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ABB INDUSTRIAL DRIVES

# ACS880-304...+A018 diode supply modules

## Hardware manual





# ACS880-304...+A018 diode supply modules

## Hardware manual

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**Further information**



# 1

## Introduction to the manual

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### 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 of the drive.

- Read the **complete safety instructions** before you install, commission, use or service the drive. The complete safety instructions are given in [ACS880 multidrives cabinets and modules safety instructions \(3AUA0000102301 \[English\]\)](#).
- Read the warnings of the software function before you take the function in use or change its default parameter settings. Read the warnings of the parameter before you change its default setting. Refer to the firmware manual.

### Target audience

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

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

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## 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 \(page 38\)](#).

## Use of component designations

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



## Terms and abbreviations

Term	Description
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 unit, 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

Term	Description
FSCA-01	Optional RS-485 (Modbus/RTU) adapter
ICU	Incoming unit
Intermediate circuit	DC circuit between rectifier and inverter
INU	Inverter unit
Inverter	Converts direct current and voltage to alternating current and voltage.
Inverter module	Inverter bridge, related components and drive DC link capacitors enclosed in a metal frame or enclosure. Intended for cabinet installation.
Inverter unit	Inverter module(s) under control of one control unit, and related components. One inverter unit typically controls one motor.
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)
UCU	Type of control unit.
VX25	Enclosure system by Rittal ( <a href="http://www.rittal.com">http://www.rittal.com</a> )

## Related documents

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

	<a href="#">Manuals for ACS880 multidrives cabinets</a>
	<a href="#">Manuals for ACS880 multidrives modules</a>





# Operation principle and hardware description

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## 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

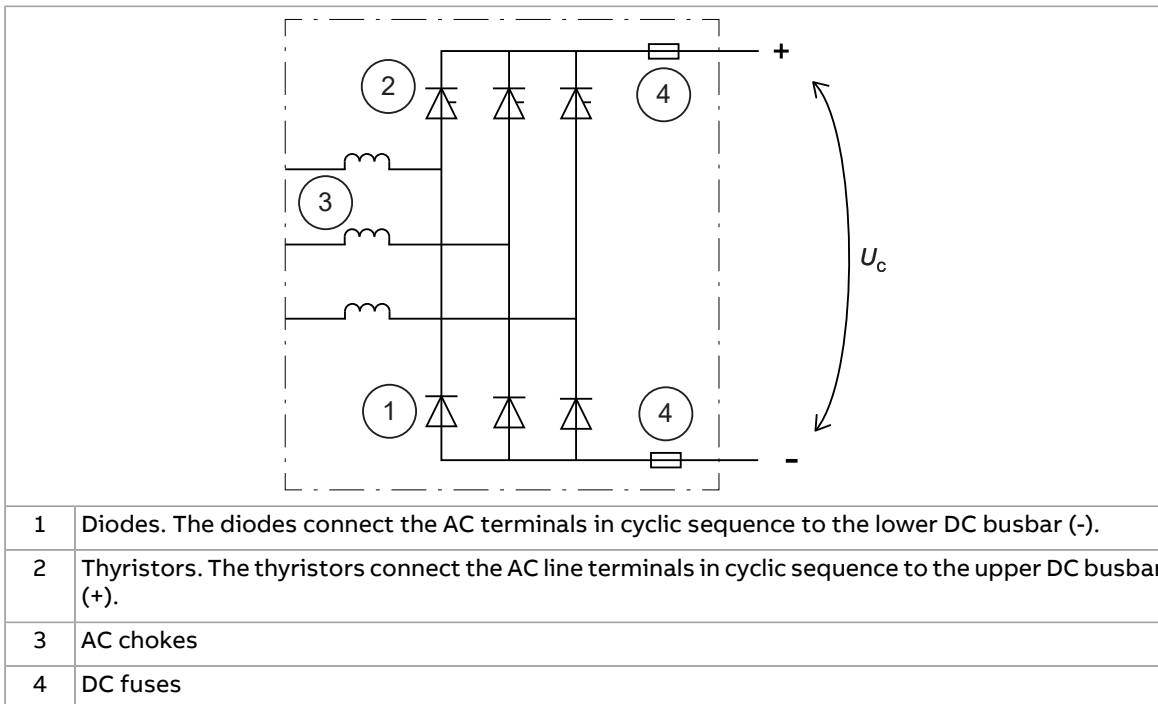
The core of the diode supply unit is a diode-thyristor bridge. It rectifies three-phase AC current to direct current for the intermediate DC link of the drive. The intermediate DC link supplies the inverters that run the motors. There can be one inverter unit only (single drives) or several inverter 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**



