ABB INDUSTRIAL DRIVES

ACS880-304...+A018 diode supply modules

Hardware manual

ACS880-304…+A018 diode supply modules

Hardware manual

3AXD50000010104 Rev G
EN
Original instructions
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1

Introduction to the manual

Contents of this chapter

This chapter gives basic information on the manual.

Applicability

The manual is applicable to the ACS880-304…+A018 diode supply modules with diode-thyristor bridges.

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 working 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 information which concerns only certain supply module frame sizes is marked with the frame size identifier. The frame size identifier is D7T or D8T. If there are several parallel modules, also the number of parallel modules is shown, for example 2×D8T. See the technical data for the DSU unit types and their frame sizes. The frame size is also shown on the module type designation label.

The information which concern only certain option device or feature is marked with the option code. For example: cabinet heating element (option +C183). An option code starts with a plus sign. The codes are listed in section *Type designation key (page 37)*.

Use of component designations

Some device names in the manual include the item designation in brackets, for example [Q20], to make it possible to identify the components in the circuit diagrams of the drive.

Terms and abbreviations

Term	Description
BCON	Type of control board
BCU	Type of control unit
BDPS	Module internal power supply board
BFPS	Control and power supply board for speed-controlled cooling fan
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.
D7T	Frame size designation of the diode supply module
D8T	Frame size designation of the diode supply module
DC link	DC circuit between rectifier and inverter
DI	Digital input
Diode supply module	Diode rectifier and related components enclosed in a metal frame or enclosure. Intended for cabinet installation.
Diode supply unit	Diode supply modules under control of one control board, and related components.
Drive	Frequency converter for controlling AC motors
DSU	Diode supply unit
FCAN	Optional CANopen® adapter module
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
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
FPBA-01	Optional PROFIBUS DP® adapter module
Frame, frame size	Physical size of the drive or power module
FSCA-01	Optional RS-485 (Modbus/RTU) adapter
ICU	Incoming unit
Intermediate circuit	DC circuit between rectifier and inverter

Term	Description
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.
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.
Rectifier	Converts alternating current and voltage to direct current and voltage
Single drive	Drive for controlling one motor
STO	Safe torque off (IEC/EN 61800-5-2)
VX25	Enclosure system by Rittal (http://www.rittal.com)

Related documents

Manual	Code
General manuals	
ACS880 multidrive cabinets and modules safety instructions	3AUA0000102301
ACS880 multidrive cabinets and modules electrical planning instructions	3AUA0000102324
Drive modules cabinet design and construction instructions	3AUA0000107668
BCU-02/12/22 control units hardware manual	3AUA0000113605
Supply module manuals	
ACS880-204 IGBT supply modules hardware manual	3AUA0000131525
ACS880 IGBT supply control program firmware manual	3AUA0000131562
ACS880-304…+A003 diode supply modules hardware manual	3AUA0000102452
ACS880-304…+A018 diode supply modules hardware manual	3AXD50000010104
ACS880 diode supply control program firmware manual	3AUA0000103295
ACS880-904 regenerative rectifier modules hardware manual	3AXD50000020457
ACS880 regenerative rectifier control program firmware manual	3AXD50000020827
Inverter module manuals and guides	
ACS880-104 inverter modules hardware manual	3AUA0000104271
ACS880 primary control program firmware manual	3AUA0000085967
ACS880 primary control program quick start-up guide	3AUA0000098062
Brake module and DC/DC converter module manuals	
ACS880-604 1-phase brake chopper modules hardware manual	3AUA0000106244
ACS880-604 3-phase dynamic brake modules as units hardware manual	3AXD50000022033
ACS880 (3-phase) brake control program firmware manual	3AXD50000020967
ACS880-1604 DC/DC converter modules hardware manual	3AXD50000023642
ACS880 DC/DC converter control program firmware manual	3AXD50000024671
Module package hardware manuals	
ACS880-04 single drive module packages (560 to 2200 kW) hardware manual	3AUA0000138495
ACS880-14 and -34 single drive module packages (160 to 2200 kW) hardware manual	3AXD50000022021

Manual	Code
Option manuals	
ACS880 +C132 marine type-approved drive modules and module packages supplement	3AXD50000037752
ACX-AP-x assistant control panels user's manual	3AUA0000085685
BAMU-12C auxiliary measurement unit hardware manual	3AXD50000117840
Drive composer start-up and maintenance PC tool user's manual	3AUA0000094606
Drive application programming (IEC 61131-3) manual	3AUA0000127808
Converter module lifting device for drive cabinets hardware manual	3AXD50000210268
Installation frames for ACS880 multidrive modules hardware manual	3AXD50000010531
Manuals and quick guides for I/O extension modules, fieldbus adapters, safety functions modules, etc.	

See www.abb.com/drives/documents for all manuals on the Internet.

You can find all documentation related to the multidrive modules on the Internet at https://sites-apps.abb.com/sites/lvacdrivesengineeringsupport/content.

2

Operation principle and hardware description

Contents of this chapter

This chapter contains a description of the diode supply unit. The information is valid for the units with ACS880-304…+A018 diode supply modules.

Operation principle

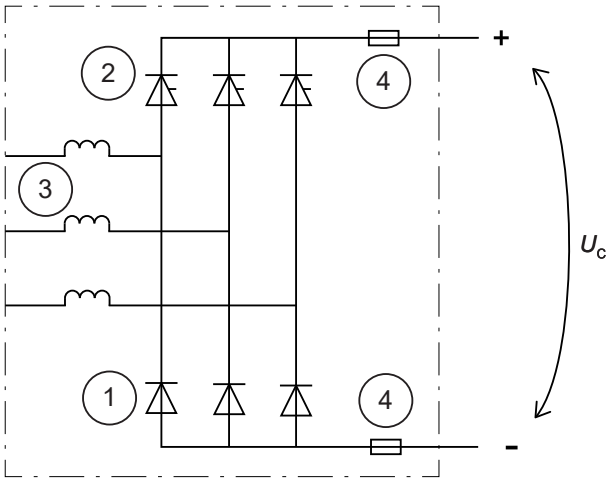
The core of the diode supply unit is a diode-thyristor bridge. It rectifies three-phase AC current to direct current for the intermediate DC link of the drive. The intermediate DC link supplies the inverters that run the motors. There can be one inverter unit only (single drives) or several inverter units (multidrives) connected to the intermediate circuit. The DSU modules have inbuilt AC chokes. The AC chokes smoothen the current waveform in the power supply network and voltage in the DC link of the drive.

The main difference between the ordinary diode-diode bridge and the controlled diode-thyristor bridge is the controllability. You cannot control the operation of the diodes but you can control the thyristors. By controlling the thyristors, you can limit the AC current of the drive at the power up without additional charging circuit in the supply unit or in inverter units.

There are two control modes for the upper leg thyristor firing: the charging mode and the normal mode:

- The charging mode is in operation a short period after the power switch on: the supply control program controls the thyristor firing angle gradually towards zero while the intermediate circuit capacitors located in the inverter module(s) get charged.
- In the normal mode, the thyristor firing angle is 0 degrees: The thyristors operate as diodes.

Overview diagram of the rectifier bridge



1	Diodes. The diodes connect the AC terminals in cyclic sequence to the lower DC busbar (-).
2	Thyristors. The thyristors connect the AC line terminals in cyclic sequence to the upper DC busbar (+).
3	AC chokes
4	DC fuses

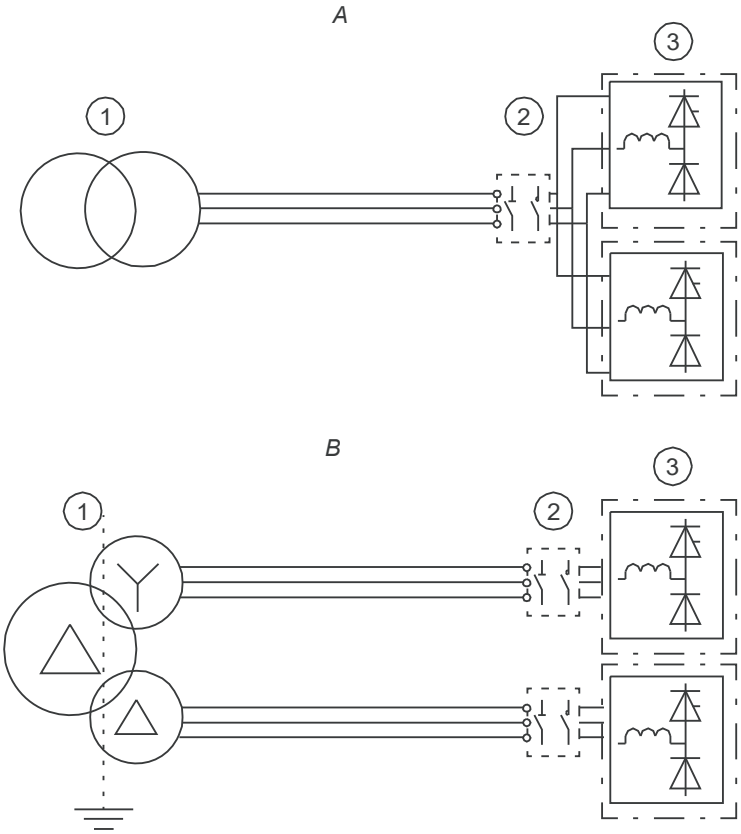
6- and 12-pulse supply connections

The figure below illustrates the difference between 6-pulse and 12-pulse AC supply connections. 6-pulse connection is standard.

If the drive has an even number of supply modules, you can order it as a 12-pulse version (option +A004).

The 12-pulse supply connection eliminates the fifth and seventh harmonics, which substantially reduces the harmonic distortion of the line current and the conducted emissions.

The 12-pulse connection requires a three-winding transformer, or two separate transformers. There is a phase shift of 30-degrees between the two 6-pulse supply lines, which are connected to different supply modules through electrically separate switching equipment.



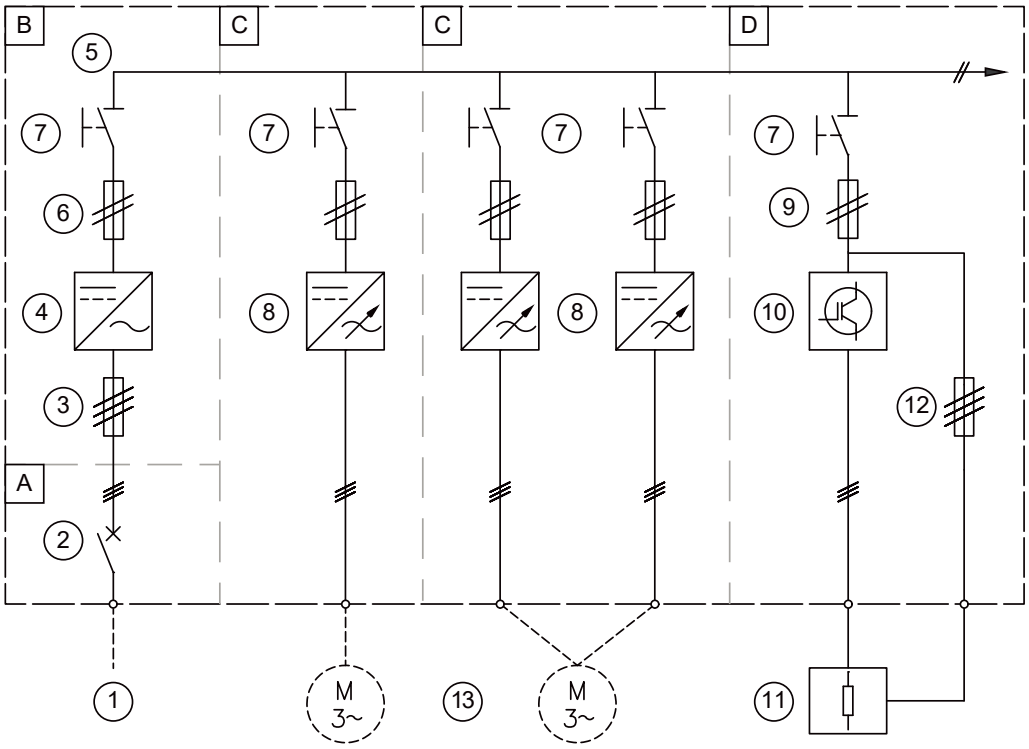
A	6-pulse connection
B	12-pulse connection
1	Supply transformer
2	Switching equipment
3	Diode supply modules

Overview diagrams

This section contains main circuit overview diagrams. The diagrams show the power line connections, and the connections between the components. The supply unit overview diagrams also show examples of division of components in cubicles, and indicate which components you can order from ABB and which you need to acquire separately.

Overview diagram of the drive system

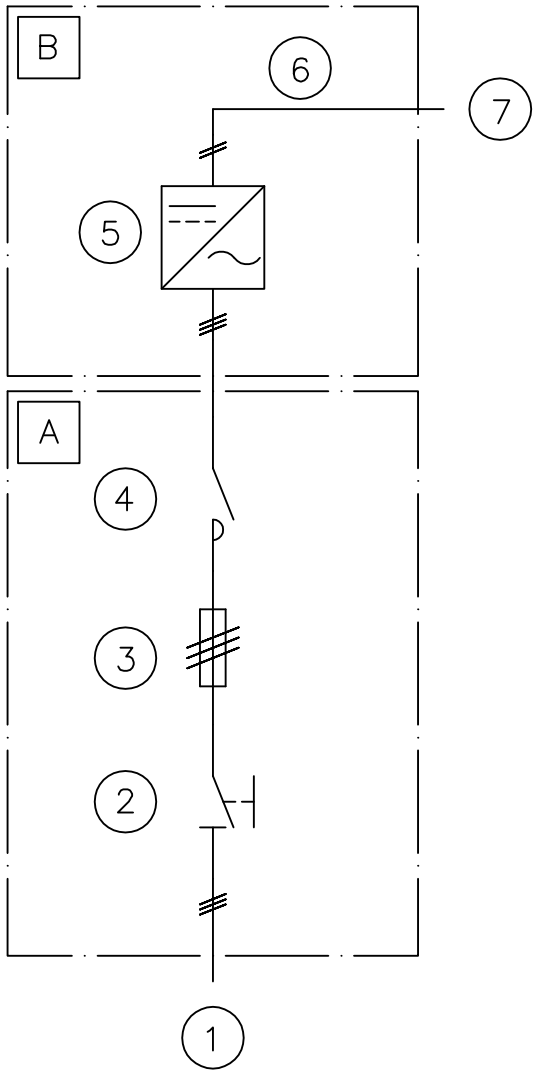
This diagram shows an example of a multidrive. The supply unit connects the drive to the AC supply network. It converts the AC voltage into DC. The DC voltage is distributed through the DC bus to all inverter units and optional brake units. The inverter unit converts the DC back to AC that rotates the motor. The brake unit (optional) conveys energy to brake resistors whenever needed.



A	Incoming unit
B	Supply unit
C	Inverter unit
D	Brake unit (optional)
1	AC supply
2	Main breaker, or main contactor and main switch-disconnector
3	Input (AC) fuses
4	Supply module
5	DC bus
6	Supply and inverter module DC fuses
7	DC switch/disconnector (optional)
8	Inverter modules
9	Brake chopper fuses
10	3-phase brake chopper module (optional)
11	Brake resistors (optional or acquired by user)
12	Fuses for the brake resistors
13	Motor(s) (acquired by user)

Overview diagram – 1×D8T, 6-pulse

This is an overview diagram of a 6-pulse supply unit with one D8T supply module.



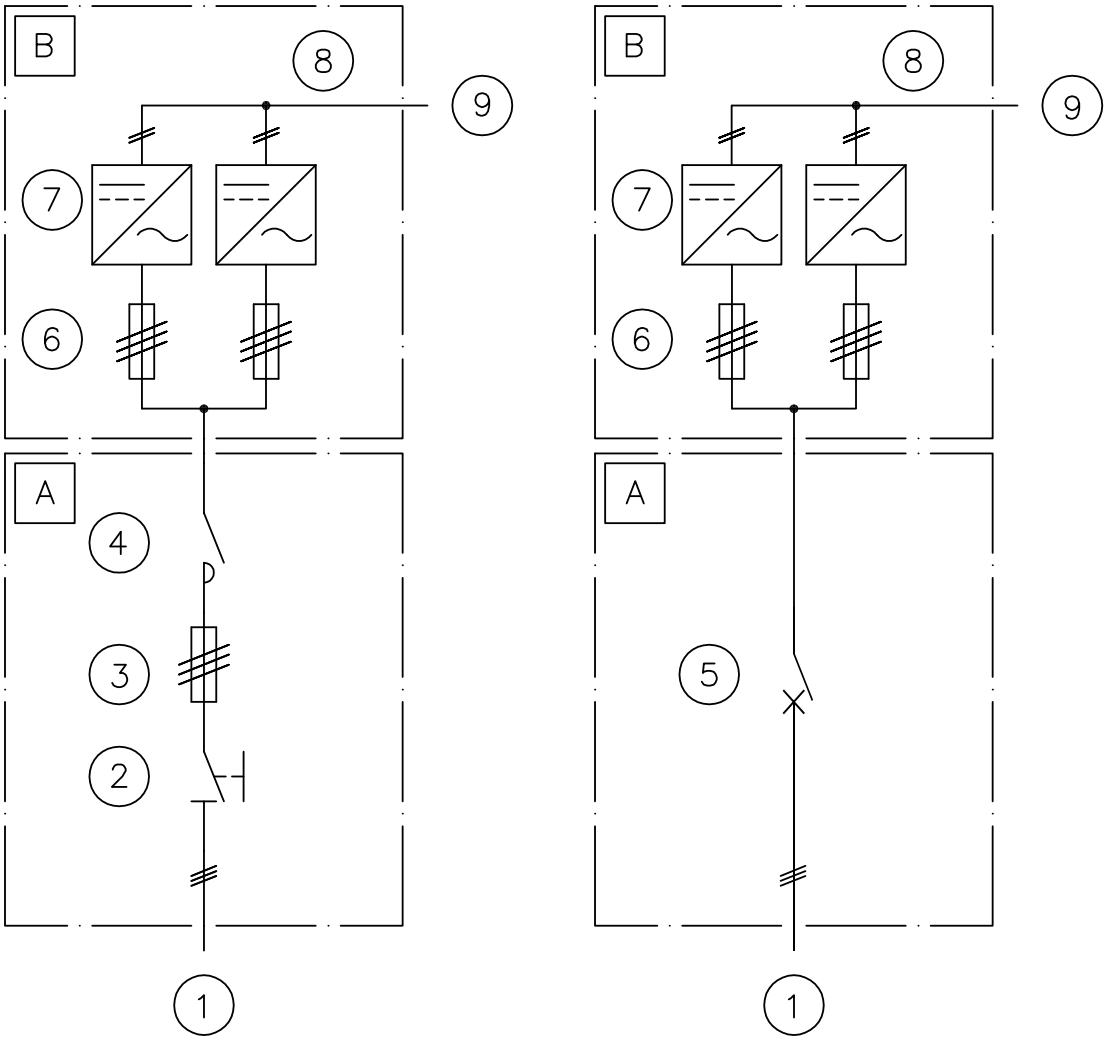
		1	AC supply
A	Incoming cubicle (ICU)	2	Main switch-disconnector [1]
		3	Main AC fuses [1]
		4	Main contactor [1]
B	Diode supply module cubicle	5	Diode supply module (DC fuses included)[2]
		6	DC link
		7	Connection to drive DC link

[1] Available through ABB or third party

[2] Available through ABB

Overview diagram – 2×D8T, 6-pulse

This is an overview diagram of a 6-pulse supply unit with two D8T supply modules. The diagram on the left shows an alternative with a main switch-disconnector and optional contactor. The diagram on the right shows an alternative with a main circuit breaker. For more information, see *Switching, disconnecting and protecting solution (page 41)*.



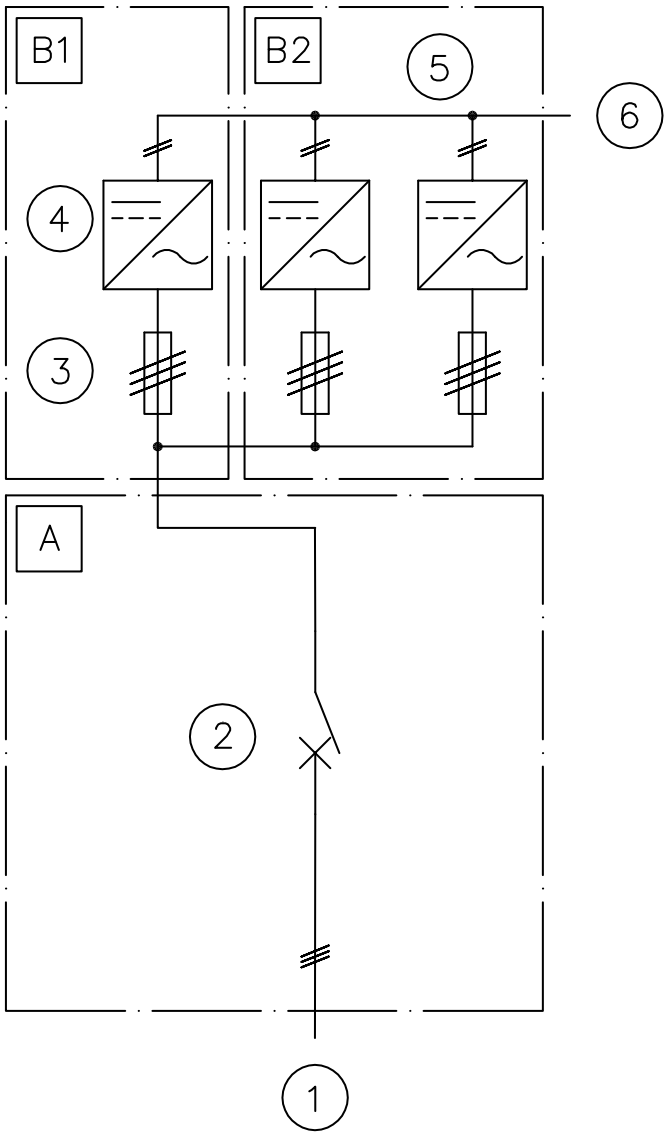
		1	AC supply
A	Incoming cubicle (ICU)	2	Main switch-disconnector [1]
		3	Main AC fuse [1]
		4	Contactor (optional) [1]
		5	Main circuit breaker [1]
B	Diode supply module cubicle	6	AC fuses for diode supply modules [1]
		7	Diode supply modules (DC fuses included) [2]
		8	DC link
		9	Connection to drive DC link

[1] Available through ABB or third party

[2] Available through ABB

Overview diagram – 3×D8T, 6-pulse

This is an overview diagram of a 6-pulse supply unit with three D8T supply modules.



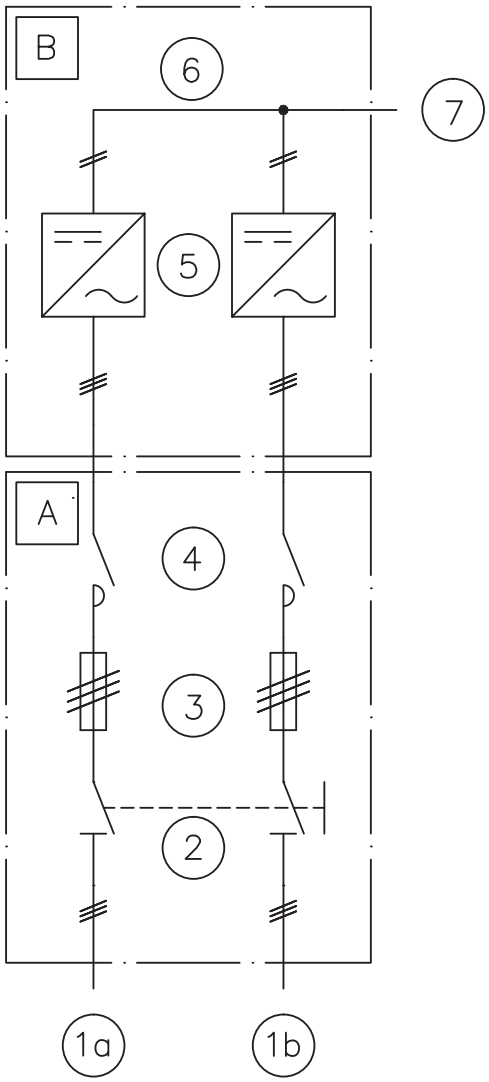
		1	AC supply
A	Incoming cubicle (ICU)	2	Main breaker [1]
B	Diode supply module cubicle	3	AC fuses for diode supply modules [1]
		4	Diode supply modules (DC fuses included) [2]
		5	DC link
		6	Connection to drive DC link

[1] Available through ABB or third party

[2] Available through ABB

Overview diagram – 2×D8T, 12-pulse

This is an overview diagram of a 12-pulse supply unit with two D8T supply modules.



		1a	AC supply. Winding Y
		1b	AC supply. Winding D
A	Incoming cubicle (ICU)	2	Main switch-disconnector (6-pole) [1]
		3	Main AC fuses [1]
		4	Main contactors [1]
B	Diode supply module cubicle	5	Diode supply modules (DC fuses included) [2]
		6	DC link
		7	Connection to drive DC link

[1] Available through ABB or third party

[2] Available through ABB

Hardware of the supply modules

The D8T modules run on wheels, and can easily be removed from the cubicle for cable installation or service. For moving the D7T modules you need a lifting device. The quick connector for the AC supply input at the back of the D8T module couples when the module is inserted into the cubicle.

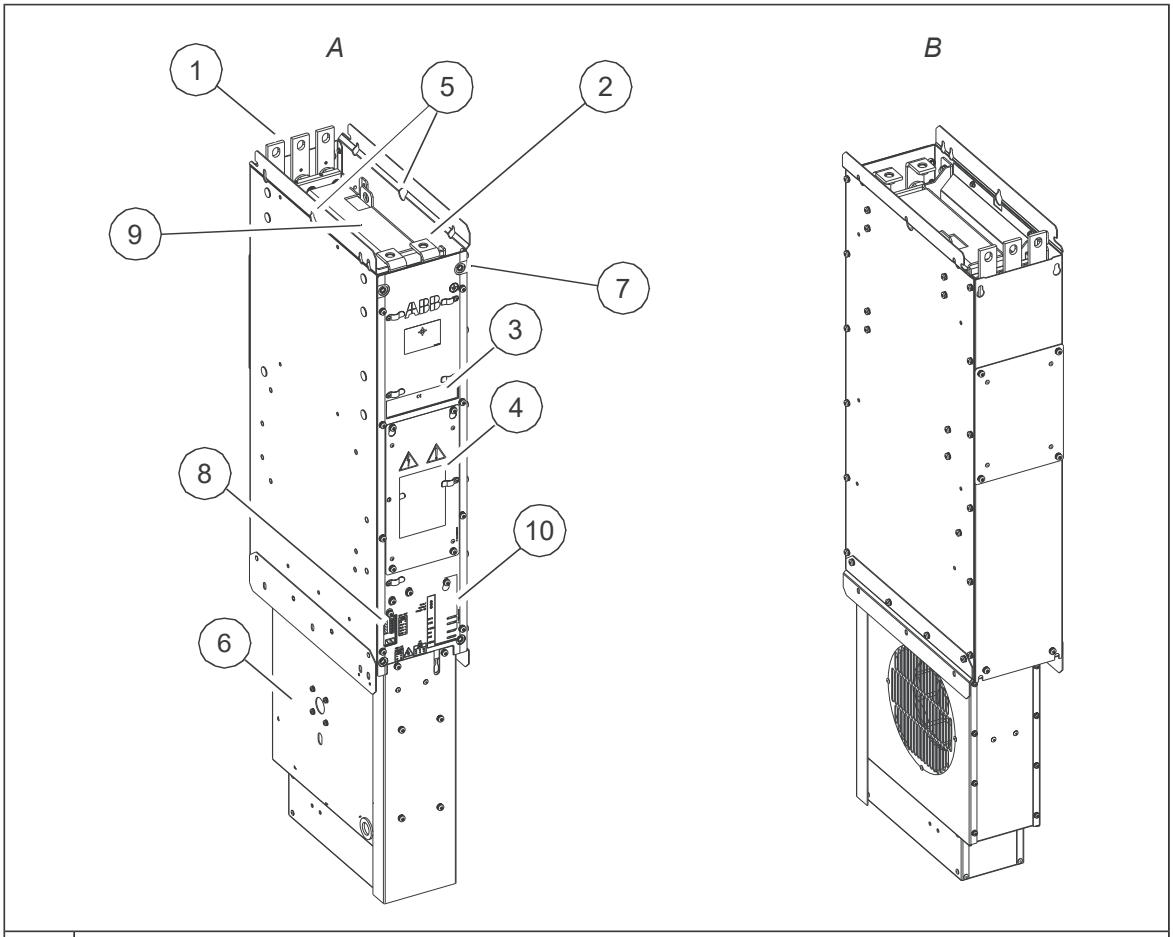
The control electronics of the supply module need to be powered from an external auxiliary voltage source. The speed-controlled cooling fan (delivered as standard) is supplied internally from DC. If a direct-on-line fan (option +C188) is used, the user must connect the fan supply to the module control connector [X50.1].

The supply modules are controlled by a single BCU control unit installed separately from the module(s). The control unit is connected to each supply module by a fiber optic link. The control unit can be powered from a module connector [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. For descriptions of the I/O terminals on the BCU control unit, see chapter *The control unit (page 243)*.

The D7T modules are cULus listed and CSA certified as standard. For D8T modules, UL/CSA approval is optional (options +C129 and +C134).

Layout drawings of the supply modules

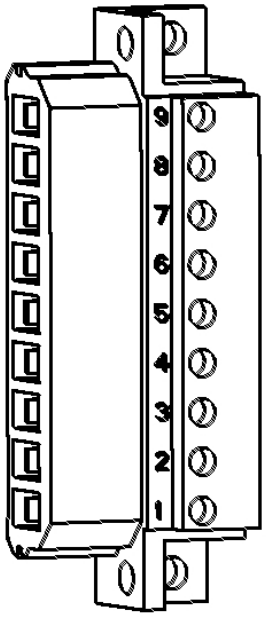
Layout drawing of D7T supply module



A	D7T supply module, front
B	D7T supply module, back
1	AC input busbars
2	DC output busbars
3	Type designation label
4	Cover of the module's DC fuses
5	Lifting eyes
6	Fan
7	Unpainted fastening hole. Grounding point (PE) between module frame and cabinet frame.
8	Terminal block [X53]. 24 V DC power for supply module control unit.
9	Terminal block [X50] (DOL fan supply, option +C188)
10	Fiber optic connectors. Communication link to the supply module control unit. When speed-controlled fan is in use: Communication link to fan control unit.

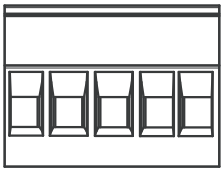
Connectors X50 and X53 of D7T supply module

Connector X50



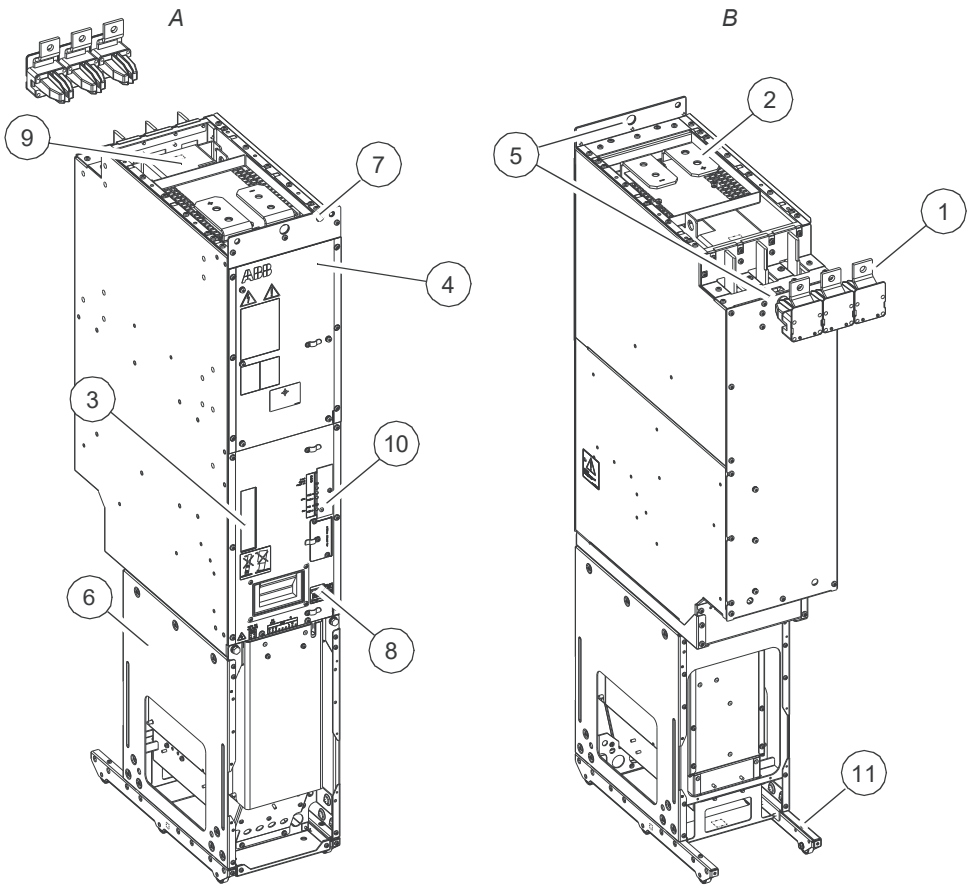
9	Not in use.	
8		
7		
6		
5	N	115/230 V AC input for internal power supply (BDPS) (115V with option +G304)
4	L	
3	PE	115/230 V AC (50/60 Hz) supply for optional DOL (direct-on-line) cooling fan (option +C188). **Note:** In modules without +C188, the DOL wiring is present but not in use.
2	N	
1	L	

Connector X53



24V OUT				
X53				
FE	24V	GND	24V	GND

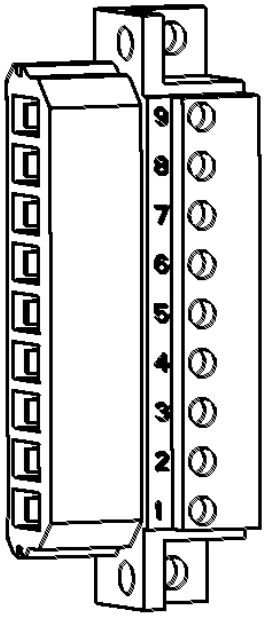
Layout drawing of D8T supply module



A	D8T supply module, front
B	D8T supply module, back
1	AC quick connector and AC input busbars
2	DC output busbars
3	Type designation label
4	Cover of the module's DC fuses
5	Lifting eyes
6	Fan
7	Unpainted fastening hole. Grounding point (PE) between module frame and cabinet frame.
8	Terminal block [X53] (24 V DC power for supply module control unit)
9	Terminal block [X50] (power supply for internal boards and module heating element, option +C183; DOL fan supply, option +C188)
10	Fiber optic connectors. Communication link to the supply module control unit. When speed-controlled fan is in use: Communication link to fan control unit.
11	Wheels

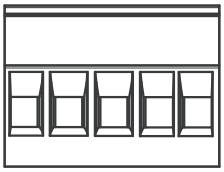
Connectors X50 and X53 of D8T supply module

Connector X50



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

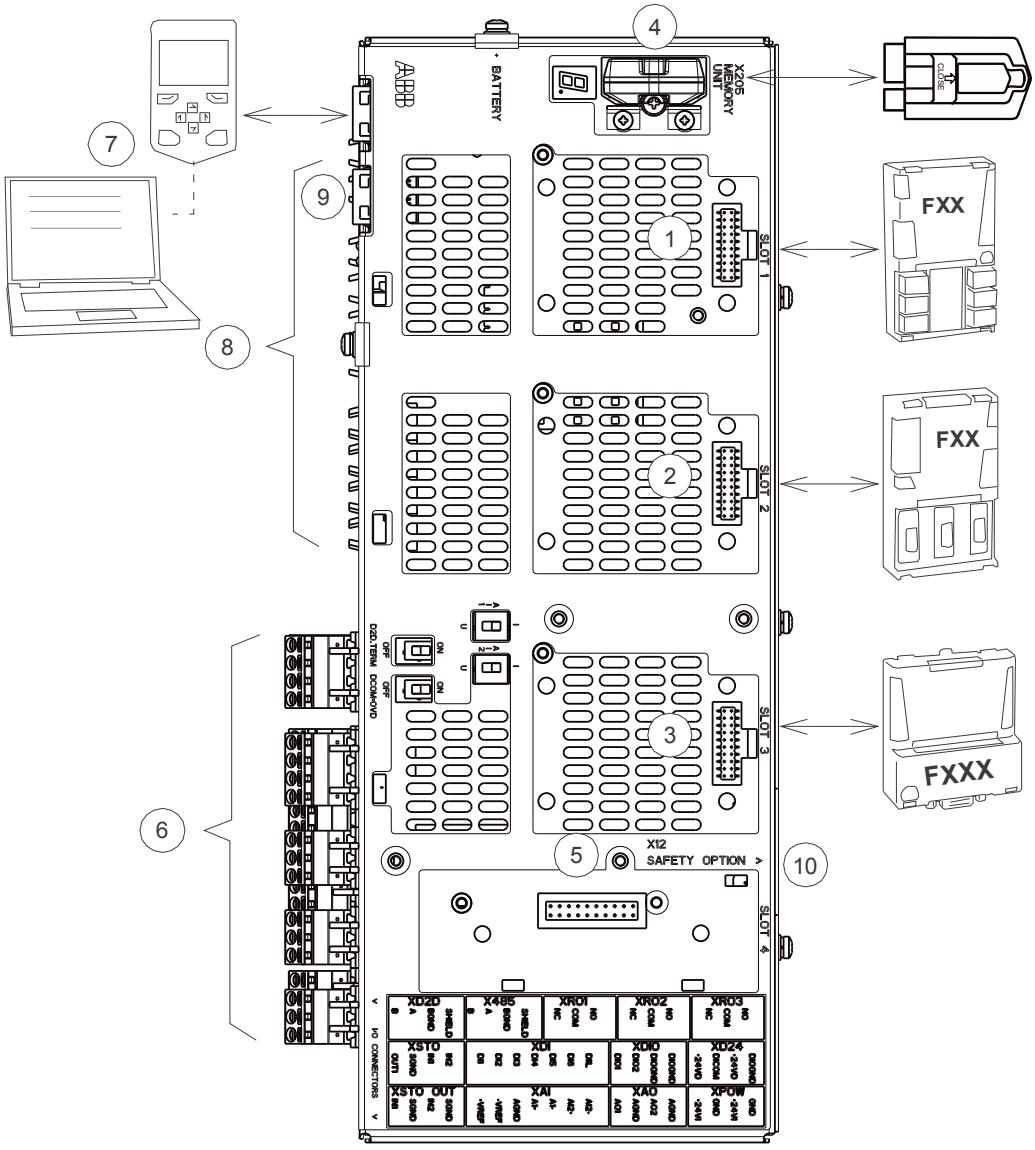
Connector X53



24V OUT				
X53				
FE	24V	GND	24V	GND

Overview of the control connections of the BCU control unit

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

A supply unit is typically controlled using the local control devices installed on the cabinet door. No additional control connections are needed. However, it is possible to:

- control the supply 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 supply unit with an externally wired emergency stop button (if the unit is equipped with an emergency stop option).

The supply unit I/O control interface is in internal use. See section *The control unit (page 243)*.

The data in brackets, for example [Q1], refer to the item designations in ABB example circuit diagrams.

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 supply unit with the two-position operating switch [S21]. Connect the switch to Run/Enable digital input of the control unit.

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

- The Run/Enable position: The control program receives the Run/Enable and Start command through digital input DI2. The control program closes the main contactor [Q2] or main breaker with relay output RO3. The module starts rectifying and charges the DC link of the drive.
- The Off position: The control program does not receive the Run/Enable command through the digital input. The program opens the main contactor [Q2] or main breaker with the relay output and the module stops rectifying. The drive DC link and inverters are de-energized after the DC capacitors de-charges.

For more information on the on/off control logic, see *ACS880 diode supply control program firmware manual* (3AUA0000103295 [English]).

Emergency stop and emergency stop reset buttons

The cabinet can be equipped with an emergency stop button and an emergency stop 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 module is controlled by a BCU control unit.

Control panel

The control panel is the user interface of the unit. With the control panel, you 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 and external control.

To be able to start and stop the unit by the control panel, you must have the Run enable signal and Start enable signal on (1) on the control board. Normally this means, that you must have the operating switch on the cabinet door in ENABLE/RUN position. The control panel must also be in local control mode. You can select the mode with the Loc/Rem key on the panel.

For the instructions on the use of the panel, see *ACX-AP-x Assistant control panels user's manual* (3AUA0000085685 [English]).

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.

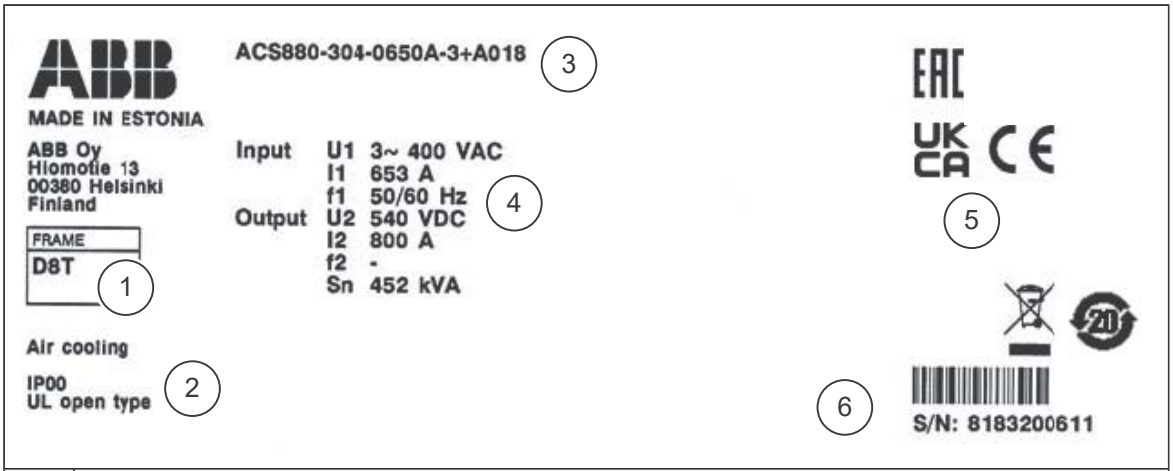
Note: To be able to switch the main contactor [Q2] or main circuit breaker [Q1] and the supply unit on and off (Run enable signal) through the fieldbus, the Run enable command at digital input DI2 must be on (1).

Type designation label

Each diode supply 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 diode supply modules.

An example label is shown below.



1	Frame size
2	Cooling method and degree of protection
3	Type designation. See section *Type designation key (page 37)*.
4	Ratings. See the technical data.
5	Valid markings. See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).
6	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

Type designation describes the composition of the supply module in short. The type designation is visible on the label (sticker) which is attached to the module. The complete designation is divided in subcodes:

- The first 1…18 digits form the basic code. It describes the basic construction of the unit. The fields in the basic code are separated with hyphens.
- The option codes follow the basic code. Each option code starts with an identifying letter (common for the whole product series), followed by descriptive digits. The option codes are separated by plus signs.

The following table lists the subcodes. The example code is: ACS880-304-0980A-3+A018.

Code	Description
Basic code	
ACS880	Product series
304	Construction: module for the cabinet installation. The module delivery includes a speed-controlled cooling fan supplied from the DC bus as standard.
0980A	Size. See the technical data.
3	380…415 V. This is indicated in the type designation label as typical input voltage level 3 ~ 400 V AC.
5	380…500 V. This is indicated in the type designation label as typical input voltage levels 3 ~ 400/480/500 V AC.
7	525…690 V (525…600 V AC for UL/CSA). This is indicated in the type designation label as typical input voltage levels 3 ~ 525/600/690 V AC (600 V AC for UL/CSA).
Option codes	
A004	12-pulse option of half-controlled diode-thyristor bridge
A018	Half-controlled diode-thyristor bridge (as standard)
C129	cULus listed (D8T) *)
C132	Marine type approval *)
C134	CSA certified (D8T) *)
C183	Internal heating element in the module (D8T) *)
C188	Direct-on-line (DOL) cooling fan *)
G304	115 V auxiliary voltage supply for the module *)
P904	Extended warranty 24/30
P909	Extended warranty 36/42
P911	Extended warranty 60/66

*) See the ordering information for the relevant module(s).

3

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

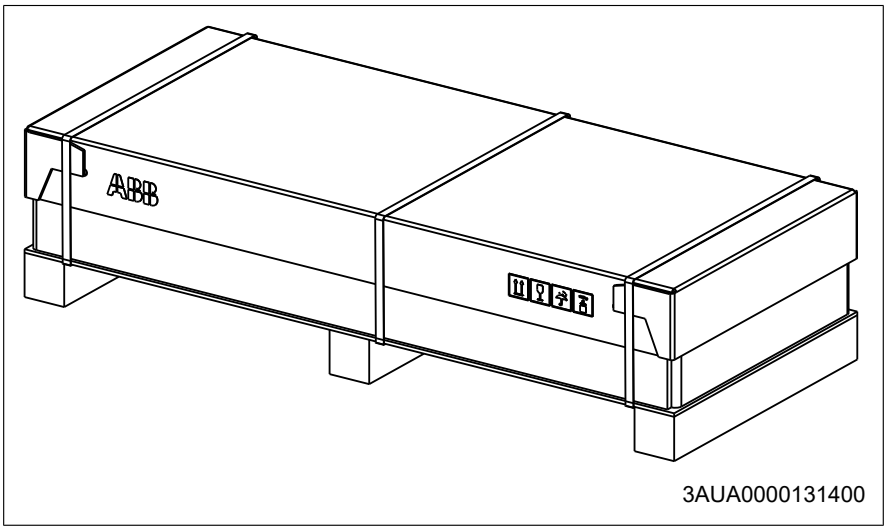
Move the transport package by a pallet truck or lift. Lift the transport package in a horizontal position. Use soft lifting slings.

Unpacking

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]).

For moving the module, see section *Replacing the D7T supply module (page 137)* and *Replacing the D8T supply module (page 140)*.

For moving the D7T modules you need a lifting device.

4

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.

Switching, disconnecting and protecting solution

To arrange the switching, disconnection and protection of the ACS880-304…+A018 module, you can use the following solution:

1. Equip the drive with a disconnector (main switch-disconnector or a main breaker) [Q1]. (A contactor is not obligatory.) See also *Main switch-disconnectors (page 189)* and *Main circuit breakers (page 198)*. The disconnector must separate the whole drive cabinet from the AC power line, including the AC fuses if they are placed in the drive cabinet.
2. Equip the drive with AC fuses to protect the unit against short circuit. Protect each input terminal of the supply module with a fuse of its own. For more information, see *AC fuses (page 193)*.

See also *Electrical safety precautions (page 98)* and *Example circuit diagrams (page 279)*.

Auxiliary control cubicle

Place the supply control unit and other control components outside the supply module cubicle(s). ABB recommends a separate auxiliary control cubicle in the cabinet line up. There is an example in section *Layout drawing of the supply unit (page 49)*.

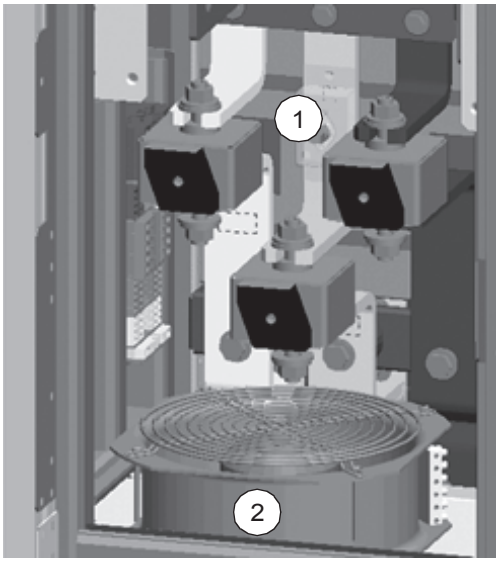
Incoming cubicle

ABB recommends a separate incoming cubicle beside the supply module cubicle for the main AC fuses and switching and disconnecting devices. There is an example in section *Layout drawing of the supply unit (page 49)*.

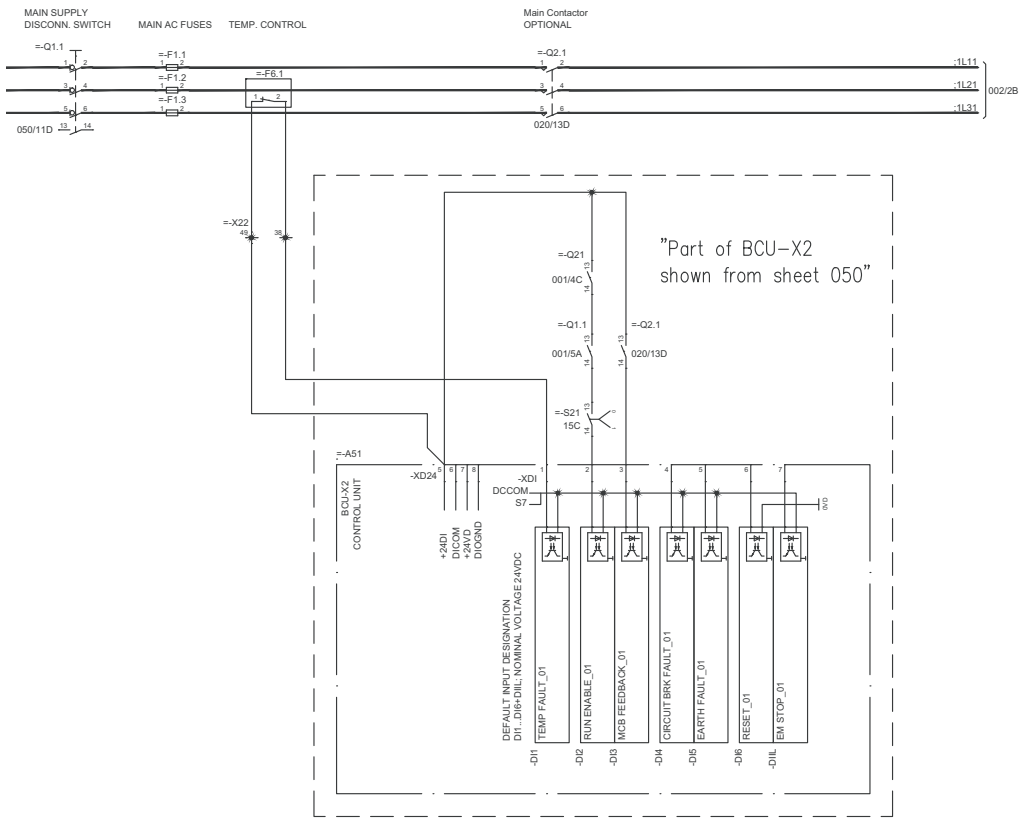
Example of the AC fuse cooling

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

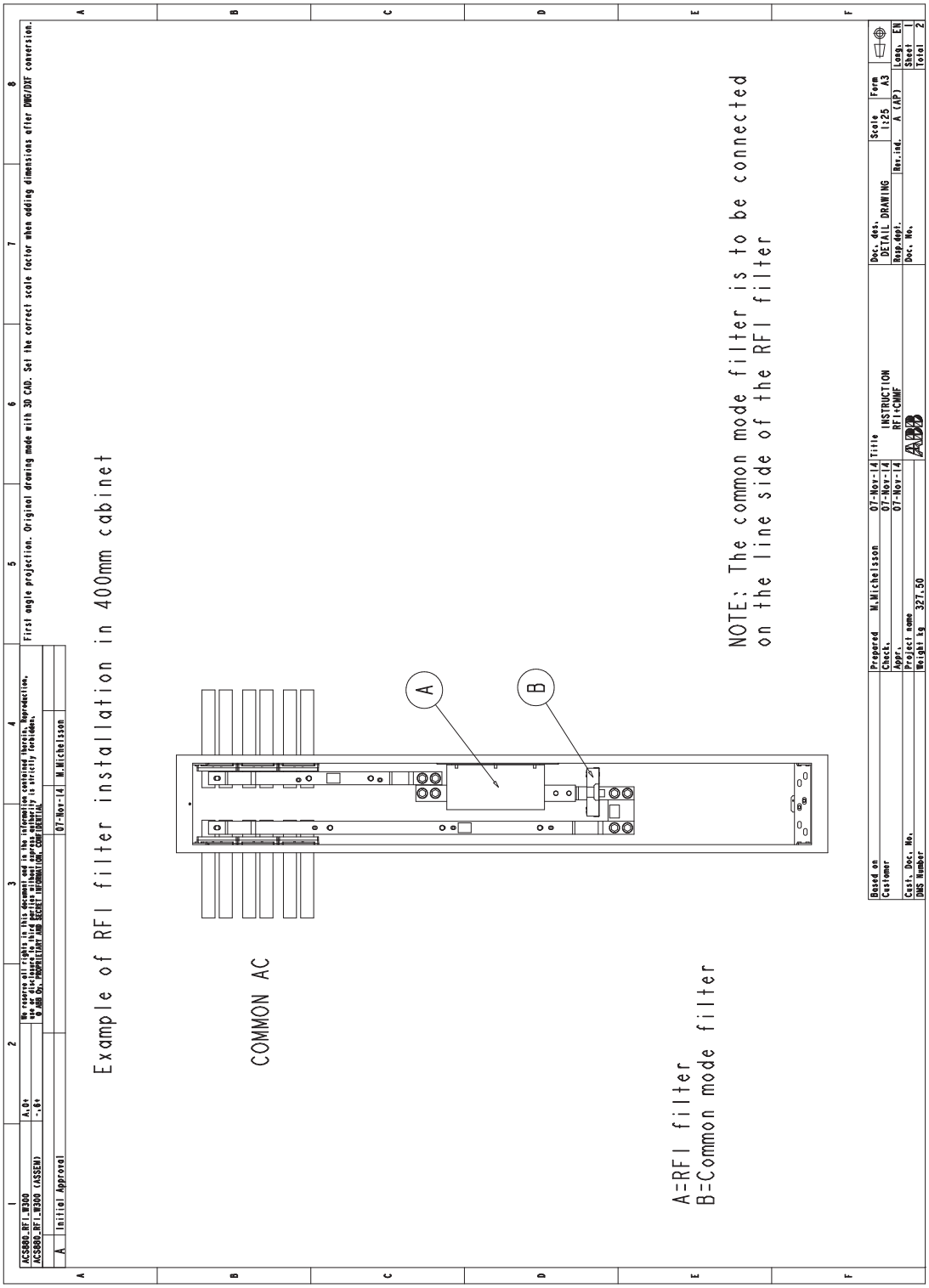


Note: The connection of temperature monitoring requires proper insulation between busbars and thermal switch.

RFI filter

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]).



Configuration overviews of the supply module cubicles

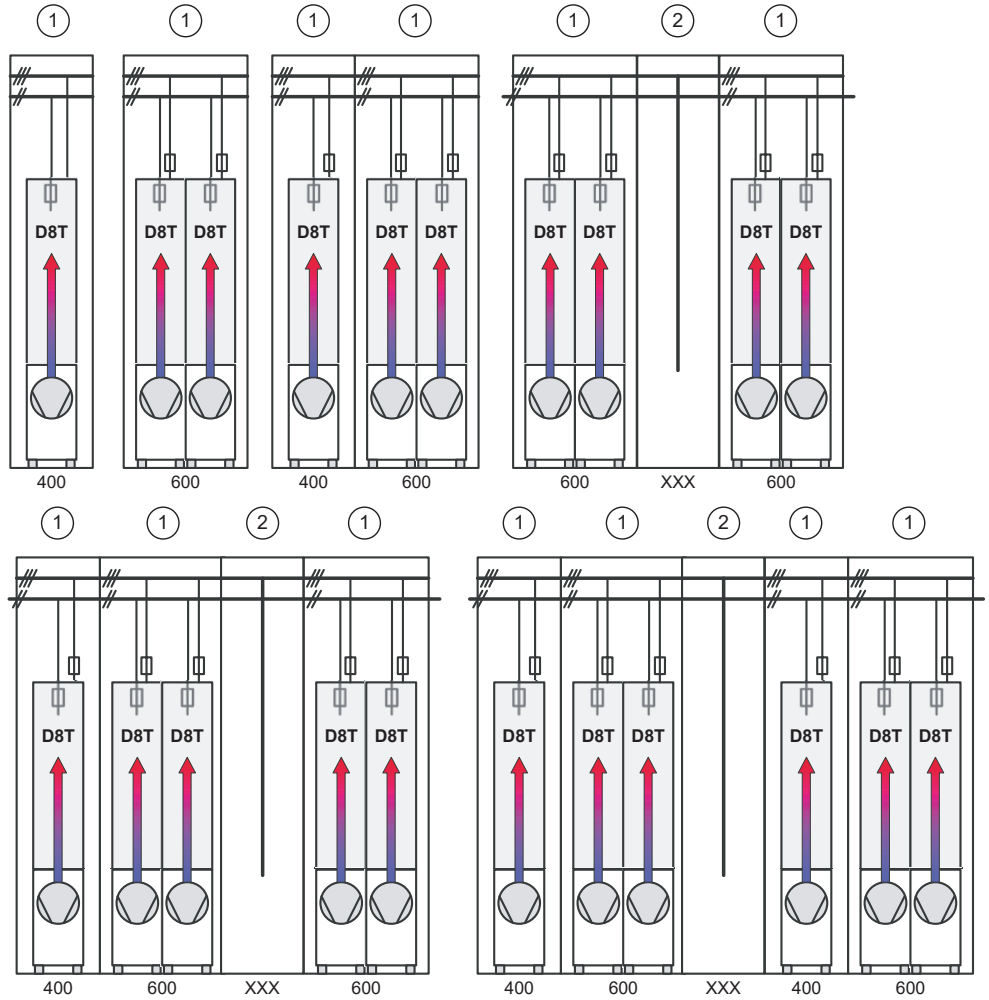
This section shows configuration examples of the supply module cubicles. You can build larger units by combining the basic configurations. Frame D7T modules are used in 12-pulse 2×D7T configurations. Frame D8T modules are used in both 6- and 12-pulse single or parallel configurations. You can supply the modules from either left or right, or from the middle in the highest powers. See the alternative configurations in the figures.

The auxiliary cubicle (or inverter cubicles) are not shown here.

The values below each cubicle indicate the widths of the cubicles in millimeters.

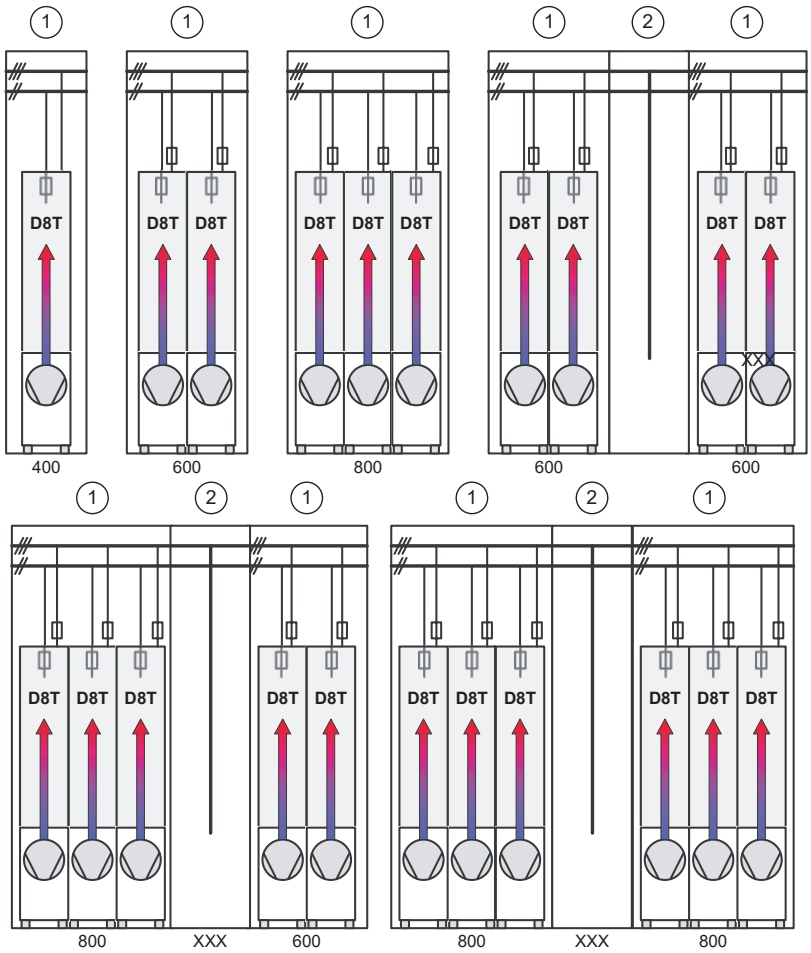
Configuration overviews – 6-pulse

Rittal VX25



1	Diode supply module cubicle
2	The incoming cubicle contains the power input cable terminals and switchgear. It is to be designed by the customer.

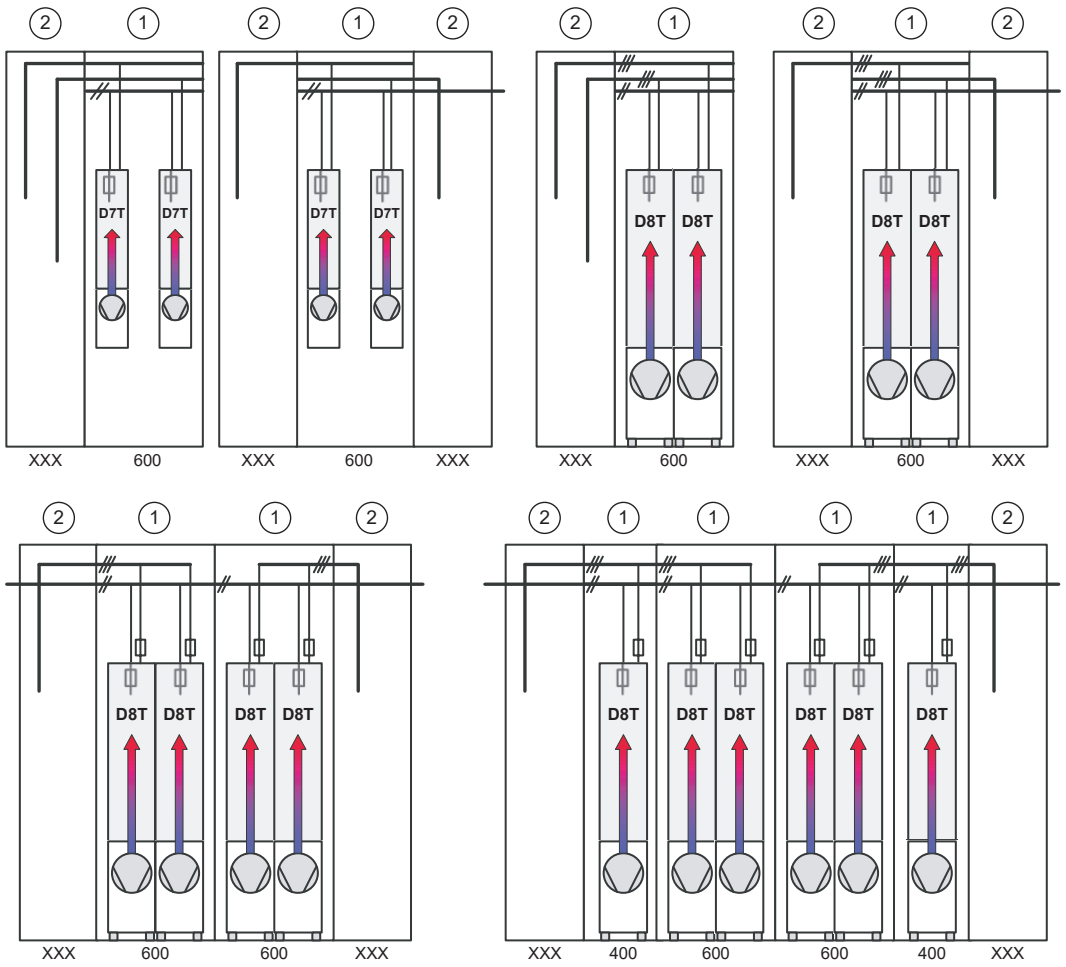
Generic cabinets



1	Diode supply module cubicle
2	The incoming cubicle contains the power input cable terminals and switchgear. It is to be designed by the customer.

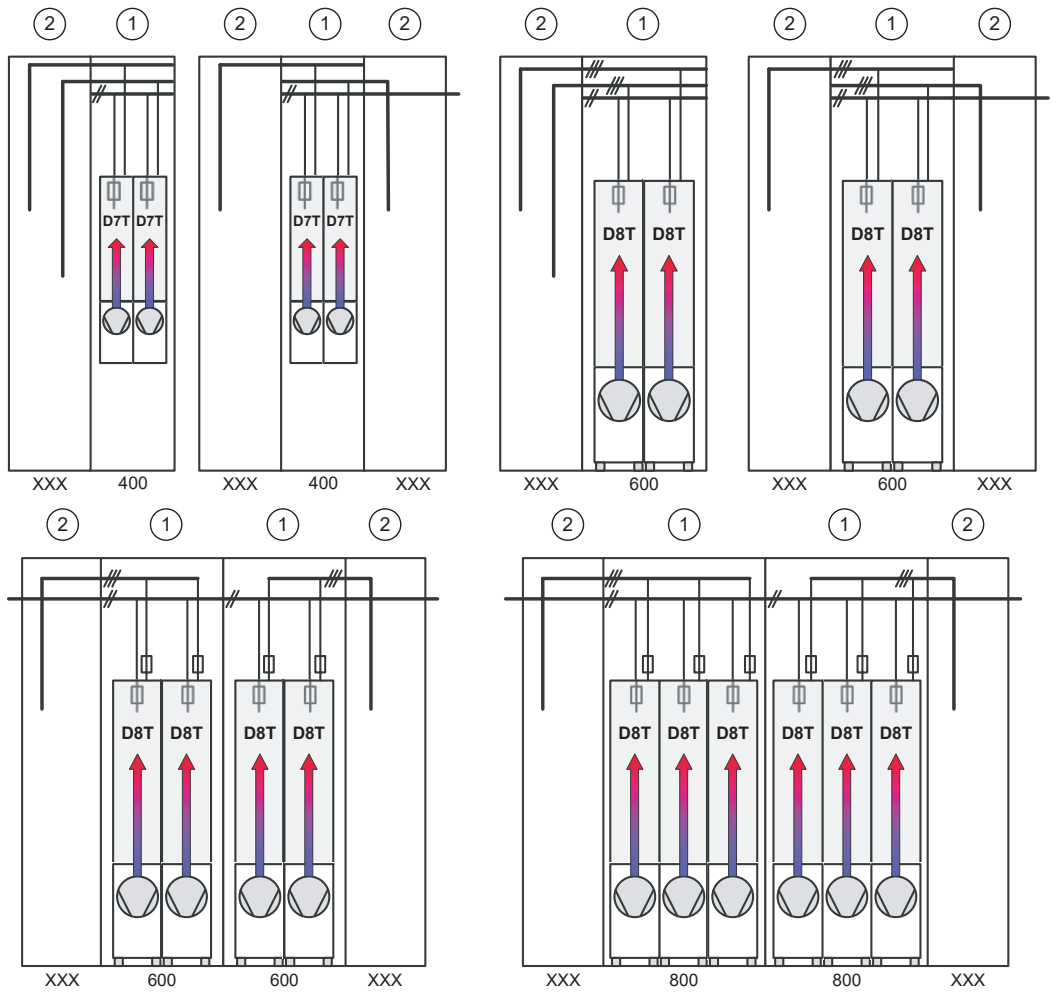
Configuration overviews – 12-pulse

Rittal VX25



1	Diode supply module cubicle
2	The incoming cubicle contains the power input cable terminals and switchgear. It is to be designed by the customer.

Generic cabinets

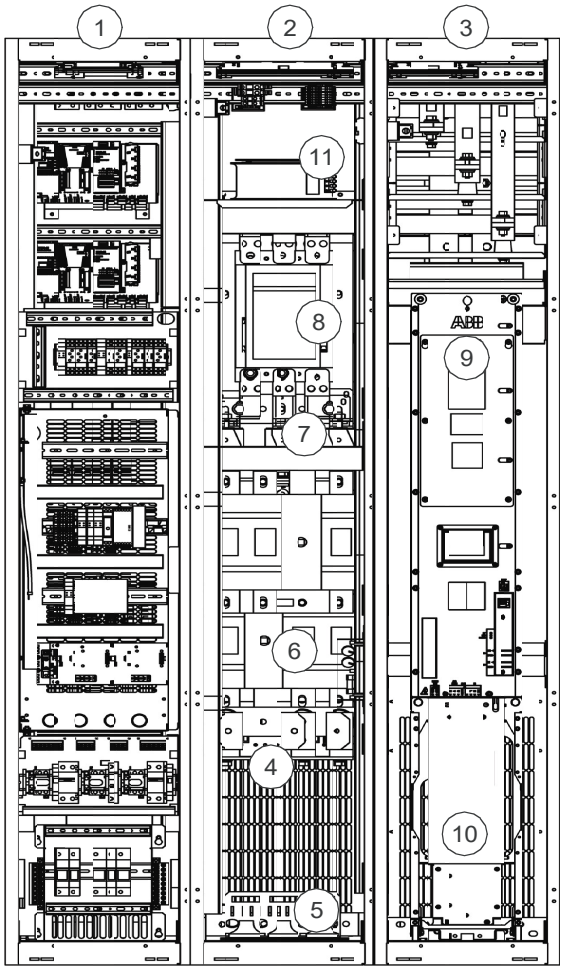


1	Diode supply module cubicle
2	The incoming cubicle contains the power input cable terminals and switchgear. It is to be designed by the customer.

Layout drawings

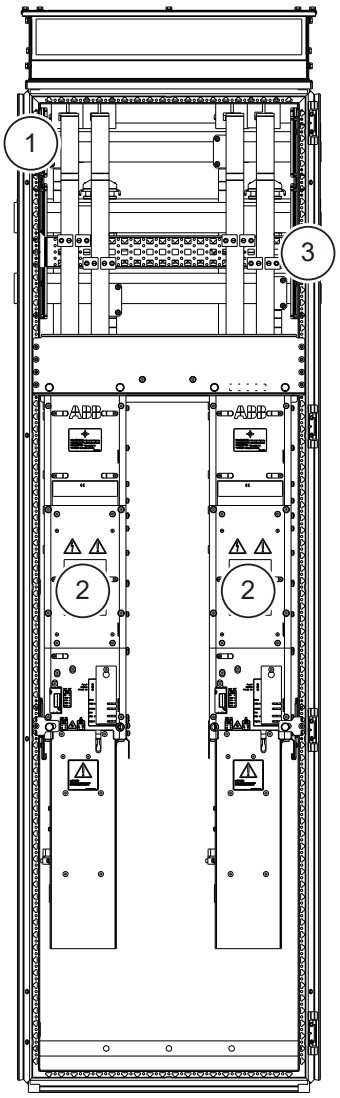
Layout drawing of the supply unit

This is an example layout drawing of a supply unit with an auxiliary control cubicle, incoming cubicle and supply module cubicle.



