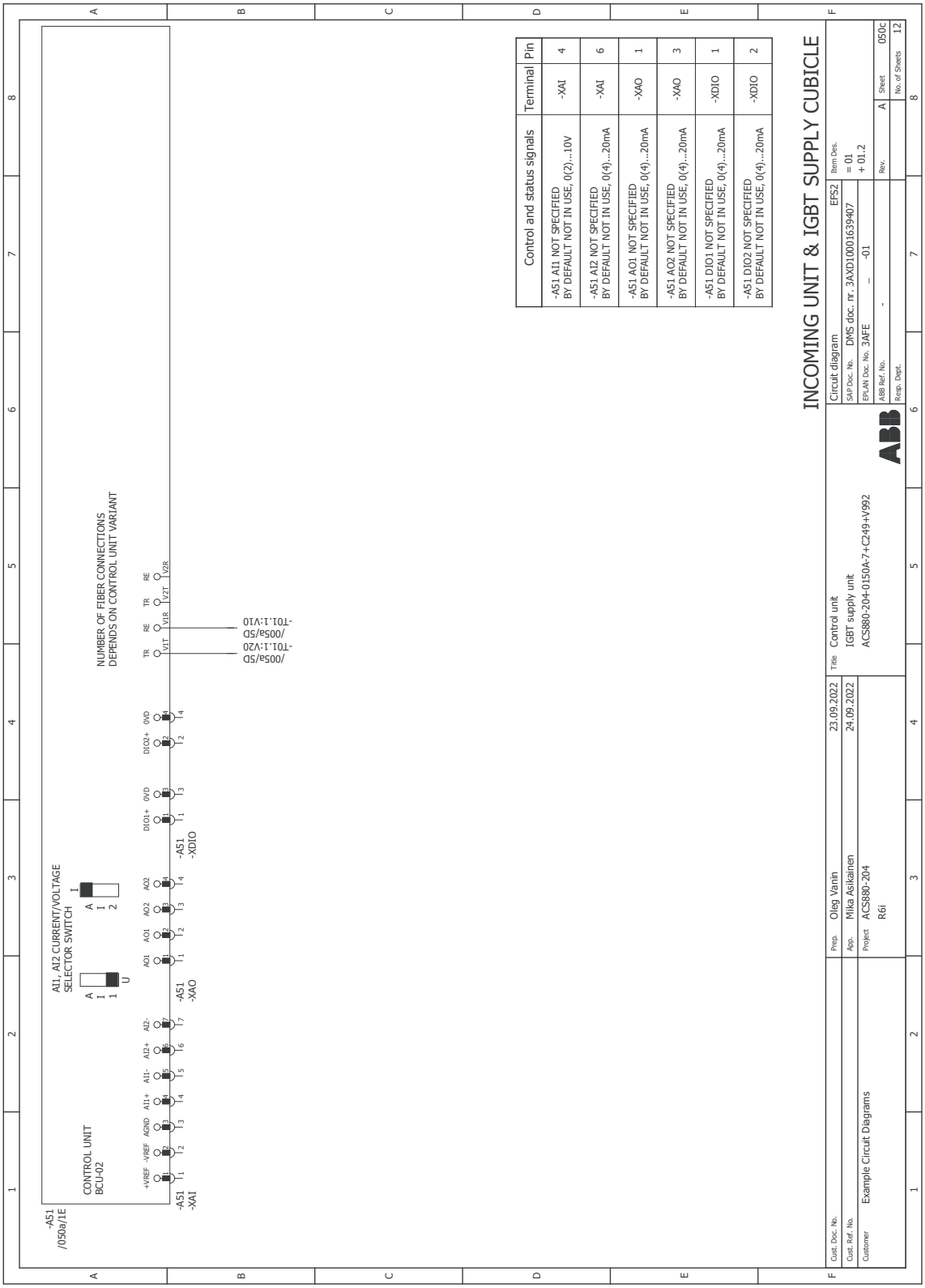

INCOMING UNIT & IGBT SUPPLY CUBICLE
Control and status signals
Terminal
Pin
-A51 TEMPERATURE FAULT 0 - FAULT
-A51 RUN / ENABLE 1 - RUN / ENABLE
-A51 MAIN BREAKER FB 1 - CLOSED
-A51 CIRCUIT BRK FAULT 0 - FAULT
-A51 EARTH LEAKAGE 1 - NO FAULT
-A51 RESET 1 - RESET
-A51 EMERGENCY STOP 0 - ACTUATED
-XDI
AUXILIARY VOLTAGE FAILURE
CONTROL UNIT BCU-02
-A51 -XDI
-A51 -XSTO
-A51 -XSTO.OUT
-A51 -XD24
-S21
-Q21 /001a/2C
-Q1 /001a/4A
-Q2 /021b/2E
-F22 /020a/2D
-F24 /021a/1C
-F29 /021a/2C
-K6 /021a/7E
-A51 /050a/1E
Circuit diagram
Control unit
IGBT supply unit
ACS880-204-0150A-7+C249+V992
EFS2
DMS doc. nr. 3AXD10001639407
Example Circuit Diagrams
ACS880-204
R6i


INCOMING UNIT & IGBT SUPPLY CUBICLE
Control unit
IGBT supply unit
ACS880-204-0150A-7+C249+V992
EFS2
ABB
Circuit diagram
DMS doc. nr. 3AXD10001639407
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Item Des.
= 01
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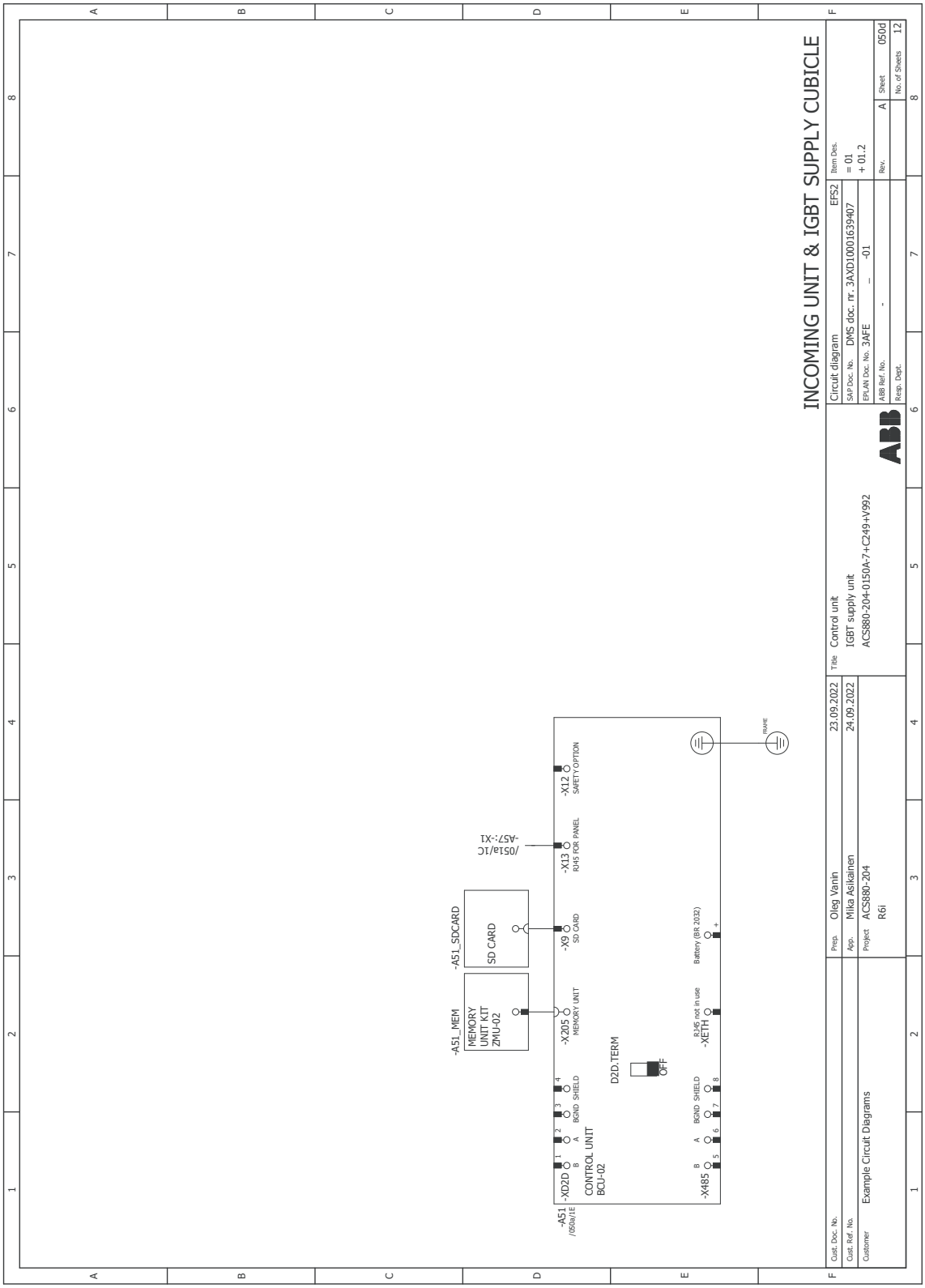
050c
No. of Sheets
1.2
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R6i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
-A51
/050a/1E
CONTROL UNIT
BCU-02
A1, A2 CURRENT/VOLTAGE
SELECTOR SWITCH
NUMBER OF FIBER CONNECTIONS
DEPENDS ON CONTROL UNIT VARIANT
-A51
-XAI
-A51
-XAO
-A51
-XDIO
-T01.1:V20
/050a/SD
-T01.1:V10
/050a/SD
Control and status signals
Terminal
Pin
-A51 AI1 NOT SPECIFIED
BY DEFAULT NOT IN USE, 0(2)...10V
-XAI
4
-A51 AI2 NOT SPECIFIED
BY DEFAULT NOT IN USE, 0(4)...20mA
-XAI
6
-A51 AO1 NOT SPECIFIED
BY DEFAULT NOT IN USE, 0(4)...20mA
-XAO
1
-A51 AO2 NOT SPECIFIED
BY DEFAULT NOT IN USE, 0(4)...20mA
-XAO
3
-A51 DIO1 NOT SPECIFIED
BY DEFAULT NOT IN USE, 0(4)...20mA
-XDIO
1
-A51 DIO2 NOT SPECIFIED
BY DEFAULT NOT IN USE, 0(4)...20mA
-XDIO
2


INCOMING UNIT & IGBT SUPPLY CUBICLE
Circuit diagram
EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept. -
Item Des. = 01 + 01.2
Rev. A
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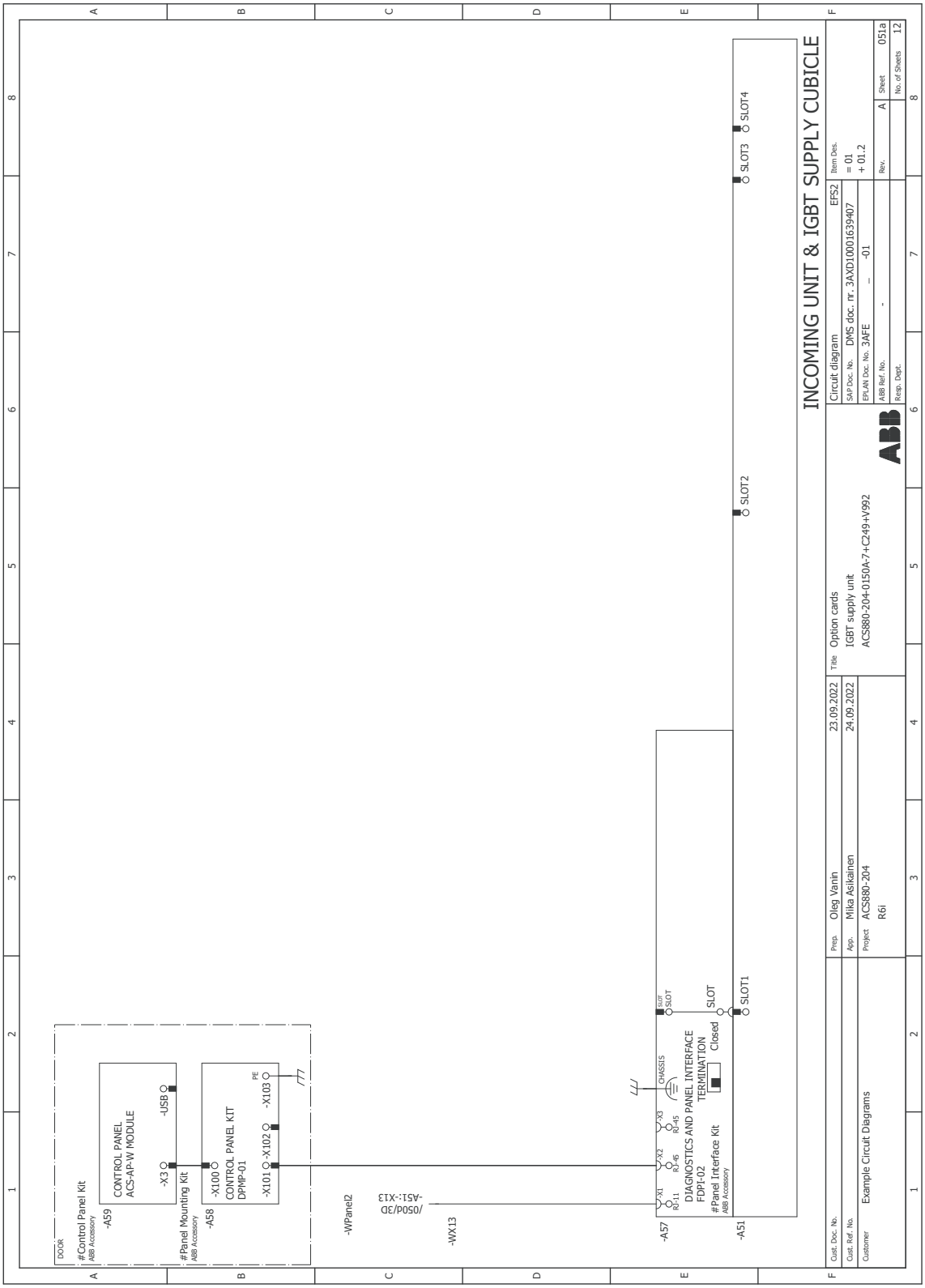
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204 R6i
Title Control unit
IGBT supply unit
ACS880-204-0150A-7+C249+V992
-A51
/050a/1E
CONTROL UNIT
BCU-02
-XD2D
-X485
-XETH
-X205
-X9
-X13
-X12
D2D.TERM
OFF
-A51_MEM
MEMORY UNIT KIT ZMU-02
-A51_SDCARD
SD CARD
/051a/1C
-A57:-X1
FRAME


DOOR
#Control Panel Kit
ABB Accessory
-A59
CONTROL PANEL
ACS-AP-W MODULE
-X3
-USB
#Panel Mounting Kit
ABB Accessory
-A58
-X100
CONTROL PANEL KIT
DPMP-01
-X101
-X102
PE
-X103
-WPanel2
-WX13
-A57
-A51:-X13
/050d/3D
DIAGNOSTICS AND PANEL INTERFACE
FDPI-02
#Panel Interface Kit
ABB Accessory
-X1
RJ-11
-X2
RJ-45
-X3
RJ-45
CHASSIS
SLOT
SLOT
Closed
TERMINATION
SLOT1
SLOT2
SLOT3
SLOT4
INCOMING UNIT & IGBT SUPPLY CUBICLE
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
23.09.2022
App.
Mika Asikainen
24.09.2022
Project
ACS880-204
R6i
Title
Option cards
IGBT supply unit
ACS880-204-0150A-7+C249+V992
EFS2
Circuit diagram
SAP Doc. No.
DMS doc. nr. 3AXD10001639407
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
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No. of Sheets
1.2

Frame R7i

Higher-level function	Page	Page description	Revision
	000A	Title page / cover sheet	A
	000C	Structured identifier overview	A
	000D	Summarized parts list	A
	000E	Summarized parts list	A
	300A	Symbol Overview	A
01	001a	Main circuit	A
	003a	Main circuit	A
	005a	Module control connections	A
	020a	Auxiliary voltage distribution	A
	021a	Auxiliary voltage distribution	A
	021b	Auxiliary voltage distribution	A
	022a	Auxiliary voltage distribution	A
	050a	Control unit	A
	050b	Control unit	A
	050c	Control unit	A
	050d	Control unit	A
	051a	Option cards	A

Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams

Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204 R7i

Title Table of contents

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ABB Ref. No. – –
Resp. Dept.

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Function designations

Designation	Structure description
=01	IGBT supply unit

Location designations

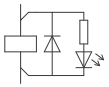
Designation	Structure description
+01.1	Auxiliary control unit (External)
+01.2	Incoming unit & IGBT supply cubicle

Electrical option designations

Designation	Material Code	Quantity
#CM Filter	3AUA0000032859	2
#Charging Kit	3AXD50000558551	1
#Control Panel Kit	3AXD50000025965	1
#Control Unit Kit	3ADXS0000002937	1
#Filter Module	3AXD50000863051	1
#Fuse	68316049, 3AXD50000010197	5
#Main Contactor	3AUA0000145463	1
#Panel Interface Kit	3AUA0000108650	1
#Panel Mounting Kit	3AUA0000108878	1
#Supply Module	ACS880-204-0170A-7	1
#Switch Kit	3AXD50000002801	1

Cust. Doc. No.	Prep. Oleg Vanin 23.09.2022	Title Structured identifier overview		Item Des.	
Cust. Ref. No.	App. Mika Asikainen 24.09.2022		SAP Doc. No. DMS doc. nr. 3AXD10001639409	=	
Customer Example Circuit Diagrams	Project ACS880-204 R7i		EPLAN Doc. No. 3AFE _ -	+	
		ABB	ABB Ref. No. -	Rev. A	Sheet 000C
			Resp. Dept.		No. of Sheets 6

GENERAL/RELAY COIL, WITH PROTECTIVE CIRCUIT DIODE AND R+LED



GENERAL/RELAY COIL

COIL WITH PICK-UP DELAY

COIL WITH OFF-DELAY

NO CONTACT

NC CONTACT

CHANGE OVER CONTACT

NO CONTACT, WITH CLOSING DELAY

TWO NO CONTACTS ONE INPUT, TWO OUTPUTS

TWO CONNECTED CHANGE OVER CONTACTS

POWER NO CONTACT OF A CONTACTOR

PUSH BUTTON WITH NO CONTACT

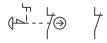
PUSH BUTTON WITH NC CONTACT

NO SWITCH, OPERATED BY TURNING, 2 POSITIONS

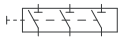
LIMIT SWITCH NC CONTACT MECHANICALLY OPERATED

NC SWITCH, TEMPERATURE OPERATED

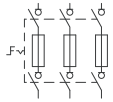
EMERGENCY STOP PUSH BUTTON



DISCONNECT SWITCH, THREE-POLE



SWITCH DISCONNECTOR WITH FUSES, THREE-POLE

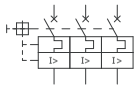


FUSE

FUSE DISCONNECTOR

CIRCUIT BREAKER

MOTOR OVERLOAD SWITCH WITH SWITCH MECHANISM



COMMON MODE FILTER FOR HIGH FREQUENCY CURRENTS

PROTECTIVE EARTH CONNECTED TO FRAME

PROTECTIVE EARTH CONNECTED TO TERMINAL / PE BUSBAR

FUNCTIONAL EARTHING CONNECTED TO TERMINAL

FUNCTIONAL BONDING TO FRAME

LIGHT

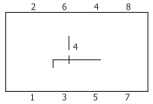
INDUCTOR

CAPACITOR

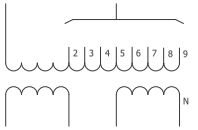
RESISTOR

POWER RESISTOR WITH FUSE

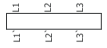
PHASE SELECTING SWITCH



TRANSFORMER



EMC FILTER



TERMINAL, FOUR POLE

PLUG AND SOCKET TERMINAL BLOCK WITH 4 CONNECTION POINTS

FEMALE AND MALE PLUG

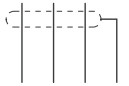
AMPERE METER

CURRENT TRANSFORMER

VOLTAGE METER

WIRE TERMINATION, INSULATED

SHIELDED CABLE



THERMAL OPERATION

DISCONNECT

DISCONNECT, CAN BE OPERATED WHILE NOMINAL CURRENT IS APPLIED

BREAKER, SHORTCIRCUIT BREAKING CAPABILITY

Cust. Doc. No.	Prep. Oleg Vanin 23.09.2022	Title Symbol Overview	Item Des.
Cust. Ref. No.	App. Mika Asikainen 24.09.2022		=
Customer Example Circuit Diagrams	Project ACS880-204 R7i		+
		SAP Doc. No. DMS doc. nr. 3AXD10001639409	
		EPLAN Doc. No. 3AFE _ -	
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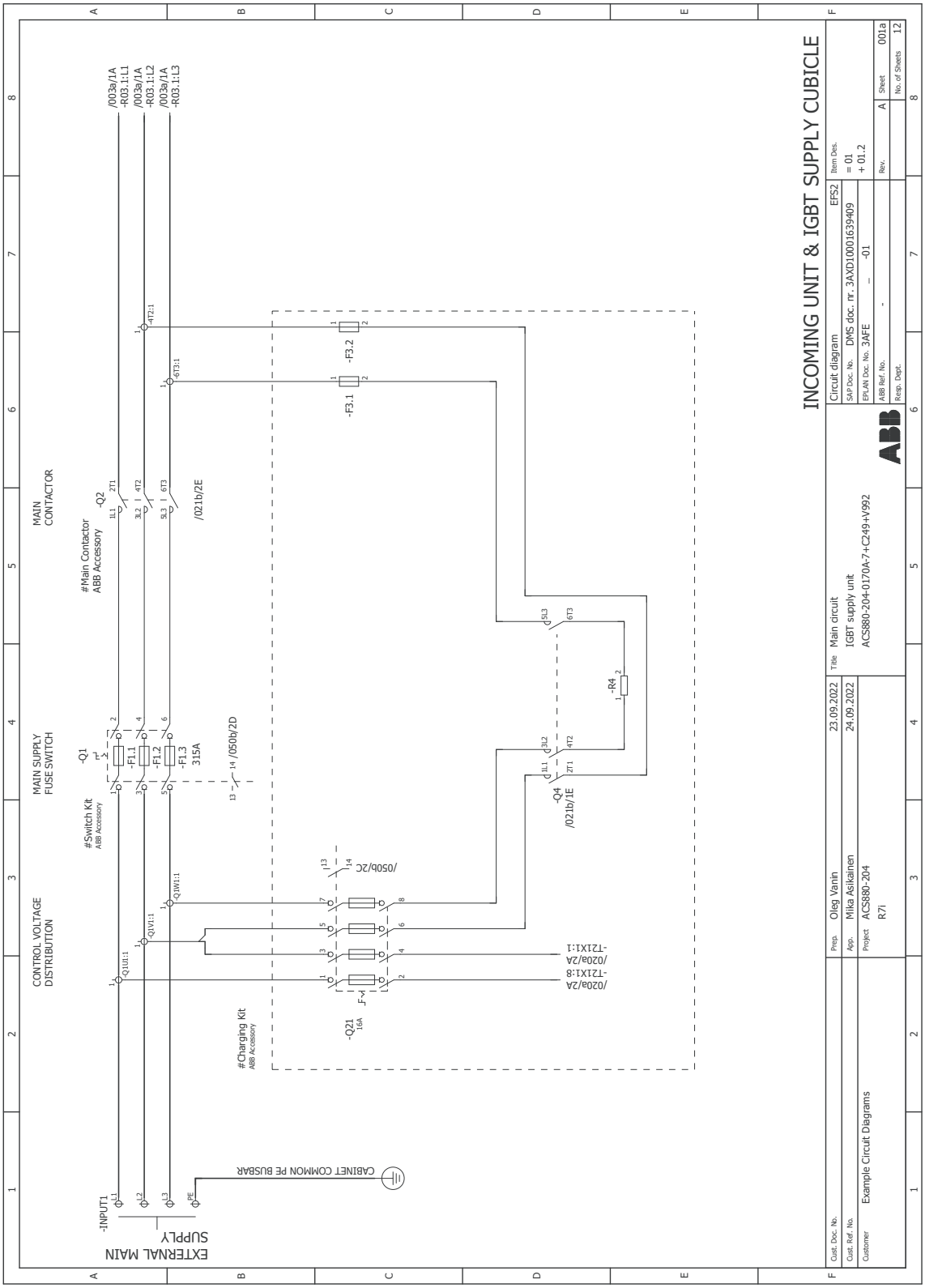
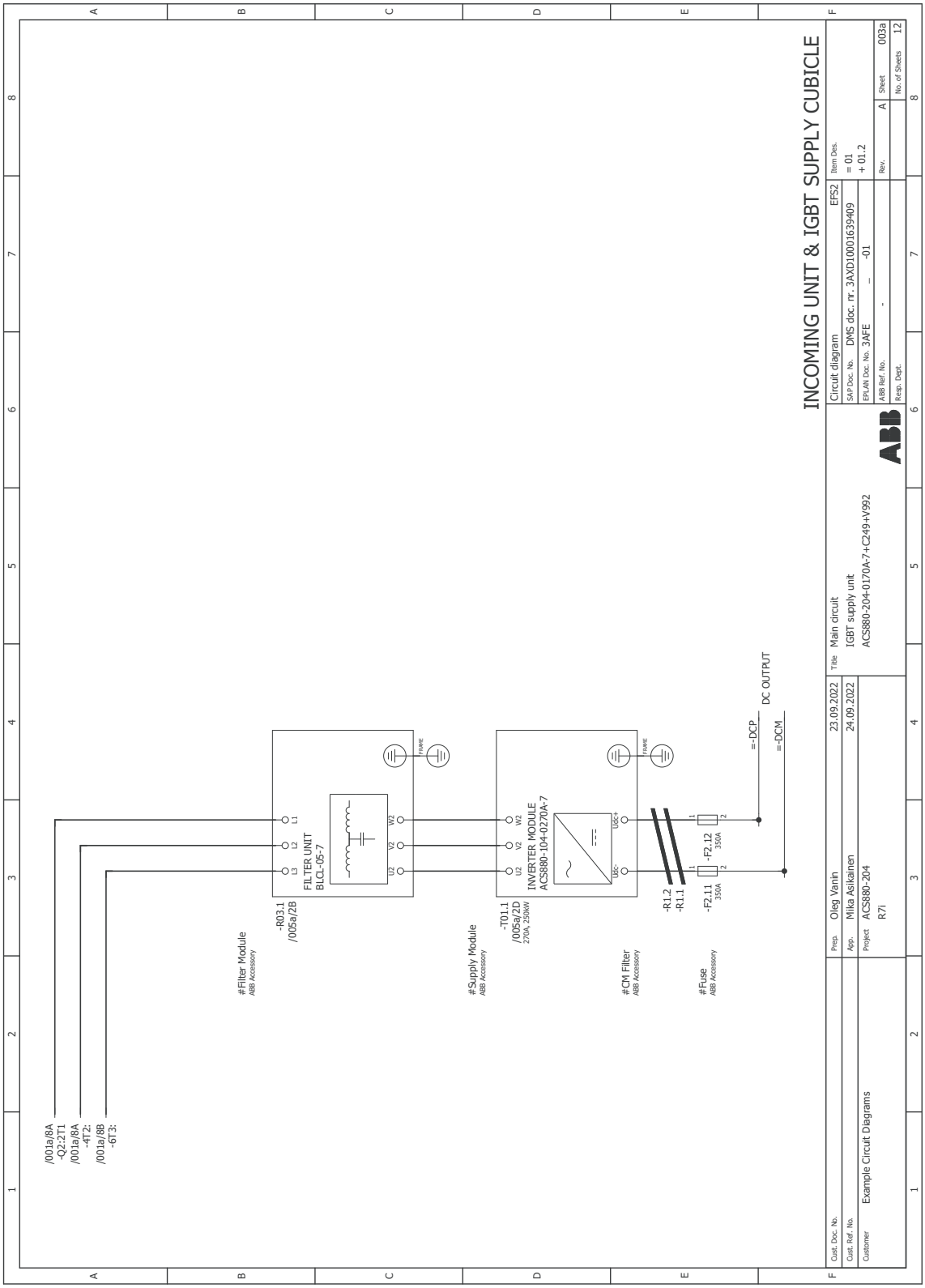

INCOMING UNIT & IGBT SUPPLY CUBICLE
EFS2
Circuit diagram
SAP Doc. No.
DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.2
Rev. A
Sheet 001a
No. of Sheets 1.2
Title Main circuit
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204 R7i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
EXTERNAL MAIN SUPPLY
-INPUT1
CABINET COMMON PE BUSBAR
CONTROL VOLTAGE DISTRIBUTION
MAIN SUPPLY FUSE SWITCH
MAIN CONTACTOR
#Switch Kit ABB Accessory
#Main Contactor ABB Accessory
#Charging Kit ABB Accessory
-Q1
-F1.1
-F1.2
-F1.3
315A
-Q2
-F3.1
-F3.2
-R4
-Q4
-Q21
16A
/003a/1A -R03.1:L1
/003a/1A -R03.1:L2
/003a/1A -R03.1:L3
/021b/2E
/050b/2D
/050b/2C
/020a/2A -T2IX1:8
/020a/2A -T2IX1:1
/021b/1E