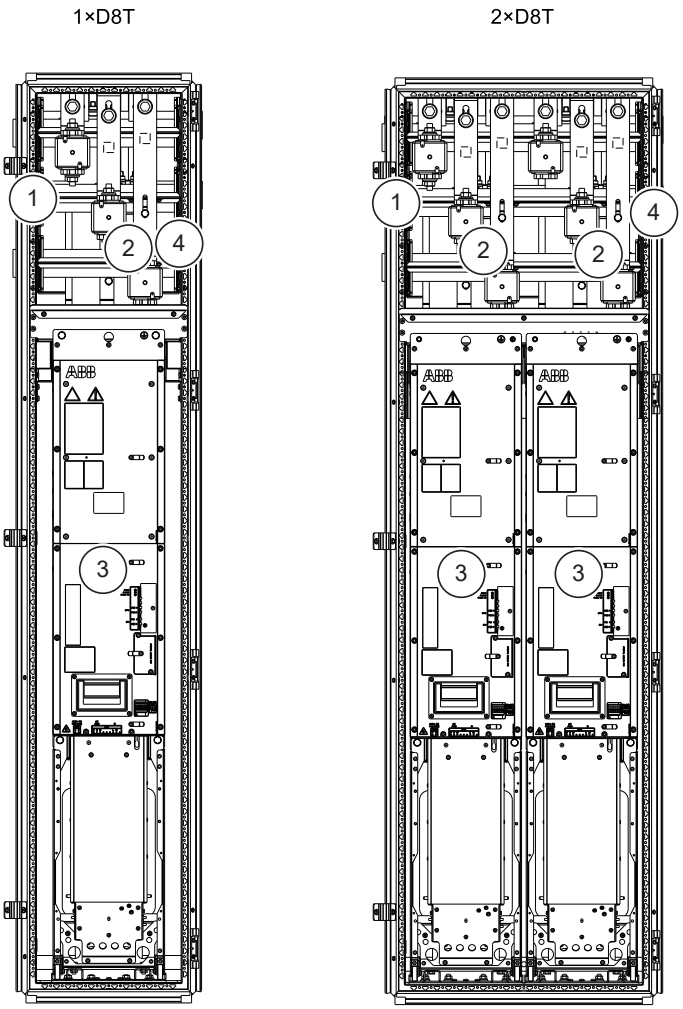
1	Auxiliary control cubicle. Contains control unit (BCU), and auxiliary control devices such as auxiliary voltage transformer, circuit breakers, terminal blocks for the control wirings etc.
2	Incoming cubicle
3	Supply module cubicle
4	Input power cable connection point
5	PE busbar
6	Main switch-disconnector
7	Main AC fuses
8	Main contactor
9	Diode supply module
10	Diode supply module fan
11	Cooling fan in incoming cubicle (for AC fuses and other devices)

Layout of supply module cubicle – 2×D7T, 12-pulse, in 600 mm wide Rittal VX25 enclosure



1	AC input
2	D7T diode supply module
3	DC output

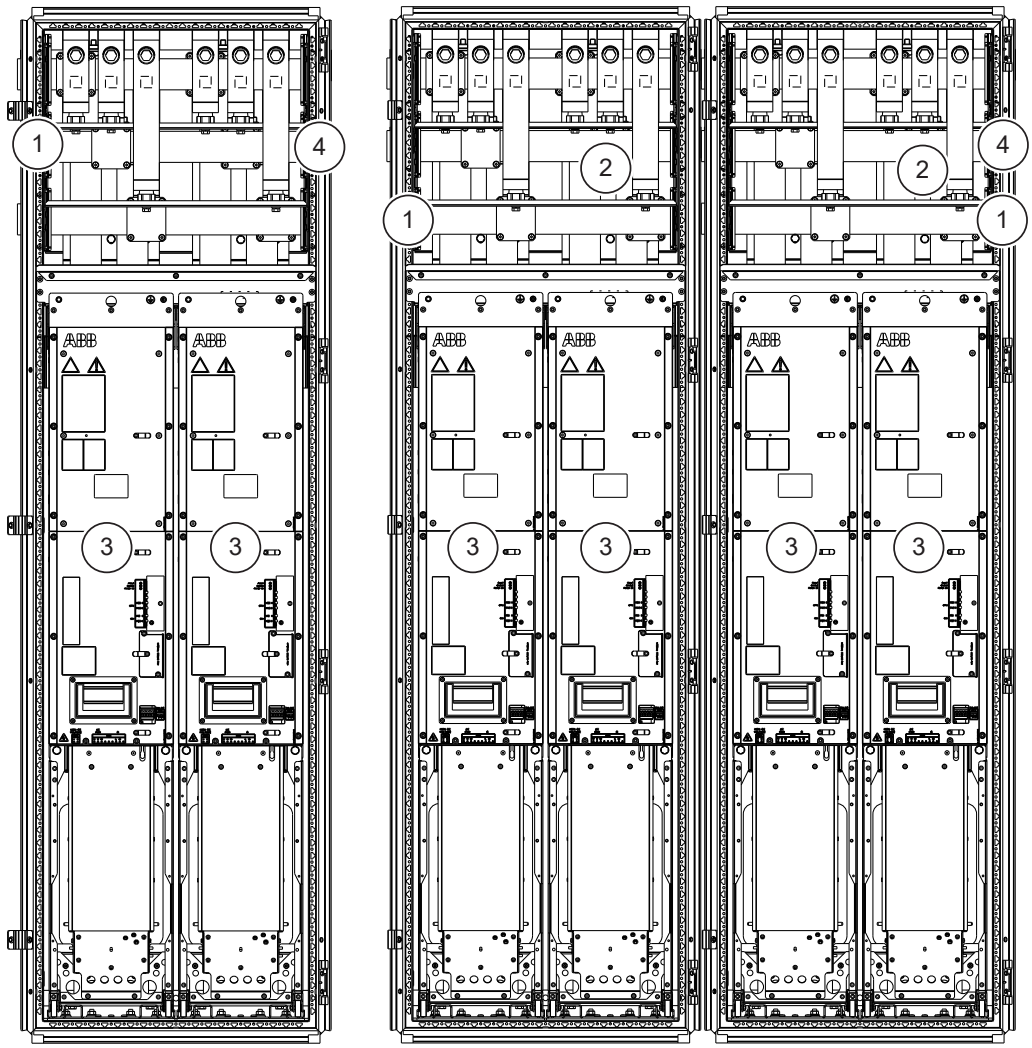
Layout of supply module cubicles – 1×D8T and 2×D8T, 6-pulse, in 400 mm / 600 mm wide Rittal VX25 enclosures



1	AC input
2	AC fuses (no fuses in 1×D8T cubicle when it is part of the 3×D8T design)
3	D8T diode supply module
4	DC output

Layout of supply module cubicles – 2×D8T and 4×D8T, 12-pulse, in 600 mm wide Rittal VX25 enclosures

2×D8T 4×D8T



1	AC input
2	AC fuses
3	D8T diode supply module
4	DC output

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.

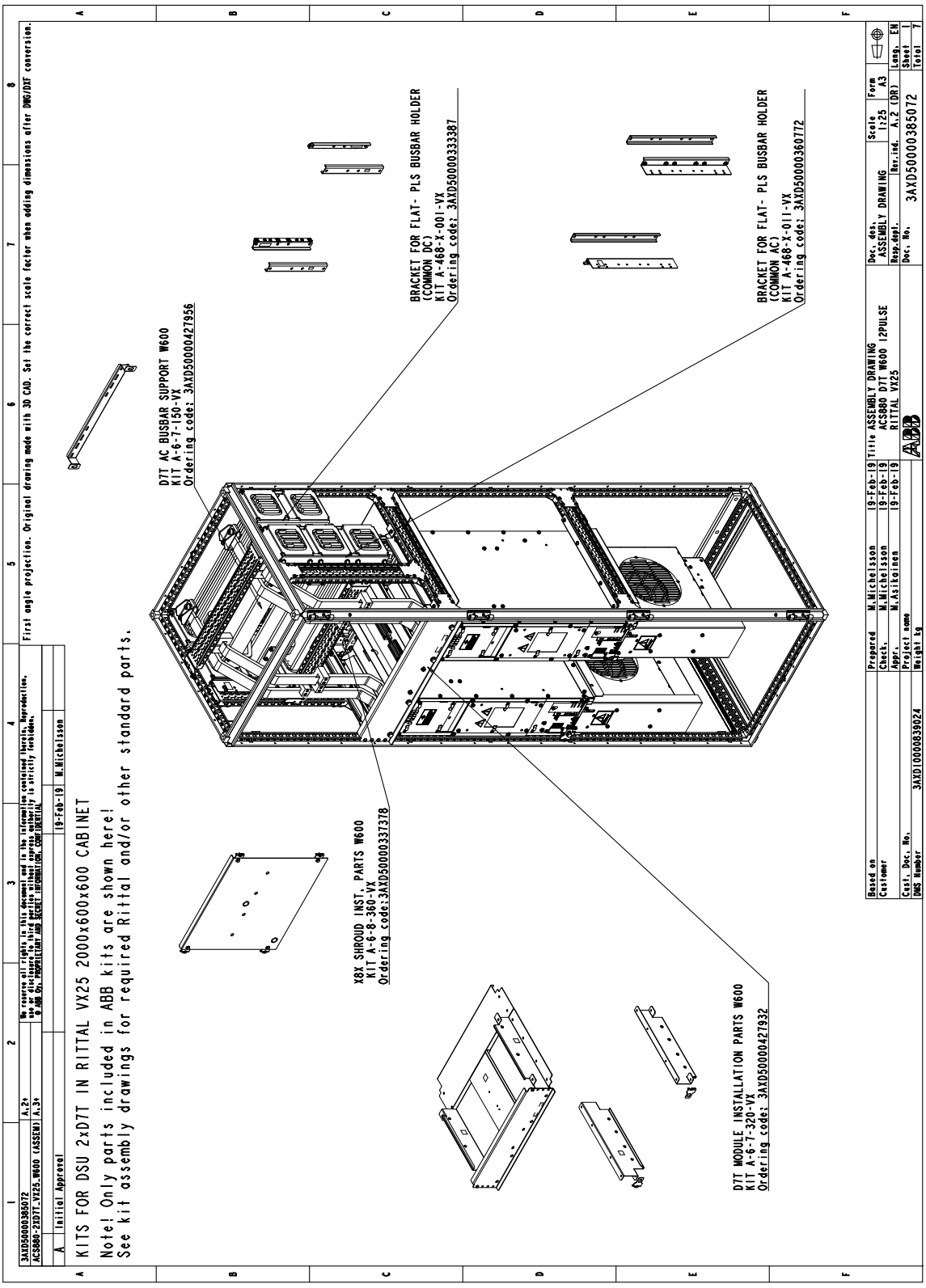
For general instructions, see *Drive modules cabinet design and construction instructions* (3AUA0000107668 [English]).

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.

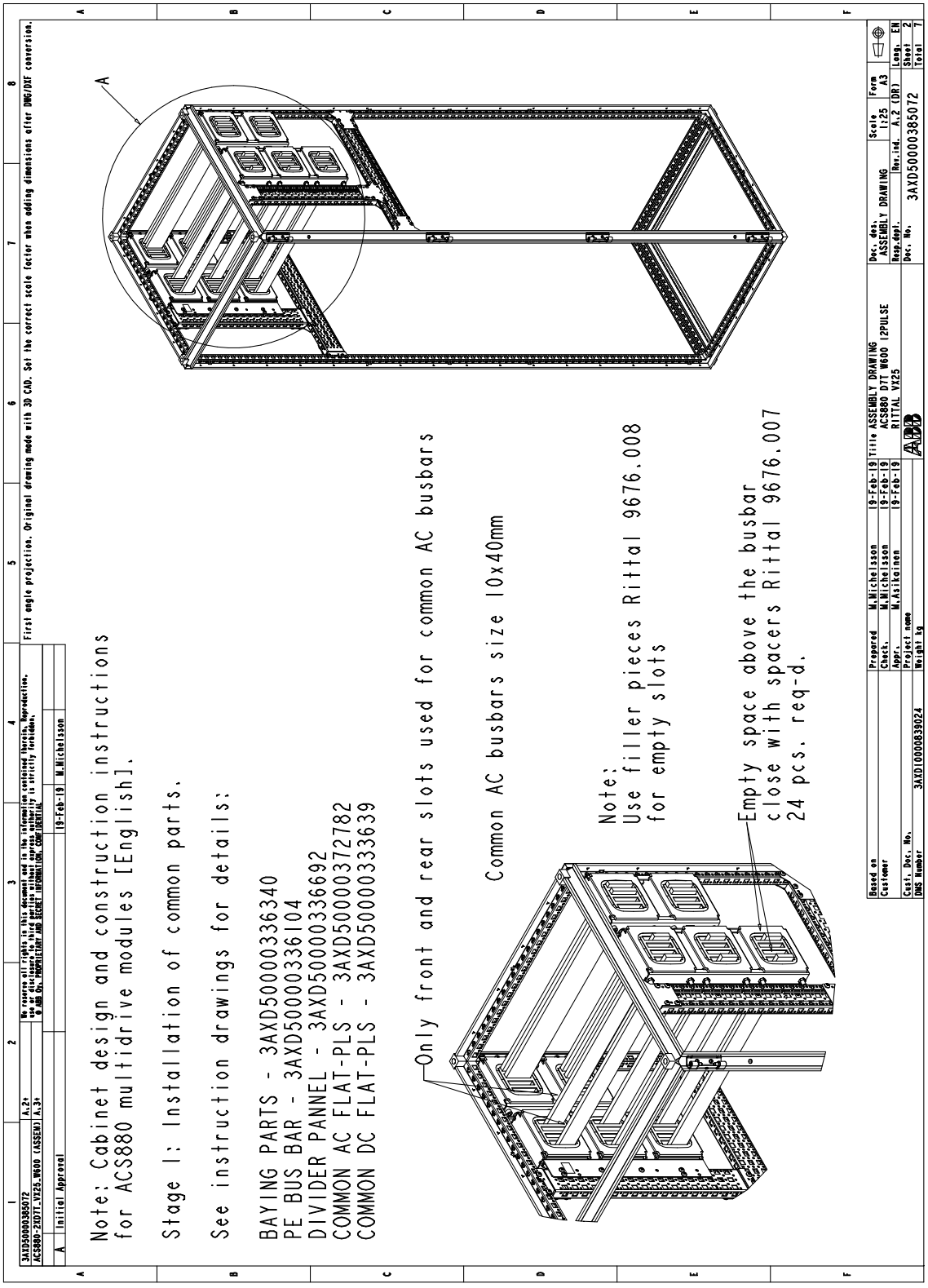
Construction of supply module cubicle – 2×D7T, 12-pulse, Rittal VX25

#	Installation stage	Instruction code	Kit code	Kit ordering code
1	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Bracket for Flat-PLS busbar holder (common AC)	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Bracket for Flat-PLS busbar holder (common DC)	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2	Module installation parts	3AXD50000426508	A-6-7-320-VX	3AXD50000427932
3	Module installation	-	-	-
4	AC busbars to the module	3AXD50000431977	A-6-7-150-VX	3AXD50000427956
5	DC busbars	3AXD50000432707	-	-
6	Shroud installation	3AXD50000335022	A-6-8-360-VX	3AXD50000337378

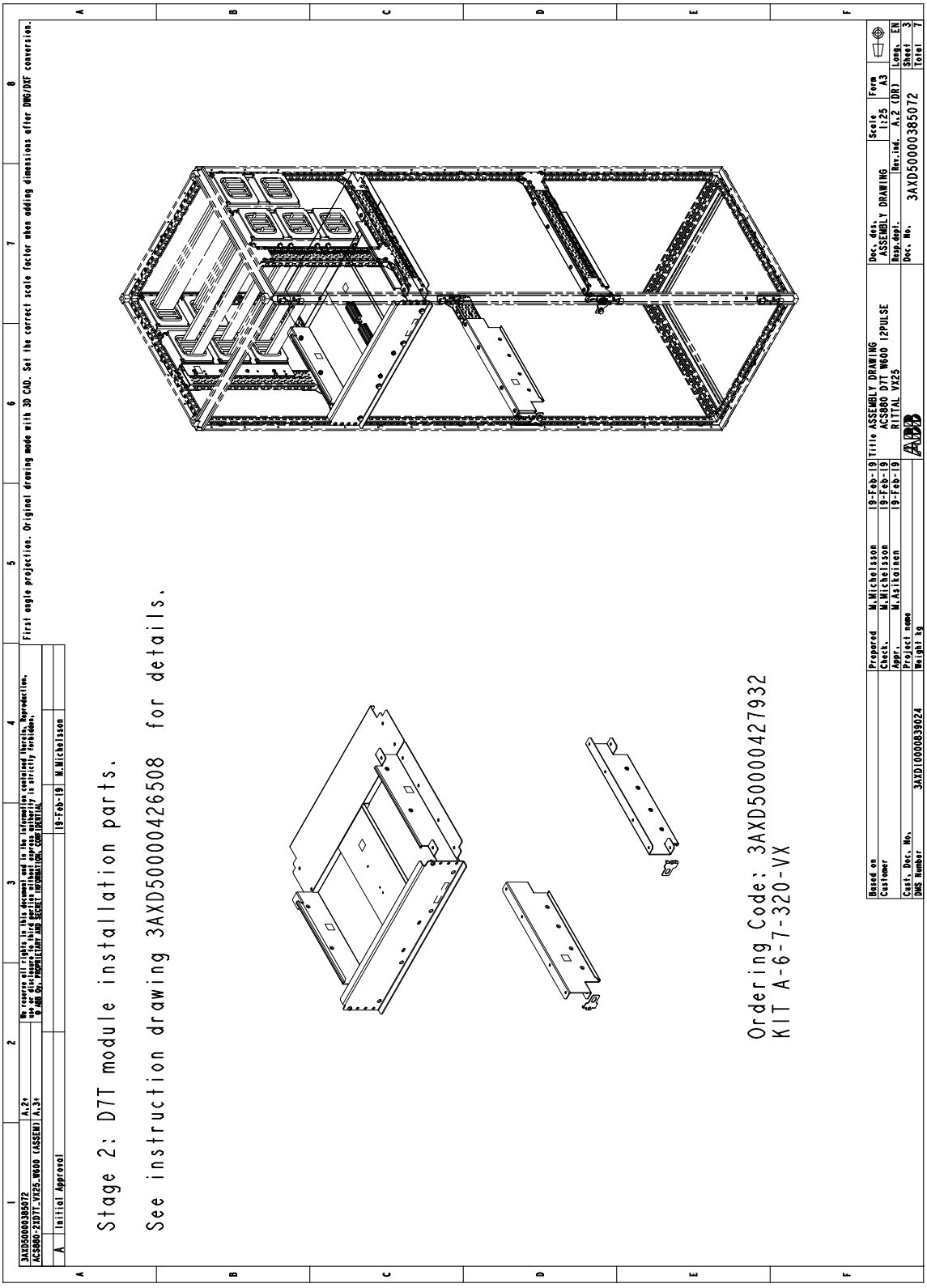
Kits for 2×D7T, 12-pulse, Rittal VX25



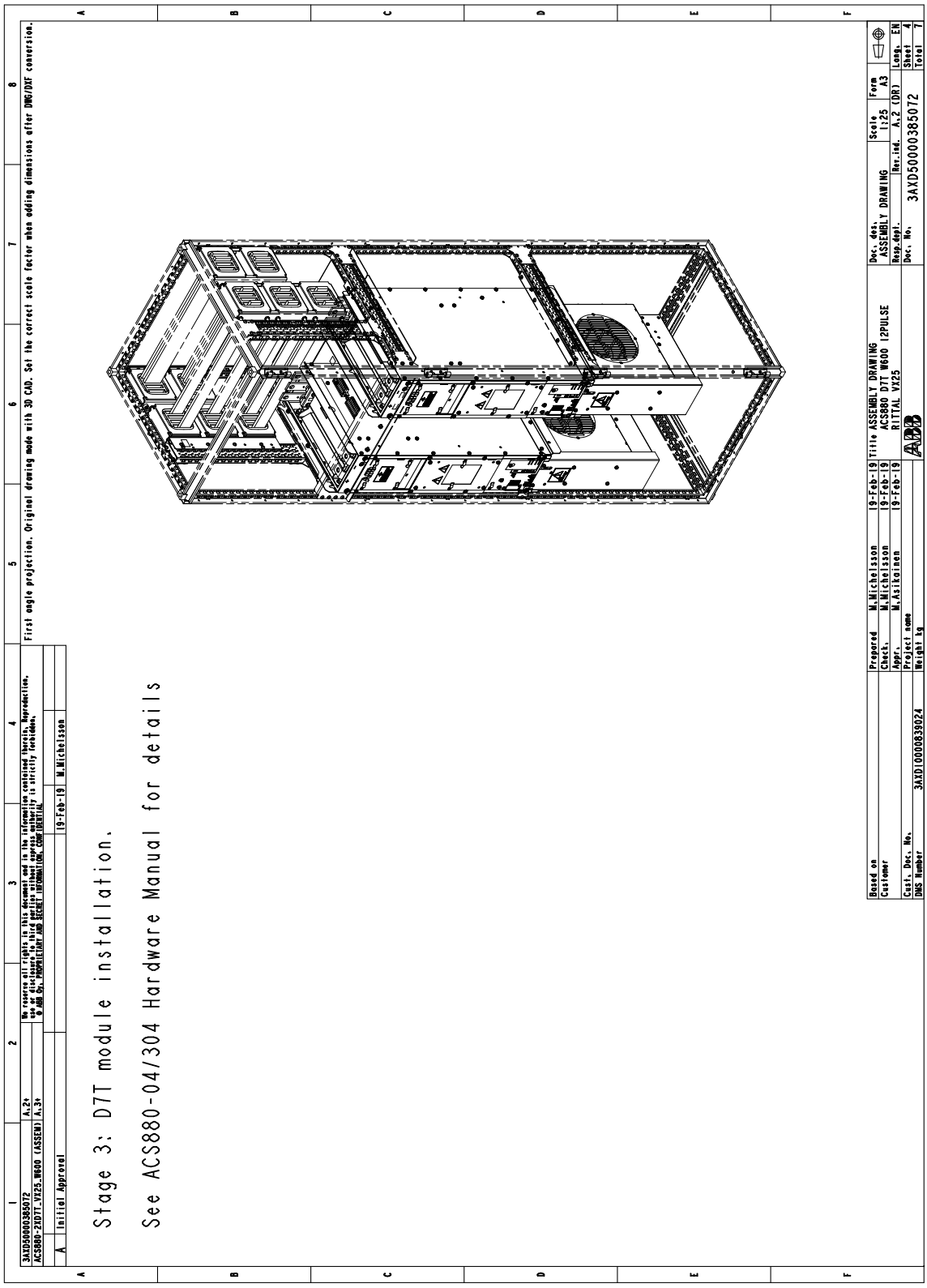
Stage 1: Installation of common parts



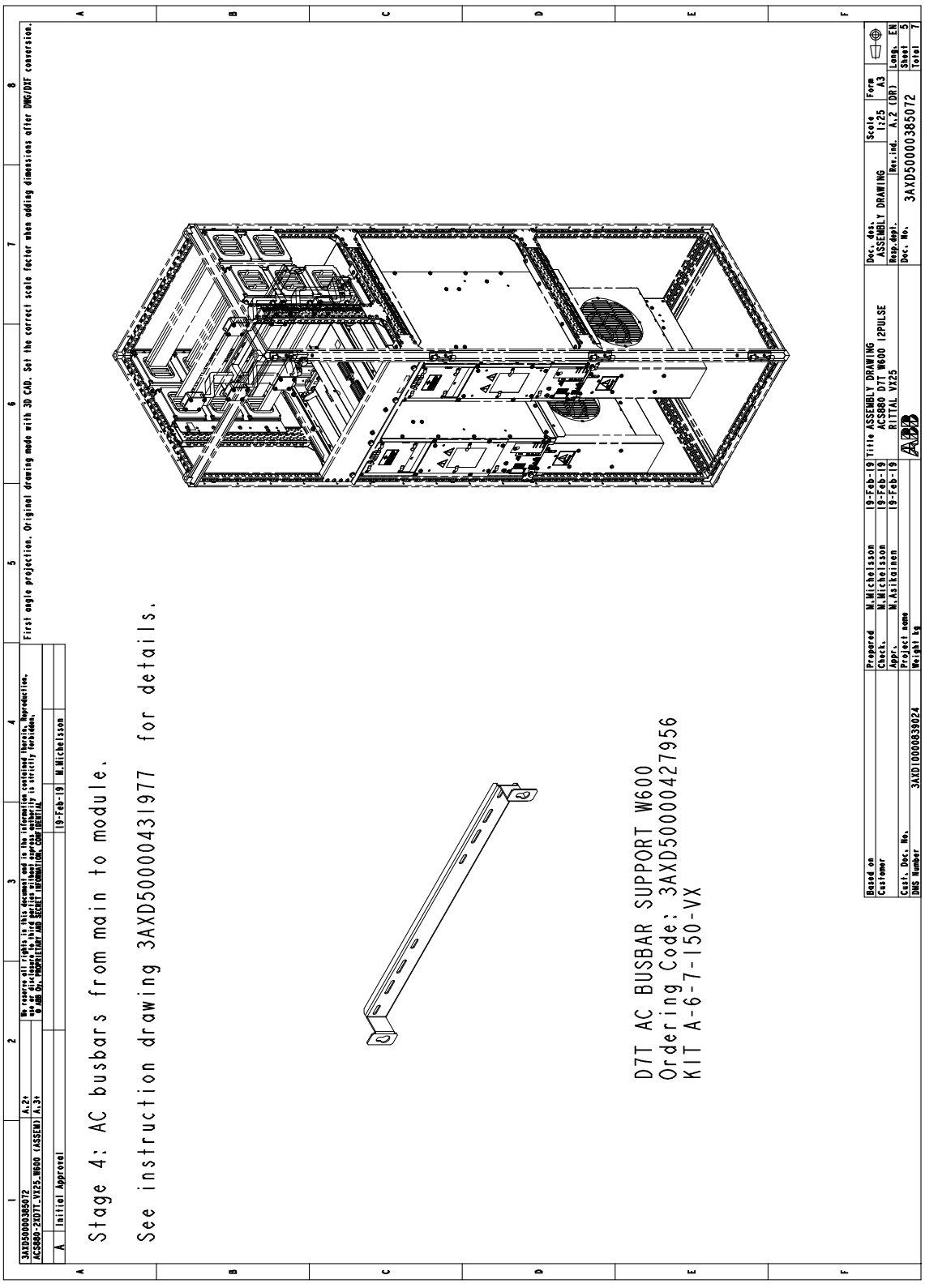
Stage 2: Module installation parts



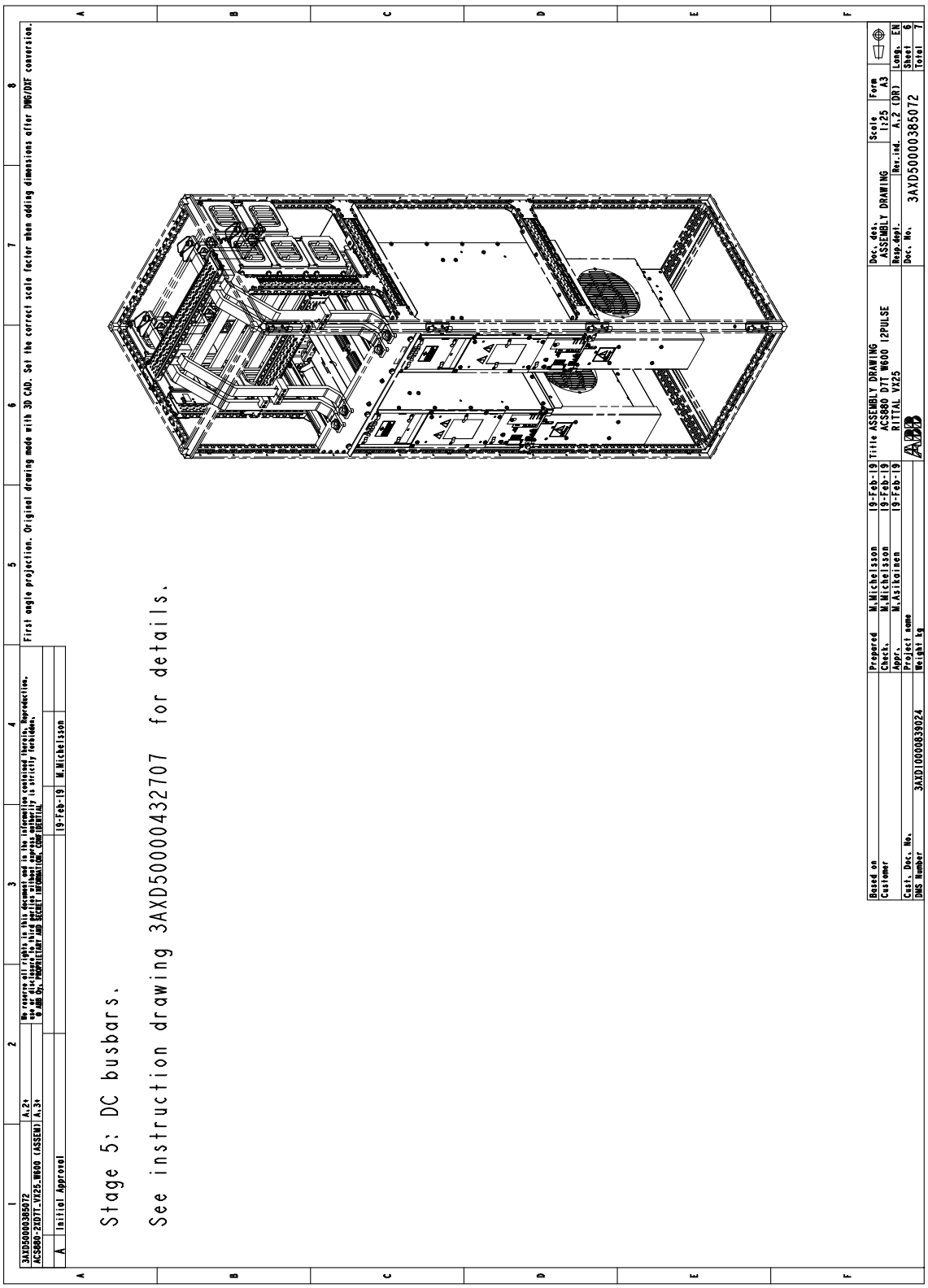
Stage 3: Module installation



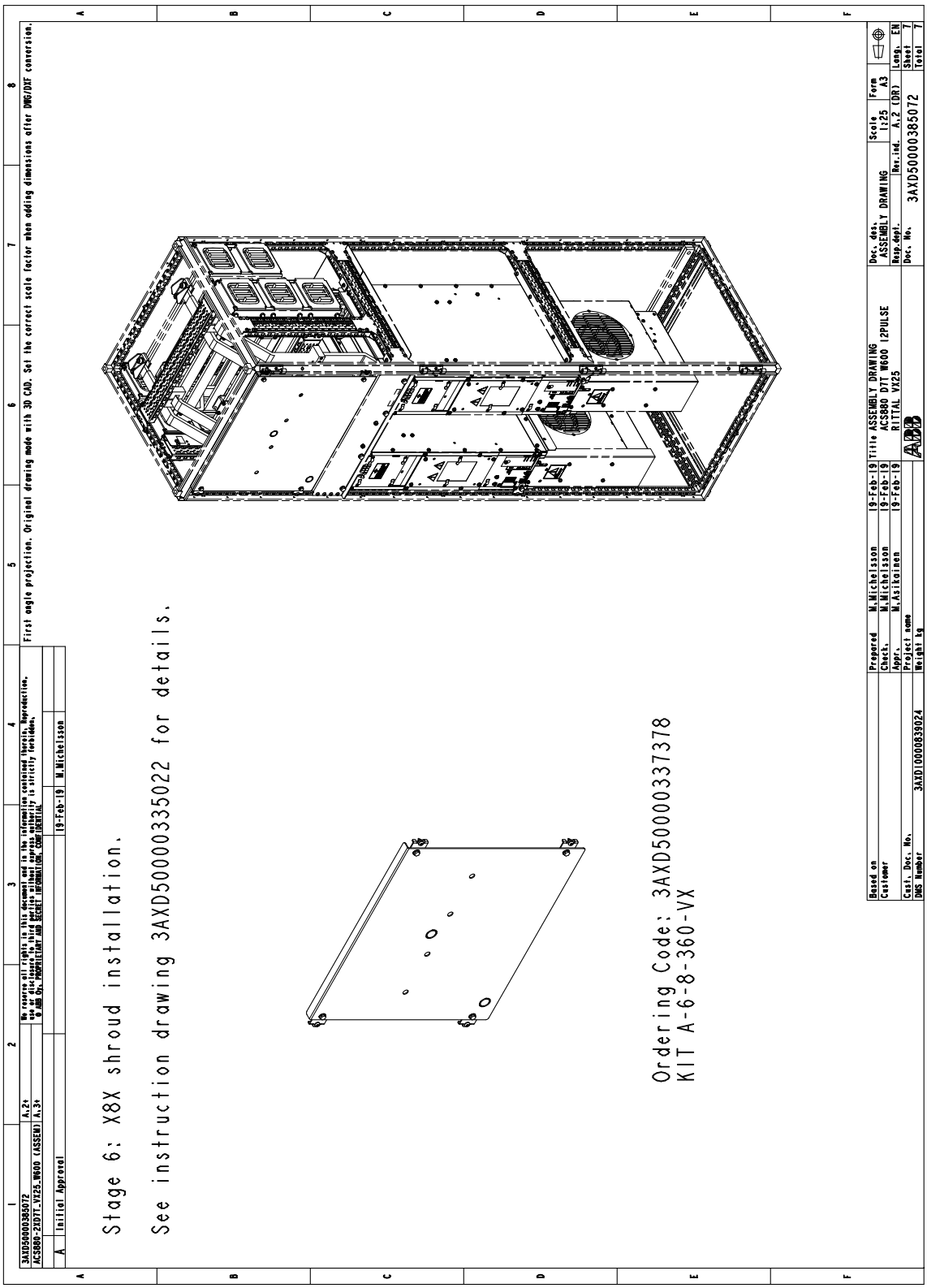
Stage 4: AC busbars to the module



Stage 5: DC busbars to the module



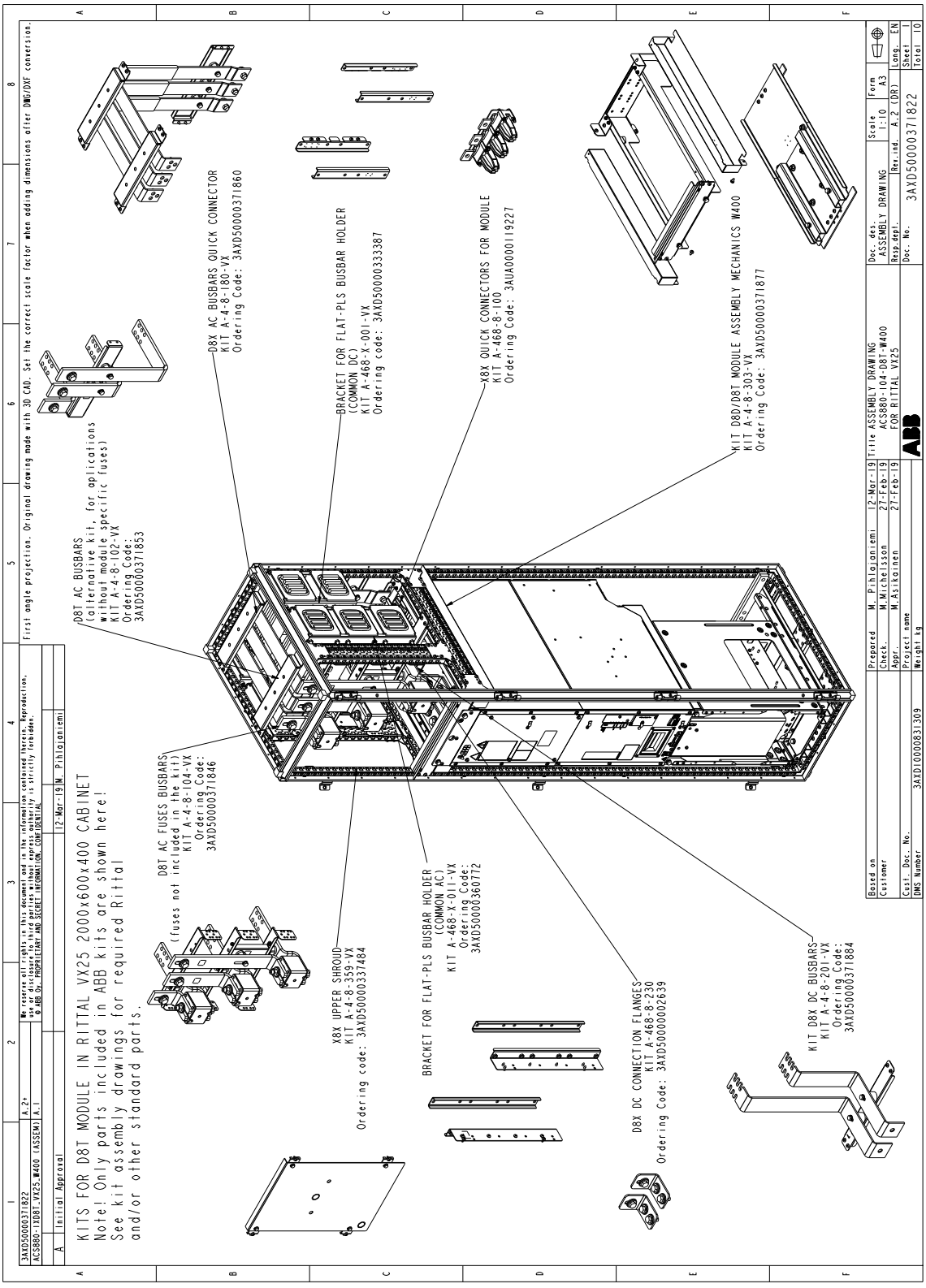
Stage 6: Shroud installation



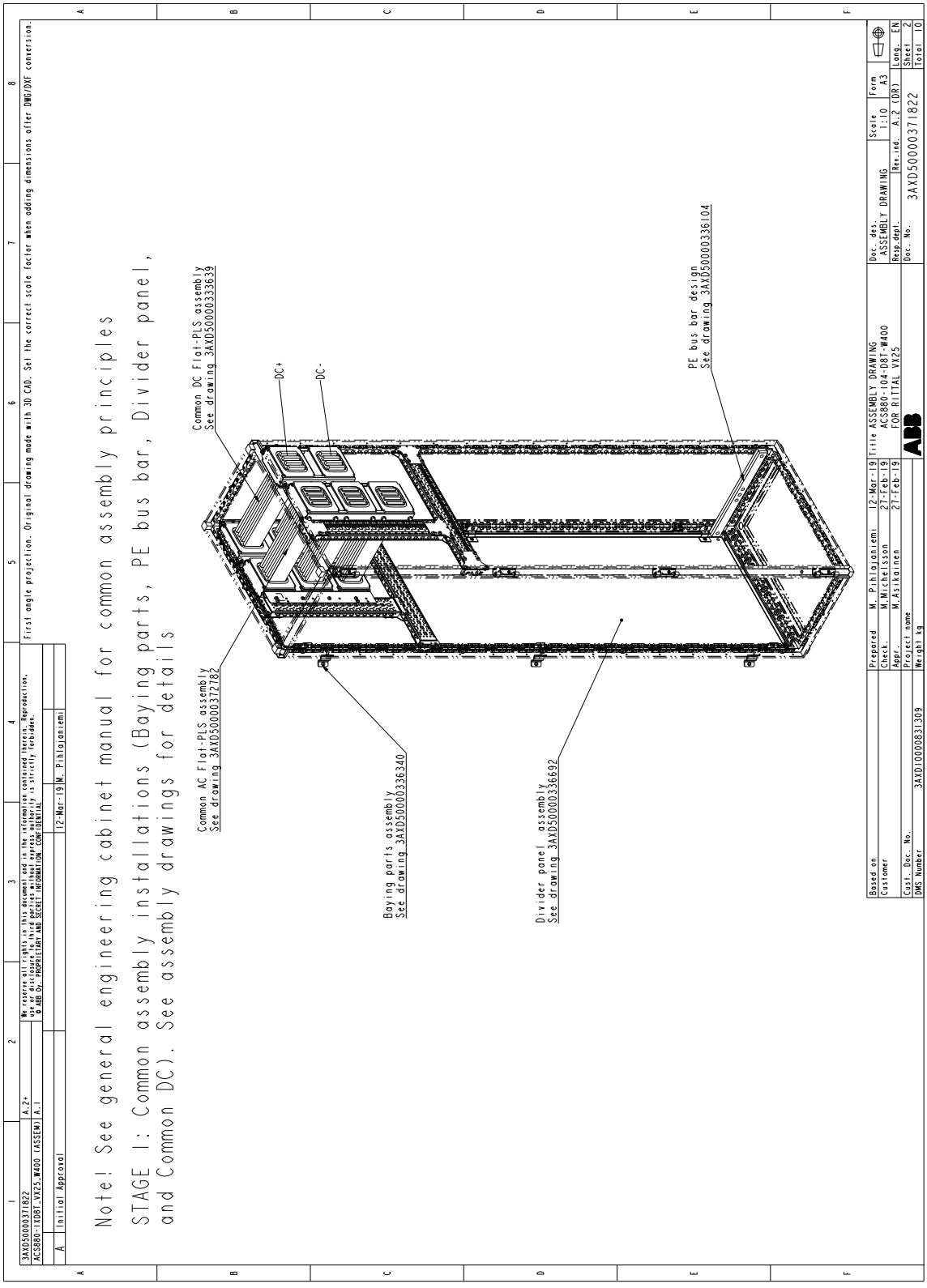
Construction of supply module cubicle – 1×D8T, 6-pulse, Rittal VX25

#	Installation stage	Instruction code	Kit code	Kit ordering code
1	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Bracket for Flat-PLS busbar holder (common AC)	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Bracket for Flat-PLS busbar holder (common DC)	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2	Module installation parts	3AXD50000372799	A-4-8-303-VX	3AXD50000371877
3	Quick connector installation	3AXD50000372799 3AUA0000118667	A-468-8-100	3AUA0000119227
4	DC busbars DC connection flanges	3AXD50000373871	A-4-8-201-VX A-468-8-230	3AXD50000371884 3AXD50000002639
5	AC busbars to quick connector	3AXD500003379739	A-4-8-180-VX	3AXD50000371860
6	AC busbar installation	3AXD50000417247	A-4-8-102-VX	3AXD50000371853
7	Module installation	3AUA0000118641	-	-
8	Shroud installation	3AXD50000335169	A-4-8-359-VX	3AXD50000337484

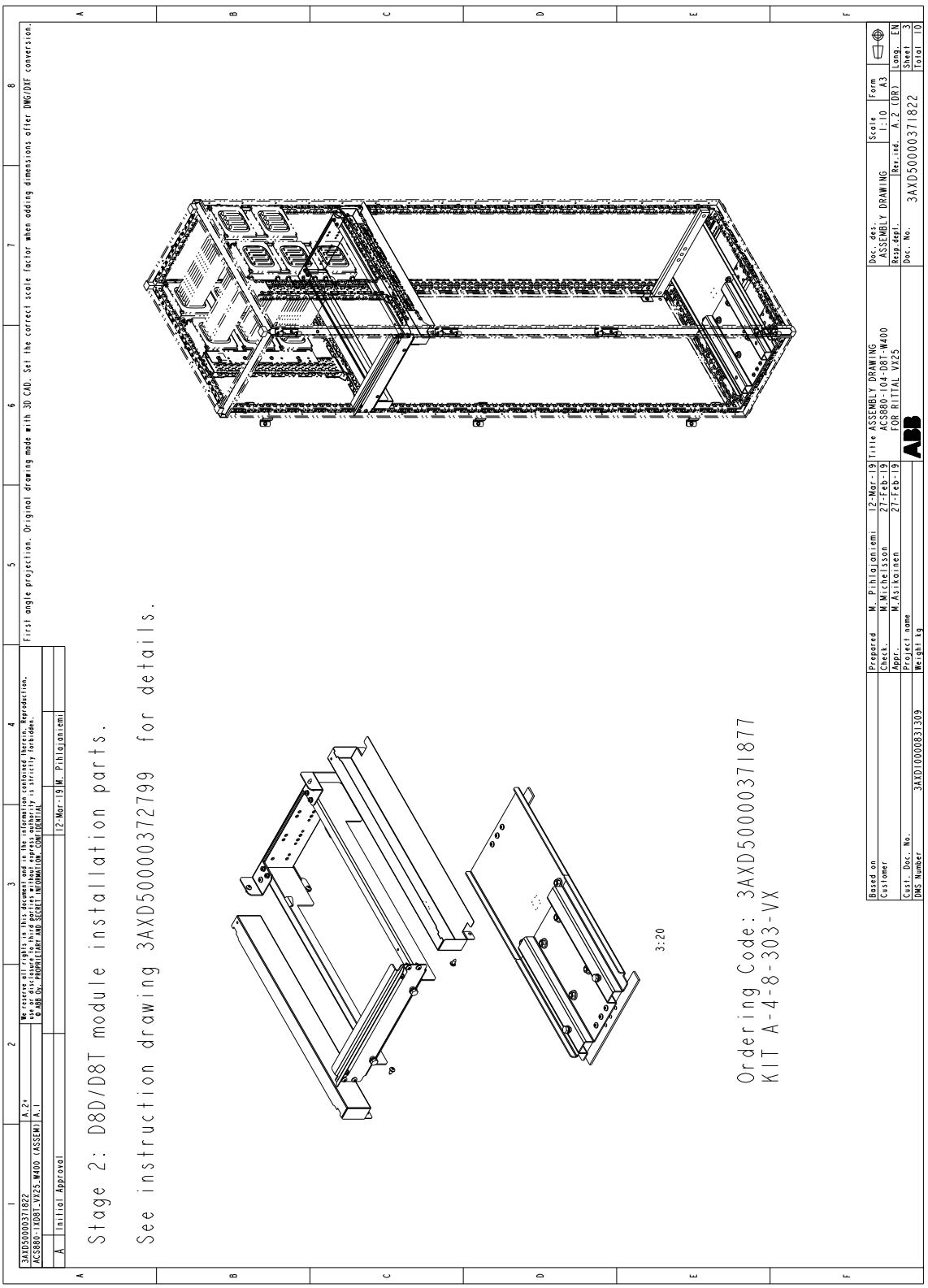
Kits for 1×D8T, 6-pulse, Rittal VX25



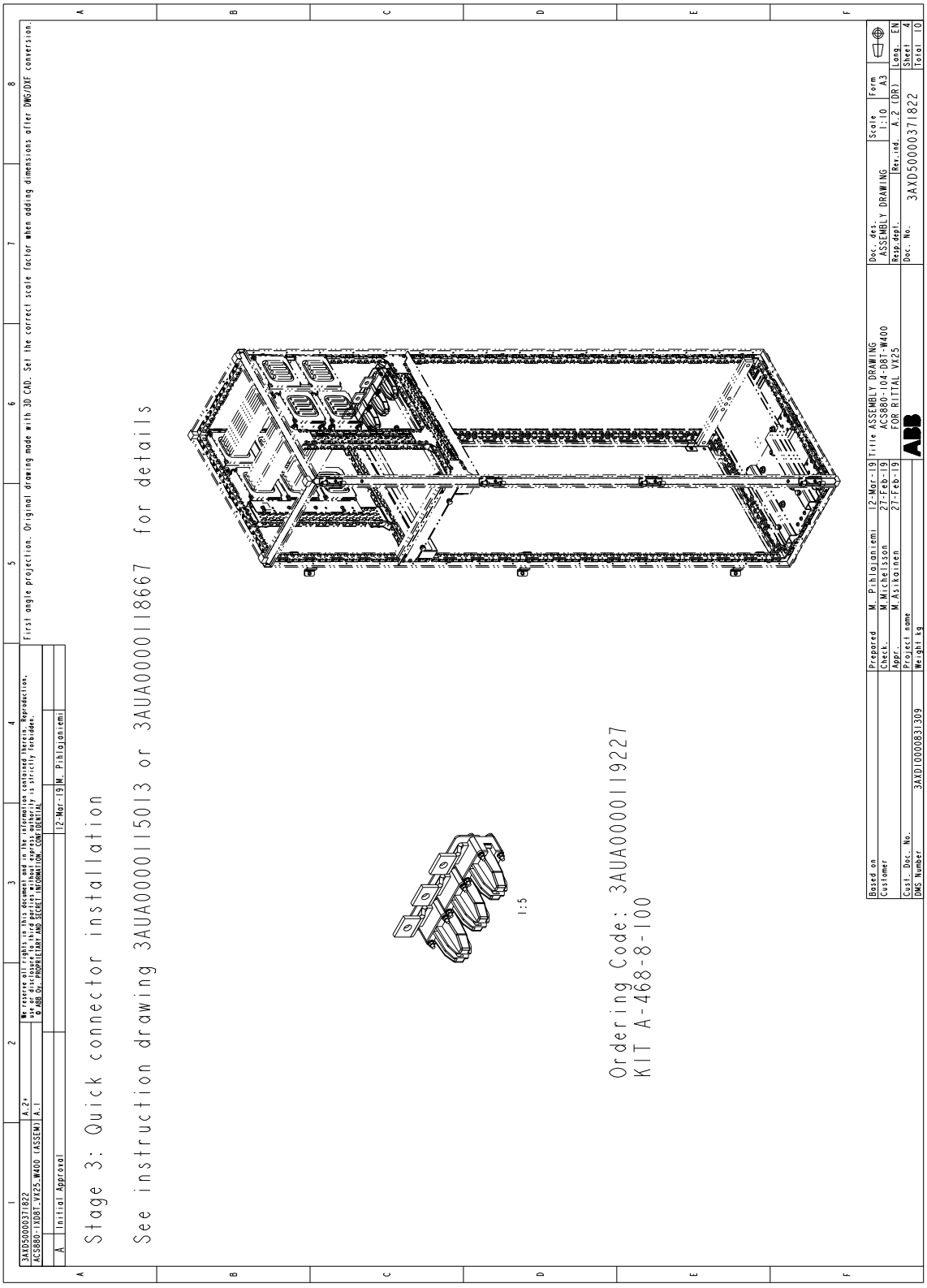
Stage 1: Installation of common parts



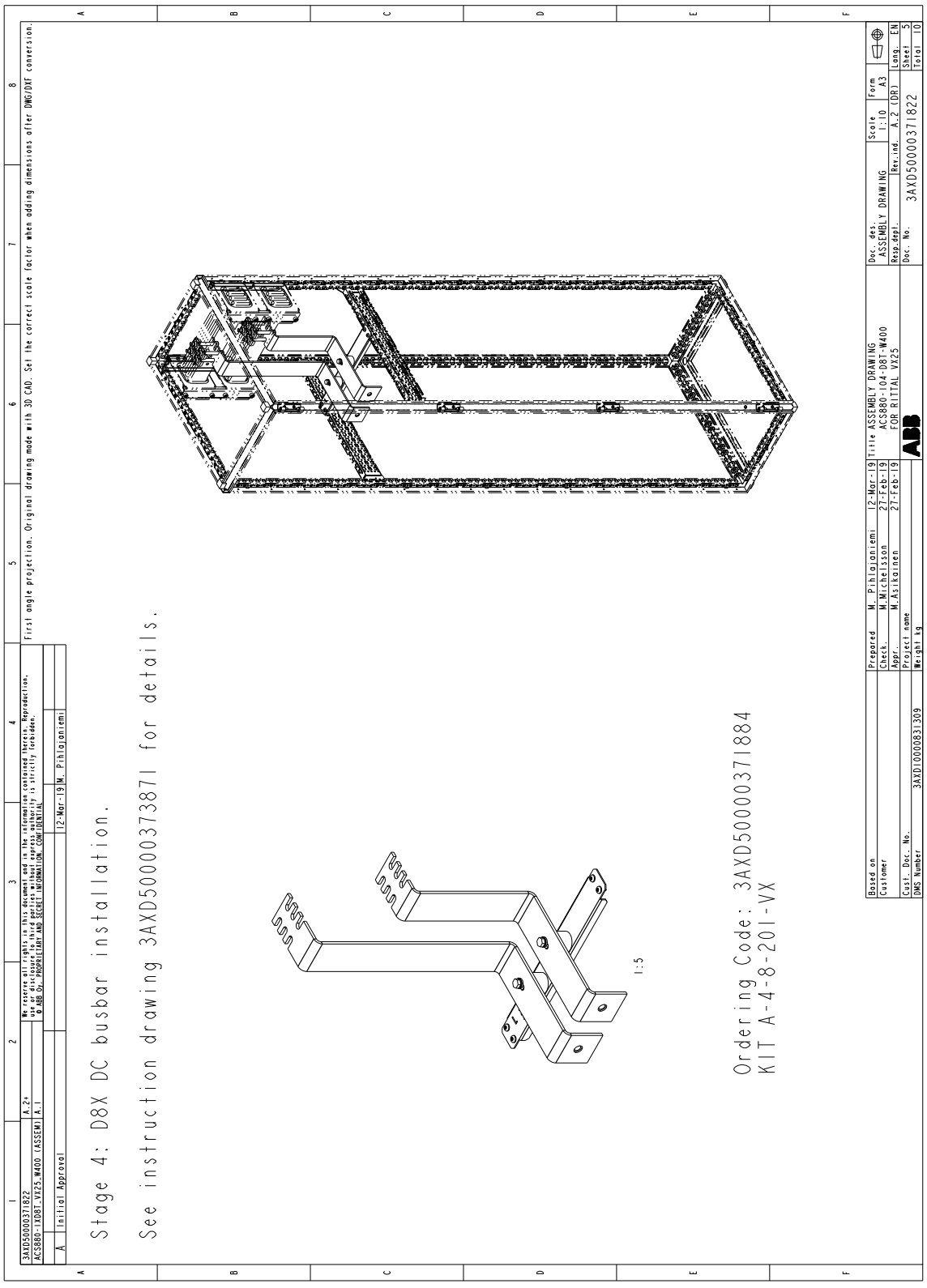
Stage 2: Module installation parts



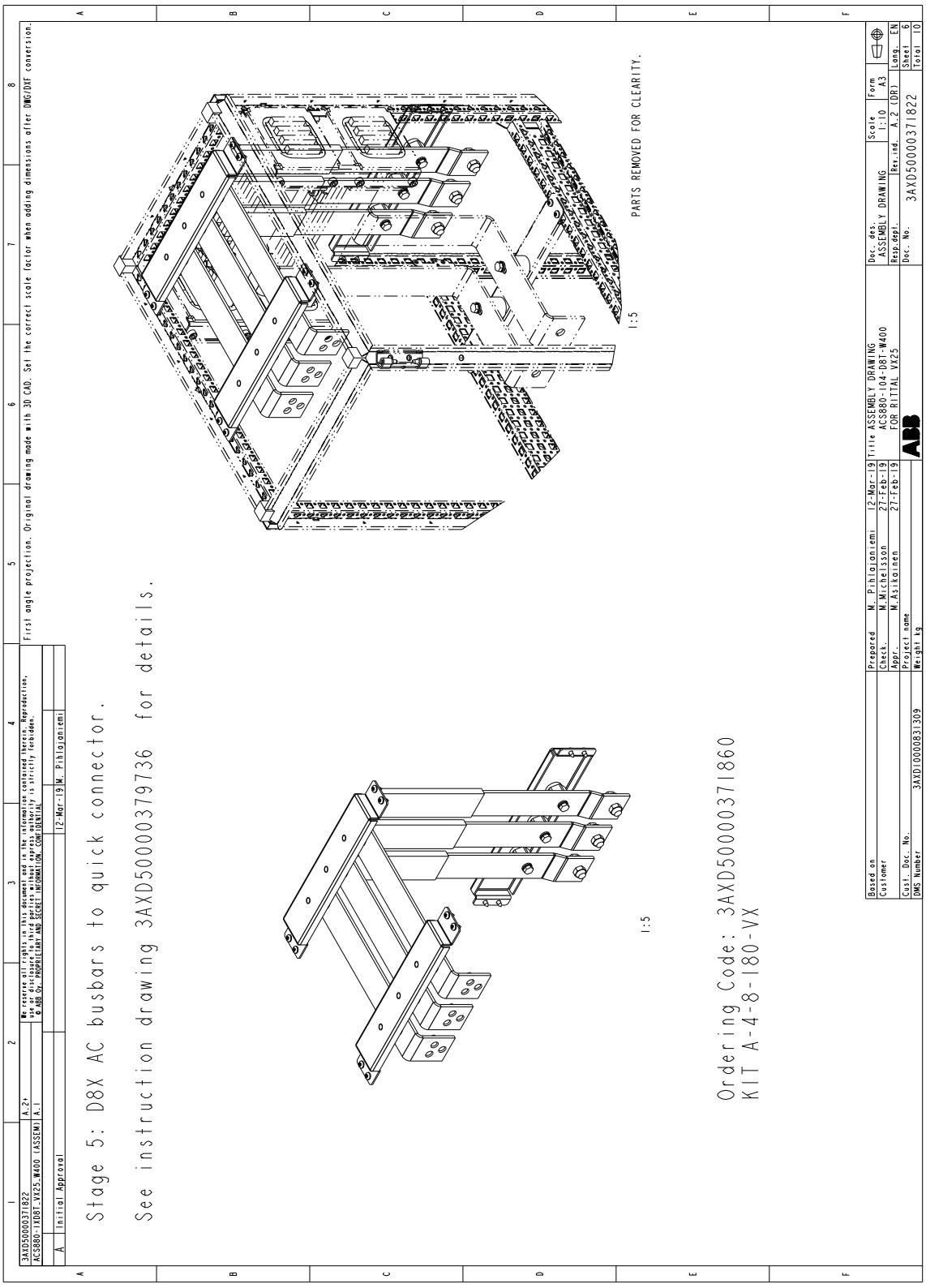
Stage 3: Quick connector installation



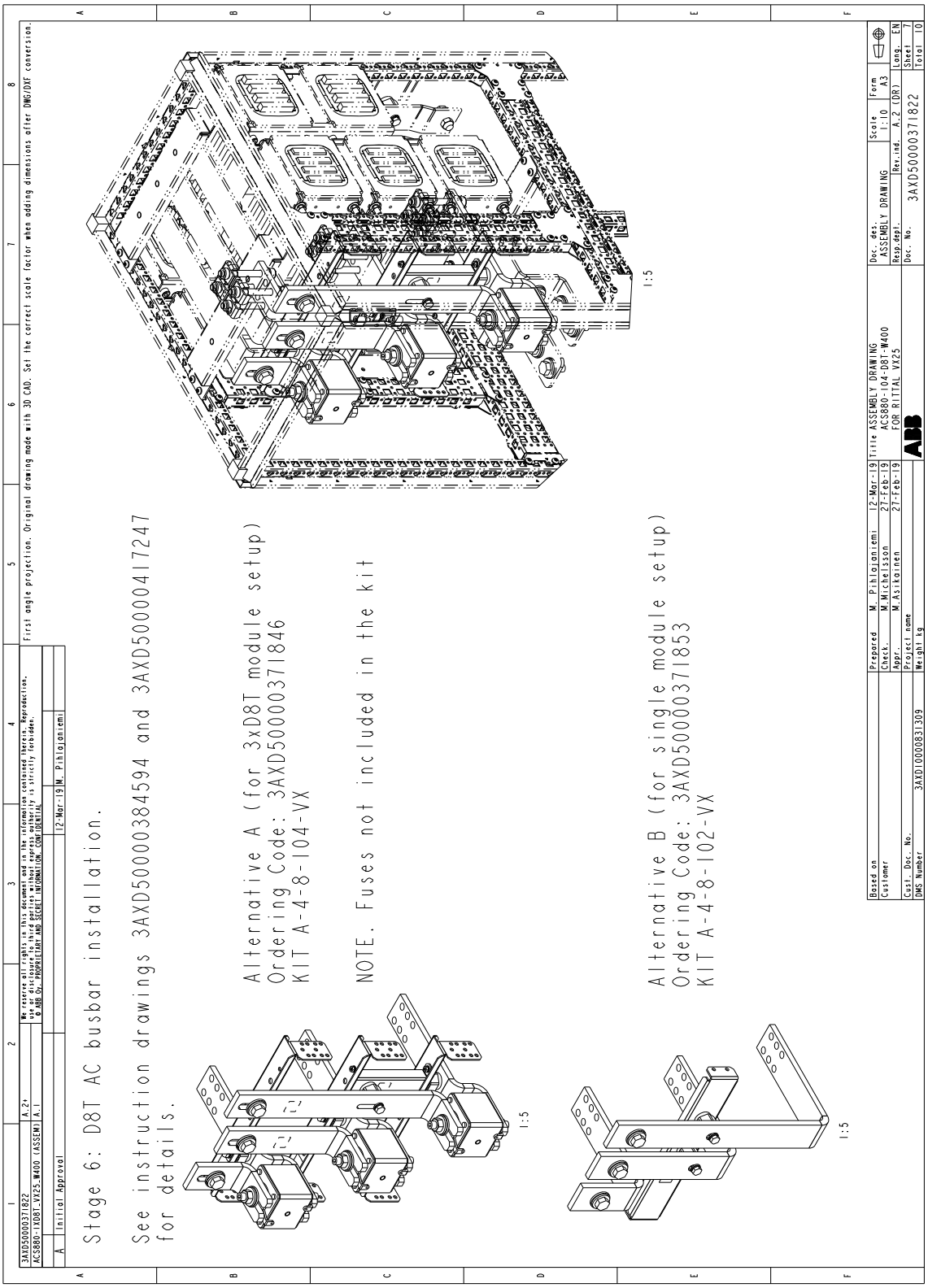
Stage 4: DC busbars to the module



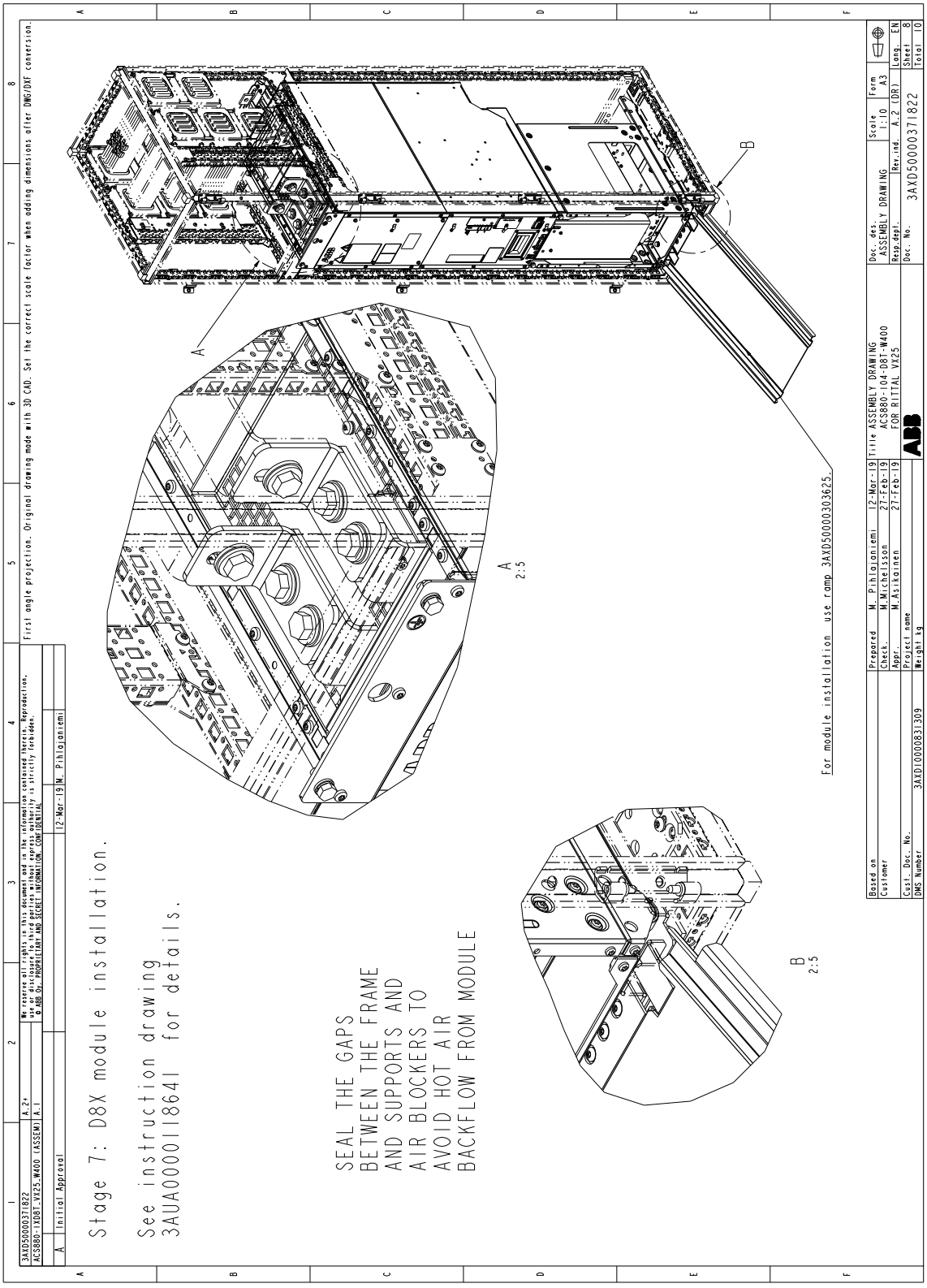
Stage 5: AC busbars to quick connector



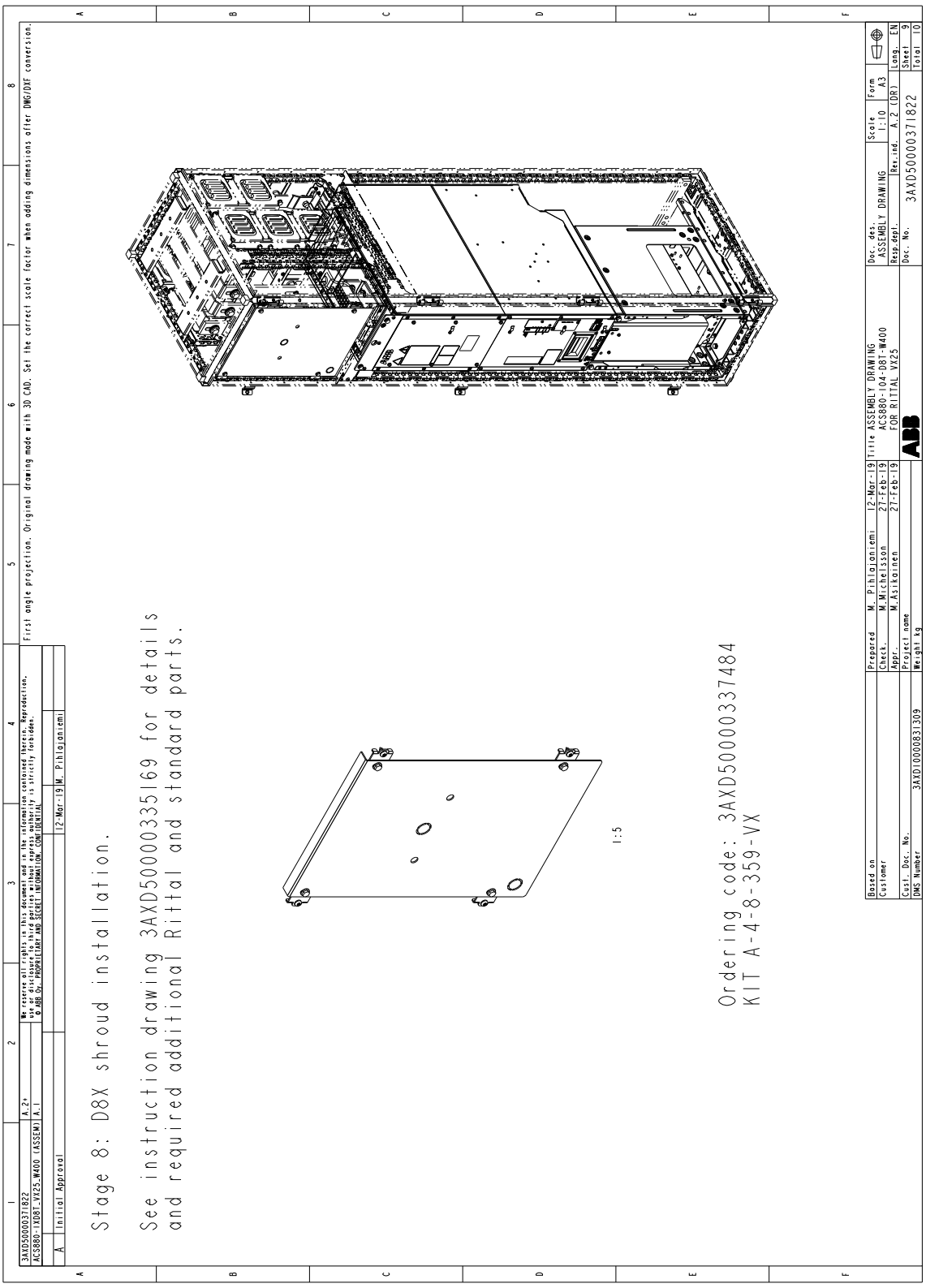
Stage 6: AC busbar



Stage 7: Module installation



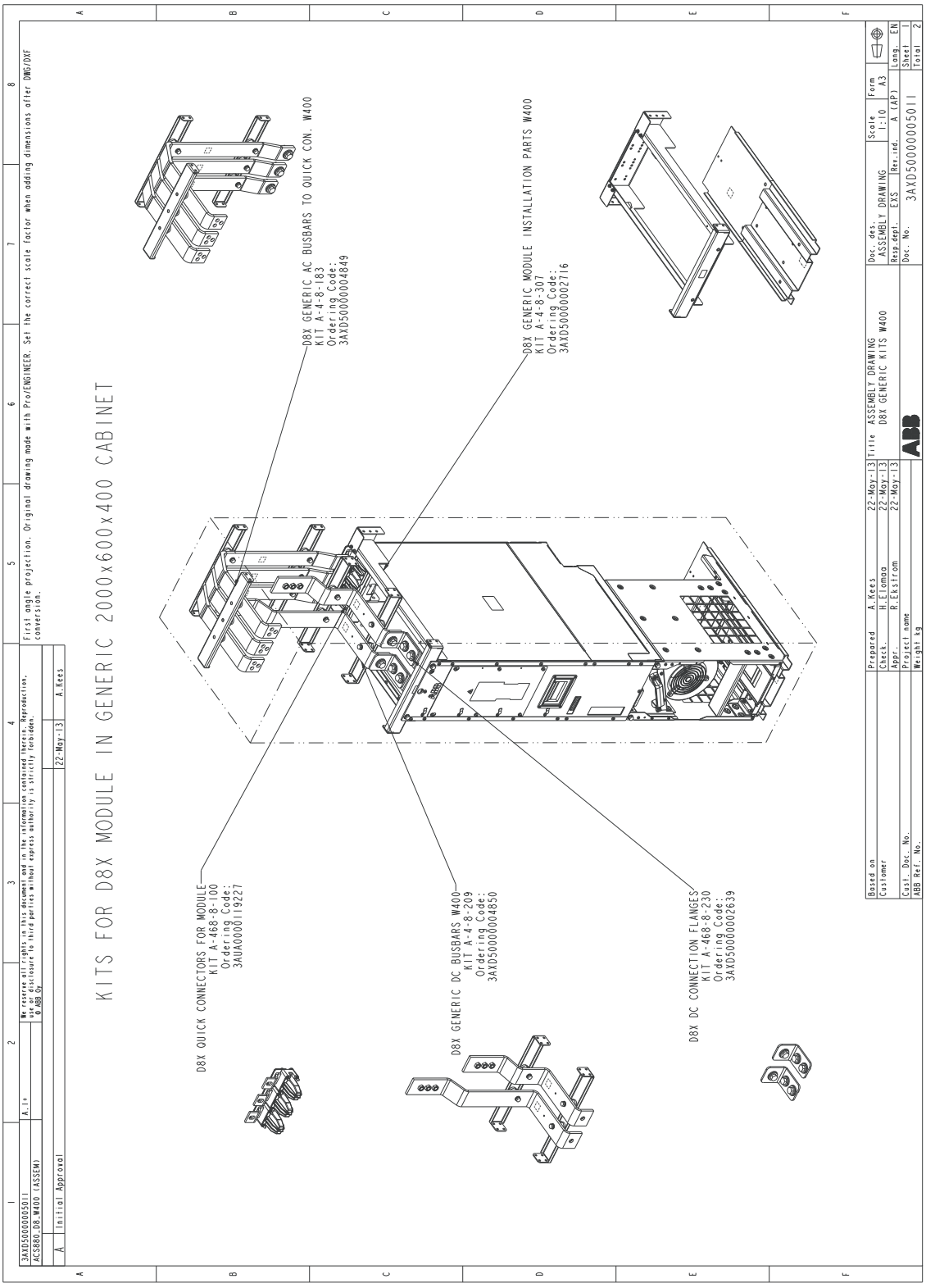
Stage 8: Shroud installation



Construction of supply module cubicle – 1×D8T, 6-pulse generic cabinet

Parts to be installed	Instruction code	Kit code	Kit ordering code
Module installation parts	3AXD50000002715	A-4-8-307	3AXD50000002716
AC busbars to quick connectors	3AXD50000006192	A-4-8-183	3AXD50000004849
Quick connectors	3AUA0000118667	A-468-8-100	3AUA0000119227
DC busbars	3AXD50000006191	A-4-8-209	3AXD50000004850
DC connection flanges	3AXD50000002638	A-468-8-230	3AXD50000002639

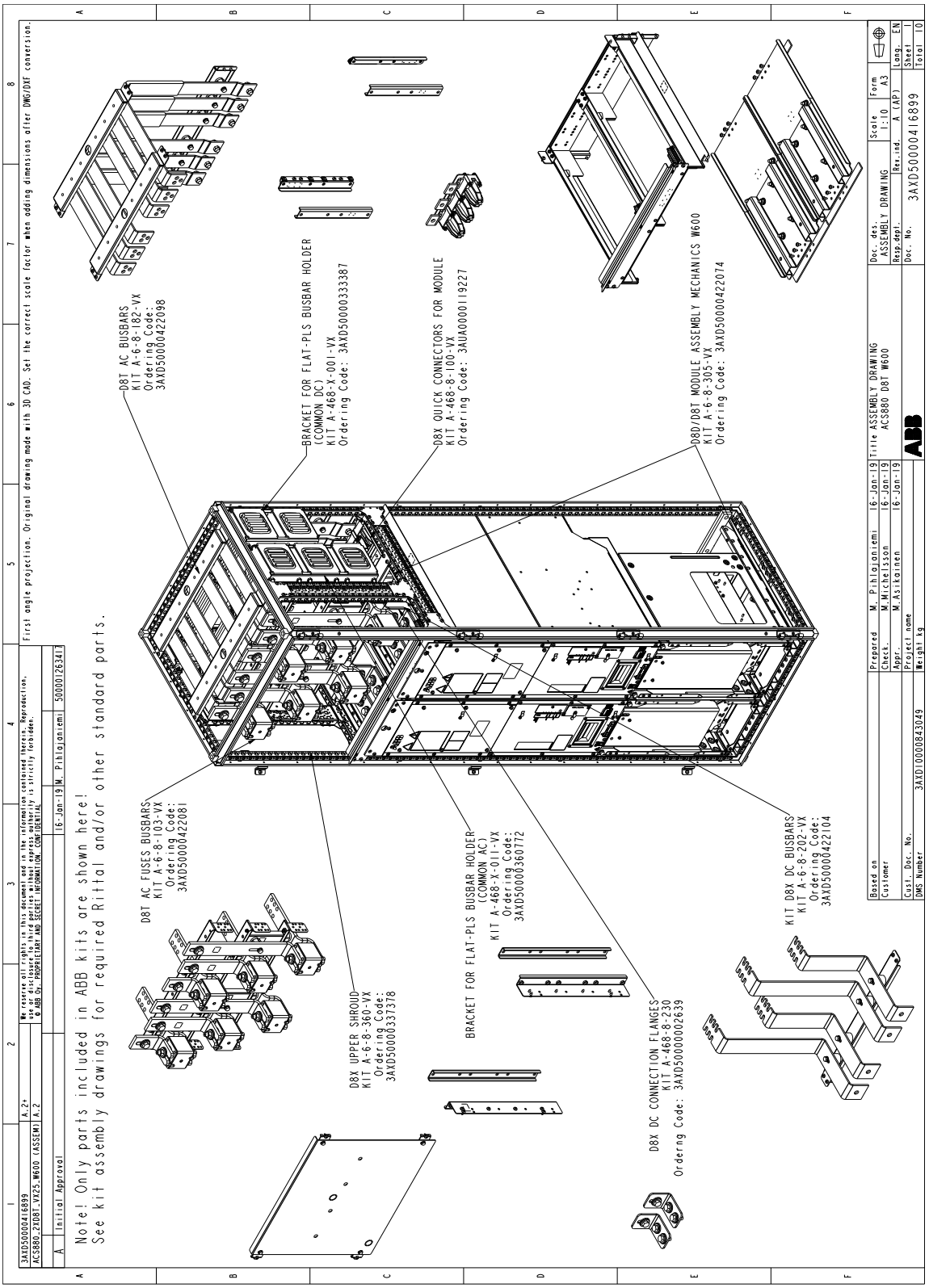
Kits for 1×D8T, 6-pulse generic cabinet



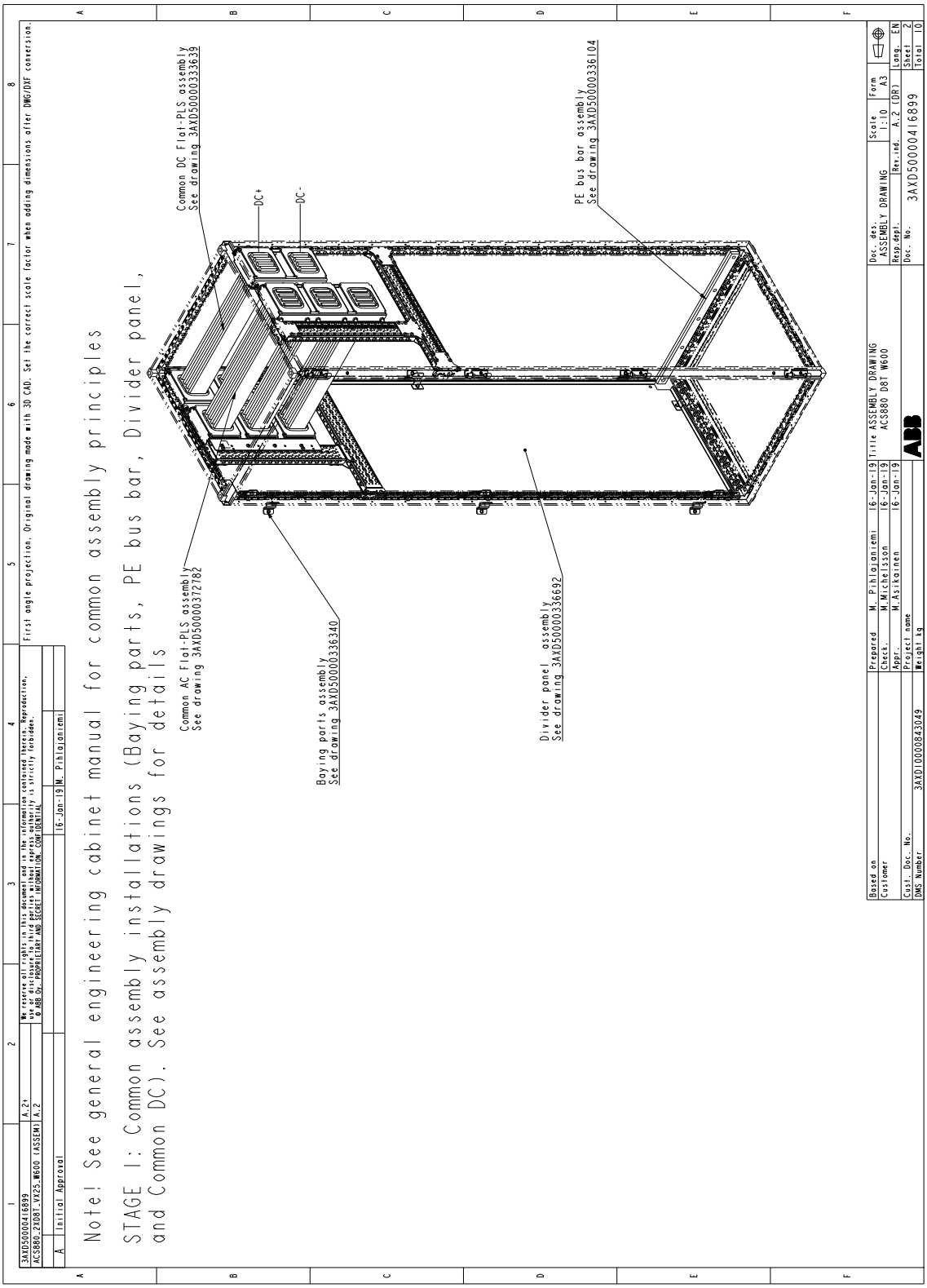
Construction of supply module cubicle – 2×D8T, 6-pulse, Rittal VX25

#	Installation stage	Instruction code	Kit code	Kit ordering code
1	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Bracket for Flat-PLS busbar holder (common AC)	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Bracket for Flat-PLS busbar holder (common DC)	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2	Module installation parts	3AXD50000422401	A-6-8-305-VX	3AXD50000422074
3	Quick connector installation	3AXD50000422401 3AUA0000118667	A-468-8-100	3AUA0000119227
4	DC busbars DC connection flanges	3AXD50000430550	A-6-8-202-VX A-468-8-230	3AXD50000422104 3AXD50000002639
5	AC busbars to quick connector	3AXD50000430574	A-6-8-182-VX	3AXD50000422098
6	AC fuse busbars installation	3AXD50000431557	A-6-8-103-VX	3AXD50000422081
7	Module installation	3AUA0000118641	-	-
8	Shroud installation	3AXD50000335022	A-6-8-354-VX	3AXD50000337378

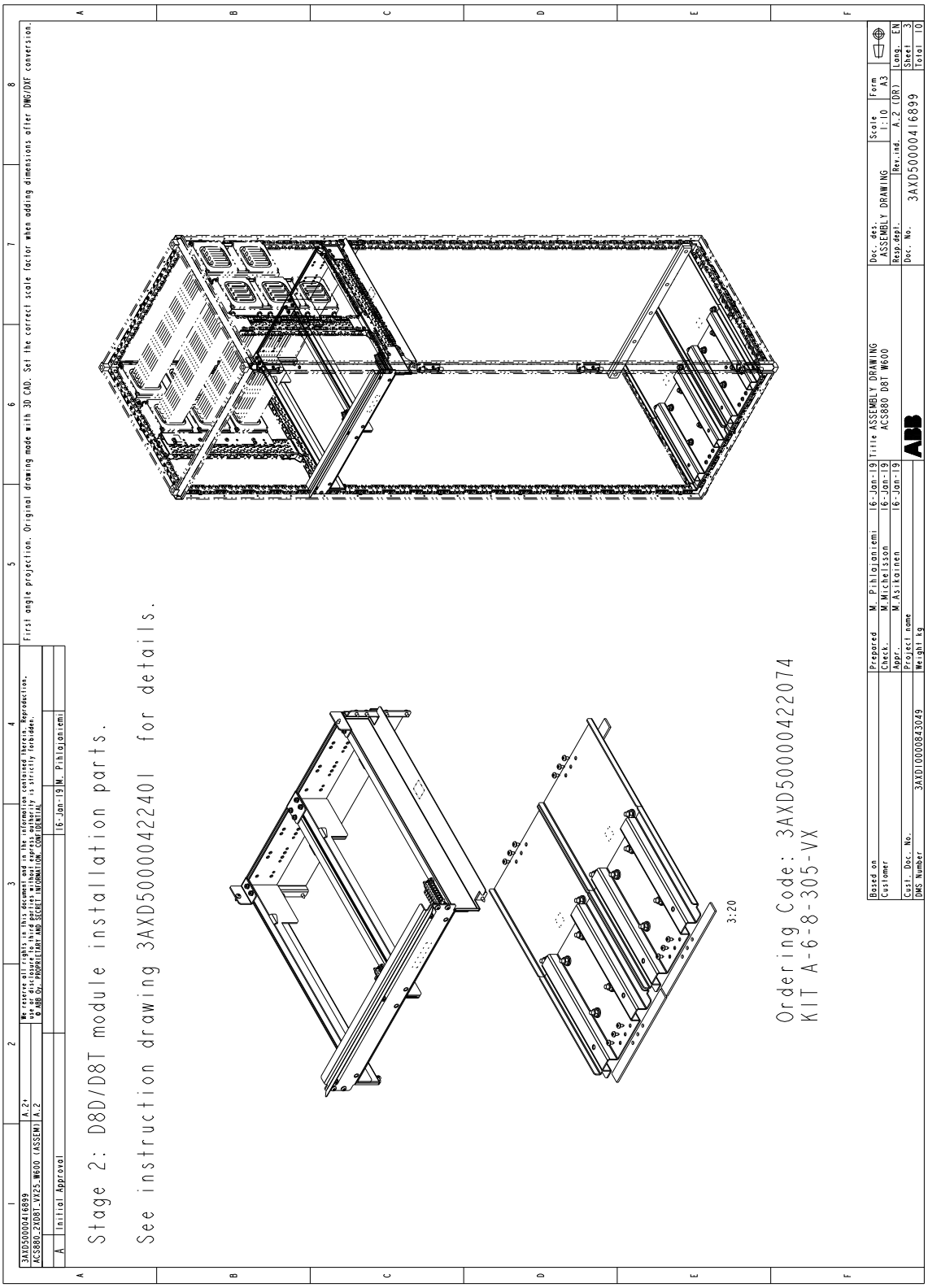
Kits for 2×D8T, 6-pulse, Rittal VX25



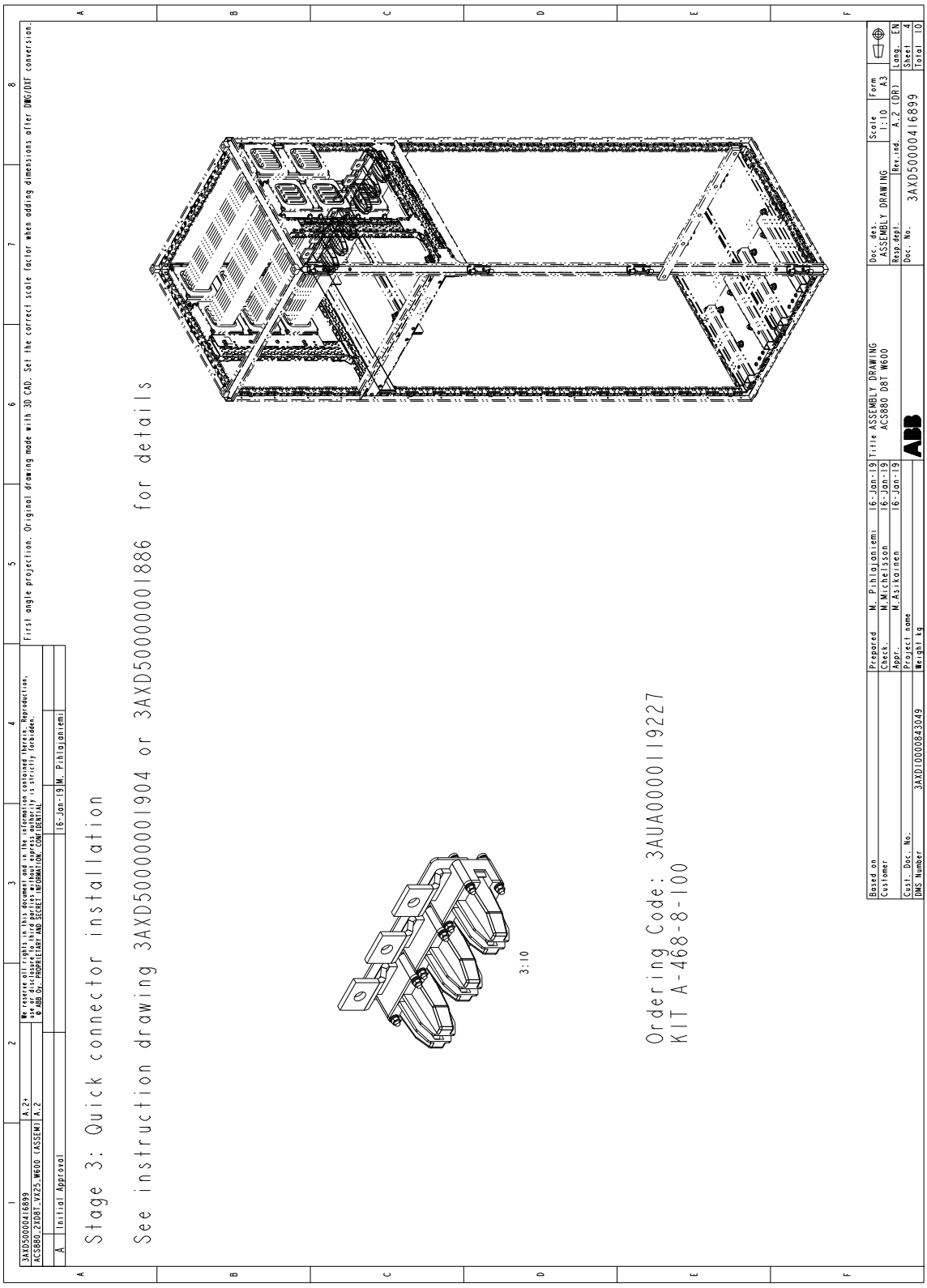
Stage 1: Installation of common parts



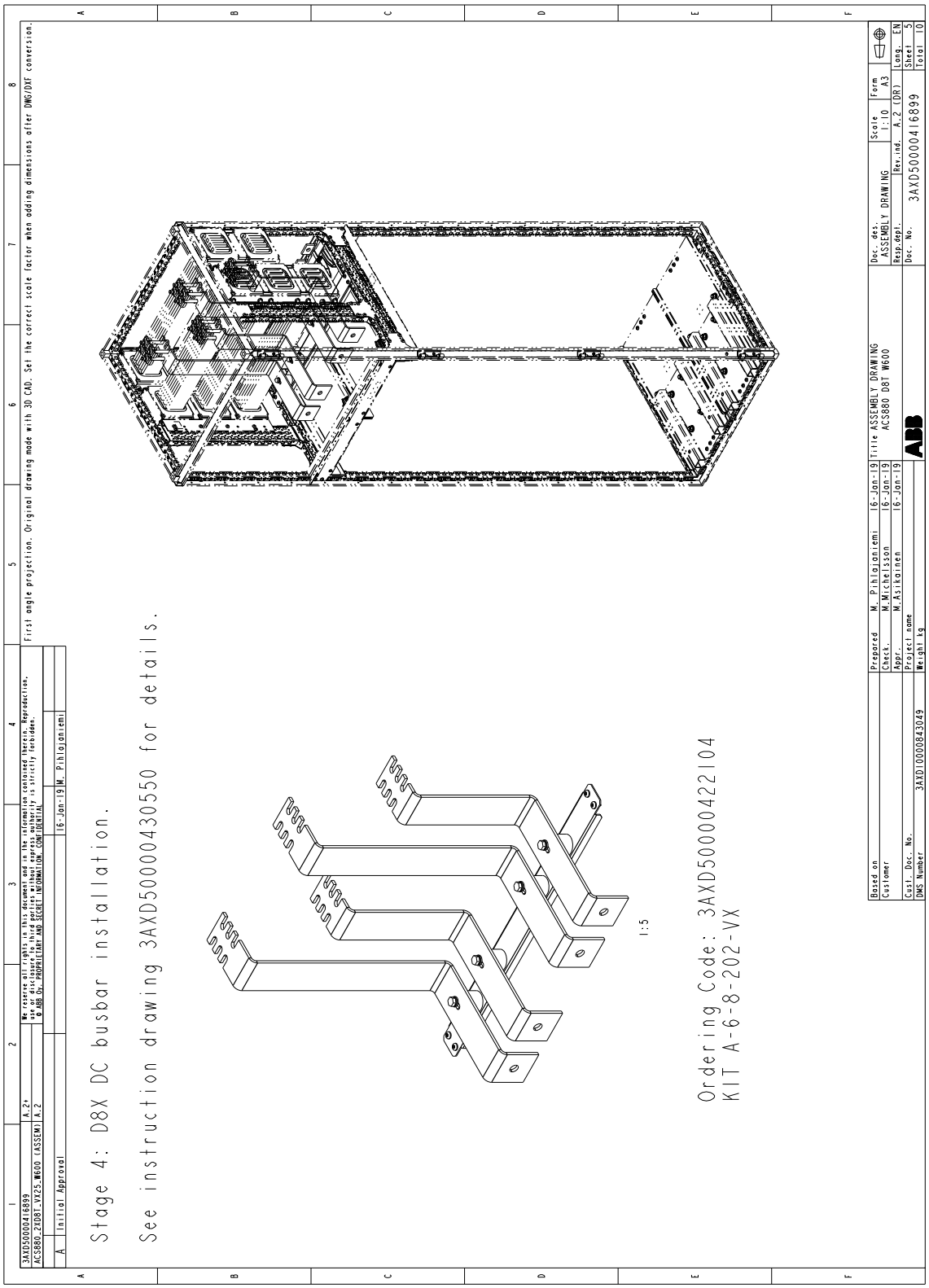
Stage 2: Module installation parts



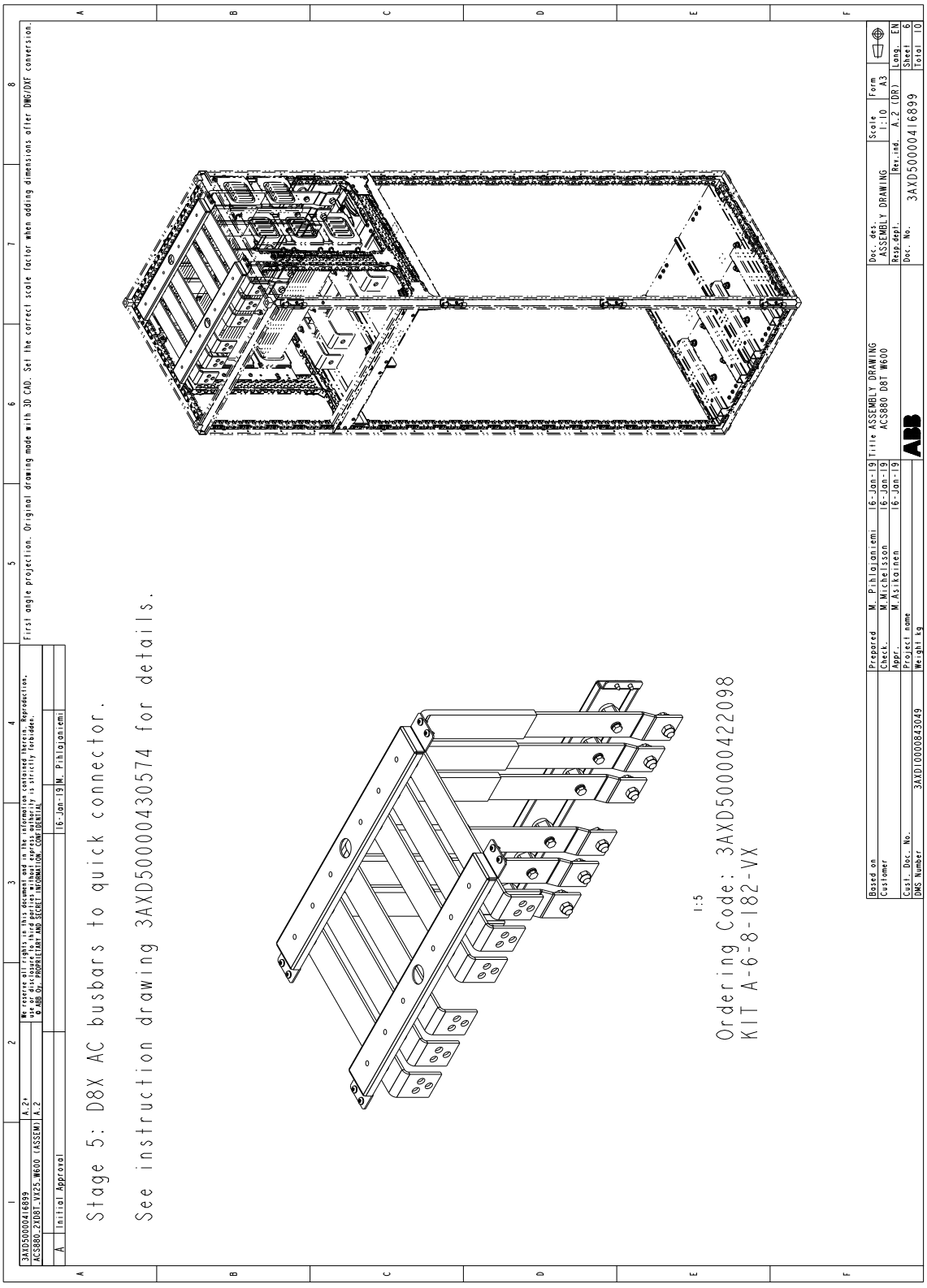
Stage 3: Quick connector installation



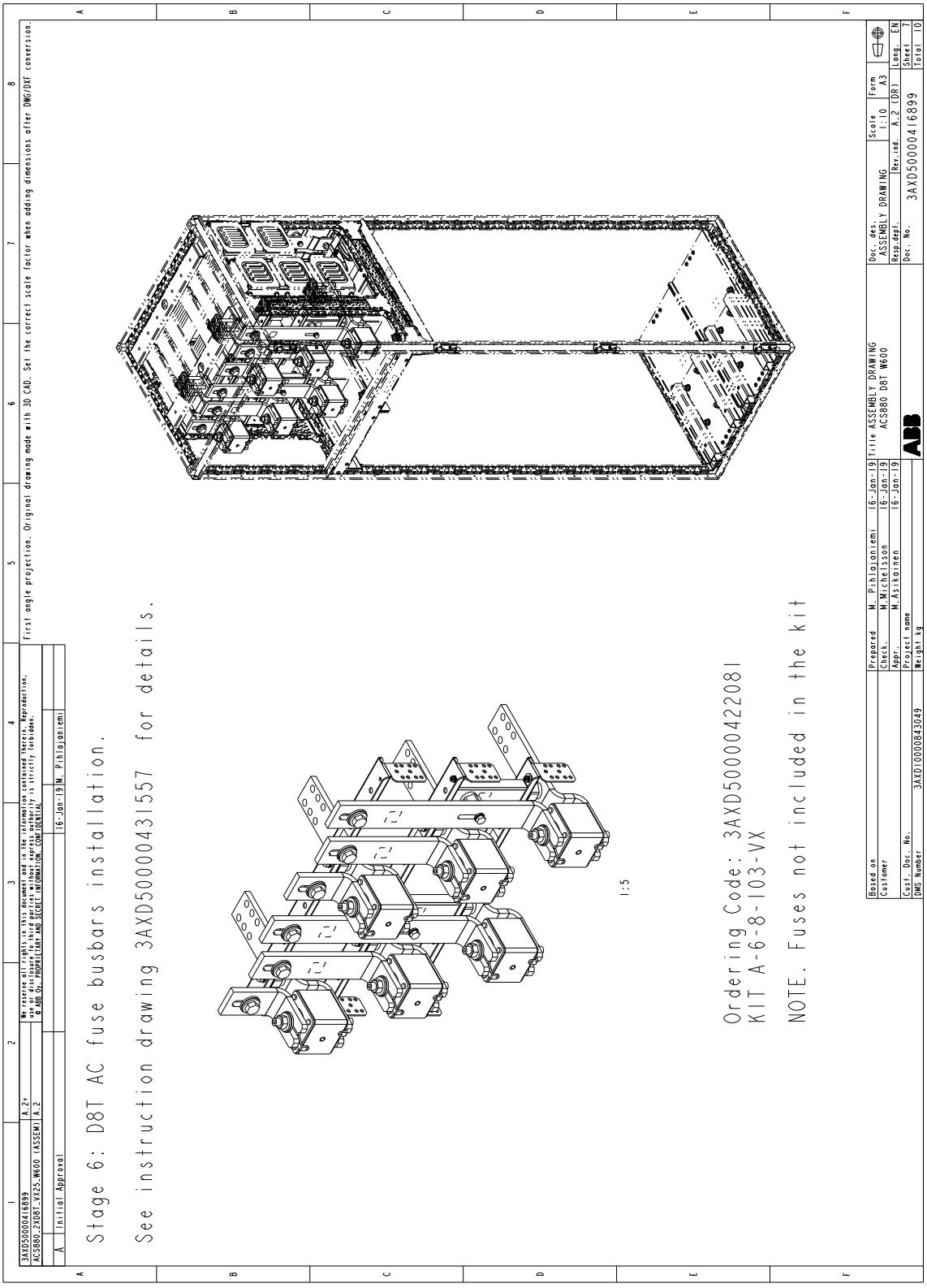
Stage 4: DC busbars



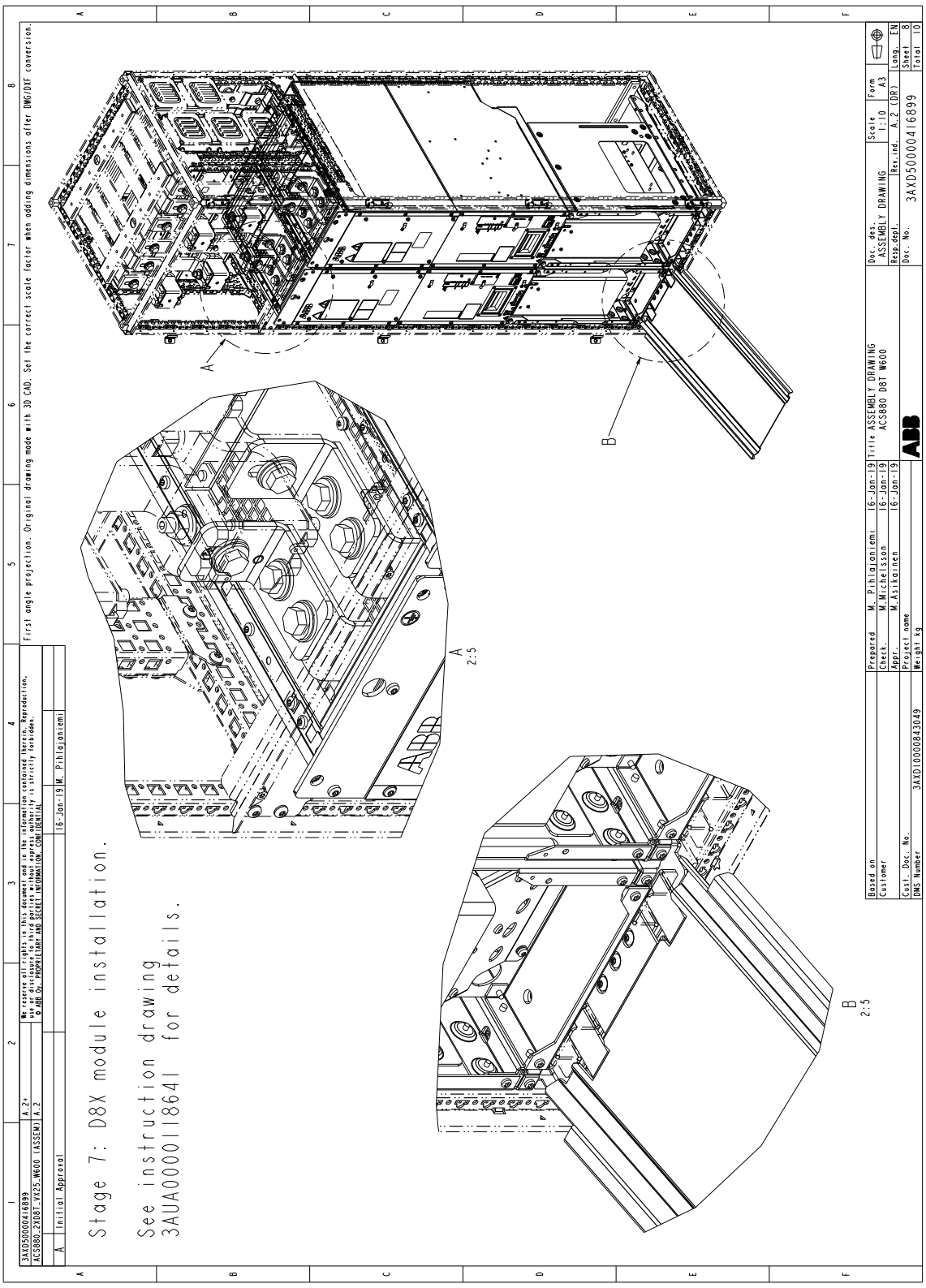
Stage 5: AC busbars to quick connector



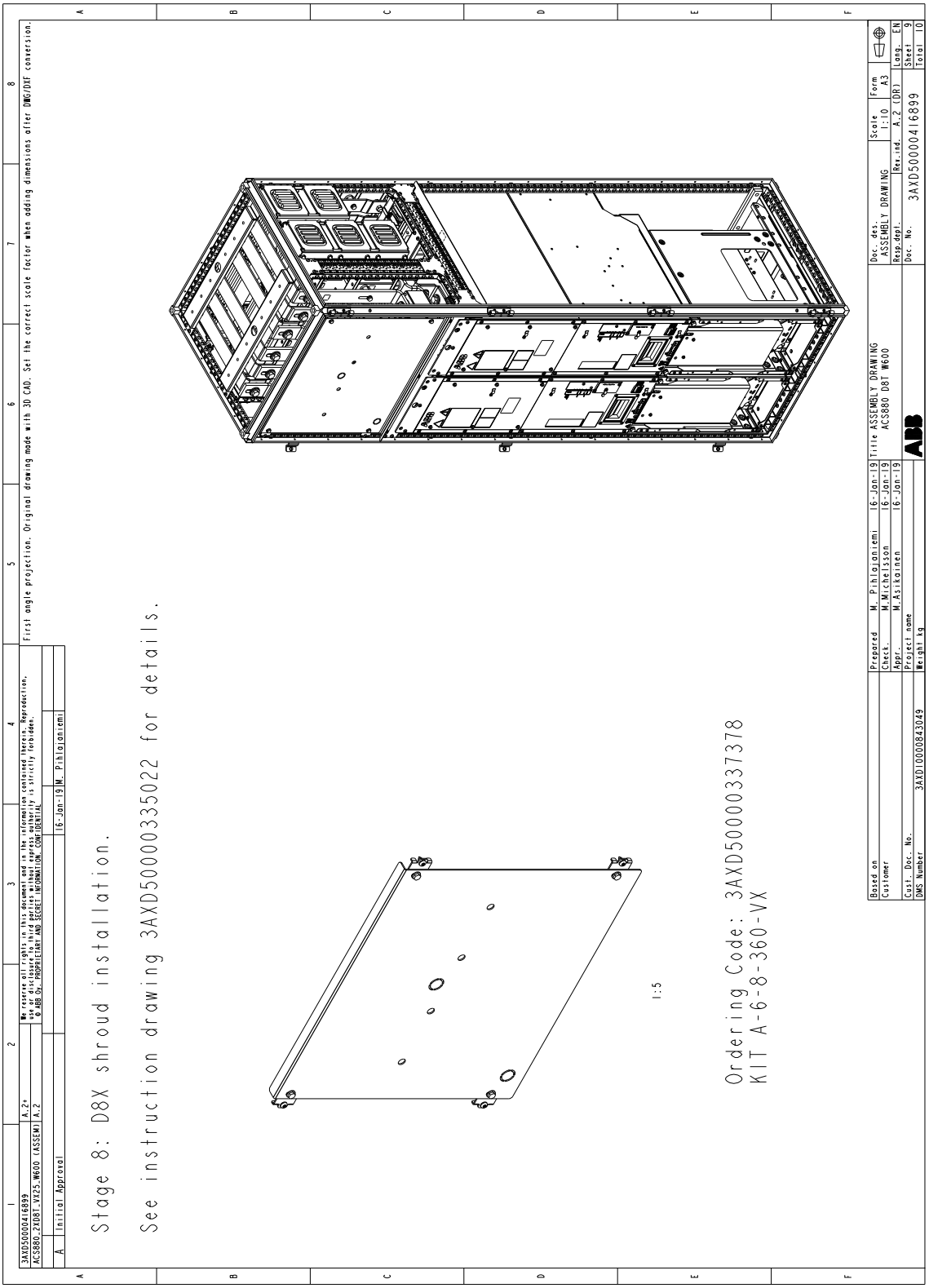
Stage 6: AC fuse busbars installation



Stage 7: Module installation



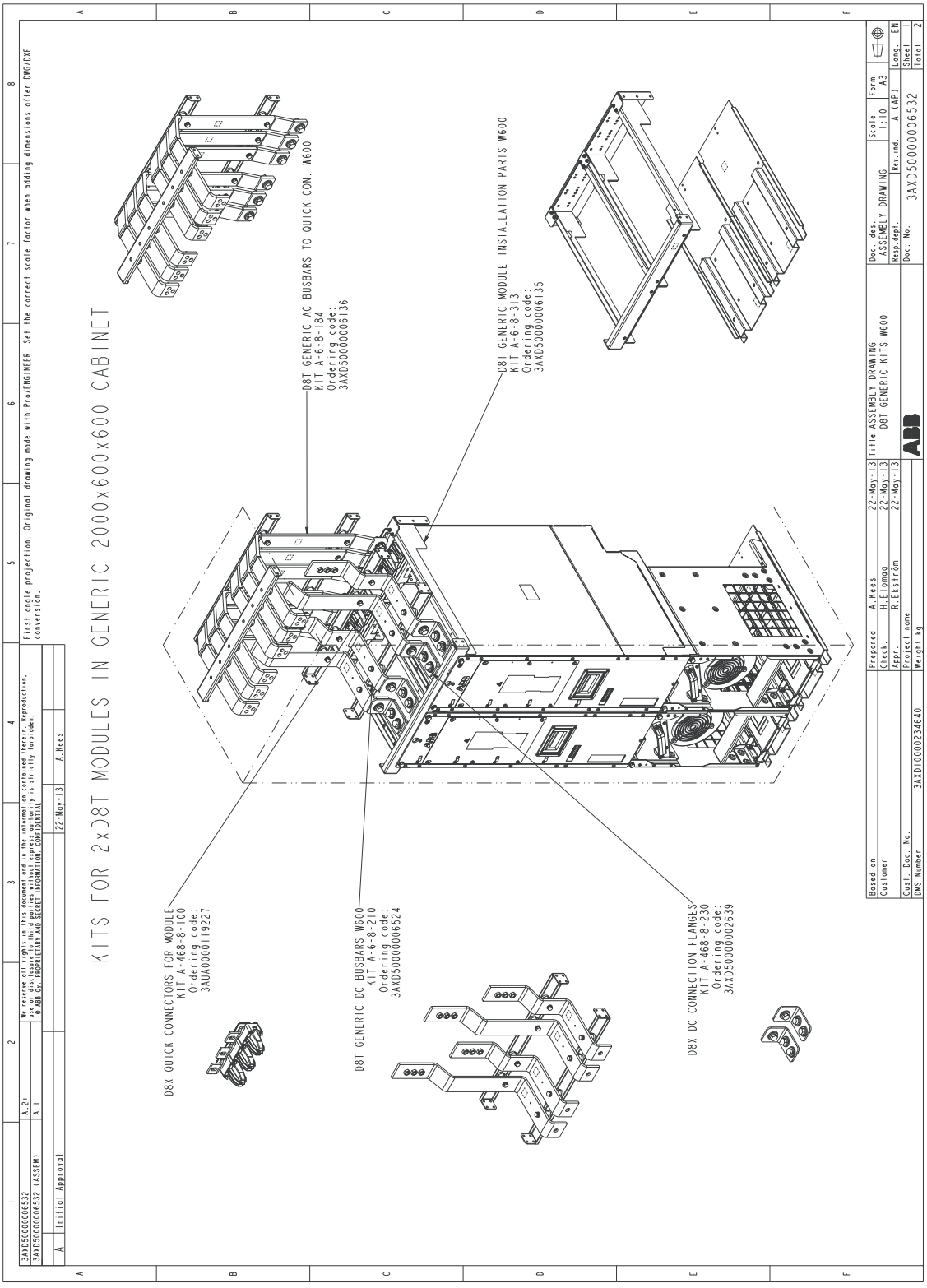
Stage 8: Shroud installation



Construction of supply module cubicle – 2×D8T, 6- and 12-pulse, generic cabinet

Parts to be installed	Instruction code	Kit code	Kit ordering code
Module installation parts	3AXD50000006128	A-6-8-313	3AXD50000006135
AC busbars to quick connectors	3AXD50000006270	A-6-8-184	3AXD50000006136
Quick connectors	3AUA0000118667	A-468-8-100	3AUA0000119227
DC busbars	3AXD50000006281	A-6-8-210	3AXD50000006524
DC connection flanges	3AXD50000002638	A-468-8-230	3AXD50000002639

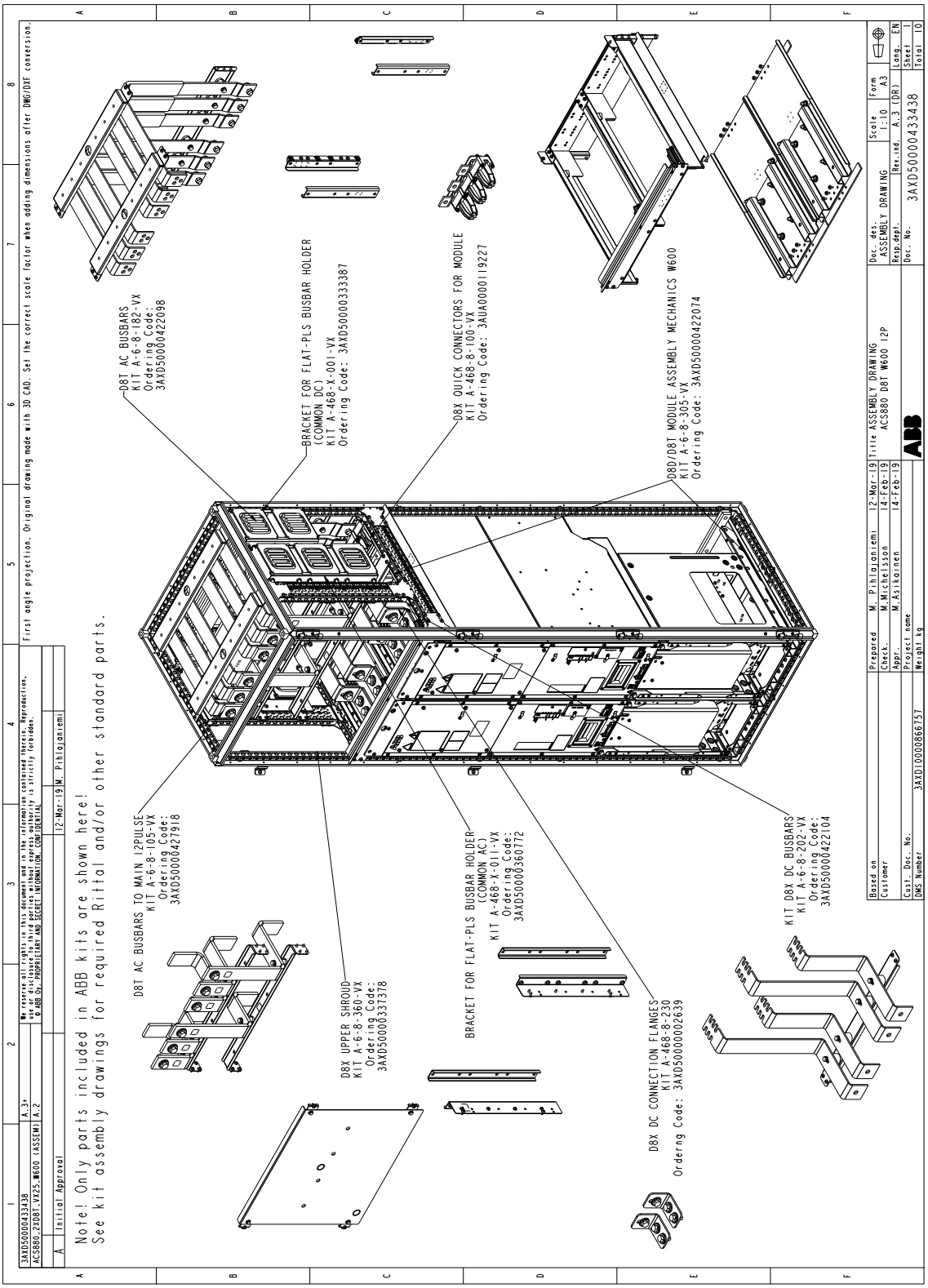
Kits for 2×D8T, 6- and 12-pulse, generic cabinet



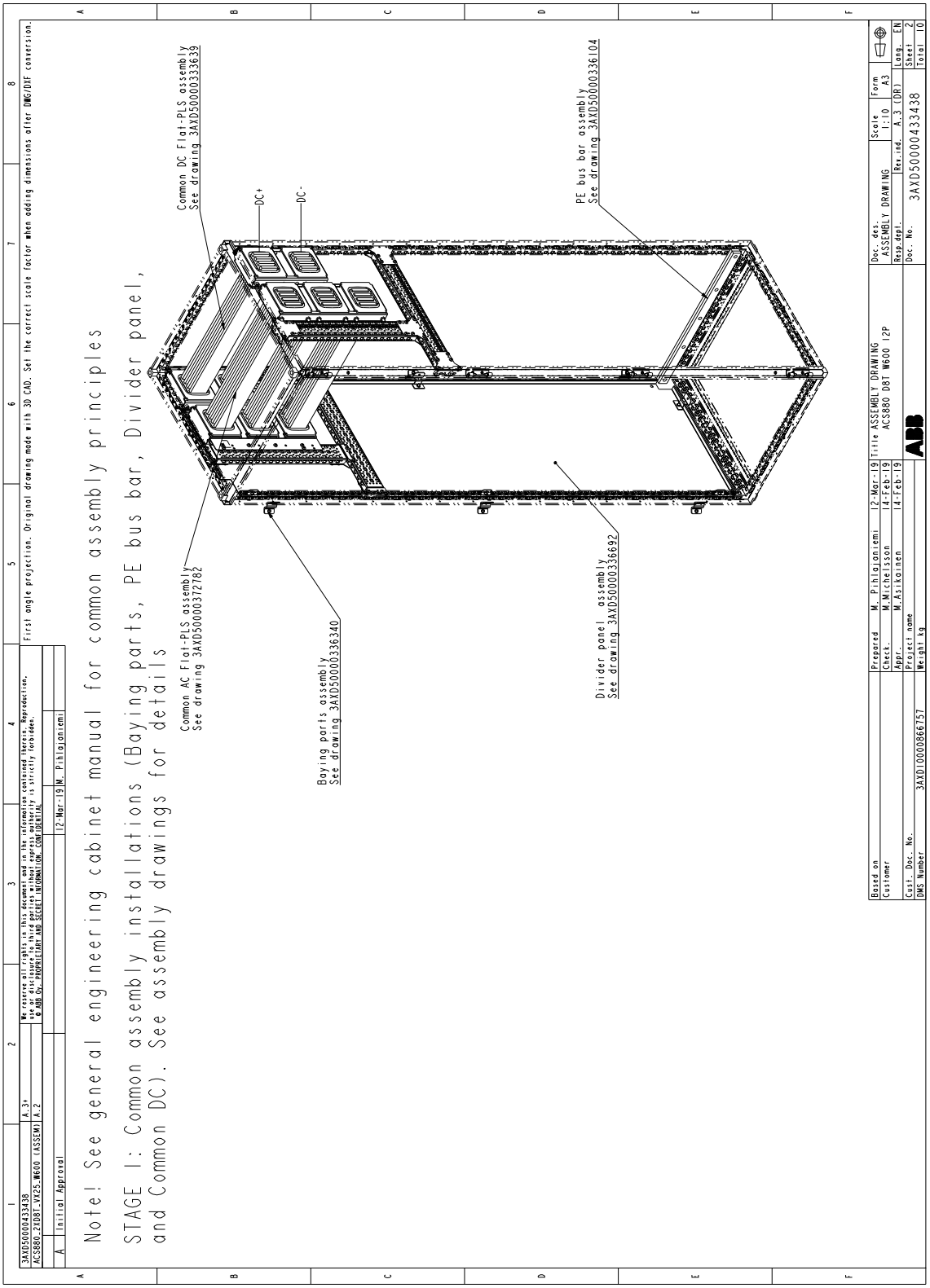
Construction of supply module cubicle – 2×D8T, 12-pulse, Rittal VX25

#	Installation stage	Instruction code	Kit code	Kit ordering code
1	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Bracket for Flat-PLS busbar holder (common AC)	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	Bracket for Flat-PLS busbar holder (common DC)	3AXD50000333639	A-468-X-001-VX	3AXD50000333387
2	Module installation parts	3AXD50000422401	A-6-8-305-VX	3AXD50000422074
3	Quick connector installation	3AXD50000422401 3AXD50000001886	A-468-8-100	3AUA0000119227
4	DC busbars DC connection flanges	3AXD50000430550	A-6-8-202-VX A-468-8-230	3AXD50000422104 3AXD50000002639
5	AC busbars to quick connector	3AXD50000430574	A-6-8-182-VX	3AXD50000422098
6	AC busbars to main AC installation	3AXD50000432417	A-6-8-105-VX	3AXD50000427918
7	Module installation	3AUA0000118641	-	-
	DC connection flanges	-	A-468-8-230	3AXD50000002639
8	Shroud installation	3AXD50000355022	A-6-8-360-VX	3AXD50000337378

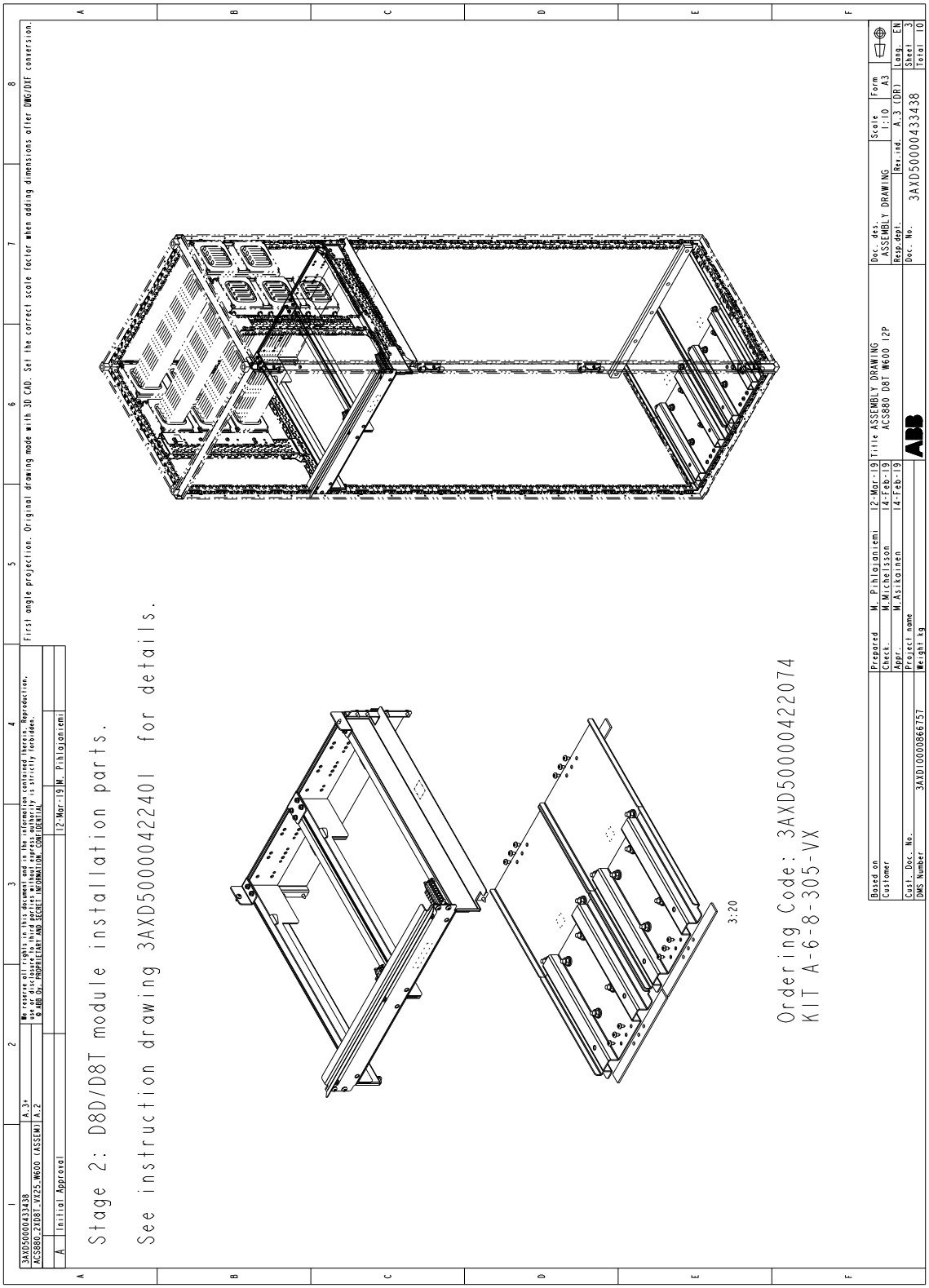
Kits for 2×D8T, 12-pulse, Rittal VX25



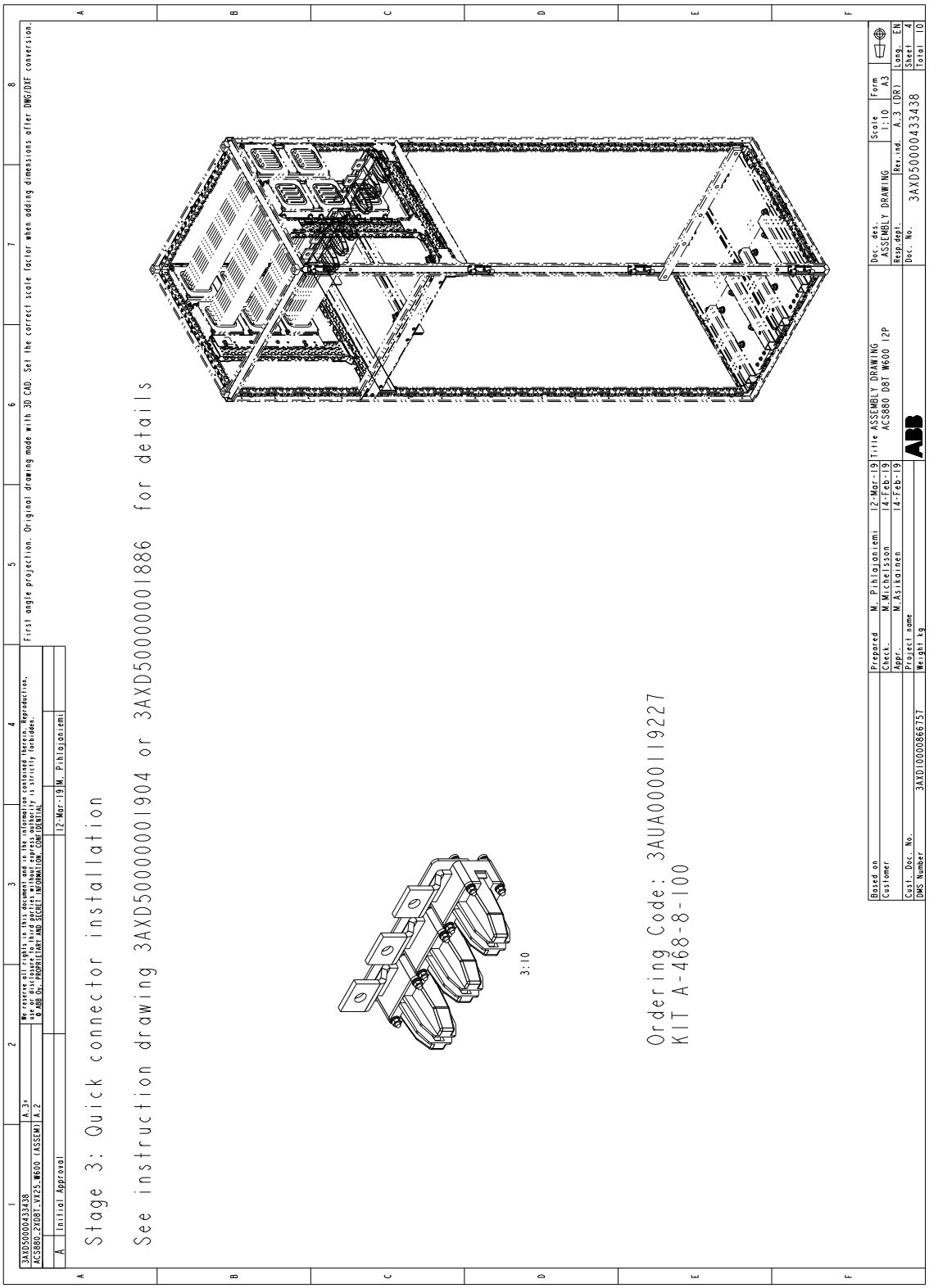
Stage 1: Installation of common parts



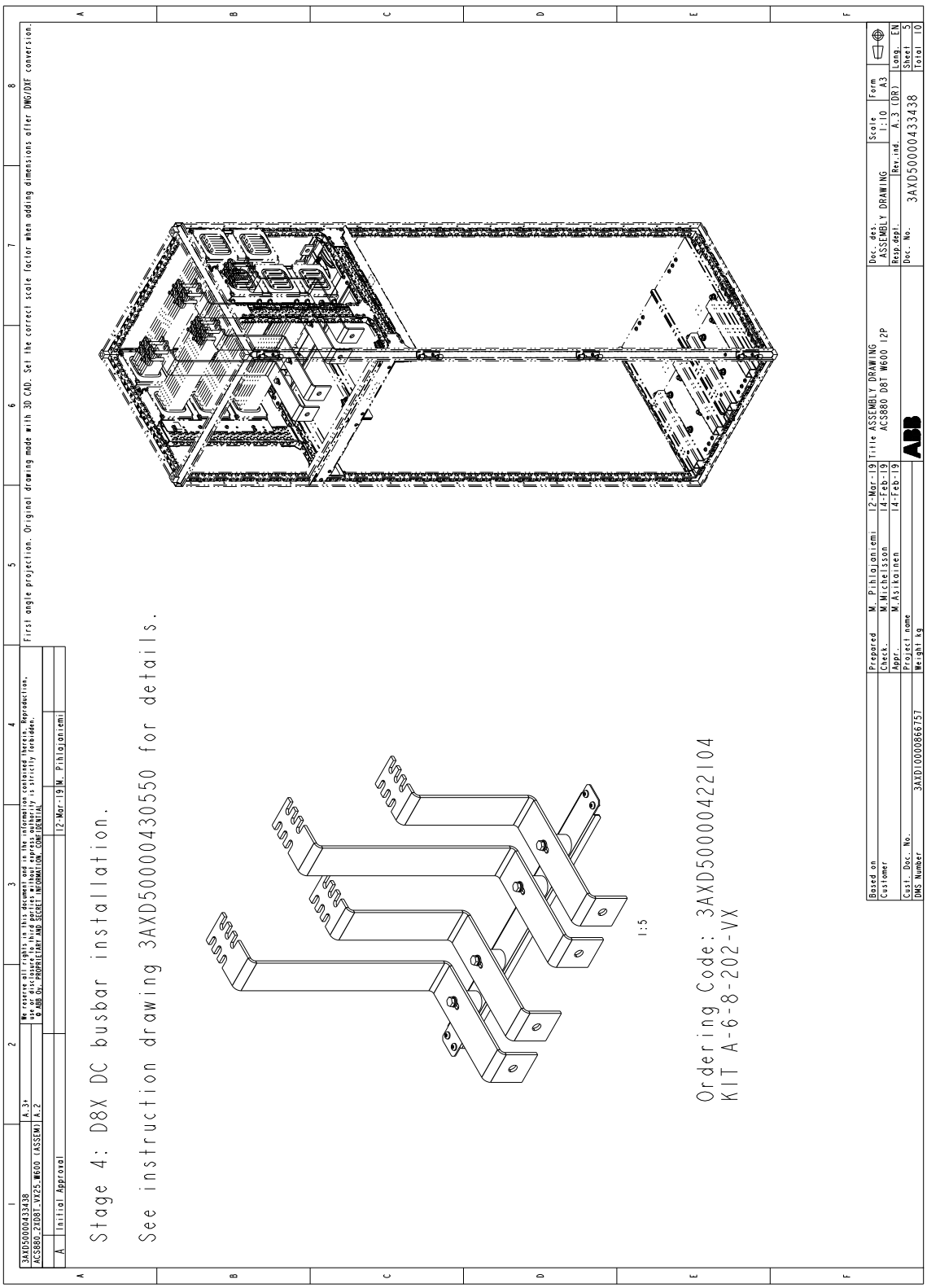
Stage 2: Module installation parts



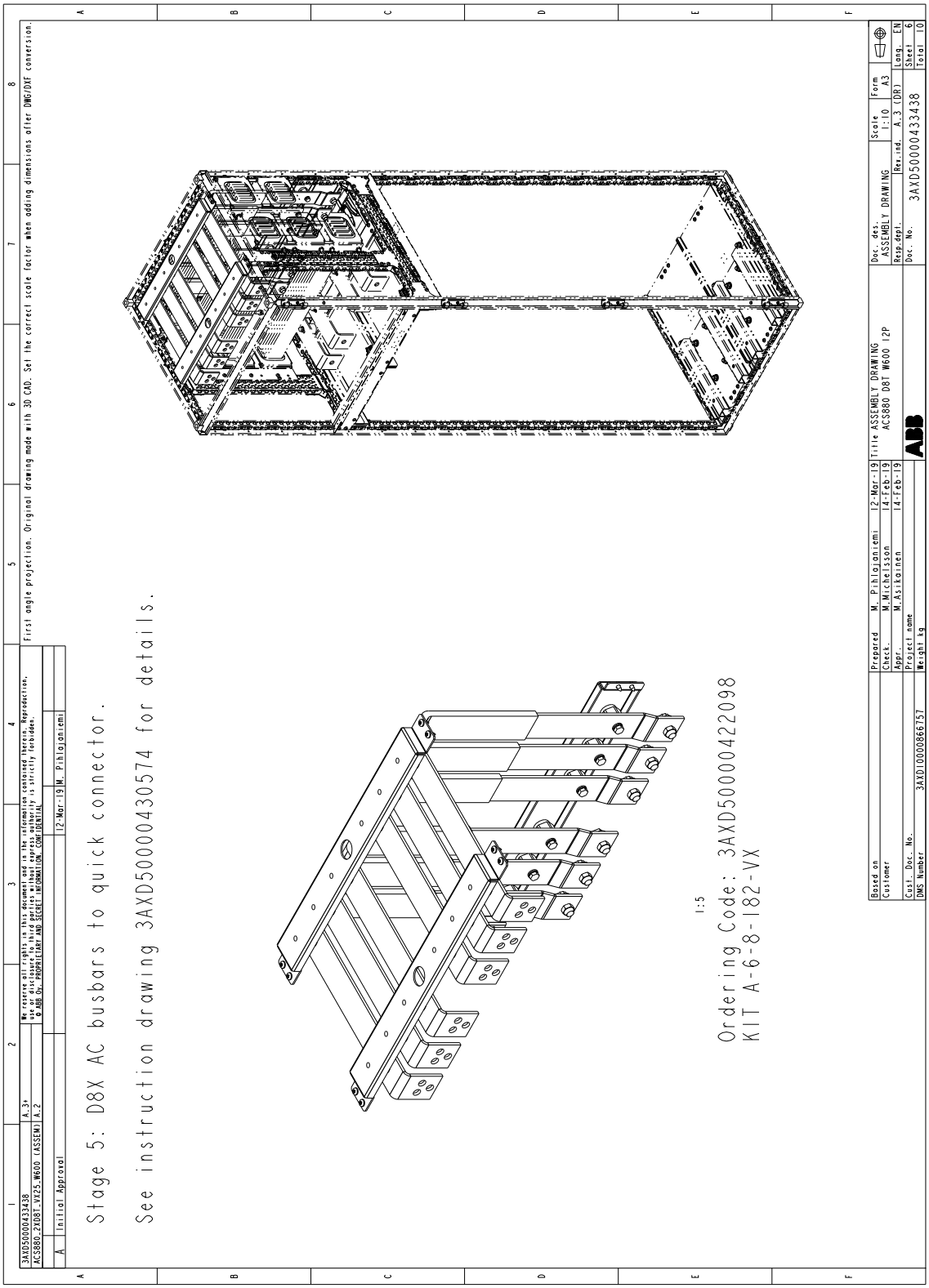
Stage 3: Quick connectors



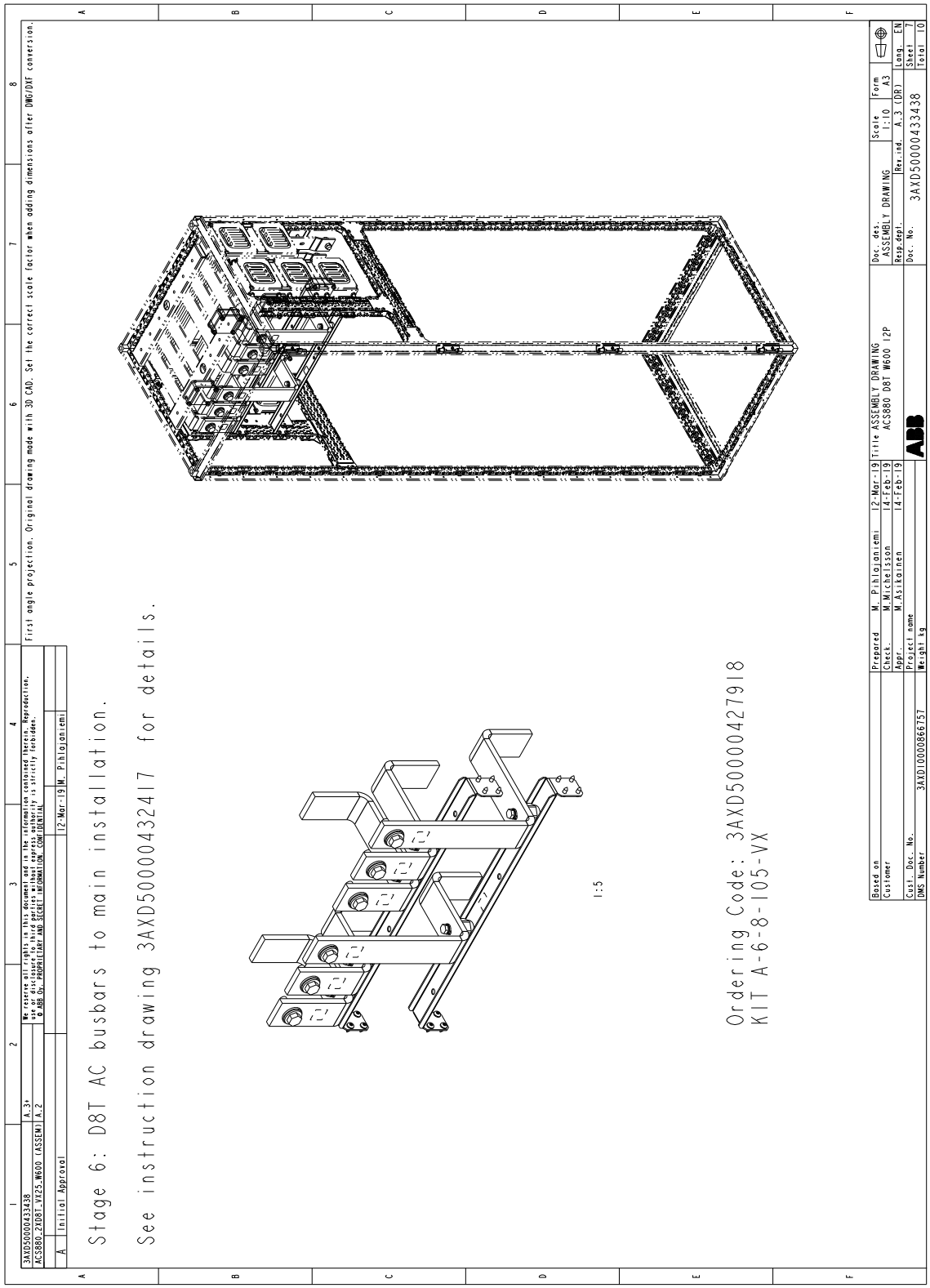
Stage 4: DC busbar installation



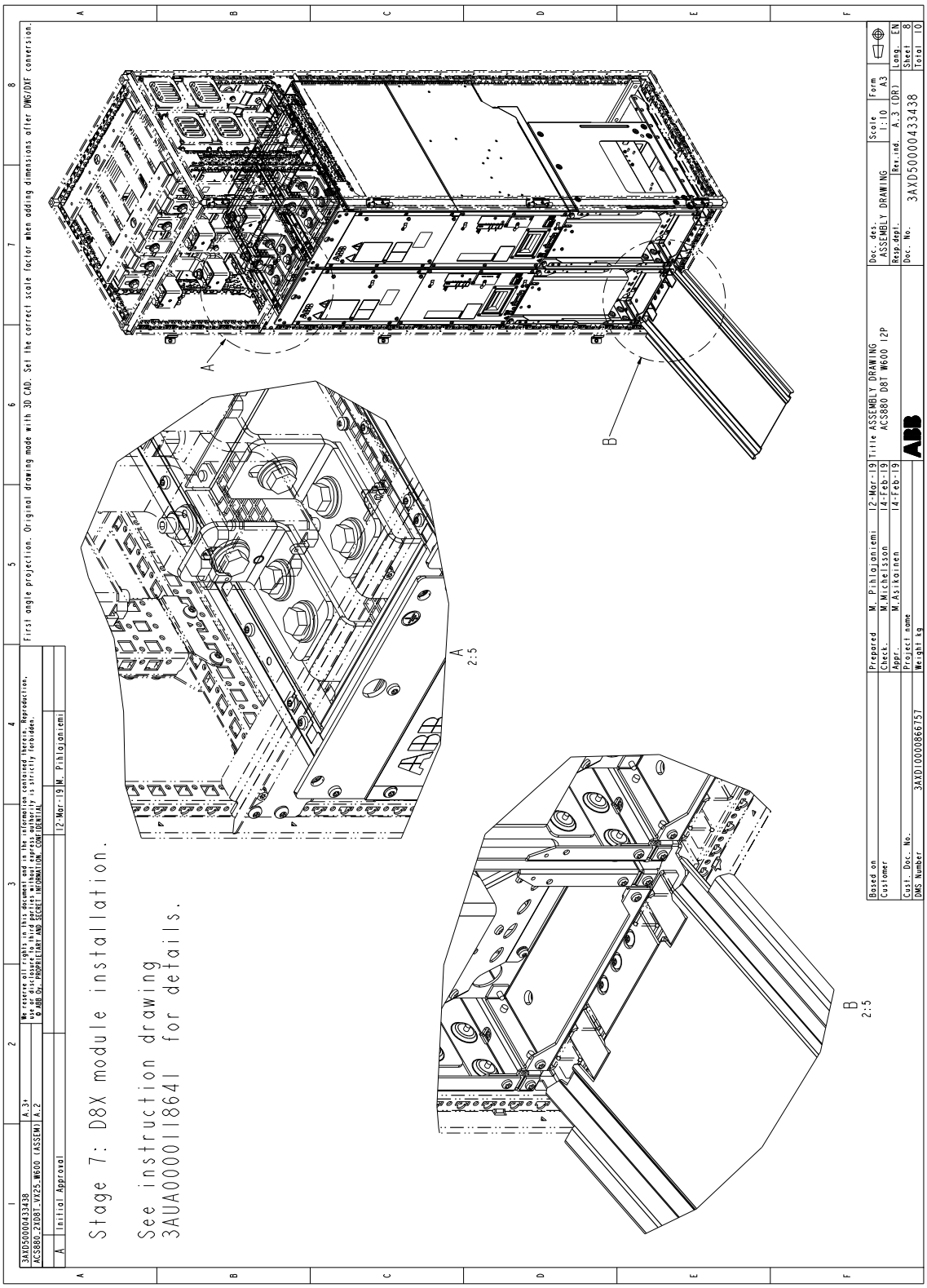
Stage 5: AC busbars to quick connector



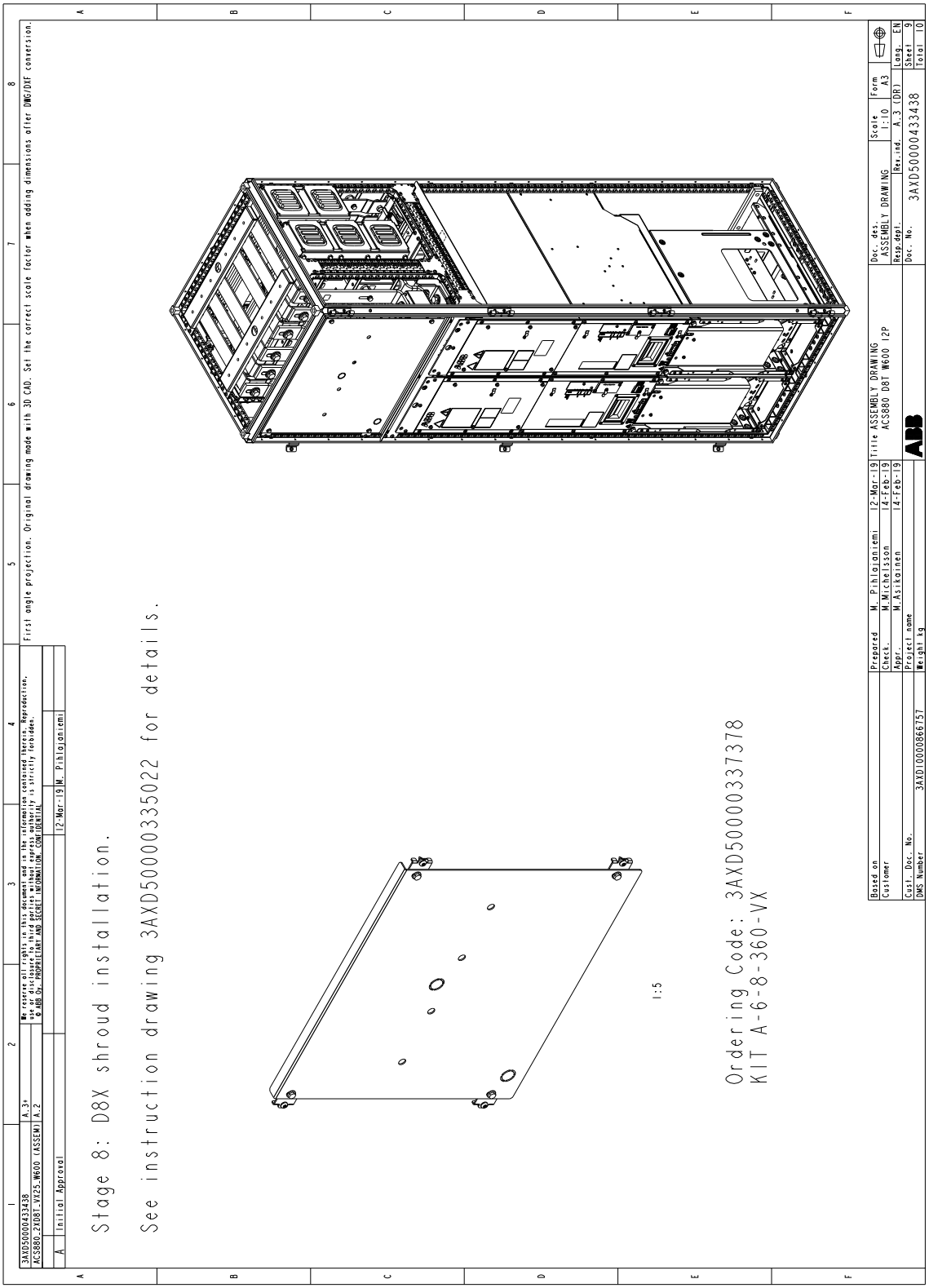
Stage 6: AC busbars to main AC installation



Stage 7: Module installation, DC connection flanges



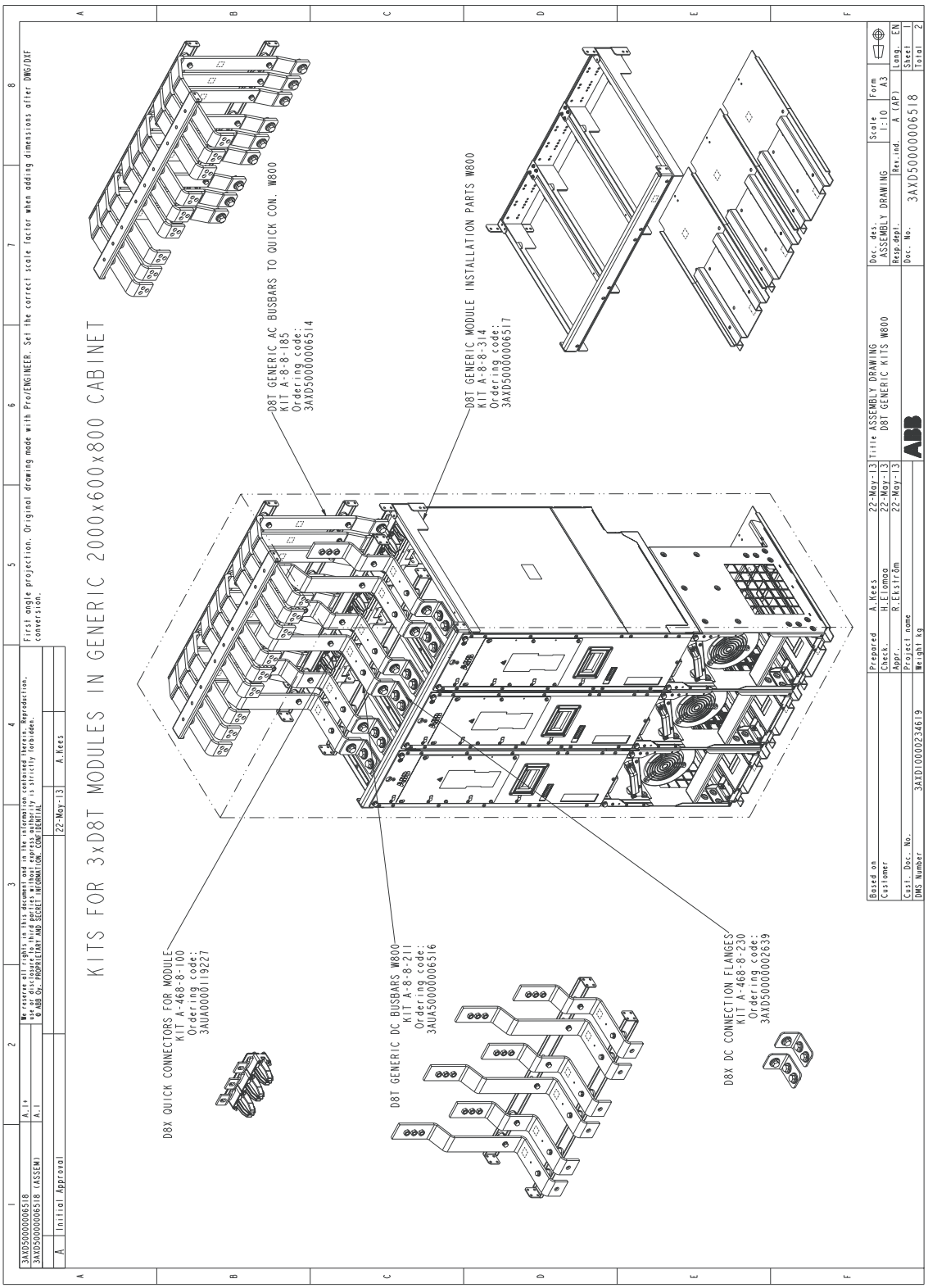
Stage 8: Shroud installation



Construction of supply module cubicle – 3×D8T, 6-pulse, generic cabinet

Parts to be installed	Instruction code	Kit code	Kit ordering code
Module installation parts	3AXD50000006142	A-8-8-314	3AXD50000006517
AC busbars to quick connectors	3AXD50000006272	A-8-8-185	3AXD50000006514
Quick connectors	3AUA0000118667	A-468-8-100	3AUA0000119227
DC busbars	3AXD50000006284	A-8-8-211	3AXD50000006516
DC connection flanges	3AXD50000002638	A-468-8-230	3AXD50000002639

Kits for 3×D8T, 6-pulse, generic cabinet



5

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.