INCOMING UNIT & IGBT SUPPLY CUBICLE
EF52
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.2
Rev. A
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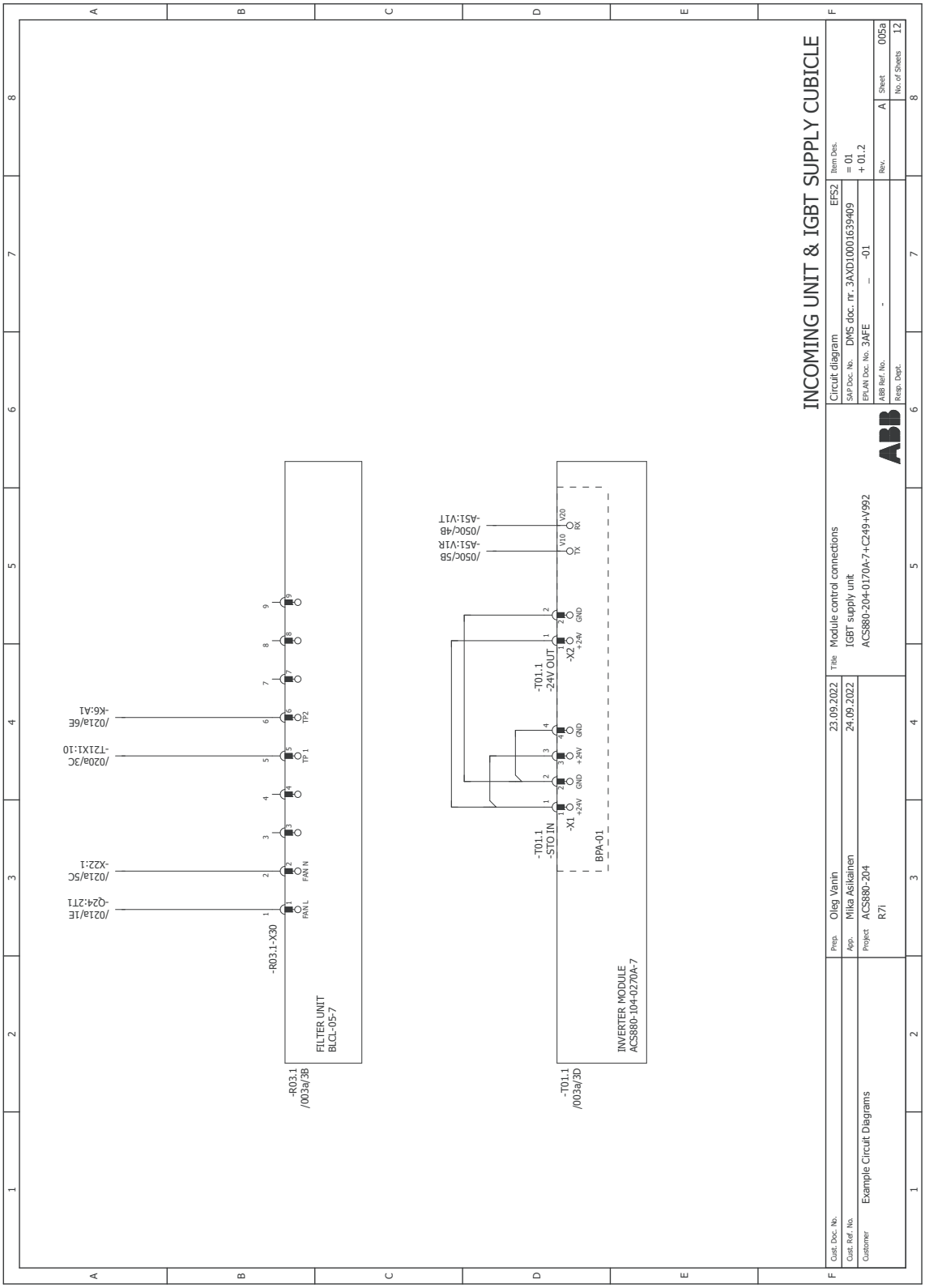
No. of Sheets 12
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204
R7i
Title Main circuit
IGBT supply unit
ACS880-204-0170A-7+C249+V992
ABB
/001a/8A
-Q2:2T1
/001a/8A
-4T2:
/001a/8B
-6T3:
#Filter Module
ABB Accessory
-R03.1
/005a/2B
FILTER UNIT
BLCL-05-7
L3 L2 L1
U2 V2 W2
FRAME
#Supply Module
ABB Accessory
-T01.1
/005a/2D
270A, 250kW
INVERTER MODULE
ACS880-104-0270A-7
U2 V2 W2
UDC- UDC+
FRAME
#CM Filter
ABB Accessory
-R1.2
-R1.1
#Fuse
ABB Accessory
-F2.11
350A
-F2.12
350A
=-DCP
=-DCM
DC OUTPUT


INCOMING UNIT & IGBT SUPPLY CUBICLE
EFS2
Circuit diagram
Module control connections
IGBT supply unit
ACS880-204-0170A-7+C249+V992
SAP Doc. No. DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.2
Rev. A
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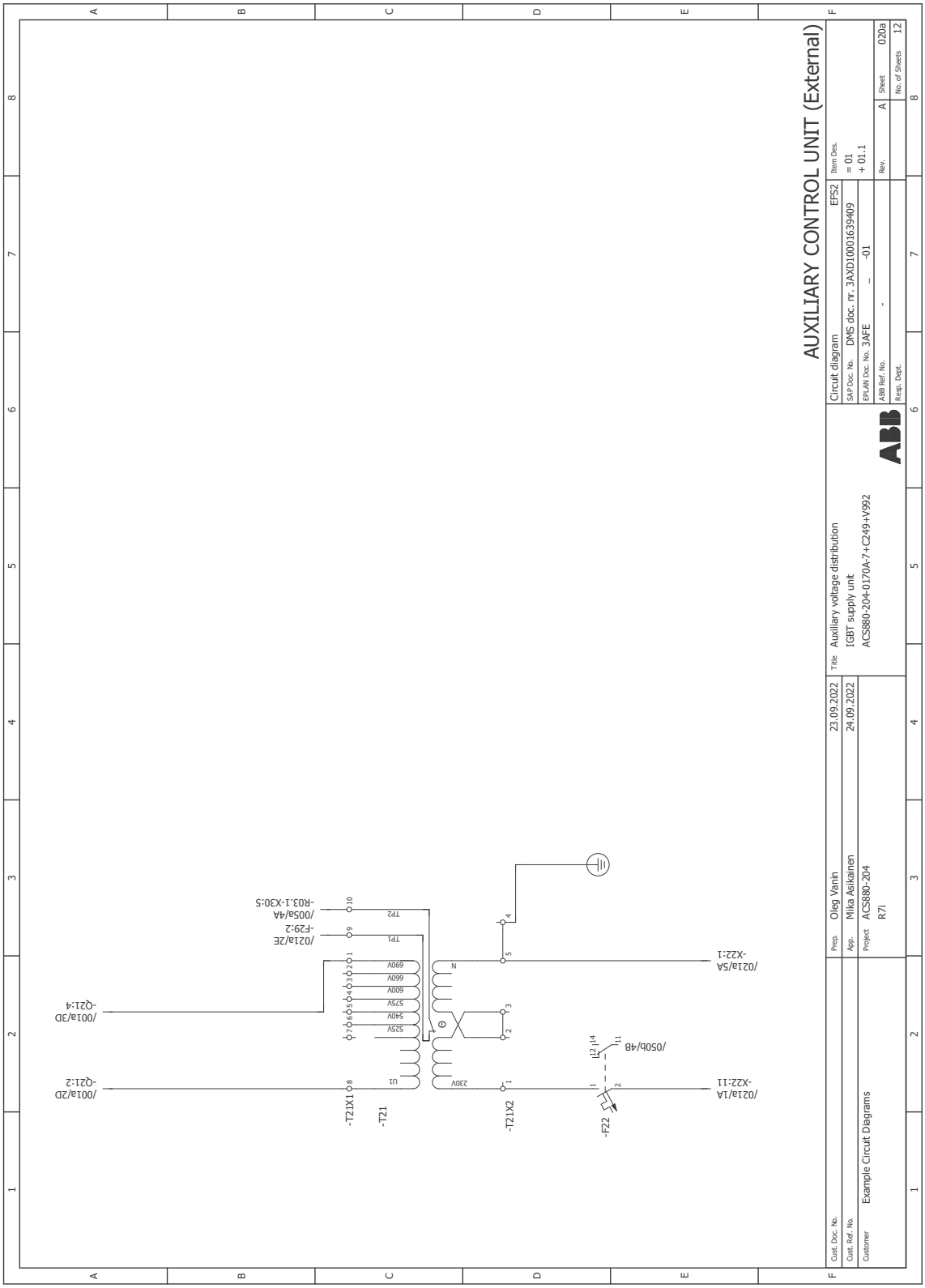
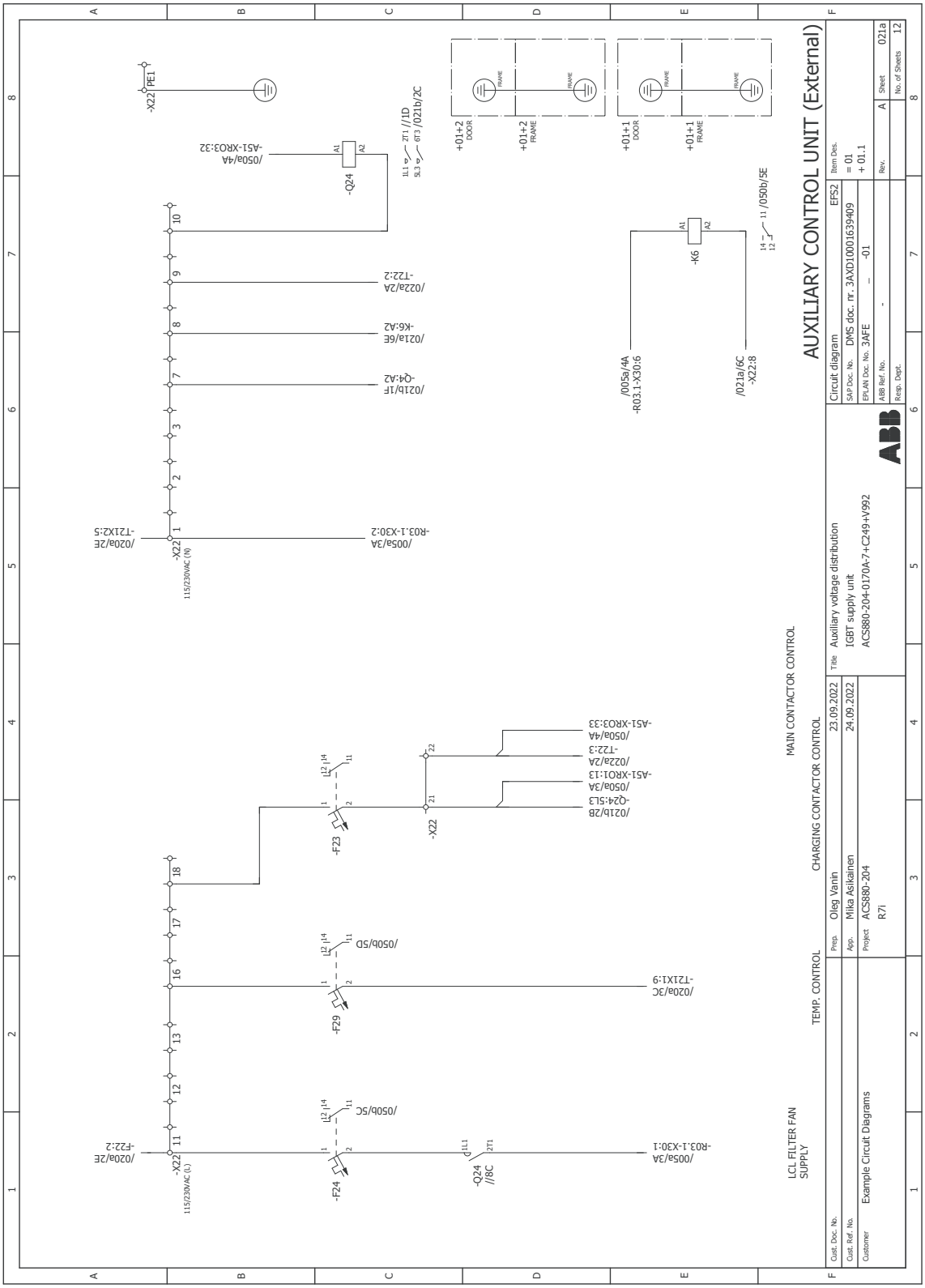
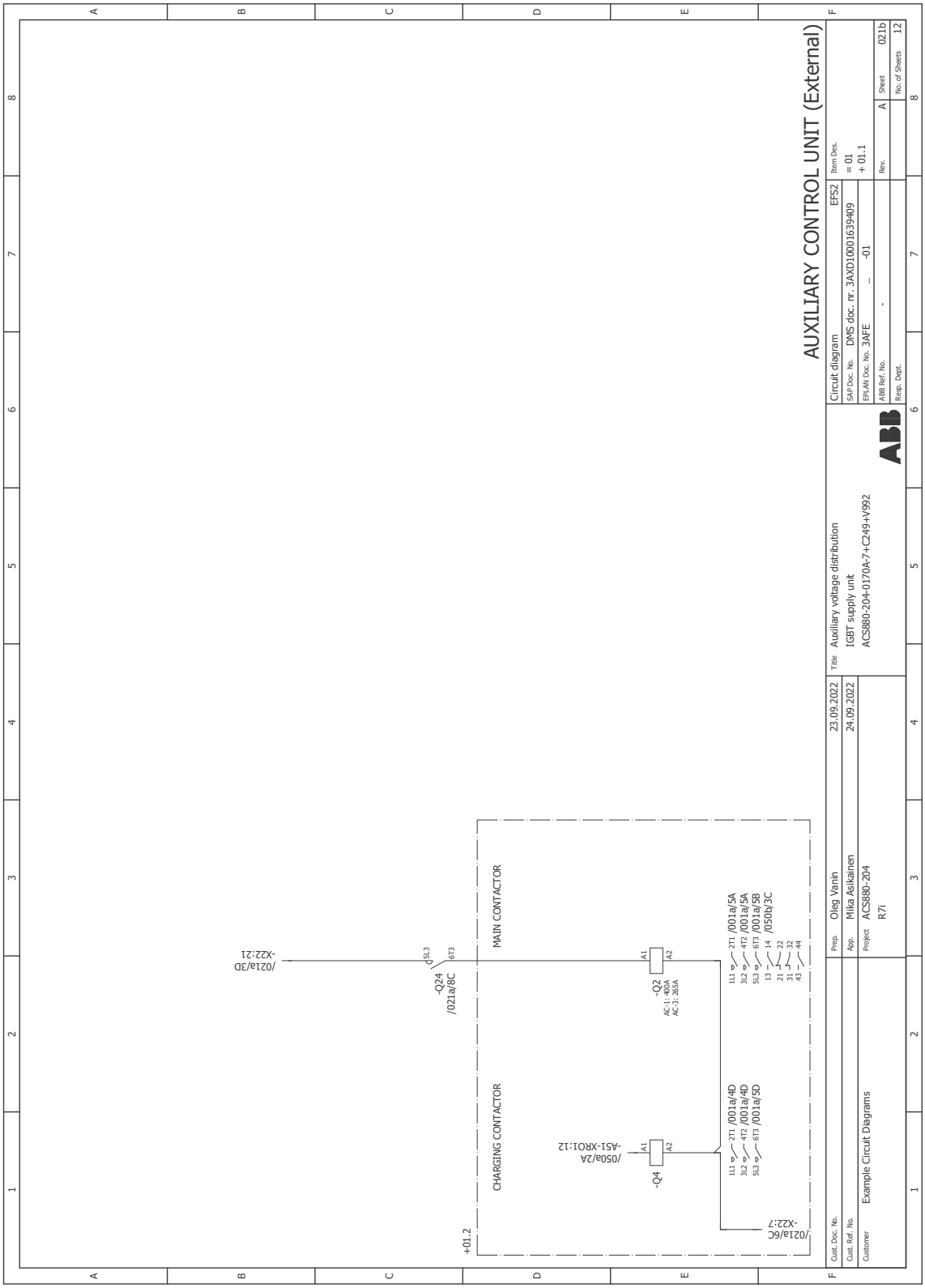
No. of Sheets 12
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204 R7i
-R03.1->X30
FILTER UNIT
BLCL-05-7
-R03.1
/003a/3B
/021a/1E
-Q24:2T1
/021a/5C
-X22:1
/020a/3C
-T21X1:10
/021a/6E
-K6:A1
-T01.1
-STO IN
-X1
-T01.1
-24V OUT
-X2
BPA-01
INVERTER MODULE
ACS880-104-0270A-7
-T01.1
/003a/3D
/050c/5B
-A51:V1R
/050c/4B
-A51:V1T


AUXILIARY CONTROL UNIT (External)
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - Rev. A Sheet 020a
Resp. Dept. No. of Sheets 12
Item Des. = 01 + 01.1
Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204 R7i
Customer Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
/001a/2D -Q21:2
/001a/3D -Q21:4
/021a/2E -F29:2
/005a/4A -R03.1-X30:5
/021a/5A -X22:1
/021a/1A -X22:11
/050b/4B
-T21X1
-T21
-T21X2
-F22
U1
TP1
TP2
230V
525V
540V
575V
600V
660V
690V
N


AUXILIARY CONTROL UNIT (External)
EFS2
Circuit diagram
SAP Doc. No.
EPLAN Doc. No. 3AFE
ABB Ref. No.
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
Sheet 021a
No. of Sheets 12
ABB
Title Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R7i
Customer Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
TEMP. CONTROL
CHARGING CONTACTOR CONTROL
MAIN CONTACTOR CONTROL
LCL FILTER FAN SUPPLY
-X22 PE1
-Q24 -AS1-XRO3:32 /050a/4A
-X22 115/230VAC (N)
-R03.1-X30:2 /005a/3A
-X22:5 /020a/ZE
-T21X2:5
-Q24:A2 /021b/1F
-K6:A2 /021a/6E
-T22:2 /022a/ZA
-F22:2 /020a/ZE
-X22 115/230VAC (L)
-F24 /050b/5C
-Q24 //8C
-R03.1-X30:1 /005a/3A
-F29 /050b/5D
-T21X1:9 /020a/3C
-F23 /050a/4A
-AS1-XRO3:33
-T22:3 /022a/ZA
-AS1-XRO1:13 /050a/3A
-Q24:5L3 /021b/ZB
-X22
-K6 /050b/5E
-R03.1-X30:6 /005a/4A
-X22:8 /021a/6C
-Q24 /050a/4A
-AS1-XRO3:32
+01+2 DOOR
+01+2 FRAME
+01+1 DOOR
+01+1 FRAME


AUXILIARY CONTROL UNIT (External)
EFS2
Item Des.
= 01
+ 01.1
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept. -
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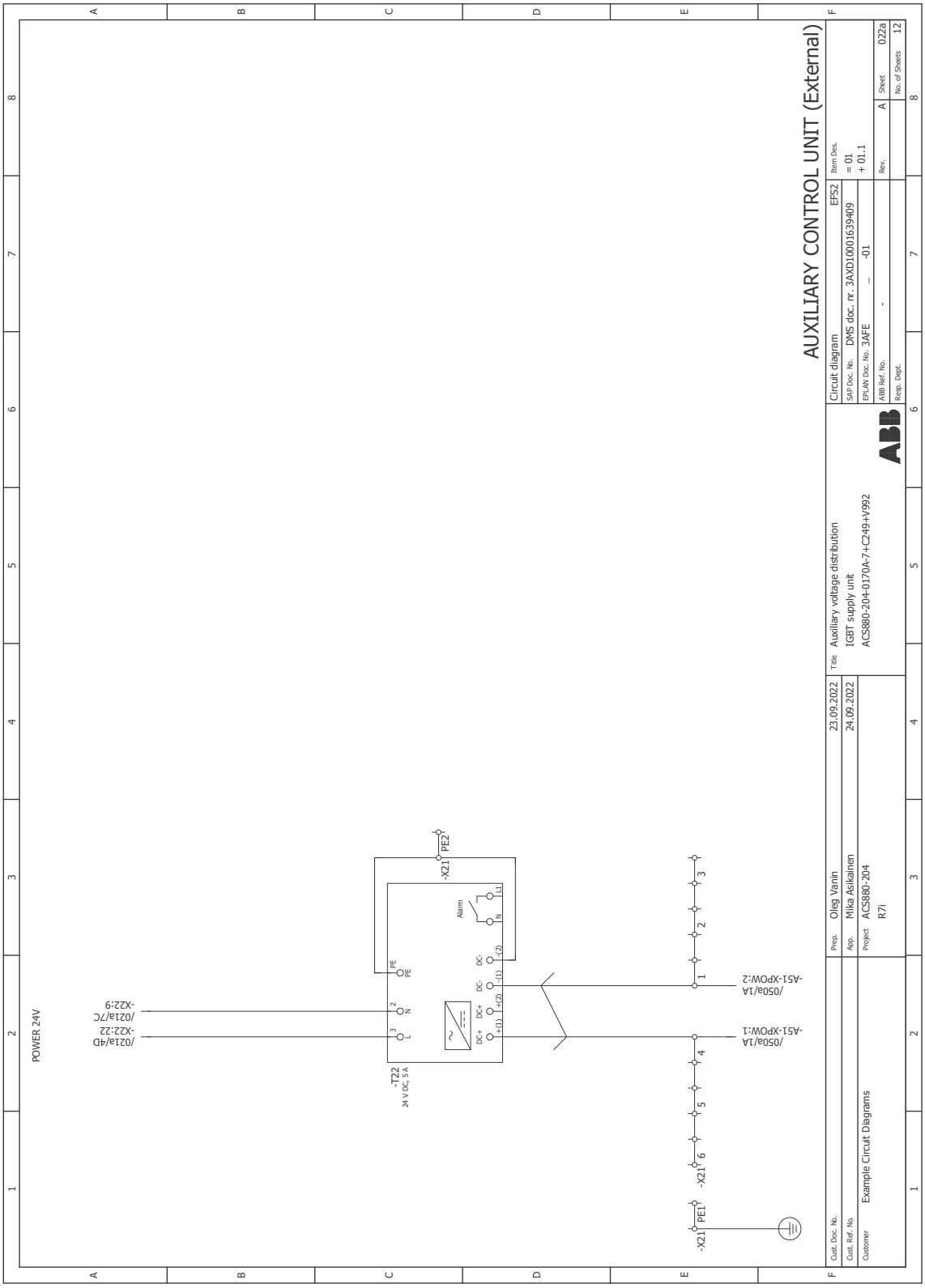
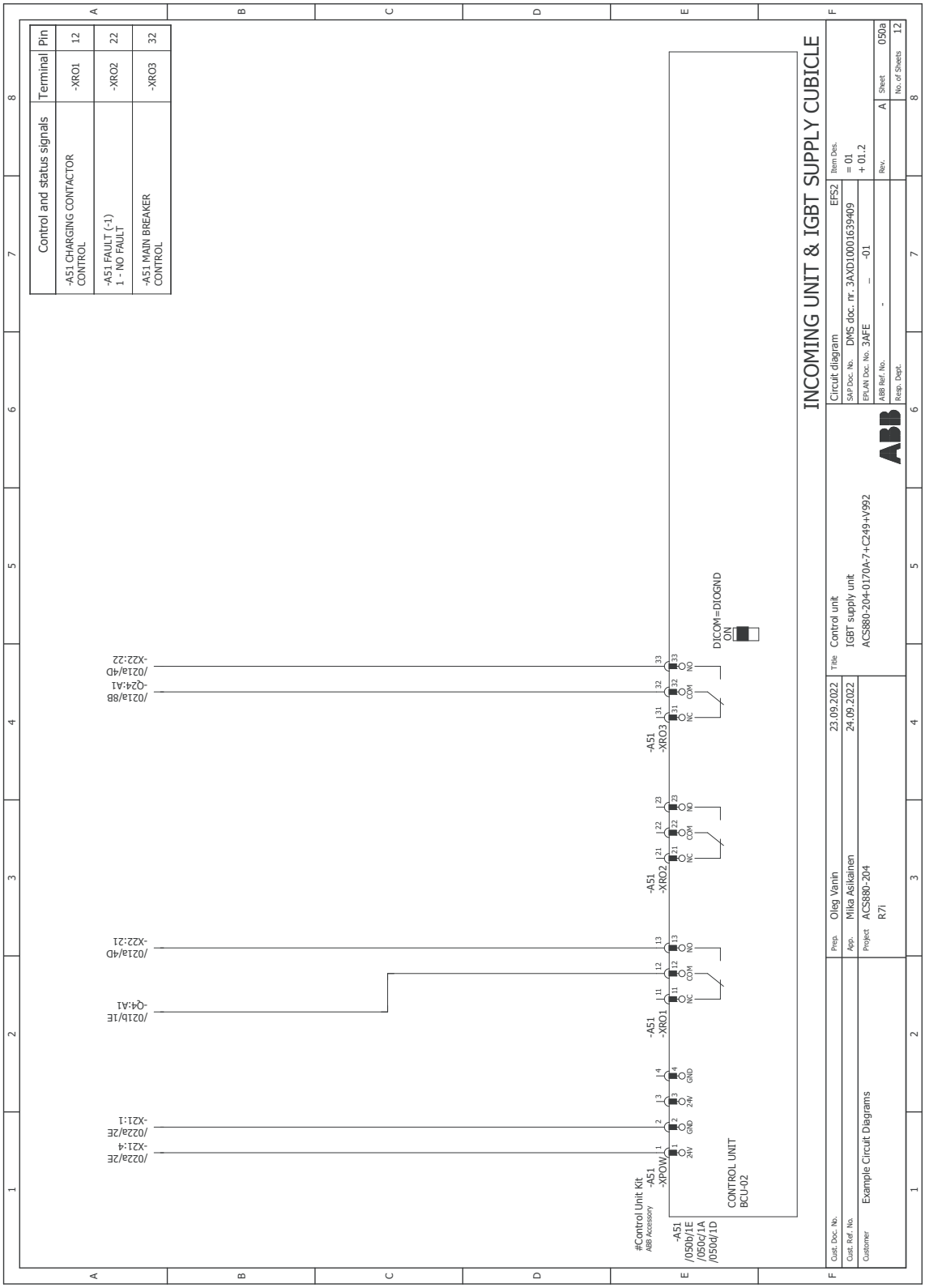
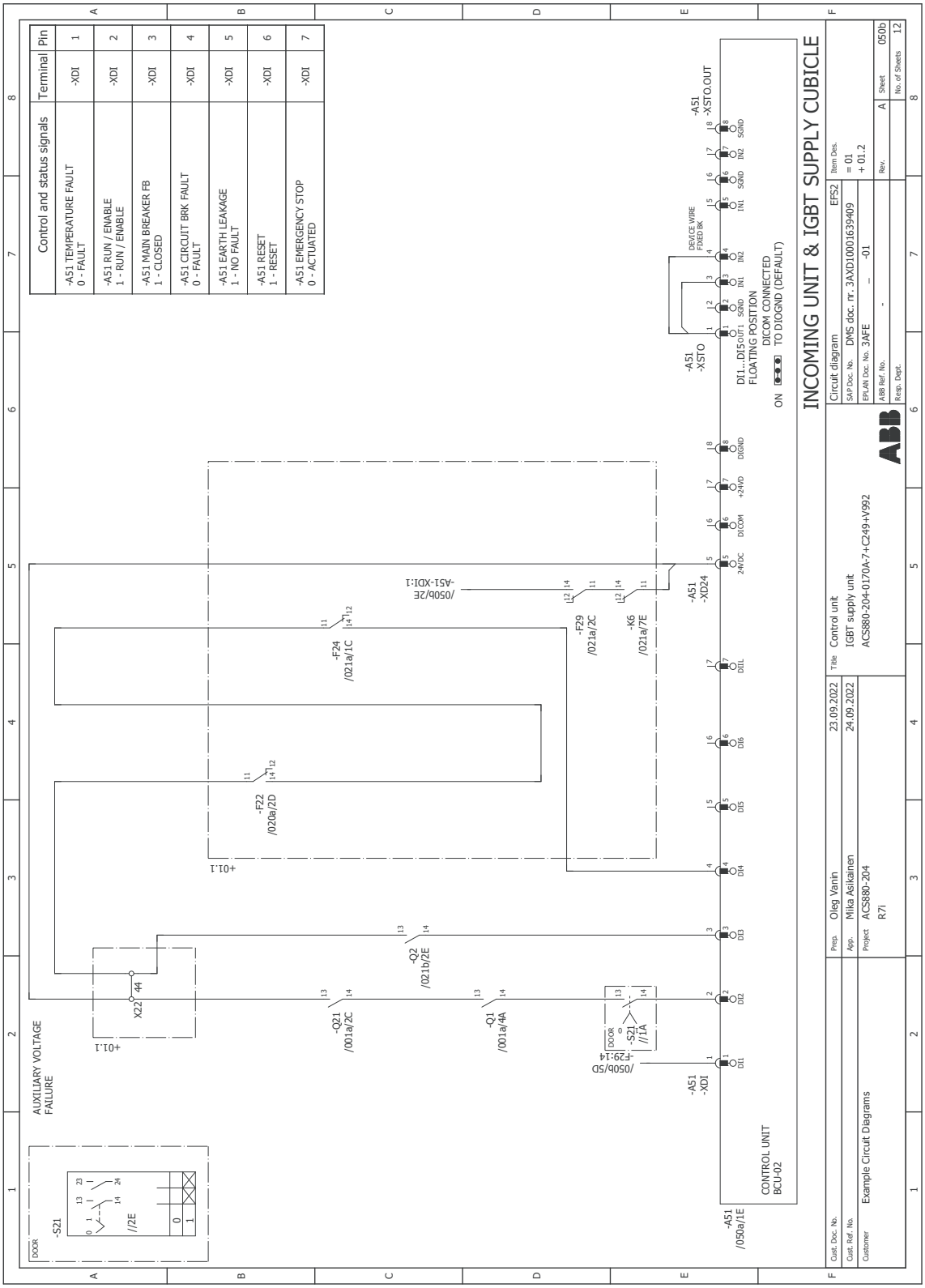
No. of Sheets 12
Title Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
Appr. Mika Asikainen 24.09.2022
Project ACS880-204
R7i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
+01.2
CHARGING CONTACTOR
MAIN CONTACTOR
-Q4
-Q2
AC-1: 400A
AC-3: 265A
-Q24
/021a/8C
-A5I-XRO1:12
/050a/2A
/021a/6C
-XZ2:7
/021a/3D
-XZ2:21
/001a/4D
/001a/5A
/001a/5B
/050b/3C
/001a/5D


AUXILIARY CONTROL UNIT (External)
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept. -
Item Des.
= 01
+ 01.1
Rev. A
Sheet 022a
No. of Sheets 1.2
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R7i
Title Auxiliary voltage distribution
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
POWER 24V
/021a/4D
-X22:22
/021a/7C
-X22:9
-T22
24 V DC, 5 A
-X21
PE2
Alarm
-X21
PE1
-X21
/050a/1A
-A51-XPOW:1
/050a/1A
-A51-XPOW:2


INCOMING UNIT & IGBT SUPPLY CUBICLE
Control and status signals
Terminal
Pin
-A51 CHARGING CONTACTOR CONTROL
-XRO1
12
-A51 FAULT (-1) 1 - NO FAULT
-XRO2
22
-A51 MAIN BREAKER CONTROL
-XRO3
32
CONTROL UNIT BCU-02
DICOM=DIOGND
ON
-A51 -XPOW
-A51 -XRO1
-A51 -XRO2
-A51 -XRO3
/022a/2E -X21:4
/022a/2E -X21:1
/021b/1E -Q4:A1
/021a/4D -X22:21
/021a/8B -Q24:A1
/021a/4D -X22:22
#Control Unit Kit
ABB Accessory
Control unit
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Oleg Vanin
Mika Asikainen
ACS880-204
R7i
Example Circuit Diagrams
Circuit diagram
EFS2
DMS doc. nr. 3AXD10001639409
3AFE
-01
050a
12