Go through 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 measuring 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

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.

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.

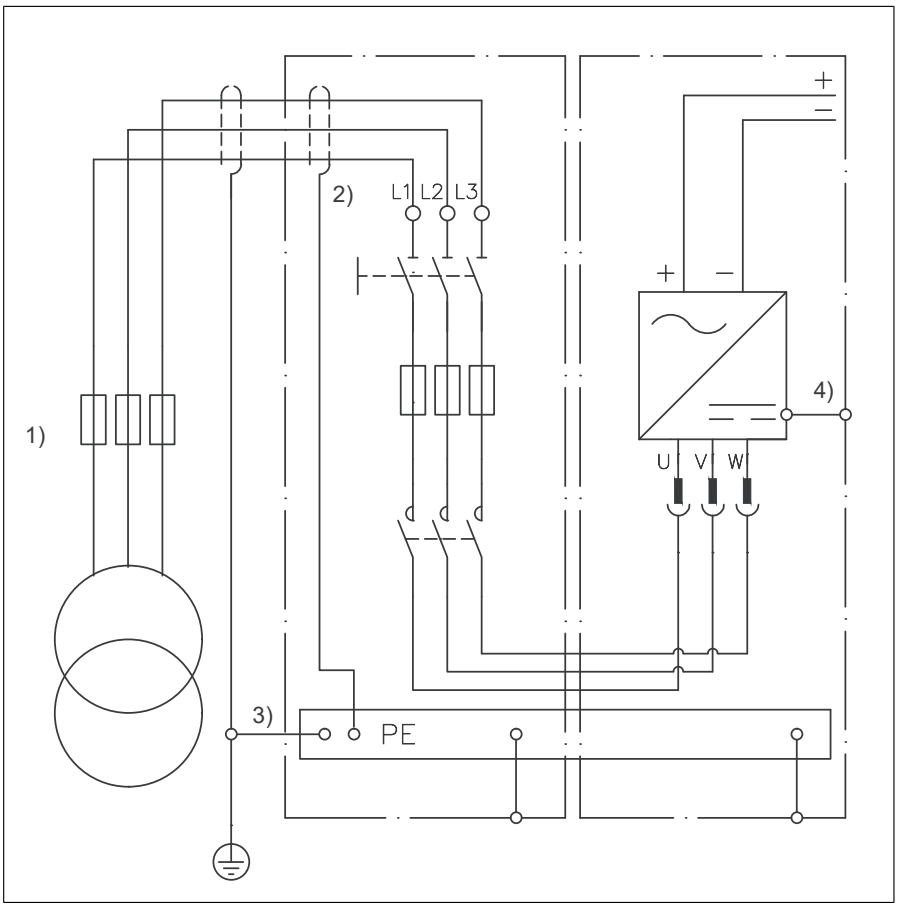
Connecting the power cables and busbars

The connection diagrams in this section are templates for the final main circuit diagrams. They do not contain details, such as terminal markings, etc. and are not suitable for the installation work as such. The designer of the cabinet-installed drive must:

- prepare the final circuit diagrams
- provide the final circuit diagrams to the installer(s).

The electricians that do the connections must use the final circuit diagrams.

Connection diagram – 1×D8T, 6-pulse



1) Fuses or other protection means.

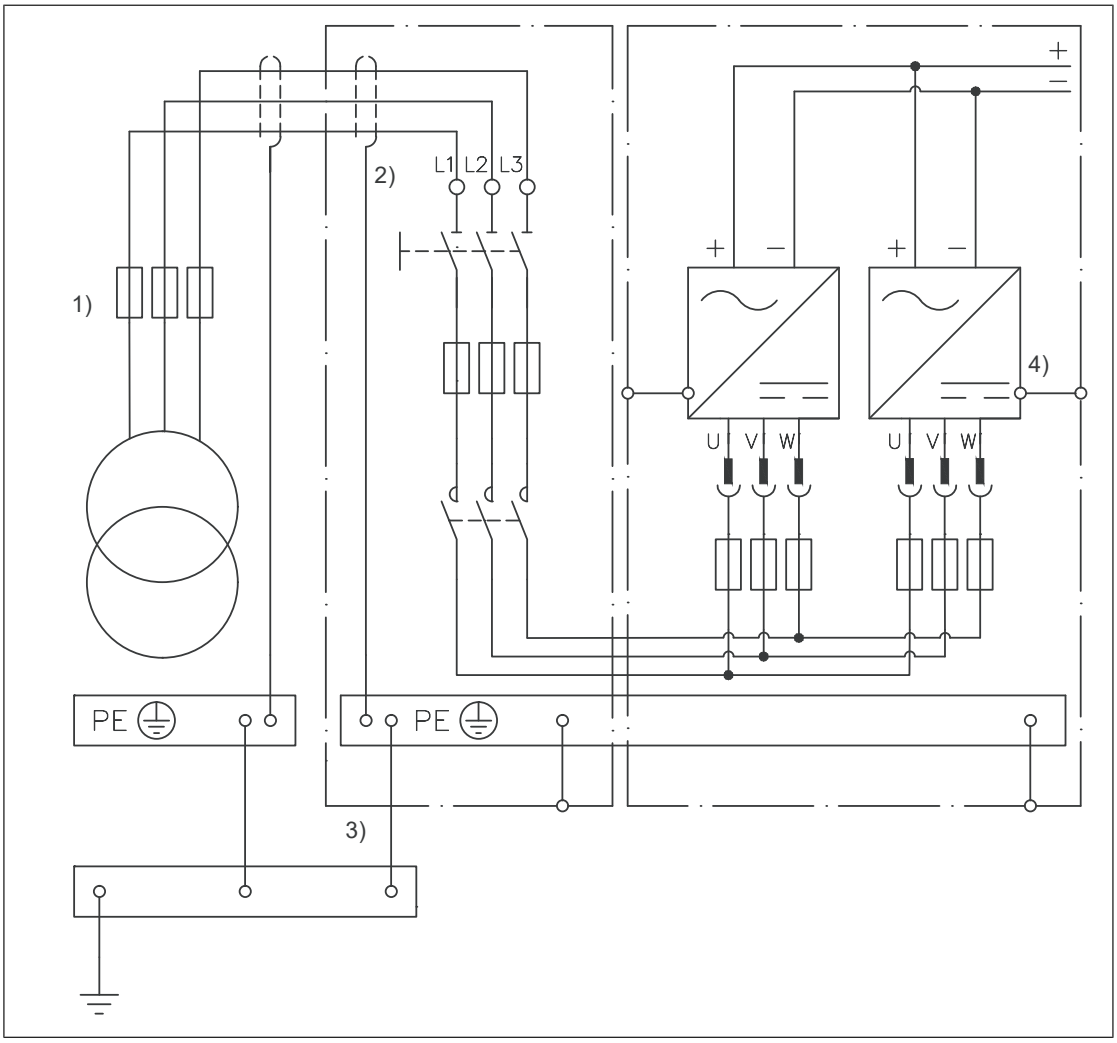
2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section *Connection procedure (page 104)*.

3) Use a separate PE conductor in addition to the input cable shield if the conductivity of the shield does not meet the requirement for the PE conductor. See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).

4) The supply modules and other components connect to the cabinet grounding point [PE] via their mounting bases and frame of the cabinet. Make sure that there are good electrical contacts (bare metal to metal, no paint or dirt). Use separate grounding wires in addition where necessary. See section *Connection procedure (page 104)*.

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

Connection diagram – 2×D8T, 6-pulse



1) Fuses or other protection means.

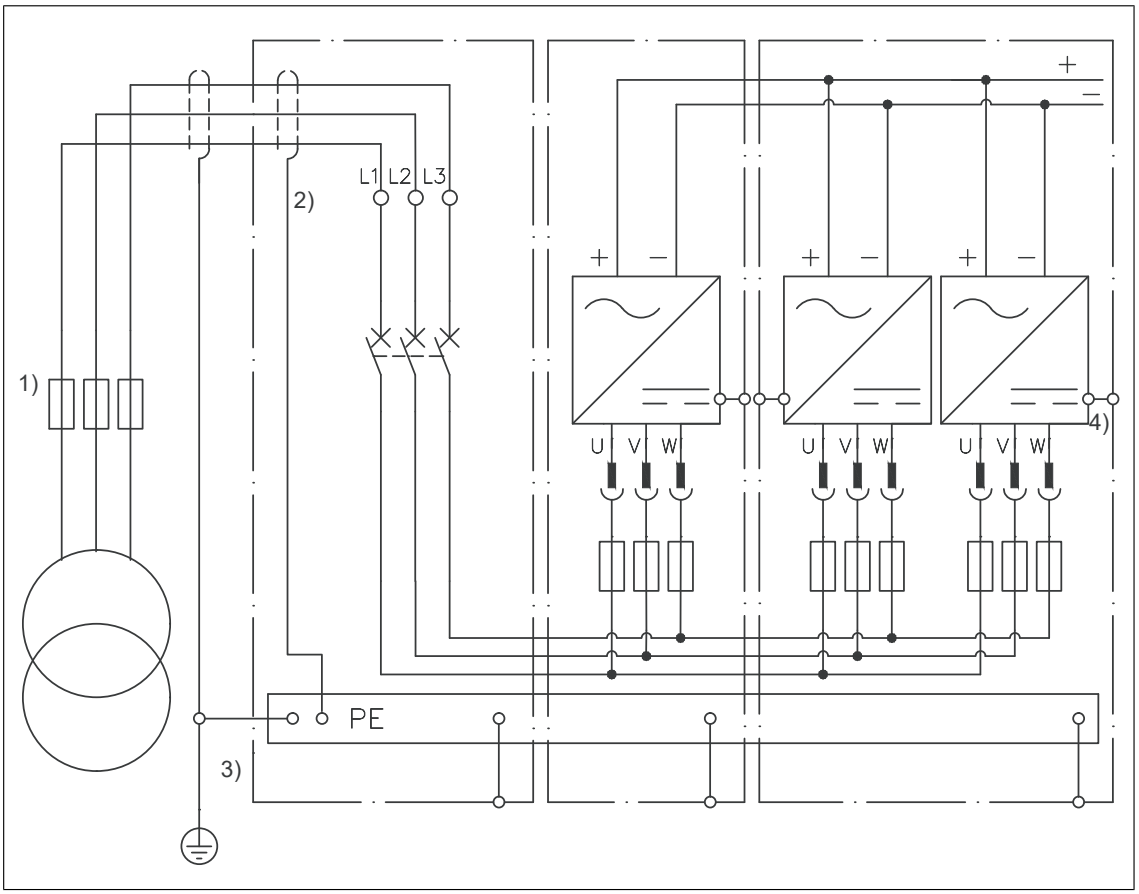
2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section *Connection procedure (page 104)*.

3) Use a separate PE conductor in addition to the input cable shield if the conductivity of the shield does not meet the requirement for the PE conductor. See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).

4) The supply modules and other components connect to the cabinet grounding point [PE] via their mounting bases and frame of the cabinet. Make sure that there are good electrical contacts (bare metal to metal, no paint or dirt). Use separate grounding wires in addition where necessary. See section *Connection procedure (page 104)*.

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

Connection diagram – 3×D8T, 6-pulse



1) Fuses or other protection means.

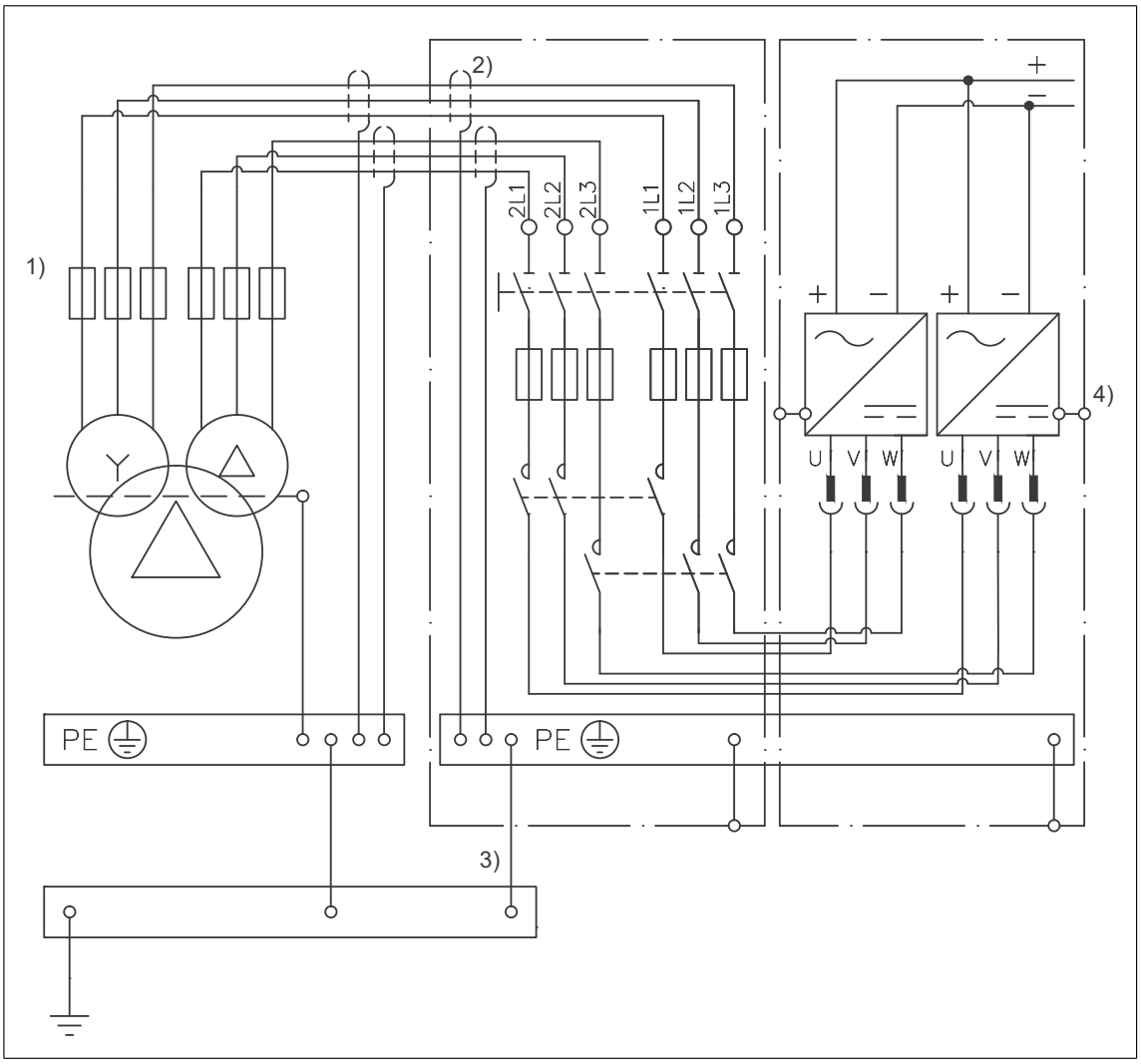
2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section *Connection procedure (page 104)*.

3) Use a separate PE conductor in addition to the input cable shield if the conductivity of the shield does not meet the requirement for the PE conductor. See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).

4) The supply modules and other components connect to the cabinet grounding point [PE] via their mounting bases and frame of the cabinet. Make sure that there are good electrical contacts (bare metal to metal, no paint or dirt). Use separate grounding wires in addition where necessary. See section *Connection procedure (page 104)*.

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

Connection diagram – 2×D8T, 12-pulse



1) Fuses or other protection means.

2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section *Connection procedure (page 104)*.

3) Use a separate PE conductor in addition to the input cable shield if the conductivity of the shield does not meet the requirement for the PE conductor. See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).

4) The supply modules and other components connect to the cabinet grounding point [PE] via their mounting bases and frame of the cabinet. Make sure that there are good electrical contacts (bare metal to metal, no paint or dirt). Use separate grounding wires in addition where necessary. See section *Connection procedure (page 104)*.

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

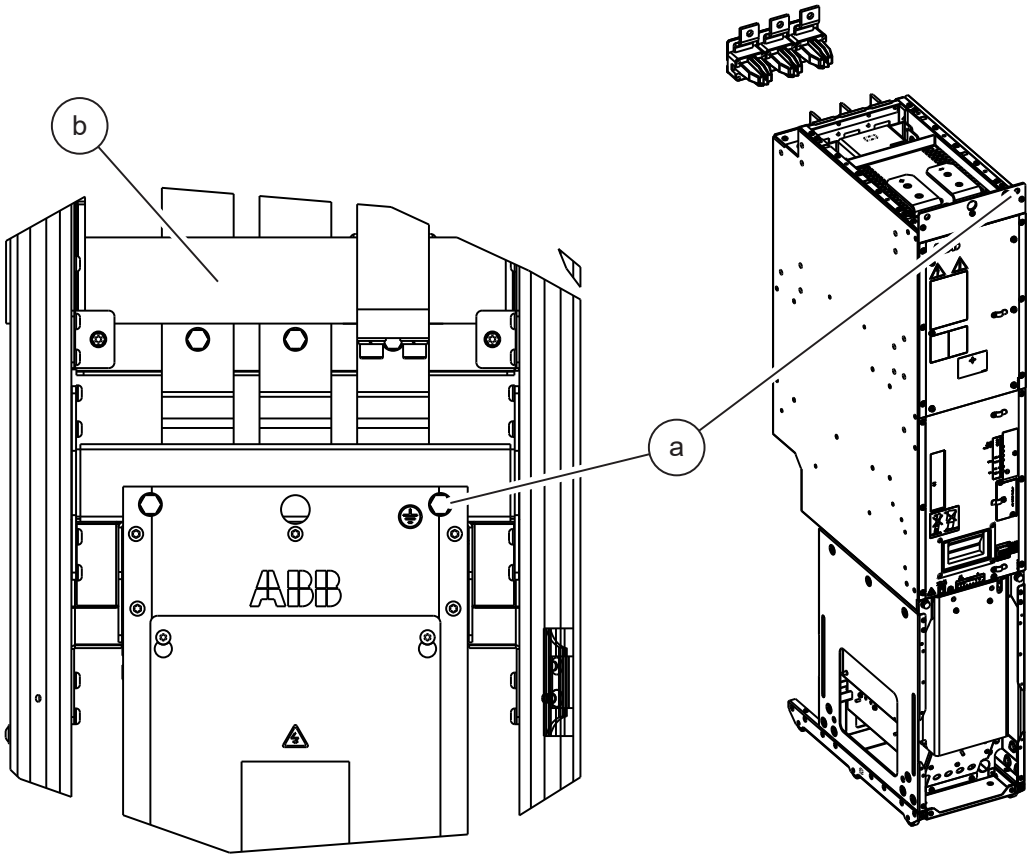
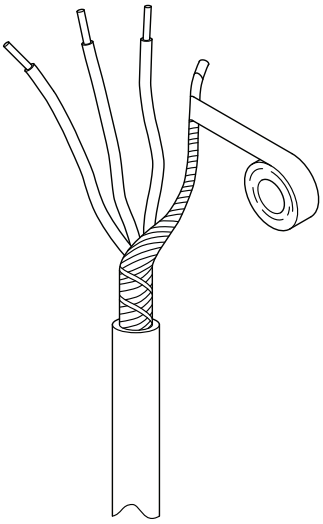
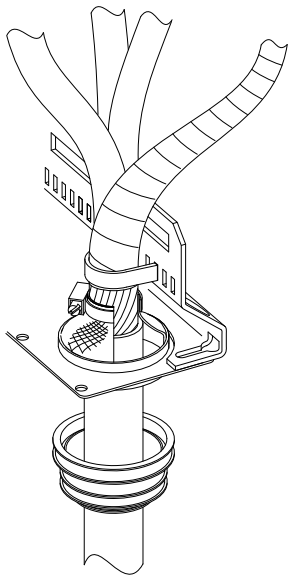
Connection procedure

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.

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. Obey the instructions in section *Electrical safety precautions (page 98)*.
2. Make the connections in between the main circuit components inside the cabinet if not done yet. Do the connections according to the final circuit diagrams for the drive. If the connections are ready, check them against the final circuit diagrams. Do not use the example circuit diagrams in this manual as the sole source of information when doing or checking the connections.
   For the tightening torques, see section *Tightening torques (page 237)*.
3. Ground the modules by the top edge of the front plate. The grounding point is marked on the module (a). Connect the front plate to the frame support bracket (b) 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 (for example, Rittal VX25 enclosures), it is important to make sure that a 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 ensure 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]).
4. Lead the input power cables into the inside of the cabinet.
5. Strip the input power cables and twist the cable shields to bundles and connect to cabinet PE (ground) busbar. Connect the separate ground conductors/cables to cabinet PE (ground) busbar. ABB recommends also 360° grounding of the cable shield at the lead-through to suppress interference. See the illustration below.
6. Connect the phase conductors to the input terminals of the main switch-disconnector [Q1] or the main breaker [Q1]. For the tightening torque, see section *Tightening torques (page 237)*.

3		
5		 A cable entry example. This is to be acquired by the cabinet installer.

Connecting auxiliary power to the diode supply module

The cabinet builder can arrange an auxiliary AC power supply of 230 V AC (or 115 V AC with option +G304) to connector X50 to power the electronics of each supply module. There is an internal power supply (BDPS) in the module that produces 24 V DC from the auxiliary voltage for the internal circuit boards.

If a direct-on-line fan (option +C188) is used, the user must connect the fan supply to the module control connector X50. The optional heating element (D8T option +C183) also requires external AC power supply to the module control connector X50.

For connectors X50, see *Connectors X50 and X53 of D7T supply module (page 30)* and *Connectors X50 and X53 of D8T supply module (page 32)*.

The plug connector is available from ABB. See section *Control circuit plug connectors for supply modules (page 188)*. See also section *Auxiliary circuit current/power consumption (page 233)*.

Connection procedure

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. Disconnect the drive from the AC power line and make sure it is safe to start the work. Obey the instructions in section *Electrical safety precautions (page 98)*.
2. Route the cable. Obey the general routing guidelines in section *Connecting the control cables (page 107)*.
3. Connect the cable from the auxiliary power supply to plug connector X50.
4. Plug connector X50 to its counterpart in the module.

Connecting power supply for the control unit

The cabinet builder must connect a 24 V DC auxiliary power supply for the BCU control unit. The cabinet builder can take the power supply from the diode supply module or use another power source.

Note: 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. See *Connectors X50 and X53 of D7T supply module (page 30)* and *Connectors X50 and X53 of D8T supply module (page 32)*.

See also chapter *The control unit (page 243)* and sections *Auxiliary circuit current/power consumption (page 233)*.

The plug connector is available from ABB. See section *Control circuit plug connectors for supply modules (page 188)*.

Connection procedure

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. Disconnect the drive from the AC power line and make sure it is safe to start the work. Obey the instructions in section *Electrical safety precautions (page 98)*.
2. Route the cable. Obey the general routing guidelines in section *Connecting the control cables (page 107)*.
3. Connect the power supply cable:
   - Connect the other end of the cable to terminal XPOW on control unit.
   - Connect the other end of the cable to the power source. If you take the power supply from diode supply module, install the plug connector X53 of the supply module and plug the connector X53 to its counterpart on the front plate of the module.

Connecting the control cables

Connection diagram

Connect the internal control cabling of the supply unit according to the circuit diagrams provided by the designer of the cabinet-installed drive.

Connection procedure

This section contains instructions on how to connect external control cables to the supply unit.

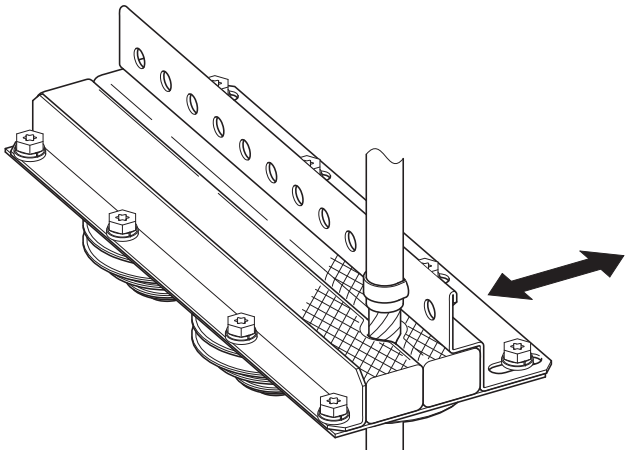
WARNING!
Obey the safety instructions given in *ACS880 multidrive cabinets and modules safety instructions* (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

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

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. Obey the instructions in section *Electrical safety precautions (page 98)*.
2. Open the door of the cabinet and remove the shrouds (if any).
3. Run the external control cables into the inside of the cabinet through a cable gland or grommet.

- 360 degree 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 entry with a grommet.

4. 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.
5. Cut the cables to suitable length. Strip the cables and conductors.
6. 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.
7. Connect the conductors to appropriate terminals. For the tightening torques of the BCU control unit I/O terminals, see section *Default I/O diagram of the supply control unit (page 246)*.
8. Fasten the shrouds (if any) and close the doors.

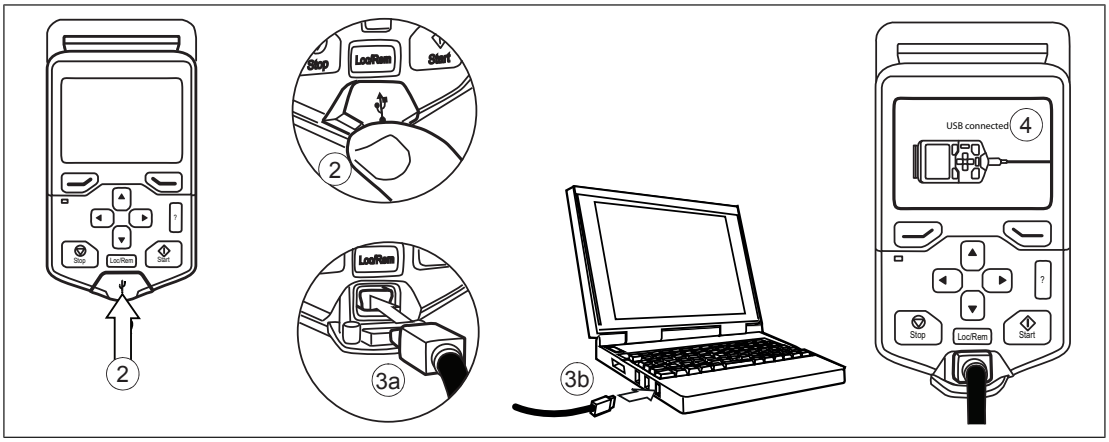
3	 An example control cable entry with 360 degrees grounding of the cable shields. To be acquired by the cabinet-installer.

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 eg, the Drive composer PC tool) can be connected as follows:

1. Connect a ACS-AP-… or ACH-AP-… control panel to the unit either
   - by inserting the control panel into the panel holder or platform, or
   - by using 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.



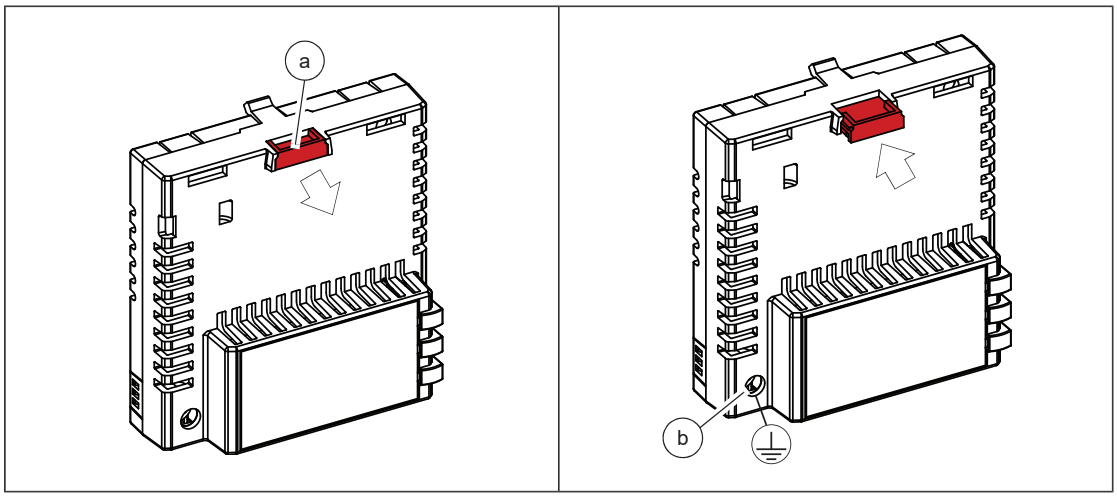
Installing option modules

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 98)*.
2. Pull out the lock (a).
   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.

6

Installation checklist

Contents of this chapter

This chapter contains a checklist of 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 98)* 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.	☐
The drive module is fastened properly to the enclosure.	☐

Make sure that …	☑
The cooling air flows freely in and out of the drive. Air recirculation inside the cabinet is not possible (air baffle plates are on place, 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 (unpainted) 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. Proper 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, and the conductor is connected to the correct terminal, and the terminal is tightened to the correct torque. Proper 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. Proper 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.	☐
There are no tools, foreign objects or dust from drilling inside the drive.	☐

Make sure that …	☑
The area in front of the drive is clean: the drive cooling fan cannot draw any dust or dirt inside.	☐
Cover(s) of the motor connection box are in place. Cabinet shrouds are in place and doors are closed.	☐
The motor and the driven equipment are ready for power-up.	☐

7

Start-up

Contents of this chapter

This chapter contains start-up instructions of the diode supply unit.

The underlined tasks are necessary only for certain cases. The symbols in brackets, for example [Q1], refer to the item designations used in the circuit diagrams. If a task is valid only for a certain option device or feature, the option code is given in brackets.

Note: The instructions do not cover all possible supply unit configurations.

Note: The start-up instructions for functional safety features are not given in this chapter. The designer of the cabinet-installed drive is responsible for the instructions of testing the functional safety systems.

WARNING!
Obey the safety instructions during the start-up procedure. See *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!
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

Basic checks with no voltage connected

Action	☑
Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.	☐
Disconnect all dangerous voltages from the drive and make sure that it is safe to start the work. Do the steps in section *Electrical safety precautions (page 98)*.	☐
If the supply unit is equipped with a main switch-disconnector [Q1] and contactor [Q2]: Open first the main contactor, and then the main switch-disconnector.	☐
If the supply unit is equipped with a main breaker [Q1]: Set the current trip limits of the main 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. **General rule** Make sure that the selectivity condition is fulfilled, that is the breaker trips at the lower current than the protection device of the supplying network, and that the limit is high enough 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 drive. **Peak current limit** Rule of thumb: Set to a value 3…4 times the rated AC current of the drive.	☐
Make sure that the mechanical and electrical installation of the drive is completed. See *Installation checklist (page 111)*.	☐
Check the settings of breakers/switches in the auxiliary circuits.	☐
If time relays, or relays with delayed make-contact or break-contact are used, for example, in emergency stop circuits, check the relay time settings. See the delivery-specific circuit diagrams and safety function specific documentation (if applicable).	☐
Make sure that the voltage settings of the auxiliary voltage transformers are according to the actual power line voltage. See the final circuit diagrams by the designer of the cabinet-installed drive.	☐

Connecting voltage to input terminals and auxiliary

Action	☑
Remove the temporary grounding system (if installed).	☐
Close the circuit breakers supplying the auxiliary circuits.	☐
Close the cabinet doors.	☐
Make sure that it is safe to connect voltage: • nobody is working on the unit or circuits that are wired from outside into the cabinets • covers of the motor terminal boxes are on • cabinet doors are closed • the disconnecting device [Q1] is open.	☐
Close the main breaker of the supply transformer.	☐

Setting the supply unit parameters

Action	☑
Supply modules with option +C188 (direct-on-line cooling fan): Set bit 13 of parameter *195.20 HW options word 1*.	☐
If the supply unit includes one supply module: • Check the correct voltage ranges by parameter *195.01 Supply voltage*. • Reboot the control unit by parameter *196.08 Control board boot*. If the supply unit includes more than one supply module: Make sure that the value of parameter *195.31 Parallel connection rating id* corresponds to the actual number of parallel-connected diode supply modules: • Select the correct voltage range with parameter *195.30 Parallel type filter*. • 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*. If you need more information on the use of the control panel, see *ACX-AP-x assistant control panels user's manual* (3AUA0000085685 [English]).	☐
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 drive

Action	☑
Drive with main breaker [Q1]: Unlock the withdrawn breaker, and crank it in. **WARNING!** Never use the start button of the air circuit breaker to close it. Start button bypasses charging circuit and may damage the module. Drive with main switch-disconnector [Q1]: Unlock the main switch-disconnector, and close it. **WARNING!** Do not use excessive force. If the unit is equipped with a grounding switch [Q9], electromagnetic interlocking is also used. You cannot switch the main switch-disconnector [Q1] before its lock release relay [K1] is energized, that is: • the main input terminals [L1, L2 and L3] are powered, and • grounding switch [Q9] is switched off, and • auxiliary voltage switch [Q21] is switched on, and • circuit breakers [F22, F23] in between the relay [K1] and auxiliary voltage switch [Q21] are switched on.	☐
Drive with brake chopper: Make sure that there are inverters connected to the DC bus before closing the main contactor. A rule of thumb: The sum capacitance of the inverters connected to the DC bus of the drive must be at least 50% of the sum capacitance of all inverters of the drive. If there is not enough capacitive load at start, the DC voltage can exceed the overvoltage limit, causing immediate start of the brake unit and continuous supply for it by the supply unit. Continuous braking will overload brake choppers and resistors and cause overheating.	☐
Turn the operating switch [S21] to *on* (1) position to activate the Run enable signal and to close the main contactor [Q2] / main breaker [Q1].	☐

Safety function validation

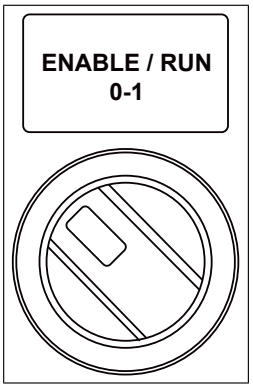
Action	☑
Validate the operation of safety functions (for example, emergency stop). **WARNING!** The safety functions are not safe before they are validated according to the instructions. See the function-specific manual for the validation tasks. Safety functions are optional. See the function-specific manual for the validation tasks.	☐

On-load checks

Action	☑
Make sure that the supply module cooling fan [G41] rotates freely in the right direction.	☐

Switching the supply unit off

1. Stop the motors connected to inverter units.
2. Turn the operating switch [S21] to the OFF (0) position to deactivate the Run enable signal and to switch off the main disconnecting device (main contactor [Q2]/ main breaker [Q1]).



Disconnecting and temporary grounding the drive

See *Electrical safety precautions (page 98)*.

8

Maintenance

Contents of this chapter

This chapter contains the maintenance instructions.

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.

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)
R	Replacement

Recommended maintenance intervals after start-up

Maintenance task / object	Years from start-up													
	1	2	3	…	6	…	9	…	12	…	15	…	18	…
Cooling fans														
Main cooling fan (D7T speed-controlled)							R						R	
Main cooling fan (D8T speed-controlled)							R						R	
Main cooling fan (D7T DOL 50 Hz)							R						R	
Main cooling fan (D7T DOL 60 Hz)							R						R	
Main cooling fan (D8T DOL 50 Hz)							R						R	
Internal cooling fan for circuit boards (D8T)							R						R	
Cabinet cooling fan, internal, 50 Hz							R						R	
Cabinet cooling fan, internal 60 Hz					R				R				R	
Cabinet cooling fan, roof (IP54), 50 Hz							R						R	
Cabinet cooling fan, roof (IP54), 60 Hz					R				R				R	
Batteries														
Control unit BCU battery					R				R				R	
Control panel battery							R						R	
Connections and environment														
Cabinet door filters (IP54)	R	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	P
Spare parts														
Spare part stock	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Other useful tasks														
Cleaning IP42 air inlet and outlet meshes	I	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	I
Checking ambient conditions (dustiness, corrosion, temperature)	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Heat sink cleaning	I	I	I	I	I	I	I	I	I	I	I	I	I	I
ABB-SACE main circuit breaker maintenance	I	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.													

Maintenance task / object	Years from start-up													
	1	2	3	…	6	…	9	…	12	…	15	…	18	…
Safety component expiry (Mission time, T_M)	20 years													

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.

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.

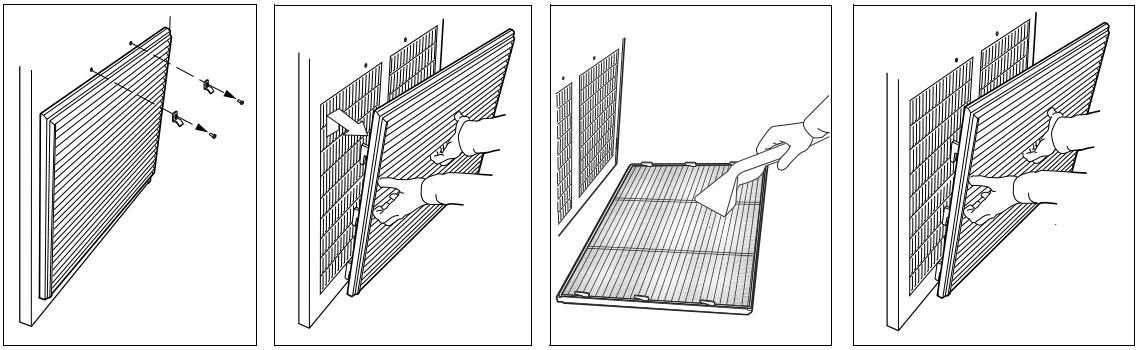
WARNING!
Use a vacuum cleaner with antistatic hose and nozzle, and wear a grounding wristband. Using a normal vacuum cleaner creates static discharges which can damage circuit boards.

1. Stop the drive and do the steps in section *Electrical safety precautions (page 98)* 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)

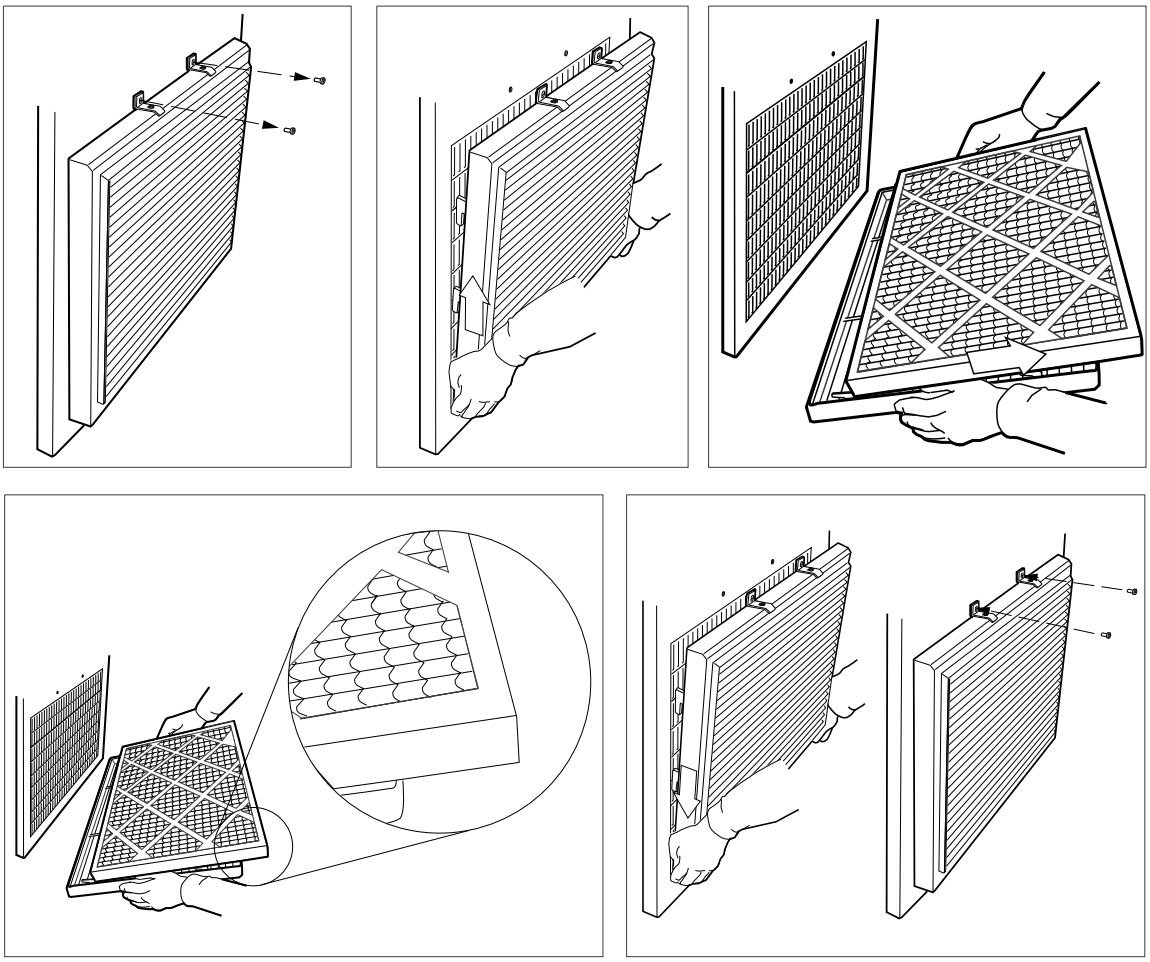
Check the dustiness of the air inlet meshes. If the dust cannot be removed by vacuum cleaning from outside through the grating holes with a small nozzle, proceed as follows:

1. Stop the drive and do the steps in section *Electrical safety precautions (page 98)* 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 98)* 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 98)* before you start the work.
2. Examine the tightness of the cable connections. Use the tightening torques given in the technical data.

Fuses

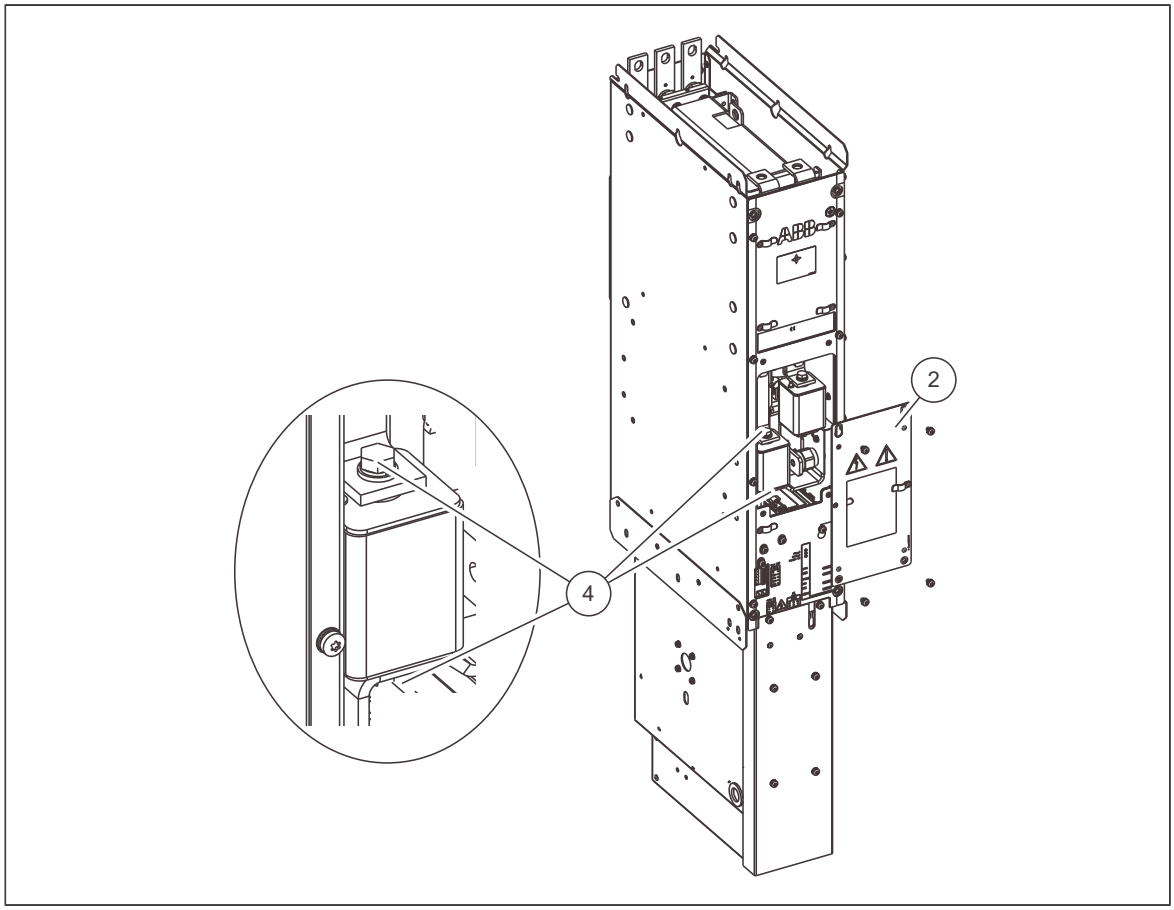
Checking and replacing the DC fuses of a D7T supply module

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

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.
2. Undo the screws of the cover panel of the module's DC fuses and lift and remove the panel.
3. Check the condition of the fuses and replace if necessary.
4. To replace a fuse, remove two M10×20 (17 mm) bolts which connect the DC fuse to the DC busbar.
5. When you replace the fuse, make sure that the possible fuse indicators point to the module to prevent a short circuit or earth fault with the cover plate.
6. Tighten two M10×20 (17 mm) bolts to 42 N·m to attach the fuse.
7. Attach the cover and close the door.



Checking and replacing the DC fuses of a D8T supply module

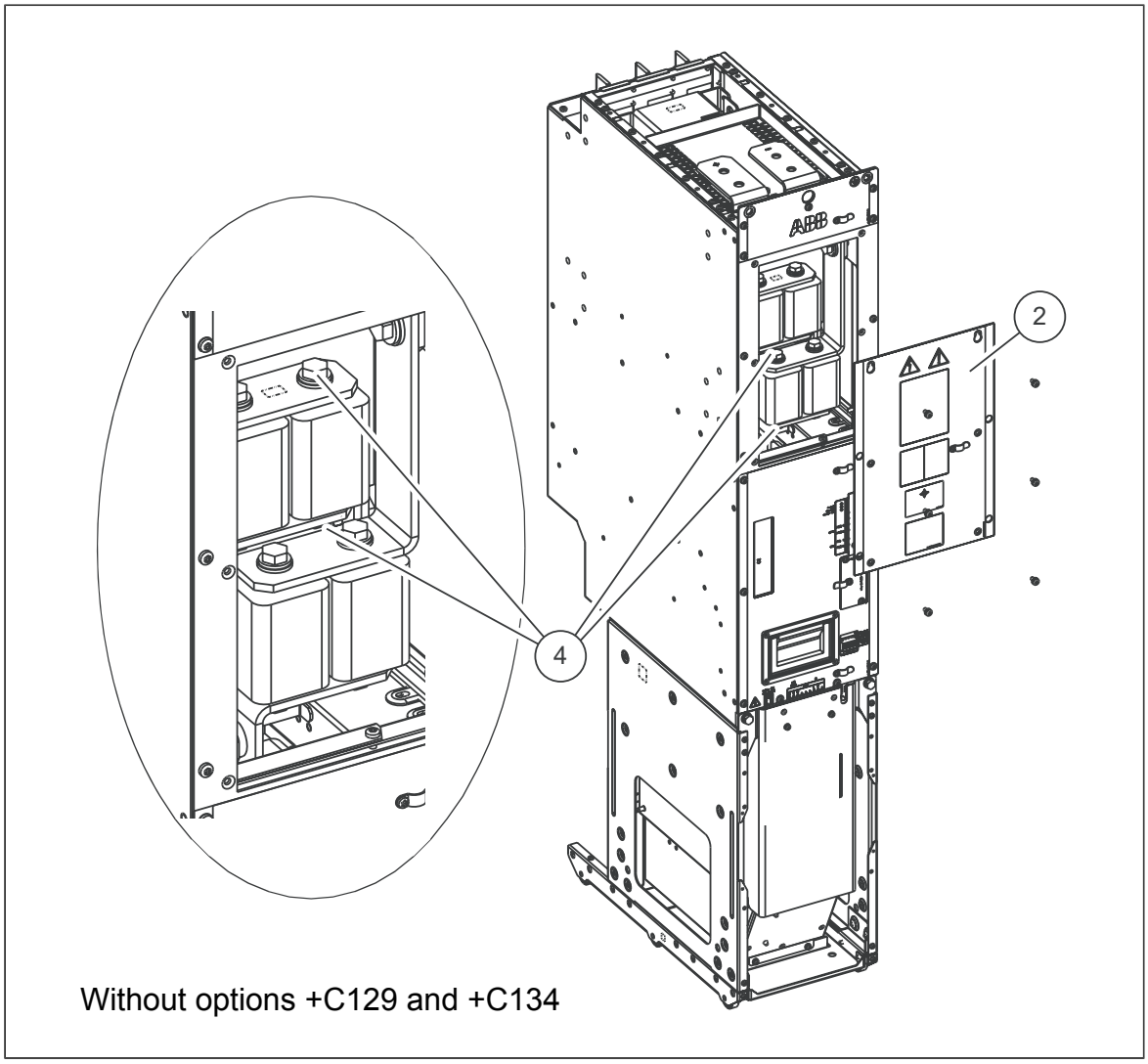
WARNING!
Obey the safety instructions given in *ACS880 multidrive cabinets and modules safety instructions* (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

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

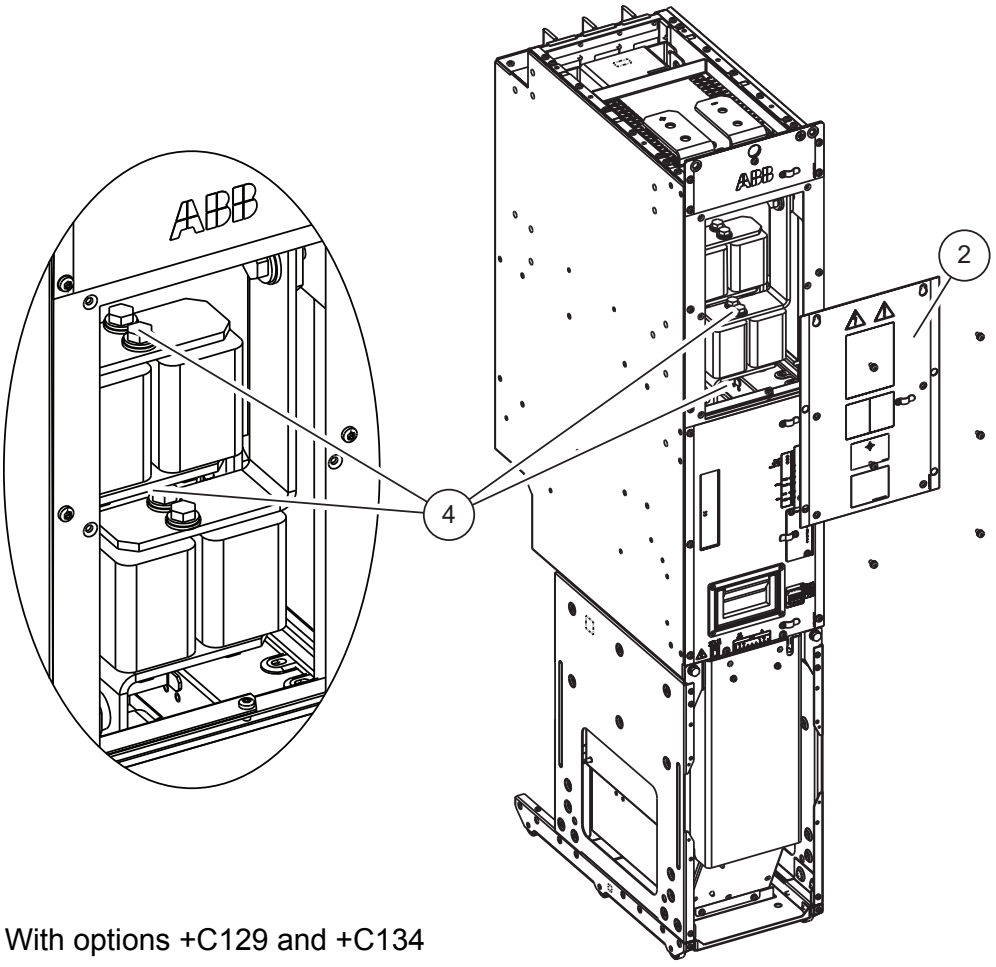
WARNING!
Use the required personal protective equipment. Wear protective gloves and long sleeves. Some parts have sharp edges.

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.
2. Undo the screws of the cover panel of the module's DC fuses and lift and remove the panel.
3. Check the condition of the fuses and replace if necessary.
4. To replace a fuse, remove two M10×20 (17 mm) bolts which connect the DC fuse to the DC busbar.
5. When you replace the fuse, make sure that the possible fuse indicators point to the module to prevent a short circuit or earth fault with the cover plate.

6. Tighten two M10×20 (17 mm) bolts to 42 N·m to attach the fuse.
7. Attach the cover and close the door.



Without options +C129 and +C134



With options +C129 and +C134

Checking and replacing the AC fuses

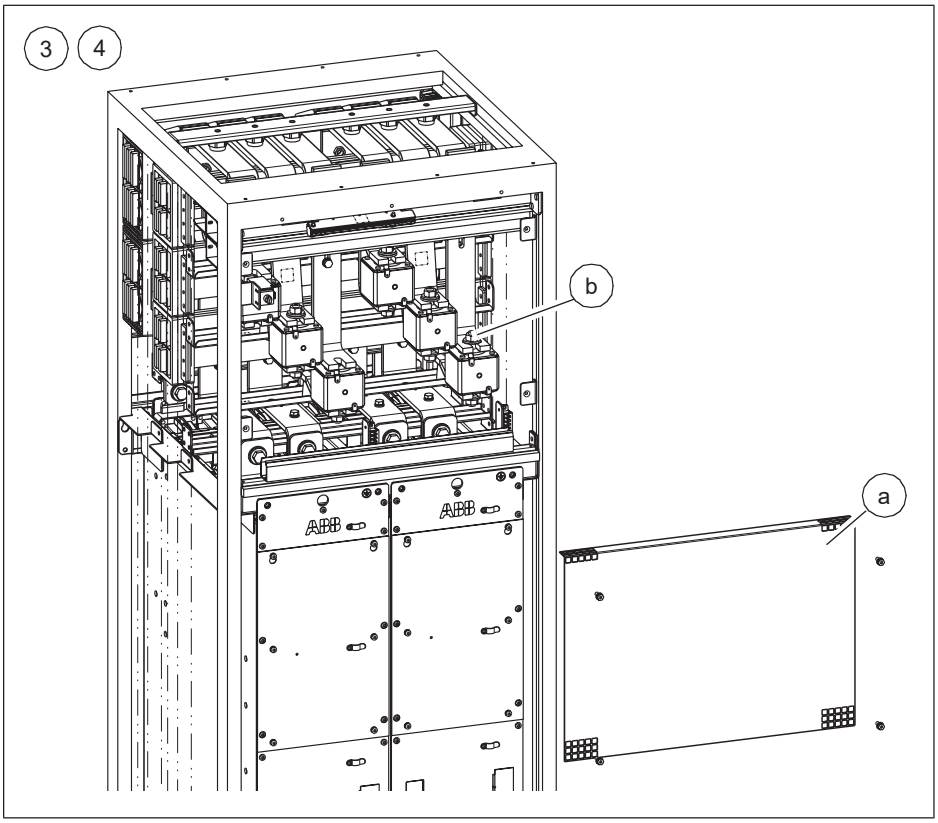
WARNING!
Obey the safety instructions given in *ACS880 multidrive cabinets and modules safety instructions* (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

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. Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.
2. Open the door of the cubicle(s) in which the fuses are.
3. Remove the shrouding (a) from in front of the fuses.
4. Slacken the nuts (b) of the headless screws of the fuses so that you can slide out the fuse blocks. Make note of the order of the washers on the screws.

5. Remove the screws, nuts and washers from the old fuses and attach them to the new fuses. Make sure to keep the washers in the original order.
6. Insert the new fuses into their slots in the cubicle.Tighten the nuts to torque as follows:
   - Bussmann fuses: 50 N·m (37 lbf·ft)
   - Mersen (Ferraz Shawmut): 46 N·m (34 lbf·ft)
   - Other: Refer to the fuse manufacturer’s instructions.
7. Reinstall the shrouding removed earlier and close the cubicle door.



Fans

Replacing the fan of the D7T supply module

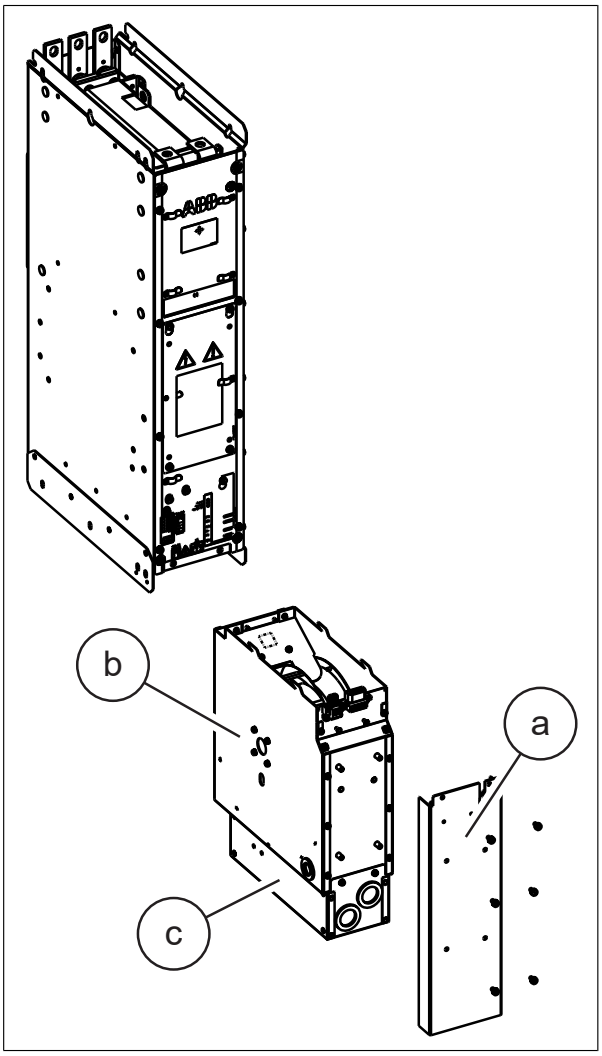
The fan replacement procedure is the same for both the standard speed-controlled cooling fan and direct-on-line fan (option +C188) of the D7T module.

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

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.
2. Open the cubicle door.
3. Remove the screws holding the front cover plate (a) and remove the cover.
4. Disconnect the fan wiring from the supply module (both the power supply plug and the fiber optic control wiring).
5. Support the fan holder (b) from below and pull it to release it from the module.
6. Pull out the fan holder.
7. Transfer the fan control box (c) from the old fan holder to the new fan holder.
8. Install a new fan in reverse order.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c

Replacing the fan of the D8T supply module

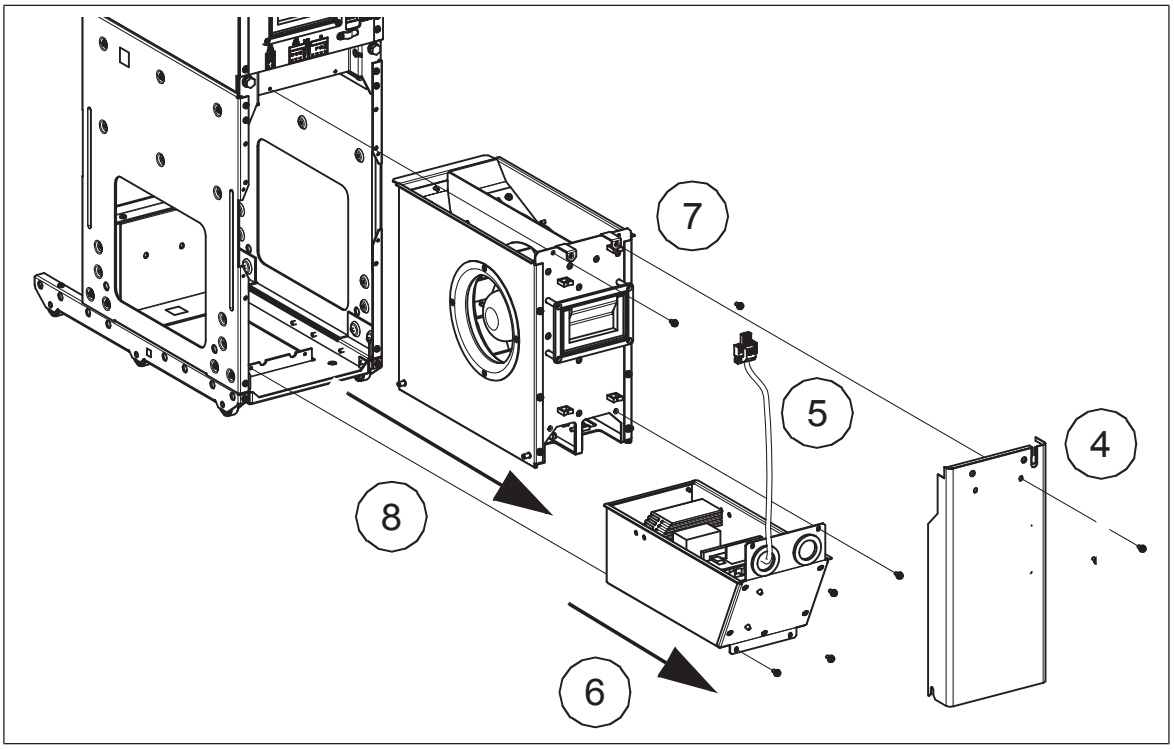
The module is equipped with a fan unit that contains two cooling fans.

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 98)* 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.



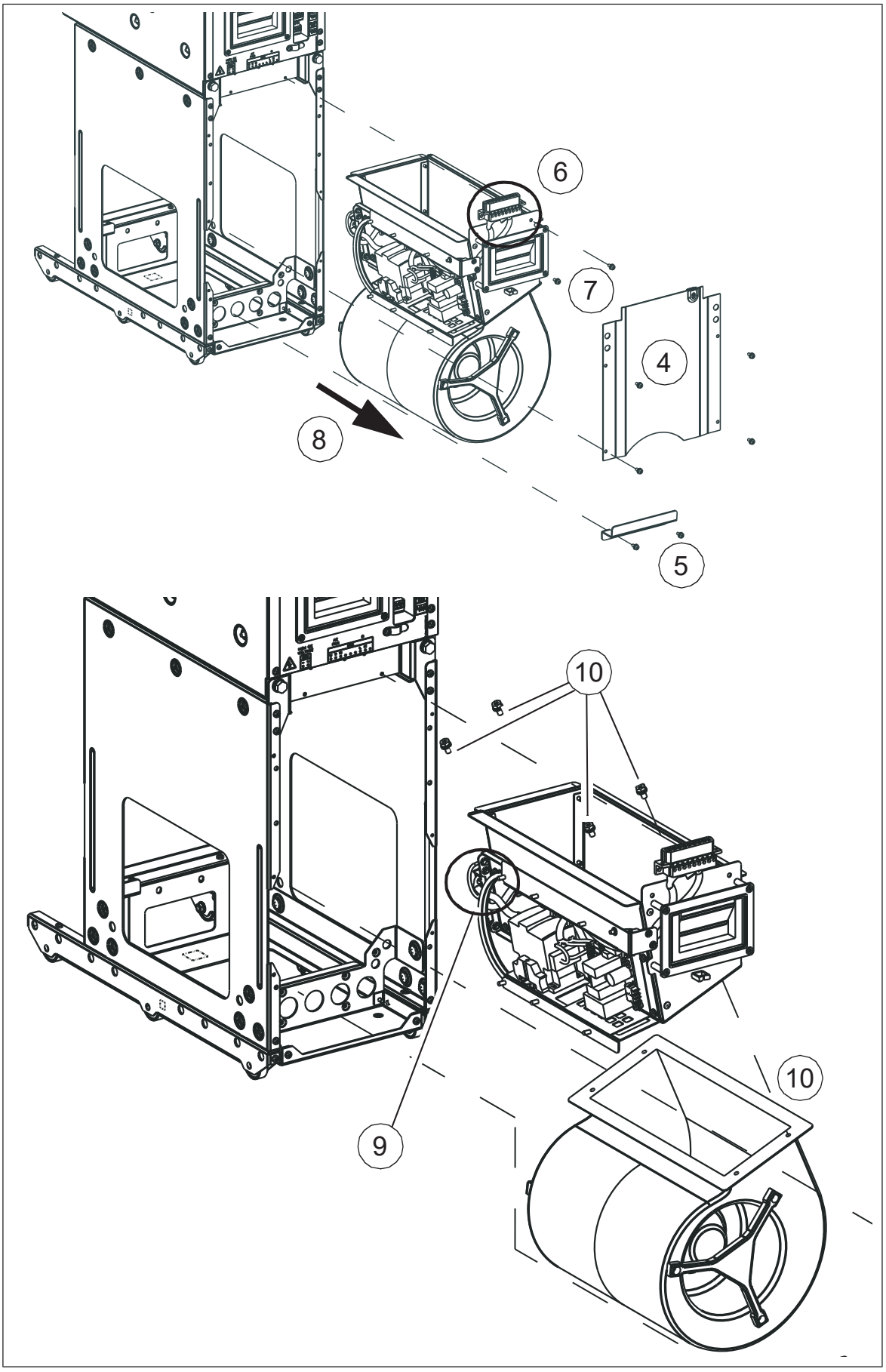
Replacing the direct-on-line fan (option +C188) of the D8T supply module

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!
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 98)* 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

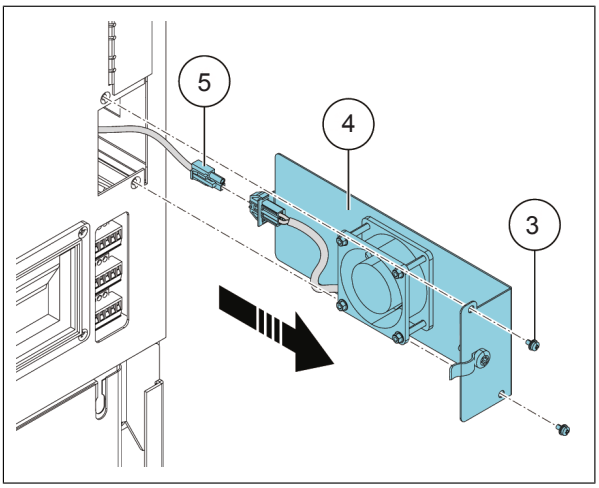
Frame D8T supply modules are equipped with a fan blowing air through the circuit board compartment.

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.

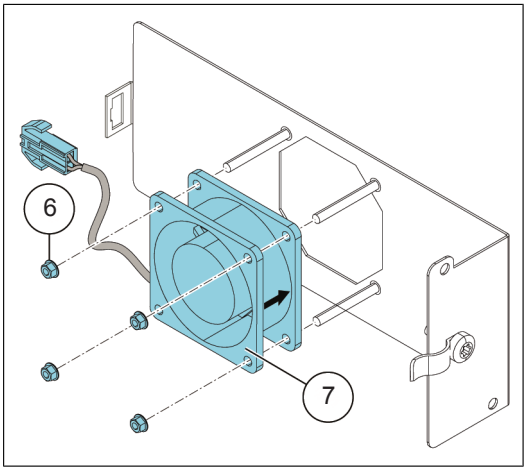
If you are not a qualified electrical professional, do not do installation or maintenance work.

1. Stop the drive and do the steps in section *Electrical safety precautions (page 98)* 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.

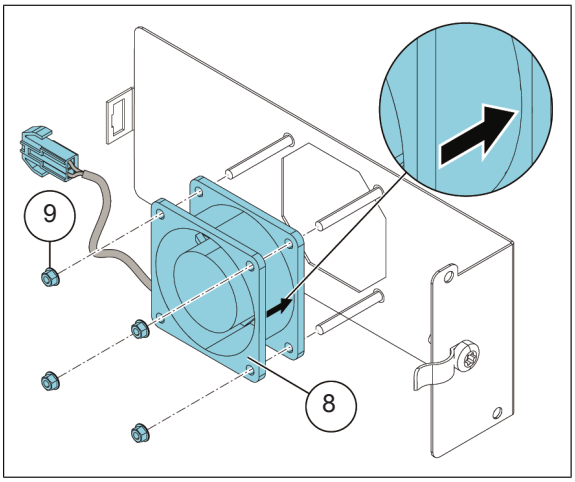


6. Remove the four M3 (5.5 mm) nuts which hold the fan.

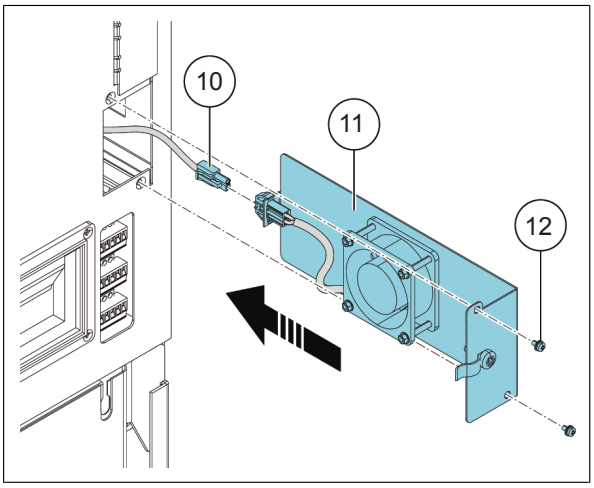
7. Remove the fan from the fan holder.