INCOMING UNIT & IGBT SUPPLY CUBICLE
Control and status signals
Terminal
Pin
-A51 TEMPERATURE FAULT 0 - FAULT
-A51 RUN / ENABLE 1 - RUN / ENABLE
-A51 MAIN BREAKER FB 1 - CLOSED
-A51 CIRCUIT BRK FAULT 0 - FAULT
-A51 EARTH LEAKAGE 1 - NO FAULT
-A51 RESET 1 - RESET
-A51 EMERGENCY STOP 0 - ACTUATED
AUXILIARY VOLTAGE FAILURE
CONTROL UNIT BCU-02
DI1...DI5 FLOATING POSITION
DICOM CONNECTED
TO DIOGND (DEFAULT)
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE
-01
Item Des.
= 01
+ 01.2
Control unit
IGBT supply unit
ACS880-204-0170A-7+C249+V992
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R7i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
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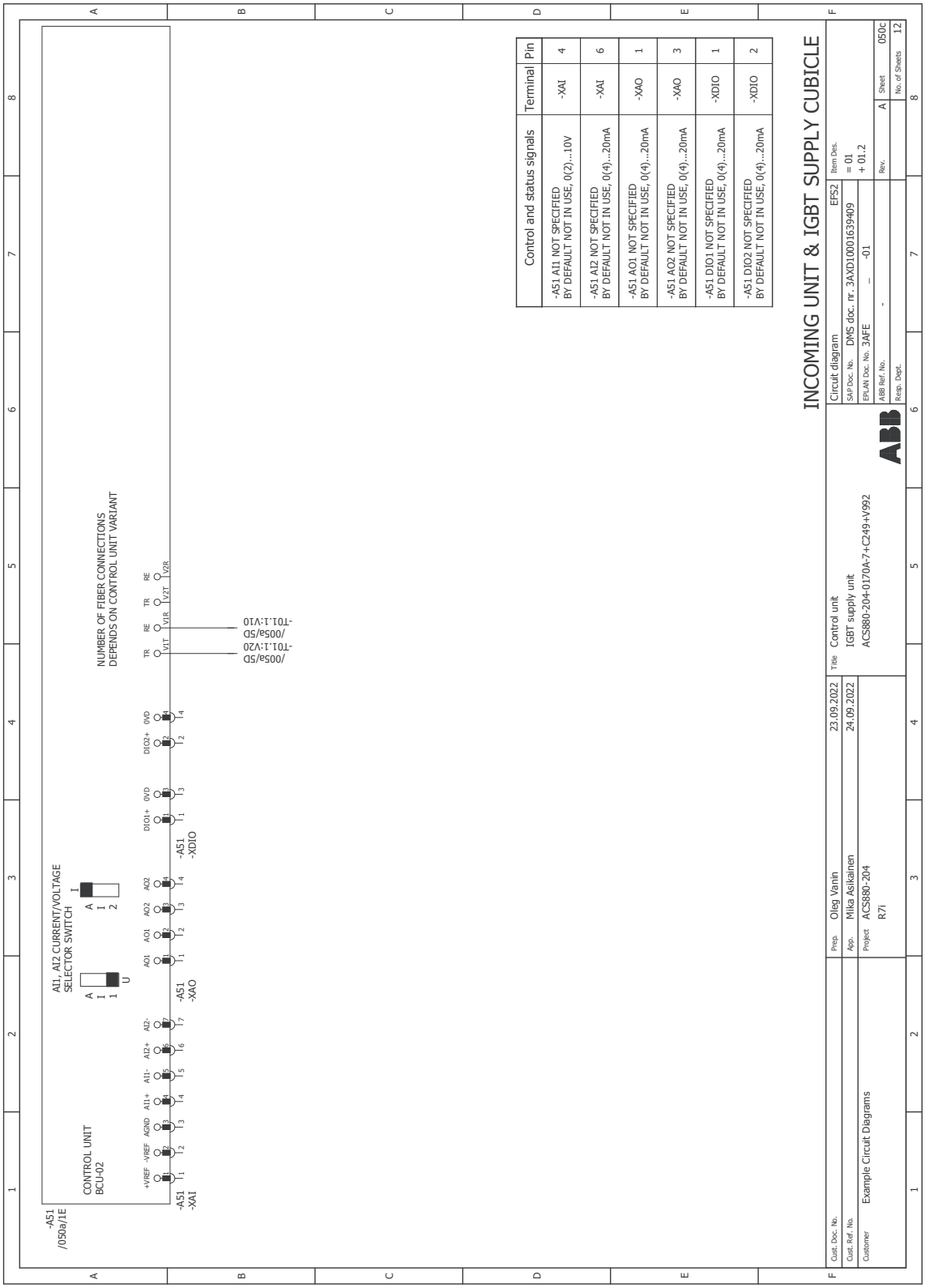
INCOMING UNIT & IGBT SUPPLY CUBICLE
Control and status signals
Terminal
Pin
-A51 AI1 NOT SPECIFIED BY DEFAULT NOT IN USE, 0(2)...10V
-XAI
4
-A51 AI2 NOT SPECIFIED BY DEFAULT NOT IN USE, 0(4)...20mA
-XAI
6
-A51 AO1 NOT SPECIFIED BY DEFAULT NOT IN USE, 0(4)...20mA
-XAO
1
-A51 AO2 NOT SPECIFIED BY DEFAULT NOT IN USE, 0(4)...20mA
-XAO
3
-A51 DIO1 NOT SPECIFIED BY DEFAULT NOT IN USE, 0(4)...20mA
-XDIO
1
-A51 DIO2 NOT SPECIFIED BY DEFAULT NOT IN USE, 0(4)...20mA
-XDIO
2
NUMBER OF FIBER CONNECTIONS DEPENDS ON CONTROL UNIT VARIANT
A11, A12 CURRENT/VOLTAGE SELECTOR SWITCH
CONTROL UNIT BCU-02
-A51 /050a/1E
-A51 -XAI
-A51 -XAO
-A51 -XDIO
-T01.1:V20 /005a/5D
-T01.1:V10 /005a/5D
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001639409
EPLAN Doc. No. 3AFE
-01
ABB Ref. No.
Resp. Dept.
Item Des.
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+ 01.2
Rev.
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Sheet
050c
No. of Sheets
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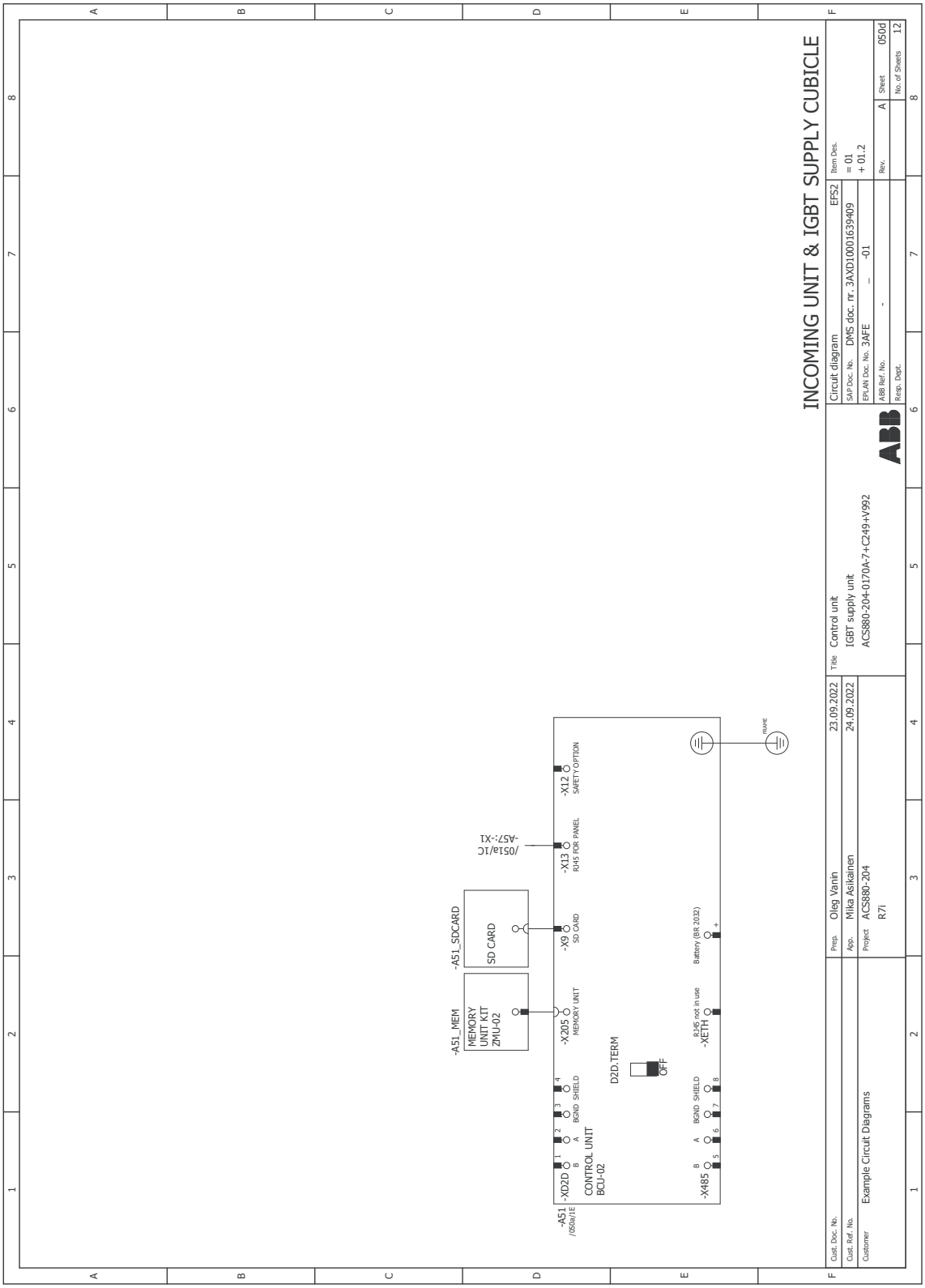
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
23.09.2022
App.
Mika Asikainen
24.09.2022
Project
ACS880-204
R7i
Title
Control unit
IGBT supply unit
ACS880-204-0170A-7+C249+V992


INCOMING UNIT & IGBT SUPPLY CUBICLE
EFS2
Circuit diagram
SAP Doc. No.
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.2
Rev. A
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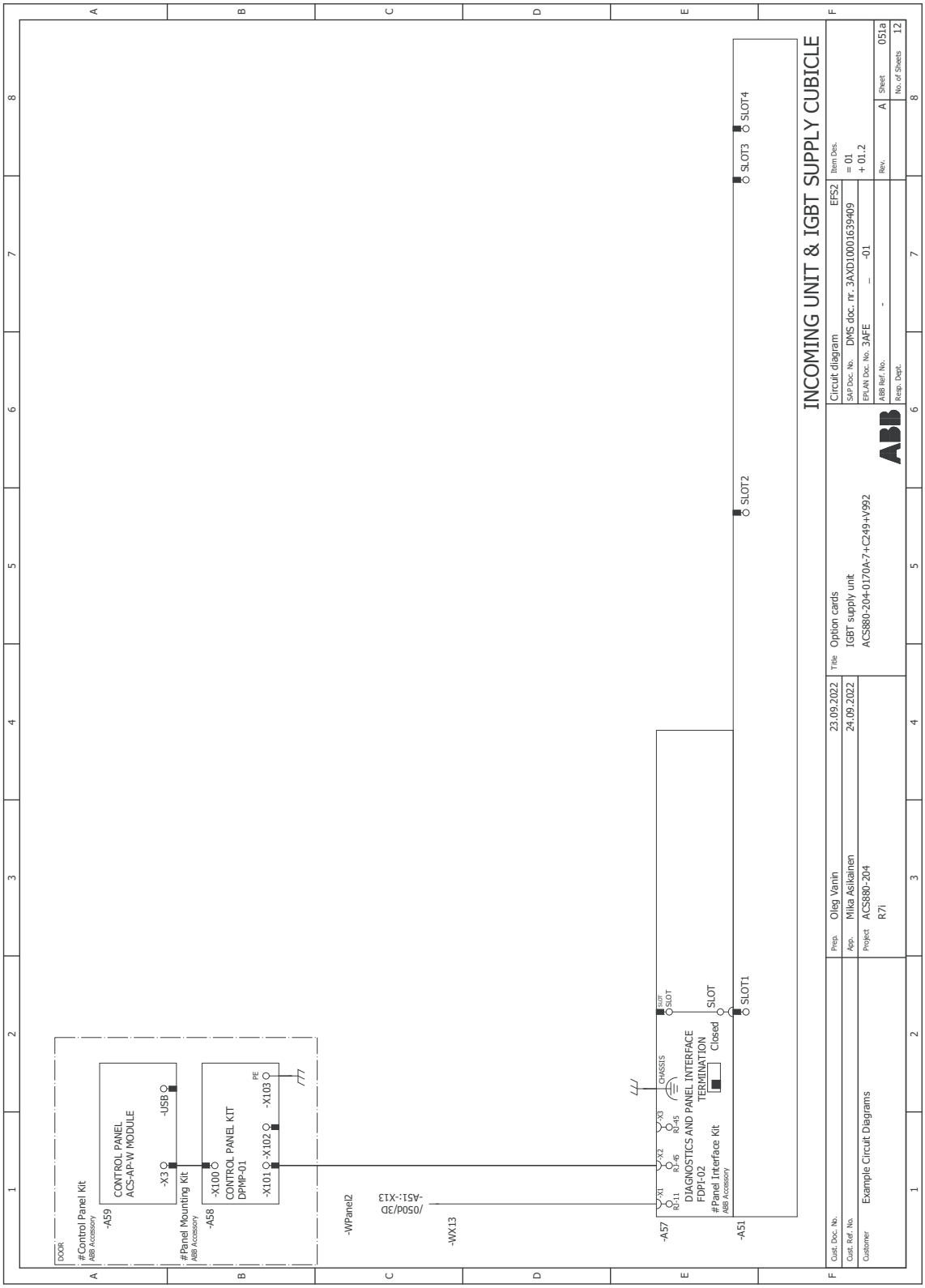
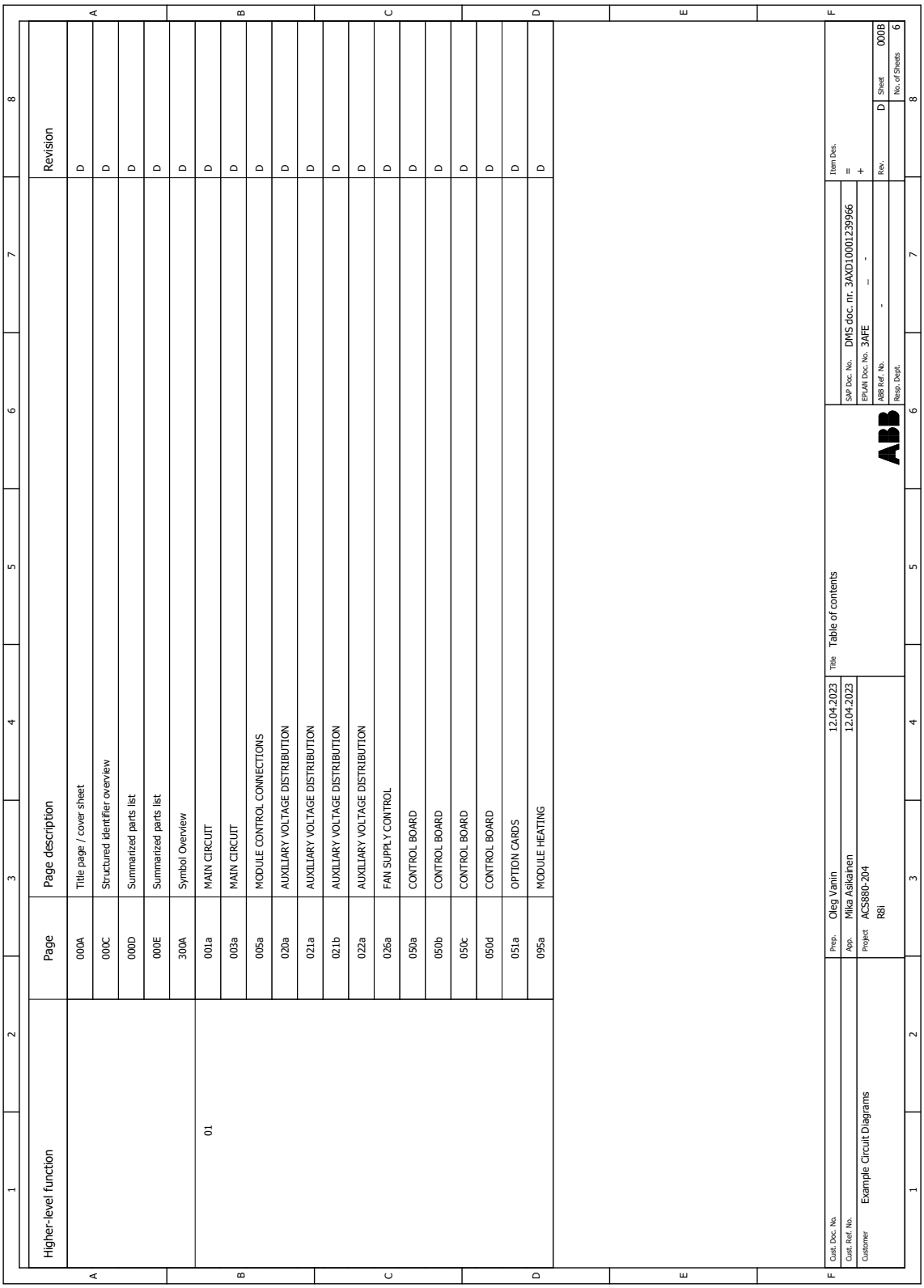
Title Control unit
IGBT supply unit
ACS880-204-0170A-7+C249+V992
ABB
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 23.09.2022
App. Mika Asikainen 24.09.2022
Project ACS880-204
R7i
-A51_MEM
MEMORY UNIT KIT ZMU-02
-A51_SDCARD
SD CARD
/051a/1C
-A57:-X1
-A51 /050a/1E
-XD2D
CONTROL UNIT BCU-02
-X205 MEMORY UNIT
-X9 SD CARD
-X13 RJ45 FOR PANEL
-X12 SAFETY OPTION
D2D.TERM
OFF
-X485
-XETH RJ45 not in use
Battery (BR 2032)
FRAME


INCOMING UNIT & IGBT SUPPLY CUBICLE
DOOR
#Control Panel Kit
ABB Accessory
-A59
CONTROL PANEL
ACS-AP-W MODULE
-X3
-USB
#Panel Mounting Kit
ABB Accessory
-A58
-X100
CONTROL PANEL KIT
DPMP-01
-X101
-X102
-X103
PE
-WPanel2
-WX13
-A57
DIAGNOSTICS AND PANEL INTERFACE
FDPI-02
#Panel Interface Kit
ABB Accessory
-X1
-X2
-X3
CHASSIS
SLOT
Closed
-A51
SLOT1
SLOT2
SLOT3
SLOT4
Option cards
IGBT supply unit
ACS880-204-0170A-7+C249+V992
EF52
Circuit diagram
DMS doc. nr. 3AXD10001639409
3AFE
-01
Item Des.
= 01
+ 01.2
Sheet
051a
No. of Sheets
12
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
23.09.2022
Appr.
Mika Asikainen
24.09.2022
Project
ACS880-204
R7i

Frame 1×R8i



Higher-level function	Page	Page description	Revision
	000A	Title page / cover sheet	D
	000C	Structured identifier overview	D
	000D	Summarized parts list	D
	000E	Summarized parts list	D
	300A	Symbol Overview	D
01	001a	MAIN CIRCUIT	D
	003a	MAIN CIRCUIT	D
	005a	MODULE CONTROL CONNECTIONS	D
	020a	AUXILIARY VOLTAGE DISTRIBUTION	D
	021a	AUXILIARY VOLTAGE DISTRIBUTION	D
	021b	AUXILIARY VOLTAGE DISTRIBUTION	D
	022a	AUXILIARY VOLTAGE DISTRIBUTION	D
	026a	FAN SUPPLY CONTROL	D
	050a	CONTROL BOARD	D
	050b	CONTROL BOARD	D
	050c	CONTROL BOARD	D
	050d	CONTROL BOARD	D
	051a	OPTION CARDS	D
	095a	MODULE HEATING	D

Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams

Prep. Oleg Vanin 12.04.2023
App. Mika Asikainen 12.04.2023
Project ACS880-204 R8i

Title Table of contents

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=
+

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Function designations

Designation	Structure description
=01	IGBT Supply Unit

Location designations

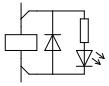
Designation	Structure description
+01.1	Auxiliary Control Cubicle (External)
+01.2	Incoming Cubicle (External)
+01.3	IGBT Supply Cubicle

Electrical option designations

Designation	Material Code	Quantity
#CMF Filter	3AUA0000032859	2
#Charging Kit	3AXD50000022535	1
#Control Panel	3AXD50000025965	1
#Control Unit Kit	3AXD50000002937	1
#Filter Module	3AXD50000986446	1
#Fuse	68244463, 68393108	5
#Main Contactor	64399772	1
#Panel Interface	3AUA0000108650	1
#Panel mounting kit	3AUA0000108878	1
#Supply Module	ACS880-104-0810A-5 +C183+E205+V112	1
#Switch Kit	3AXD50000000894	1

Cust. Doc. No.	Prep. Oleg Vanin 12.04.2023	Title Structured identifier overview		Item Des.	
Cust. Ref. No.	App. Mika Asikainen 12.04.2023		SAP Doc. No. DMS doc. nr. 3AXD10001239966	=	
Customer Example Circuit Diagrams	Project ACS880-204 R8i		EPLAN Doc. No. 3AFE _ -	+	
		ABB	ABB Ref. No. -	Rev. D	Sheet 000C
			Resp. Dept.		No. of Sheets 6