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 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 98)* 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 98)* before you start the work.
2. Follow the instructions of the manufacturer of the air outlet or enclosure system.

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 98)* 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 D7T supply module

This section contains instructions on replacing the module from Rittal VX25 enclosure. The instructions are valid for the example Rittal installations presented in this manual. Use the lifting device 3AXD50000439997. For replacing the module from ABB drives ACx enclosure, use lifting device 3AXD50000047447.

For the lifting devices ordering information, see section *Lifting device for the D7T supply module (page 221)*.

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.

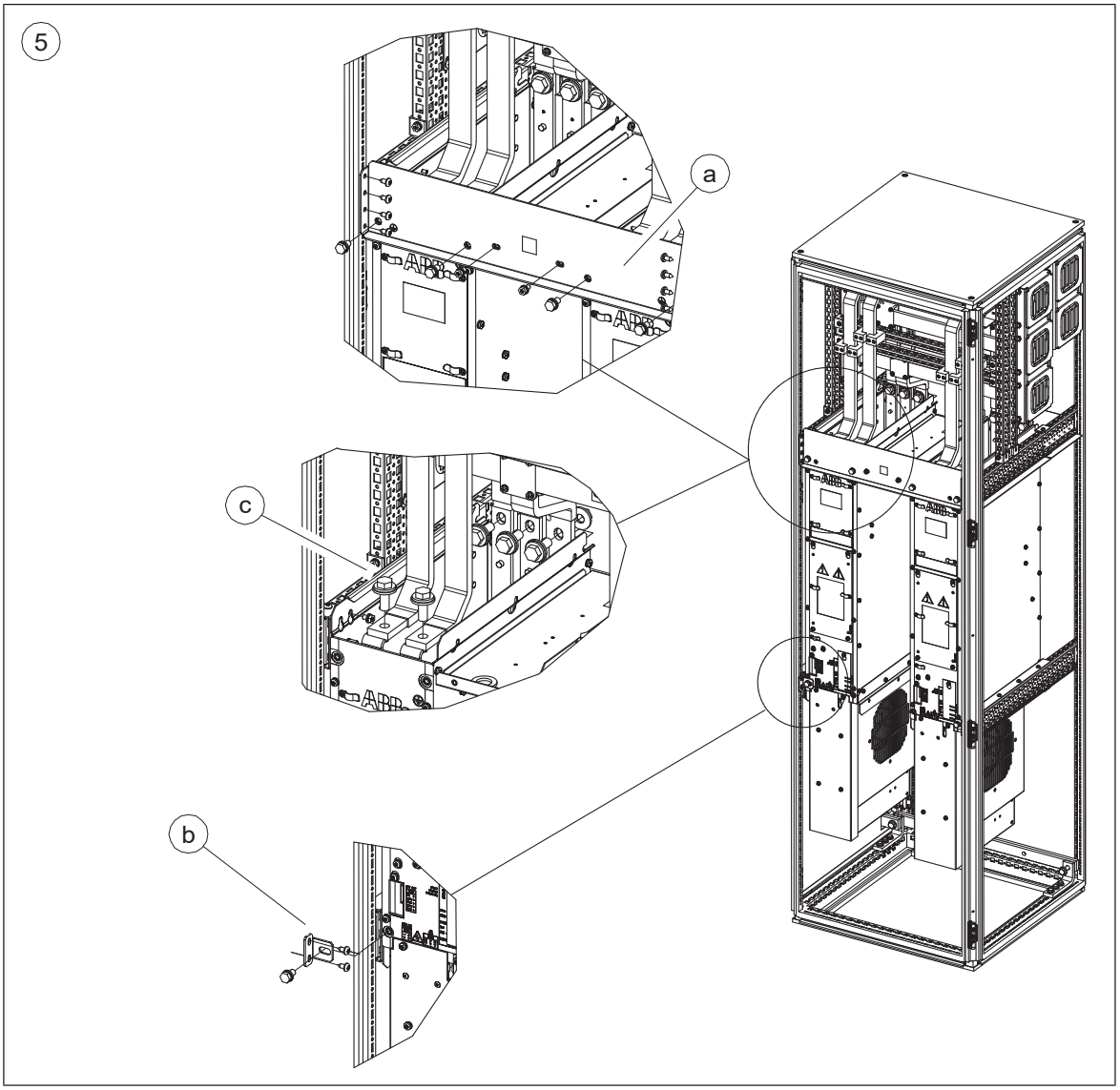
If you are not a qualified electrical professional, do not do installation or maintenance work.

WARNING!
Use extreme caution when maneuvering the supply module. It is heavy and has a high center of gravity. Ignoring the following instructions can cause physical injury, or damage to the equipment.

- Use a lifting device:
  - Attach the lifting device securely to the module lifting eyes before removing the module fastening screws. For the location of the lifting eyes, see *Layout drawing of D7T supply module (page 29)*.
  - Keep the lifting device attached to the module until you have lifted the module onto a pallet (on a floor) and made sure that the module is supported and cannot topple over.
  - Lift a replacement module only with a lifting device. Keep the lifting device attached to the module during the replacement work until you have tightened the module fastening screws.
- When replacing a module, keep your fingers away from the edge of the module front plate to avoid pinching them between the module and the cubicle.
- Wear protective gloves and long sleeves! Some parts have sharp edges.
- Do not tilt the module. Do not leave the module unattended on a floor.

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.
2. Open the cubicle door.
3. Remove the shrouds (if any).
4. Unplug the plug connector [X53] and fiber optic connectors in front of the module and plug connector [X50] on top of the module. For the locations, see section *Layout drawing of D7T supply module (page 29)*.
5. Remove the module upper fastening screws and support bracket (a), and lower fastening screws and support bracket (b). Remove the fastening bolts of the DC (c) and AC busbars.
6. Install the module lifting device to the Rittal VX25 enclosure. For using the lifting device, see Converter module lifting device for drive cabinets hardware manual (3AXD50000210268).
7. Attach the lifting hooks to the lifting eyes of the module:
   - Bend the DC busbars away from the module.
   - Carefully pull the module out along the module guide plates until you can attach the lifting hooks to the module. Tighten the chain.
8. Pull the module completely out of the cabinet along the module guide plates. Keep the weight constantly on the lifting device.
9. Remove the upper module guide plate.
10. Lift the module somewhat to disconnect it from the lower guide plate and lift the module down on a pallet.
11. Keep the lifting chain attached to the module and attach the module safely to the pallet to prevent it from toppling over.

12. Remove the lifting chain from the old module and move the module away.
13. Install the new module:
    - Attach the lifting hook to the module, lift the module and place it on the lower module guide plate. Keep the weight on the lifting device.
    - Install the upper module guide plate.
    - Push the module into cabinet along the guide plates and remove the lifting device.
    - Fasten the support brackets and the module fastening screws.
    - Tighten the fastening bolts of the DC and AC busbars to 70 N·m (51.6 lbf·ft).
    - Plug the module plug connectors and fiber optic connectors.
    - Fasten the shrouds.
    - Close the cubicle door.



Replacing the D8T supply module

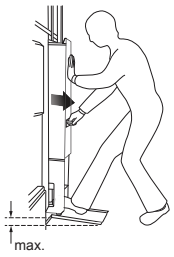
This section contains instructions on replacing the module from Rittal VX25 enclosure. The instructions are valid for the example Rittal installations presented in this manual. We assume that you have the ABB module pull-out ramp in use (order code: 3AUA0000120467). If you do not have the ramp, always use a lifting device when you remove the module.

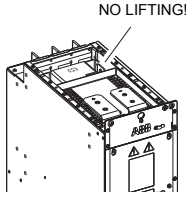
WARNING!
Obey the safety instructions given in *ACS880 multidrive cabinets and modules safety instructions* (3AUA0000102301 [English]). If you ignore the safety instructions, injury or death, or damage to the equipment can occur.

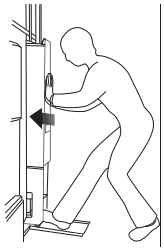
If you are not a qualified electrical professional, do not do installation or maintenance work.

WARNING!
Be very careful when you move a module that runs on wheels. Ignoring the following instructions can cause physical injury or death, or damage to the equipment.

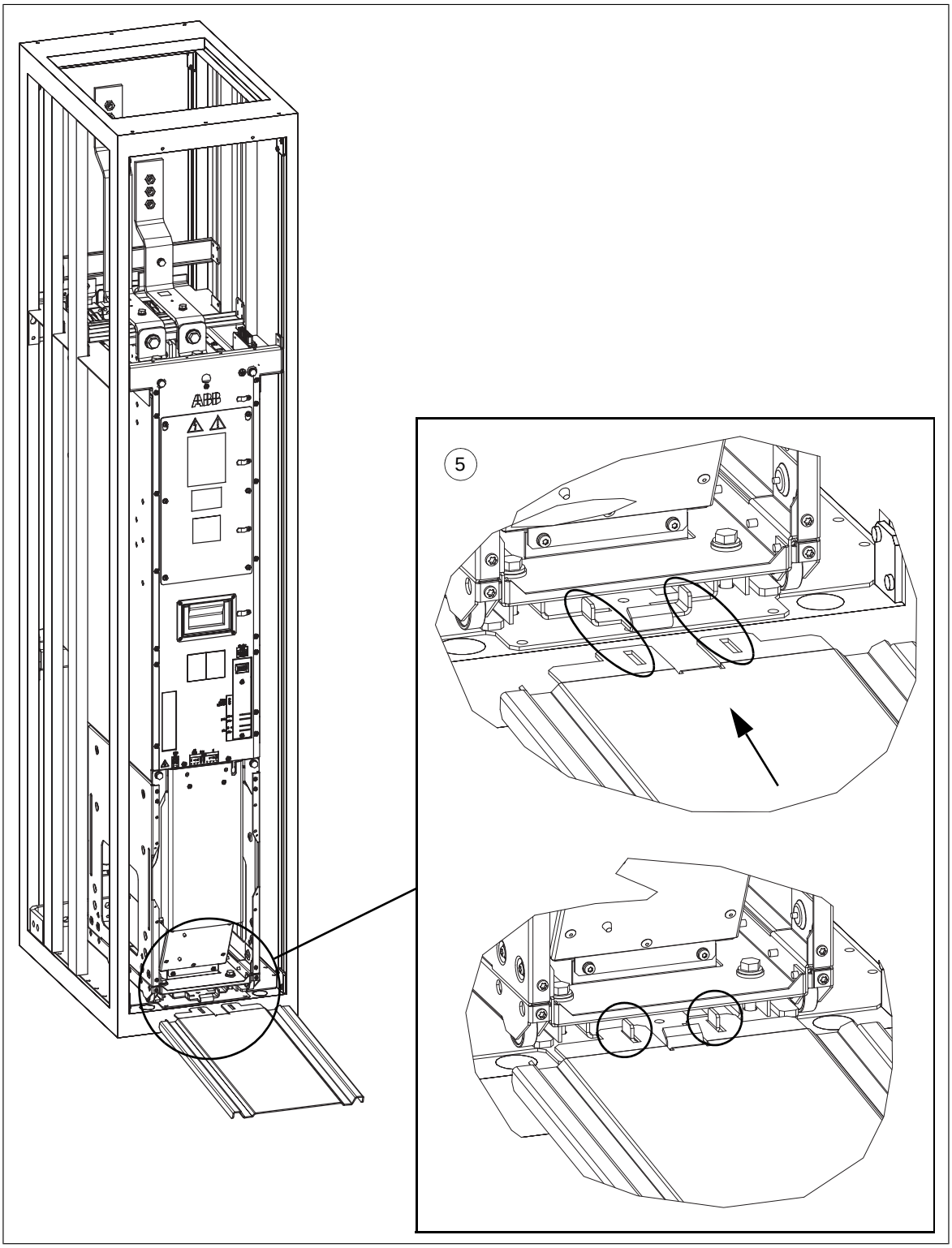
- Do not move the module carelessly. It is heavy (approximately 175 kg) (386 lbs) and has a high center of gravity. It topples over easily.
- When you remove the module, use the module pull-out ramp. Pull the module carefully out of the cubicle along the ramp. While pulling on the handle, keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back. We recommend that you attach a lifting device to the module before you remove the module and keep it attached while removing.
- When you install a module, use the module pull-out ramp. Keep your fingers away from the edge of the module front plate to avoid pinching them between the module and the cubicle. Also, keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back. We recommend that you attach a lifting device to the module before you install the module and keep it attached while installing.
- If you lift the module, use only the two lifting eyes on top of the module: one in front and the other in back. Never lift the module from the hole inside the module (visible from top). It cannot carry the weight of the whole module. For the location of the lifting eyes, see section *Layout drawing of D8T supply module (page 31)*.
- Do not tilt the module. Do not leave the module unattended on a sloping floor.
- Wear protective gloves and long sleeves! Some parts have sharp edges.
- Do not use the module pull-out ramp with plinth heights over 100 mm (3.94 in). The ramp is designed for a plinth height of 100 mm (the standard plinth height of Rittal VX25 cabinets).

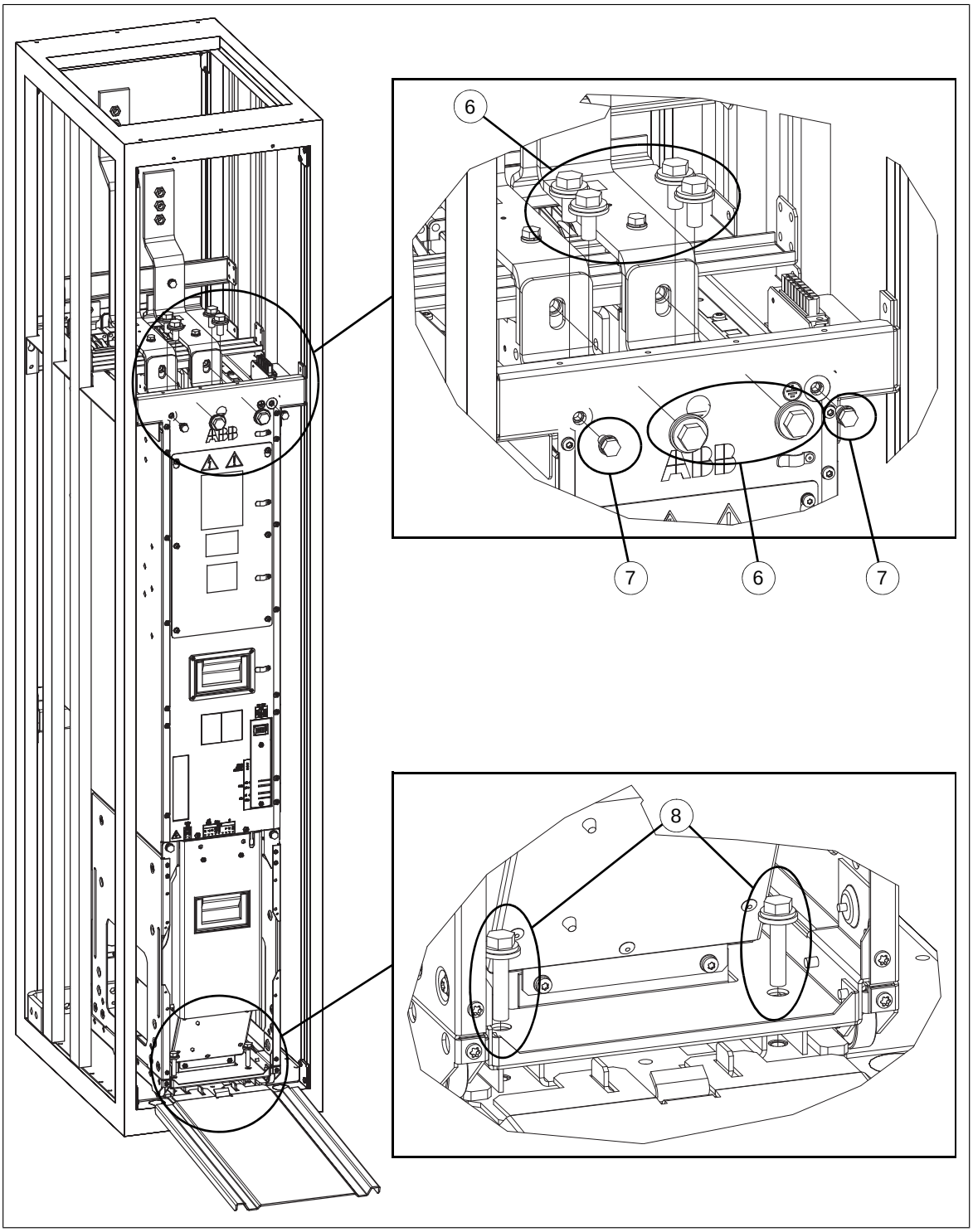
<table>
<tr>
<td> 

Support the top and bottom of the module!
max: 100 mm</td>
<td> 
Do not tilt!</td>
<td> 
Do not leave the module unattended on a sloping floor!</td>
</tr>
<tr>
<td> 

Do not use this hole for lifting!</td>
<td> 
Mind your fingers!</td>
<td> 
Support the top and bottom of the module!</td>
</tr>
</table>

1. Disconnect the drive from the AC power line and make sure it is safe to start the work. See section *Electrical safety precautions (page 98)*.
2. Open the cubicle door.
3. Remove the shrouds (if any).
4. Disconnect the plug connector [X53] and fiber optic connectors in front of the module, and plug connector [X50] on top of the module. For the locations, see section *Layout drawing of D8T supply module (page 31)*.
5. Install the module pull-out ramp: Push its hooks inside the cabinet and lock them tight between the cabinet bottom plate and the cabinet frame.
6. Remove the module DC busbar bolts.
7. Remove the module fastening screws at the top of the module.
8. Remove the module fastening screws at the bottom of the module.
9. Pull the module carefully out of the cabinet along the ramp. While pulling on the handle, keep a constant pressure with one foot on the base of the module to prevent the module from falling on its back.
10. Install the new module into the cubicle:
    - Push the module back in and attach. Be careful not to break the fastening screws: tighten the fastening screws of the module to 22 N·m (16.2 lbf·ft). Tighten the fastening bolts of the DC output busbars to 70 N·m (51.6 lbf·ft).
    - Connect the module plug connectors and fiber optic connectors that you disconnected earlier.
    - Remove the module pull-out ramp, attach the shrouds (if any) and close the cabinet doors.


5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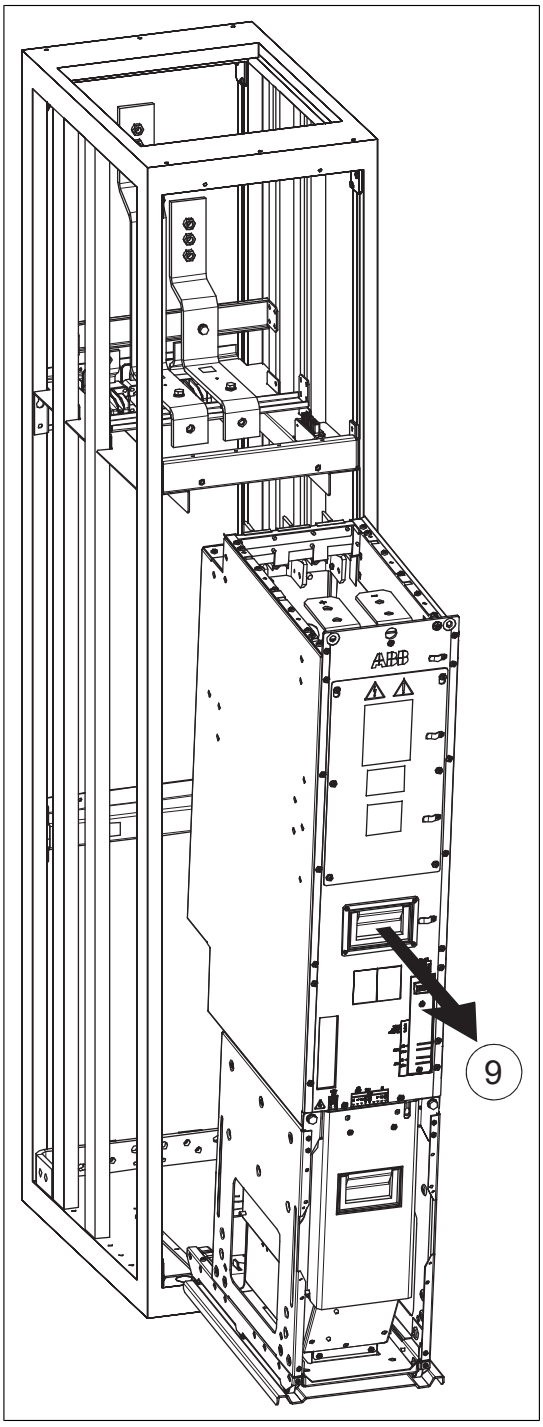


Control panel

See *ACx-AP-x assistant control panels user's manual* (3AUA0000085685 [English]).

Control unit

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

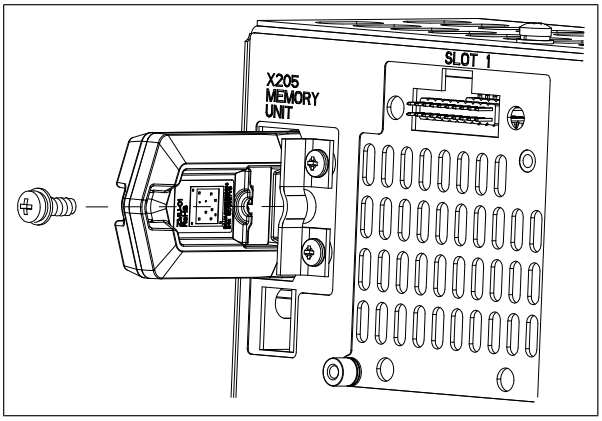
as the number of connections is sufficient. For example, the BCU-22 can be used as a direct replacement for both BCU-02 and BCU-12.

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 98)* 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.

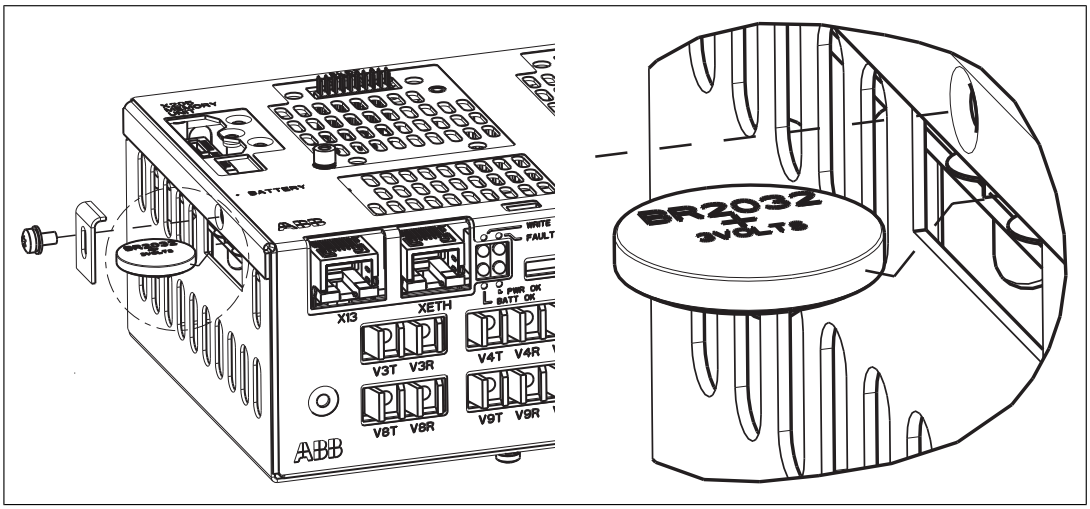


Replacing the BCU control unit battery

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 98)* 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

This section instructs how to interpret the status indications of the diode supply unit.

Information on warnings and faults reported by the control program and displayed on the drive/converter/inverter control panel on the cabinet door are contained within the firmware manual delivered with the drive.

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.

Module LEDs

Frame D7T and D8T modules have three LEDs. For their indications, see the following table.

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 (or two modules in 12-pulse DSU), but the physical requirements of operating the motor still apply; for example, the modules remaining in use must be able to provide enough current.

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 98)* 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. In 12-pulse DSU setups, the number of modules in both windings must be equal, which means that at least two modules have to be removed at once.
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 98)* 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*.

9

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.

Diode supply units – 2×D7T, 12-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of two D7T supply modules
- has a 12-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

Diode supply modules – 2×D7T, 12-pulse

The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-0910A-3+A004+A018	2×D7T	
U_N = 500 V		
ACS880-304-0910A-5+A004+A018	2×D7T	
U_N = 690 V		
ACS880-304-0760A-7+A004+A018	2×D7T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-0910A-3+A004+A018**	**+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C188**: Direct-on-line (DOL) cooling fan (230 V or 115 V) **+G304**: 115 V auxiliary voltage supply If you select both +C188 and +G304, 115 V DOL is configured automatically.

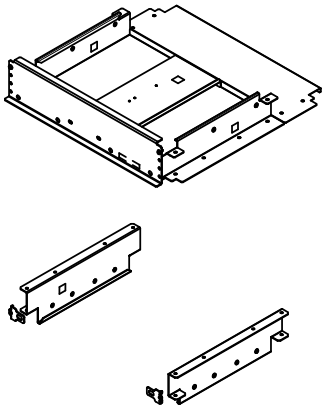
Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kit. See section *Control units – 12-pulse (page 187)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.

Mechanical installation accessories – 2×D7T, 12-pulse, Rittal VX25

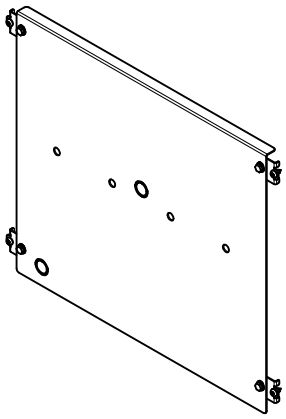
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D7T	600 mm (23.62 in)	1	A-6-7-320-VX	3AXD50000427932	 Instruction code: 3AXD50000426508

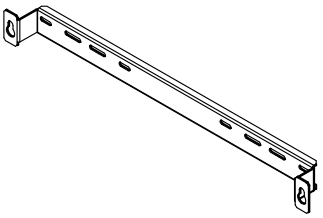
Shrouds

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D7T	600 mm (23.62 in)	1	A-6-8-360-VX	3AXD50000337378	 Instruction code: 3AXD50000335022

AC busbar support

AC busbar support kit contains the busbar support and the screws and nuts for attaching the support to the cabinet frame. the AC busbars between the common Flat-PLS busbars of the cabinet and the module input terminals, or the related fixings are not included in the kit.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D7T	600 mm (23.62 in)	1	A-6-7-150-VX	3AXD50000427956	 Instruction code: 3AXD50000431977

DC busbars

Module size	Enclosure width	Qty	Kit code	Ordering code	Instruction code
2×D7T	600 mm (23.62 in)	1	-	-	3AXD50000432707

Other components and tools – 2×D7T, 12-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main contactor	*Main contactors (page 196)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Lifting device	*Lifting device for the D7T supply module (page 221)*

Diode supply units – 1×D8T, 6-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of one D8T supply module
- has a 6-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

Diode supply modules – 1×D8T, 6-pulse

The type designations and power ratings for the modules are given in section *Ratings (page 225)*. The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply module with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-0650A-3+A018	D8T	
ACS880-304-0980A-3+A018	D8T	
U_N = 500 V		
ACS880-304-0650A-5+A018	D8T	
ACS880-304-0980A-5+A018	D8T	
U_N = 690 V		
ACS880-304-0570A-7+A018	D8T	
ACS880-304-0820A-7+A018	D8T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-0650A-3 +A018**	**+A004**: 12-pulse option of half-controlled diode-thyristor bridge **+C129**: cULus listed **+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C134**: CSA certified **+C183**: Internal heating element in the module **+C188**: Direct-on-line (DOL) cooling fan (400 V) **+G304**: 115 V auxiliary voltage supply **Note:** D8T DOL fan is always 400 V.

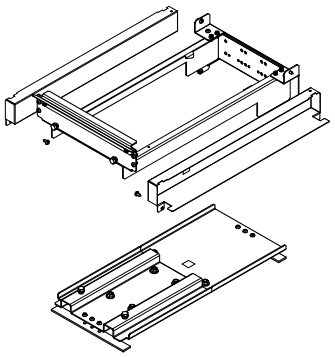
Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kits. See section *Control units (page 186)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.
- Quick connectors (3AUA0000119227) for each module. See section *Quick connector for D8T module (page 189)*.

Mechanical installation accessories – 1×D8T, 6-pulse, Rittal VX25

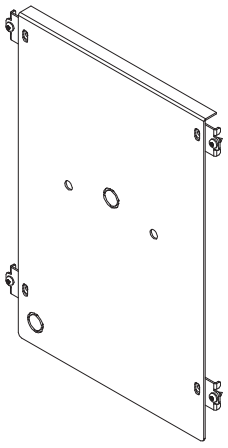
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-303-VX	3AXD50000371877	 Instruction code: 3AXD50000372799

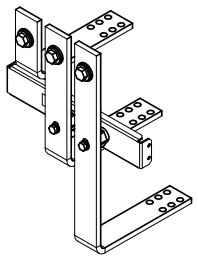
Shrouds

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-359-VX	3AXD50000337484	 Instruction code: 3AXD50000335169

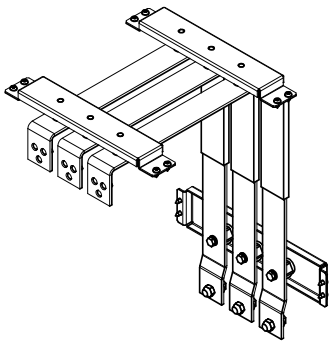
AC busbars

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-102-VX	3AXD50000371853	 Instruction code: 3AXD50000417247

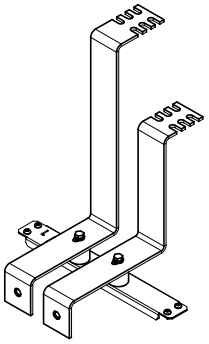
AC busbars to quick connector

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-180-VX	3AXD50000371860	 Instruction code: 3AXD50000379736

DC busbars

The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-201-VX	3AXD50000371884	 Instruction code: 3AXD50000373871

DC connection flanges

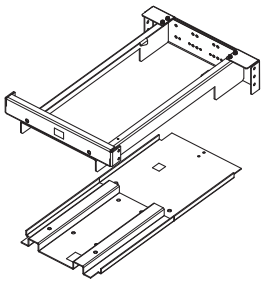
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-468-8-230	3AXD50000002639	 Instruction code: 3AXD50000002638

Mechanical installation accessories – 1×D8T, 6-pulse, generic cabinet

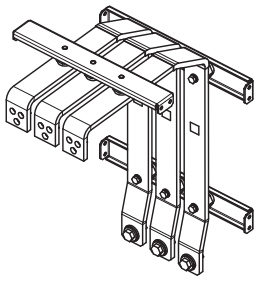
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-307	3AXD50000002716	 Instruction code: 3AXD50000002715

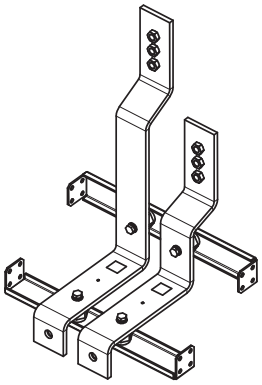
AC busbars to quick connector

The common AC busbars of the cabinet (user-defined) connect to the supply module AC terminals via the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-183	3AXD50000004849	 Instruction code: 3AXD50000006192

DC busbars

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-209	3AXD50000004850	 Instruction code: 3AXD50000006191

DC connection flanges

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-468-8-230	3AXD50000002639	 Instruction code: 3AXD50000002638

Other components and tools – 1×D8T, 6-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main contactor	*Main contactors (page 196)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Pull-out ramp	*Pull-out ramp for the D8T supply module (page 222)*

Diode supply units – 2×D8T, 6-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of two D8T supply modules
- have a 6-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

Diode supply modules – 2×D8T, 6-pulse

The type designations and power ratings for the modules are given in section *Ratings (page 225)*. The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-1210A-3+A018	2×D8T	
ACS880-304-1820A-3+A018	2×D8T	
U_N = 500 V		
ACS880-304-1210A-5+A018	2×D8T	
ACS880-304-1820A-5+A018	2×D8T	
U_N = 690 V		
ACS880-304-1060A-7+A018	2×D8T	
ACS880-304-1520A-7+A018	2×D8T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-1210A-3+A018**	**+A004**: 12-pulse option of half-controlled diode-thyristor bridge **+C129**: cULus listed **+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C134**: CSA certified **+C183**: Internal heating element in the module **+C188**: Direct-on-line (DOL) cooling fan (400 V) **+G304**: 115 V auxiliary voltage supply **Note:** D8T DOL fan is always 400 V.

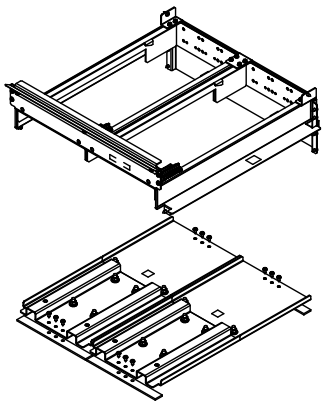
Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kits. See section *Control units (page 186)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.
- Quick connectors (3AUA0000119227) for each module. See section *Quick connector for D8T module (page 189)*.

Mechanical installation accessories – 2×D8T, 6-pulse, Rittal VX25

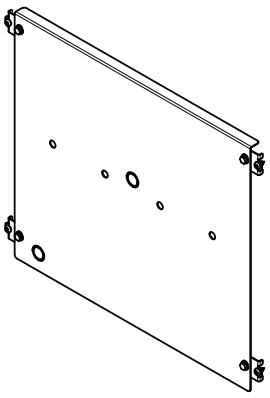
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-305-VX	3AXD50000422074	 Instruction code: 3AXD50000422401

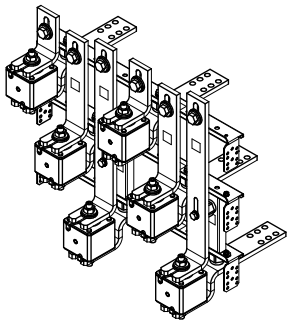
Shrouds

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-360-VX	3AXD50000337378	 Instruction code: 3AXD50000335022

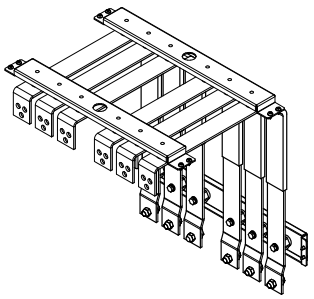
AC busbars

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-103-VX	3AXD50000422081	 Instruction code: 3AXD50000431557

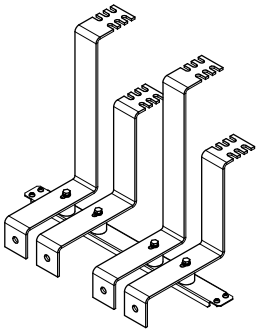
AC busbars to quick connector

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-182-VX	3AXD50000422098	 Instruction code: 3AXD50000430574

DC busbars

The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-202-VX	3AXD50000422104	 Instruction code: 3AXD50000430550

DC connection flanges

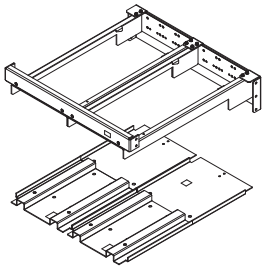
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	2	A-468-8-230 (Rittal VX25 and generic enclosures)	3AXD50000002639	 Instruction code: 3AXD50000002638

Mechanical installation accessories – 2×D8T, 6-pulse, generic cabinet

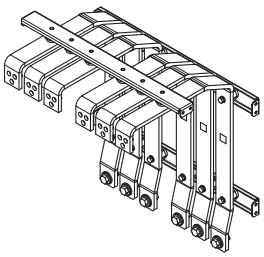
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-313	3AXD50000006135	 Instruction code: 3AXD50000006128

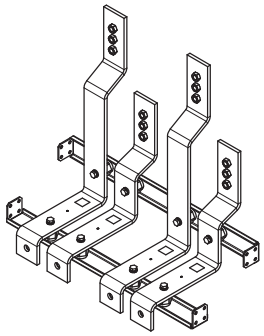
AC busbars to quick connector

The common AC busbars of the cabinet (user-defined) connect to the supply module AC terminals via the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-184	3AXD50000006136	 Instruction code: 3AXD50000006270

DC busbars

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-210	3AXD50000006524	 Instruction code: 3AXD50000006281

DC connection flanges

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	2	A-468-8-230	3AXD50000002639	 Instruction code: 3AXD50000002638

Other components and tools – 2×D8T, 6-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main contactor	*Main contactors (page 196)*
Main circuit breaker	*Main circuit breakers (page 198)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Pull-out ramp	*Pull-out ramp for the D8T supply module (page 222)*

Diode supply units – 2×D8T, 12-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of two D8T supply modules
- has a 12-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

Diode supply modules – 2×D8T, 12-pulse

The type designations and power ratings for the modules are given in section *Ratings (page 225)*. The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-1210A-3+A004+A018	2×D8T	
ACS880-304-1820A-3+A004+A018	2×D8T	
U_N = 500 V		
ACS880-304-1210A-5+A004+A018	2×D8T	
ACS880-304-1820A-5+A004+A018	2×D8T	
U_N = 690 V		
ACS880-304-1060A-7+A004+A018	2×D8T	
ACS880-304-1520A-7+A004+A018	2×D8T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-1210A-3 +A004+A018**	**+C129**: cULus listed **+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C134**: CSA certified **+C183**: Internal heating element in the module **+C188**: Direct-on-line (DOL) cooling fan (400 V) **+G304**: 115 V auxiliary voltage supply **Note:** D8T DOL fan is always 400 V.

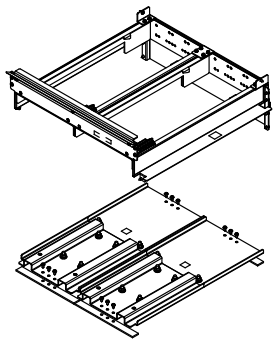
Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kits. See section *Control units (page 186)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.
- Quick connectors (3AUA0000119227) for each module. See section *Quick connector for D8T module (page 189)*.

Mechanical installation accessories – 2×D8T, 12-pulse, Rittal VX25

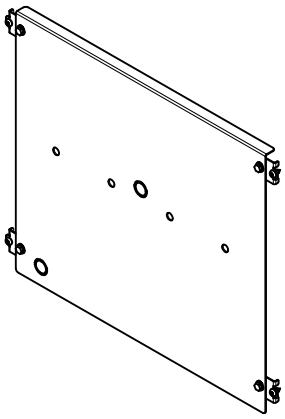
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-305-VX	3AXD50000422074	 Instruction code: 3AXD50000422401

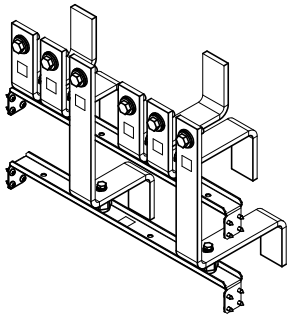
Shrouds

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-360-VX	3AXD50000337378	 Instruction code: 3AXD50000335022

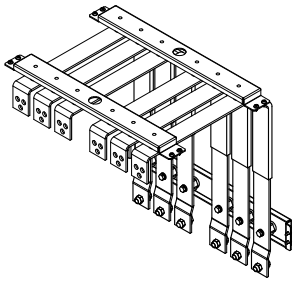
AC busbars

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-105-VX	3AXD50000427918	 Instruction code: 3AXD50000432417

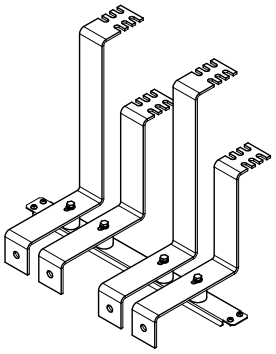
AC busbars to quick connector

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-182-VX	3AXD50000422098	 Instruction code: 3AXD50000430574

DC busbars

The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-202-VX	3AXD50000422104	 Instruction code: 3AXD50000430550

DC connection flanges

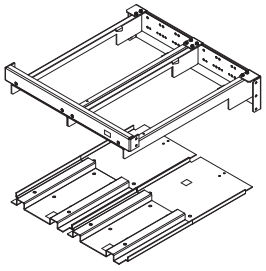
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	2	A-468-8-230 (Rittal VX25 and generic enclosures)	3AXD50000002639	 Instruction code: 3AXD50000002638

Mechanical installation accessories and tool – 2×D8T, 12-pulse, generic cabinet

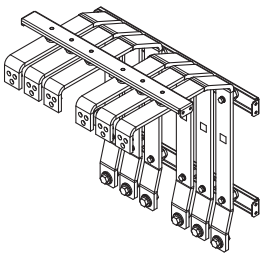
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-313	3AXD50000006135	 Instruction code: 3AXD50000006128

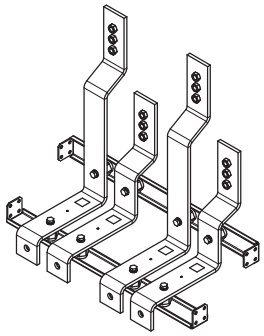
AC busbars to quick connector

The common AC busbars of the cabinet (user-defined) connect to the supply module AC terminals via the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-184	3AXD50000006136	 Instruction code: 3AXD50000006270

DC busbars

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-6-8-210	3AXD50000006524	 Instruction code: 3AXD50000006281

DC connection flanges

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2×D8T	600 mm (23.62 in)	1	A-468-8-230	3AXD50000002639	 Instruction code: 3AXD50000002638

Other components and tools – 2×D8T, 12-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main contactor	*Main contactors (page 196)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Pull-out ramp	*Pull-out ramp for the D8T supply module (page 222)*

Diode supply units – 3×D8T, 6-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of three D8T supply modules
- has a 6-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

In the Rittal installations, the supply unit consist of one 1×D8T supply module cubicle and one 2×D8T supply module cubicle. In the generic cabinet installations, the supply unit consist of one 3×D8T supply module cubicle.

Diode supply modules – 3×D8T, 6-pulse

The type designations and power ratings for the modules are given in section *Ratings (page 225)*. The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-2730A-3+A018	3×D8T	
U_N = 500 V		
ACS880-304-2730A-5+A018	3×D8T	
U_N = 690 V		
ACS880-304-2280A-7+A018	3×D8T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-2730A-3 +A018**	**+A004**: 12-pulse option of half-controlled diode-thyristor bridge **+C129**: cULus listed **+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C134**: CSA certified **+C183**: Internal heating element in the module **+C188**: Direct-on-line (DOL) cooling fan (400 V) **+G304**: 115 V auxiliary voltage supply **Note:** D8T DOL fan is always 400 V.

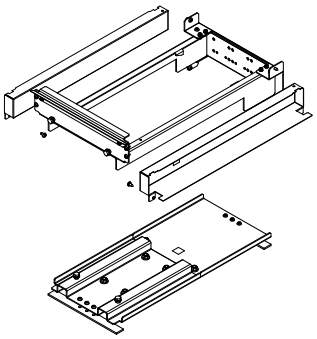
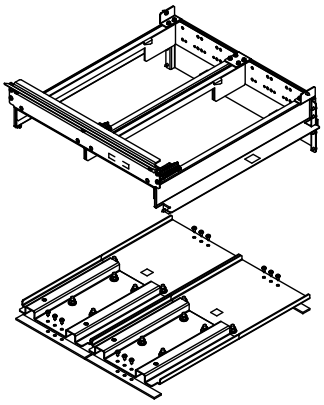
Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kits. See section *Control units (page 186)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.
- Quick connectors (3AUA0000119227) for each module. See section *Quick connector for D8T module (page 189)*.

Mechanical installation accessories – 3×D8T, 6-pulse, Rittal VX25

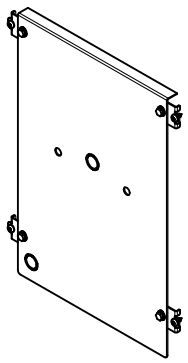
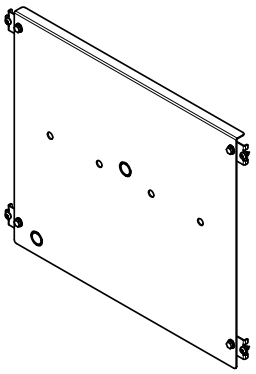
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-303-VX	3AXD50000371877	 Instruction code: 3AXD50000372799
2×D8T	600 mm (23.62 in)	1	A-6-8-305-VX	3AXD50000422074	 Instruction code: 3AXD50000422401

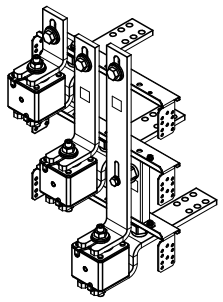
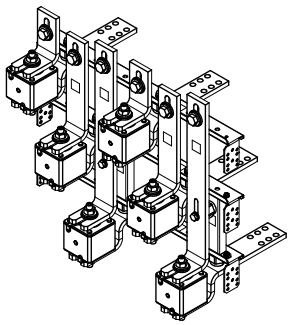
Shrouds

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-359-VX	3AXD50000337484	 Instruction code: 3AXD50000335169
2×D8T	600 mm (23.62 in)	1	A-6-8-360-VX	3AXD50000337378	 Instruction code: 3AXD50000335022

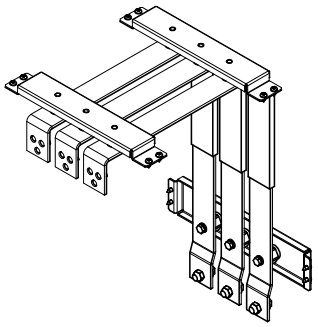
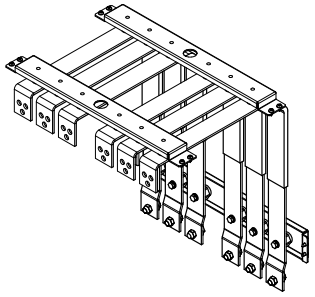
AC busbars

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-104-VX	3AXD50000371846	 Instruction code: 3AXD50000384594
2×D8T	600 mm (23.62 in)	1	A-6-8-103-VX	3AXD50000422081	 Instruction code: 3AXD50000431557

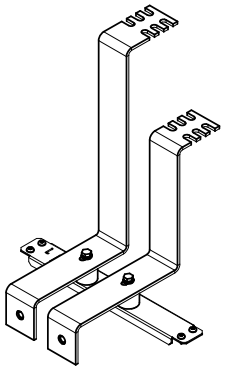
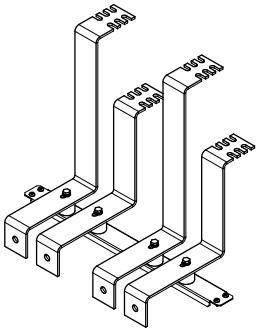
AC busbars to quick connector

The common AC Flat-PLS busbars of the cabinet connect to the supply module AC terminals via the AC busbars, the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-180-VX	3AXD50000371860	 Instruction code: 3AXD50000379736
2×D8T	600 mm (23.62 in)	1	A-6-8-182-VX	3AXD50000422098	 Instruction code: 3AXD50000430574

DC busbars

The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400 mm (15.75 in)	1	A-4-8-201-VX	3AXD50000371884	 Instruction code: 3AXD50000373871
2×D8T	600 mm (23.62 in)	1	A-6-8-202-VX	3AXD50000422104	 Instruction code: 3AXD50000430550

DC connection flanges

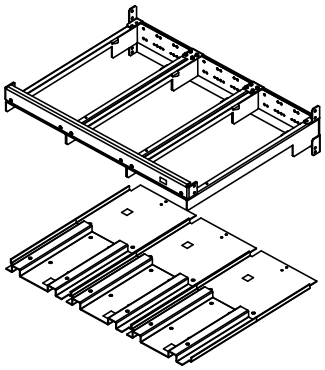
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
1×D8T	400/600/800 mm (15.75/23.62/31.50 in)	3	A-468-8-230	3AXD50000002639	 Instruction code: 3AXD50000002638

Mechanical installation accessories and tools – 3×D8T, 6-pulse, generic cabinet

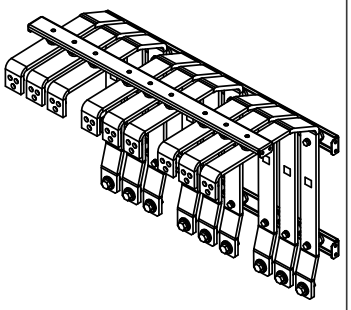
Module installation parts

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

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
3×D8T	800 mm (31.50 in)	1	A-8-8-314	3AXD50000006117	 Instruction code: 3AXD50000006142

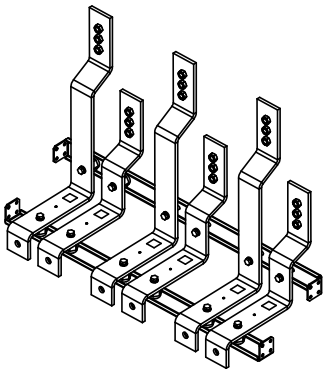
AC busbars to quick connector

The common AC busbars of the cabinet (user-defined) connect to the supply module AC terminals via the AC busbars to quick connector and the AC quick connector.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
3×D8T	800 mm (31.50 in)	1	A-8-8-185	3AXD50000006514	 Instruction code: 3AXD50000006272

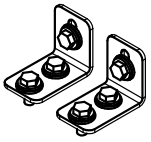
DC busbars

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
3×D8T	800 mm (31.50 in)	1	A-8-8-211	3AXD50000006516	 Instruction code: 3AXD50000006284

DC connection flanges

The common DC busbars of the cabinet (user-defined) connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
3×D8T	400/600/800 mm (15.75/23.62/31.50 in)	3	A-468-8-230	3AXD50000002639	 Instruction code: 3AXD50000002638

Other components and tools – 3×D8T, 6-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main circuit breaker	*Main circuit breakers (page 198)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Pull-out ramp	*Pull-out ramp for the D8T supply module (page 222)*

Diode supply units – 4×D8T, 5×D8T and 6×D8T 6-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of multiple D8T supply modules
- has a 6-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

For combining supply module cubicles into larger units, see *Configuration overviews – 6-pulse (page 45)*.

Diode supply modules – 4×D8T, 5×D8T and 6×D8T 6-pulse

The type designations and power ratings for the modules are given in section *Ratings (page 225)*. The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-3640A-3+A018	4×D8T	
ACS880-304-4560A-3+A018	5×D8T	
ACS880-304-5470A-3+A018	6×D8T	
U_N = 500 V		
ACS880-304-3640A-5+A018	4×D8T	
ACS880-304-4560A-5+A018	5×D8T	
ACS880-304-5470A-5+A018	6×D8T	
U_N = 690 V		
ACS880-304-3040A-7+A018	4×D8T	
ACS880-304-3800A-7+A018	5×D8T	
ACS880-304-4560A-7+A018	6×D8T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-3640A-3 +A018**	**+A004**: 12-pulse option of half-controlled diode-thyristor bridge **+C129**: cULus listed **+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C134**: CSA certified **+C183**: Internal heating element in the module **+C188**: Direct-on-line (DOL) cooling fan (400 V) **+G304**: 115 V auxiliary voltage supply **Note:** D8T DOL fan is always 400 V.

Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kits. See section *Control units (page 186)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.
- Quick connectors (3AUA0000119227) for each module. See section *Quick connector for D8T module (page 189)*.

Mechanical installation accessories – 4×D8T, 5×D8T and 6×D8T 6-pulse

For the mechanical installation accessories, see:

- *Mechanical installation accessories – 1×D8T, 6-pulse, Rittal VX25 (page 157)*
- *Mechanical installation accessories – 2×D8T, 6-pulse, Rittal VX25 (page 163)*
- *Mechanical installation accessories – 2×D8T, 6-pulse, generic cabinet (page 165)*
- *Mechanical installation accessories and tools – 3×D8T, 6-pulse, generic cabinet (page 180)*

Other components and tools – 4×D8T, 5×D8T and 6×D8T, 6-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main circuit breaker	*Main circuit breakers (page 198)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Pull-out ramp	*Pull-out ramp for the D8T supply module (page 222)*

Diode supply units – 4×D8T and 6×D8T 12-pulse

This section lists the component ordering codes for a diode supply unit which:

- consists of multiple D8T supply modules
- have a 12-pulse connection to AC power line
- is installed in the Rittal VX25 enclosure or in a generic cabinet.

For combining supply module cubicles into larger units, see *Configuration overviews – 12-pulse (page 47)*.

Diode supply modules – 4×D8T and 6×D8T 12-pulse

The type designations and power ratings for the modules are given in section *Ratings (page 225)*. The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
U_N = 400 V		• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard
ACS880-304-2430A-3+A004+A018	4×D8T	
ACS880-304-3640A-3+A004+A018	4×D8T	
ACS880-304-5470A-3+A004+A018	6×D8T	
U_N = 500 V		
ACS880-304-2430A-5+A004+A018	4×D8T	
ACS880-304-3640A-5+A004+A018	4×D8T	
ACS880-304-5470A-5+A004+A018	6×D8T	
U_N = 690 V		
ACS880-304-2130A-7+A004+A018	4×D8T	
ACS880-304-3040A-7+A004+A018	4×D8T	
ACS880-304-4560A-7+A004+A018	6×D8T	

Ordering code format	Option codes
[Module type] + code [+code] … For example, **ACS880-304-2430A-3 +A004+A018**	**+C129**: cULus listed **+C132**: Marine type approval. For more information, see *ACS880 +C132 marine type-approved drive modules and module packages supplement* (3AXD50000037752 [English]). **+C134**: CSA certified **+C183**: Internal heating element in the module **+C188**: Direct-on-line (DOL) cooling fan (400 V) **+G304**: 115 V auxiliary voltage supply **Note:** D8T DOL fan is always 400 V.

Note: The following components are always required to construct a working unit out of the modules and you must order them separately:

- BCU control unit kits. See section *Control units (page 186)*.
- A pair of fiber optic cables for the communication link between the control unit and each module. See section *Fiber optic cables for supply modules (page 187)*.
- Control circuit plug connectors for each supply module and the necessary cabling. See section *Control circuit plug connectors for supply modules (page 188)*.
- Quick connectors (3AUA0000119227) for each module. See section *Quick connector for D8T module (page 189)*.

Mechanical installation accessories

Needed mechanical installation accessories depend on the width of the construction. For the mechanical installation accessories, see:

- *Mechanical installation accessories – 1×D8T, 6-pulse, Rittal VX25 (page 157)*
- *Mechanical installation accessories – 2×D8T, 12-pulse, Rittal VX25 (page 169)*
- *Mechanical installation accessories and tool – 2×D8T, 12-pulse, generic cabinet (page 171)*
- *Mechanical installation accessories and tools – 3×D8T, 6-pulse, generic cabinet (page 180)*

Other components and tools – 4×D8T and 6×D8T, 12-pulse

Component	See section …
Main switch-disconnector	*Main switch-disconnectors (page 189)*
AC fuses	*AC fuses (page 193)*
Main circuit breaker	*Main circuit breakers (page 198)*
Control panel and its door mounting	*Control panel (page 215)*
Ventilation kits	*Ventilation kits (page 216)*
Bracket for Flat-PLS busbar holder (Rittal VX25)	*Bracket for Rittal Flat-PLS busbar holder (common AC) (page 222)* *DC bus installation parts (for Rittal VX25 enclosures) (page 223)*
Pull-out ramp	*Pull-out ramp for the D8T supply module (page 222)*

Control units

Control units – 6-pulse

Supply module	Size	Control unit	Qty	Ordering code
U_N = 400 V, 500 V, 690 V				
ACS880-304-0650A-3+A018	1xD8T	BCU-02 kit for DxT	1	3AXD50000006338
ACS880-304-0980A-3+A018				
ACS880-304-0650A-5+A018				
ACS880-304-0980A-5+A018				
ACS880-304-0570A-7+A018				
ACS880-304-0820A-7+A018				
ACS880-304-1210A-3+A018	2xD8T			
ACS880-304-1820A-3+A018				
ACS880-304-1210A-5+A018				
ACS880-304-1820A-5+A018				
ACS880-304-1060A-7+A018				
ACS880-304-1520A-7+A018				
ACS880-304-2730A-3+A018	3xD8T	BCU-12 kit for DxT	1	3AXD50000006351
ACS880-304-2730A-5+A018				
ACS880-304-2280A-7+A018				
ACS880-304-3640A-3+A018	4xD8T			
ACS880-304-3640A-5+A018				
ACS880-304-3040A-7+A018				
ACS880-304-4560A-3+A018	5xD8T			
ACS880-304-4560A-5+A018				
ACS880-304-3800A-7+A018				
ACS880-304-5470A-3+A018	6xD8T			
ACS880-304-5470A-5+A018				
ACS880-304-4560A-7+A018				

Control units – 12-pulse

The control unit kit contains: BCU control unit and memory unit with the control program.

Supply module	Size	Control unit	Qty	Ordering code
U_N = 400 V, 500 V, 690 V				
ACS880-304-0910A-3+A004+A018	2xD7T	BCU-02 kit for DxT	1	3AXD50000006338
ACS880-304-0910A-5+A004+A018				
ACS880-304-0760A-7+A004+A018				
ACS880-304-1210A-3+A004+A018	2xD8T			
ACS880-304-1820A-3+A004+A018				
ACS880-304-1210A-5+A004+A018				
ACS880-304-1820A-5+A004+A018				
ACS880-304-1060A-7+A004+A018				
ACS880-304-1520A-7+A004+A018				
ACS880-304-2430A-3+A004+A018	4xD8T	BCU-12 kit for DxT	1	3AXD50000006351
ACS880-304-3640A-3+A004+A018				
ACS880-304-2430A-5+A004+A018				
ACS880-304-3640A-5+A004+A018				
ACS880-304-2130A-7+A004+A018				
ACS880-304-3040A-7+A004+A018				
ACS880-304-5470A-3+A004+A018	6xD8T			
ACS880-304-5470A-5+A004+A018				
ACS880-304-4560A-7+A004+A018				

Fiber optic cables for supply modules

The fiber optic cables are needed between the control unit and the supply module. The cable kits are shown below. Select a kit with suitable length. You need one pair of cables (kit) per each supply module.

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

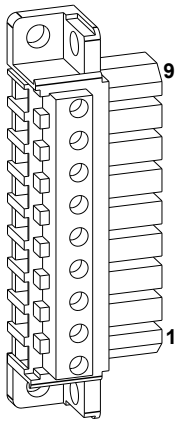
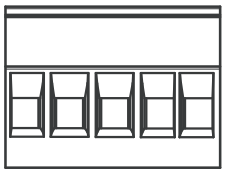
Control circuit plug connectors for supply modules

The control circuit plug connectors are not included in the module kit but you must order them separately:

- You need one plug connector X50 for the AC auxiliary power supply connection for each diode supply module. See the table below.
- If you supply 24 V DC for the control unit from one diode supply module, you need one plug connector X53.

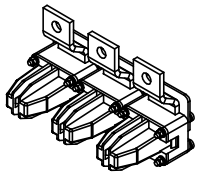
Note: Plug connector for X53 is included in the module kit.

The user must acquire and install the cabling for the plug connectors. For more information on the plug connectors, see section *Connecting auxiliary power to the diode supply module (page 106)*.

Connect-or	Data	Qty	Ordering code	Illustration
X50	STV S 9 SB 9-pole 6 KV/3 (female) 4 mm^2, 500 V, 32 A	1 per module	3AUA0000059813	
X53	MSTB 2.5/5-ST-5.08 2.50 mm^2, 320 V, 12 A	1 per module	3AXD50000012975	

Quick connector for D8T module

The module quick connector is not included in the diode supply module kit but you must order it separately for each D8T supply module. The AC power input is connected to the module through the quick connector. For the dimension drawing, see section *Dimensions of quick connector for D8T module (page 256)*.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
D8T	400 mm (15.75 in)	1	A-468-8-100	3AUA0000119227	 Instruction code: 3AUA0000115013, 3AUA0000118667

Main switch-disconnectors

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

For the dimension drawings, see section *Dimensions of main switch-disconnectors (page 260)*.

Note: For the high power units, you can use withdrawable main circuit breaker instead of the main switch-disconnector. 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 *. See section *Main circuit breakers (page 198)*.

IEC main switch-disconnector kits – 6-pulse

Supply module	Size	IEC switch-disconnectors		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0650A-3+A018	1×D8T	OT1250E12	1250 A, 1000 V	1	3AXD50000006185
ACS880-304-0980A-3+A018					
ACS880-304-0650A-5+A018					
ACS880-304-0980A-5+A018					
ACS880-304-0570A-7+A018					
ACS880-304-0820A-7+A018					
ACS880-304-1210A-3+A018*	2×D8T	OT2000E12	2000 A, 1000 V	1	3AXD50000006186
ACS880-304-1820A-3+A018*					
ACS880-304-1210A-5+A018*					
ACS880-304-1820A-5+A018*					
ACS880-304-1060A-7+A018		OT1250E12	1250 A, 1000 V	1	3AXD50000006185
ACS880-304-1520A-7+A018*		OT2000E12	2000 A, 1000 V	1	3AXD50000006186

Kit contents:

- IEC main switch-disconnector
- Shaft (12 × 465 mm)
- OHB150J12P handle with on/off indication
- OA1G10 normally-open auxiliary contact block.

UL main switch-disconnector kits – 6-pulse

Supply module	Size	UL switch-disconnectors		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0650A-3+A018	1×D8T	OT1200U12	1200 A, 600 V	1	3AXD50000010814 *
ACS880-304-0980A-3+A018					
ACS880-304-0650A-5+A018					
ACS880-304-0980A-5+A018					
ACS880-304-0570A-7+A018					
ACS880-304-0820A-7+A018					
ACS880-304-1060A-7+A018	2×D8T				

Kit contents:

- UL main switch-disconnector
- Shaft (12 × 465 mm)
- OHB150J12P handle with on/off indication
- OA1G10 normally-open auxiliary contact block.

IEC main switch-disconnector kits – 12-pulse

Supply module	Size	IEC switch-disconnectors		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0910A-3+A004+A018	2×D7T	OT1250E12DD	1250 A, 1000 V	1	3AXD50000009845
ACS880-304-0910A-5+A004+A018					
ACS880-304-0760A-7+A004+A018					
ACS880-304-1210A-3+A004+A018	2×D8T				
ACS880-304-1820A-3+A004+A018					
ACS880-304-1210A-5+A004+A018					
ACS880-304-1820A-5+A004+A018					
ACS880-304-1060A-7+A004+A018					
ACS880-304-1520A-7+A004+A018					
ACS880-304-2430A-3+A004+A018*	4×D8T	OT2000E12	2000 A, 1000 V	2	3AXD50000006186
ACS880-304-3640A-3+A004+A018*					
ACS880-304-2430A-5+A004+A018*					
ACS880-304-3640A-5+A004+A018*					
ACS880-304-2130A-7+A004+A018*					
ACS880-304-3040A-7+A004+A018*					

Kit contents (3AXD50000009845):

- IEC main switch-disconnector
- Shaft (12 × 395 mm)
- OHB200J12PTE08 handle
- OA1G10 normally-open auxiliary contact block (2 pcs).

Kit contents (3AXD50000006186):

- IEC main switch-disconnector
- Shaft (12 × 465 mm)
- OHB150J12P handle with on/off indication
- OA1G10 normally-open auxiliary contact block.

UL main switch-disconnector kits – 12-pulse

Supply module	Size	UL switch-disconnectors		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0910A-3+A004+A018	2×D7T	OT1200U12	1200 A, 600 V	2	3AXD50000010814 *
ACS880-304-0910A-5+A004+A018					
ACS880-304-0760A-7+A004+A018					
ACS880-304-1210A-3+A004+A018	2×D8T				
ACS880-304-1820A-3+A004+A018					
ACS880-304-1210A-5+A004+A018					
ACS880-304-1820A-5+A004+A018					
ACS880-304-1060A-7+A004+A018					
ACS880-304-1520A-7+A004+A018					

Kit contents:

- UL main switch-disconnector
- Shaft (12 × 465 mm)
- OHB150J12P handle with on/off indication
- OA1G10 normally-open auxiliary contact block.

AC fuses

Always equip the supply unit either with the main AC fuses, module-specific AC fuses or both:

- Equip the supply unit with main AC fuses to protect the supply modules against short circuits.
  Equip the supply unit with additional module-specific AC fuses, if
  - the main AC fuses do not protect the supply modules
  - the main contactor is installed
  - there are parallel modules after the main AC fuses.
- Equip the supply unit only with module-specific AC fuses, if the main circuit breaker is installed.

For the dimension drawings, see section *Dimensions of AC fuses (page 265)*.

IEC/UL main AC fuses – 6-pulse

Supply module	Size	AC fuses (IEC, UL)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0650A-3+A018	1×D8T	170M6415	1100 A, 690 V	3	68731658
ACS880-304-0980A-3+A018		170M6419	1600 A, 690 V	3	68393108
ACS880-304-0650A-5+A018		170M6415	1100 A, 690 V	3	68731658
ACS880-304-0980A-5+A018		170M6419	1600 A, 690 V	3	68393108
ACS880-304-0570A-7+A018		170M6414	1000 A, 690 V	3	68333296
ACS880-304-0820A-7+A018		170M6417	1400 A, 690 V	3	3AXD50000000150
ACS880-304-1210A-3+A018	2×D8T	170M7062	2000 A, 690 V	3	68689589
ACS880-304-1820A-3+A018		170M7064	3000 A, 690 V	3	3AXD50000001059
ACS880-304-1210A-5+A018		170M7062	2000 A, 690 V	3	68689589
ACS880-304-1820A-5+A018		170M7064	3000 A, 690 V	3	3AXD50000001059
ACS880-304-1060A-7+A018		170M6419	1600 A, 690 V	3	68393108
ACS880-304-1520A-7+A018		170M7063	2500 A, 690 V	3	68752591

IEC/UL module-specific AC fuses – 6-pulse

Supply module	Size	AC fuses (IEC, UL)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-1210A-3+A018	2×D8T	170M6415	1100 A, 690 V	6	68731658
ACS880-304-1820A-3+A018		170M6419	1600 A, 690 V	6	68393108
ACS880-304-1210A-5+A018		170M6415	1100 A, 690 V	6	68731658
ACS880-304-1820A-5+A018		170M6419	1600 A, 690 V	6	68393108
ACS880-304-1060A-7+A018		170M6414	1000 A, 690 V	6	68333296
ACS880-304-1520A-7+A018		170M6417	1400 A, 690 V	6	3AXD50000000150
ACS880-304-2730A-3+A018	3×D8T	170M6419	1600 A, 690 V	9	68393108
ACS880-304-2730A-5+A018		170M6419	1600 A, 690 V	9	68393108
ACS880-304-2280A-7+A018		170M6417	1400 A, 690 V	9	3AXD50000000150
ACS880-304-3640A-3+A018	4×D8T	170M6419	1600 A, 690 V	12	68393108
ACS880-304-3640A-5+A018		170M6419	1600 A, 690 V	12	68393108
ACS880-304-3040A-7+A018		170M6417	1400 A, 690 V	12	3AXD50000000150
ACS880-304-4560A-3+A018	5×D8T	170M6419	1600 A, 690 V	15	68393108
ACS880-304-4560A-5+A018		170M6419	1600 A, 690 V	15	68393108
ACS880-304-3800A-7+A018		170M6417	1400 A, 690 V	15	3AXD50000000150
ACS880-304-5470A-3+A018	6×D8T	170M6419	1600 A, 690 V	18	68393108
ACS880-304-5470A-5+A018		170M6419	1600 A, 690 V	18	68393108
ACS880-304-4560A-7+A018		170M6417	1400 A, 690 V	18	3AXD50000000150

IEC main AC fuses – 12-pulse

Supply module	Size	AC fuses (IEC)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0910A-3+A004+A018	2×D7T	170M6412	800 A, 690 V	6	68731640
ACS880-304-0910A-5+A004+A018		170M6412	800 A, 690 V	6	68731640
ACS880-304-0760A-7+A004+A018		170M6411	700 A, 690 V	6	3AXD50000000175
ACS880-304-1210A-3+A004+A018	2×D8T	170M6415	1100 A, 690 V	6	68731658
ACS880-304-1820A-3+A004+A018		170M6419	1600 A, 690 V	6	68393108
ACS880-304-1210A-5+A004+A018		170M6415	1100 A, 690 V	6	68731658
ACS880-304-1820A-5+A004+A018		170M6419	1600 A, 690 V	6	68393108
ACS880-304-1060A-7+A004+A018		170M6414	1000 A, 690 V	6	68333296
ACS880-304-1520A-7+A004+A018		170M6417	1400 A, 690 V	6	3AXD50000000150
ACS880-304-2430A-3+A004+A018	4×D8T	170M7062	2000 A, 690 V	6	68689589
ACS880-304-3640A-3+A004+A018		170M7064	3000 A, 690 V	6	3AXD50000001059
ACS880-304-2430A-5+A004+A018		170M7062	2000 A, 690 V	6	68689589
ACS880-304-3640A-5+A004+A018		170M7064	3000 A, 690 V	6	3AXD50000001059
ACS880-304-2130A-7+A004+A018		170M7062	2000 A, 690 V	6	68689589
ACS880-304-3040A-7+A004+A018		170M7063	2500 A, 690 V	6	68752591

UL main AC fuses – 12-pulse

Supply module	Size	AC fuses (UL)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0910A-3+A004+A018	2×D7T	170M6412	800 A, 690 V	6	68731640
ACS880-304-0910A-5+A004+A018		170M6412	800 A, 690 V	6	68731640
ACS880-304-0760A-7+A004+A018		170M6411	700 A, 690 V	6	3AXD50000000175
ACS880-304-1210A-3+A004+A018	2×D8T	170M6415	1100 A, 690 V	6	68731658
ACS880-304-1820A-3+A004+A018		170M6419	1600 A, 690 V	6	68393108
ACS880-304-1210A-5+A004+A018		170M6415	1100 A, 690 V	6	68731658
ACS880-304-1820A-5+A004+A018		170M6419	1600 A, 690 V	6	68393108
ACS880-304-1060A-7+A004+A018		170M6414	1000 A, 690 V	6	68333296
ACS880-304-1520A-7+A004+A018		170M6417	1400 A, 690 V	6	3AXD50000000150

IEC module-specific AC fuses – 12-pulse

Supply module	Size	AC fuses (IEC)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-5470A-3+A004+A018	6×D8T	170M6419	1600 A, 690 V	18	68393108
ACS880-304-5470A-5+A004+A018		170M6419	1600 A, 690 V	18	68393108
ACS880-304-4560A-7+A004+A018		170M6417	1400 A, 690 V	18	3AXD50000000150

UL module-specific AC fuses – 12-pulse

Supply module	Size	AC fuses (UL)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-2430A-3+A004+A018	4×D8T	170M6415	1100 A, 690 V	12	68731658
ACS880-304-3640A-3+A004+A018		170M6419	1600 A, 690 V	12	68393108
ACS880-304-2430A-5+A004+A018		170M6415	1100 A, 690 V	12	68731658
ACS880-304-3640A-5+A004+A018		170M6419	1600 A, 690 V	12	68393108
ACS880-304-2130A-7+A004+A018		170M6414	1000 A, 690 V	12	68333296
ACS880-304-3040A-7+A004+A018		170M6417	1400 A, 690 V	12	3AXD50000000150
ACS880-304-5470A-3+A004+A018	6×D8T	170M6419	1600 A, 690 V	18	68393108
ACS880-304-5470A-5+A004+A018		170M6419	1600 A, 690 V	18	68393108
ACS880-304-4560A-7+A004+A018		170M6417	1400 A, 690 V	18	3AXD50000000150

Main contactors

You can use the main contactors for the on-off control of the AC input power. The contactors can make and break the full load current.

The contactor package includes:

- contactor unit
- 2 × normally-open OA1G10 + 2 × normally-closed auxiliary contacts OA1G01.

For the dimension drawings, see section *Dimensions of main contactors (page 267)*.

IEC/UL main contactors – 6-pulse

Supply module type	Size	Main contactor (IEC, UL)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0650A-3+A018	1×D8T	AF1250-30-22-70	1260 A (I_{Th}), 1000 V (U_E)	1	68687284
ACS880-304-0980A-3+A018					
ACS880-304-0650A-5+A018					
ACS880-304-0980A-5+A018					
ACS880-304-0570A-7+A018					
ACS880-304-0820A-7+A018					
ACS880-304-1210A-3+A018	2×D8T	AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E)	1	64731378
ACS880-304-1820A-3+A018		AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E)	1	3AUA0000051805
ACS880-304-1210A-5+A018		AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E)	1	64731378
ACS880-304-1820A-5+A018		AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E)	1	3AUA0000051805
ACS880-304-1060A-7+A018		AF1250-30-22-70	1250 A (I_{Th}), 1000 V (U_E)	1	68687284
ACS880-304-1520A-7+A018		AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E)	1	64731378

IEC main contactors – 12-pulse

Supply module type	Size	Main contactor (IEC)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0910A-3+A004+A018	2×D7T	AF1250-30-22-70	1260 A (I_{Th}), 1000 V (U_E)	2	68687284
ACS880-304-0910A-5+A004+A018					
ACS880-304-0760A-7+A004+A018					
ACS880-304-1210A-3+A004+A018	2×D8T	AF1250-30-22-70	1260 A (I_{Th}), 1000 V (U_E)	2	68687284
ACS880-304-1820A-3+A004+A018					
ACS880-304-1210A-5+A004+A018					
ACS880-304-1820A-5+A004+A018					
ACS880-304-1060A-7+A004+A018					
ACS880-304-1520A-7+A004+A018					
ACS880-304-2430A-3+A004+A018	4×D8T	AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E)	2	64731378
ACS880-304-3640A-3+A004+A018		AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E)	2	3AUA0000051805
ACS880-304-2430A-5+A004+A018		AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E)	2	64731378
ACS880-304-3640A-5+A004+A018		AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E)	2	3AUA0000051805
ACS880-304-2130A-7+A004+A018		AF1650-30-22-70	1650 A (I_{Th}), 1000 V (U_E)	2	64731378
ACS880-304-3040A-7+A004+A018		AF2050-30-22-70	2050 A (I_{Th}), 1000 V (U_E)	2	3AUA0000051805

UL main contactors – 12-pulse

Supply module type	Size	Main contactor (UL)		Qty	Ordering code
		Type	Data		
U_N = 400 V, 500 V, 690 V					
ACS880-304-0910A-3+A004+A018	2×D7T	AF1250-30-22-70	1260 A (I_{Th}), 1000 V (U_E)	2	68687284
ACS880-304-0910A-5+A004+A018					
ACS880-304-0760A-7+A004+A018					
ACS880-304-1210A-3+A004+A018	2×D8T	AF1250-30-22-70	1260 A (I_{Th}), 1000 V (U_E)	2	68687284
ACS880-304-1820A-3+A004+A018					
ACS880-304-1210A-5+A004+A018					
ACS880-304-1820A-5+A004+A018					
ACS880-304-1060A-7+A004+A018					
ACS880-304-1520A-7+A004+A018					

Main circuit breakers

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).)

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 *.

Note: UL main circuit breakers have IEC certification according to IEC 60947. See ABB SACE catalogs for further details.

For illustrations and dimensions, see manufactures data sheet in the Internet.

IEC main circuit breakers – 6-pulse 230 V

Main circuit breaker (IEC)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
1210A-3+A018*	2×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048327
1820A-3+A018*	2×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048330
1210A-5+A018*	2×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048327
1820A-5+A018*	2×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048330
1520A-7+A018*	2×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048327
2730A-3+A018	3×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346
2730A-5+A018	3×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346
2280A-7+A018	3×D8T	E4.2S-A 2500	2500 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048343
3640A-3+A018	4×D8T	E6.2V-A 4000	4000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048348
3640A-5+A018	4×D8T	E6.2V-A 4000	4000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048348
3040A-7+A018	4×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346
4560A-3+A018	5×D8T	E6.2V-A 5000	5000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048352
4560A-5+A018	5×D8T	E6.2V-A 5000	5000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048352
3800A-7+A018	5×D8T	E6.2V-A 4000	4000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048348
5470A-3+A018	6×D8T	E6.2V 6300	6300 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000048350
5470A-5+A018	6×D8T	E6.2V 6300	6300 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000048350
4560A-7+A018	6×D8T	E6.2V-A 5000	5000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048352

Content of the 6-pulse 230 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA072501R1 (E4.2S 3200) 1SDA078458R1 (E4.2S-A 2500) 1SDA079128R1 (E6.2V-A 4000) 1SDA079138R1 (E6.2V-A 5000) 1SDA072651R1 (E6.2V 6300)
YO E1.2...E6.2 220-240 Vac/dc	1SDA073674R1

Content of the 6-pulse 230 V main circuit breakers	
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
TRIPLE CERTIFIC: UL/IEC/CCC [1)]	1SDA083022R1 (E2.2S) 1SDA083025RI (E4.2S) 1SDA083028RI (E6.2V)

1) Certificate not included in E4.2S 3200 and E6.2V 6300.

For adapting E2.2S-A, E4.2S-A and E6.2V-A air circuit breakers to IEC bus bars, use a bus bar shim kit. See section *IEC bus bar shim kit (page 214)*.

Wagon (IEC)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
1210A-3+A018*	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048354
1820A-3+A018*				
1210A-5+A018*				
1820A-5+A018*				
1520A-7+A018*				
2730A-3+A018	E4.2_W_FP_3200_HR-HR_IEC	3-pole rear HR-HR term., IEC	1	3AXD50000048356
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018	E4.2_W_FP_3200_HR-HR_IEC	3-pole rear HR-HR term., IEC	1	3AXD50000048356
4560A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-5+A018				
3800A-7+A018				
5470A-3+A018	E6.2X_W_FP_6300_HR	3-pole rear HR-HR term., IEC	1	3AXD50000048353
5470A-5+A018				
4560A-7+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402

Content of the 6-pulse 230 V wagons	
W FP lu=2000 3p HR HR UL / W FP lu=2500 3p HR HR UL / WAGON W FP lu=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
IEC-wagons E4.2_W_FP_3200 and E6.2X_W_FP_6300	

Content of the 6-pulse 230 V wagons	
W FP lu=3200 HR HR, IEC W FP lu=6300 or X version 3p HR HR	1SDA073913R1 (E4.2_W_FP_3200) 1SDA073920R1 (E6.2X_W_FP_6300)
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

For adapting E2.2S-A, E4.2S-A and E6.2V-A air circuit breakers to IEC bus bars, use a bus bar shim kit. See section *IEC bus bar shim kit (page 214)*.

UL main circuit breakers – 6-pulse 230 V

Main circuit breaker (UL)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
1210A-3+A018	2×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048327
1820A-3+A018	2×D8T	E2.2S-A 2000	2000 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048330
1210A-5+A018	2×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048327
1820A-5+A018	2×D8T	E2.2S-A 2000	2000 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048330
1520A-7+A018	2×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048327
2730A-3+A018	3×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
2730A-5+A018	3×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
2280A-7+A018	3×D8T	E4.2S-A 2500	2500 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048343
3640A-3+A018	4×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
3640A-5+A018	4×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
3040A-7+A018	4×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
4560A-3+A018	5×D8T	E6.2V-A 5000	5000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048352
4560A-5+A018	5×D8T	E6.2V-A 5000	5000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048352
3800A-7+A018	5×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
5470A-3+A018	6×D8T	Not available from ABB			
5470A-5+A018	6×D8T				
4560A-7+A018	6×D8T	E6.2V-A 5000	5000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048352

Content of the 6-pulse 230 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA079128R1 (E6.2V-A 4000) 1SDA078458R1 (E4.2S-A 2500) 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

Content of the 6-pulse 230 V main circuit breakers	
KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key	1SDA073807R1
TRIPLE CERTIFIC: UL/IEC/CCC	1SDA083022R1 (E2.2S) 1SDA083025RI (E4.2S) 1SDA083028RI (E6.2V)

Wagon (UL)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
1210A-3+A018	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048354
1820A-3+A018				
1210A-5+A018				
1820A-5+A018				
1520A-7+A018				
2730A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018				
4560A-3+A018				
4560A-5+A018				
3800A-7+A018				
5470A-3+A018	Not available from ABB			
5470A-5+A018				
4560A-7+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402

Content of the 6-pulse 230 V 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

IEC main circuit breakers – 12-pulse 230 V

Main circuit breaker (IEC)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
2430A-3+A004+A018*	4×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048327
3640A-3+A004+A018*	4×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048330
2430A-5+A004+A018*	4×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048327
3640A-5+A004+A018*	4×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048330
2130A-7+A004+A018*	4×D8T	E2.2S-A 1200	1250 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048328
3040A-7+A004+A018*	4×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048327
5470A-3+A004+A018	6×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	2	3AXD50000048346
5470A-5+A004+A018	6×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	2	3AXD50000048346
4560A-7+A004+A018	6×D8T	E4.2S-A 2500	2500 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048343

Content of the 12-pulse 230 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA072501R1 (E4.2S 3200) 1SDA078458R1 (E4.2S-A 2500)
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
TRIPLE CERTIFIC: UL/IEC/CCC [1)]	1SDA083022R1 (E2.2S) 1SDA083025RI (E4.2S)

1) Certificate not included in E4.2S 3200

Wagon (IEC)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
2430A-3+A004+A018*	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000048354
3640A-3+A004+A018*				
2430A-5+A004+A018*				
3640A-5+A004+A018*				
2130A-7+A004+A018*				
3040A-7+A004+A018*				
5470A-3+A004+A018	E4.2_W_FP_3200_HR-HR_IEC	3-pole rear HR-HR term., IEC	2	3AXD50000048356
5470A-5+A004+A018				
4560A-7+A004+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000039281

Content of the 12-pulse 230 V wagons	
W FP Iu=2000 3p HR HR UL / W FP Iu=2500 3p HR HR UL	1SDA079698R1 (E2.2-A_W_FP_2000) 1SDA079700R1 (E4.2-A_W_FP_2500)
AUP 5 contacts 400V E2.2...E6.2 - left set	1SDA080373R1
IEC-wagon E4.2_W_FP_3200	
W FP Iu=3200 HR HR, IEC	1SDA073913R1 (E4.2_W_FP_3200)
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

UL main circuit breakers – 12-pulse 230 V

Main circuit breaker (UL)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
2430A-3+A004+A018	4×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048327
3640A-3+A004+A018	4×D8T	E2.2S-A 2000	2000 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048330
2430A-5+A004+A018	4×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048327
3640A-5+A004+A018	4×D8T	E2.2S-A 2000	2000 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048330
2130A-7+A004+A018	4×D8T	E2.2S-A 1200	1200 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048328
3040A-7+A004+A018	4×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048327
5470A-3+A004+A018	6×D8T	E6.2V-A 4000	3200A, 600 V, 3P, 100 kA, UL	2	3AXD50000048348
5470A-5+A004+A018	6×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	2	3AXD50000048348
4560A-7+A004+A018	6×D8T	E4.2S-A 2500	2500 A, 600 V, 3P, 65 kA, UL	2	3AXD50000048343

Content of the 12-pulse 230 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA079128R1 (E6.2V-A 4000) 1SDA078458R1 (E4.2S-A 2500)
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
TRIPLE CERTIFIC: UL/IEC/CCC	1SDA083022R1 (E2.2S) 1SDA083025RI (E4.2S)

Certificate not included in E4.2S 3200

Wagon (UL)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
2430A-3+A004+A018	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000048354
3640A-3+A004+A018				
2430A-5+A004+A018				
3640A-5+A004+A018				
2130A-7+A004+A018				
3040A-7+A004+A018				
5470A-3+A004+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000048402
5470A-5+A004+A018				
4560A-7+A004+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000039281

Content of the 12-pulse 230 V 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

IEC main circuit breakers – 6-pulse 115 V

Main circuit breaker (IEC)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
1210A-3+A018*	2×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048329
1820A-3+A018*	2×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048342
1210A-5+A018*	2×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048329
1820A-5+A018*	2×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048342
1520A-7+A018*	2×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048329
2730A-3+A018	3×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341
2730A-5+A018	3×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341
2280A-7+A018	3×D8T	E4.2S-A 2500	2500 A, 690 V, 3P, 65 kA, UL	1	3AXD50000048345
3640A-3+A018	4×D8T	E6.2V-A 4000	4000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048347
3640A-5+A018	4×D8T	E6.2V-A 4000	4000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048347
3040A-7+A018	4×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341
4560A-3+A018	5×D8T	E6.2V-A 5000	5000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048349
4560A-5+A018	5×D8T	E6.2V-A 5000	5000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048349
3800A-7+A018	5×D8T	E6.2V-A 4000	4000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048347
5470A-3+A018	6×D8T	E6.2V 6300	6300 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000048344
5470A-5+A018	6×D8T	E6.2V 6300	6300 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000048344
4560A-7+A018	6×D8T	E6.2V-A 5000	5000 A, 690 V, 3P, 100 kA, UL	1	3AXD50000048349

Content of the 6-pulse 115 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA072501R1 (E4.2S 3200) 1SDA078458R1 (E4.2S-A 2500) 1SDA079128R1 (E6.2V-A 4000) 1SDA079138R1 (E6.2V-A 5000) 1SDA072651R1 (E6.2V 6300)
YO E1.2...E6.2 110-120 Vac/dc	1SDA073672R1

Content of the 6-pulse 115 V main circuit breakers	
YC E1.2...E6.2 110-120 Vac/dc	1SDA073685R1
YU E1.2...E6.2 110-120 Vac/dc	1SDA073698R1
M E1.2...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 1st key	1SDA073792R1
KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key	1SDA073807R1
TRIPLE CERTIFIC: UL/IEC/CCC [1)]	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S) 1SDA083028R1 (E6.2V)

1) Certificate not included in E4.2S 3200 and E6.2V 6300.

Wagon (IEC)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
1210A-3+A018*	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048354
1820A-3+A018*				
1210A-5+A018*				
1820A-5+A018*				
1520A-7+A018*				
2730A-3+A018	E4.2_W_FP_3200_HR-HR_IEC	3-pole rear HR-HR term., IEC	1	3AXD50000048356
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018	E4.2_W_FP_3200_HR-HR_IEC	3-pole rear HR-HR term., IEC	1	3AXD50000048356
4560A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-5+A018				
3800A-7+A018				
5470A-3+A018	E6.2X_W_FP_6300_HR	3-pole rear HR-HR term., IEC	1	3AXD50000048353
5470A-5+A018				
4560A-7+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402

Content of the 6-pulse 115 V wagons	
W FP lu=2000 3p HR HR UL / W FP lu=2500 3p HR HR UL / WAGON W FP lu=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
IEC-wagons E4.2_W_FP_3200 and E6.2X_W_FP_6300	
W FP lu=3200 HR HR, IEC / W FP lu=6300 or X version 3p HR HR	1SDA073913R1 (E4.2_W_FP_3200) 1SDA073920R1 (E6.2X_W_FP_6300)

Content of the 6-pulse 115 V wagons	
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

For adapting E2.2S-A, E4.2S-A and E6.2V-A air circuit breakers to IEC bus bars, use a bus bar shim kit. See section *IEC bus bar shim kit (page 214)*.

UL/CSA main circuit breakers – 6-pulse 115 V

Main circuit breaker (UL)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
1210A-3+A018	2×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048329
1820A-3+A018	2×D8T	E2.2S-A 2000	2000 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048342
1210A-5+A018	2×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048329
1820A-5+A018	2×D8T	E2.2S-A 2000	2000 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048342
1520A-7+A018	2×D8T	E2.2S-A 1600	1600 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048329
2730A-3+A018	3×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
2730A-5+A018	3×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
2280A-7+A018	3×D8T	E4.2S-A 2500	2500 A, 600 V, 3P, 65 kA, UL	1	3AXD50000048345
3640A-3+A018	4×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
3640A-5+A018	4×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
3040A-7+A018	4×D8T	E6.2V-A 4000	3200 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
4560A-3+A018	5×D8T	E6.2V-A 5000	5000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048349
4560A-5+A018	5×D8T	E6.2V-A 5000	5000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048349
3800A-7+A018	5×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
4560A-7+A018	6×D8T	E6.2V-A 5000	5000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048349

Content of the 6-pulse 115 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA079128R1 (E6.2V-A 4000) 1SDA078458R1 (E4.2S-A 2500) 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 E1.2...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 1st key	1SDA073792R1
KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key	1SDA073807R1

Content of the 6-pulse 115 V main circuit breakers	
TRIPLE CERTIFIC: UL/IEC/CCC	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S) 1SDA083028R1 (E6.2V)

Certificate not included in E4.2S 3200 and E6.2V 6300.

Wagon (UL)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
1210A-3+A018	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048354
1820A-3+A018				
1210A-5+A018				
1820A-5+A018				
1520A-7+A018				
2730A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-3+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-5+A018				
3800A-7+A018				
4560A-7+A018				

Content of the 6-pulse 115 V wagons	
W FP lu=2000 3p HR HR UL / W FP lu=2500 3p HR HR UL / WAGON W FP lu=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

IEC main circuit breakers – 12-pulse 115 V

Main circuit breaker (IEC)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
2430A-3+A004+A018*	4×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048329
3640A-3+A004+A018*	4×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048342
2430A-5+A004+A018*	4×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048329
3640A-5+A004+A018*	4×D8T	E2.2S-A 2000	2000 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048342
2130A-7+A004+A018*	4×D8T	E2.2S-A 1200	1200 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048351
3040A-7+A004+A018*	4×D8T	E2.2S-A 1600	1600 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048329
5470A-3+A004+A018	6×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	2	3AXD50000048341
5470A-5+A004+A018	6×D8T	E4.2S 3200	3200 A, 690 V, 3P, 66 kA, IEC	2	3AXD50000048341
4560A-7+A004+A018	6×D8T	E4.2S-A 2500	2500 A, 690 V, 3P, 65 kA, UL	2	3AXD50000048345

Content of the 12-pulse 115 V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA072501R1 (E4.2S 3200) 1SDA078458R1 (E4.2S-A 2500)
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 E1.2...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 1st key	1SDA073792R1
KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key	1SDA073807R1
TRIPLE CERTIFIC: UL/IEC/CCC [1)]	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S)

1) Certificate not included in E4.2S 3200.

For adapting E2.2S-A, E4.2S-A and E6.2V-A air circuit breakers to IEC bus bars, use a bus bar shim kit. See section *IEC bus bar shim kit (page 214)*.

Wagon (IEC)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
2430A-3+A004+A018*	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000048354
3640A-3+A004+A018*				
2430A-5+A004+A018*				
3640A-5+A004+A018*				
2130A-7+A004+A018*				
3040A-7+A004+A018*				
5470A-3+A004+A018	E4.2_W_FP_3200_HR-HR_IEC	3-pole rear HR-HR term., IEC	2	3AXD50000048356
5470A-5+A004+A018				
4560A-7+A004+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000039281

Content of the 12-pulse 115 V wagons	
W FP lu=2000 3p HR HR UL / W FP lu=2500 3p HR HR UL	1SDA079698R1 (E2.2-A_W_FP_2000) 1SDA079700R1 (E4.2-A_W_FP_2500)
AUP 5 contacts 400V E2.2...E6.2 - left set	1SDA080373R1
IEC-wagon E4.2_W_FP_3200	
W FP lu=3200 HR HR, IEC	1SDA073913R1 (E4.2_W_FP_3200)
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

For adapting E2.2S-A, E4.2S-A and E6.2V-A air circuit breakers to IEC bus bars, use a bus bar shim kit. See section *IEC bus bar shim kit (page 214)*.

UL/CSA main circuit breakers – 12-pulse 115 V

Main circuit breaker (UL)					
Supply module ACS880-304-…	**Size**	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V					
2430A-3+A004+A018	4×D8T	E2.2S-A 1600	1600°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048329
3640A-3+A004+A018	4×D8T	E2.2S-A 2000	2000°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048342
2430A-5+A004+A018	4×D8T	E2.2S-A 1600	1600°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048329
3640A-5+A004+A018	4×D8T	E2.2S-A 2000	2000°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048342
2130A-7+A004+A018	4×D8T	E2.2S-A 1200	1200°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048351
3040A-7+A004+A018	4×D8T	E2.2S-A 1600	1600°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048329
5470A-3+A004+A018	6×D8T	E6.2V-A 4000	3200°A, 600°V, 3P, 100°kA, UL	2	3AXD50000048347
5470A-5+A004+A018	6×D8T	E6.2V-A 4000	3200°A, 600°V, 3P, 100°kA, UL	2	3AXD50000048347
4560A-7+A004+A018	6×D8T	E4.2S-A 2500	2500°A, 600°V, 3P, 65°kA, UL	2	3AXD50000048345

Content of the 12-pulse 115°V main circuit breakers	
Ekip Dip LI 3p WMP	1SDA077658R1 (E2.2S-A 1600) 1SDA077668R1 (E2.2S-A 2000) 1SDA077648R1 (E2.2S-A 1200) 1SDA079128R1 (E6.2V-A 4000) 1SDA078458R1 (E4.2S-A 2500)
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 E1.2...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 1st key	1SDA073792R1
KLP-S Key lock racked in/out N.20005 E2.2...E6.2 1st key	1SDA073807R1
TRIPLE CERTIFIC: UL/IEC/CCC	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S) 1SDA083028R1 (E6.2V)

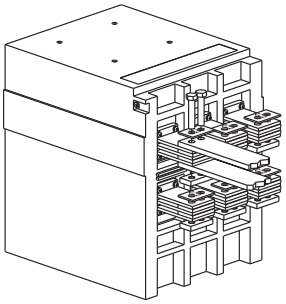
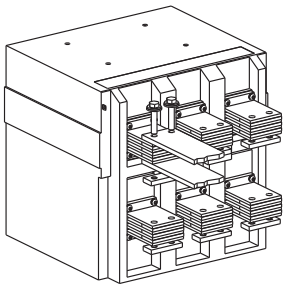
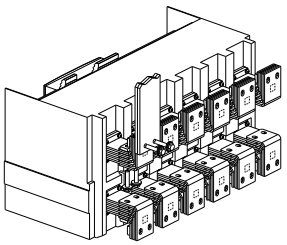
Certificate not included in E4.2S 3200.

Wagon (UL)				
Supply module ACS880-304-…	**Type**	**Data**	**Qty**	**Ordering code**
U_N = 400 V, 500 V, 690 V				
2430A-3+A004+A018	E2.2-A_W_FP_2000HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000048354
3640A-3+A004+A018				
2430A-5+A004+A018				
3640A-5+A004+A018				
2130A-7+A004+A018				
3040A-7+A004+A018				
5470A-3+A004+A018	E6.2-A_W_FP_5000HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000048402
5470A-5+A004+A018				
4560A-7+A004+A018	E4.2-A_W_FP_2500HR-HR_UL	3-pole rear HR-HR term., UL	2	3AXD50000039281

Content of the 12-pulse 115°V wagons	
W FP lu=2000 3p HR HR UL / W FP lu=2500 3p HR HR UL / WAGON W FP lu=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

IEC bus bar shim kit

The following shim kits are available for adapting E2.2S-A, E4.2S-A and E6.2V-A air circuit breakers to IEC bus bars.

Type	Data	Ordering code	Illustration
E2.2S-A	EMAX2 E2.2 busbar shim kit	3AXD50000286324	 Instruction code: 3AXD50000286072
E4.2S-A	EMAX2 E4.2 busbar shim kit	3AXD50000286782	 Instruction code: 3AXD50000286973
E6.2V-A	EMAX2 E6.2 bus bar shim kit	3AXD50000287369	 Instruction code: 3AXD50000287468

Main circuit breaker and wagon cover

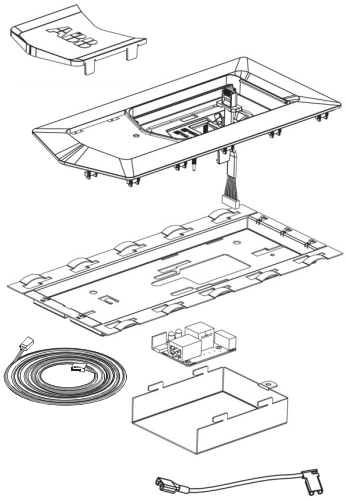
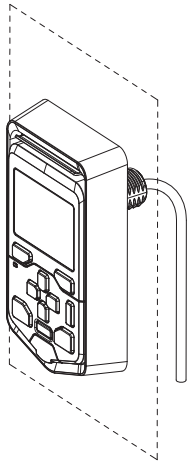
One cover is needed for each main circuit breaker/wagon pair. For further details regarding arc protection, see *Drive modules cabinet design and construction instructions* (3AUA0000107668 [English]).

Type	Description	Ordering code
IEC	IP54 flange, key N.200005 E2.2…E6.2, 1SDA073869R1	3AXD50000049760
UL	Hinged window, APWK2016H	3AUA0000222786

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 *ACX-AP-x 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	

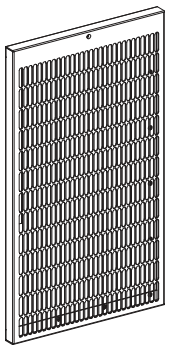
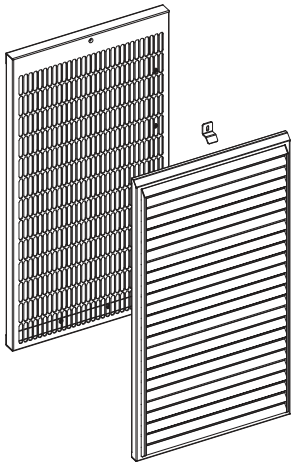
For more information on the door mounting kits, such as the contents of the kit, see the installation manuals:

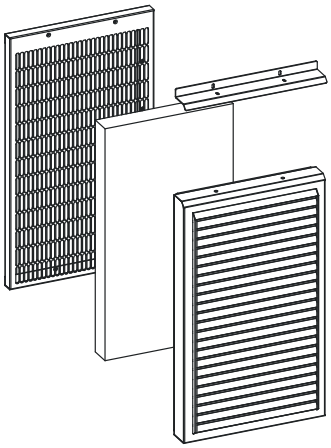
- *DPMP-01 mounting platform for control panels installation guide* (3AUA0000100140 [English])
- *DPMP-02/03 mounting platform for control panels installations guide* (3AUA0000136205 [English]).

Ventilation kits

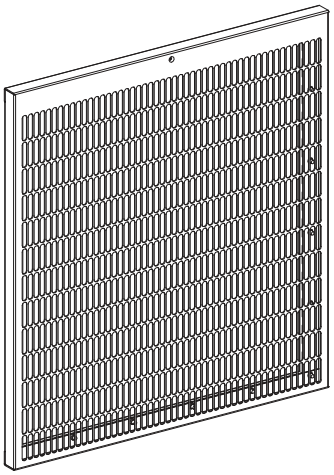
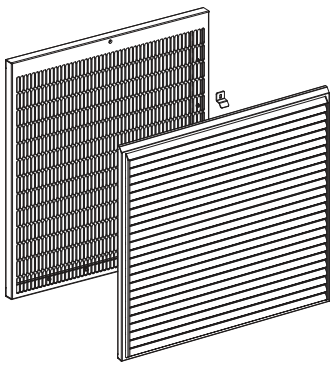
Air inlet kits

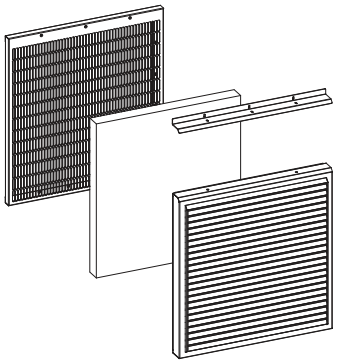
Air inlet kits 400 mm cabinet

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

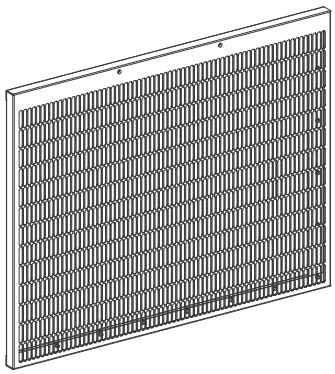
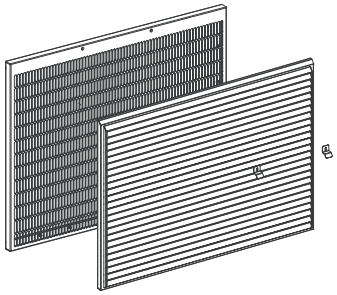
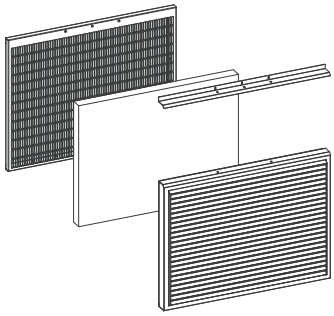
Used with …	Qty	Ordering code	Kit code	Illustration
IP54	1	3AXD50000009184	A-4-X-027	 Instruction code: 3AXD50000009989

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

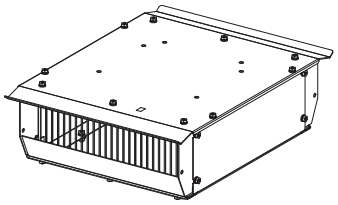
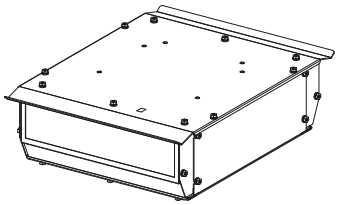
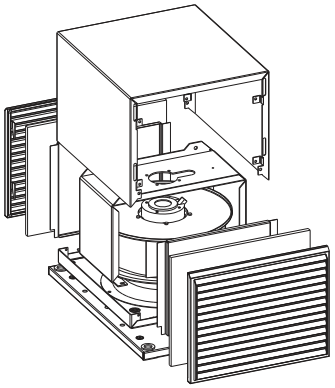
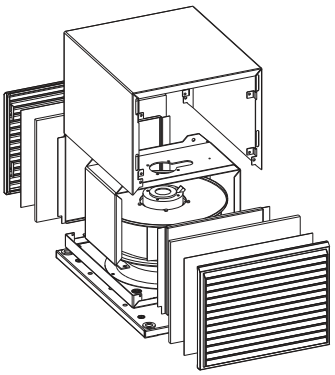
Used with …	Qty	Ordering code	Kit code	Illustration
IP54	1	3AXD50000009185	A-6-X-028	 Instruction code: 3AXD50000009990

Air inlet kits 800 mm cabinet

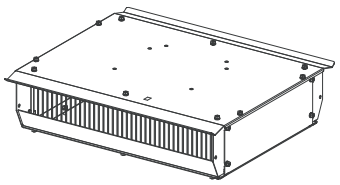
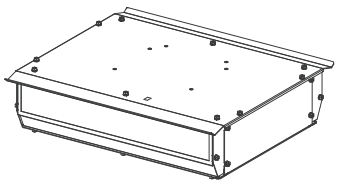
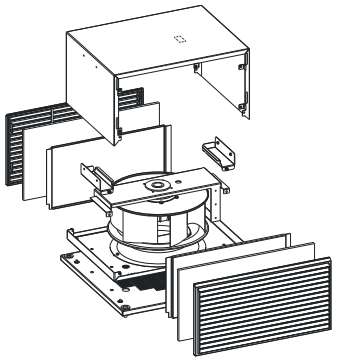
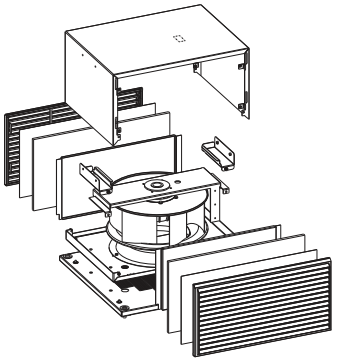
Used with …	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117005	A-8-X-023	 Instruction code: 3AUA0000116887
IP42	1	3AUA0000117009	A-8-X-026	 Instruction code: 3AUA0000116875
IP54	1	3AXD50000009186	A-8-X-029	 Instruction code: 3AXD50000010001

Air outlet kits

Air outlet kits 400 mm cabinet

Used with …	Qty	Ordering code	Kit code	Illustration
IP20 (IEC)	1	3AUA0000125203	A-4-X-042	 Instruction code: 3AXD50000001983
IP42 (IEC)	1	3AUA0000114968	A-4-X-040	 Instruction code: 3AUA0000115292
IP54 (IEC)	1	3AXD50000009187	A-4-X-064	 Instruction code: 3AXD50000010284 **Note:** Fan to be ordered separately
IP54 (UL)	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 (IEC)	1	3AUA0000125204	A-6-X-043	 Instruction code: 3AXD50000001981
IP42 (IEC)	1	3AUA0000114789	A-6-X-041	 Instruction code: 3AUA0000115166
IP54 (IEC)	1	3AXD50000009189	A-6-X-065	 Instruction code: 3AXD50000010004 **Note:** Fan to be ordered separately
IP54 (UL)	1	3AXD50000010327	A-6-X-066	 Instruction code: 3AXD50000010004 **Note:** Fan to be ordered separately

Cooling fans

One or two cooling fans are to be installed inside the air outlet compartment to ensure sufficient cooling of the cabinet.

IEC/UL				
Enclosure / Degree of protection (Auxiliary voltage)	**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	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
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 (Auxiliary voltage)	**Component**		**Qty**	**Ordering code**
	Name	**Data**		
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
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	1	68713188
	Connector	PLUG; 12 AWG; 2.50 mm^2	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm^2	1	3AXD50000000724

Miscellaneous

Lifting device for the D7T supply module

Use the lifting device when replacing a frame D7T module in ABB drives ACx enclosure or in the Rittal VX25 enclosure. See also section *Replacing the D7T supply module (page 137)*.

Frame size	Enclosure	Qty	Ordering code	Instruction code
D7T	Rittal VX25	1	3AXD50000439997	3AXD50000210268
D7T	ABB drives ACx enclosure	1	3AXD50000047447	3AXD50000210268

Pull-out ramp for the D8T supply module

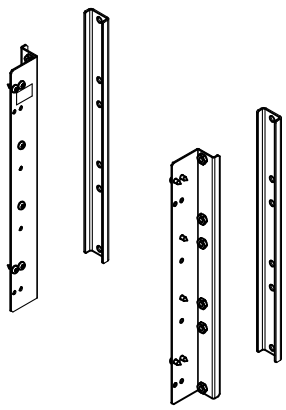
Use the pull-out ramp when you remove or install a D8T module from or in the Rittal VX25 enclosure. Do not use the ramp with plinth heights over 100 mm (3.93 in) (the standard plinth height of Rittal VX25 enclosures). For the dimension drawing, see section *Dimensions of the pull-out ramp for D8T module (page 257)*.

Frame size	Enclosure	Qty	Ordering code	Instruction code
D8T	400 mm (15.75 in)	1	A-468-8-304	3AUA0000120467

Bracket for Rittal Flat-PLS busbar holder (common AC)

If you use the Rittal Flat-PLS system, you can use this kit for correct positioning of the common AC bus in the Rittal VX25 enclosure.

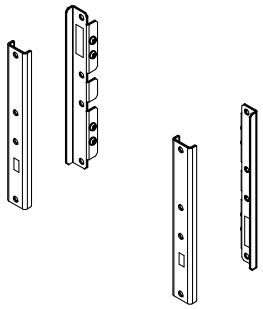
Note: The designs presented in this manual for Rittal VX25 enclosures employ the Rittal Flat-PLS busbar system. Make sure that the current carrying capability of the busbars is not exceeded at any point of the drive system.

Used with…	Qty	Ordering code	Kit code	Illustration
400/600/800 mm (15.75/23.62/31.50 in) VX25 enclosure	1	3AXD50000360772	A-468-X-011-VX	 Instruction code: 3AXD50000372782

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

RFI filters

The RFI filter is used for improving the EMC characteristics of the unit and to fulfill category C2 requirements. The RFI filter can be used in a grounded TN-S network. See *ACS880 multidrive cabinets and modules electrical planning instructions* (3AUA0000102324 [English]).

ACS880-304-...	RFI filter				Assembly kit for toroid		
	Type	Data	Qty	Ordering code	Type	Qty	Ordering code
U_N = 400 V							
0650A-3+A018	B84143B 1250S080	1250 A, 500 V	1	3AXD50000009256	Assembly kit including 20 µH toroid	1	3AUA0000094324
0980A-3+A018							
U_N = 500 V							
0650A-5+A018	B84143B 1250S080	1250 A, 500 V	1	3AXD50000009256	Assembly kit including 20 µH toroid	1	3AUA0000094324
0980A-5+A018							

For dimension drawing, see section *RFI filter and related accessories (page 276)*.

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Technical data

Contents of this chapter

This chapter contains the technical data for ACS880-304…+A018 diode supply modules.

Ratings

ACS880-304-…	Nominal ratings			No overload use		Light overload use		Heavy-duty use	
	I_1	I_2	I_{max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}
	A (AC)	A (DC)	A (DC)	kVA	KW	A (DC)	kW (DC)	A (DC)	kW (DC)
U_N = 400 V									
6-pulse									
0650A-3+A018	653	800	1120	452	432	768	415	598	323
0980A-3+A018	980	1200	1680	679	648	1152	622	898	485
1210A-3+A018	1215	1488	2083	842	804	1428	771	1113	601
1820A-3+A018	1823	2232	3125	1263	1205	2143	1157	1670	902
2730A-3+A018	2734	3348	4687	1894	1808	3214	1736	2504	1352
3640A-3+A018	3645	4464	6250	2525	2411	4285	2314	3339	1803
4560A-3+A018	4557	5580	7812	3157	3013	5357	2893	4174	2254
5470A-3+A018	5468	6696	9374	3788	3616	6428	3471	5009	2705
12-pulse									
0910A-3+A004+A018	912	1116	1562	632	625	1071	600	835	467
1210A-3+A004+A018	1215	1488	2083	842	833	1428	800	1113	623
1820A-3+A004+A018	1823	2232	3125	1263	1250	2143	1200	1670	935
2430A-3+A004+A018	2430	2976	4166	1684	1667	2857	1600	2226	1247

ACS880-304-…	Nominal ratings			No overload use		Light overload use		Heavy-duty use	
	I_1	I_2	I_{max}	S_N	P_N	I_{Ld}	P_{Ld}	I_{Hd}	P_{Hd}
	A (AC)	A (DC)	A (DC)	kVA	KW	A (DC)	kW (DC)	A (DC)	kW (DC)
3640A-3+A004+A018	3645	4464	6250	2525	2500	4285	2400	3339	1870
5470A-3+A004+A018	5468	6696	9374	3788	3750	6428	3600	5009	2805
U_N = 500 V									
6-pulse									
0650A-5+A018	653	800	1120	566	540	768	518	598	404
0980A-5+A018	980	1200	1680	849	810	1152	778	898	606
1210A-5+A018	1215	1488	2083	1052	1004	1428	964	1113	751
1820A-5+A018	1823	2232	3125	1579	1507	2143	1446	1670	1127
2730A-5+A018	2734	3348	4687	2368	2260	3214	2170	2504	1690
3650A-5+A018	3645	4464	6250	3157	3013	4285	2893	3339	2254
4560A-5+A018	4557	5580	7812	3946	3767	5357	3616	4174	2817
5470A-5+A018	5468	6696	9374	4735	4520	6428	4339	5009	3381
12-pulse									
0910A-5+A004+A018	912	1116	1562	790	781	1071	750	835	584
1210A-5+A004+A018	1215	1488	2083	1052	1042	1428	1000	1113	779
1820A-5+A004+A018	1823	2232	3125	1579	1562	2143	1500	1670	1169
2430A-5+A004+A018	2430	2976	4166	2104	2083	2857	2000	2226	1558
3650A-5+A004+A018	3645	4464	6250	3157	3125	4285	3000	3339	2337
5470A-5+A004+A018	5468	6696	9374	4735	4687	6428	4500	5009	3506
U_N = 690 V									
6-pulse									
0570A-7+A018	572	700	980	684	652	672	626	524	488
0820A-7+A018	817	1000	1400	976	932	960	894	748	697
1060A-7+A018	1064	1302	1823	1272	1213	1250	1164	974	907
1520A-7+A018	1519	1860	2604	1815	1733	1786	1663	1391	1296
2280A-7+A018	2279	2790	3906	2724	2599	2678	2495	2087	1944
3040A-7+A018	3038	3720	5208	3631	3465	3571	3327	2783	2592
3800A-7+A018	3797	4650	6510	4538	4331	4464	4158	3478	3240
4560A-7+A018	4557	5580	7812	5446	5198	5357	4990	4174	3888
12-pulse									
0760A-7+A004+A018	760	930	1302	908	898	893	862	696	672
1060A-7+A004+A018	1064	1302	1823	1272	1258	1250	1207	974	941
1520A-7+A004+A018	1519	1860	2604	1815	1797	1786	1725	1391	1344
2130A-7+A004+A018	2127	2604	3646	2542	2515	2500	2415	1948	1882
3040A-7+A004+A018	3038	3720	5208	3631	3594	3571	3450	2783	2688
4560A-7+A004+A018	4557	5580	7812	5446	5390	5357	5175	4174	4032

Definitions

Nominal ratings

U_N Nominal input voltage

I_1 Continuous rms input (AC) current. No overload capability at 40 °C (104 °F).

I_2 Continuous output (DC) current. No overload capability at 40 °C (104 °F).

I_{max} Maximum output current

S_N Nominal apparent power

P_N Nominal output power

Light-overload use (10% overload capability) ratings

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

P_{Ld} Output power in light-overload use

Heavy-duty use (40% overload capability) ratings

I_{Hd} Continuous current. 40% overload is allowed for one minute every 5 minutes.

P_{Hd} Output power in heavy-duty use

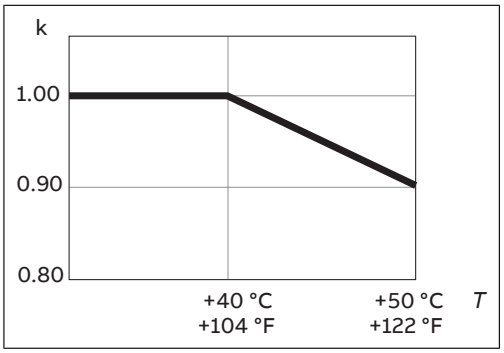
Note:

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

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 1000 … 2000 m (3281 … 6562 ft) above sea level, the output must be derated for 1% for every 100 m (328 ft). For derating at altitudes over 2000 m (6561.7 ft), contact ABB.

Type equivalence table and frame sizes

Module type	Basic module type	Frame size
U_N = 400 V		
6-pulse		
ACS880-304-0650A-3+A018	ACS880-304-0650A-3+A018	D8T
ACS880-304-0980A-3+A018	ACS880-304-0980A-3+A018	D8T
ACS880-304-1210A-3+A018	ACS880-304-0650A-3+A018	2xD8T
ACS880-304-1820A-3+A018	ACS880-304-0980A-3+A018	2xD8T
ACS880-304-2730A-3+A018	ACS880-304-0980A-3+A018	3xD8T
ACS880-304-3640A-3+A018	ACS880-304-0980A-3+A018	4xD8T
ACS880-304-4560A-3+A018	ACS880-304-0980A-3+A018	5xD8T
ACS880-304-5470A-3+A018	ACS880-304-0980A-3+A018	6xD8T
12-pulse		
ACS880-304-0910A-3+A004+A018	ACS880-304-0490A-3+A018	2xD7T
ACS880-304-1210A-3+A004+A018	ACS880-304-0650A-3+A018	2xD8T
ACS880-304-1820A-3+A004+A018	ACS880-304-0980A-3+A018	2xD8T
ACS880-304-2430A-3+A004+A018	ACS880-304-0650A-3+A018	4xD8T
ACS880-304-3640A-3+A004+A018	ACS880-304-0980A-3+A018	4xD8T
ACS880-304-5470A-3+A004+A018	ACS880-304-0980A-3+A018	6xD8T
U_N = 500 V		
6-pulse		
ACS880-304-0650A-5+A018	ACS880-304-0650A-5+A018	D8T
ACS880-304-0980A-5+A018	ACS880-304-0980A-5+A018	D8T
ACS880-304-1210A-5+A018	ACS880-304-0650A-5+A018	2xD8T
ACS880-304-1820A-5+A018	ACS880-304-0980A-5+A018	2xD8T
ACS880-304-2730A-5+A018	ACS880-304-0980A-5+A018	3xD8T
ACS880-304-3640A-5+A018	ACS880-304-0980A-5+A018	4xD8T
ACS880-304-4560A-5+A018	ACS880-304-0980A-5+A018	5xD8T
ACS880-304-5470A-5+A018	ACS880-304-0980A-5+A018	6xD8T
12-pulse		
ACS880-304-0910A-5+A004+A018	ACS880-304-0490A-5+A018	2xD7T
ACS880-304-1210A-5+A004+A018	ACS880-304-0650A-5+A018	2xD8T
ACS880-304-1820A-5+A004+A018	ACS880-304-0980A-5+A018	2xD8T
ACS880-304-2430A-5+A004+A018	ACS880-304-0650A-5+A018	4xD8T
ACS880-304-3640A-5+A004+A018	ACS880-304-0980A-5+A018	4xD8T
ACS880-304-5470A-5+A004+A018	ACS880-304-0980A-5+A018	6xD8T
U_N = 690 V		
6-pulse		
ACS880-304-0570A-7+A018	ACS880-304-0570A-7+A018	D8T
ACS880-304-0820A-7+A018	ACS880-304-0820A-7+A018	D8T
ACS880-304-1060A-7+A018	ACS880-304-0570A-7+A018	2xD8T
ACS880-304-1520A-7+A018	ACS880-304-0820A-7+A018	2xD8T

Module type	Basic module type	Frame size
ACS880-304-2280A-7+A018	ACS880-304-0820A-7+A018	3xD8T
ACS880-304-3040A-7+A018	ACS880-304-0820A-7+A018	4xD8T
ACS880-304-3800A-7+A018	ACS880-304-0820A-7+A018	5xD8T
ACS880-304-4560A-7+A018	ACS880-304-0820A-7+A018	6xD8T
12-pulse		
ACS880-304-0760A-7+A004+A018	ACS880-304-0410A-7+A018	2xD7T
ACS880-304-1060A-7+A004+A018	ACS880-304-0570A-7+A018	2xD8T
ACS880-304-1520A-7+A004+A018	ACS880-304-0820A-7+A018	2xD8T
ACS880-304-2130A-7+A004+A018	ACS880-304-0570A-7+A018	4xD8T
ACS880-304-3040A-7+A004+A018	ACS880-304-0820A-7+A018	4xD8T
ACS880-304-4560A-7+A004+A018	ACS880-304-0820A-7+A018	6xD8T

Fuses

AC fuses

There must always be the main AC fuses in the supply unit. If there are parallel modules after the main AC fuses, there must also be separate module-specific AC fuses for each module. For the AC fuse types and ordering codes, see section *AC fuses (page 193)*. For the locations of the AC fuses in the main circuit, see the overview diagrams.

ABB recommends forced cooling for the AC fuses to keep the fuse temperature under 100 °C (212 °F).

- When the AC fuses are located in the module cubicle, the cooling fan of the module cools also the fuses.
- When located in another cabinet (example, in incoming cubicle), use an extra fan. Install the fan in such a way that it directly cools the fuses.

ABB also recommends that you monitor the cooling fan status or fuse temperature.

Supply module internal DC fuses

Each supply module has internal DC fuses.

Note: You can use fuses from other manufacturers if they meet the ratings and the melting curve of the fuse does not exceed the melting curve of the fuse in the table.

Supply module frame size and options	DC fuses in each supply module					
	I_N A	I^2t A^2s	U_N V	Manufacturer	Type	Qty
D7T	700	755000	1000	Bussmann	170M4908	2
D8T (IEC)	900	1750000*	1100	Bussmann	170M5499	4
D8T +C129+C134 (UL/CSA)	1800	7600000	1250	Bussmann	170M6783	2

* Clearing value at 1000 V DC.

Dimensions and weights

Module type	Height		Width		Depth		Weight	
	mm	inch	mm	inch	mm	inch	kg	lbs
U_N = 400 V								
6-pulse								
ACS880-304-0650A-3+A018	1397	55.00	240	9.45	589	23.19	180	397
ACS880-304-0980A-3+A018	1397	55.00	240	9.45	589	23.19	180	397
ACS880-304-1210A-3+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-1820A-3+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-2730A-3+A018	1397	55.00	240	9.45	589	23.19	540	1191
ACS880-304-3640A-3+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-4560A-3+A018	1397	55.00	240	9.45	589	23.19	900	1984
ACS880-304-5470A-3+A018	1397	55.00	240	9.45	589	23.19	1080	2381
12-pulse								
ACS880-304-0910A-3+A004+A018	1054	41.50	170	6.69	417	16.42	160	353
ACS880-304-1210A-3+A004+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-1820A-3+A004+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-2430A-3+A004+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-3640A-3+A004+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-5470A-3+A004+A018	1397	55.00	240	9.45	589	23.19	1080	2381
U_N = 500 V								
6-pulse								
ACS880-304-0650A-5+A018	1397	55.00	240	9.45	589	23.19	180	397
ACS880-304-0980A-5+A018	1397	55.00	240	9.45	589	23.19	180	397
ACS880-304-1210A-5+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-1820A-5+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-2730A-5+A018	1397	55.00	240	9.45	589	23.19	540	1191
ACS880-304-3640A-5+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-4560A-5+A018	1397	55.00	240	9.45	589	23.19	900	1984
ACS880-304-5470A-5+A018	1397	55.00	240	9.45	589	23.19	1080	2381
12-pulse								
ACS880-304-0910A-5+A004+A018	1054	41.50	170	6.69	417	16.42	160	353
ACS880-304-1210A-5+A004+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-1820A-5+A004+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-2430A-5+A004+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-3640A-5+A004+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-5470A-5+A004+A018	1397	55.00	240	9.45	589	23.19	1080	2381
U_N = 690 V								
6-pulse								
ACS880-304-0570A-7+A018	1397	55.00	240	9.45	589	23.19	180	397
ACS880-304-0820A-7+A018	1397	55.00	240	9.45	589	23.19	180	397
ACS880-304-1060A-7+A018	1397	55.00	240	9.45	589	23.19	360	794

Module type	Height		Width		Depth		Weight	
	mm	inch	mm	inch	mm	inch	kg	lbs
ACS880-304-1520A-7+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-2280A-7+A018	1397	55.00	240	9.45	589	23.19	540	1191
ACS880-304-3040A-7+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-3800A-7+A018	1397	55.00	240	9.45	589	23.19	900	1984
ACS880-304-4560A-7+A018	1397	55.00	240	9.45	589	23.19	1080	2381
12-pulse								
ACS880-304-0760A-7+A004+A018	1054	41.50	170	6.69	417	16.42	160	353
ACS880-304-1060A-7+A004+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-1520A-7+A004+A018	1397	55.00	240	9.45	589	23.19	360	794
ACS880-304-2130A-7+A004+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-3040A-7+A004+A018	1397	55.00	240	9.45	589	23.19	720	1587
ACS880-304-4560A-7+A004+A018	1397	55.00	240	9.45	589	23.19	1080	2381

Free space requirements

Frame size	Above		Front		Left		Right	
	mm	in	mm	in	mm	in	mm	in
D8T	200	7.87	10	0.39	10	0.39	10	0.39
D7T	150	6	25	1	25	1	25	1

Above Free space to enable cooling air flow

Front Free space for cabling

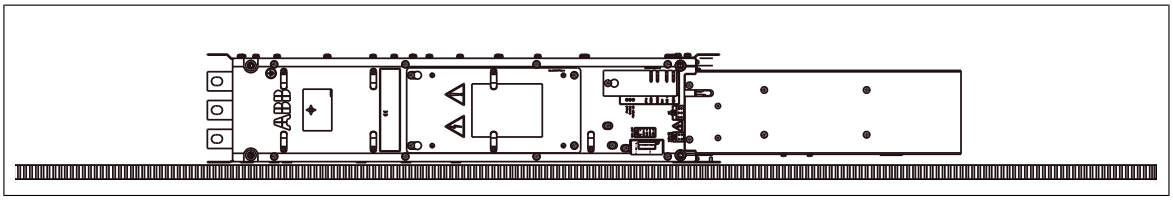
Left Free space for smooth installation

Right Free space for smooth installation

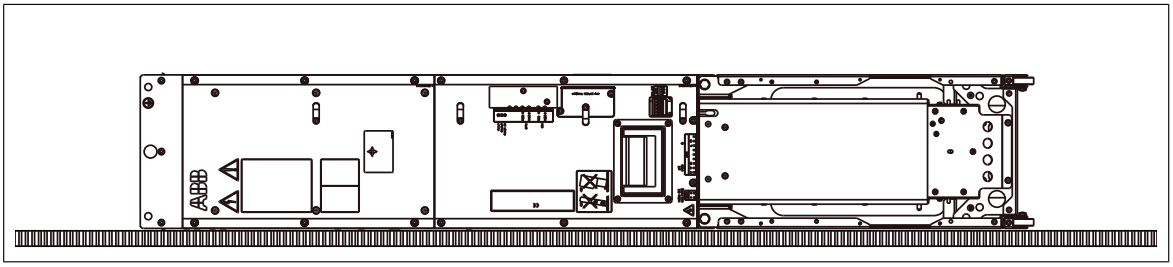
Allowable mounting orientations

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

D7T modules: Installation on left-hand side (viewed from the front) allowed.



D8T modules: Installation on left-hand side (viewed from the front) allowed.



Losses, cooling data and noise

ACS880-304-…	Losses kW	Air flow		Efficiency %	Noise level dB
		m³/h	ft³/min		
U_N = 400 V					
6-pulse					
0650A-3+A018	4.6	1300	765	99.0	72
0980A-3+A018	6.6	1300	765	99.0	72
1210A-3+A018	9.2	2600	1530	98.9	74
1820A-3+A018	13.3	2600	1530	99.0	74
2730A-3+A018	19.9	3900	2296	99.0	76
3640A-3+A018	26.6	5200	3061	99.0	76
4560A-3+A018	33.3	6500	3826	99.0	77
5470A-3+A018	40.0	7800	4591	99.0	78
12-pulse					
0910A-3+A004+A018	8.4	1800	1059	98.7	74
1210A-3+A004+A018	9.2	2600	1530	98.9	74
1820A-3+A004+A018	13.3	2600	1530	99.0	74
2430A-3+A004+A018	18.4	5200	3061	98.9	76
3640A-3+A004+A018	26.6	5200	3061	99.0	76
5470A-3+A004+A018	40.0	7800	4591	99.0	78
U_N = 500 V					
6-pulse					
0650A-5+A018	4.6	1300	765	99.2	72
0980A-5+A018	6.6	1300	765	99.2	72
1210A-5+A018	9.2	2600	1530	99.1	74
1820A-5+A018	13.3	2600	1530	99.2	74
2730A-5+A018	19.9	3900	2296	99.2	76
3640A-5+A018	26.6	5200	3061	99.2	76
4560A-5+A018	33.3	6500	3826	99.2	77
5470A-5+A018	40.0	7800	4591	99.2	78
12-pulse					
0910A-5+A004+A018	8.4	1800	1059	99.0	74
1210A-5+A004+A018	9.2	2600	1530	99.1	74
1820A-5+A004+A018	13.3	2600	1530	99.2	74

ACS880-304-…	Losses kW	Air flow		Efficiency %	Noise level dB
		m³/h	ft³/min		
2430A-5+A004+A018	18.4	5200	3061	99.1	76
3640A-5+A004+A018	26.6	5200	3061	99.2	76
5470A-5+A004+A018	40.0	7800	4591	99.2	78
U_N = 690 V					
6-pulse					
0570A-7+A018	4.5	1300	765	99.3	72
0820A-7+A018	5.8	1300	765	99.4	72
1060A-7+A018	9.0	2600	1530	99.3	74
1520A-7+A018	12.7	2600	1530	99.3	74
2280A-7+A018	19.1	3900	2296	99.3	76
3040A-7+A018	25.5	5200	3061	99.3	76
3800A-7+A018	32.0	6500	3826	99.3	77
4560A-7+A018	38.4	7800	4591	99.3	78
12-pulse					
0760A-7+A004+A018	7.7	1800	1059	99.2	74
1060A-7+A004+A018	9.0	2600	1530	99.3	74
1520A-7+A004+A018	12.7	2600	1530	99.3	74
2130A-7+A004+A018	18.1	5200	3061	99.3	76
3040A-7+A004+A018	25.5	5200	3061	99.3	76
4560A-7+A004+A018	38.4	7800	4591	99.3	78

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

Auxiliary circuit current/power consumption

Device	U_N	f	I_{cont}	I_{start}	P_{cont}
	V	Hz	A	A	W
BCU control unit	24 V DC ±10%	-	2.0	-	48
D7T/D8T module: internal electronics	230 V AC (+15%/-20%)	50/60	0.45	-	105
	115 V AC (+15%/-20%)	50/60	0.90	-	105
D7T module: direct-on-line fan (option +C188)	115 V AC	50	2.4	2.4	-
	115 V AC	60	2.4	2.4	-
	230 V AC	50	1.4	1.4	-
	230 V AC	60	1.4	1.4	-
D8T module: direct-on-line fan (option +C188)	400 V AC	50	1.50	3.00	-
	400 V AC	60	1.90	3.80	-

Device	U_N	f	I_{cont}	I_{start}	P_{cont}
	V	Hz	A	A	W
D8T module: heating element (option +C183)	230 V AC	50/60	-	-	40
	115 V AC	60	-	-	40

U_N Nominal voltage

f Supply frequency

I_{cont} Calculated continuous load current

I_{start} Calculated load current at start

P_{cont} Continuous input power

Cooling fans

Cabinet fans	Enclosure width	U_N V AC	f Hz	I_{cont} A
IP54 roof fan IEC/UL	400 mm	230	50	1.10
			60	1.45
IP54 roof fan IEC/UL	600 mm	230	50	2.30
			60	3.00
IP54 roof fan UL/CSA	400 mm	115	50	3.1
			60	3.9
IP54 roof fan UL/CSA	600 mm	115	50	5.5
			60	6.3

f Supply frequency

I_{cont} Calculated continuous load current

U_N Nominal voltage

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	⌀ **[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	**⌀ [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

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
M10	32 N·m (23.5 lbf·ft)	8.8
M12	50 N·m (37 lbf·ft)	8.8

Electrical power network specification

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: 525…690 V AC 3-phase ± 10% (525…600 V AC ± 10% in UL/CSA installations, or corner-grounded TN systems). 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)	Rectifier 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 Rectifier units with ABB-defined main 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)	0.98 (at nominal load)
Transformer specification for 12-pulse supply (IEC 60076-1:2011)	Connection: Dy 11 d0 or Dyn 11 d0 Phase shift between secondaries: 30° electrical Voltage difference between secondaries: < 0.5% Short-circuit impedance of secondaries: > 5% Short-circuit impedance difference between secondaries: ≤ 10% of the percentage impedance To avoid a potentially destructive DC voltage level in an earth fault situation, grounding of the secondaries is not allowed. Static shielding is recommended.

DC connection data

Voltage (U_2), 6-pulse modules	ACS880-304-xxxxA-3+A018: 513…560 V DC. This is indicated in the type designation label as typical output voltage level 540 V DC. ACS880-304-xxxxA-5+A018: 513…675 V DC. This is indicated in the type designation label as typical output voltage levels 540/648/675 V DC. ACS880-304-xxxxA-7+A018: 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).
Voltage (U_2), 12-pulse modules	ACS880-304-xxxxA-3+A018: 532 … 581 V DC. This is indicated in the type designation label as typical output voltage level 560 V DC. ACS880-304-xxxxA-5+A018: 532 … 700 V DC. This is indicated in the type designation label as typical output voltage levels 560/672/700 V DC. ACS880-304-xxxxA-7+A018: 735 … 966 V DC (735 … 840 V DC for UL/CSA). This is indicated in the type designation label as typical output voltage levels 735/840/966 V DC (840 V DC for UL/CSA).

Efficiency

> 98%

Note: 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).

Control unit connection data

See chapter *The control unit (page 243)*.

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.

Protection classes for module

Degrees of protection (IEC/EN 60529)	IP00
Enclosure types (UL 50/50E)	UL Type Open
Overvoltage category (IEC/EN 60664-1)	III
Protective class (IEC/EN 61800-5-1)	I

Ambient conditions

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

	Operation installed for stationary use	**Storage** in protective package	**Transportation** in protective package
Altitude above sea level	0…2000 m (0…6561.7 ft) no derating. For altitudes over 2000 m (6561.7 ft), contact ABB.	-	-
Air temperature	0…+45 °C (+32…+113 °F), no condensation allowed. Output derated in the range +40…+50 °C (+113…+131 °F).	-40…+70 °C (-40…+158 °F)	-40…+70 °C (-40…+158 °F)
Relative humidity	Maximum 95%, no condensation allowed	Maximum 95%, no condensation allowed	Maximum 95%, no condensation allowed
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	Class 1C2	Class 2C2
Solid particles	Class 3S1	Class 1S3 (packing must support this, otherwise 1S2)	Class 2S2
	No conductive dust allowed.		
Vibration IEC 61800-5-1 IEC 60068-2-6:2007, EN 60068-2-6:2008 Environmental testing Part 2: Tests -Test Fc: Vibration (sinusoidal)	IEC/EN 60721-3-3:2002 10…57 Hz, max. 0.075 mm amplitude 57…150 Hz 1 *g* Tested in a typical cabinet assembly according to: Max. 1 mm (0.04 in.) (peak value, 5 … 13.2 Hz), max. 0.7 *g* (13.2 … 100 Hz) sinusoidal	IEC/EN 60721-3-1:1997 10...57 Hz: max. 0.075 mm amplitude 57...150 Hz: 1g	IEC/EN 60721-3-2:1997 2...9 Hz: max. 3.5 mm amplitude 9...200 Hz: 10 m/s2 (32.8 ft/s2)
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/s^2 (330 ft./s^2) 11 ms	With packing max. 100 m/s^2 (330 ft./s^2) 11 ms

Cooling

Method	Forced air cooling

Materials

Module housing

Front plate covered with Lexan 8B35 polycarbonate film, color PMS 1C Cool Gray / RAL 9002 and PMS Process Black

Fire safety of materials (IEC 60332-1)

Insulating materials and non-metallic items: mostly self-extinctive.

Package

Plywood base, corrugated cardboard, PET straps. Product wrapping: polyethylene sheet or VCI protection bag.

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 multidrive modules recycling instructions and environmental information* (3AXD50000153909 [English]).

Standards

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

Markings

See *ACS880 multidrive cabinets and modules electrical planning instructions* (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 to 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 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.

11

The control unit

Contents of this chapter

This chapter

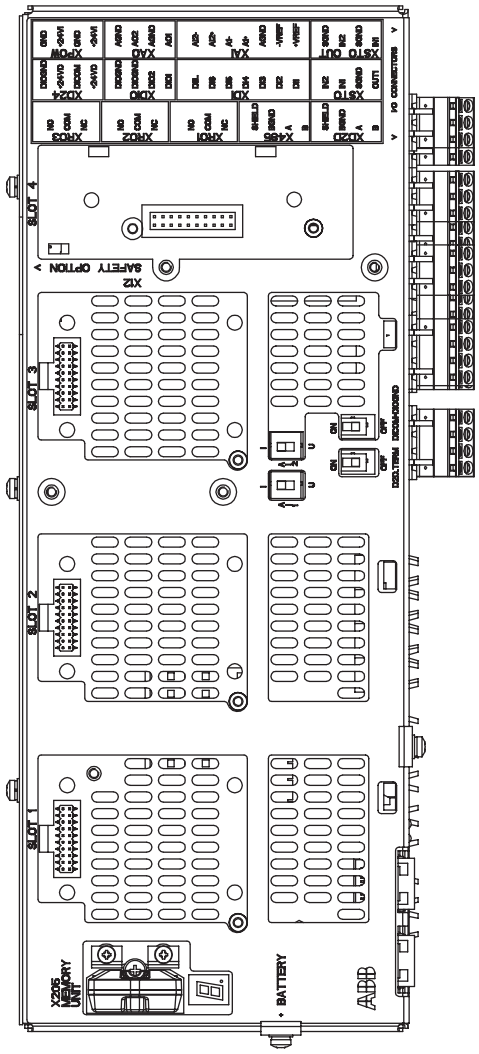
- describes the connections of the control unit
- contains the specifications of the inputs and outputs of the control unit.

General

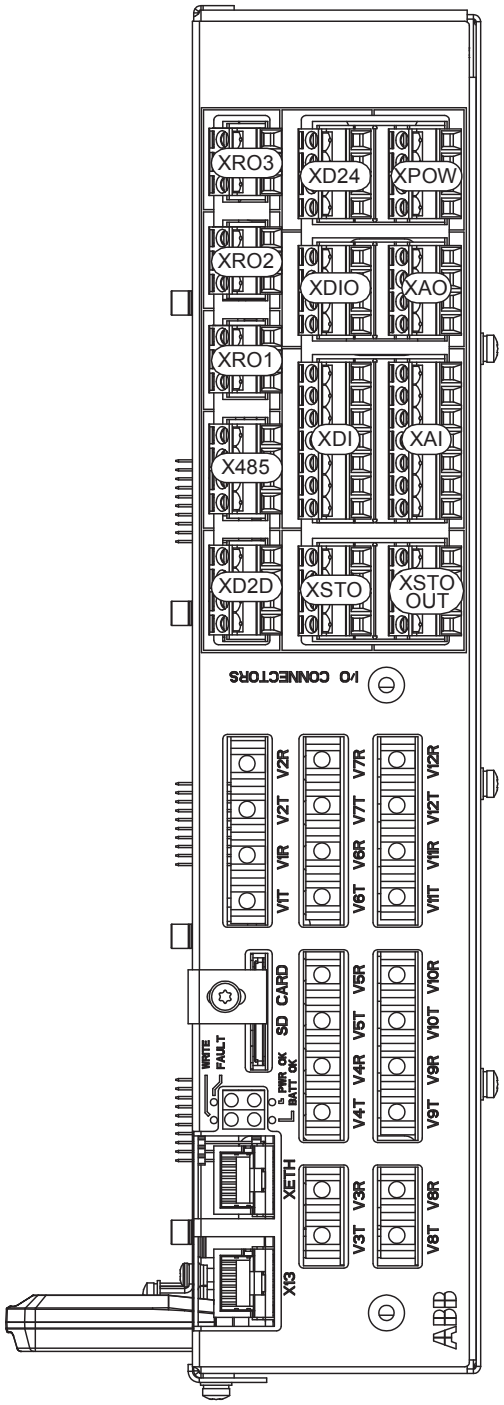
The supply unit is controlled by a BCU-x2 control unit. The BCU-x2 consists of a BCON-12 control board (and a BIOC-01 I/O connector board and power supply board) built in a metal housing. The control unit is connected to the supply module(s) by fiber optic cables.

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

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, fieldbus adapter or FSO-xx 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	
o	(“U” is indicated briefly before “o”.) Control program running
U	Control program startup in progress
F	(Flashing) Firmware cannot be started. Memory unit missing or corrupted
1	Firmware download from PC to control unit in progress
2	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-xx 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

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 mm^2 (24…12 AWG). The torque is 0.5 N·m (5 lbf·in).

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

Terminal			Description
1 2 3 4 5 6 7	1	DI1	**Temp fault**[2] (0 = overtemperature)
	2	DI2	**Run enable**[2] (1 = run enable)
	3	DI3	**MCB feedback**[3] (0 = main contactor/breaker open)
	4	DI4	**Auxiliary circuit breaker fault**[2]
	5	DI5	Not in use by default. Can be used for eg. earth fault monitoring.
	6	DI6	**Reset**[2] (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-	
– U	AI1		AI1 current/voltage selection switch
– U	AI2		AI2 current/voltage selection switch
XAO			Analog outputs
1 2 3 4	1	AO1	**Zero** (no signal indicated)[2] 0…20 mA, R_L < 500 ohm
	2	AGND	
	3	AO2	**Zero** (not signal indicated)[2] 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			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) Default use of the signal in the control program. The use can be changed by a parameter. See also the delivery-specific circuit diagrams.
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.

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 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 IN1 and/or IN2 terminals of other units (supply, DC/DC converter, or brake unit) will stop the unit but not constitute a true safety function.

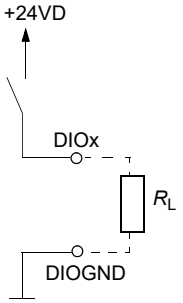
FSO-xx safety functions module connection (X12)

See the user manual of the FSO-xx module. Note that the FSO-xx safety functions module is not in use 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.

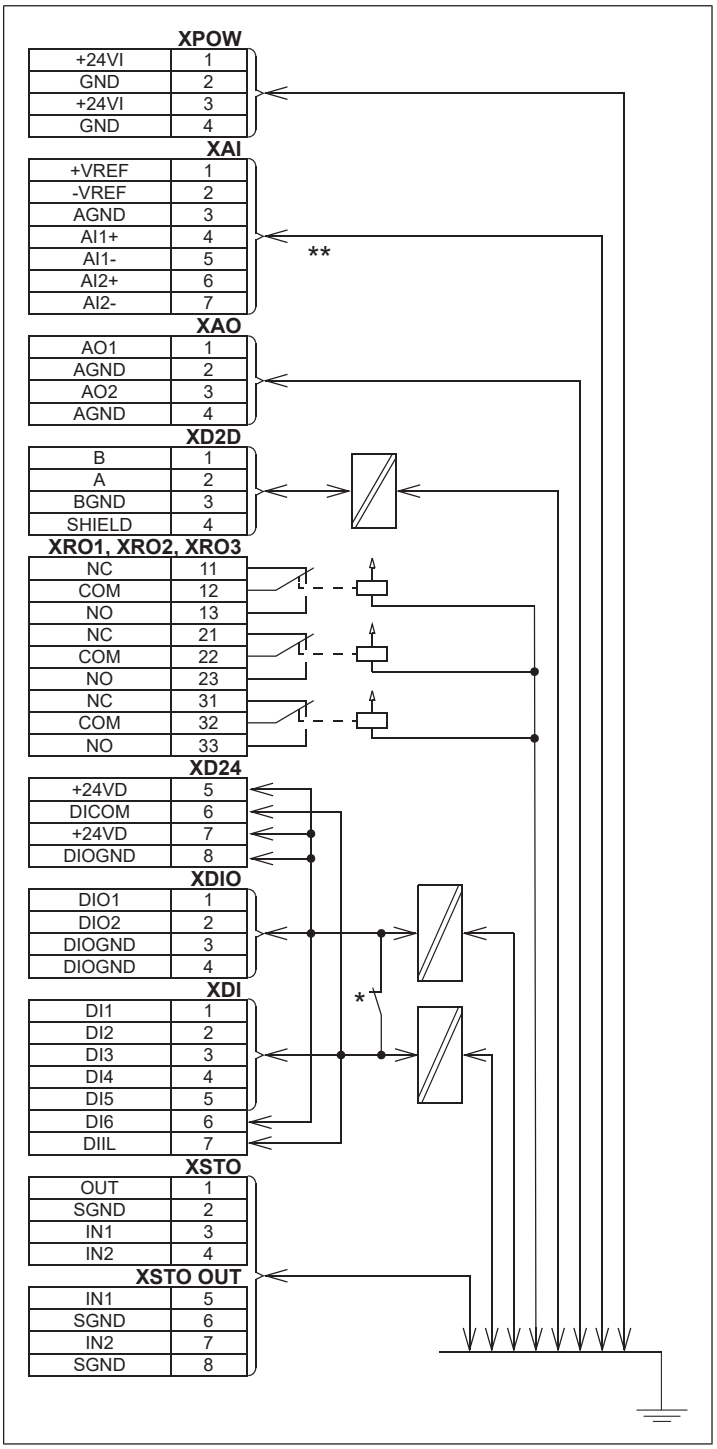
Connector data

Power supply (XPOW)	Connector pitch 5 mm, wire size 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 24 V (±10%) DC, 2 A 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 (XDI:7)	Connector pitch 5 mm, wire size 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 switches	Connector pitch 5 mm, wire size 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 0…20 mA, R_{load} < 500 ohm Frequency range: 0…500 Hz Resolution: 11 bit + sign bit Inaccuracy: 2% of full scale range
XD2D connector	Connector pitch 5 mm, wire size 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 switch
RS-485 connection (X485)	Connector pitch 5 mm, wire size 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) 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. EMC (immunity) according to IEC 61326-3-1
Safe torque off output (XSTO OUT)	Connector pitch 5 mm, wire size 2.5 mm^2 Tightening torque 0.45 N·m (4 lbf·in) To STO connector of inverter module.
Control panel connection (X13)	Connector: RJ-45 Cable length < 3 m
Ethernet connection (XETH)	Connector: RJ-45 This connection is not supported by the firmware.
SDHC memory card slot (SD CARD)	Memory card type: SDHC Maximum memory size: 4 GB

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

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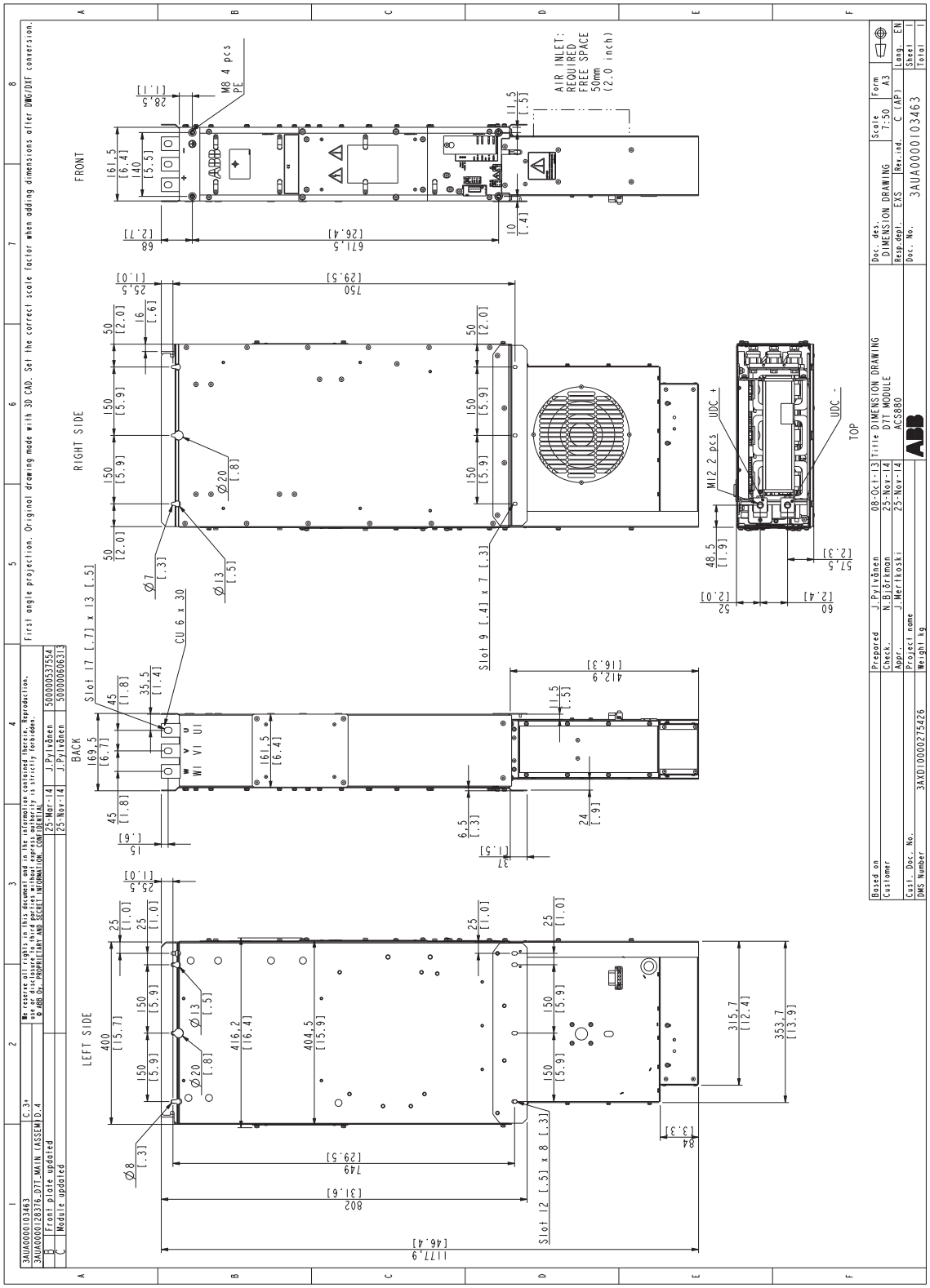
Dimension drawings

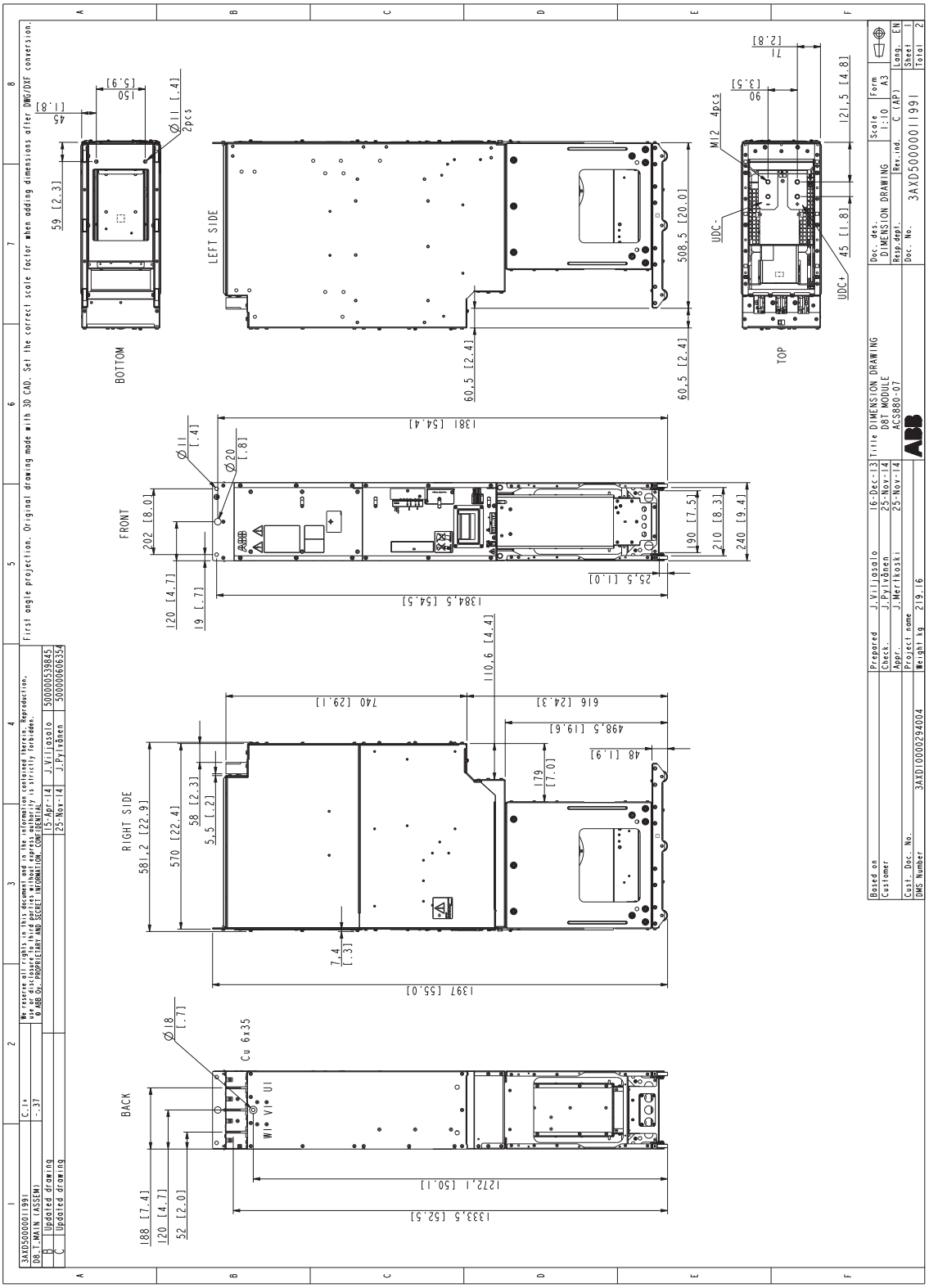
Contents of this chapter

This chapter shows dimensions of the ACS880-304…+A018 diode supply modules and related accessories.