GENERAL/RELAY COIL, WITH PROTECTIVE CIRCUIT DIODE AND R+LED



GENERAL/RELAY COIL

COIL WITH PICK-UP DELAY

COIL WITH OFF-DELAY

NO CONTACT

NC CONTACT

CHANGE OVER CONTACT

NO CONTACT, WITH CLOSING DELAY

TWO NO CONTACTS ONE INPUT, TWO OUTPUTS

TWO CONNECTED CHANGE OVER CONTACTS

POWER NO CONTACT OF A CONTACTOR

PUSH BUTTON WITH NO CONTACT

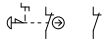
PUSH BUTTON WITH NC CONTACT

NO SWITCH, OPERATED BY TURNING, 2 POSITIONS

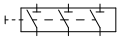
LIMIT SWITCH NC CONTACT MECHANICALLY OPERATED

NC SWITCH, TEMPERATURE OPERATED

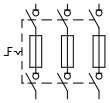
EMERGENCY STOP PUSH BUTTON



DISCONNECT SWITCH, THREE-POLE



SWITCH DISCONNECTOR WITH FUSES, THREE-POLE

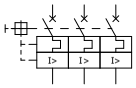


FUSE

FUSE DISCONNECTOR

CIRCUIT BREAKER

MOTOR OVERLOAD SWITCH WITH SWITCH MECHANISM



COMMON MODE FILTER FOR HIGH FREQUENCY CURRENTS

PROTECTIVE EARTH CONNECTED TO FRAME

PROTECTIVE EARTH CONNECTED TO TERMINAL / PE BUSBAR

FUNCTIONAL EARTHING CONNECTED TO TERMINAL

FUNCTIONAL BONDING TO FRAME

LIGHT

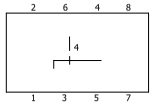
INDUCTOR

CAPACITOR

RESISTOR

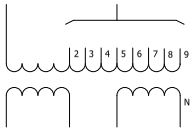
POWER RESISTOR WITH FUSE

PHASE SELECTING SWITCH

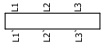


PRIMARY, VOLTAGE SELECTION

TRANSFORMER



EMC FILTER



TERMINAL, FOUR POLE

PLUG AND SOCKET TERMINAL BLOCK WITH 4 CONNECTION POINTS

FEMALE AND MALE PLUG

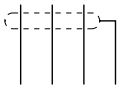
AMPERE METER

CURRENT TRANSFORMER

VOLTAGE METER

WIRE TERMINATION, INSULATED

SHIELDED CABLE



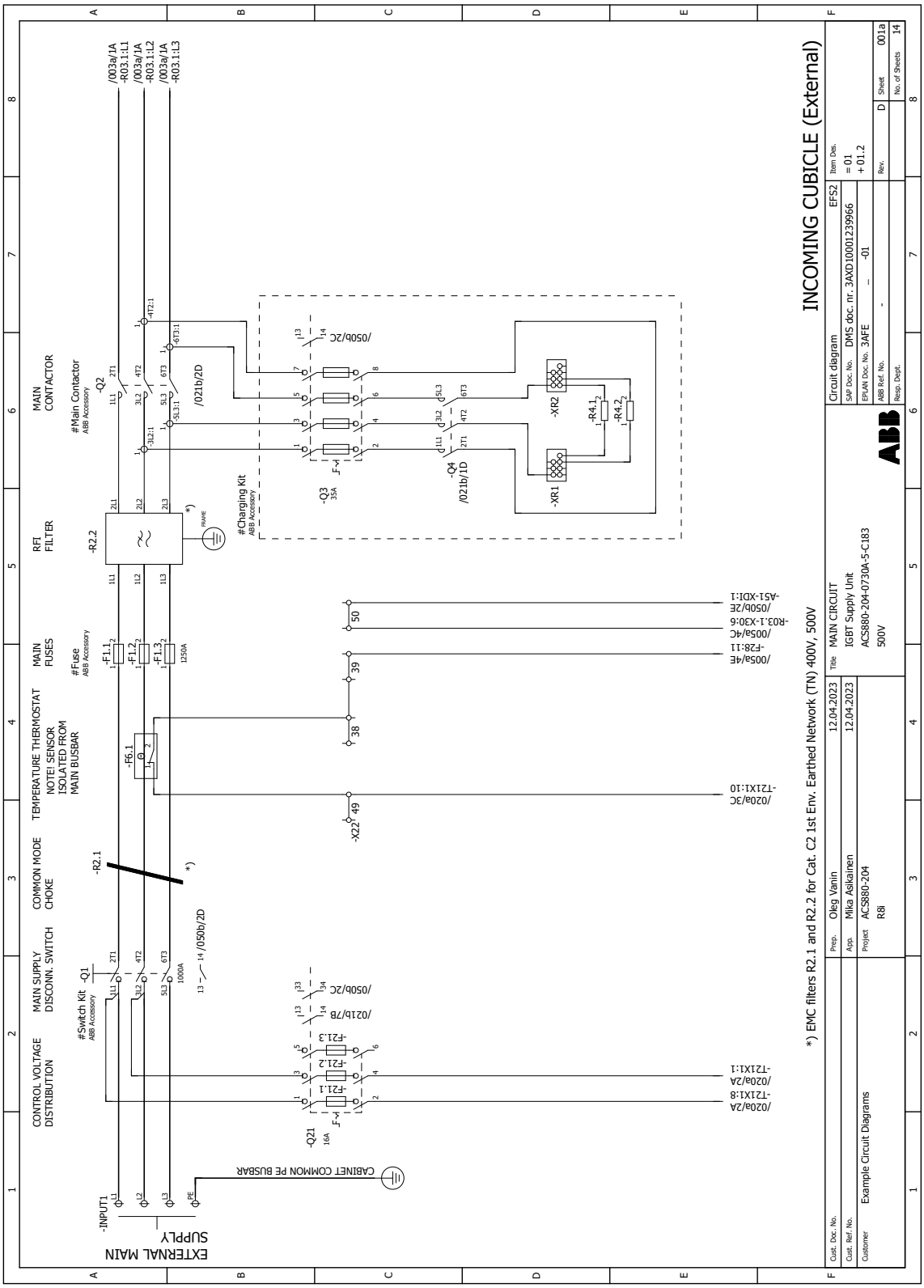
THERMAL OPERATION

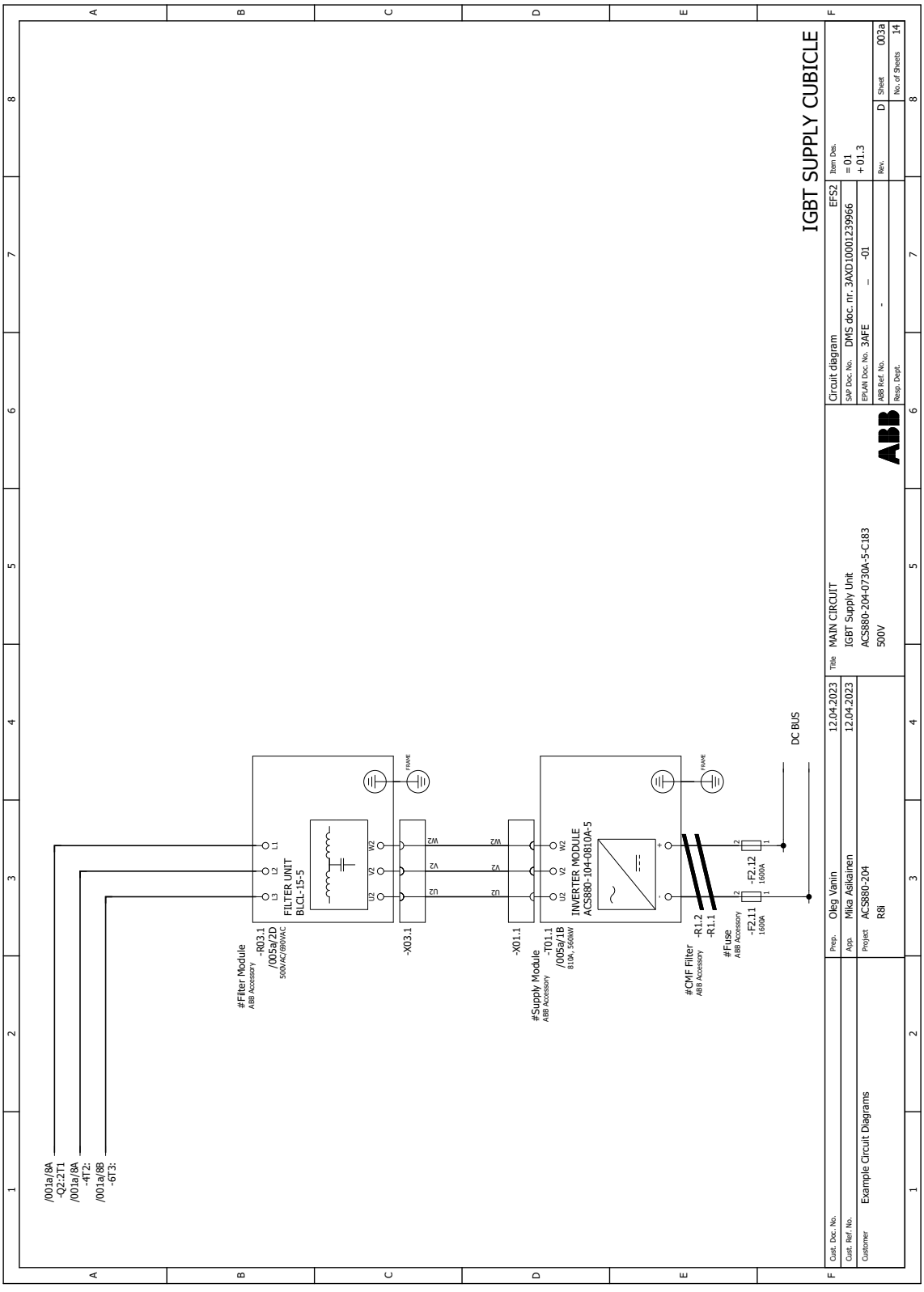
DISCONNECT

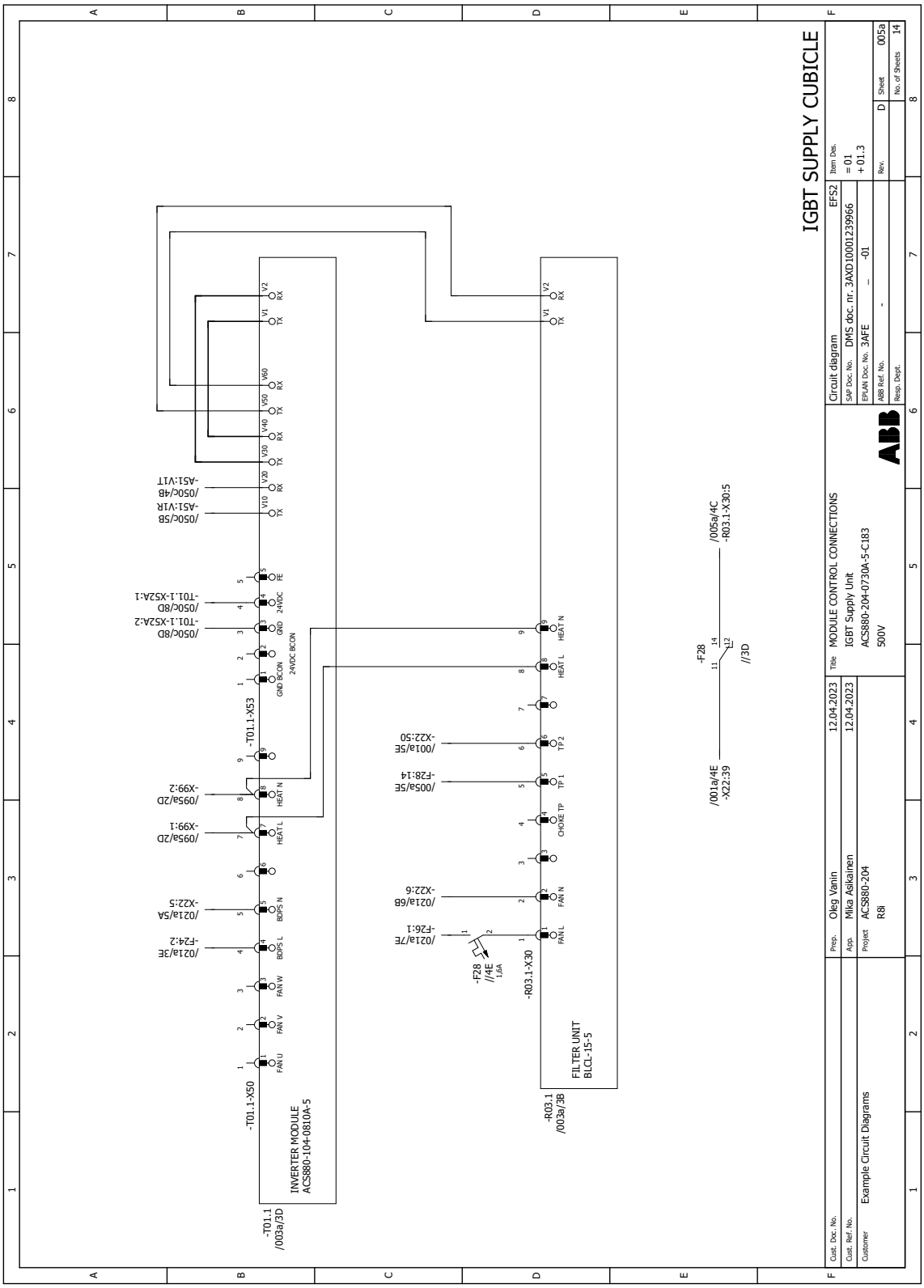
DISCONNECT, CAN BE OPERATED WHILE NOMINAL CURRENT IS APPLIED

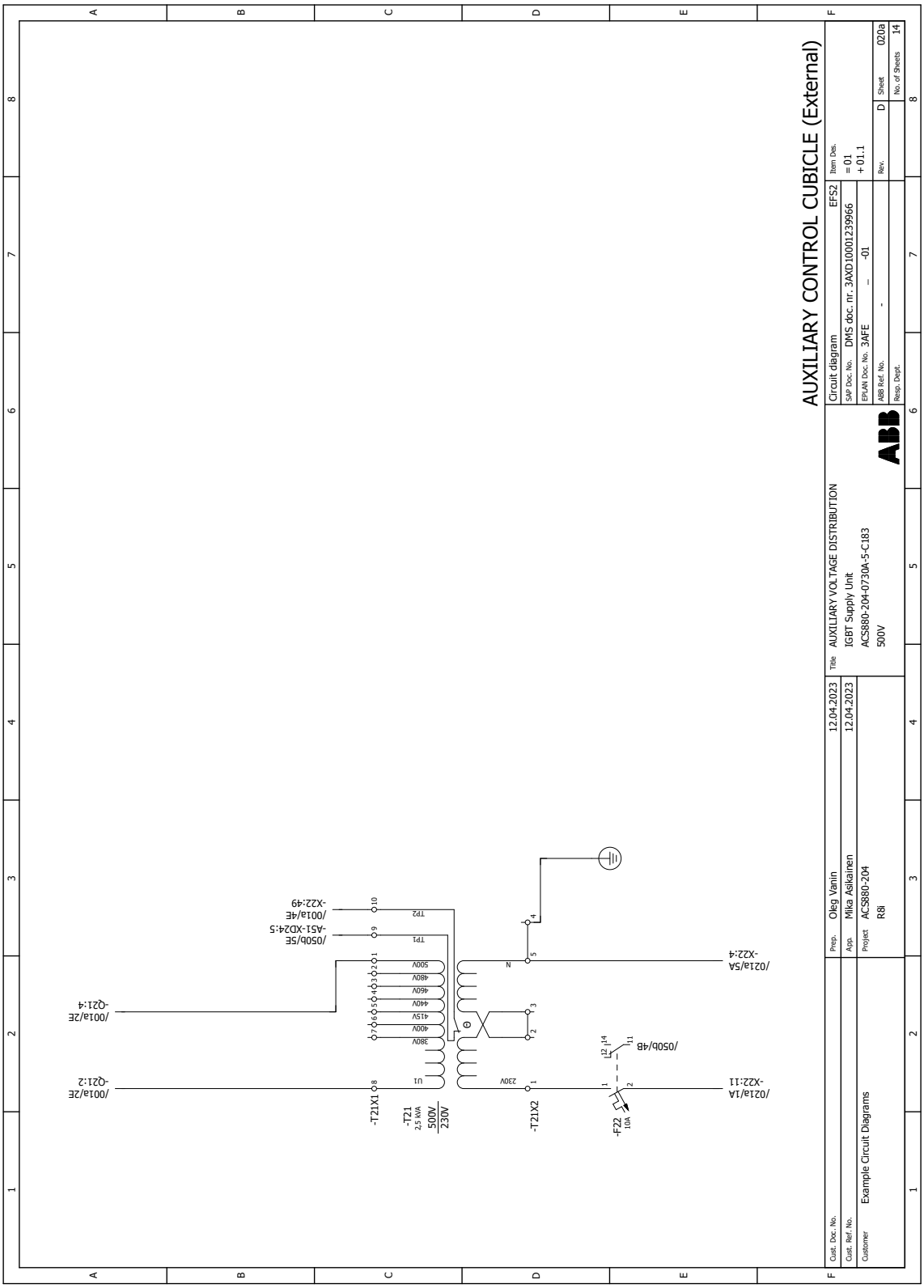
BREAKER, SHORTCIRCUIT BREAKING CAPABILITY

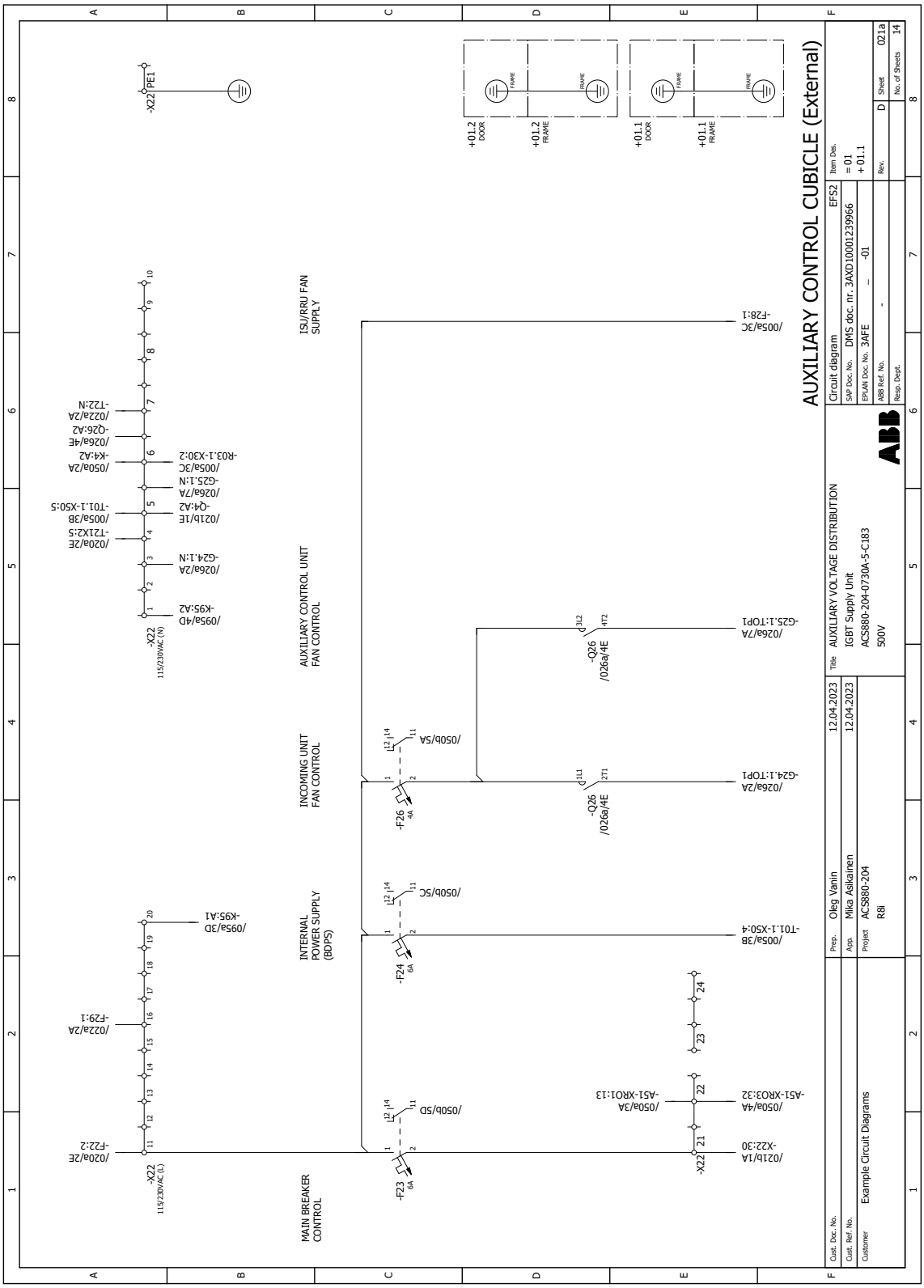
Cust. Doc. No.	Prep. Oleg Vanin 12.04.2023	Title Symbol Overview		Item Des.	
Cust. Ref. No.	App. Mika Asikainen 12.04.2023		SAP Doc. No. DMS doc. nr. 3AXD10001239966	=	
Customer Example Circuit Diagrams	Project ACS880-204 R8i		EPLAN Doc. No. 3AFE _ -	+	
		ABB	ABB Ref. No. -	Rev. D	Sheet 300A
			Resp. Dept.		No. of Sheets 6

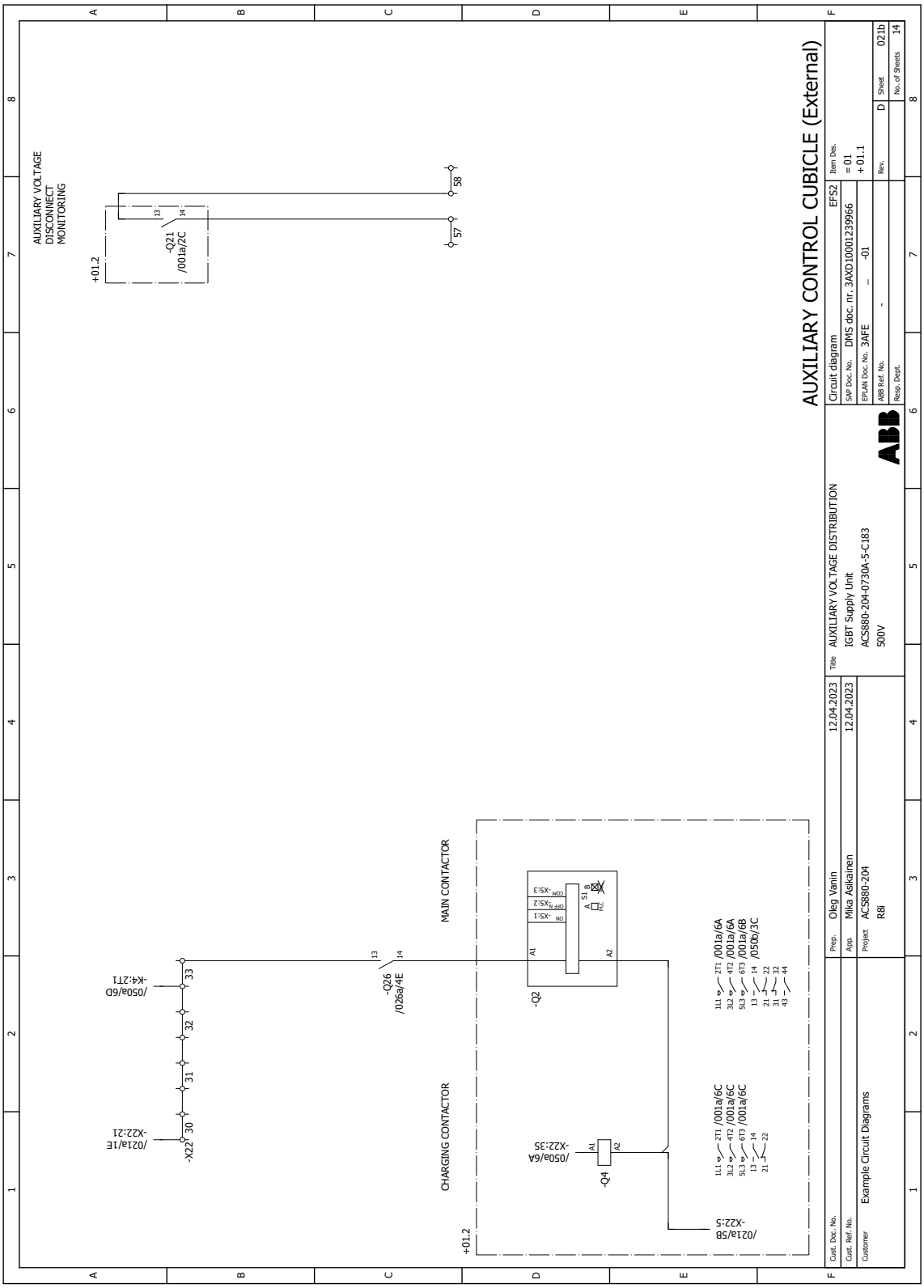

INCOMING CUBICLE (External)
*) EMC filters R2.1 and R2.2 for Cat. C2 1st Env. Earthed Network (TN) 400V, 500V
EXTERNAL MAIN SUPPLY
-INPUT1
CABINET COMMON PE BUSBAR
CONTROL VOLTAGE DISTRIBUTION
MAIN SUPPLY DISCONN. SWITCH
COMMON MODE CHOKE
TEMPERATURE THERMOSTAT NOTE! SENSOR ISOLATED FROM MAIN BUSBAR
MAIN FUSES
RFI FILTER
MAIN CONTACTOR
#Switch Kit ABB Accessory
#Fuse ABB Accessory
#Main Contactor ABB Accessory
#Charging Kit ABB Accessory
-Q1
-R2.1
-F6.1
-F1.1
-F1.2
-F1.3
-R2.2
-Q2
-Q3
-Q4
-Q21
-XR1
-XR2
-R4.1
-R4.2
-X22
-FZ8:11
-A51-XDI:1
-R03.1-X30:6
-T21X1:10
-T21X1:8
-T21X1:1
/003a/1A -R03.1:L1
/003a/1A -R03.1:L2
/003a/1A -R03.1:L3
/021b/2D
/050b/2C
/021b/7B
/050b/2D
/021b/1D
/005a/4E
/005a/4C
/050b/2E
/020a/3C
/020a/2A
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. mr. 3AXD10001239966
EPLAN Doc. No. 3AFE -01
ABB Ref. No.
Resp. Dept.
Item Des.
= 01
+ 01.2
Rev.
D
Sheet
001a
No. of Sheets
14
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Asikainen
12.04.2023
Project
ACS880-204
R8i
Title
MAIN CIRCUIT
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V

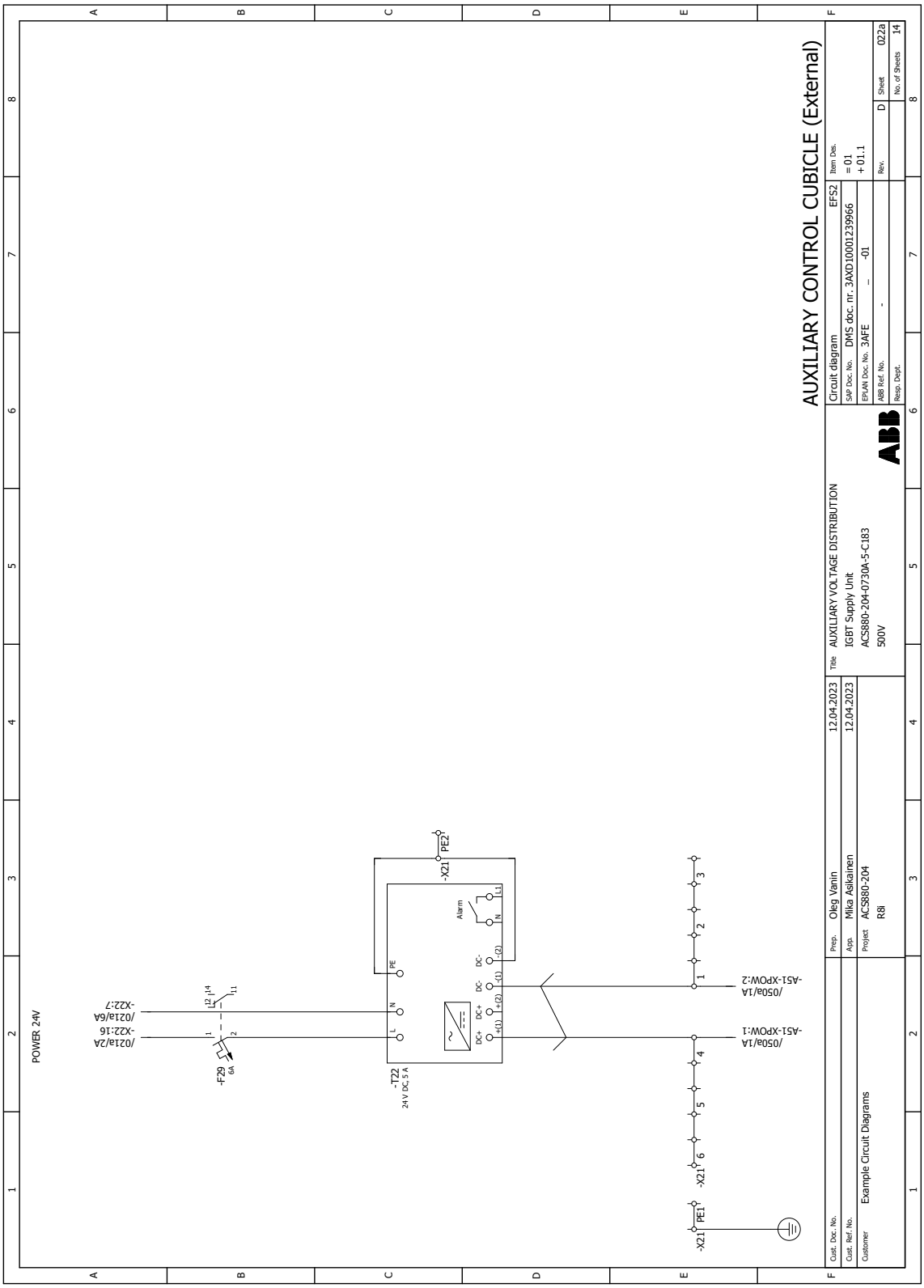

IGBT SUPPLY CUBICLE
/001a/9A
-Q2:2T1
/001a/9A
-4T2:
/001a/8B
-6T3:
#Filter Module
ABB Accessory
-R03.1
/005a/2D
500VAC/690VAC
FILTER UNIT
BLCL-15-5
-X03.1
-X01.1
#Supply Module
ABB Accessory
-T01.1
/005a/1B
810A, 560kW
INVERTER MODULE
ACS880-104-0810A-5
#CMF Filter
ABB Accessory
-R1.2
-R1.1
#Fuse
ABB Accessory
-F2.11
1600A
-F2.12
1600A
DC BUS
FRAME
Prep. Oleg Vanin 12.04.2023
Appr. Mika Askainen 12.04.2023
Project ACS880-204
R8i
Title MAIN CIRCUIT
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001239966
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.3
Rev. D
Sheet 003a
No. of Sheets 14
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams


IGBT SUPPLY CUBICLE
MODULE CONTROL CONNECTIONS
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001239966
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept. -
Item Des. = 01 + 01.3
Rev. D
Sheet 005a
No. of Sheets 14
Prep. Oleg Vanin 12.04.2023
Appr. Mika Aslkainen 12.04.2023
Project ACS880-204 R8i
Customer Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
INVERTER MODULE ACS880-104-0810A-5
-T01.1 /003a/3D
-T01.1-X50
FAN U
FAN V
FAN W
BDPS L
BDPS N
-T01.1-X53
GND DCON
24VDC DCON
GND
24VDC
PE
HEAT N
HEAT L
V1 TX
V2 RX
V10 TX
V20 RX
V30 TX
V40 RX
V50 TX
V60 RX
/050C/5B -A51:V1R
/050C/4B -A51:V1T
/050C/8D -T01.1-X52A:2
/050C/8D -T01.1-X52A:1
/095a/2D -X99:2
/095a/2D -X99:1
/021a/3E -F24:2
/021a/5A -X22:5
-R03.1 /003a/3B
FILTER UNIT BLCL-15-5
-R03.1-X30
FAN L
FAN N
CHOKE TP
TP 1
TP 2
-F28 //4E 1.6A
/021a/7E -F26:1
/021a/6B -X22:6
/005a/5E -F28:14
/001a/5E -X22:50
/001a/4E -X22:39
-F28
//3D
/005a/4C -R03.1-X30:5


AUXILIARY CONTROL CUBICLE (External)
Circuit diagram
EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001239966
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
D
Sheet 020a
No. of Sheets 14
Title AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Prep. Oleg Vanin 12.04.2023
Appr. Mika Asikainen 12.04.2023
Project ACS880-204
R8i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
-T21X1
-T21
2,5 kVA
500V
230V
-T21X2
+F22
10A
-Q21:2
/001a/2E
-Q21:4
/001a/2E
-XZ2:49
/001a/4E
-A51-XD24:5
/050b/5E
-XZ2:4
/021a/5A
-XZ2:11
/021a/1A
/050b/4B
380V
400V
415V
440V
460V
480V
500V
230V
TP1
TP2
N
U1


AUXILIARY CONTROL CUBICLE (External)
EFS2
Circuit diagram
SAP Doc. No.
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
D
Sheet 021a
No. of Sheets 14
Prep. Oleg Vanin 12.04.2023
Appr. Mika Askainen 12.04.2023
Project ACS880-204 R8i
Customer Example Circuit Diagrams
Cust. Doc. No.
Cust. Ref. No.
Title AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
MAIN BREAKER CONTROL
INTERNAL POWER SUPPLY (BDPS)
INCOMING UNIT FAN CONTROL
AUXILIARY CONTROL UNIT FAN CONTROL
ISU/RRU FAN SUPPLY
-X22 PE1
+01.2 DOOR
+01.2 FRAME
+01.1 DOOR
+01.1 FRAME
-X22 115/230VAC (L)
-X22 115/230VAC (N)
-F22:2
-F29:1
-K95:A1
-F23 6A
-F24 6A
-F26 4A
-X22:30
-A51-XRO3:32
-A51-XRO1:13
-T01.1-X50:4
-G24.1:TOP1
-G25.1:TOP1
-Q26 /026a/4E
-F28:1
-K95:A2
-G24.1:N
-T21X2:5
-Q4:A2
-T01.1-X50:5
-G25.1:N
-R03.1-X30:2
-K4:A2
-Q26:A2
-T22:N
/022a/ZE
/022a/ZA
/026a/4E
/026a/7A
/026a/ZA
/050a/3A
/050a/4A
/050a/5A
/050b/5A
/050b/5C
/050b/5D
/005a/3B
/005a/3C
/009a/3D
/021b/1A
/021b/1E
/021b/3B
/021b/3E
/095a/4D


AUXILIARY CONTROL CUBICLE (External)
AUXILIARY VOLTAGE DISCONNECT MONITTORING
+01.2
-Q21
/001a/2C
58
57
MAIN CONTACTOR
CHARGING CONTACTOR
-Q26
/026a/4E
-Q2
-Q4
-X22
/021a/1E
-X22:21
/050a/6D
-K4:2T1
/050a/6A
-X22:35
/021a/5B
-X22:5
/001a/6A
/001a/6B
/050b/3C
/001a/6C
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001239966
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
D
Sheet
021b
No. of Sheets
14
Prep.
Oleg Vanin
12.04.2023
Chk.
Appr.
Mika Askainen
12.04.2023
Project
ACS880-204
R8i
Title
AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams


AUXILIARY CONTROL CUBICLE (External)
POWER 24V
/021a/2A
-XZ2:16
/021a/6A
-XZ2:7
-F29
6A
-T22
24 V DC, 5 A
-X21
PE2
Alarm
PE
N
L
DC+
DC-
+(1)
+(2)
L1
N
/050a/1A
-A51-XPOW:1
/050a/1A
-A51-XPOW:2
-X21
PE1
-X21
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Asikainen
12.04.2023
Project
ACS880-204
R8i
Title
AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001239966
EPLAN Doc. No.
3AFE
-01
ABB Ref. No.
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
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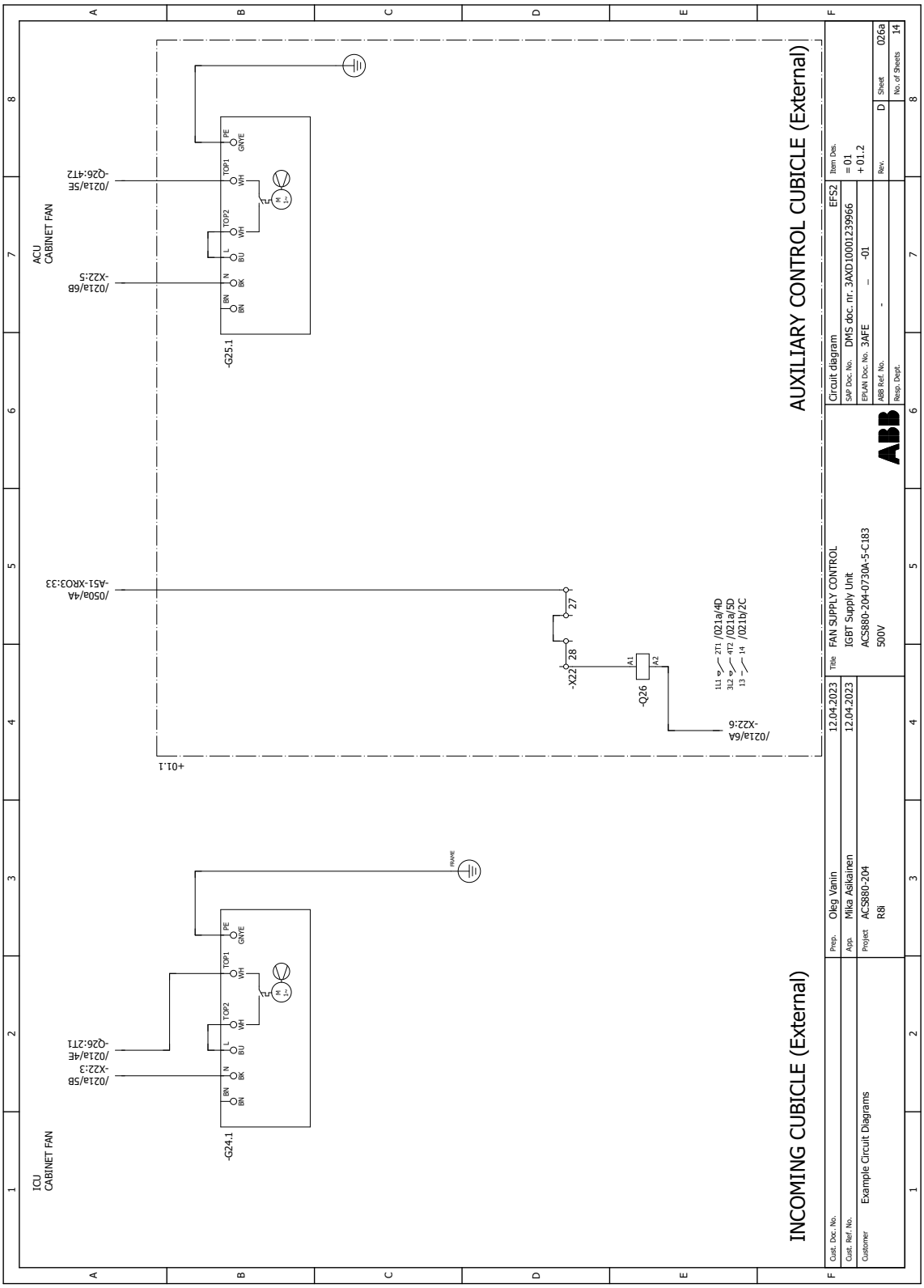
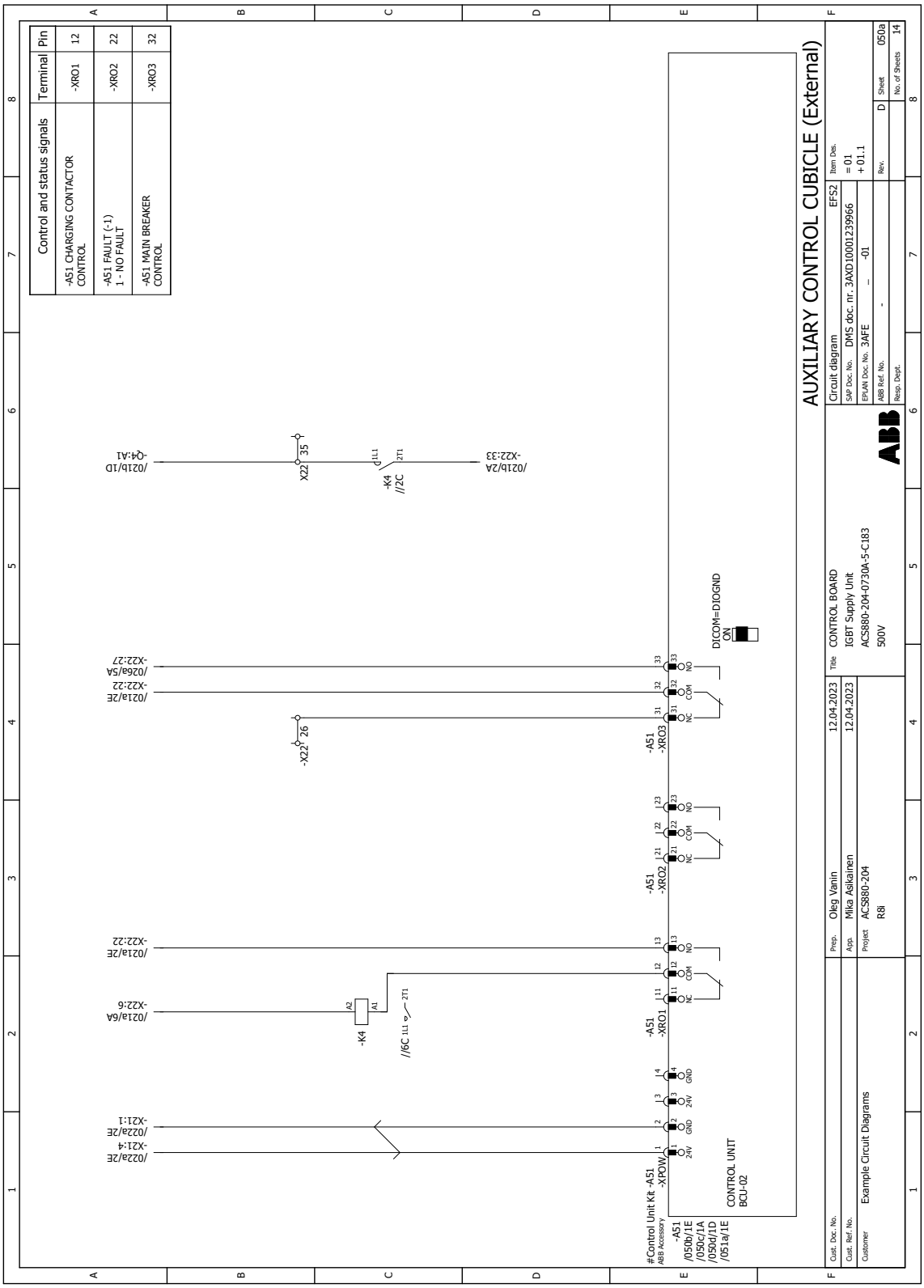
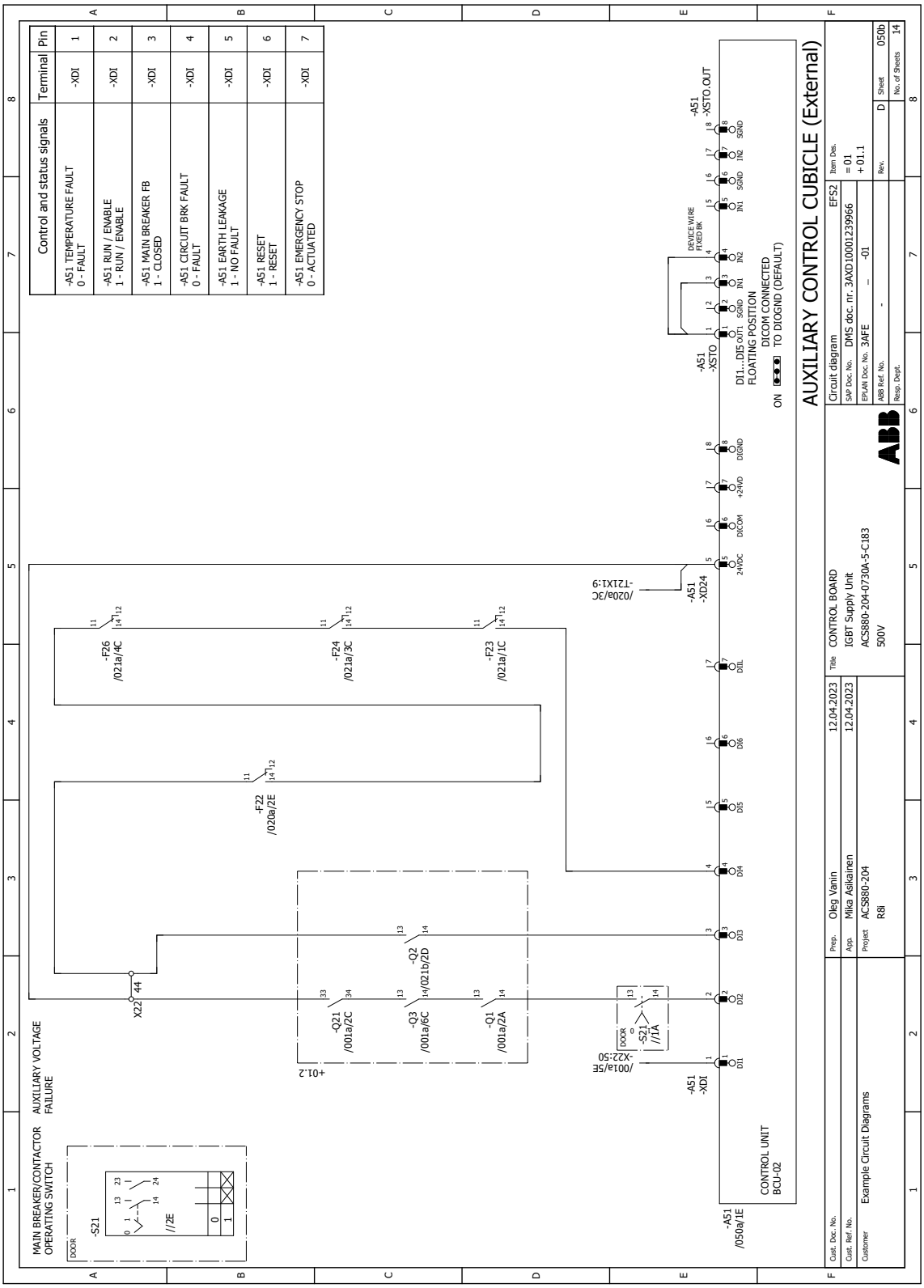
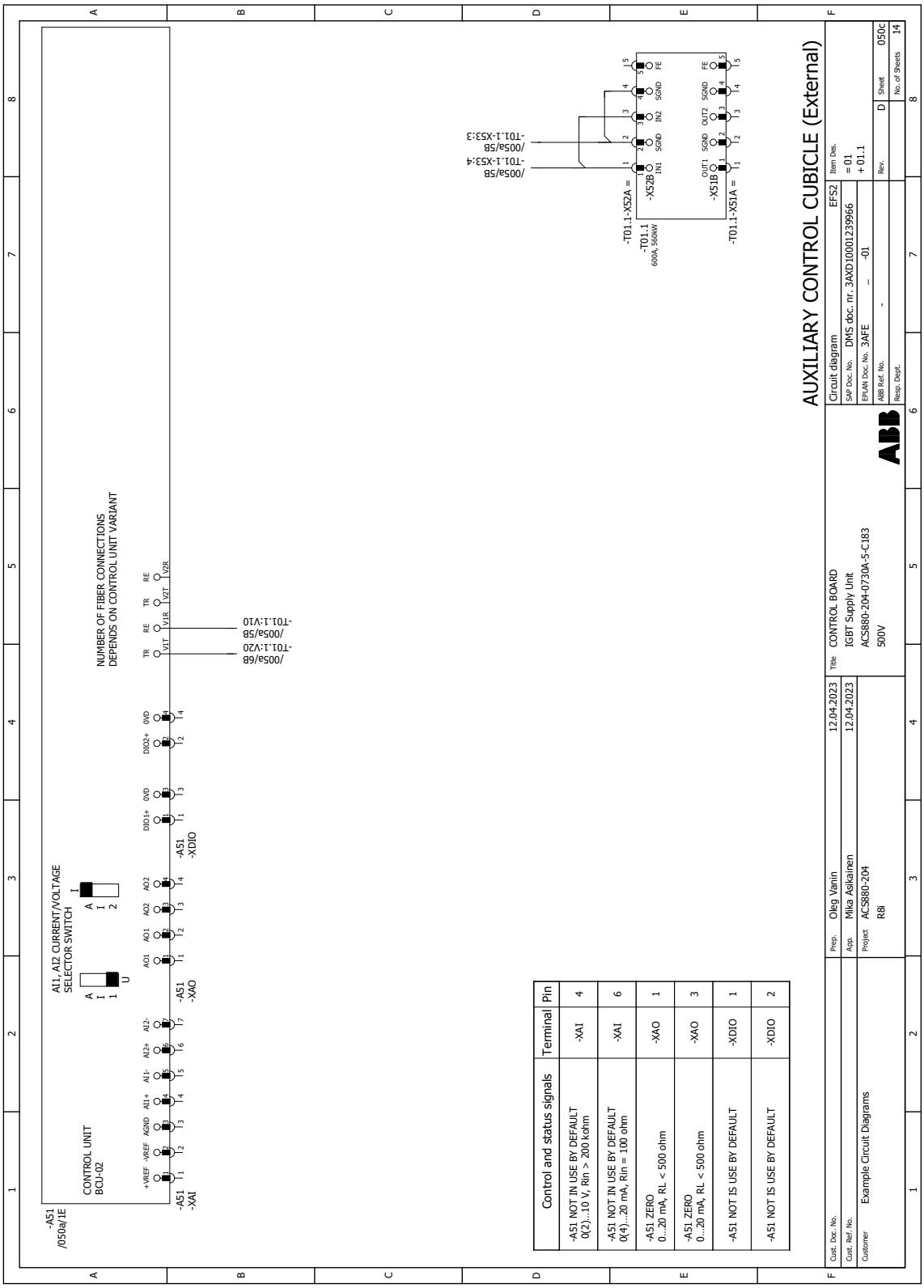
Sheet
022a
No. of Sheets
14


INCOMING CUBICLE (External)
AUXILIARY CONTROL CUBICLE (External)
ICU
CABINET FAN
ACU
CABINET FAN
-G24.1
-G25.1
-Q26
-X22
-A51-XRO3:33
/050a/4A
/021a/6A
-X22:6
/021a/5B
-X22:3
-Q26:271
/021a/4E
/021a/5E
-Q26:472
-X22:5
/021a/6B
+01.1
FRAME
Prep. Oleg Vanin 12.04.2023
Appr. Mika Asikainen 12.04.2023
Project ACS880-204
R8i
Title FAN SUPPLY CONTROL
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001239966
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.2
Rev. D Sheet 026a
No. of Sheets 14
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams


AUXILIARY CONTROL CUBICLE (External)
Control and status signals
Terminal
Pin
-A51 CHARGING CONTACTOR CONTROL
-XRO1
12
-A51 FAULT (-1) 1 - NO FAULT
-XRO2
22
-A51 MAIN BREAKER CONTROL
-XRO3
32
CONTROL UNIT BCU-02
-A51 -XPOW
-A51 -XRO1
-A51 -XRO2
-A51 -XRO3
-K4
-X22
DICOM=DIOGND
ON
Circuit diagram
EFS2
Item Des.
= 01
+ 01.1
Rev.
D
Sheet
050a
No. of Sheets
14
Prep.
Oleg Vanin
12.04.2023
Chk.
Mika Asikainen
12.04.2023
Appr.
Project
ACS880-204
R8i
Title
CONTROL BOARD
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
ABB


AUXILIARY CONTROL CUBICLE (External)
Control and status signals
-A51 TEMPERATURE FAULT 0 - FAULT
-A51 RUN / ENABLE 1 - RUN / ENABLE
-A51 MAIN BREAKER FB 1 - CLOSED
-A51 CIRCUIT BRK FAULT 0 - FAULT
-A51 EARTH LEAKAGE 1 - NO FAULT
-A51 RESET 1 - RESET
-A51 EMERGENCY STOP 0 - ACTUATED
Terminal
Pin
-XDI
MAIN BREAKER/CONTACTOR OPERATING SWITCH
AUXILIARY VOLTAGE FAILURE
-S21
-F26 /021a/4C
-F24 /021a/3C
-F23 /021a/1C
-F22 /020a/2E
-Q21 /001a/2C
-Q3 /001a/6C
-Q1 /001a/2A
-Q2 /021b/2D
-S21 /1A
-A51 -XDI
-A51 -XDO
-A51 -XD24
-A51 -XSTO
-A51 -XSTO.OUT
CONTROL UNIT BCU-02
CONTROL BOARD
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram
EFS2
DMS doc. nr. 3AXD10001239966
3AFE
Item Des.
= 01
+ 01.1
Sheet
050b
No. of Sheets
14
Prep. Oleg Vanin 12.04.2023
Appr. Mika Asikainen 12.04.2023
Project ACS880-204
R8i
Example Circuit Diagrams


AUXILIARY CONTROL CUBICLE (External)
CONTROL UNIT
BCU-02
A11, A12 CURRENT/VOLTAGE
SELECTOR SWITCH
NUMBER OF FIBER CONNECTIONS
DEPENDS ON CONTROL UNIT VARIANT
-A51
/050a/1E
-A51
-XAI
-A51
-XAO
-A51
-XDIO
-T01.1-X52A =
-T01.1
600A, 580kW
-X52B
-T01.1-X51A =
-X51B
-T01.1:V10
/005a/5B
-T01.1:V20
/005a/6B
-T01.1-X53:4
/005a/5B
-T01.1-X53:3
/005a/5B
Control and status signals
Terminal
Pin
-A51 NOT IN USE BY DEFAULT
0(2)...10 V, Rin > 200 kohm
-XAI
4
-A51 NOT IN USE BY DEFAULT
0(4)...20 mA, Rin = 100 ohm
-XAI
6
-A51 ZERO
0...20 mA, RL < 500 ohm
-XAO
1
-A51 ZERO
0...20 mA, RL < 500 ohm
-XAO
3
-A51 NOT IS USE BY DEFAULT
-XDIO
1
-A51 NOT IS USE BY DEFAULT
-XDIO
2
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Aalkainen
12.04.2023
Project
ACS880-204
R8i
Title
CONTROL BOARD
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001239966
Item Des.
= 01
+ 01.1
EPLAN Doc. No.
3AFE
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-01
ABB Ref. No.
-
Rev.
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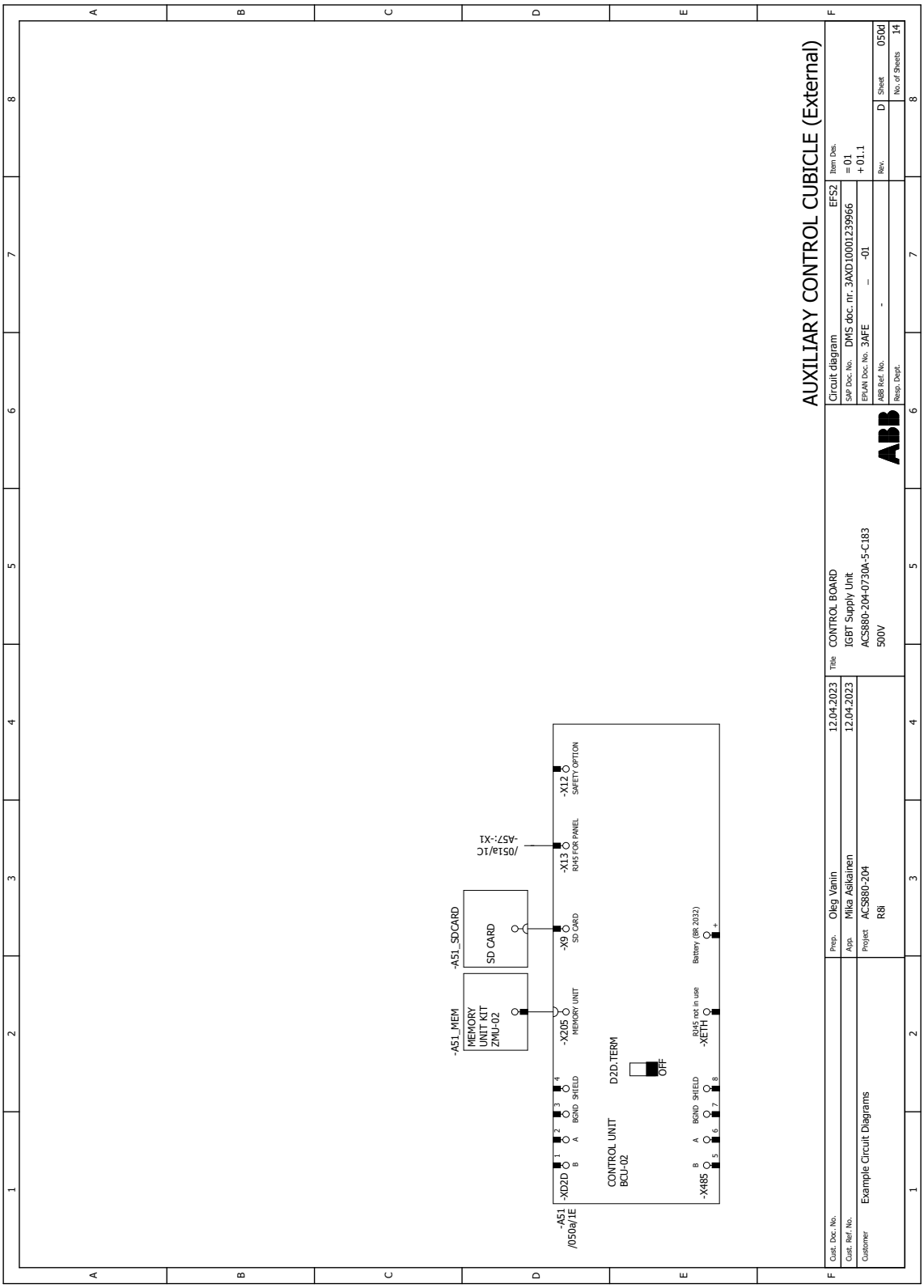
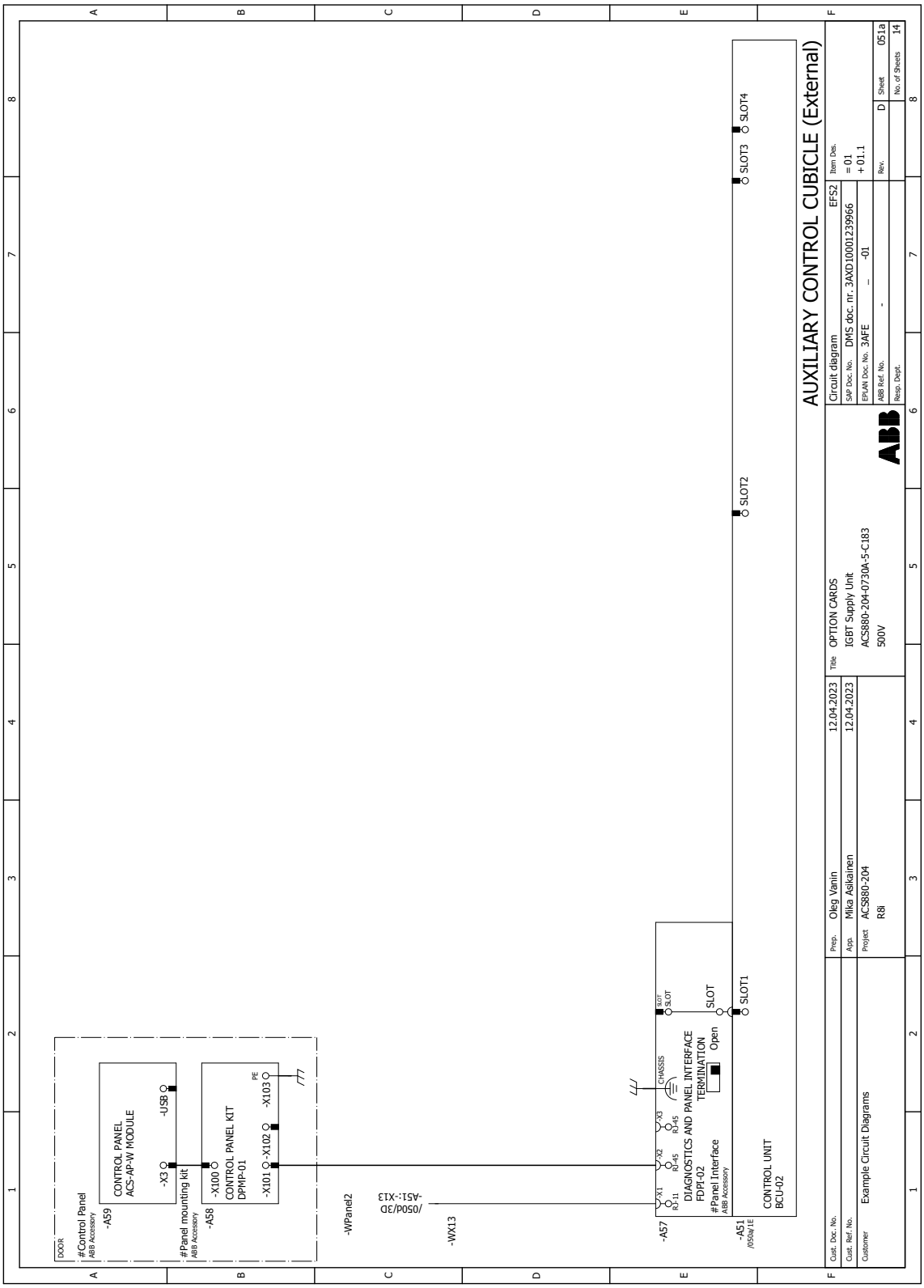
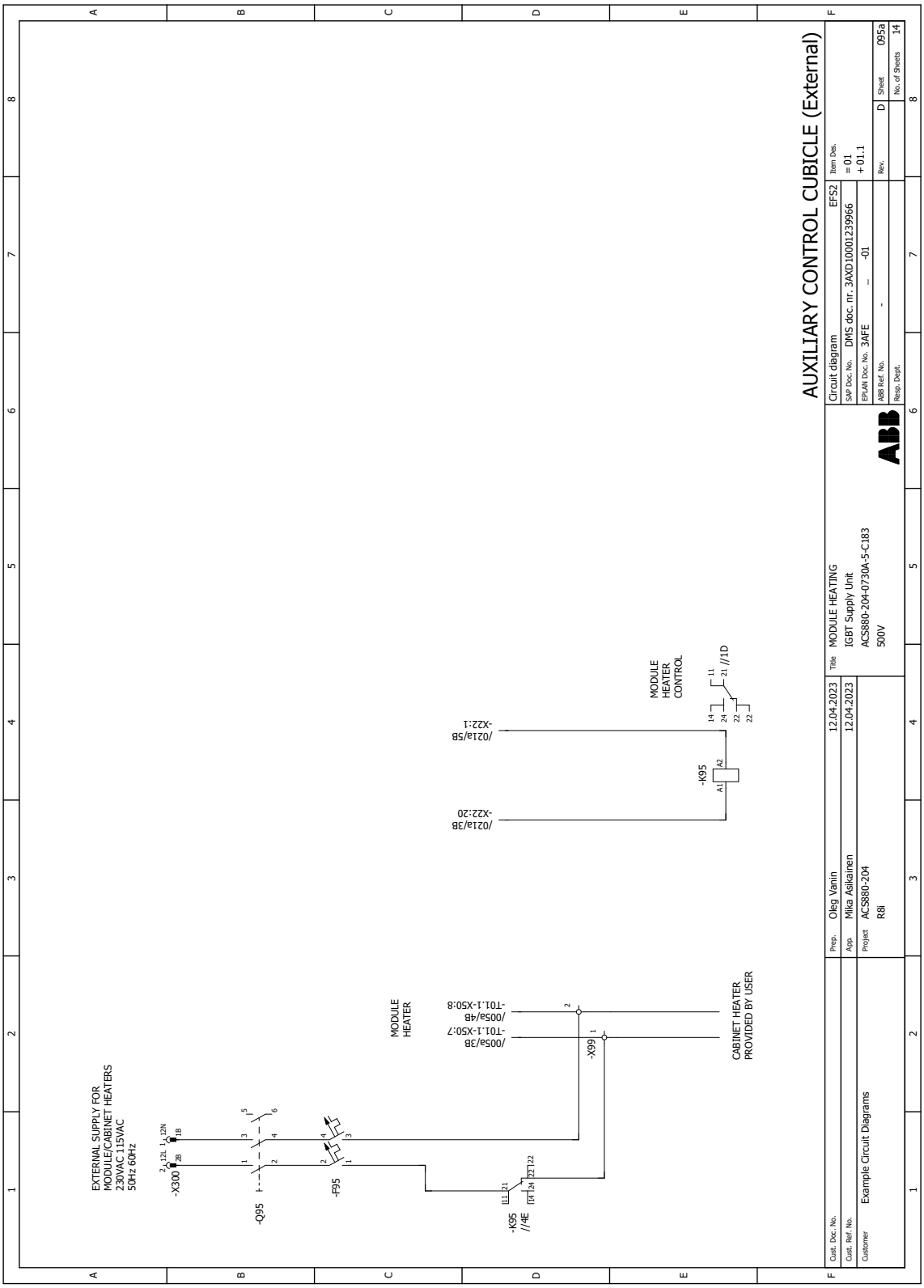
14


AUXILIARY CONTROL CUBICLE (External)
CONTROL BOARD
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram
EFS2
DMS doc. nr. 3AXD10001239966
3AFE
-01
Item Des.
= 01
+ 01.1
Rev.
D
Sheet
050d
No. of Sheets
14
Oleg Vanin
Mika Askainen
ACS880-204
R8i
12.04.2023
12.04.2023
Example Circuit Diagrams
-A51
/050d/1E
CONTROL UNIT
BCU-02
D2D.TERM
OFF
-XD2D
-X485
-X205
MEMORY UNIT
-XETH
RJ45 not in use
-X9
SD CARD
Battery (BR 2032)
-X13
RJ45 FOR PANEL
-X12
SAFETY OPTION
-A51_MEM
MEMORY
UNIT KIT
ZMU-02
-A51_SDCARD
SD CARD
/051a/1C
-A57:-X1


AUXILIARY CONTROL CUBICLE (External)
DOOR
#Control Panel
ABB Accessory
-A59
CONTROL PANEL
ACS-AP-W MODULE
-X3
-USB
#Panel mounting kit
ABB Accessory
-A58
-X100
CONTROL PANEL KIT
DPMP-01
-X101
-X102
-X103
PE
-WPanel2
-WX13
/050d/3D
-A51:-X13
-A57
-X1
-X2
-X3
RJ-11
RJ-45
RJ-45
CHASSIS
DIAGNOSTICS AND PANEL INTERFACE
FDPI-02
#Panel Interface
ABB Accessory
SLOT
TERMINATION
Open
SLOT
SLOT1
SLOT2
SLOT3
SLOT4
CONTROL UNIT
BCU-02
-A51
/050a/1E
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Asikainen
12.04.2023
Project
ACS880-204
R8i
Title
OPTION CARDS
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001239966
EPLAN Doc. No.
3AFE
–
-01
ABB Ref. No.
-
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
D
Sheet
051a
No. of Sheets
14


AUXILIARY CONTROL CUBICLE (External)
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001239966
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev. D
Sheet 095a
No. of Sheets 14
Prep. Oleg Vanin 12.04.2023
Chk. Mika Askainen 12.04.2023
Appr.
Project ACS880-204
R8i
Title MODULE HEATING
IGBT Supply Unit
ACS880-204-0730A-5-C183
500V
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
EXTERNAL SUPPLY FOR
MODULE/CABINET HEATERS
230VAC 115VAC
50Hz 60Hz
-X300
-Q95
-F95
-K95
//4E
MODULE
HEATER
-X99
-T01.1-X50:8
/005a/4B
-T01.1-X50:7
/005a/3B
CABINET HEATER
PROVIDED BY USER
MODULE
HEATER
CONTROL
-K95
-X22:20
/021a/3B
-X22:1
/021a/5B
//1D

Frame 4×R8i

Higher-level function	Page	Page description	Revision
	000A	Title page / cover sheet	E
	000C	Structured identifier overview	E
	000D	Summarized parts list	E
	300A	Symbol Overview	E
01	001a	MAIN CIRCUIT	E
	003a	MAIN CIRCUIT	E
	005a	MODULE CONTROL CONNECTIONS	E
	005b	MODULE CONTROL CONNECTIONS	E
	020a	AUXILIARY VOLTAGE DISTRIBUTION	E
	021a	AUXILIARY VOLTAGE DISTRIBUTION	E
	021b	AUXILIARY VOLTAGE DISTRIBUTION	E
	022a	AUXILIARY VOLTAGE DISTRIBUTION	E
	026a	FAN SUPPLY CONTROL	E
	030a	AIR CIRCUIT BREAKER CONTROL	E
	050a	CONTROL BOARD	E
	050b	CONTROL BOARD	E
	050c	CONTROL BOARD	E
	050d	CONTROL BOARD	E
	051a	OPTION CARDS	E
	066a	SUPPLY STO	E
	095a	MODULE HEATING	E
	110a	DOL FAN TRANSFORMER	E

Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams

Prep. Oleg Vanin 12.04.2023
Appr. Mika Asikainen 12.04.2023
Project ACS880-204 4×R8i

Title Table of contents

ABB

SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -
ABB Ref. No. - -
Resp. Dept.