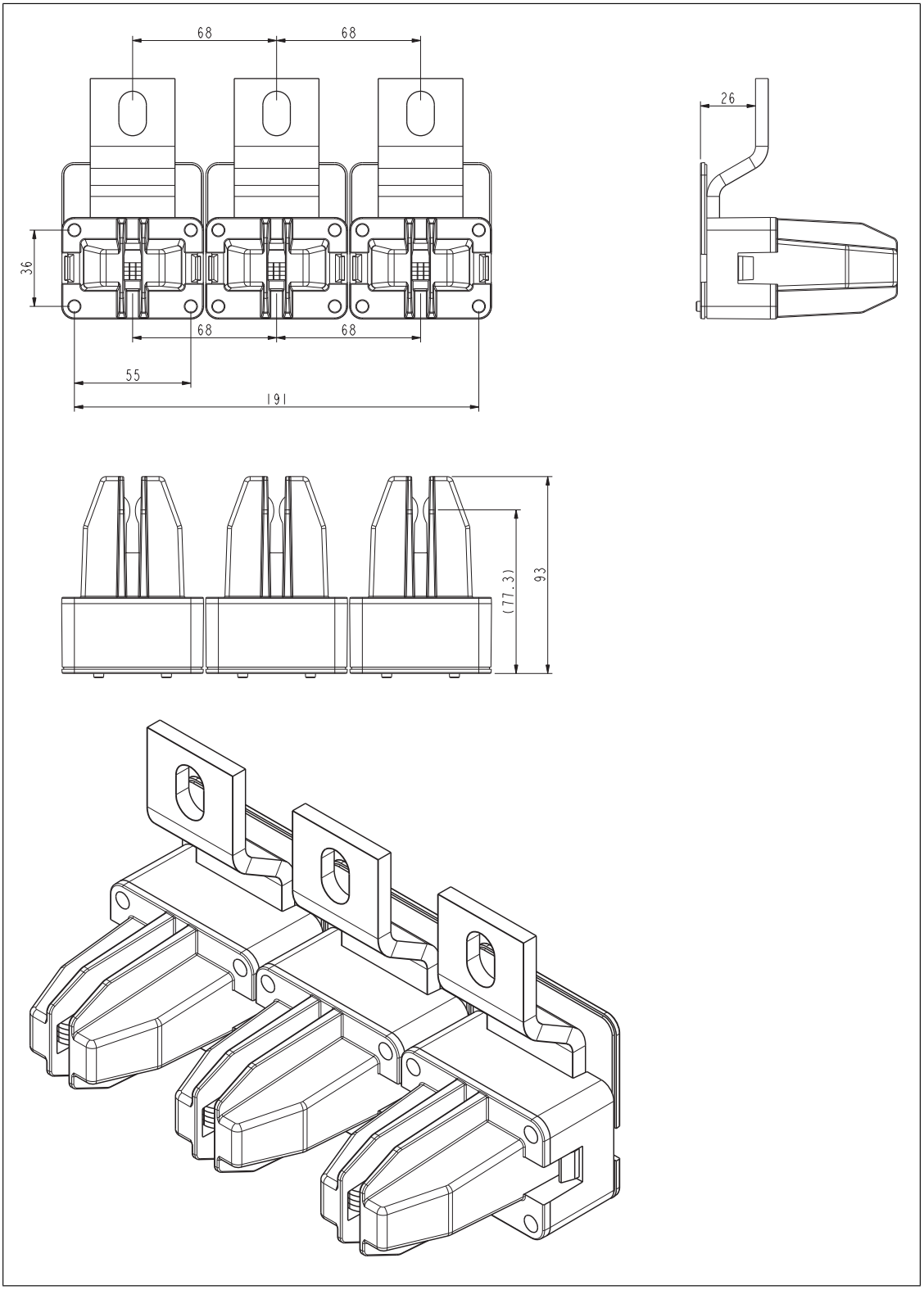
Dimensions of D7T supply module



Dimensions of D8T supply module

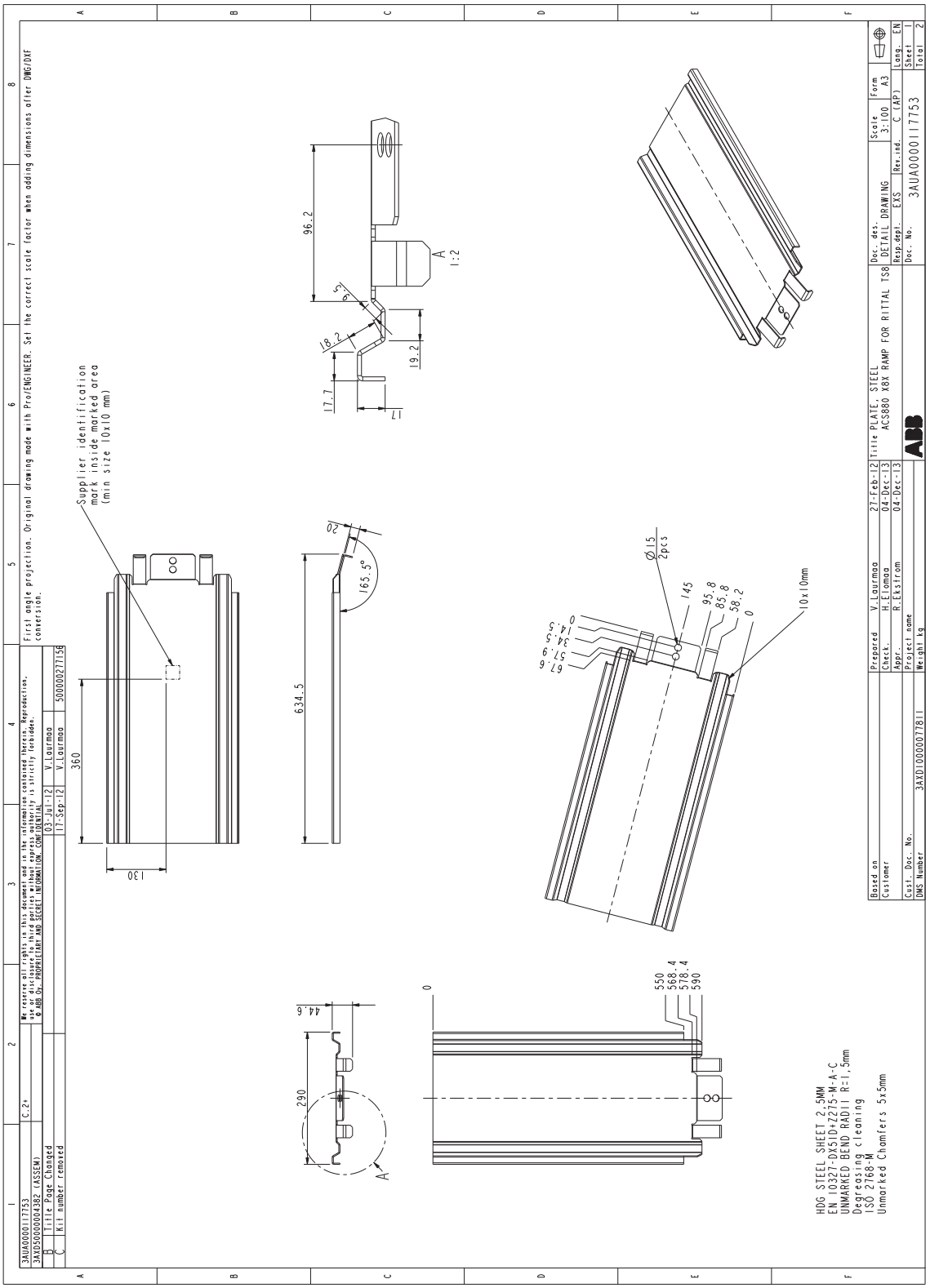


Dimensions of quick connector for D8T module

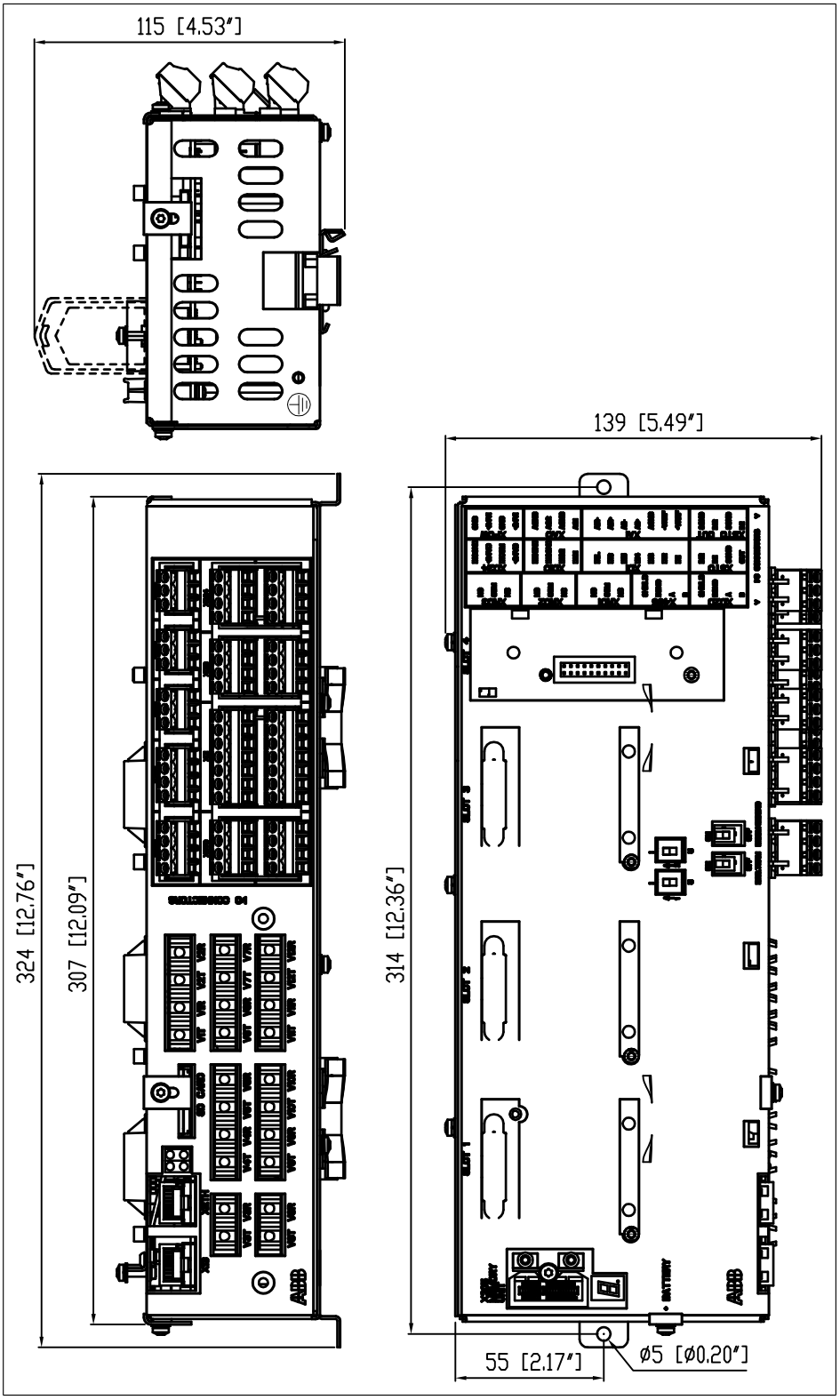


Dimensions in mm
(1 mm = 0.0394 in)

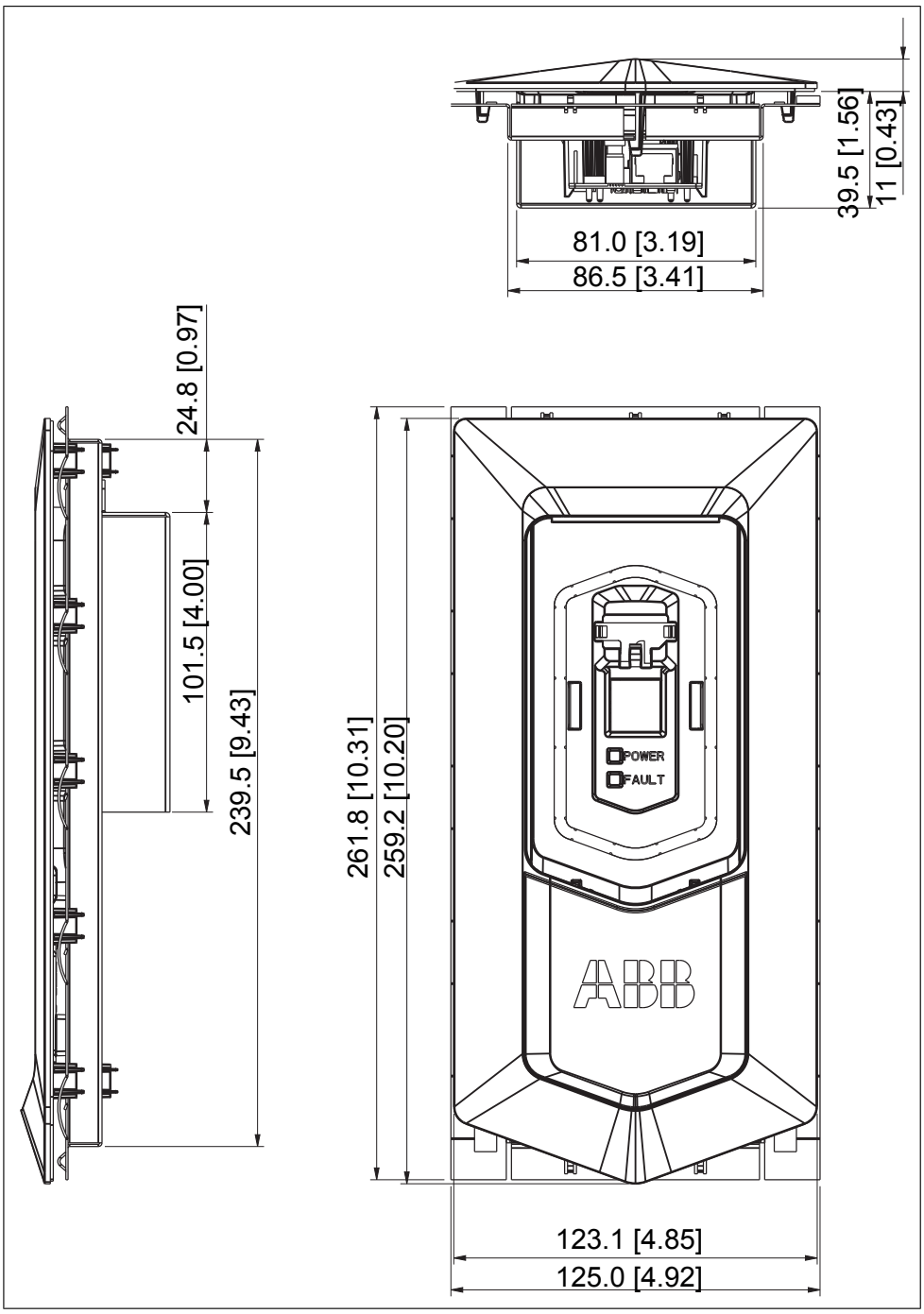
Dimensions of the pull-out ramp for D8T module



Dimensions of BCU control unit



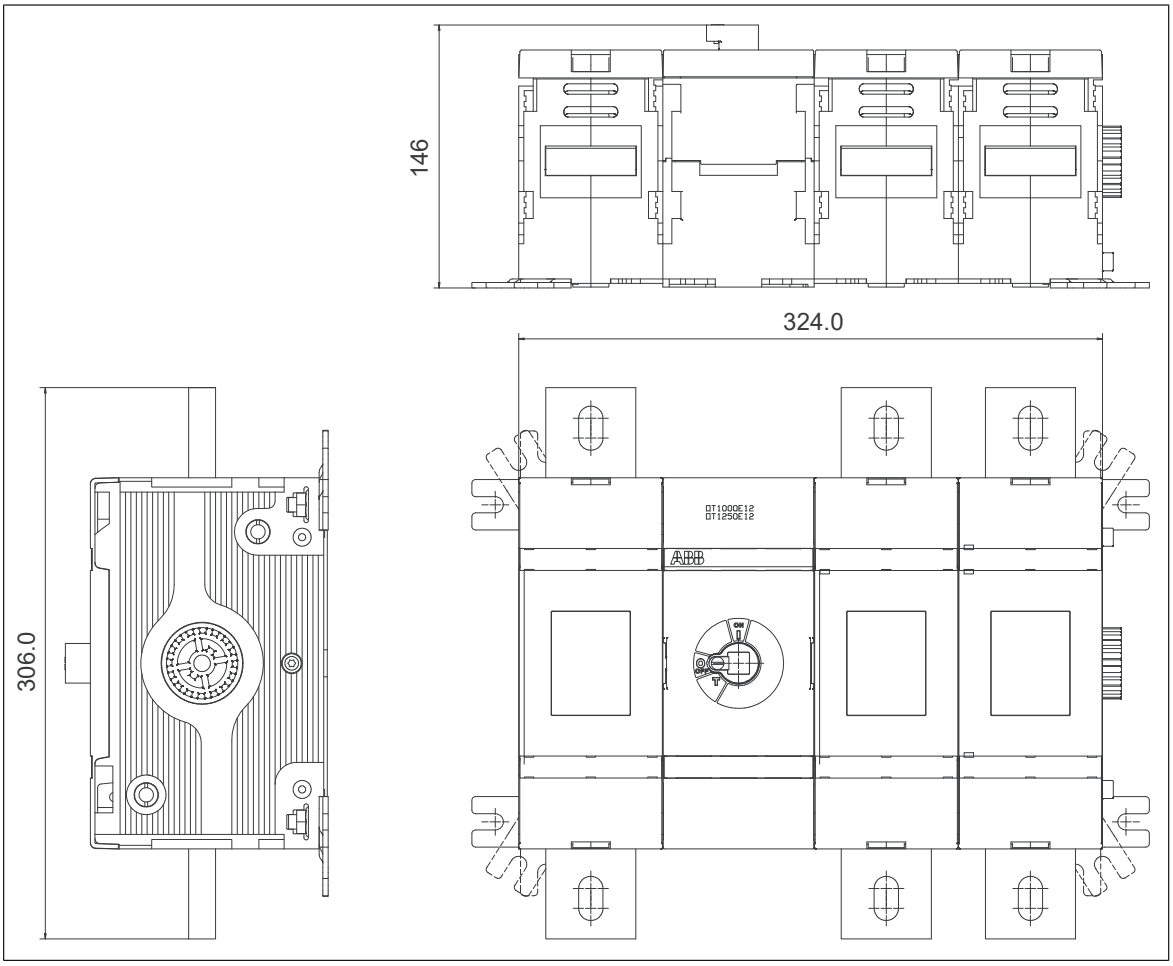
Dimensions of ACS-AP-x control panel with DPMP-01 door mounting kit



- Cutting in the cabinet door: 109 mm × 223 mm (4.29 in. × 8.78 in.)
- Plate thickness: 1.5…2.5 mm (0.059…0.098 in.)

Dimensions of main switch-disconnectors

Dimensions of OT1250E12



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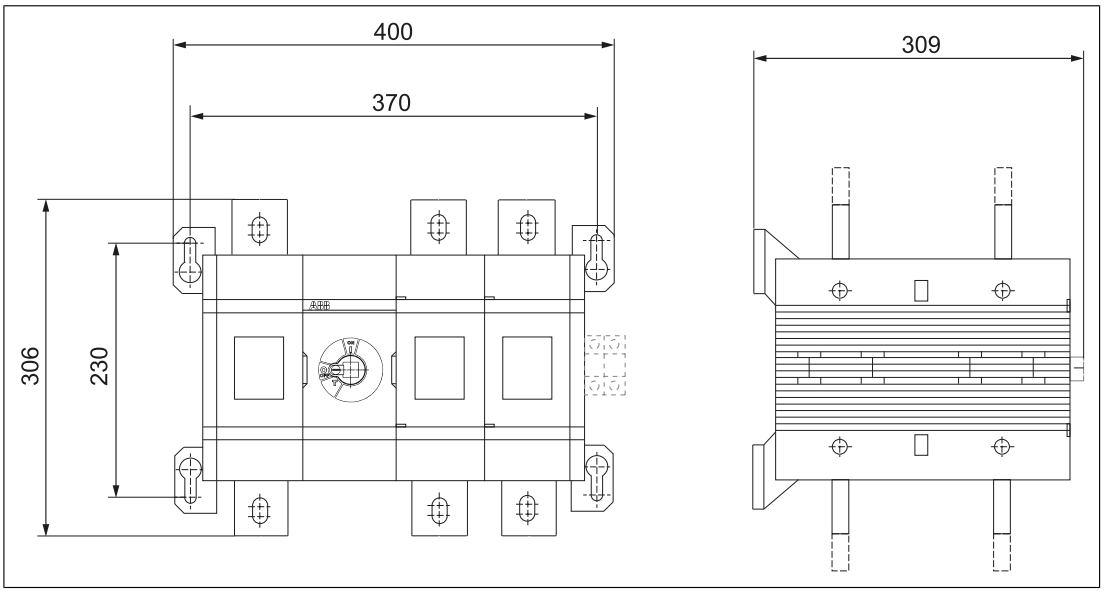
Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of OT1250E12DD (IEC)



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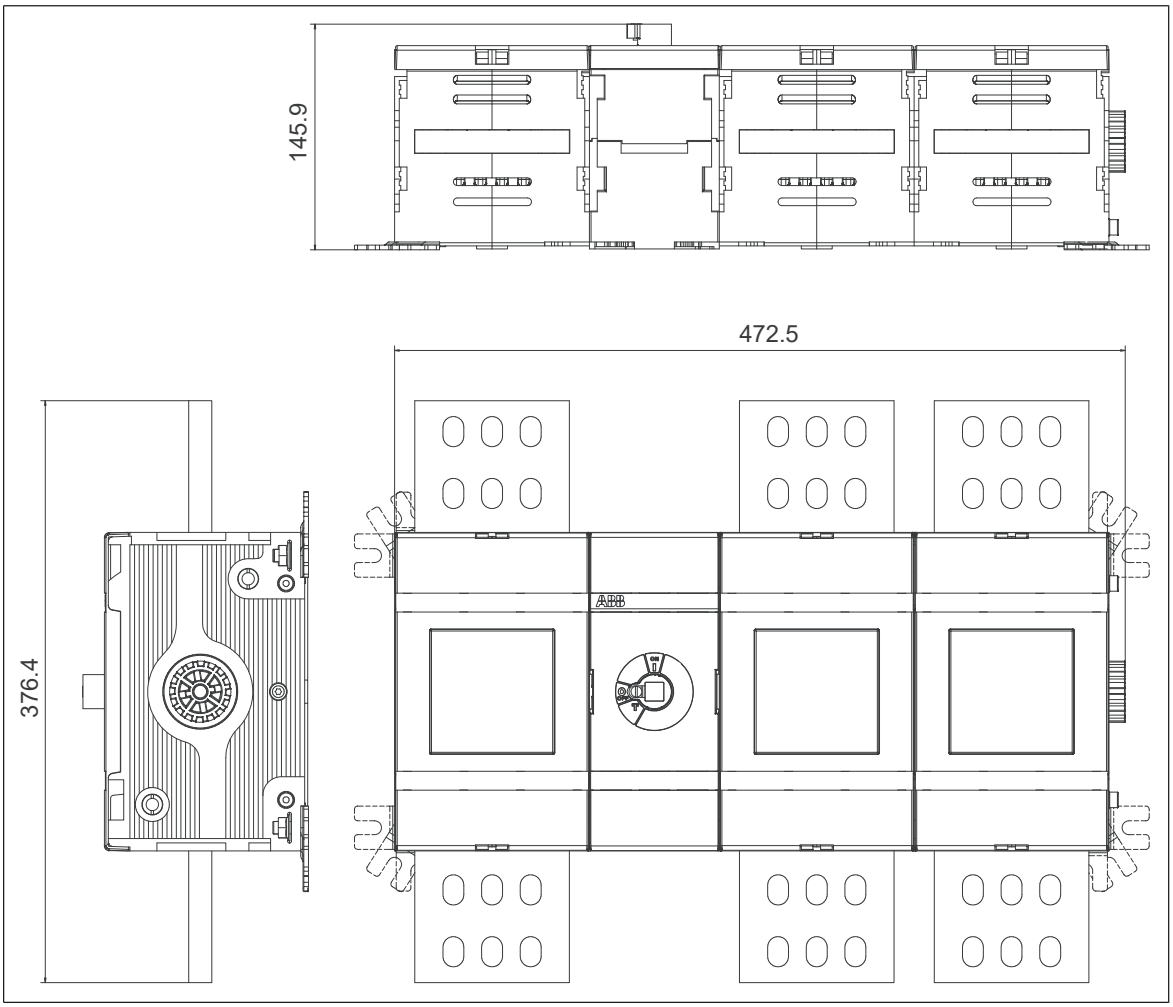
Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of OT2000E12 (IEC)



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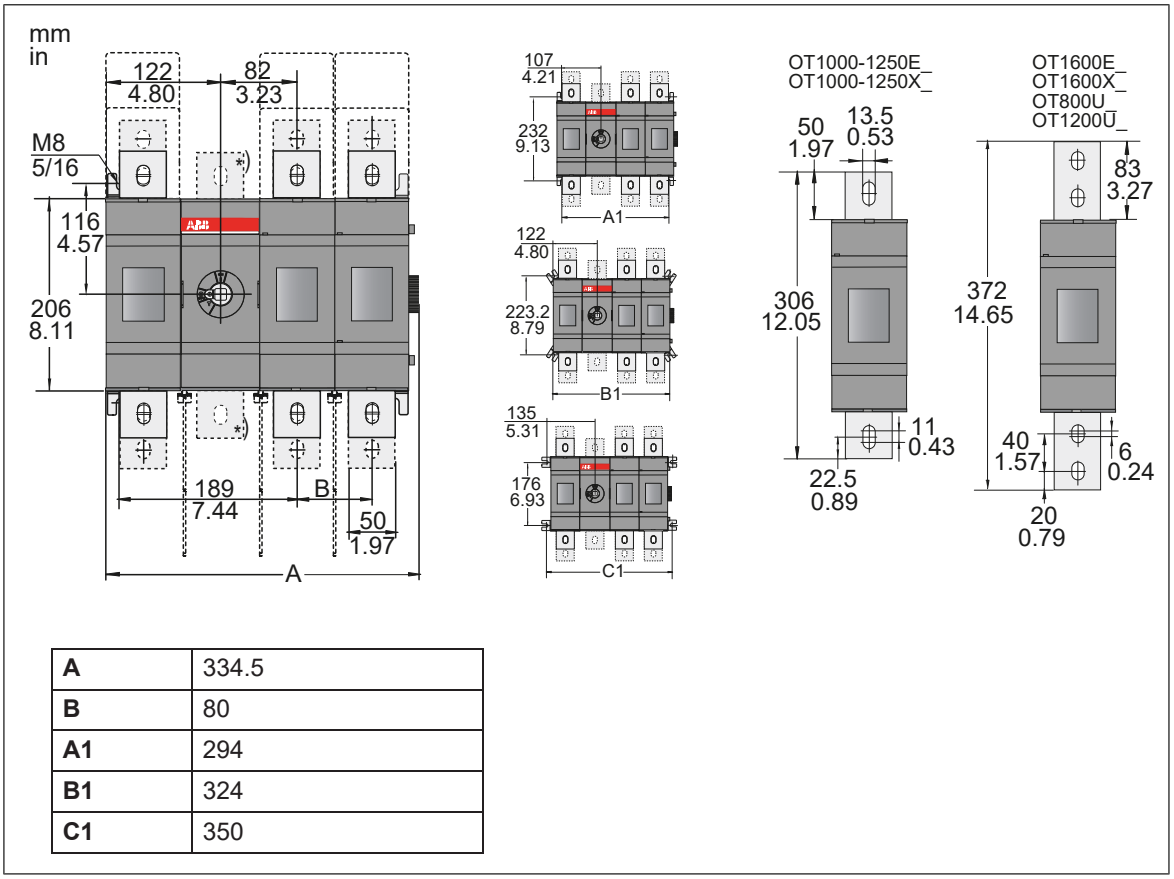
Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of OT1200U12 (UL)



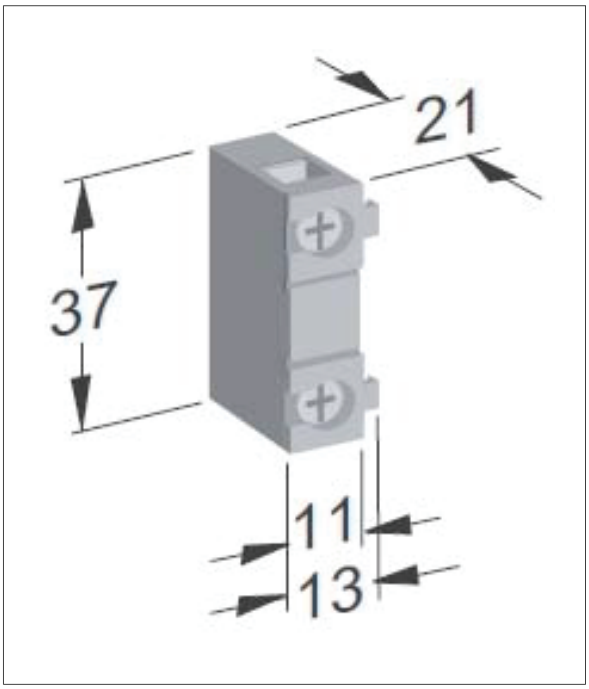
A	334.5
B	80
A1	294
B1	324
C1	350

www.abb.com

Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of switch-disconnector auxiliary contacts

OA1G10, 0A3G01

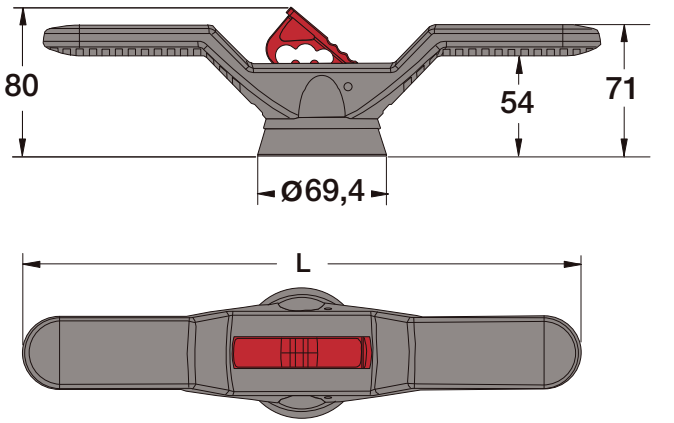


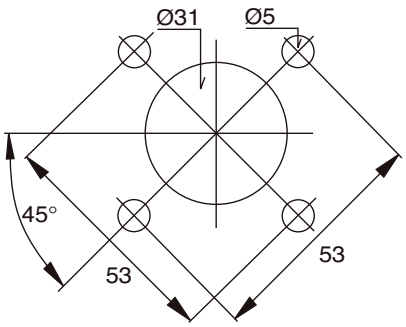
2×0.75…2.5 mm² (2×18…14 AWG)

0.8 N·m (7 lbf·in)

Pozidriv M3.5 Form 2

Dimensions of switch-disconnector handle



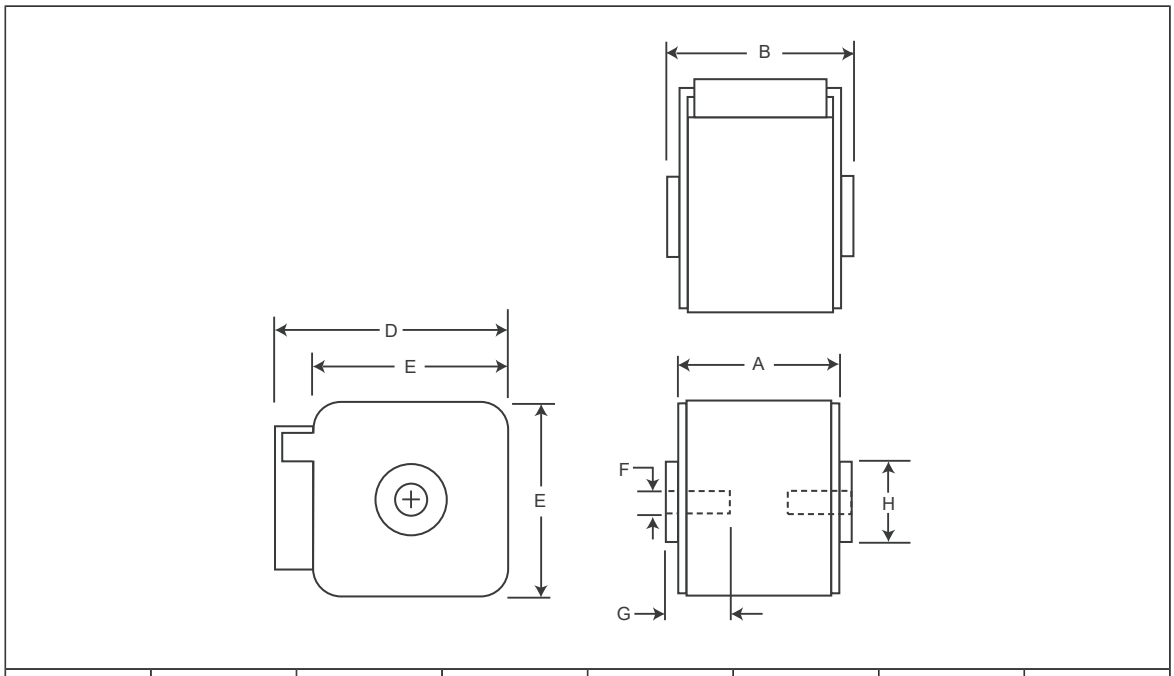


Handle type	Length L [mm]
OHB150J12P	300
OHB200J12P	400

Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of AC fuses

Dimensions of 170M6411, 170M6412, 170M6413, 170M6414, 170M6415, 170M6416, 170M6417, 170M6419

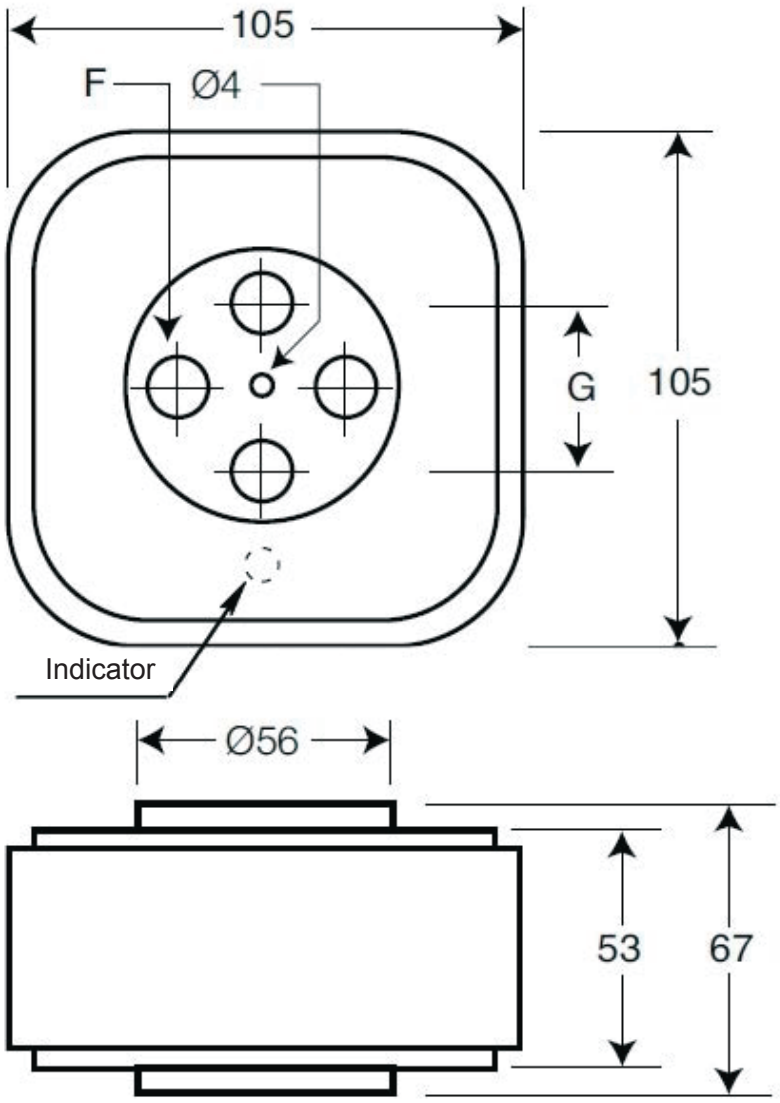


Size	A	B	D	E	F	G	H
3	51	53	92	76	M12	10	ø30
3 [1)]	51	65	92	76	M12	10	ø30

[1)] For size 3 1600...2000 A

Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of 170M7062, 170M7063, 170M7064



Size	F	G
4B	M10	33

Dimensions in mm
(1 mm = 0.0394 in)

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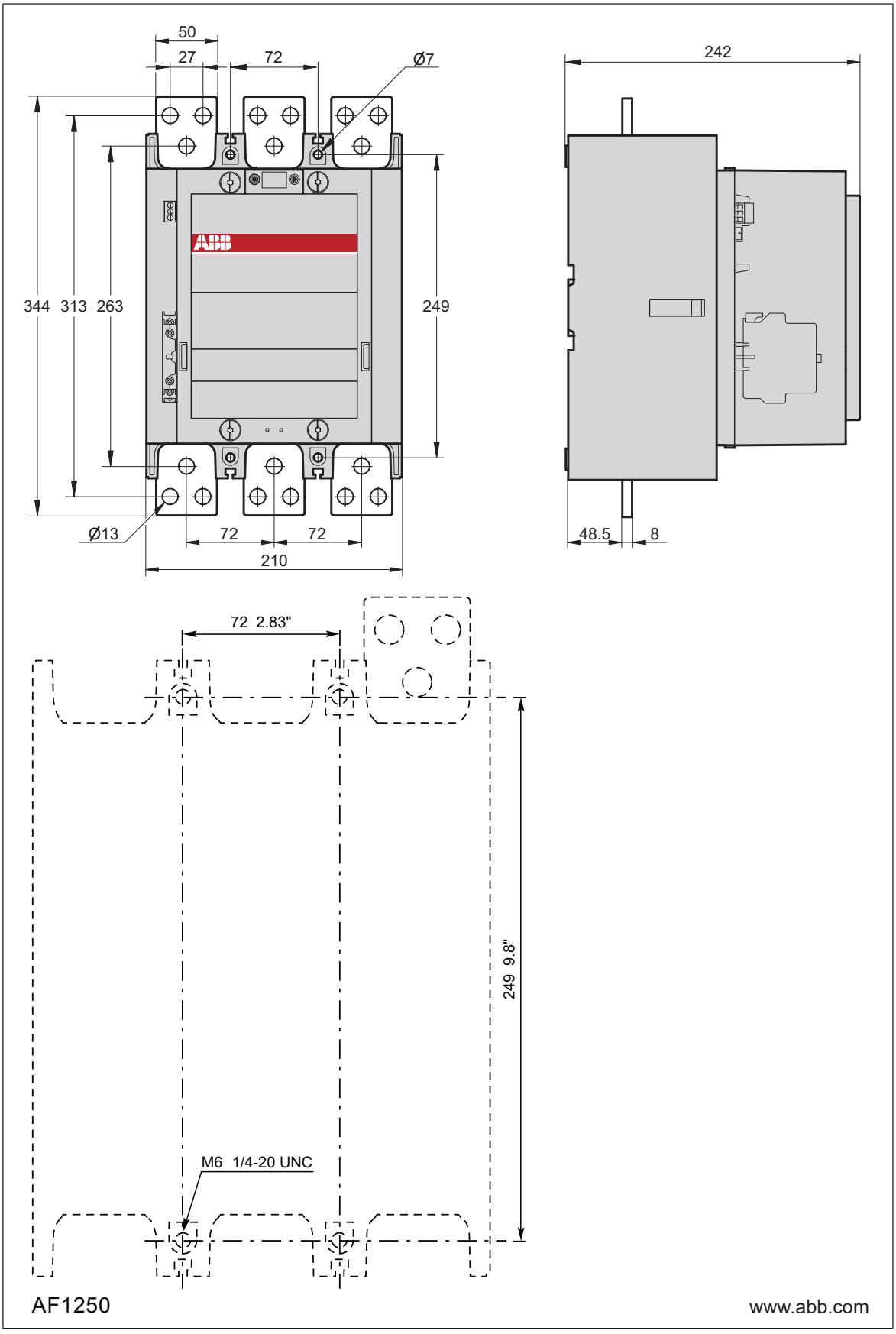
Dimensions of main contactors

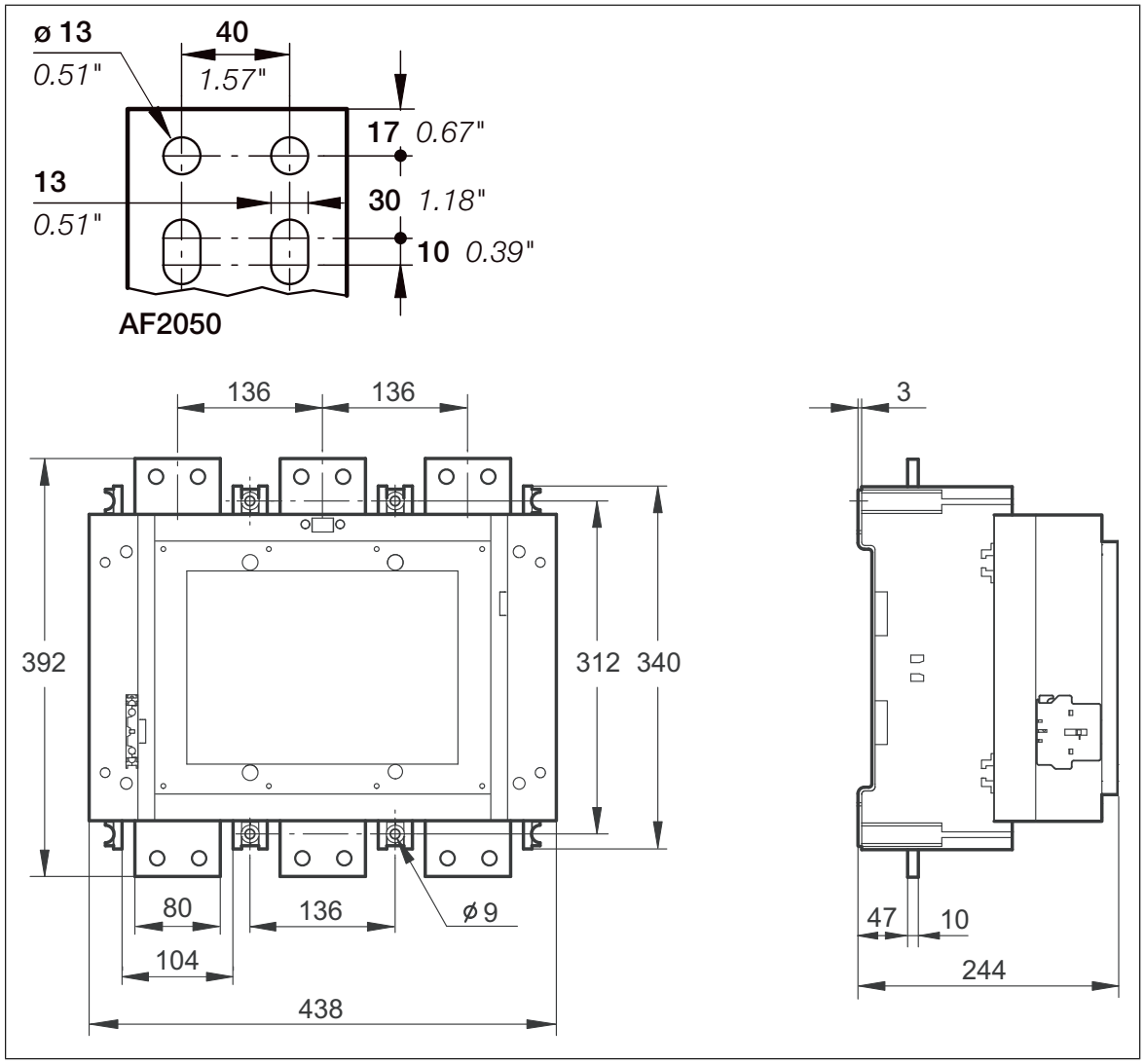
Dimensions of AF1250-30-22-70



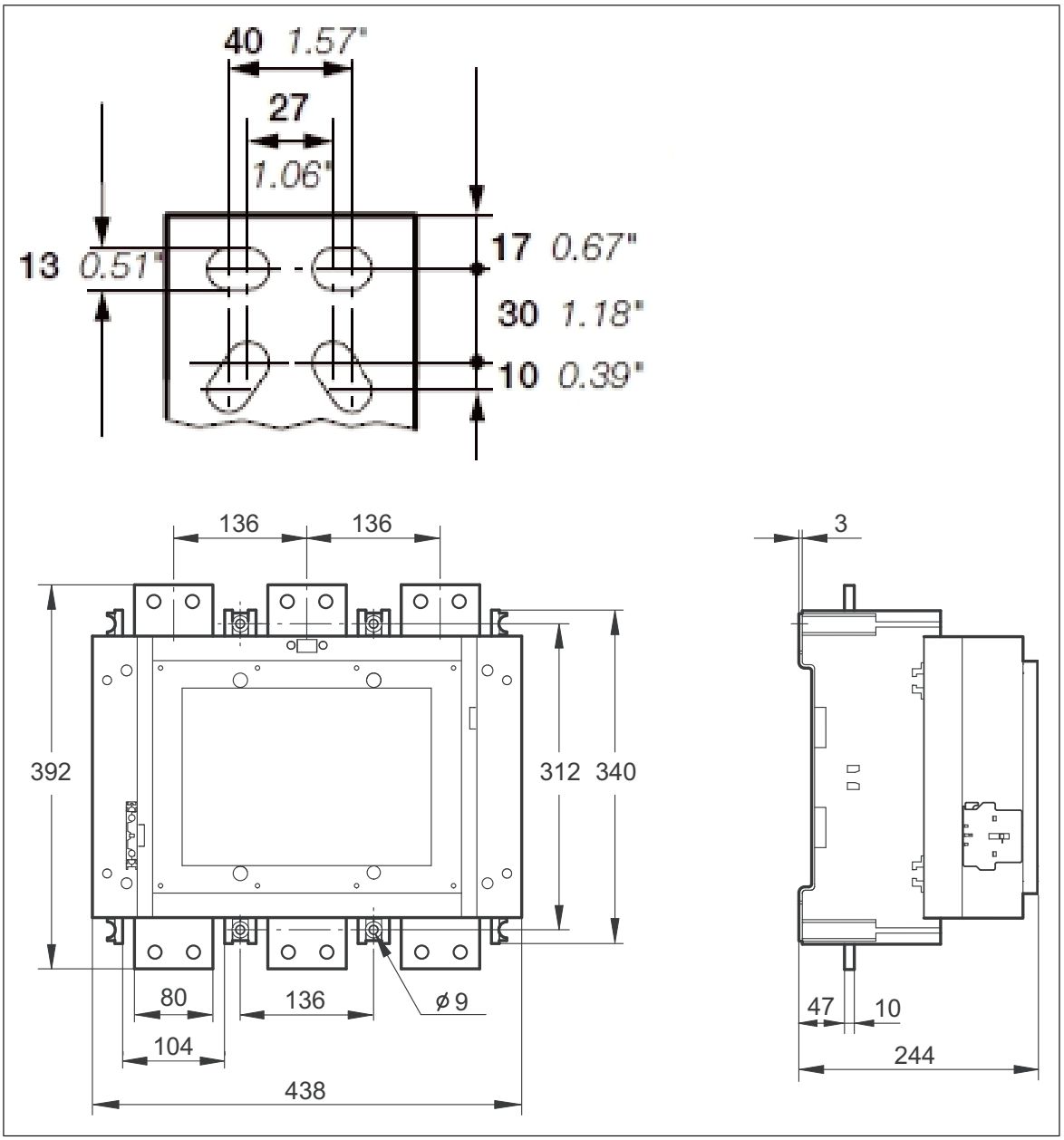
Dimensions in mm

(1 mm = 0.0394 in)

Dimensions of AF2050-30-22-70



Dimensions of AF1650-30-22-70



www.abb.com

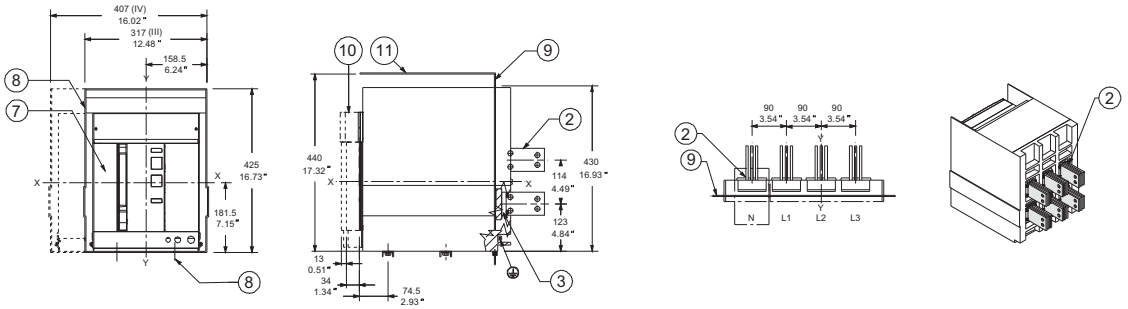
Dimensions in mm
(1 mm = 0.0394 in)

Dimensions of main circuit breakers

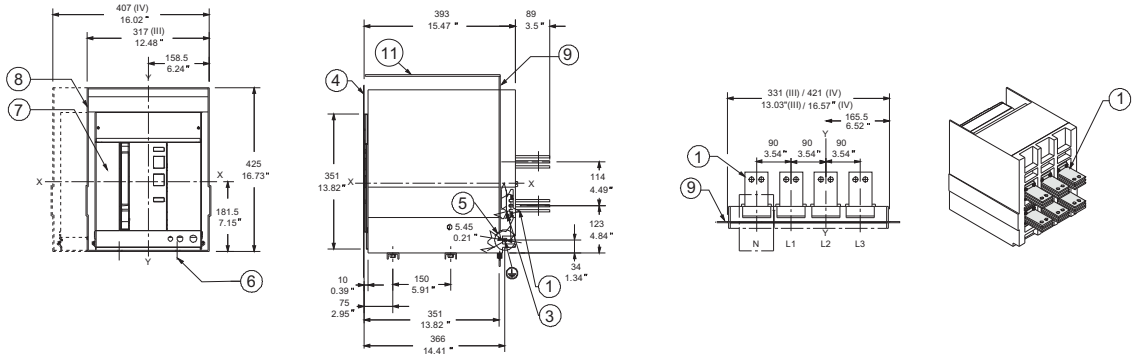
E2.2S-A (UL/CSA/IEC)

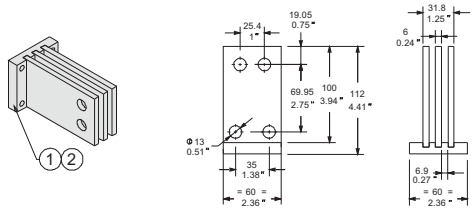
E2.2 B-A, N-A, S-A, H-A, V-A 250A - 2000A

VR



HR



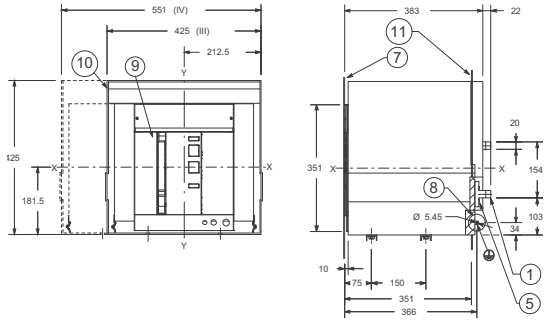


1	Horizontal terminals 1600…2000 A	7	Moving part
2	Vertical terminals 1600…2000 A	8	Fixed part
3	Tightening torque 8.6 N·m (76 lbf·in)	9	Segregation
4	Door position	10	Connected, test, disconnected distances
5	Grounding	11	Roof insulation or insulated material
6	Mounting fixed part screws		

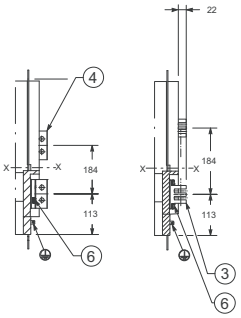
E4.2S (IEC)

HR/VR

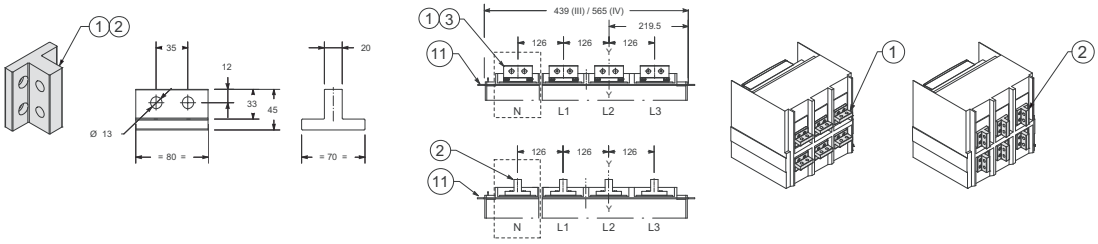
E4.2 N/S/H 3200A



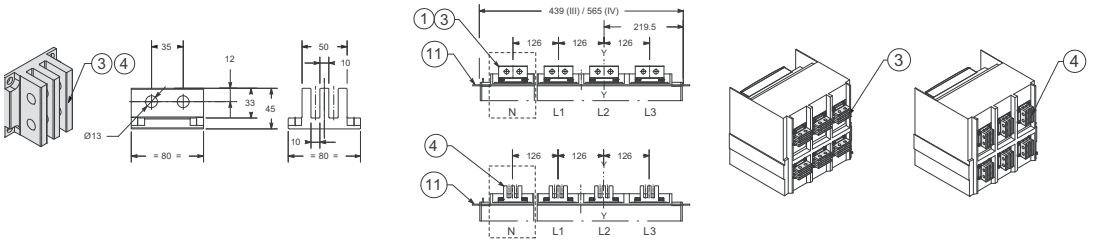
E4.2 N/S/H 4000A
E4.2 V 2000...4000A



E4.2 N/S/H 3200A



E4.2 N/S/H 4000A
E4.2 V 2000...4000A

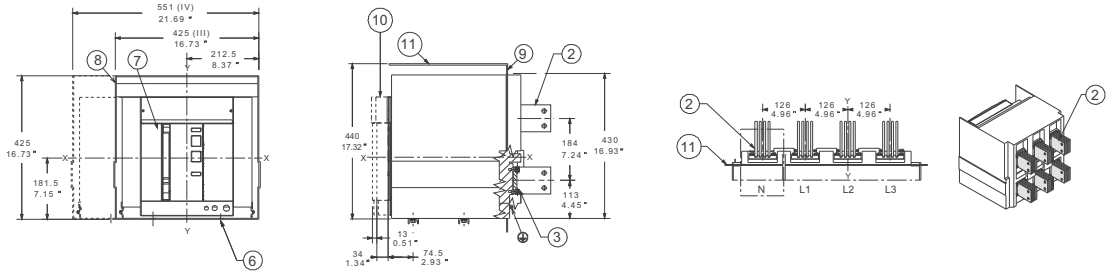


1	Horizontal terminals 3200 A	7	Door position
2	Vertical terminals 3200 A	8	Earthing device
3	Horizontal terminals 4000 A	9	Mobile part
4	Vertical terminals 4000 A	10	Fixed part
5	Tightening torque 3200 A 20 N·m	11	Segregation (where envisaged)
6	Tightening torque 4000 A 20 N·m	12	Distance from connected for testing to isolated

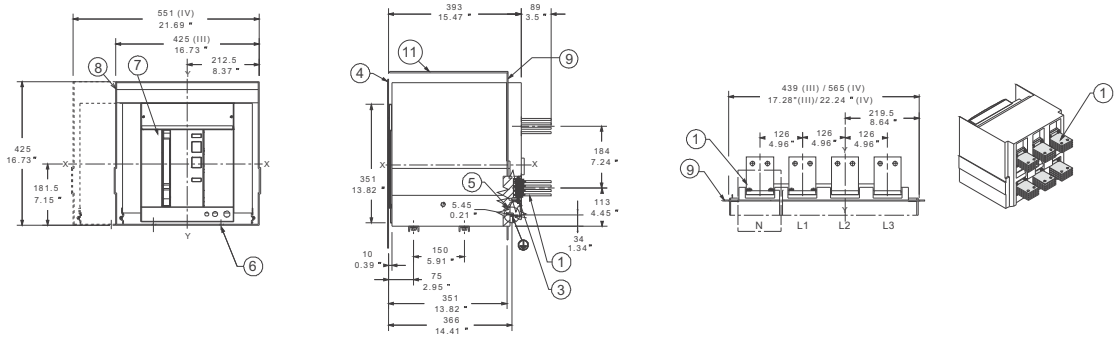
E4.2S-A (UL/CSA/IEC)

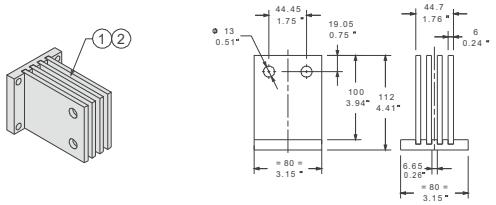
E4.2 S-A, H-A, V-A 800A - 2500A

VR



HR



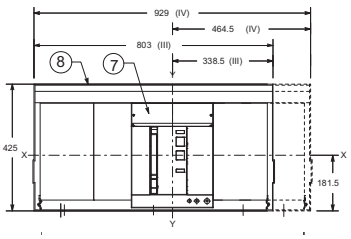


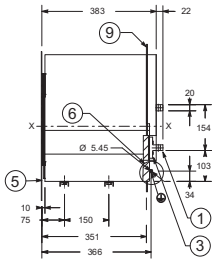
1	Horizontal terminals 2500 A	7	Moving part
2	Vertical terminals 2500 A	8	Fixed part
3	Tightening torque 20 N·m (177 lbf·in)	9	Segregation
4	Door position	10	Connected, test, disconnected distances
5	Grounding	11	Roof insulation or insulated material
6	Mounting fixed part screws		

E6.2V (IEC)

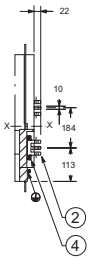
HR

E6.2 H/V 4000-5000A

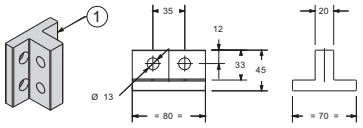


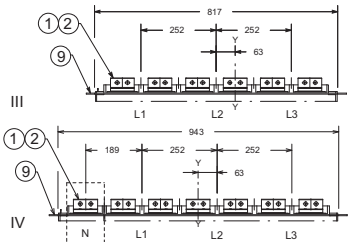


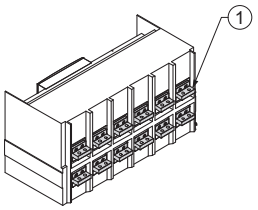
E6.2 H/V 6300A
E6.2 X 4000...6300A



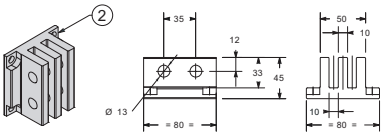
E6.2 H/V 4000-5000A

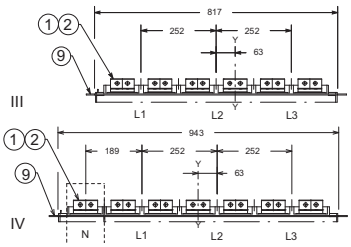


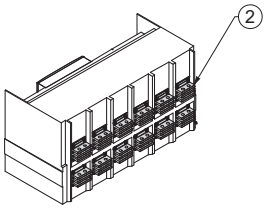




E6.2 H/V 6300A
E6.2 X 4000...6300A



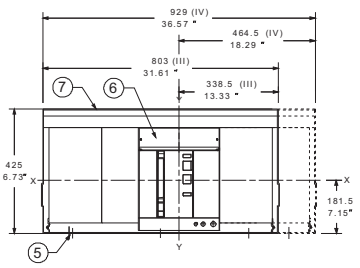




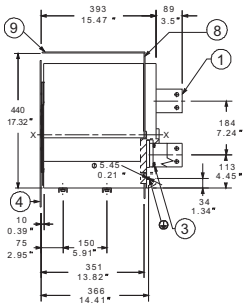
1	Horizontal terminals 4000…5000 A	6	Earthing device
2	Vertical terminals 6300 A	7	Mobile part
3	Tightening torque 4000…5000 A 20 N·m	8	Fixed part
4	Tightening torque 6300 A 20 Nm	9	Segregation (where envisaged)
5	Door position		

E6.2V-A (UL/CSA/IEC)

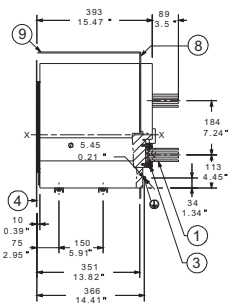
E6.2 H-A, V-A, L-A 4000A - 5000A

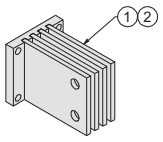


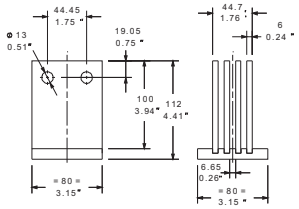
VR



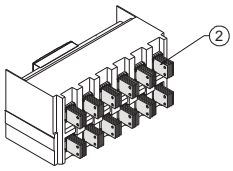
HR

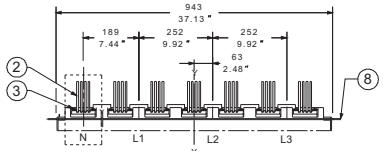


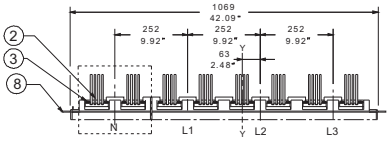




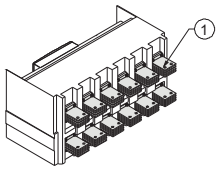
VR adjustment

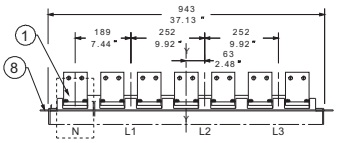


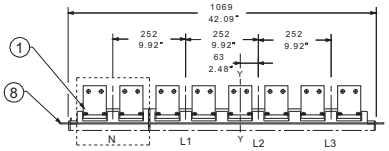




HR adjustment



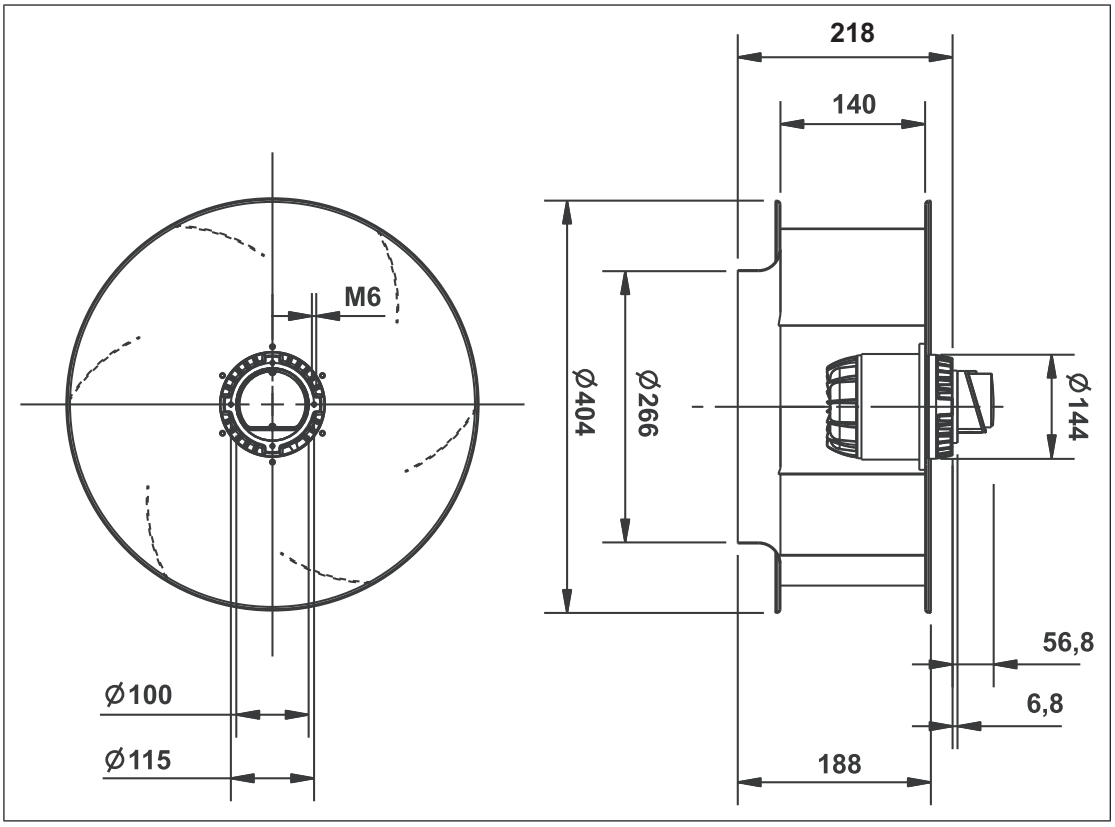




1	Horizontal terminals 5000 A	5	Mounting fixed part screws M8x25 provided. Tightening torque 20 N·m (177 lbf·in).
2	Vertical terminals 5000 A	6	Moving part
3	Tightening torque 20 N·m (177 lbf·in)	7	Fixed part
4	Door position	8	Segregation

Miscellaneous components

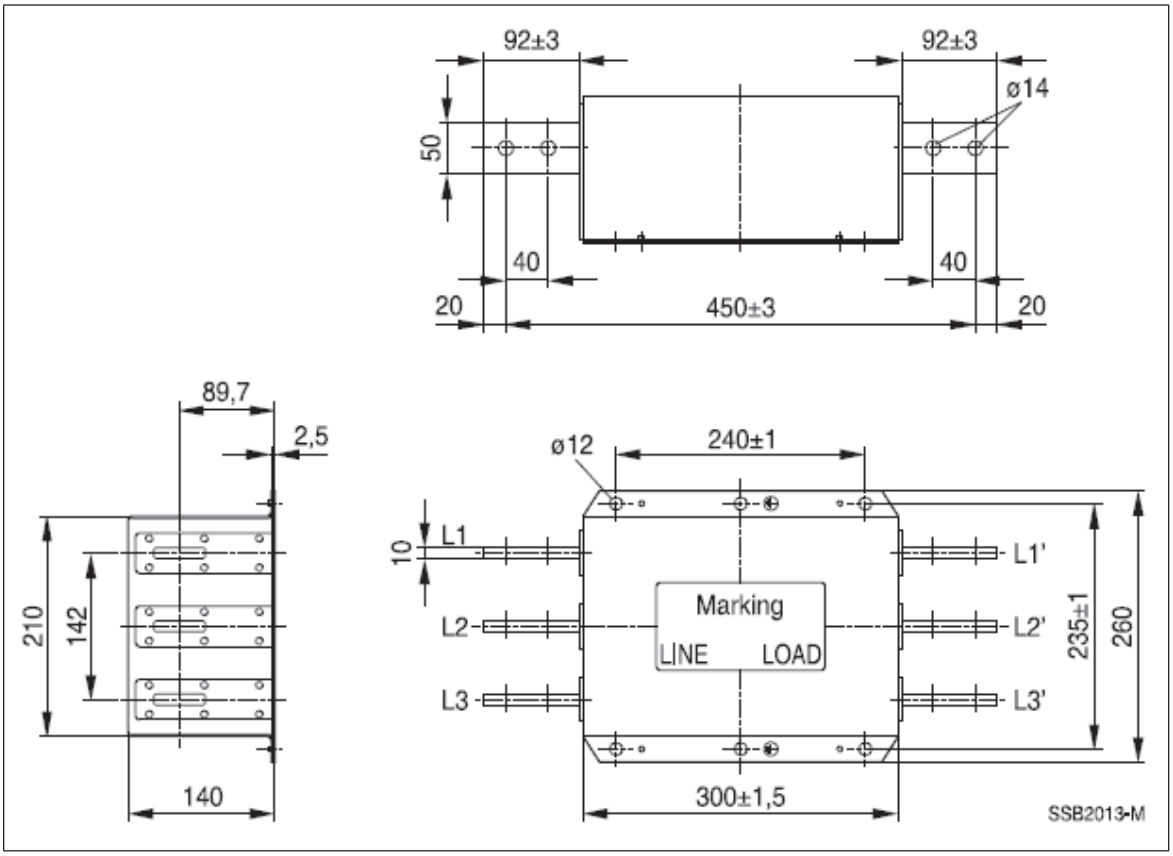
IP54 roof fan (IEC/UL) in 600 mm enclosure



Dimensions in mm
(1 mm = 0.0394 in)

RFI filter and related accessories

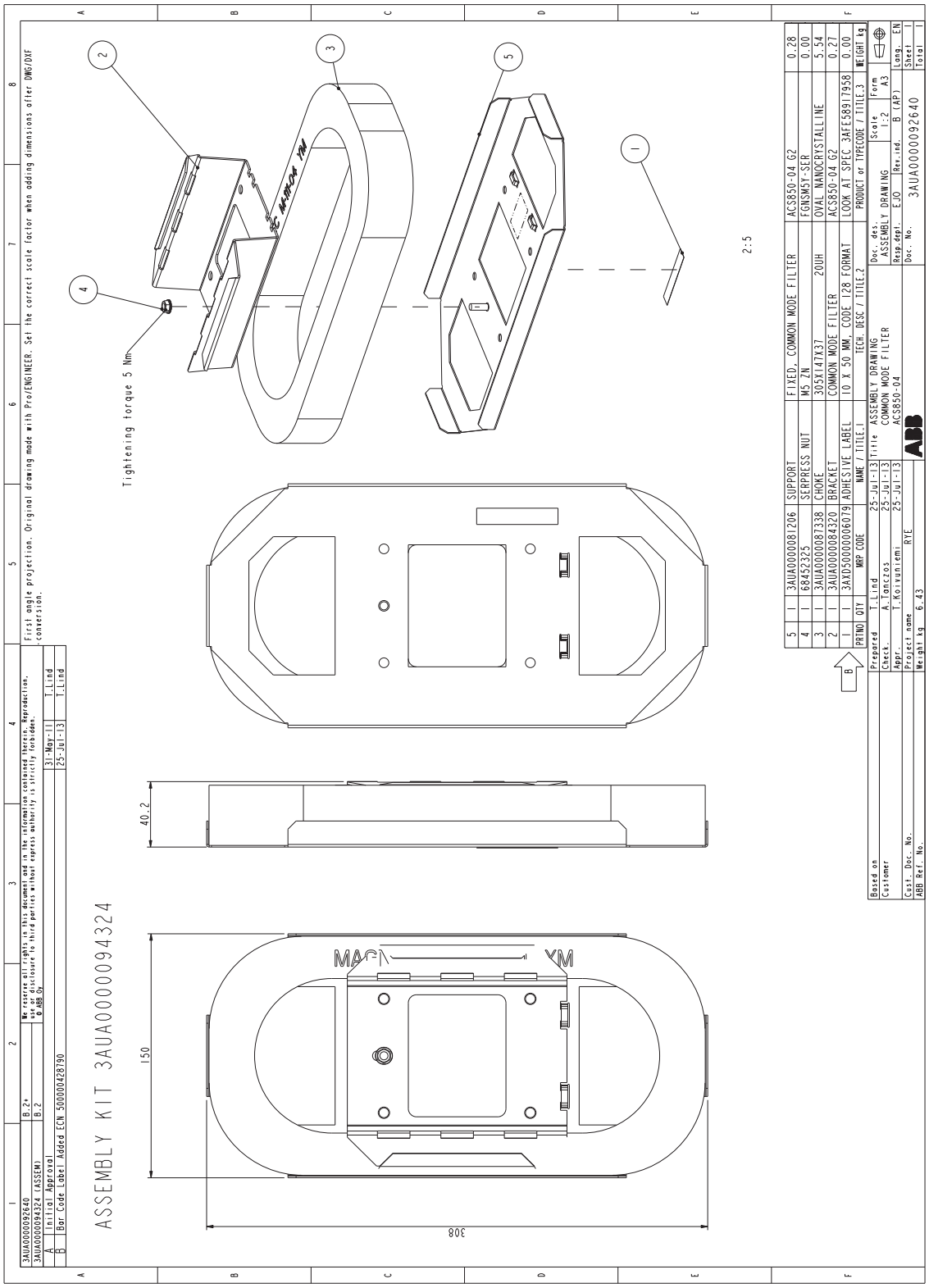
RFI filter



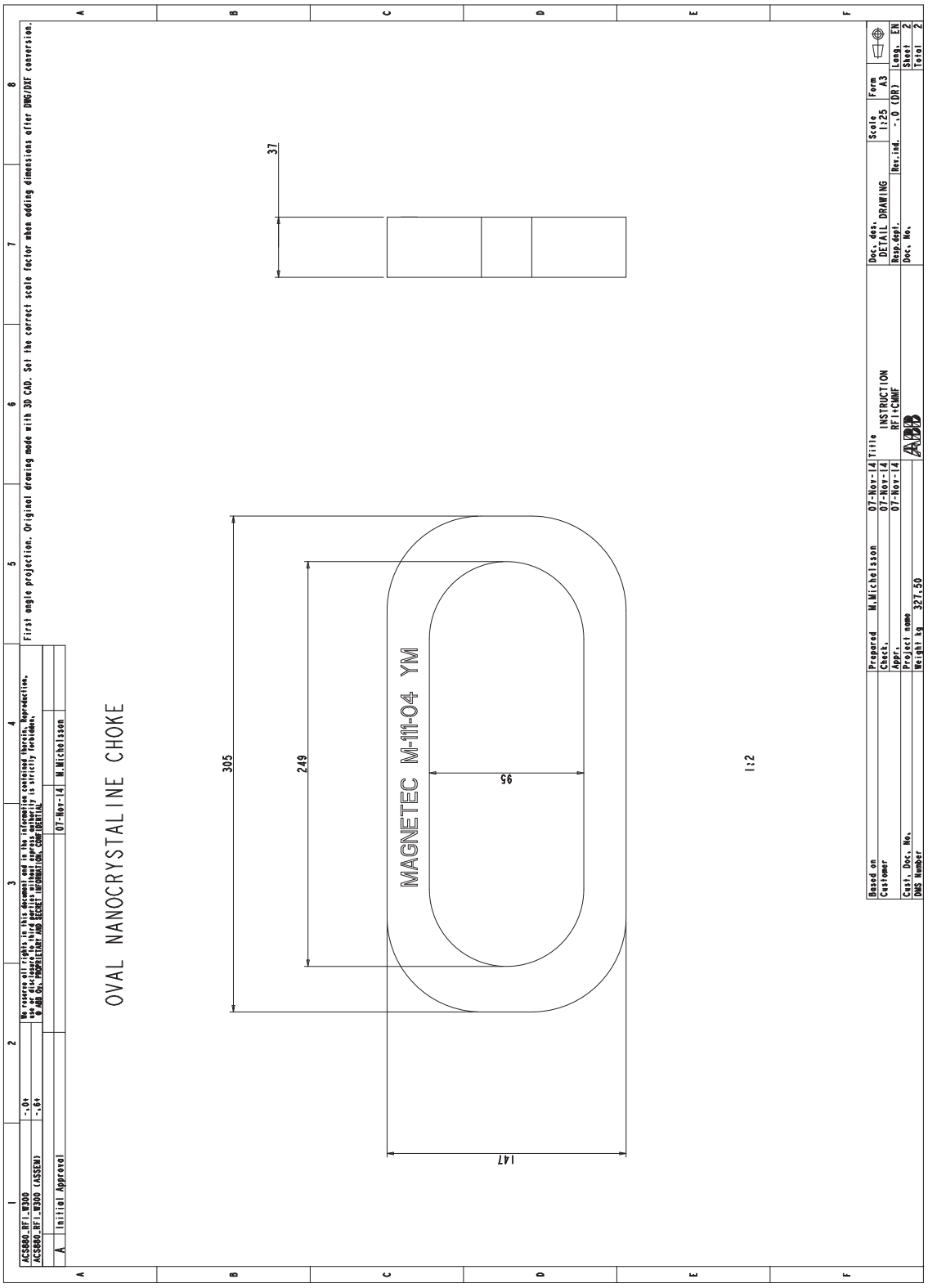
Dimensions in mm

(1 mm = 0.0394 in)

Oval toroid kit



Oval toroid


OVAL NANOCRYSTALINE CHOKE
MAGNETEC M-111-04 YM
305
249
95
147
37
1:2

13. Example circuit diagrams

Contents of this chapter

This chapter contains three example circuit diagram sets. Each set includes one supply module type and typical related equipment. These supply module types are presented:

- ACS880-304-1820A-3+A018+C183+C188 (2×D8T 6-pulse connection)
- ACS880-304-4560A-3+A018+C183 (5×D8T 6-pulse connection)
- ACS880-304-0910A-3+A004+A018+C188 (2×D7T 12-pulse connection)

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 a diode supply unit, and
- learning how to wire a (ACS880-304…+A018) diode supply module when installed in a user-defined cabinet.