Item Des.
=
+
Rev. E Sheet 000B
No. of Sheets 5

Function designations

Designation	Structure description
=01	IGBT Supply Unit

Location designations

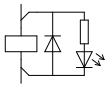
Designation	Structure description
+01.1	Auxiliary Control Cubicle (External)
+01.2	Incoming Cubicle (External)
+01.3	First IGBT Supply Cubicle
+01.4	Second IGBT Supply Cubicle

Electrical option designations

Designation	Material Code	Quantity
#Air Circuit Breaker	3AXD50000048346	1
#CM Filter	3AUA0000032859	8
#Charging Kit	3AXD50000016058	1
#Control Panel	3AXD50000025965	1
#Control Unit Kit	3AXD50000015806	1
#Filter Module	3AXD50000986743	2
#Fuse	68752591, 68393108	14
#Panel Interface	3AUA0000108650	1
#Panel mounting kit	3AUA0000108878	1
#Supply Module	ACS880-104-0900A-3 +C183+C188+E205+V112	4

Cust. Doc. No.	Prep. Oleg Vanin 12.04.2023	Title Structured identifier overview		Item Des.	
Cust. Ref. No.	App. Mika Asikainen 12.04.2023		SAP Doc. No. DMS doc. nr. 3AXD10001090391	=	
Customer Example Circuit Diagrams	Project ACS880-204 4×R8i	ABB	EPLAN Doc. No. 3AFE _ -	+	
			ABB Ref. No. -	Rev. E	Sheet 000C
			Resp. Dept.		No. of Sheets 5

GENERAL/RELAY COIL, WITH PROTECTIVE CIRCUIT DIODE AND R+LED



GENERAL/RELAY COIL

COIL WITH PICK-UP DELAY

COIL WITH OFF-DELAY

NO CONTACT

NC CONTACT

CHANGE OVER CONTACT

NO CONTACT, WITH CLOSING DELAY

TWO NO CONTACTS ONE INPUT, TWO OUTPUTS

TWO CONNECTED CHANGE OVER CONTACTS

POWER NO CONTACT OF A CONTACTOR

PUSH BUTTON WITH NO CONTACT

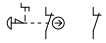
PUSH BUTTON WITH NC CONTACT

NO SWITCH, OPERATED BY TURNING, 2 POSITIONS

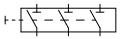
LIMIT SWITCH NC CONTACT MECHANICALLY OPERATED

NC SWITCH, TEMPERATURE OPERATED

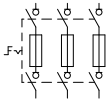
EMERGENCY STOP PUSH BUTTON



DISCONNECT SWITCH, THREE-POLE



SWITCH DISCONNECTOR WITH FUSES, THREE-POLE

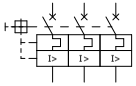


FUSE

FUSE DISCONNECTOR

CIRCUIT BREAKER

MOTOR OVERLOAD SWITCH WITH SWITCH MECHANISM



COMMON MODE FILTER FOR HIGH FREQUENCY CURRENTS

PROTECTIVE EARTH CONNECTED TO FRAME

PROTECTIVE EARTH CONNECTED TO TERMINAL / PE BUSBAR

FUNCTIONAL EARTHING CONNECTED TO TERMINAL

FUNCTIONAL BONDING TO FRAME

LIGHT

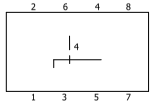
INDUCTOR

CAPACITOR

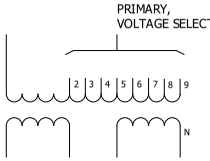
RESISTOR

POWER RESISTOR WITH FUSE

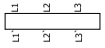
PHASE SELECTING SWITCH



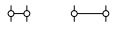
TRANSFORMER



EMC FILTER



TERMINAL, FOUR POLE



PLUG AND SOCKET TERMINAL BLOCK WITH 4 CONNECTION POINTS

FEMALE AND MALE PLUG

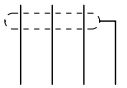
AMPERE METER

CURRENT TRANSFORMER

VOLTAGE METER

WIRE TERMINATION, INSULATED

SHIELDED CABLE



THERMAL OPERATION

DISCONNECT

DISCONNECT, CAN BE OPERATED WHILE NOMINAL CURRENT IS APPLIED

BREAKER, SHORTCIRCUIT BREAKING CAPABILITY

Cust. Doc. No.	Prep. Oleg Vanin 12.04.2023	Title Symbol Overview	Item Des.
Cust. Ref. No.	App. Mika Asikainen 12.04.2023		=
Customer Example Circuit Diagrams	Project ACS880-204 4×R8i		+
		SAP Doc. No. DMS doc. nr. 3AXD10001090391	
		EPLAN Doc. No. 3AFE _ -	
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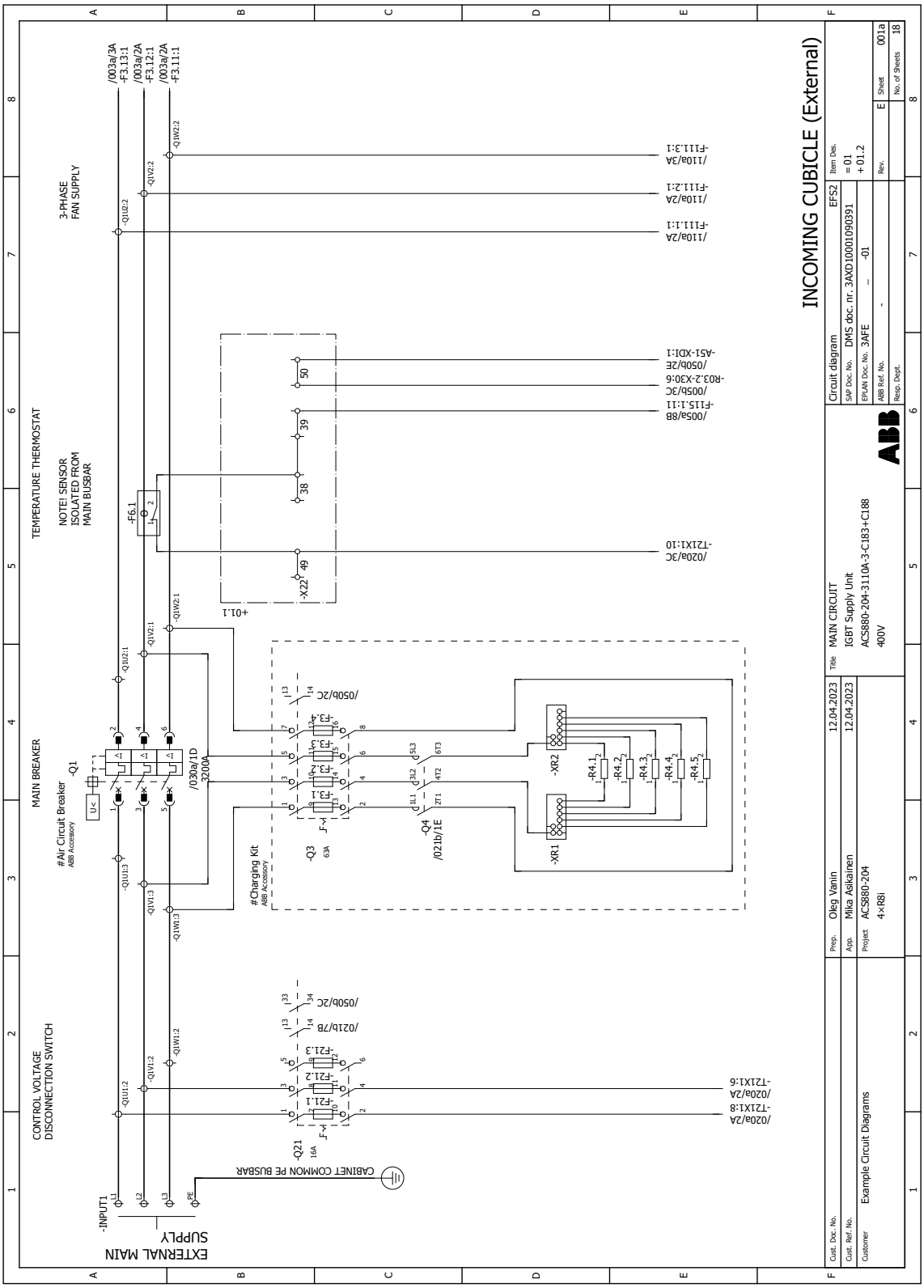
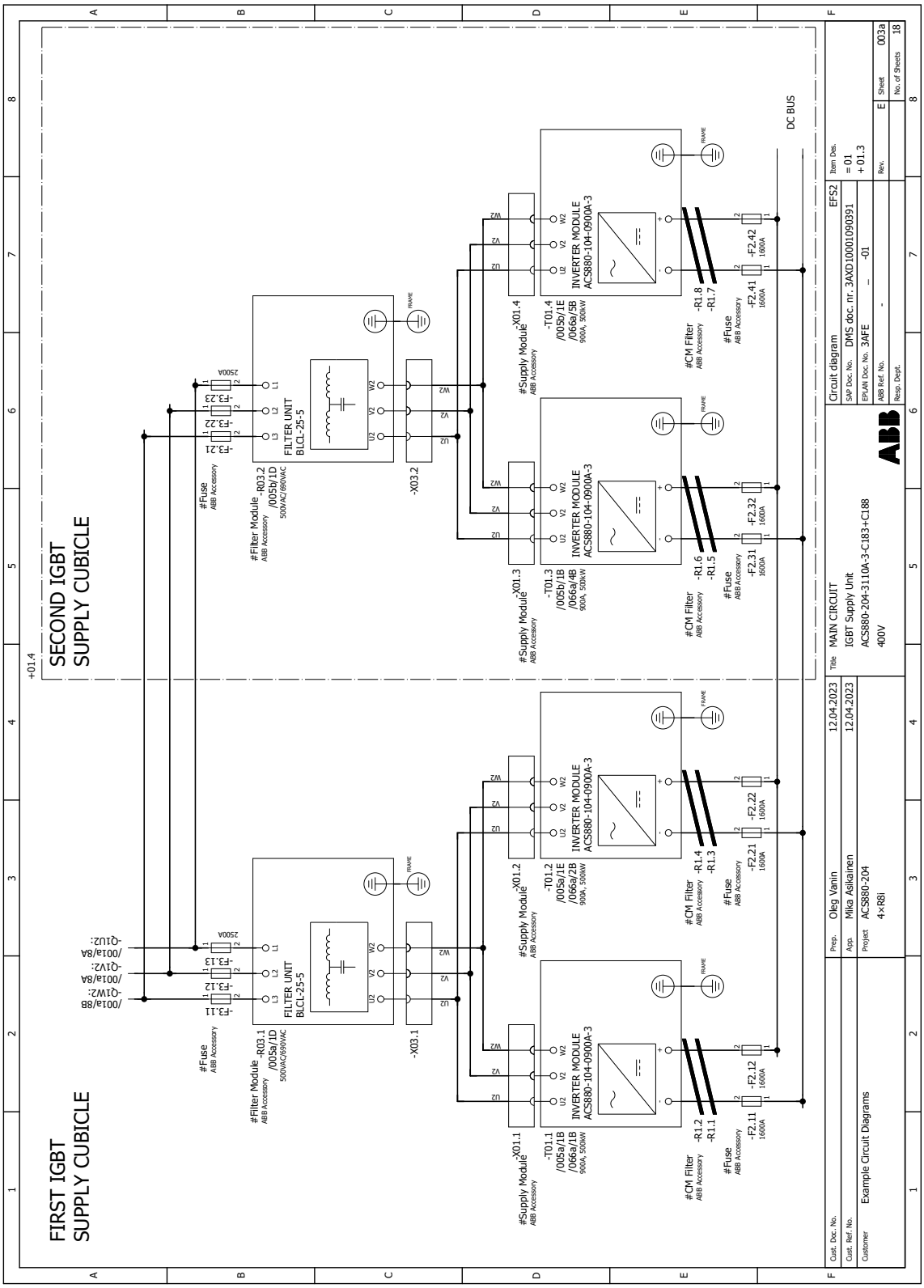
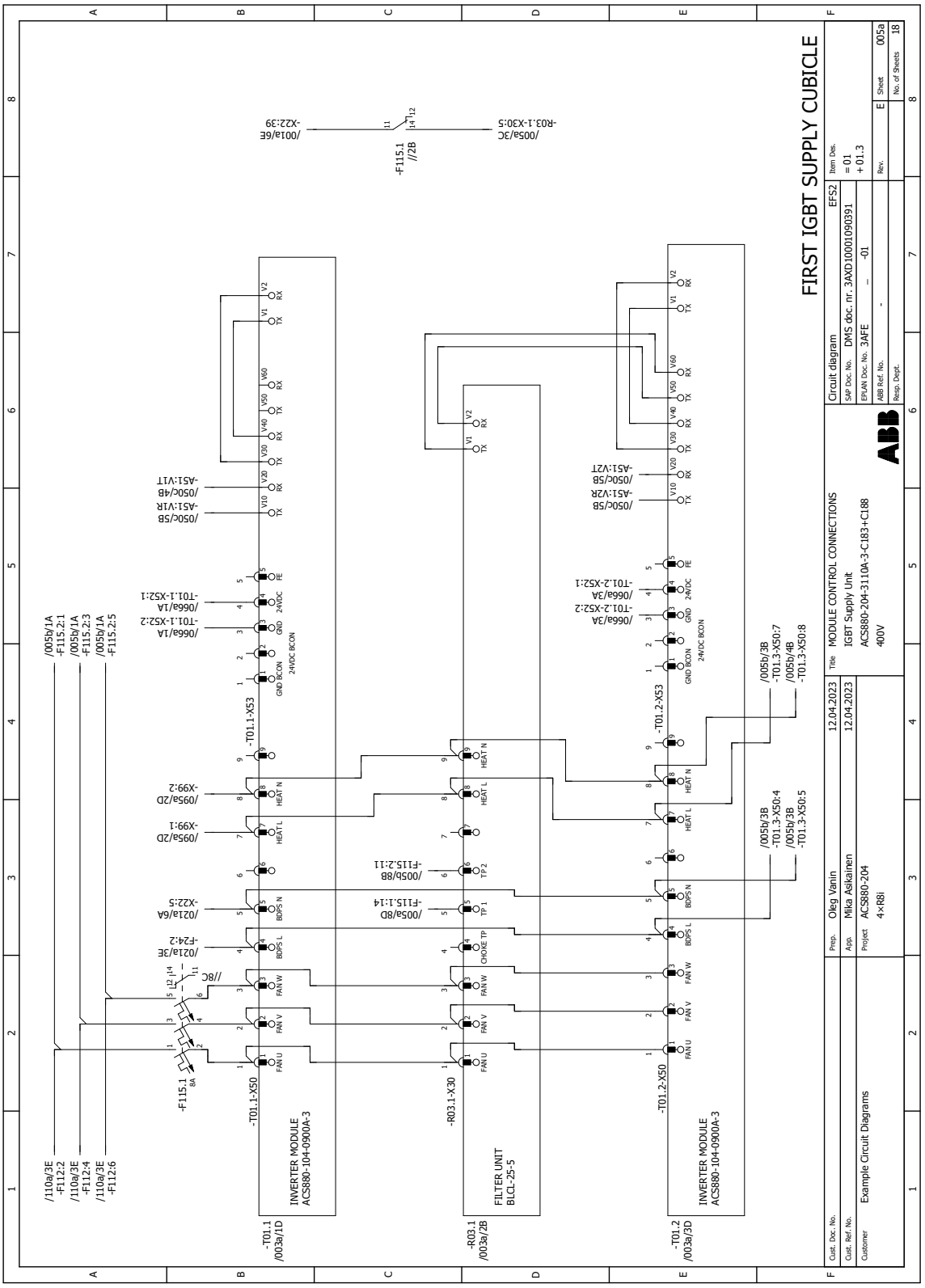
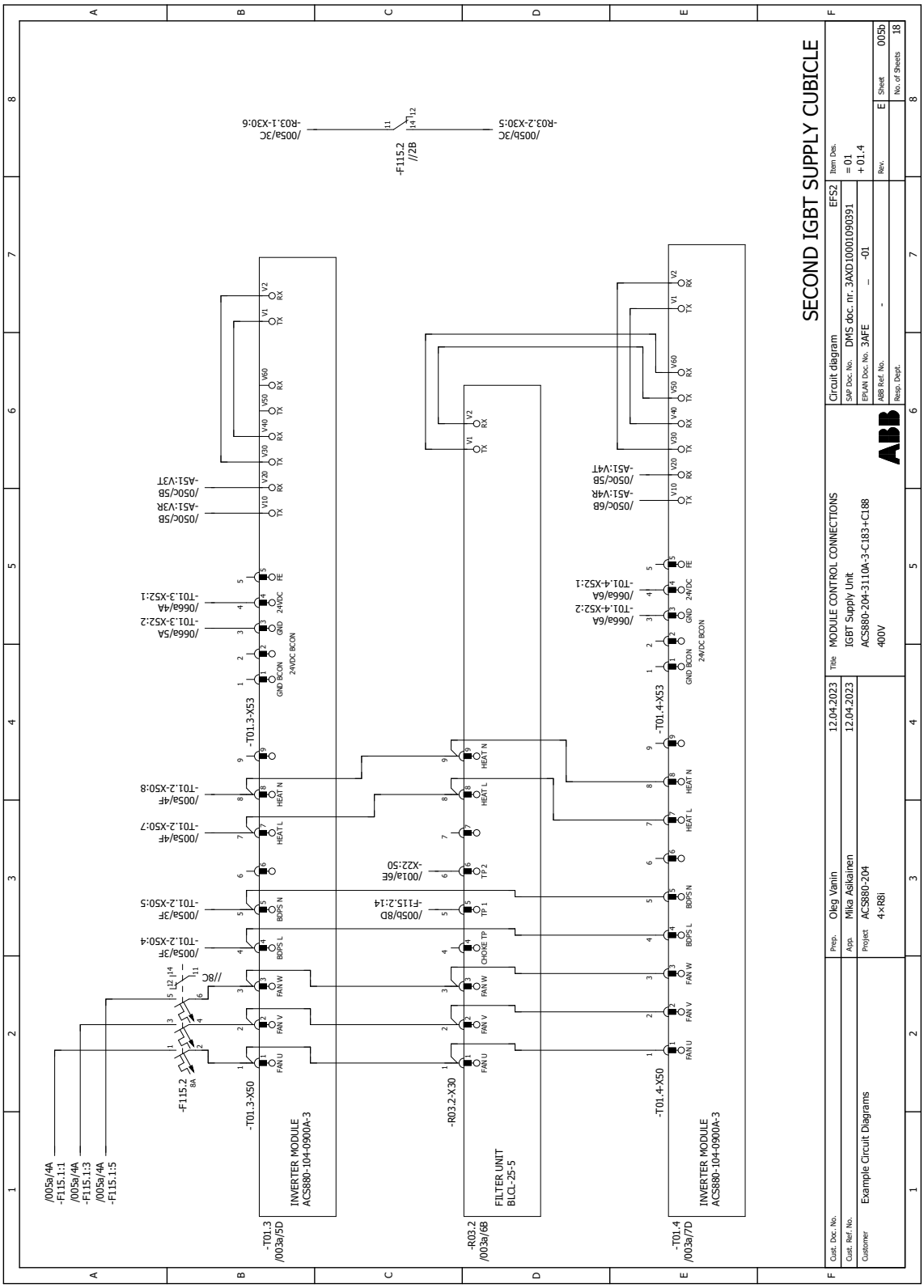
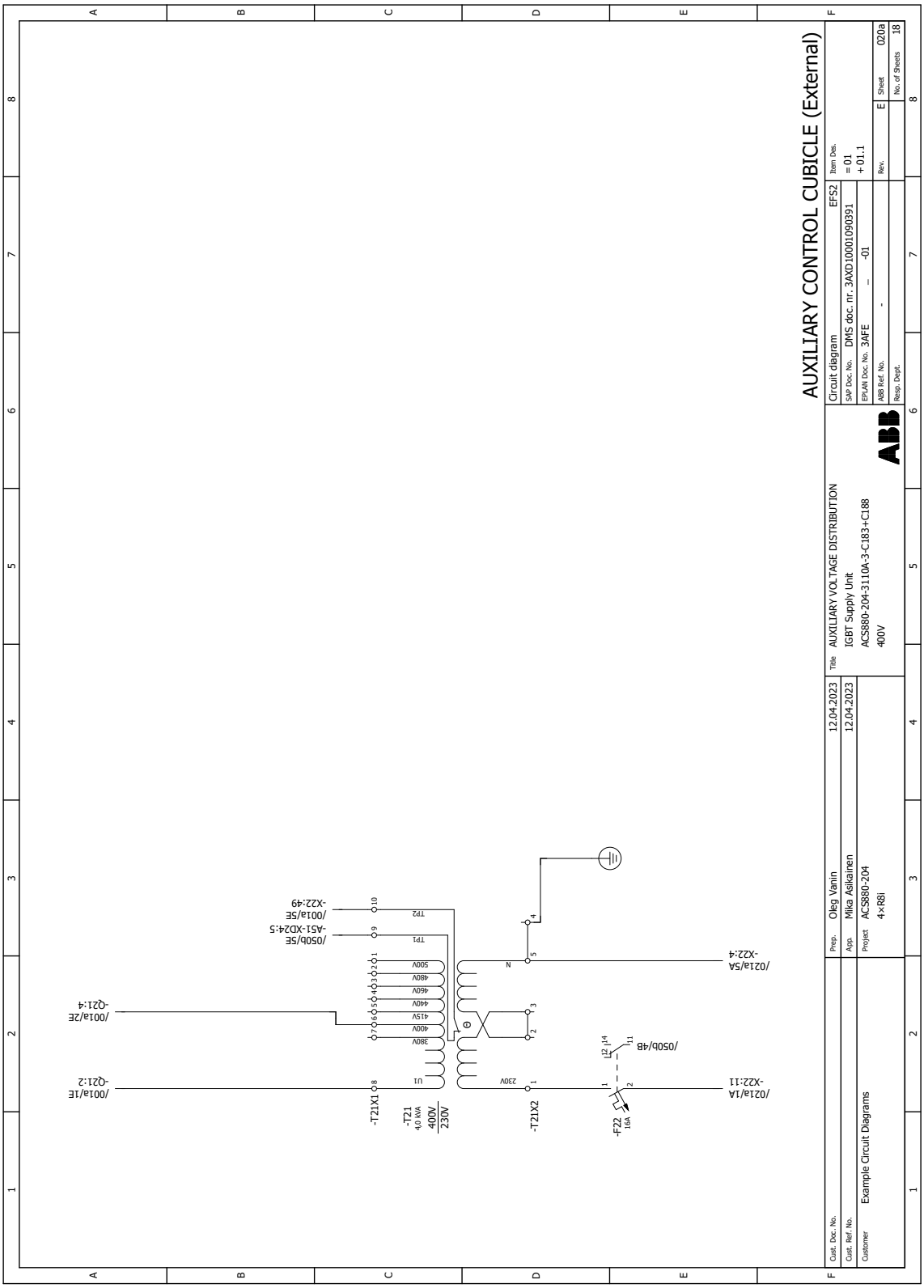
ABB

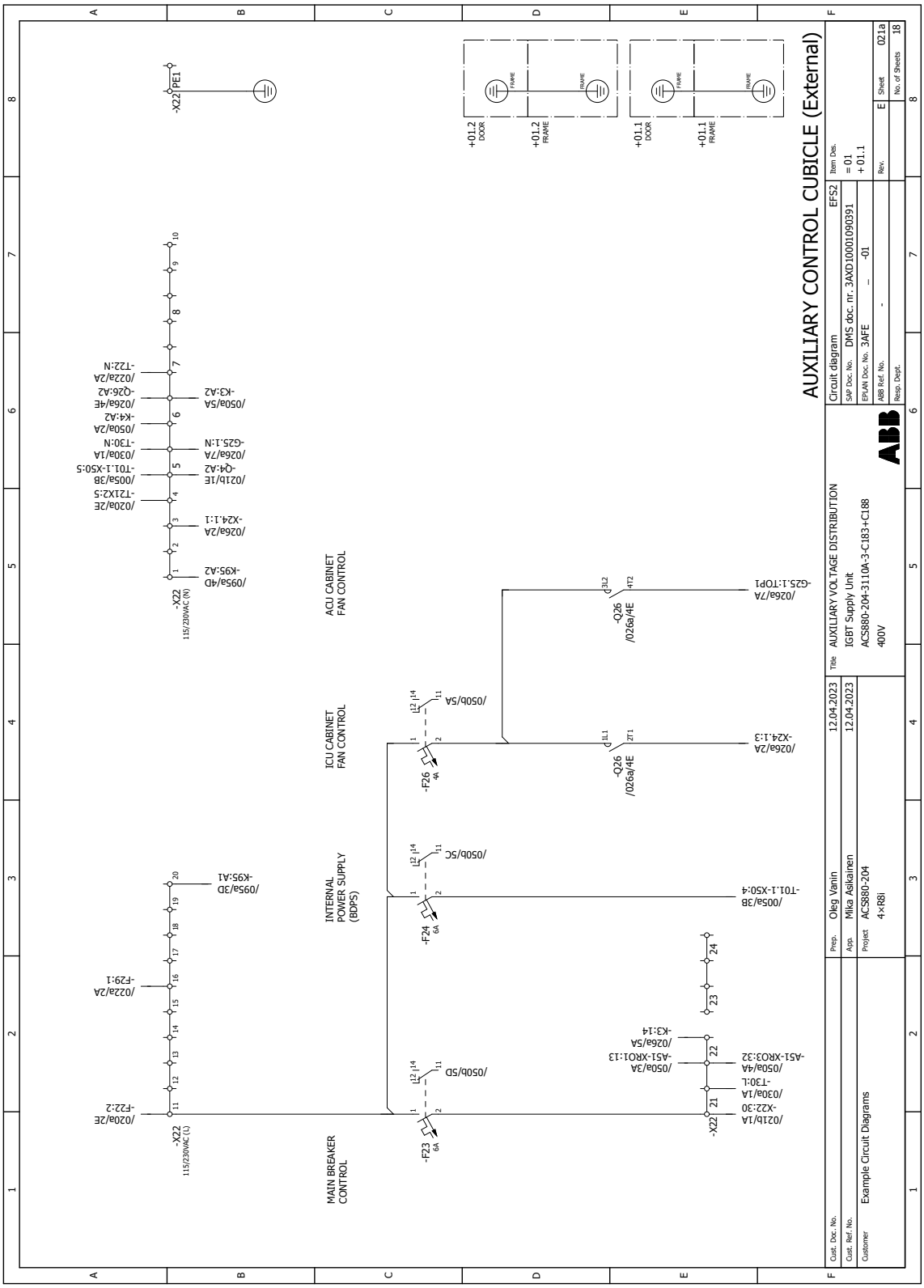

INCOMING CUBICLE (External)
EFS2
Item Des.
= 01
+ 01.2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Rev.
E
Sheet 001a
No. of Sheets 18
Title MAIN CIRCUIT
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Prep. Oleg Vanin 12.04.2023
Appr. Mika Askainen 12.04.2023
Project ACS880-204
4×R8i
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
MAIN BREAKER
#Air Circuit Breaker
ABB Accessory
-Q1
/030a/1D
3200A
TEMPERATURE THERMOSTAT
NOTE! SENSOR
ISOLATED FROM
MAIN BUSBAR
3-PHASE
FAN SUPPLY
CONTROL VOLTAGE
DISCONNECTION SWITCH
#Charging Kit
ABB Accessory
-Q3
63A
-Q4
/021b/1E
-Q21
16A
-F6.1
-XR1
-XR2
-R4.1
-R4.2
-R4.3
-R4.4
-R4.5
-X22
+01.1
-INPUT1
EXTERNAL MAIN
SUPPLY
CABINET COMMON PE BUSBAR
/003a/3A
-F3.13:1
/003a/2A
-F3.12:1
/003a/2A
-F3.11:1
/110a/3A
-F111.3:1
/110a/2A
-F111.2:1
/110a/2A
-F111.1:1
/005a/8B
-F115.1:11
/050b/3C
-R03.2-X30:6
/050b/ZE
-AS1-XDI:1
/020a/3C
-T2IX1:10
/050b/2C
/021b/7B
/020a/2A
-T2IX1:8
/020a/2A
-T2IX1:6


FIRST IGBT
SUPPLY CUBICLE
SECOND IGBT
SUPPLY CUBICLE
+01.4
DC BUS
MAIN CIRCUIT
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
EFS2
ACS880-104-0900A-3
FILTER UNIT
BLCL-25-5
Oleg Vanin
Mika Aslkainen
ACS880-204
4×R8i
Example Circuit Diagrams
DMS doc. nr. 3AXD10001090391
3AFE
ABB


FIRST IGBT SUPPLY CUBICLE
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.3
Rev.
E
Sheet 005a
No. of Sheets 18
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 12.04.2023
Appr. Mika Askainen 12.04.2023
Project ACS880-204 4×R8i
Title MODULE CONTROL CONNECTIONS
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
ABB
-T01.1 /003a/1D
INVERTER MODULE ACS880-104-0900A-3
-R03.1 /003a/2B
FILTER UNIT BLCL-25-5
-T01.2 /003a/3D
INVERTER MODULE ACS880-104-0900A-3
-F115.1 8A
-F115.1 /2B
/005a/3C -R03.1-X30:5
/001a/6E -XS2:39
/110a/3E -F112:2
/110a/3E -F112:4
/110a/3E -F112:6
/005b/1A -F115.2:1
/005b/1A -F115.2:3
/005b/1A -F115.2:5
-T01.1-X50
-T01.1->X53
-T01.2-X50
-T01.2->X53
FAN U
FAN V
FAN W
BDPS L
BDPS N
CHOKE TP
TP 1
TP 2
HEAT L
HEAT N
24VDC BCON
GND BCON
24VDC
GND
FE
TX
RX
/021a/3E -F24:2
/021a/6A -XS2:5
/005a/8D -F115.1:14
/005a/8B -F115.2:11
/095a/2D -X99:1
/095a/2D -X99:2
/066a/1A -T01.1-XS2:1
/066a/1A -T01.1-XS2:2
/066a/3A -T01.2-XS2:1
/066a/3A -T01.2-XS2:2
/050c/5B -AS1:V1R
/050c/4B -AS1:V1T
/050c/5B -AS1:V2R
/050c/5B -AS1:V2T
/005b/3B -T01.3->X50:7
/005b/4B -T01.3->X50:8
/005b/3B -T01.3->X50:4
/005b/3B -T01.3->X50:5


SECOND IGBT SUPPLY CUBICLE
MODULE CONTROL CONNECTIONS
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
EFS2
ABB
INVERTER MODULE ACS880-104-0900A-3
FILTER UNIT BLCL-25-5
-T01.3 /003a/5D
-R03.2 /003a/6B
-T01.4 /003a/7D
-T01.3-X50
-T01.3-X53
-R03.2-X30
-T01.4-X50
-T01.4-X53
-F115.2 8A
-F115.2 //2B
/005a/4A -F115.1:1
/005a/4A -F115.1:3
/005a/4A -F115.1:5
/005a/3C -R03.1-X30:6
/005b/3C -R03.2-X30:5
/050C/5B -A51:V3T
/050C/5B -A51:V3R
/050C/6B -A51:V4T
/050C/6B -A51:V4R
/066a/5A -T01.3-X52:2
/066a/4A -T01.3-X52:1
/066a/6A -T01.4-X52:2
/066a/6A -T01.4-X52:1
/005a/4F -T01.2-X50:8
/005a/4F -T01.2-X50:7
/005a/3F -T01.2-X50:5
/005a/3F -T01.2-X50:4
/005b/8D -F115.2:14
/001a/6E -X22:50
//8C
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep. Oleg Vanin 12.04.2023
Appr. Mika Aslkainen 12.04.2023
Project ACS880-204 4×R8i
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - -
Resp. Dept.
Item Des. = 01 + 01.4
Rev. E Sheet 005b
No. of Sheets 18


AUXILIARY CONTROL CUBICLE (External)
EFS2
Item Des.
= 01
+ 01.1
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE _ -01
ABB Ref. No. -
Resp. Dept.
Rev.
E
Sheet 020a
No. of Sheets 18
Prep. Oleg Vanin 12.04.2023
Appr. Mika Asikainen 12.04.2023
Project ACS880-204
4×R8i
Title AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
-T21X1
-T21
4.0 kVA
400V
230V
-T21X2
+F22
16A
/001a/1E
-Q21:2
/001a/2E
-Q21:4
/050b/4B
/021a/1A
-XZ2:11
/021a/5A
-XZ2:4
/050b/5E
-A51-XD24:5
/001a/5E
-XZ2:49
380V
400V
415V
440V
460V
480V
500V
TP1
TP2
U1
230V
N


AUXILIARY CONTROL CUBICLE (External)
Circuit diagram
EFS2
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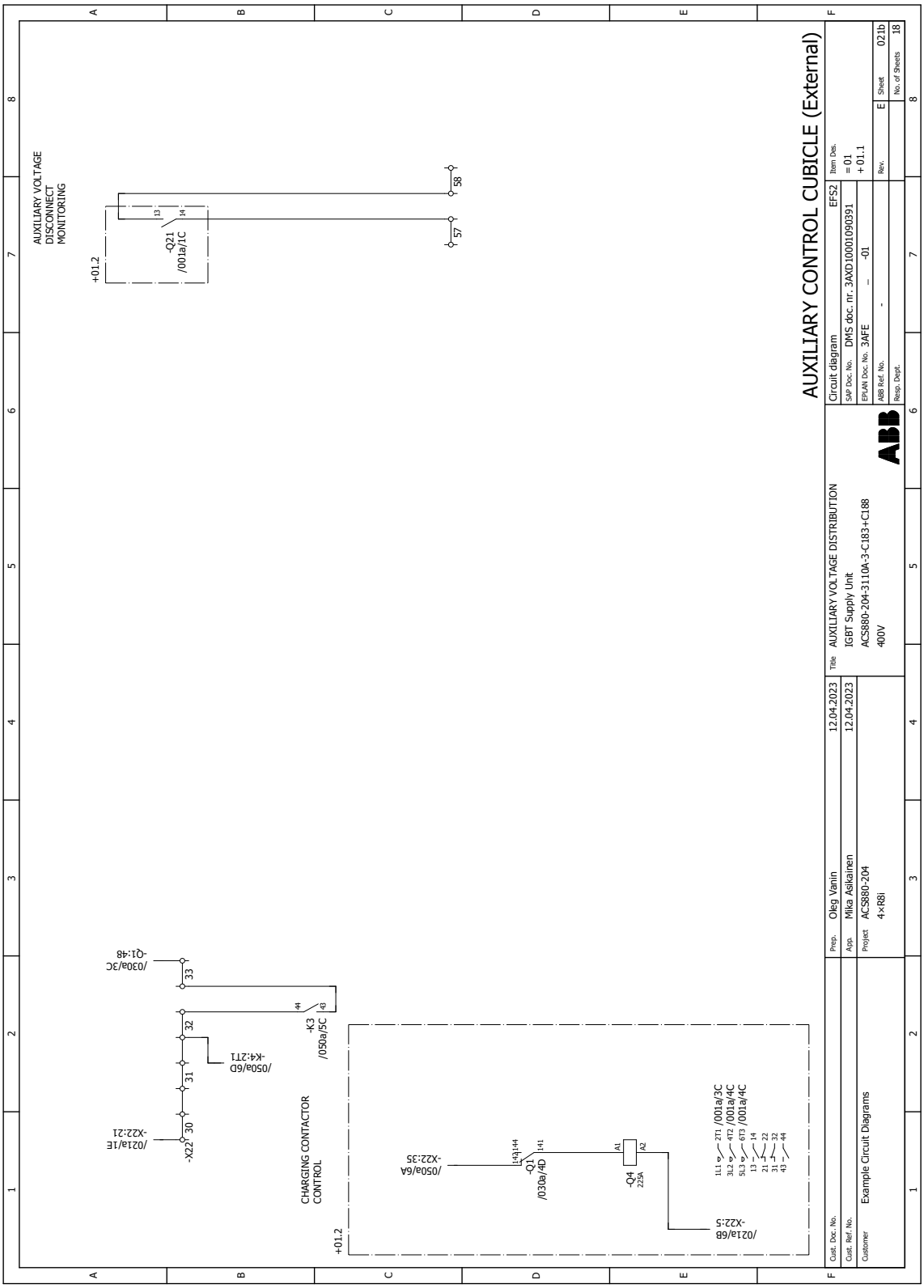
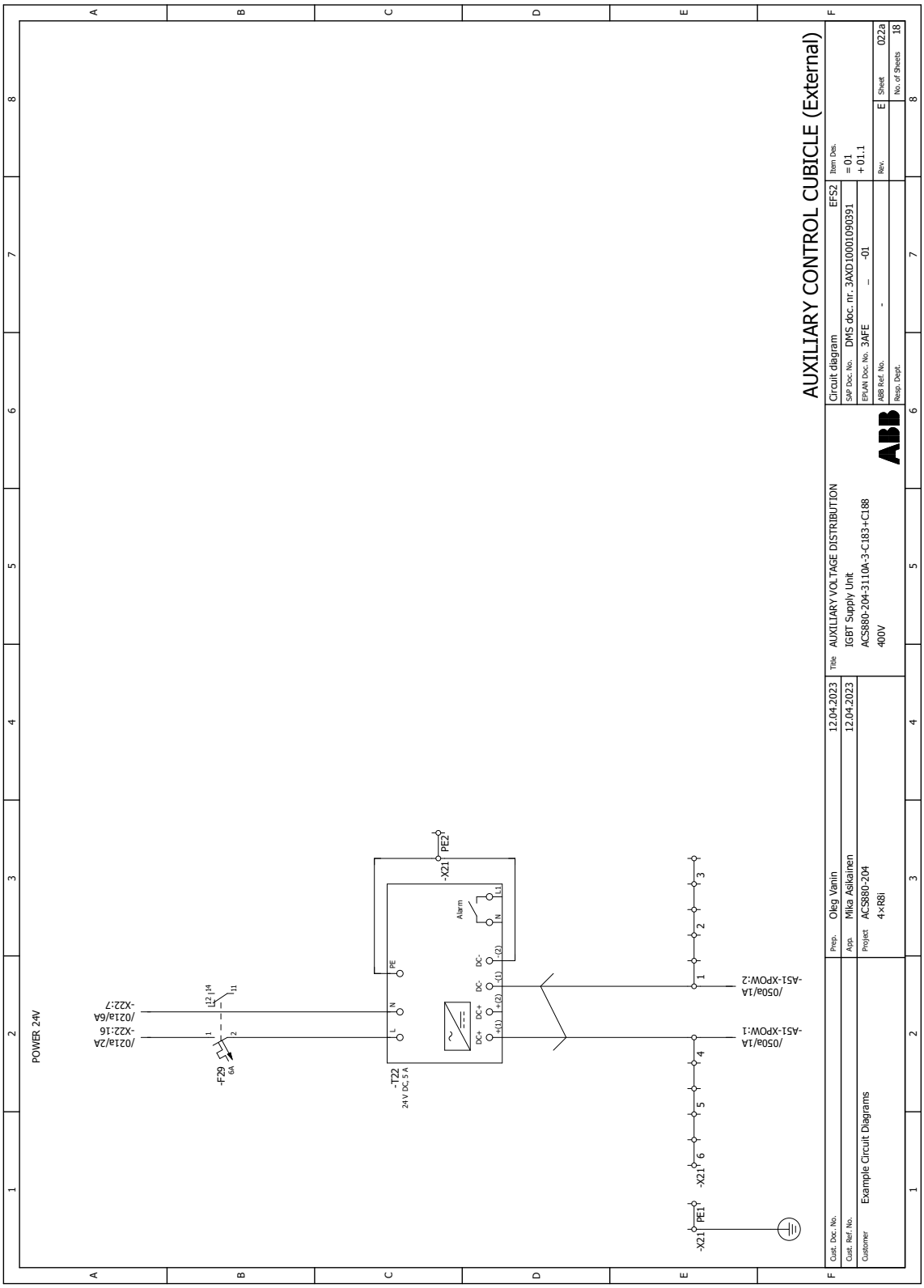
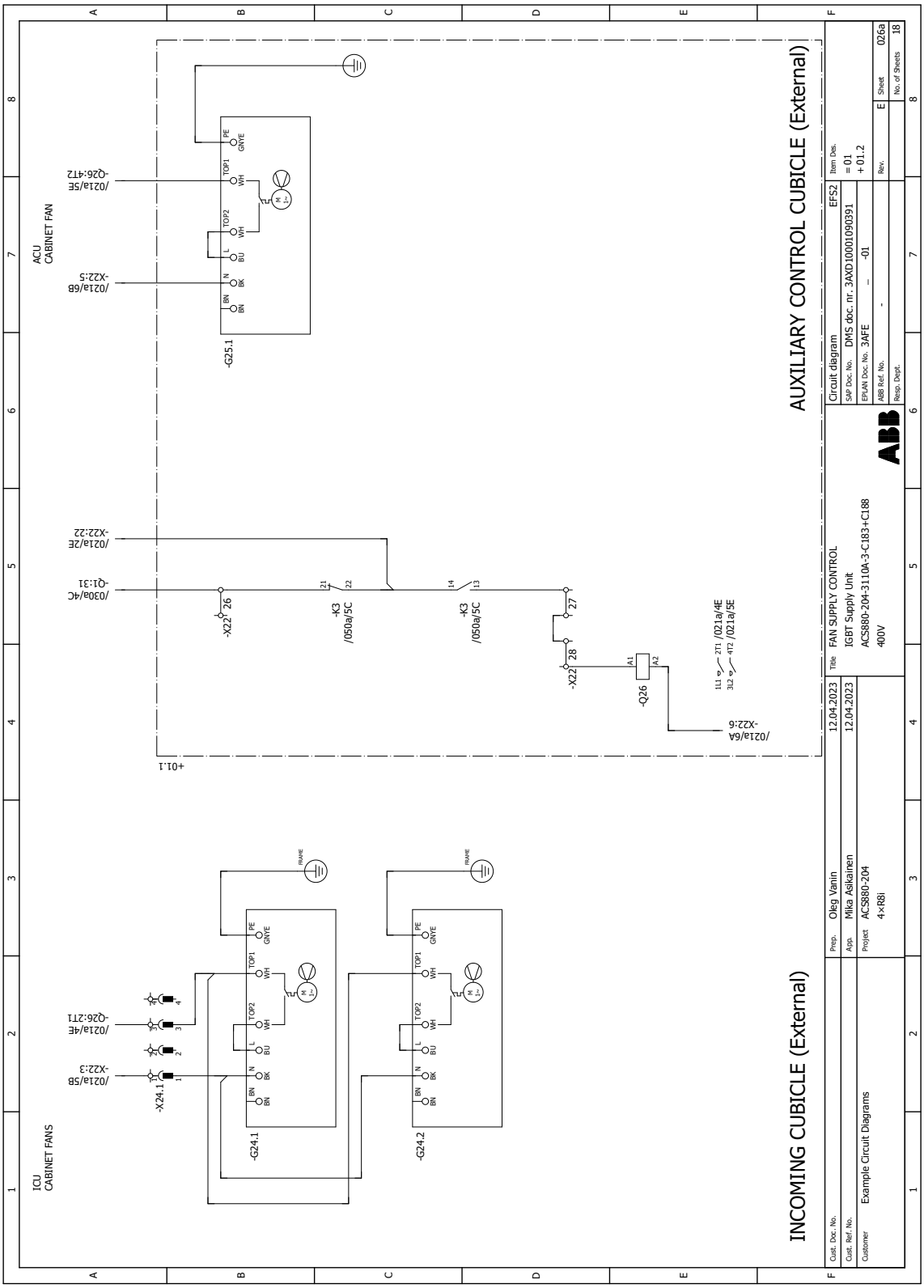
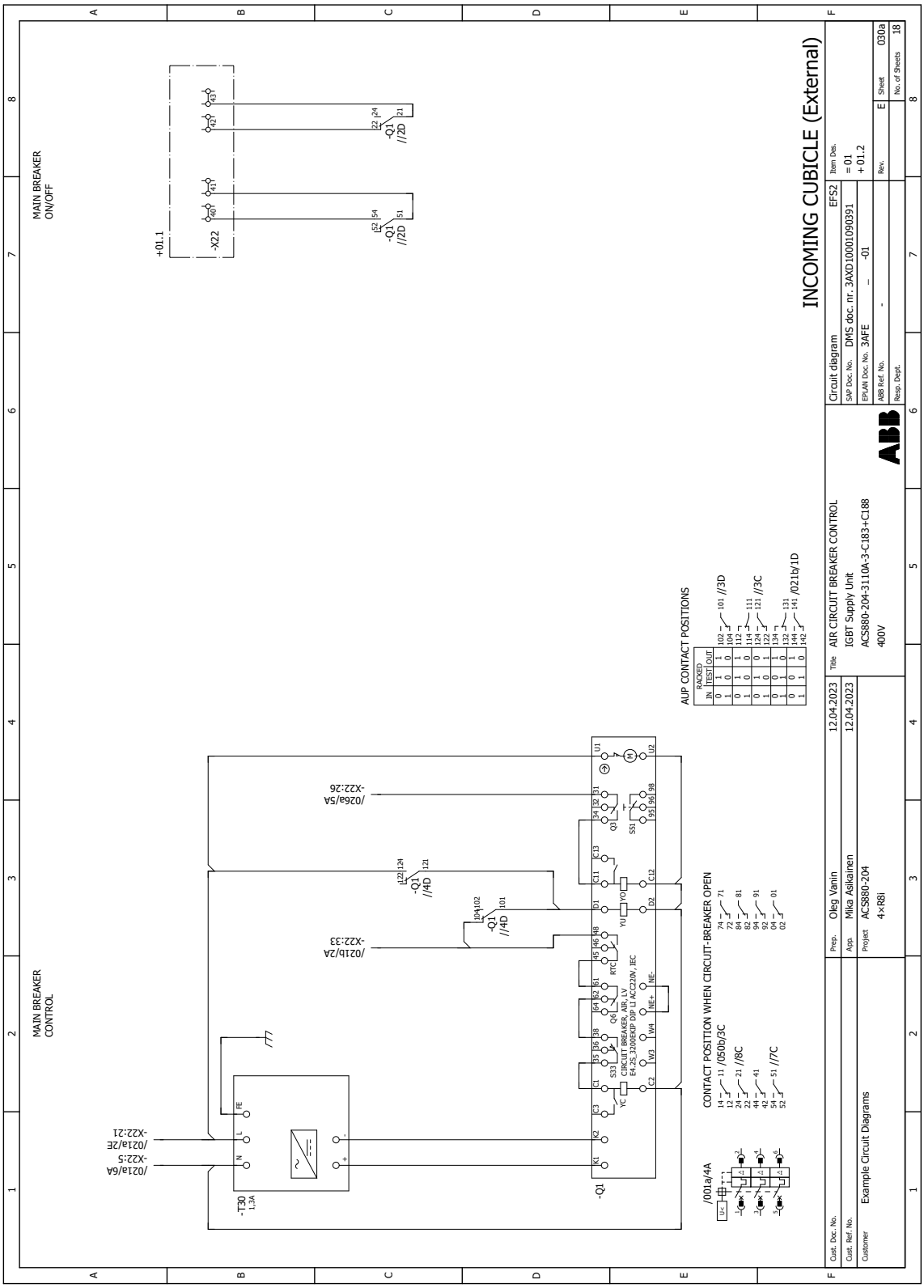
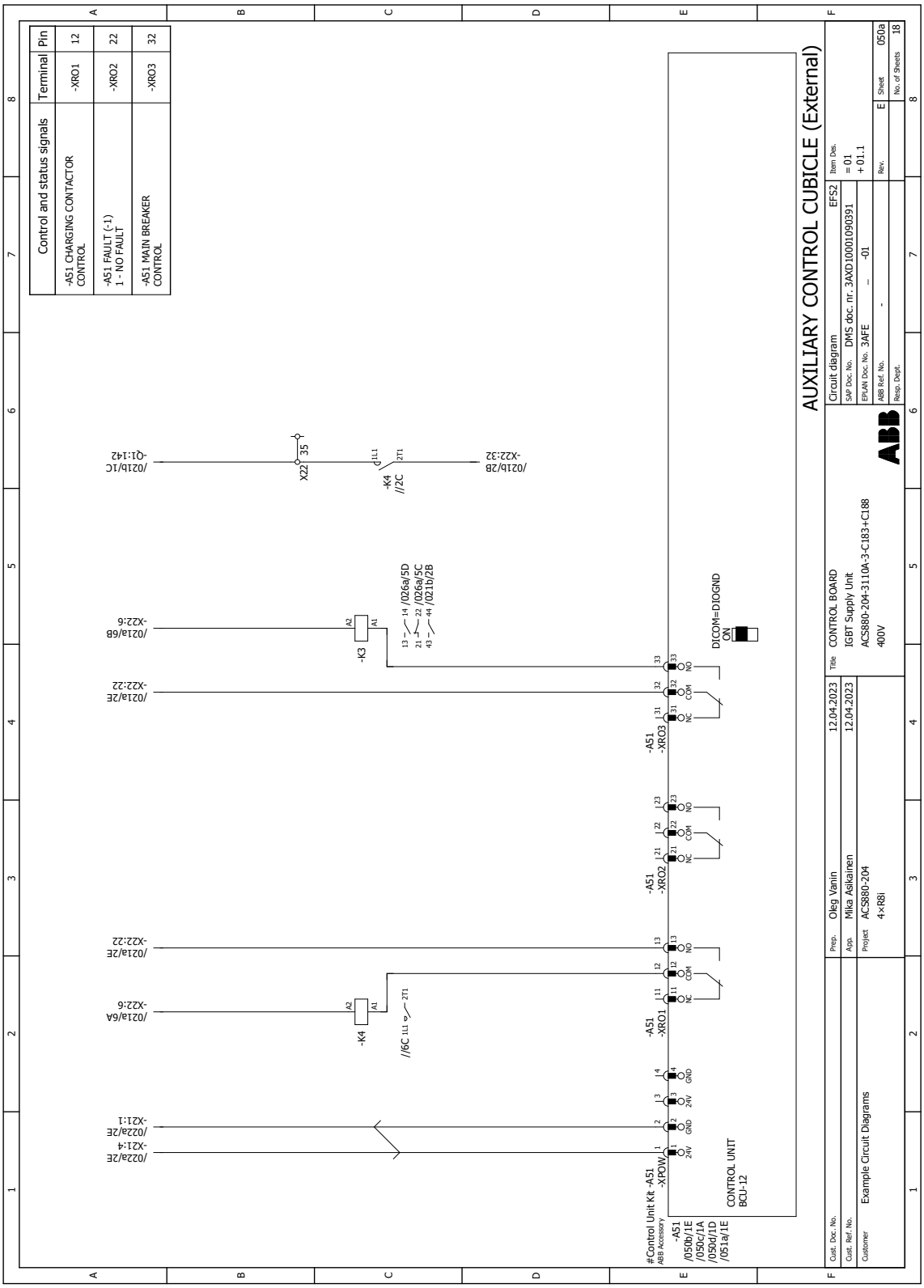
DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE -01
ABB Ref. No. -
Resp. Dept.
Item. Des.
= 01
+ 01.1
Rev. E
Sheet 021a
No. of Sheets 18
Title AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
Prep. Oleg Vanin 12.04.2023
Appr. Mika Aslkainen 12.04.2023
Project ACS880-204
4×R8i
-X22 PE1
+01.2 DOOR
+01.2 FRAME
+01.1 DOOR
+01.1 FRAME
FRAME
-X22 115/230VAC (N)
-X22 115/230VAC (L)
ACU CABINET FAN CONTROL
ICU CABINET FAN CONTROL
INTERNAL POWER SUPPLY (BDPS)
MAIN BREAKER CONTROL
-F26 4A
-F24 6A
-F23 6A
-Q26 /026a/4E
-X24.1:1
-X24.1:3
-GZ5.1:TOP1
-T01.1-X50:4
-K95:A2
-K95:A1
-K3:A2
-K3:14
-K4:A2
-Q4:A2
-Q26:A2
-GZ5.1:N
-T30:N
-T01.1-X50:5
-T21X2:5
-T22:N
-F29:1
-F22:2
-X22:30
-T30:L
-A51-XRO3:32
-A51-XRO1:13
/026a/2A
/026a/4E
/026a/5A
/026a/7A
/026a/1A
/026a/1E
/026a/2E
/021b/1E
/021b/1A
/030a/1A
/050a/2A
/050a/3A
/050a/4A
/050a/5A
/050b/5A
/050b/5C
/050b/5D
/005a/3B
/009a/3D
/009a/4D
/022a/2A
/026a/2E
/026a/2A

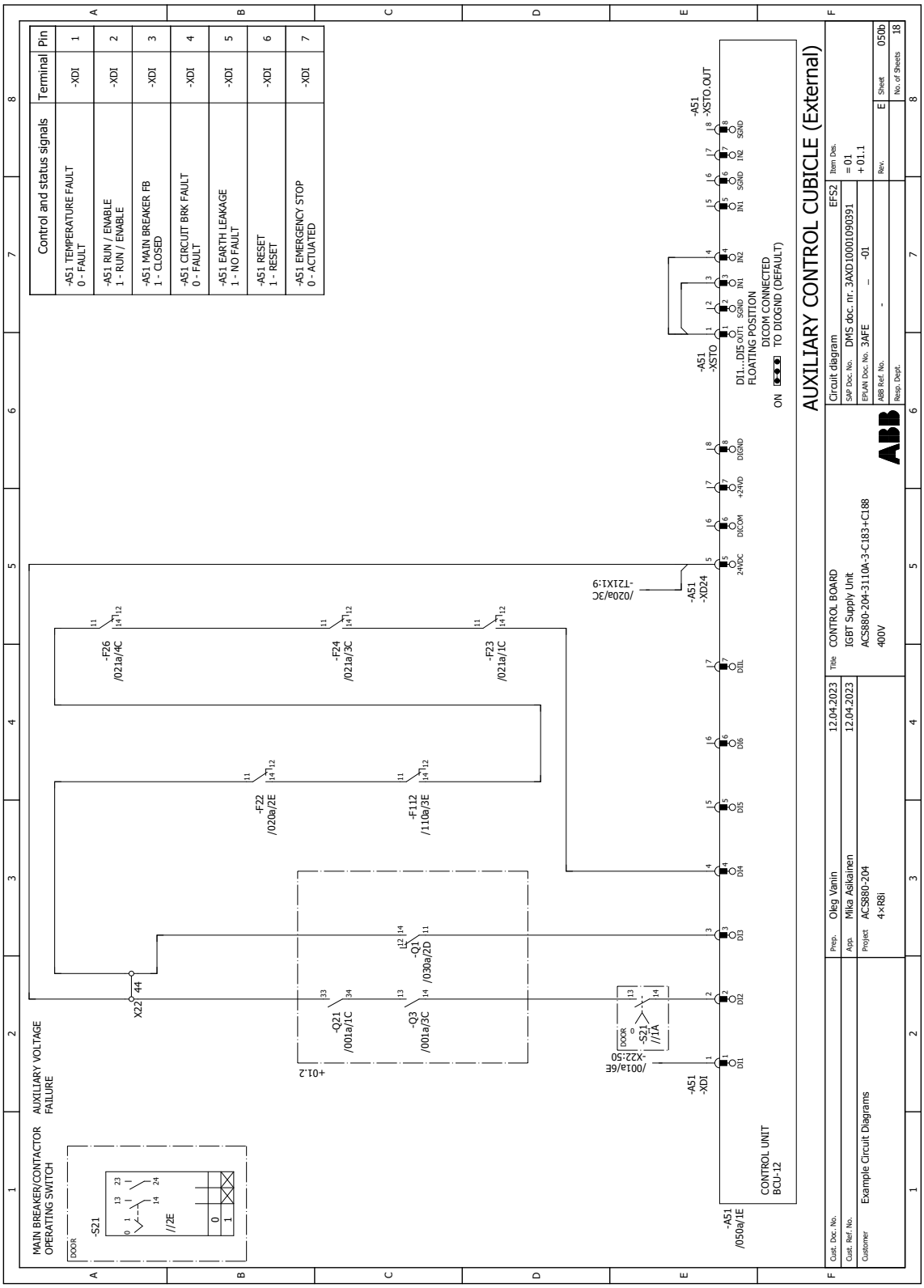

AUXILIARY CONTROL CUBICLE (External)
AUXILIARY VOLTAGE DISCONNECT MONITTORING
+01.2
-Q21 /001a/1C
13
14
57
58
CHARGING CONTACTOR CONTROL
-X22
30
31
32
33
-K3 /050a/5C
-K4:2T1 /050a/6D
-Q1:48 /030a/3C
-Q1 /030a/4D
-Q4 225A
-X22:21 /021a/1E
-X22:35 /050a/6A
-X22:5 /021a/6B
/001a/3C
/001a/4C
/001a/4C
Prep. Oleg Vanin 12.04.2023
Appr. Mika Askainen 12.04.2023
Project ACS880-204 4×R8i
Title AUXILIARY VOLTAGE DISTRIBUTION IGBT Supply Unit ACS880-204-3110A-3-C183+C188 400V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des. = 01 + 01.1
Rev. E
Sheet 021b
No. of Sheets 18
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams

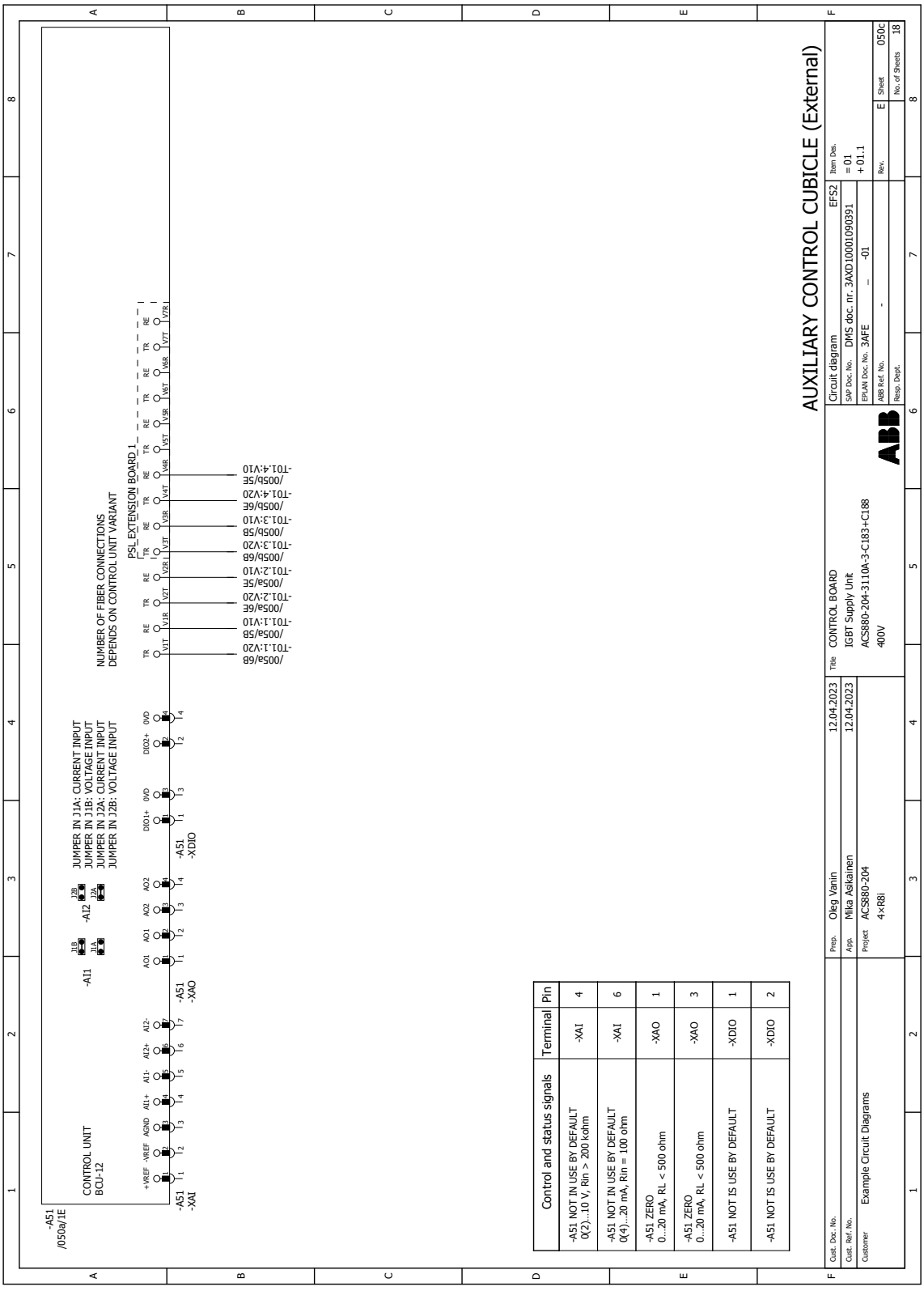

AUXILIARY CONTROL CUBICLE (External)
POWER 24V
/021a/2A
-XZ2:16
/021a/6A
-XZ2:7
-F29
6A
-T22
24 V DC, 5 A
-X21
PE2
PE
N
L
DC+
DC-
+(1)
+(2)
Alarm
L1
N
/050a/1A
-A51-XPOW:2
/050a/1A
-A51-XPOW:1
-X21
PE1
-X21
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Asikainen
12.04.2023
Project
ACS880-204
4×R8i
Title
AUXILIARY VOLTAGE DISTRIBUTION
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
ABB
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. – -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
E
Sheet
022a
No. of Sheets
18