Component designations used in the diagrams

2×D8T 6-pulse circuit diagrams

The 2×D8T 6-pulse circuit diagrams include:

Designation	Component
A1.1	CVAR board for UL/CSA installations only
A51	BCU control unit
A58	DPMP-01 door mounting kit for control panel
A59	ACS-AP-x control panel
A61	Emergency stop safety relay
A62	Emergency stop extension safety relay
F1.x	Main AC fuses for protecting the input cables, main contactor
F3.x	AC fuses for protecting the modules
G24	Incoming cubicle fan for cooling the AC fuses
Q1.1	Main switch-disconnector
Q2.1	Main contactor (not obligatory). See *Switching, disconnecting and protecting solution (page 41)*.
Q21	Auxiliary voltage switch with fuses
S21	Operating switch
S61	Emergency stop button
S62	Emergency stop reset button
T1.x	Frame D8T diode supply module(s)
T111	400 V AC 3-phase DOL fan supply (option +C188)
T21	Auxiliary voltage transformer

The 2×D8T 6-pulse circuit diagrams also include:

- an example of auxiliary voltage distribution
- internal heating element of the module (option +C183)
- DSU cabinet option +Q963 Emergency stop (category 0) with safety relays, by activating the Safe torque off function without opening the main contactor/main breaker.

5×D8T 6-pulse circuit diagrams

The 5×D8T 6-pulse circuit diagrams include:

Designation	Component
A1.1	CVAR board for UL/CSA installations only
A51	BCU control unit
A58	DPMP-01 door mounting kit for control panel
A59	ACS-AP-x control panel
F3.x	AC fuses for protecting the modules
G24	Incoming cubicle fan for cooling the AC fuses
Q1.1	Main breaker (air circuit breaker)
Q21	Auxiliary voltage switch with fuses
S21	Operating switch
T1.x	Frame D8T diode supply module(s)
T21	Auxiliary voltage transformer

The 5×D8T 6-pulse circuit diagrams also include:

- an example of auxiliary voltage distribution
- internal heating element of the module (option +C183).

2×D7T 12-pulse circuit diagrams

The 2×D7T 12-pulse circuit diagrams include:

Designation	Component
A1.1	CVAR board for UL/CSA installations only
A51	BCU control unit
A58	DPMP-01 door mounting kit for control panel
A59	ACS-AP-x control panel
F1.x	Main AC fuses for protecting the input cables, main contactors and modules
G24.1	Incoming cubicle fan for cooling the AC fuses
Q1.1	Main switch-disconnector
Q2.1	Main contactor (not obligatory). See *Switching, disconnecting and protecting solution (page 41)*.
Q21	Auxiliary voltage switch with fuses
S21	Operating switch
T1.x	Frame D7T diode supply module(s)
T21	Auxiliary voltage transformer

The 2×D7T 12-pulse circuit diagrams also include:

- an example of auxiliary voltage distribution
- 230 V AC 1-phase DOL fan supply (option +C188).

Differences of 2×D8T 6-pulse, 5×D8T 6-pulse and 2×D7T 12-pulse circuit diagrams

The main difference between 2×D8T 6-pulse, 2×D7T 12-pulse and 5×D8T 6-pulse diagrams is that in 5×D8T, the main AC fuses [F1.x], main switch-disconnector [Q1.1] and main contactor [Q2.1] are replaced with one component, main circuit breaker [Q1.1]. 2×D7T 12-pulse has the main AC fuses [F1.x] for protecting modules, therefore there are no AC fuses [F3.x] in module cabinet.

The 2×D8T 6-pulse modules have optional 400 V AC 3-phase DOL fans while the D7T modules have optional 230 V AC 1-phase DOL fans. The diagrams of 5×D8T 6-pulse describe modules with standard speed-controlled fans.

D8T 6-pulse modules can have the internal heating element in the module (option +C183) while D7T 12-pulse modules do not have it.

Circuit diagram set contents

The contents of each circuit diagram set are listed below:

ACS880-304+A018, 2xD8T 6-pulse (3AXD10000285426)

- Main switch disconnector, AC fuses
- Main contactor
- Module heaters (+183)
- Module DOL fan supply (+C188)
- Internal auxiliary voltage distribution
- Incoming unit fan
- BCU-02 Control unit
- Emergency stop, Category 0 without opening main contactor with safety relay (+Q963)

ACS880-304+A018, 5xD8T 6-pulse (3AXD10000285688)

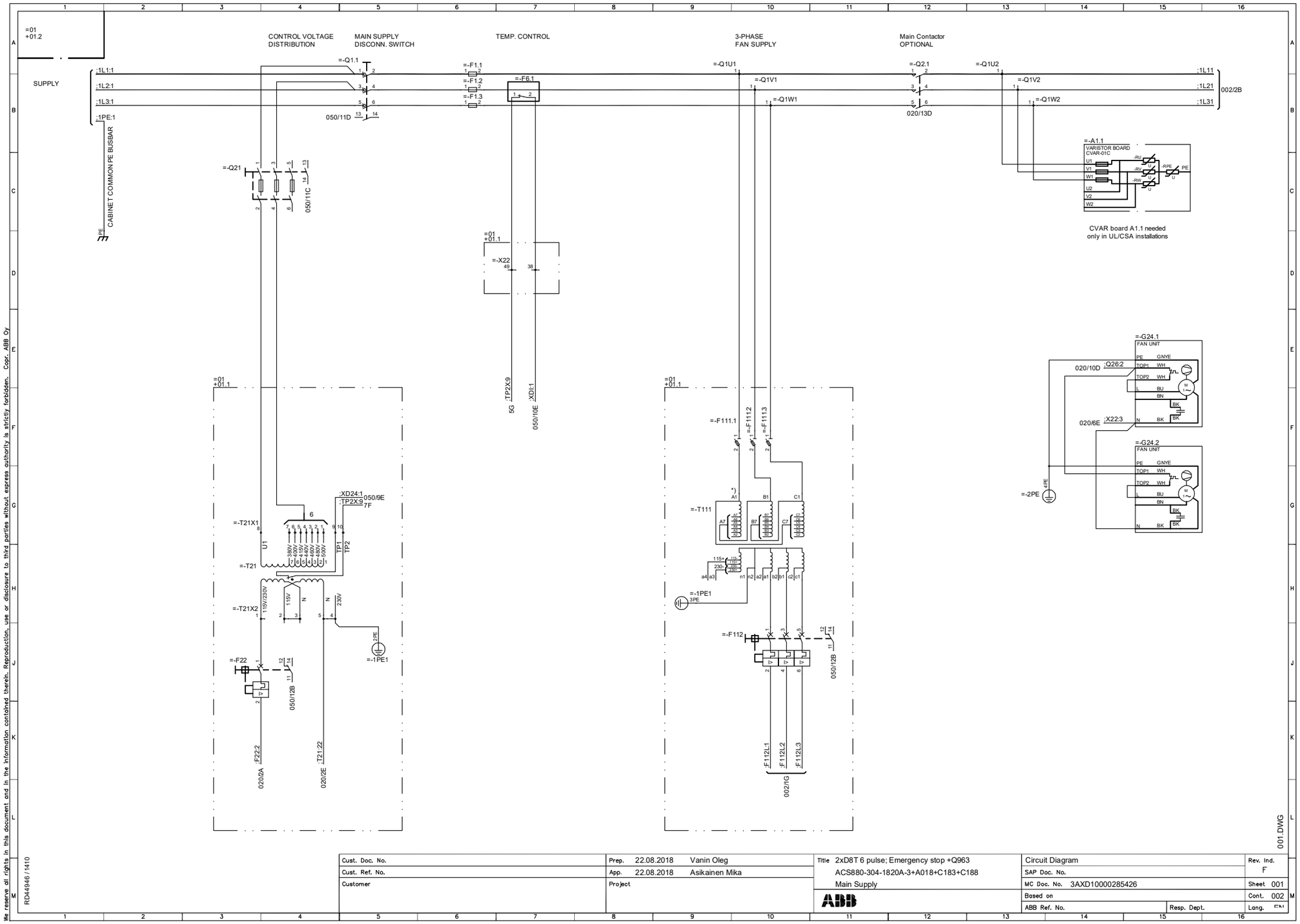
- Main air circuit breaker
- Module heaters (+C183)
- Module DC speed controlled fan
- Internal auxiliary voltage distribution
- Incoming unit fan
- BCU-12 Control unit

ACS880-304+A018, 2xD7T 12-pulse (3AXD10000285689)

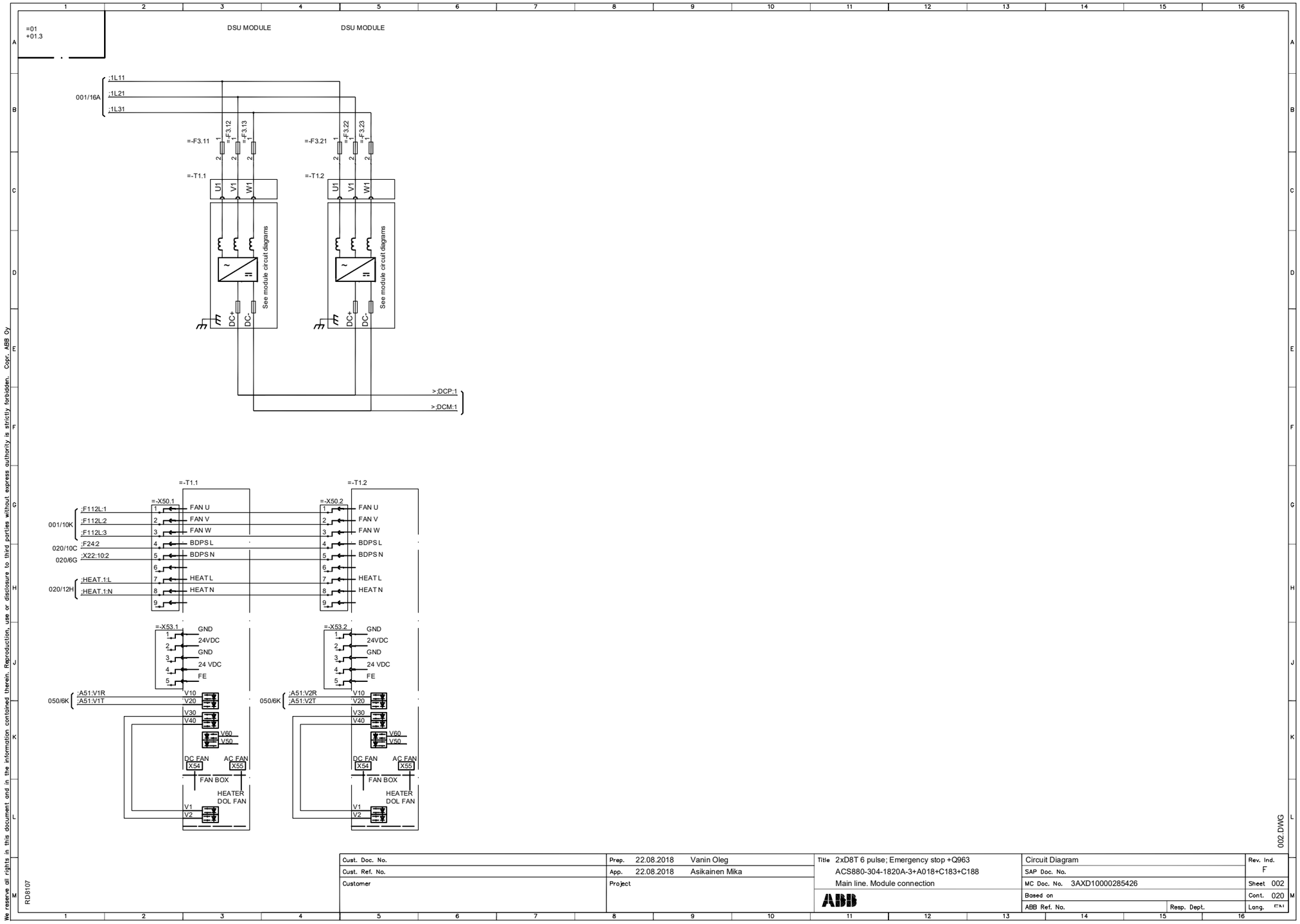
- Main switch disconnector, AC fuses
- Main contactor
- Temperature control
- Module DOL fan supply (+C188)
- Internal auxiliary voltage distribution
- Incoming unit fan
- BCU-12 Control unit

ACS880-304-1820A-3+A018+C183+C188 (2×D8T 6-pulse connection)

Sheet 001 – Main supply

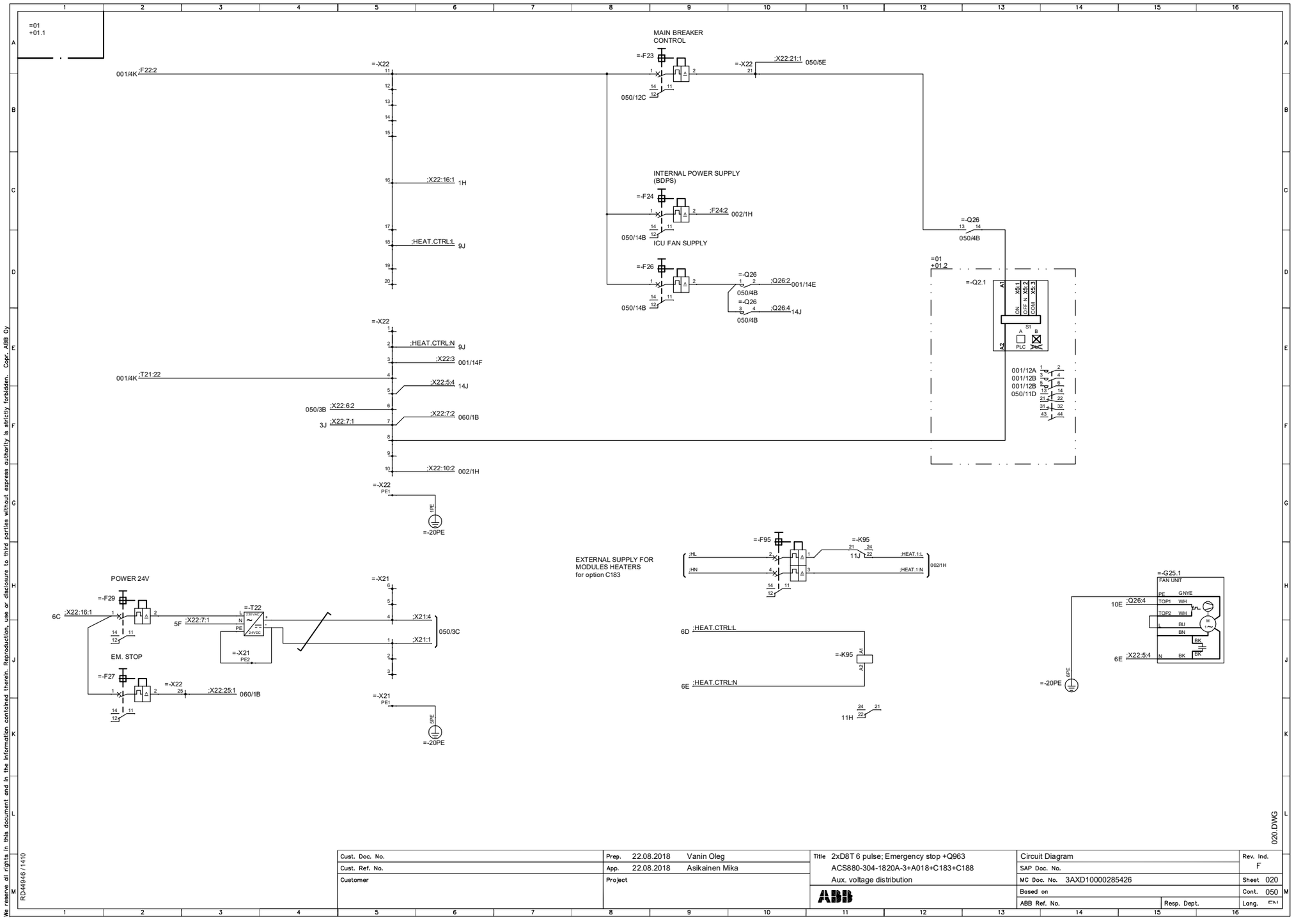


Sheet 002 – Main line, module connections



Cust. Doc. No.	Prep. 22.08.2018 Vanin Oleg	Title 2xD8T 6 pulse; Emergency stop +Q963	Circuit Diagram		Rev. Ind. F
Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	ACS880-304-1820A-3+A018+C183+C188	SAP Doc. No.		
Customer	Project	Main line. Module connection	MC Doc. No. 3AXD10000285426		Sheet 002
		ABB	Based on		Cont. 020
			ABB Ref. No.	Resp. Dept.	Lang. EN

Sheet 020 – Auxiliary voltage distribution

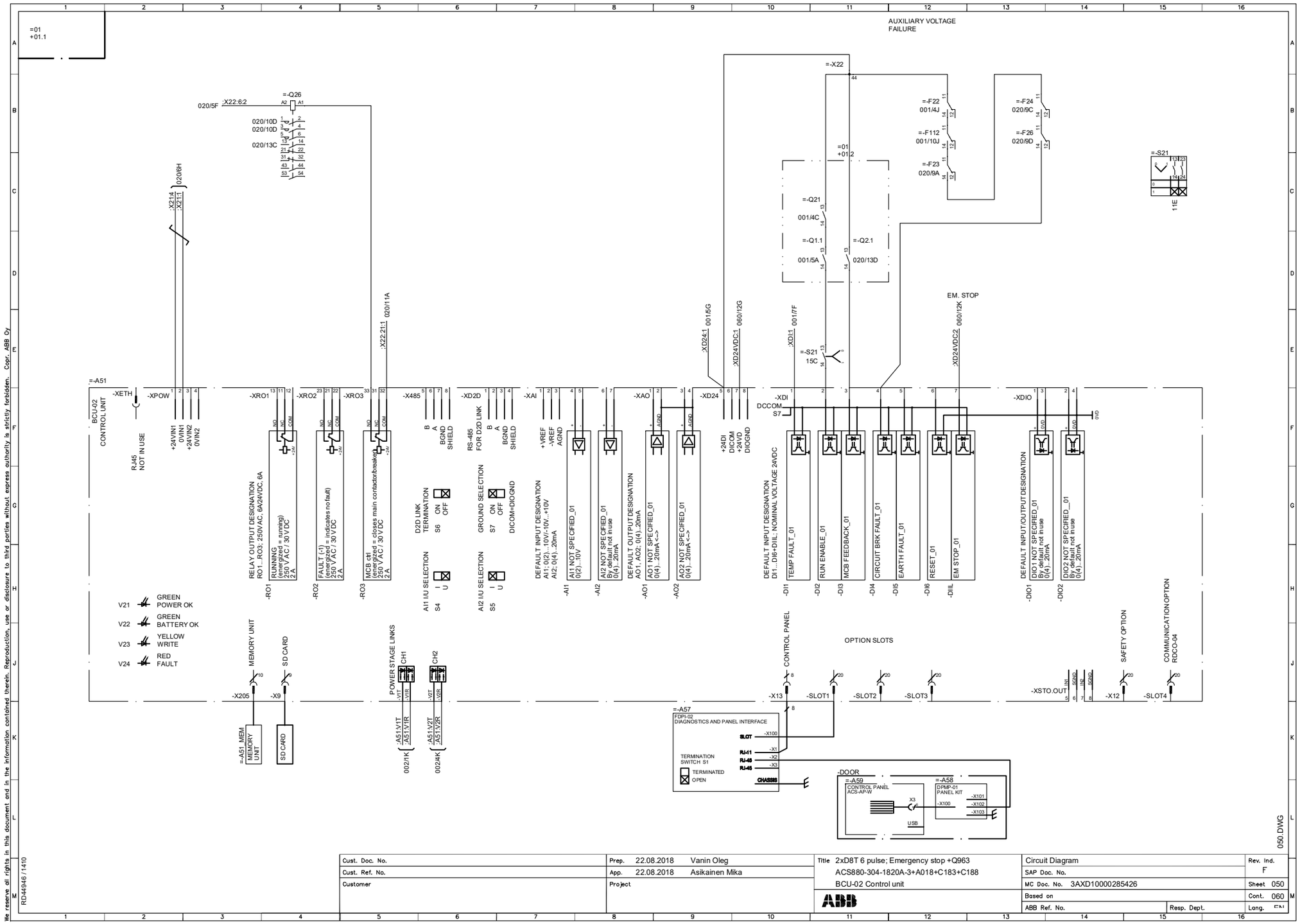


Cust. Doc. No.	Prep. 22.08.2018 Vanin Oleg	Title 2xD8T 6 pulse; Emergency stop +Q963	Circuit Diagram		Rev. Ind. F
Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	ACS880-304-1820A-3+A018+C183+C188	SAP Doc. No.		
Customer	Project	Aux. voltage distribution	MC Doc. No. 3AXD10000285426		Sheet 020
		ABB	Based on		Cont. 050
			ABB Ref. No.	Resp. Dept.	Lang. EN

RD44946 / 1410

020.DWG

Sheet 050 – BCU-02 control unit

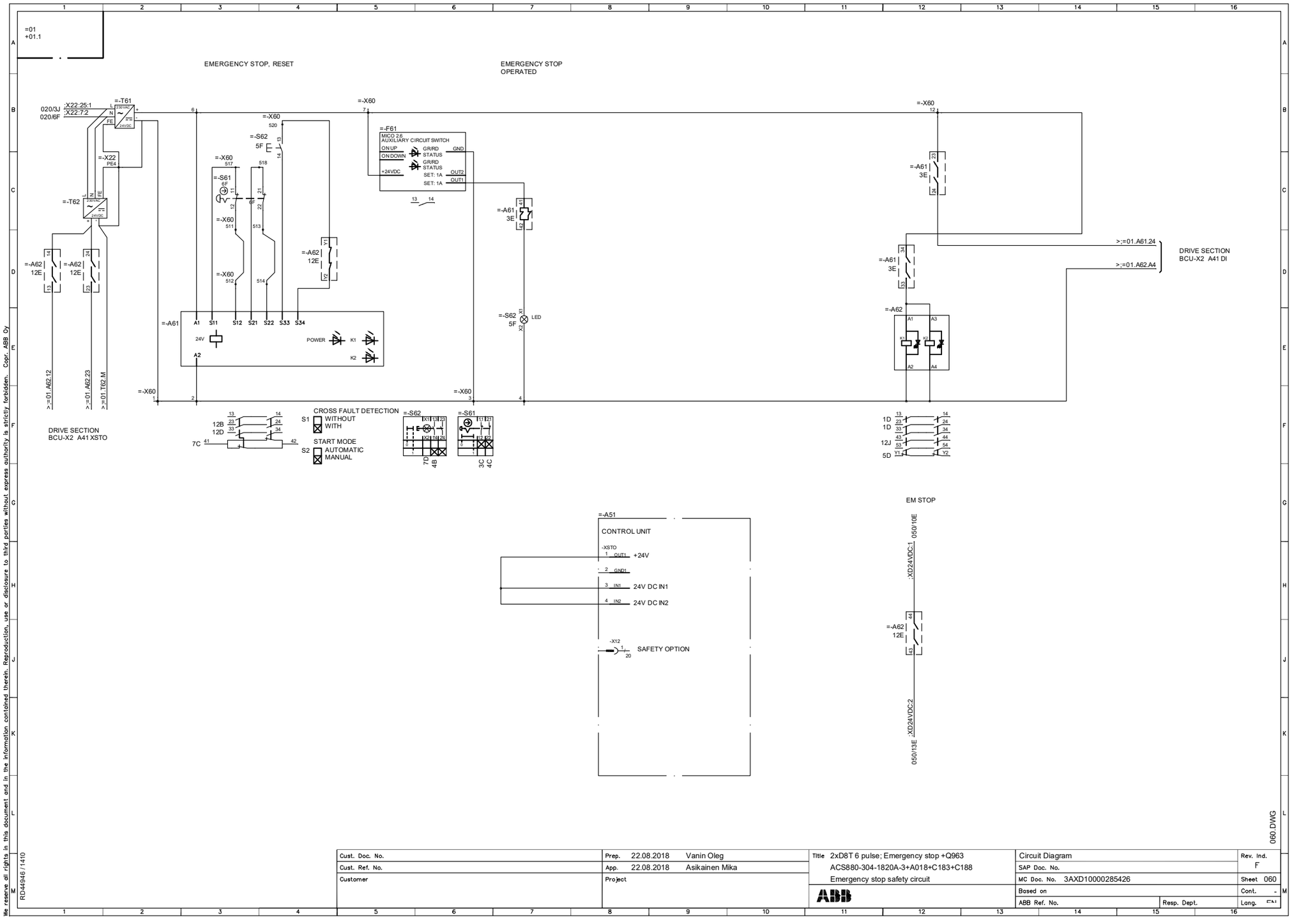


Cust. Doc. No.	Prep. 22.08.2018 Vanin Oleg	Title 2xD8T 6 pulse; Emergency stop +Q963	Circuit Diagram		Rev. Ind. F
Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	ACS880-304-1820A-3+A018+C183+C188	SAP Doc. No.		
Customer	Project	BCU-02 Control unit	MC Doc. No. 3AXD10000285426		Sheet 050
		ABB	Based on		Cont. 060
			ABB Ref. No.	Resp. Dept.	Lang. EN

RD44946 / 1410

050.DWG

Sheet 060 – Emergency stop +Q963

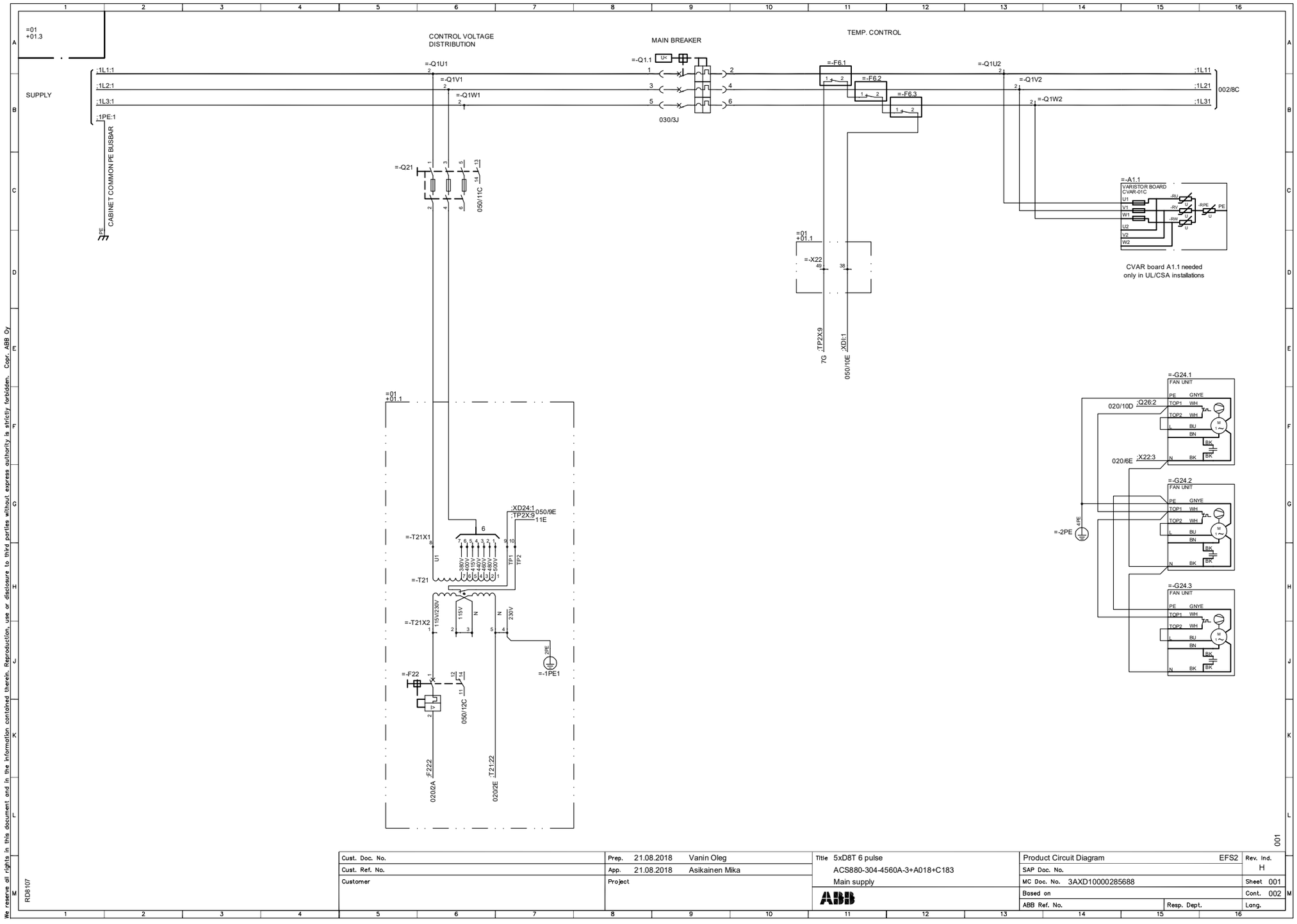


RD44946 / 1410	Cust. Doc. No.	Prep. 22.08.2018 Vanin Oleg	Title 2xD8T 6 pulse; Emergency stop +Q963 ACS880-304-1820A-3+A018+C183+C188 Emergency stop safety circuit
	Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	
	Customer	Project	

Circuit Diagram		Rev. Ind. F
SAP Doc. No.		
MC Doc. No. 3AXD10000285426		Sheet 060
Based on		Cont. -
ABB Ref. No.	Resp. Dept.	Lang. EN

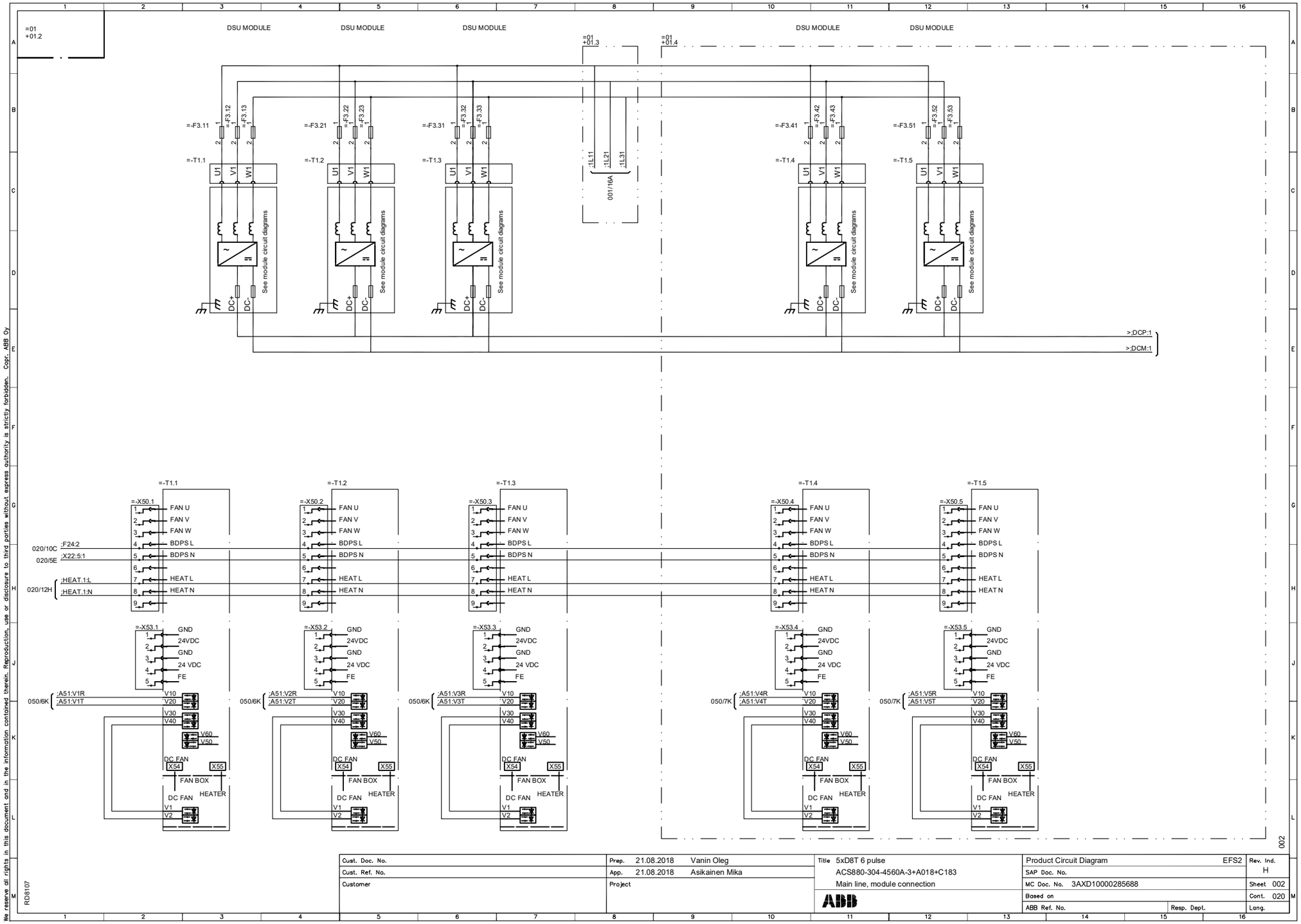
ACS880-304-4560A-3+A018+C183 (5×D8T 6-pulse connection)

Sheet 001 – Main supply

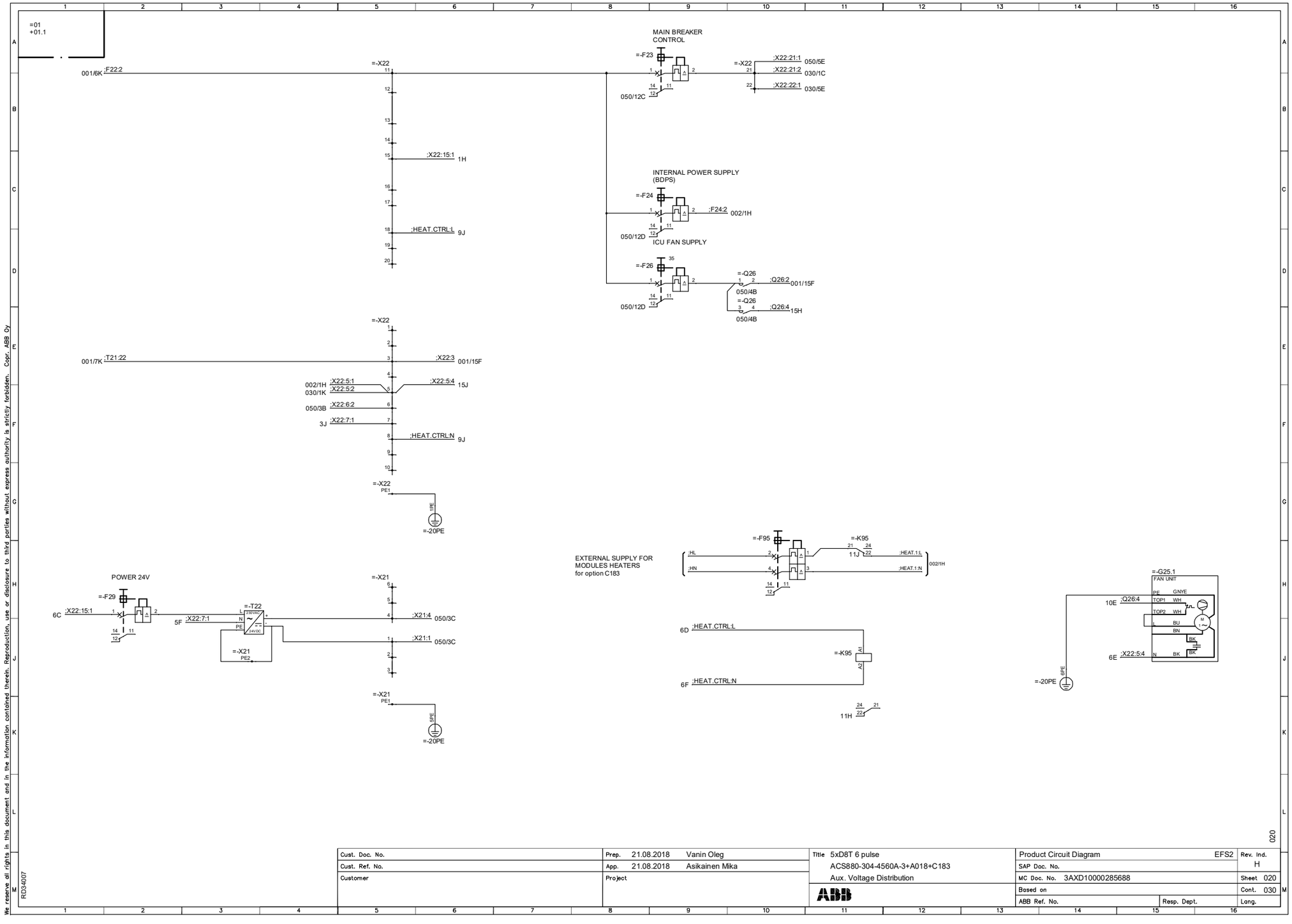


Cust. Doc. No.	Prep. 21.08.2018 Vanin Oleg	Title 5xD8T 6 pulse	Product Circuit Diagram EFS2 / Rev. Ind.
Cust. Ref. No.	App. 21.08.2018 Asikainen Mika	ACS880-304-4560A-3+A018+C183	SAP Doc. No. / H
Customer	Project	Main supply	MC Doc. No. 3AXD10000285688 / Sheet 001
RD8107		ABB	Based on / Cont. 002
			ABB Ref. No. / Resp. Dept. / Lang.

Sheet 002 – Main line, module connections



Sheet 020 – Auxiliary voltage distribution

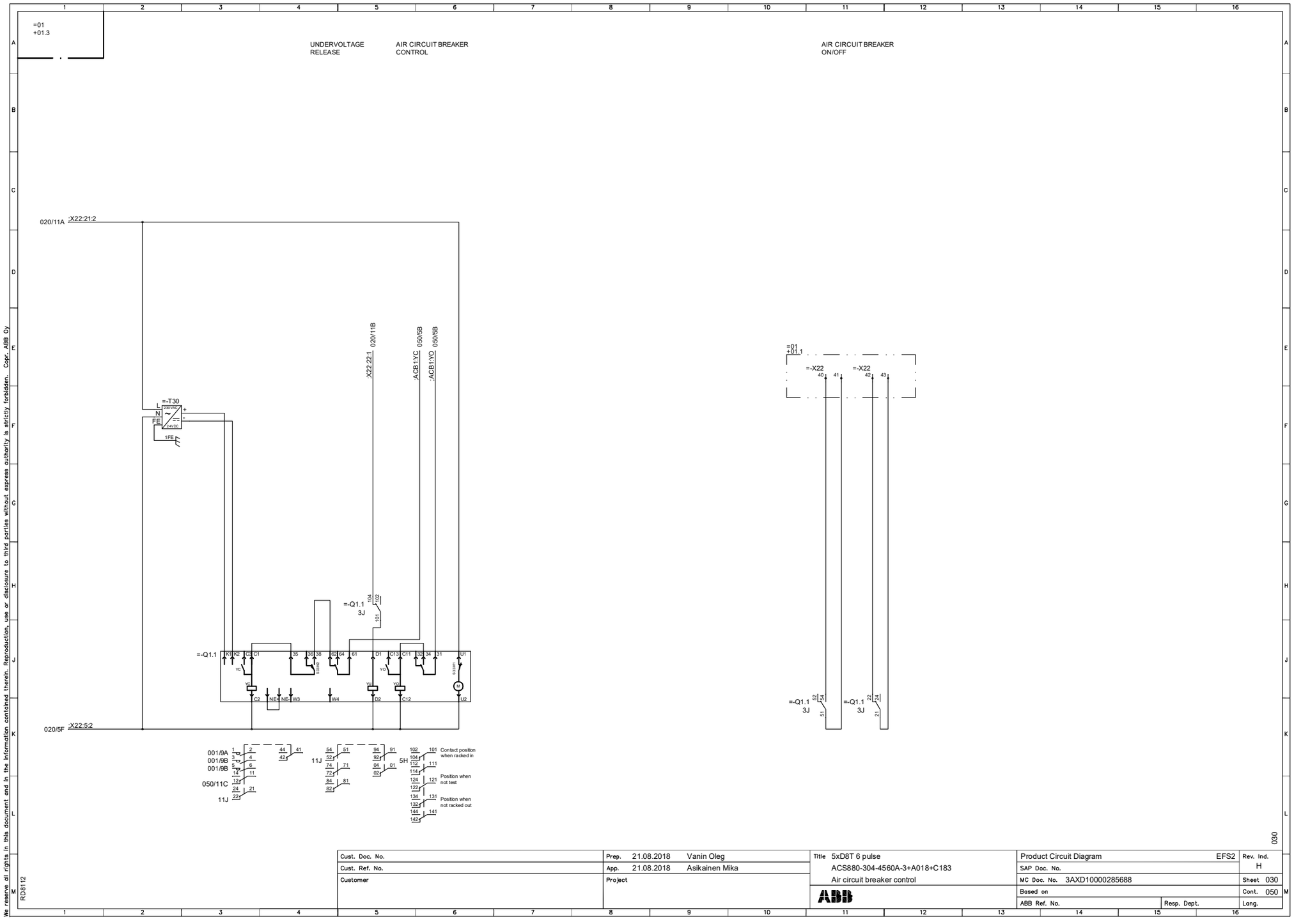


Cust. Doc. No.	Prep. 21.08.2018 Vanin Oleg	Title 5xD8T 6 pulse	Product Circuit Diagram EFS2	Rev. Ind.
Cust. Ref. No.	App. 21.08.2018 Asikainen Mika	ACS880-304-4560A-3+A018+C183	SAP Doc. No.	H
Customer	Project	Aux. Voltage Distribution	MC Doc. No. 3AXD10000285688	Sheet 020
		ABB	Based on	Cont. 030
			ABB Ref. No. / Resp. Dept.	Lang.

RD34007

020

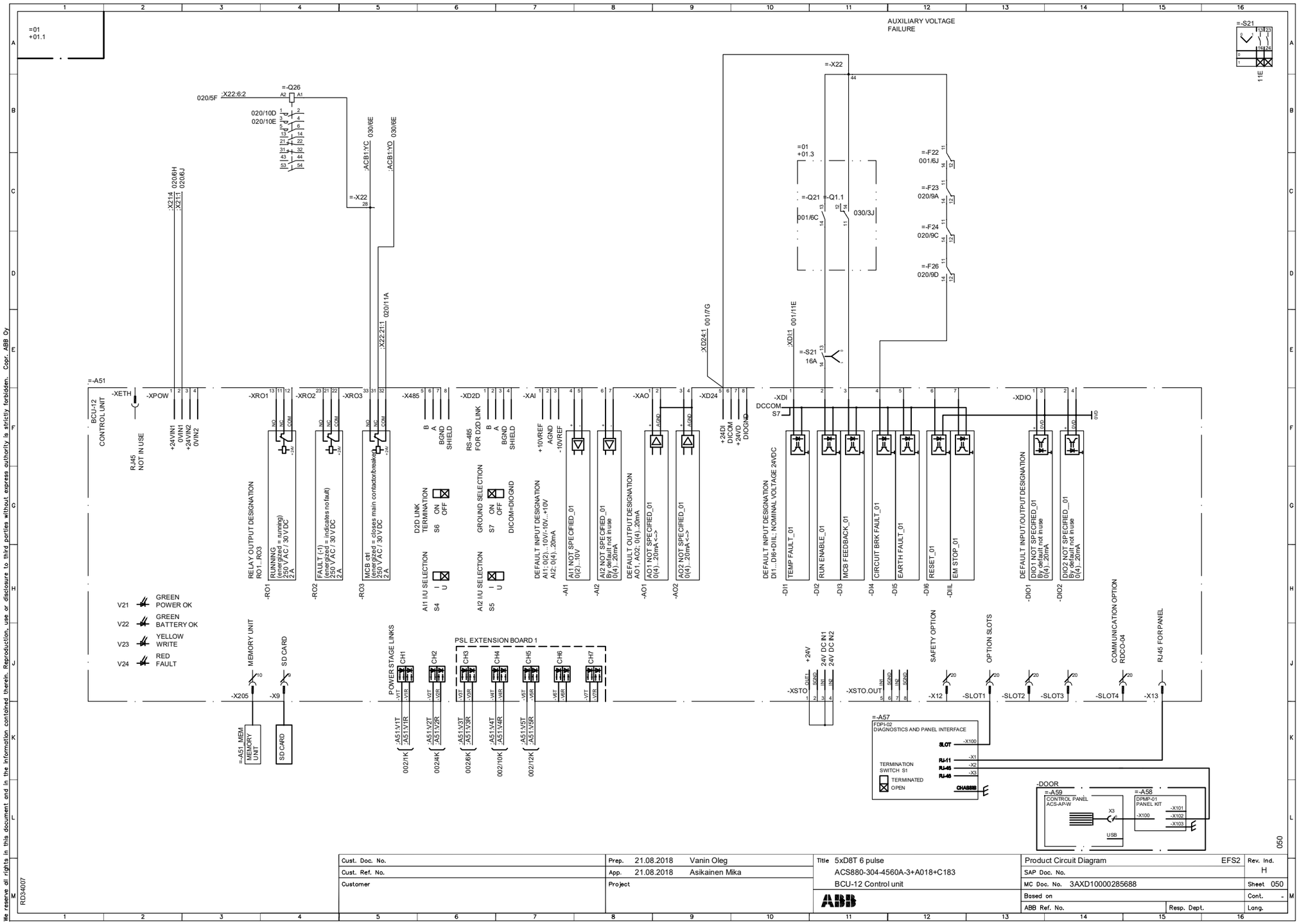
Sheet 030 – Main circuit breaker control



Cust. Doc. No.	Prep. 21.08.2018 Vanin Oleg	Title 5xD8T 6 pulse	Product Circuit Diagram EFS2	Rev. Ind.
Cust. Ref. No.	App. 21.08.2018 Asikainen Mika	ACS880-304-4560A-3+A018+C183	SAP Doc. No.	H
Customer	Project	Air circuit breaker control	MC Doc. No. 3AXD10000285688	Sheet 030
		ABB	Based on	Cont. 050
			ABB Ref. No. / Resp. Dept.	Lang.

RD8112

Sheet 050 – BCU-12 control unit



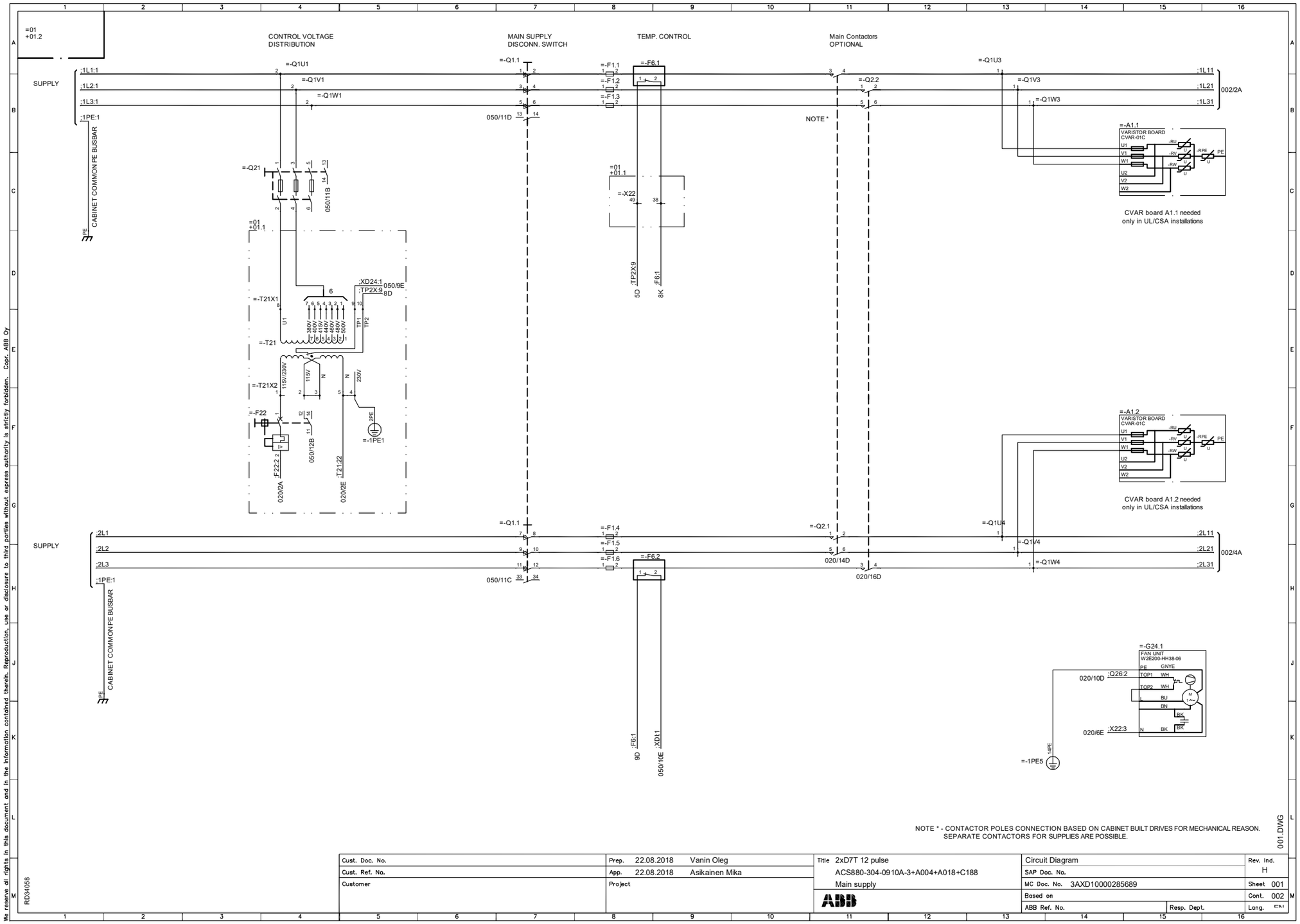
Cust. Doc. No.	Prep. 21.08.2018 Vanin Oleg	Title 5xD8T 6 pulse	Product Circuit Diagram EFS2	Rev. Ind.
Cust. Ref. No.	App. 21.08.2018 Asikainen Mika	ACS880-304-4560A-3+A018+C183	SAP Doc. No.	H
Customer	Project	BCU-12 Control unit	MC Doc. No. 3AXD10000285688	Sheet 050
		ABB	Based on	Cont. -
			ABB Ref. No. / Resp. Dept.	Lang.

RD34007

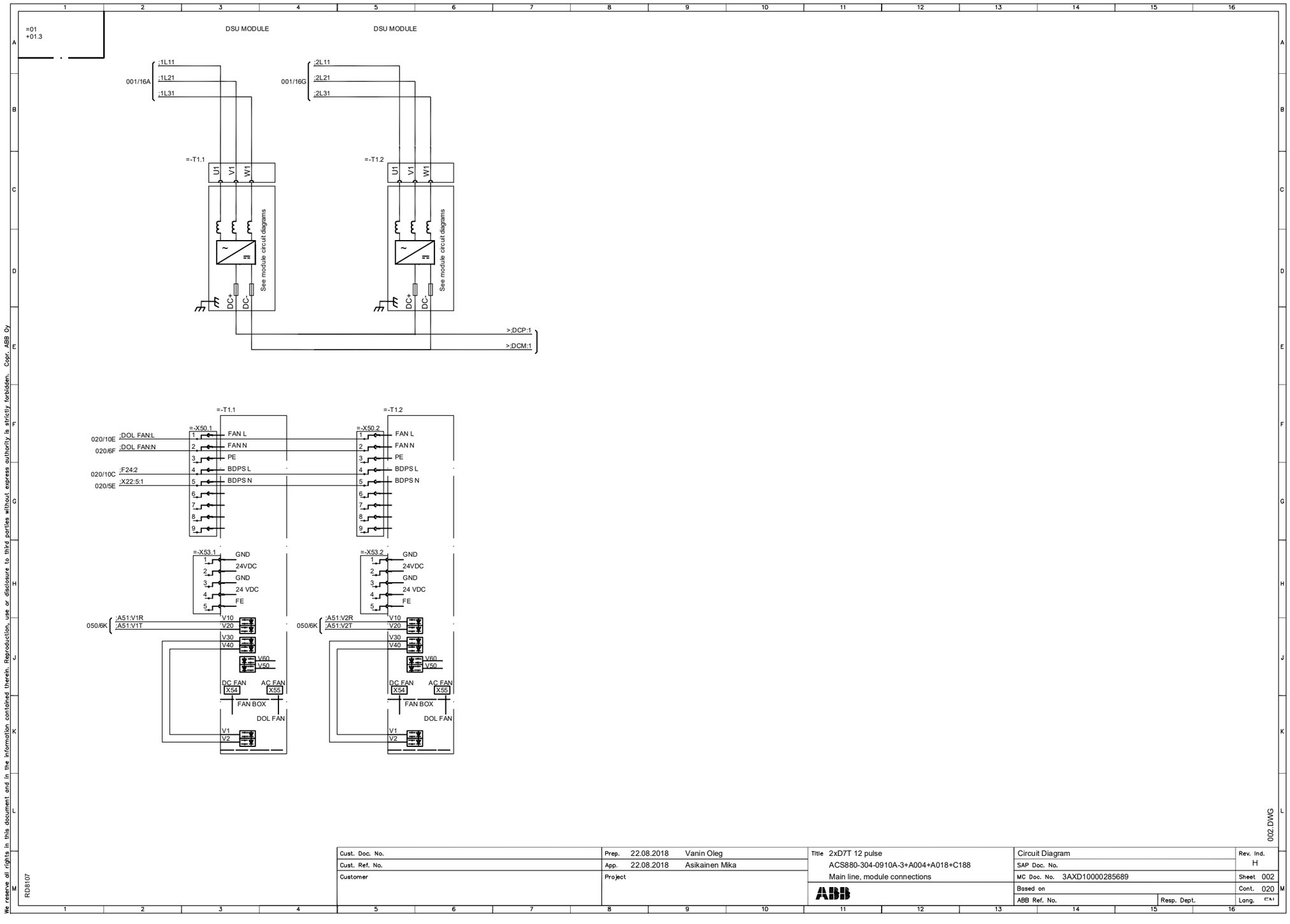
050

ACS880-304-0910A-3+A003+A018+C188 (2×D7T 12-pulse connection)

Sheet 001 – Main supply

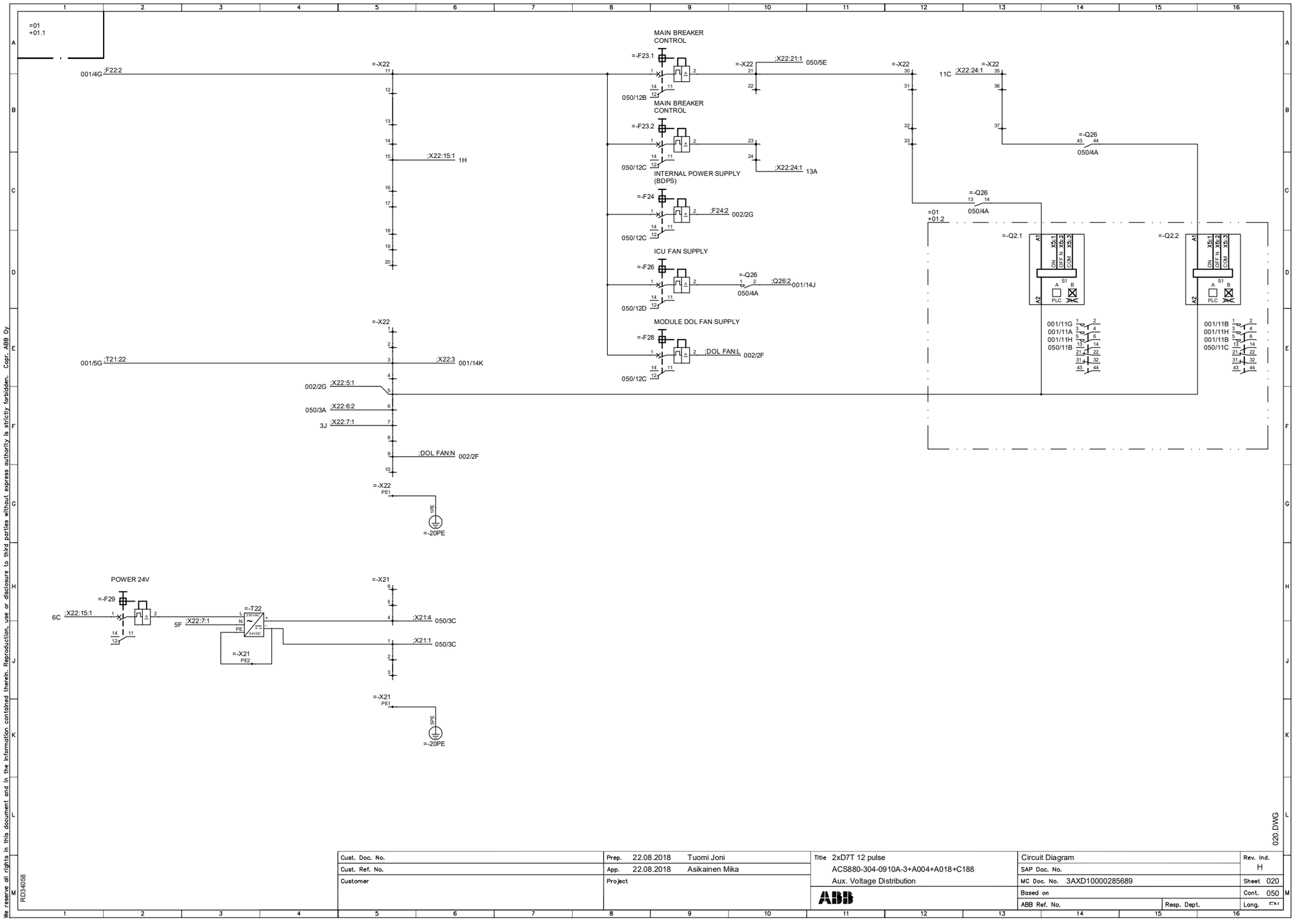


Sheet 002 – Main line, module connections



Cust. Doc. No.	Prep. 22.08.2018 Vanin Oleg	Title 2xD7T 12 pulse	Circuit Diagram	Rev. Ind.
Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	ACS880-304-0910A-3+A004+A018+C188	SAP Doc. No.	H
Customer	Project	Main line, module connections	MC Doc. No. 3AXD10000285689	Sheet 002
RD8107		ABB	Based on	Cont. 020
			ABB Ref. No. / Resp. Dept.	Lang. EN

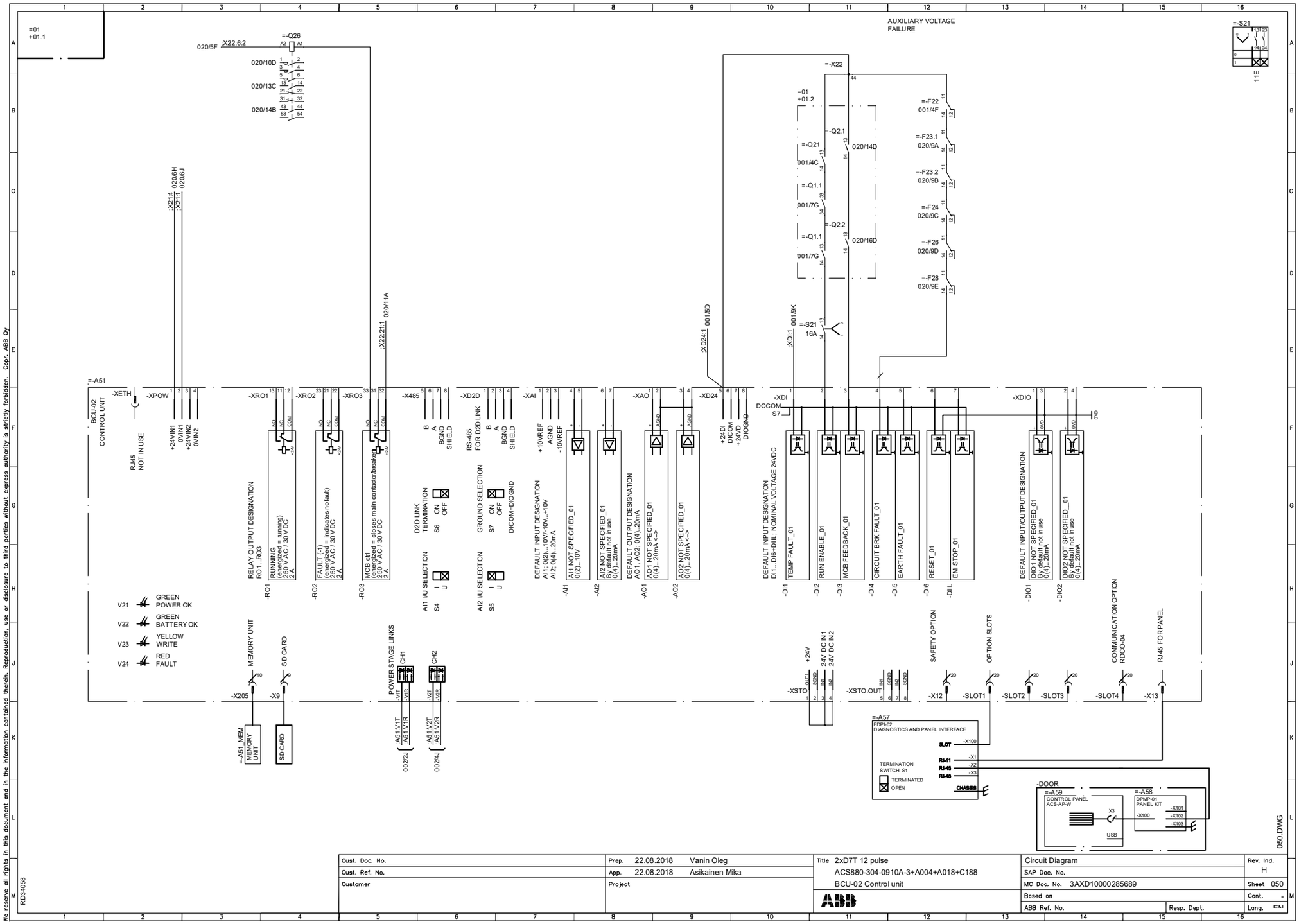
Sheet 020 – Auxiliary voltage distribution



Cust. Doc. No.	Prep. 22.08.2018 Tuomi Joni	Title 2xD7T 12 pulse	Circuit Diagram / Rev. Ind. H
Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	ACS880-304-0910A-3+A004+A018+C188	SAP Doc. No.
Customer	Project	Aux. Voltage Distribution	MC Doc. No. 3AXD10000285689 / Sheet 020
		ABB	Based on / Cont. 050
			ABB Ref. No. / Resp. Dept. / Lang. EN

RD34058

Sheet 050 – BCU-02 control unit



Cust. Doc. No.	Prep. 22.08.2018 Vanin Oleg	Title 2xD7T 12 pulse	Circuit Diagram		Rev. Ind. H
Cust. Ref. No.	App. 22.08.2018 Asikainen Mika	ACS880-304-0910A-3+A004+A018+C188	SAP Doc. No.		
Customer	Project	BCU-02 Control unit	MC Doc. No. 3AXD10000285689		Sheet 050
		ABB	Based on		Cont. -
RD34058			ABB Ref. No.	Resp. Dept.	Lang. EN

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.

Providing feedback on ABB manuals

Your comments on our manuals are welcome. Navigate to new.abb.com/drives/manuals-feedback-form.

Document library on the Internet

You can find manuals and other product documents in PDF format on the Internet at www.abb.com/drives/documents.

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3AXD50000010104 Rev G (EN) 2022-02-03