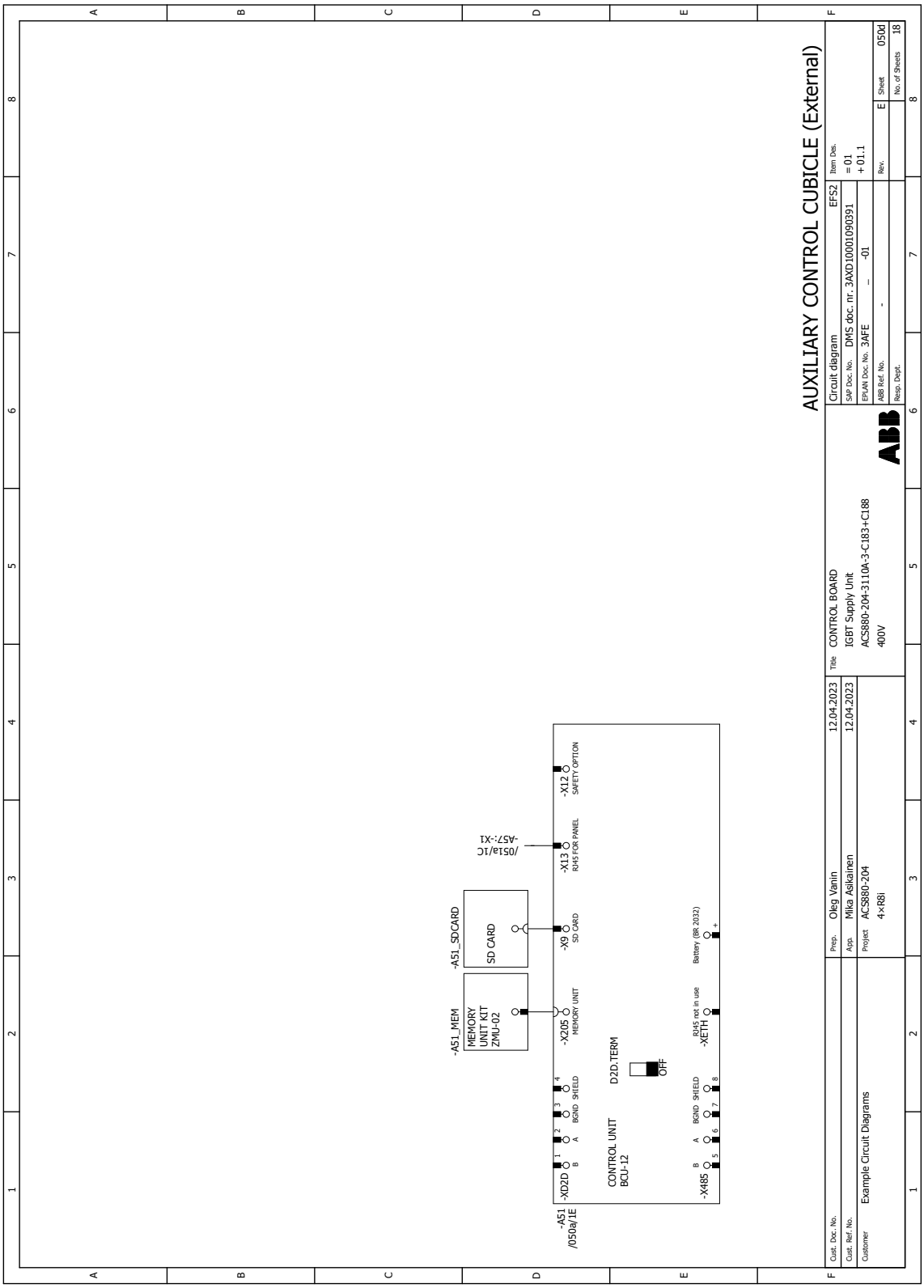

AUXILIARY CONTROL CUBICLE (External)
INCOMING CUBICLE (External)
ACU
CABINET FAN
ICU
CABINET FANS
-G25.1
-G24.1
-G24.2
-X24.1
-X22
-K3
-Q26
-Q1
+01.1
FAN SUPPLY CONTROL
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Oleg Vanin
Mika Askainen
ACS880-204
4×R8i
12.04.2023
12.04.2023
EFS2
DMS doc. nr. 3AXD10001090391
3AFE
-01
Example Circuit Diagrams
Circuit diagram
Sheet 026a
No. of Sheets 18

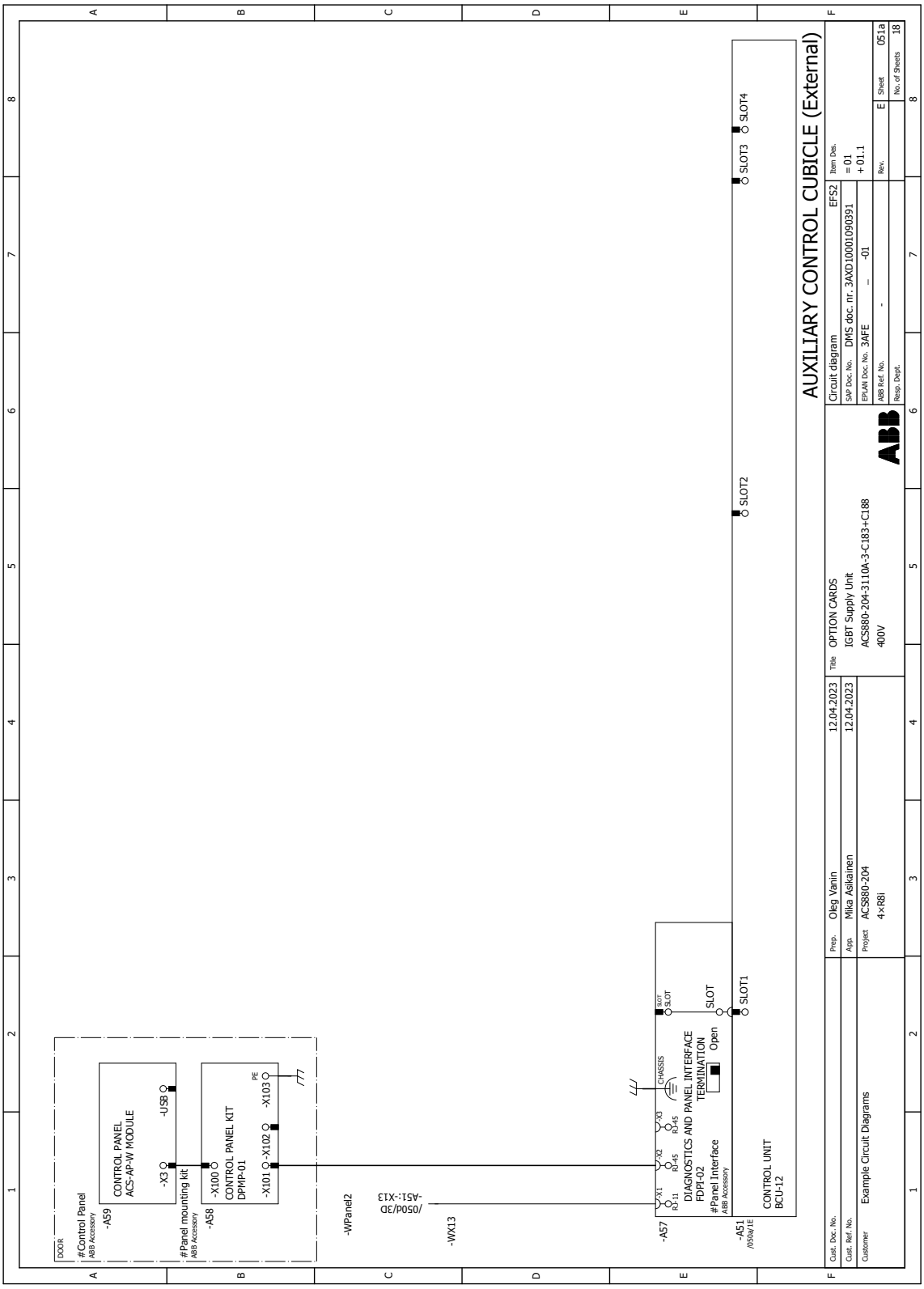

INCOMING CUBICLE (External)
MAIN BREAKER CONTROL
MAIN BREAKER ON/OFF
-T30 1.3A
-Q1
-X22
+01.1
/001a/4A
CONTACT POSITION WHEN CIRCUIT-BREAKER OPEN
AUP CONTACT POSITIONS
/021a/6A
/021a/7E
-X22:5
-X22:21
/021b/2A
-X22:33
/026a/5A
-X22:26
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep. Oleg Vanin 12.04.2023
Appr. Mika Aalkainen 12.04.2023
Project ACS880-204 4×R8i
Title AIR CIRCUIT BREAKER CONTROL
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - Rev. E Sheet 030a
Resp. Dept. No. of Sheets 18
Item Des. = 01 + 01.2


AUXILIARY CONTROL CUBICLE (External)
CONTROL UNIT
BCU-12
-A51
-XPOW
-A51
-XRO1
-A51
-XRO2
-A51
-XRO3
-K4
-K3
-K4
DICOM=DIOGND
ON
Control and status signals
-A51 CHARGING CONTACTOR CONTROL
-A51 FAULT (-1) 1 - NO FAULT
-A51 MAIN BREAKER CONTROL
Terminal
-XRO1
-XRO2
-XRO3
Pin
12
22
32
Circuit diagram
EFS2
CONTROL BOARD
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Oleg Vanin
Mika Asikainen
ACS880-204
4×R8i
12.04.2023
12.04.2023
Example Circuit Diagrams


AUXILIARY CONTROL CUBICLE (External)
Control and status signals
-A51 TEMPERATURE FAULT 0 - FAULT
-A51 RUN / ENABLE 1 - RUN / ENABLE
-A51 MAIN BREAKER FB 1 - CLOSED
-A51 CIRCUIT BRK FAULT 0 - FAULT
-A51 EARTH LEAKAGE 1 - NO FAULT
-A51 RESET 1 - RESET
-A51 EMERGENCY STOP 0 - ACTUATED
Terminal
Pin
-XDI
-A51 -XSTO.OUT
-A51 -XSTO
-A51 -XD24
-A51 -XDI
-A51 /050a/1E
CONTROL UNIT BCU-12
MAIN BREAKER/CONTACTOR OPERATING SWITCH
AUXILIARY VOLTAGE FAILURE
-S21
//2E
-F26 /021a/4C
-F24 /021a/3C
-F23 /021a/1C
-F22 /020a/2E
-F112 /110a/3E
-Q21 /001a/1C
-Q3 /001a/3C
-Q1 /030a/2D
-S21 //1A
X22 44
+01.2
/001a/6E -XZ2:50
/020a/3C -T2:X1:9
DI1...DI5 OUT1 SGND IN1 IN2 SGND IN1 SGND IN2 SGND
FLOATING POSITION
DICOM CONNECTED
ON TO DIOGND (DEFAULT)
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep. Oleg Vanin 12.04.2023
Appr. Mika Aalkainen 12.04.2023
Project ACS880-204 4×R8i
Title CONTROL BOARD IGBT Supply Unit ACS880-204-3110A-3-C183+C188 400V
Circuit diagram EFS2
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. - Rev. E
Resp. Dept.
Item Des. = 01 + 01.1
Sheet 050b
No. of Sheets 18


AUXILIARY CONTROL CUBICLE (External)
CONTROL UNIT
BCU-12
-A51
/050a/1E
-A51
-XAI
-A11
-A12
JUMPER IN J1A: CURRENT INPUT
JUMPER IN J1B: VOLTAGE INPUT
JUMPER IN J2A: CURRENT INPUT
JUMPER IN J2B: VOLTAGE INPUT
NUMBER OF FIBER CONNECTIONS
DEPENDS ON CONTROL UNIT VARIANT
PSL_EXTENSION BOARD_1
-A51
-XAO
-A51
-XDIO
-T01.1:V20 /005a/6B
-T01.1:V10 /005a/5B
-T01.2:V20 /005a/6E
-T01.2:V10 /005a/5E
-T01.3:V20 /005b/6B
-T01.3:V10 /005b/5B
-T01.4:V20 /005b/6E
-T01.4:V10 /005b/5E
Control and status signals
Terminal
Pin
-A51 NOT IN USE BY DEFAULT
0(2)...10 V, Rin > 200 kohm
-XAI
4
-A51 NOT IN USE BY DEFAULT
0(4)...20 mA, Rin = 100 ohm
-XAI
6
-A51 ZERO
0...20 mA, RL < 500 ohm
-XAO
1
-A51 ZERO
0...20 mA, RL < 500 ohm
-XAO
3
-A51 NOT IS USE BY DEFAULT
-XDIO
1
-A51 NOT IS USE BY DEFAULT
-XDIO
2
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Askainen
12.04.2023
Project
ACS880-204
4×R8i
Title
CONTROL BOARD
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
ABB
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001090391
EPLAN Doc. No.
3AFE
–
-01
ABB Ref. No.
-
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
E
Sheet
050c
No. of Sheets
18


AUXILIARY CONTROL CUBICLE (External)
CONTROL UNIT
BCU-12
-A51
/050q/1E
-XD2D
-X485
D2D.TERM
OFF
-A51_MEM
MEMORY UNIT KIT ZMU-02
-A51_SDCARD
SD CARD
-X205
MEMORY UNIT
-X9
SD CARD
-X13
RJ45 FOR PANEL
-X12
SAFETY OPTION
-XETH
RJ45 not in use
Battery (BR 2032)
/051a/1C
-A57:-X1
CONTROL BOARD
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Circuit diagram
EFS2
DMS doc. nr. 3AXD10001090391
3AFE
-01
Item Des.
= 01
+ 01.1
Sheet
050d
No. of Sheets
18
Oleg Vanin
Mika Asikainen
ACS880-204
4×R8i
12.04.2023
12.04.2023
Example Circuit Diagrams


AUXILIARY CONTROL CUBICLE (External)
DOOR
#Control Panel
ABB Accessory
-A59
CONTROL PANEL
ACS-AP-W MODULE
-X3
-USB
#Panel mounting kit
ABB Accessory
-A58
-X100
CONTROL PANEL KIT
DPMP-01
-X101
-X102
-X103
PE
-WPanel2
/050d/3D
-A51:-X13
-WX13
-A57
-X1
RJ-11
-X2
RJ-45
-X3
RJ-45
CHASSIS
DIAGNOSTICS AND PANEL INTERFACE
FDPI-02
#Panel Interface
ABB Accessory
TERMINATION
Open
SLOT
-A51
/050a/1E
CONTROL UNIT
BCU-12
SLOT1
SLOT2
SLOT3
SLOT4
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Asikainen
12.04.2023
Project
ACS880-204
4×R8i
Title
OPTION CARDS
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
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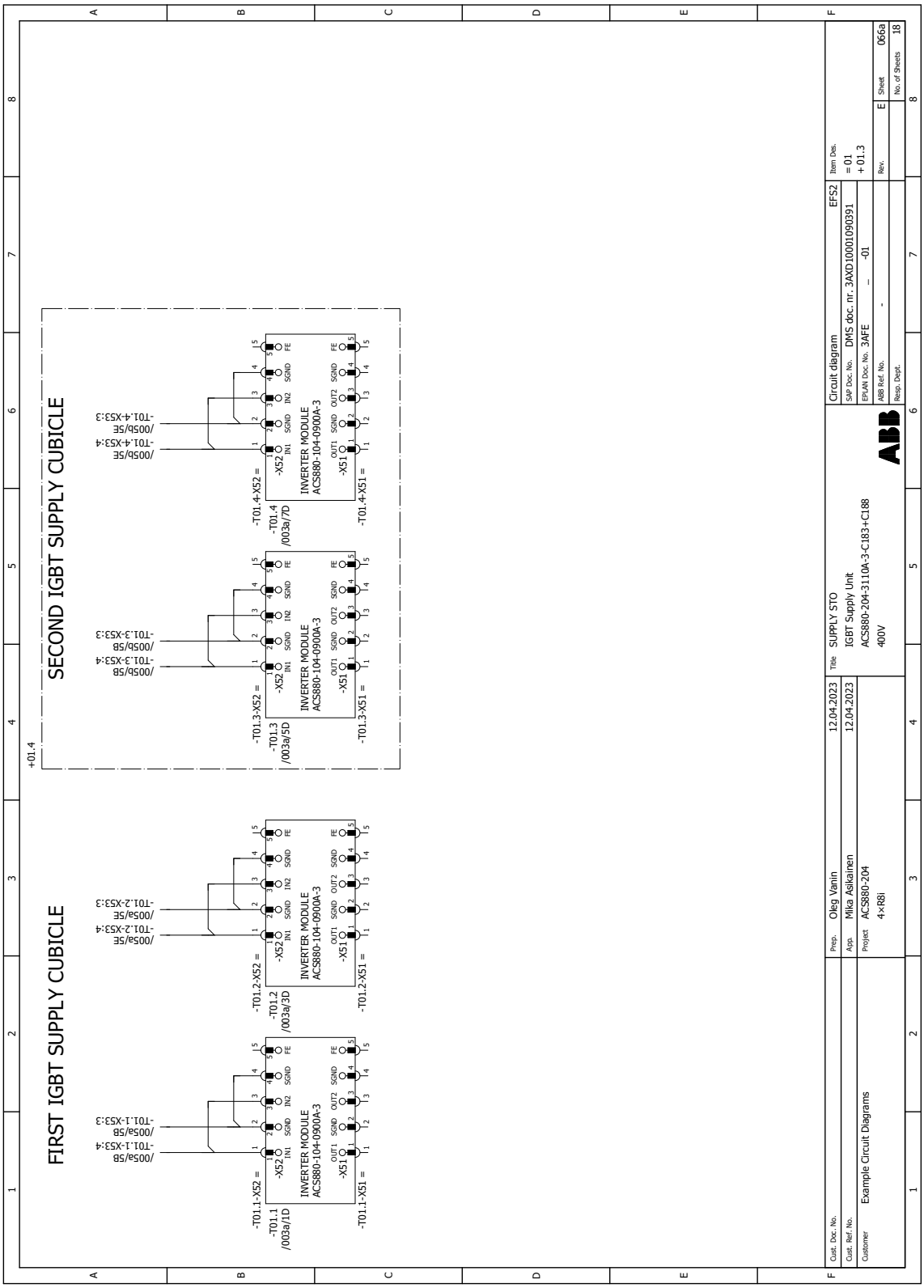
051a
No. of Sheets
18


FIRST IGBT SUPPLY CUBICLE
SECOND IGBT SUPPLY CUBICLE
+01.4
INVERTER MODULE
ACS880-104-0900A-3
-T01.1-X52 =
-T01.1
/003a/1D
-T01.1-X51 =
-T01.2-X52 =
-T01.2
/003a/3D
-T01.2-X51 =
-T01.3-X52 =
-T01.3
/003a/5D
-T01.3-X51 =
-T01.4-X52 =
-T01.4
/003a/7D
-T01.4-X51 =
/005a/5B
-T01.1-X53:4
/005a/5B
-T01.1-X53:3
/005a/5E
-T01.2-X53:4
/005a/5E
-T01.2-X53:3
/005b/5B
-T01.3-X53:4
/005b/5B
-T01.3-X53:3
/005b/5E
-T01.4-X53:4
/005b/5E
-T01.4-X53:3
Cust. Doc. No.
Cust. Ref. No.
Customer
Example Circuit Diagrams
Prep.
Oleg Vanin
12.04.2023
Appr.
Mika Asikainen
12.04.2023
Project
ACS880-204
4×R8i
Title
SUPPLY STO
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001090391
EPLAN Doc. No.
3AFE
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-01
ABB Ref. No.
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Resp. Dept.
Item Des.
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+ 01.3
Rev.
E
Sheet
066a
No. of Sheets
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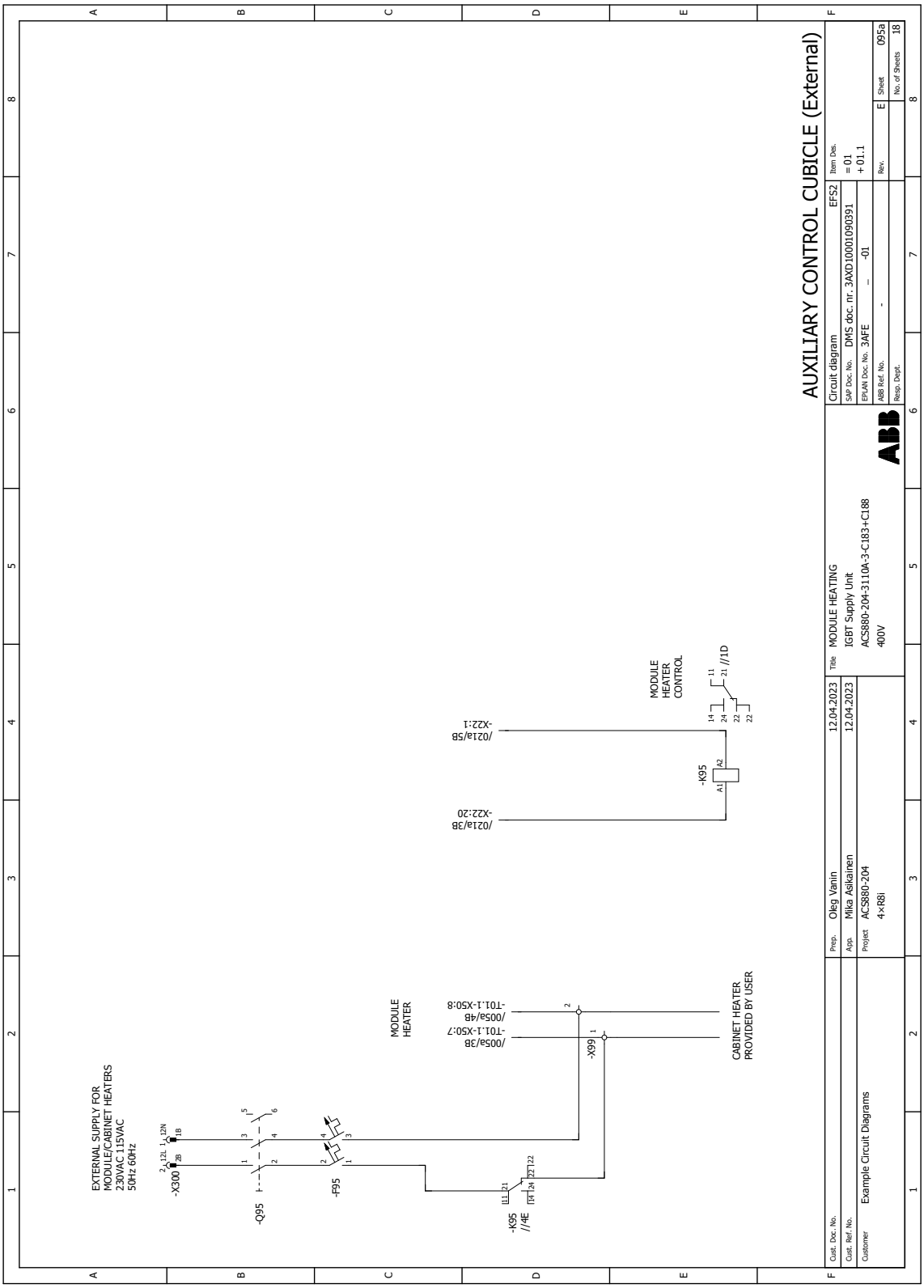
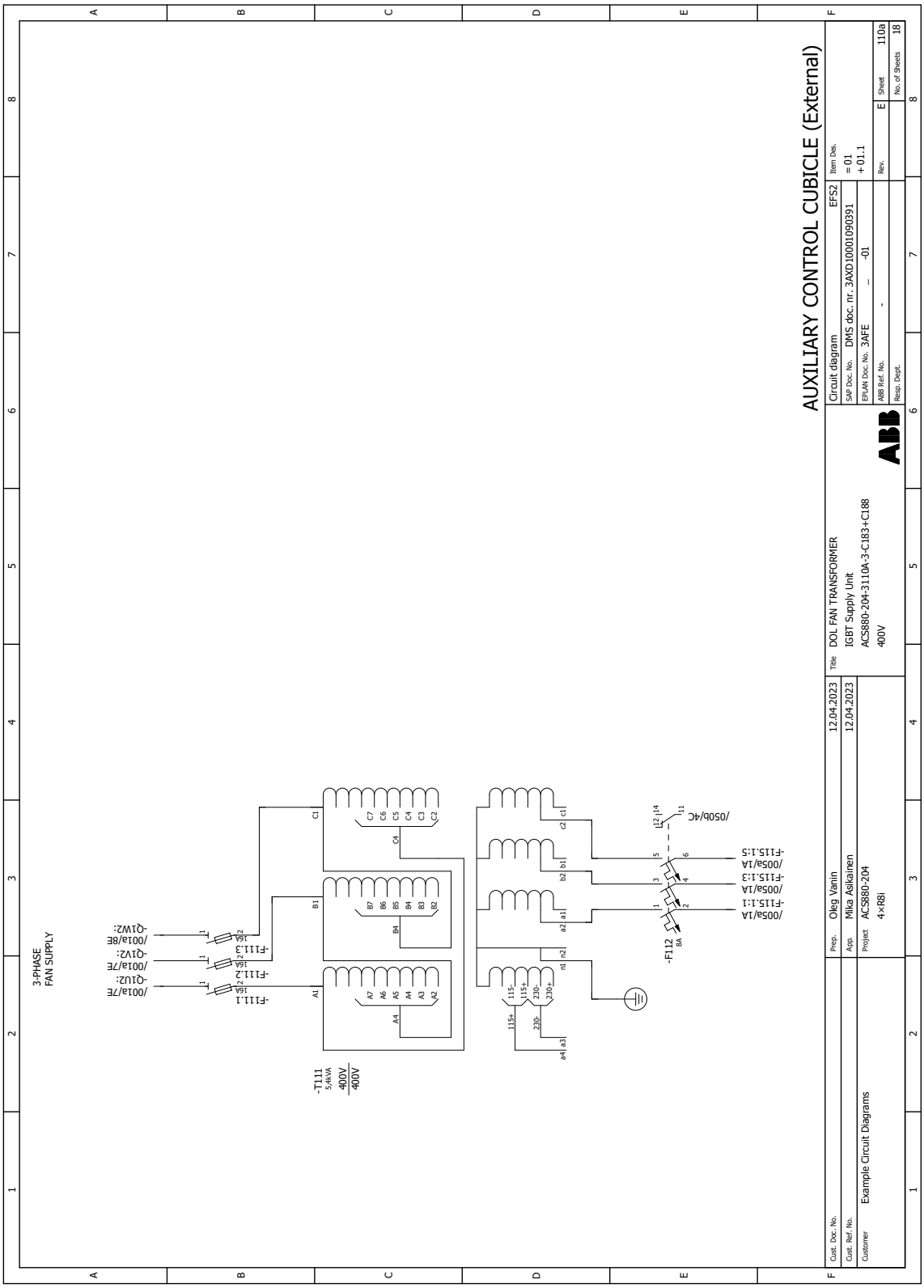

AUXILIARY CONTROL CUBICLE (External)
EFS2
Circuit diagram
SAP Doc. No. DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE – -01
ABB Ref. No. -
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev. E
Sheet 095a
No. of Sheets 18
Prep. Oleg Vanin 12.04.2023
Appr. Mika Askainen 12.04.2023
Project ACS880-204
4×R8i
Title MODULE HEATING
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
Cust. Doc. No.
Cust. Ref. No.
Customer Example Circuit Diagrams
EXTERNAL SUPPLY FOR
MODULE/CABINET HEATERS
230VAC 115VAC
50Hz 60Hz
-X300
-Q95
-F95
-K95
//4E
MODULE
HEATER
-X99
-T01.1-X50:8
/005a/4B
-T01.1-X50:7
/005a/3B
CABINET HEATER
PROVIDED BY USER
MODULE
HEATER
CONTROL
-K95
-X22:20
/021a/3B
-X22:1
/021a/5B
//1D


AUXILIARY CONTROL CUBICLE (External)
3-PHASE
FAN SUPPLY
-T111
5,4kVA
400V
400V
-F112
8A
-F115.1:1
-F115.1:3
-F115.1:5
/005a/1A
/050b/4C
Circuit diagram
EFS2
SAP Doc. No.
DMS doc. nr. 3AXD10001090391
EPLAN Doc. No. 3AFE -01
ABB Ref. No.
Resp. Dept.
Item Des.
= 01
+ 01.1
Rev.
Sheet 110a
No. of Sheets 18
Prep. Oleg Vanin 12.04.2023
Appr. Mika Aslkainen 12.04.2023
Project ACS880-204
4×R8i
Customer Example Circuit Diagrams
Title DOL FAN TRANSFORMER
IGBT Supply Unit
ACS880-204-3110A-3-C183+C188
400V
ABB

Further information

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/searchchannels.

Product training

For information on ABB product training, navigate to new.abb.com/service/training.

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3AUA0000131525 Rev K (EN) 2023-04-25