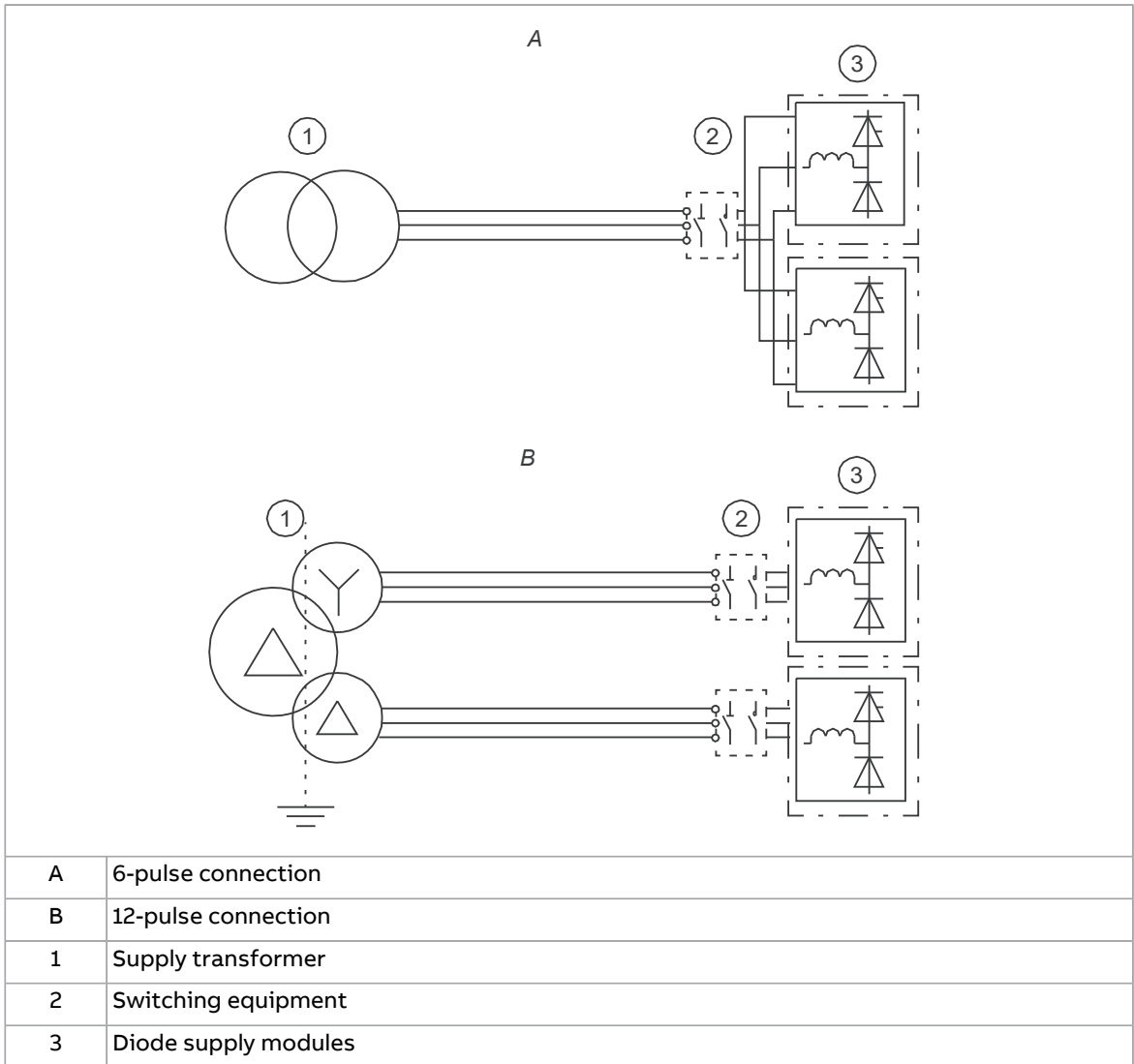
■ **6- and 12-pulse supply connections**

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, it is also available 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 must be a phase shift of 30-degrees between the two 6-pulse supply lines.

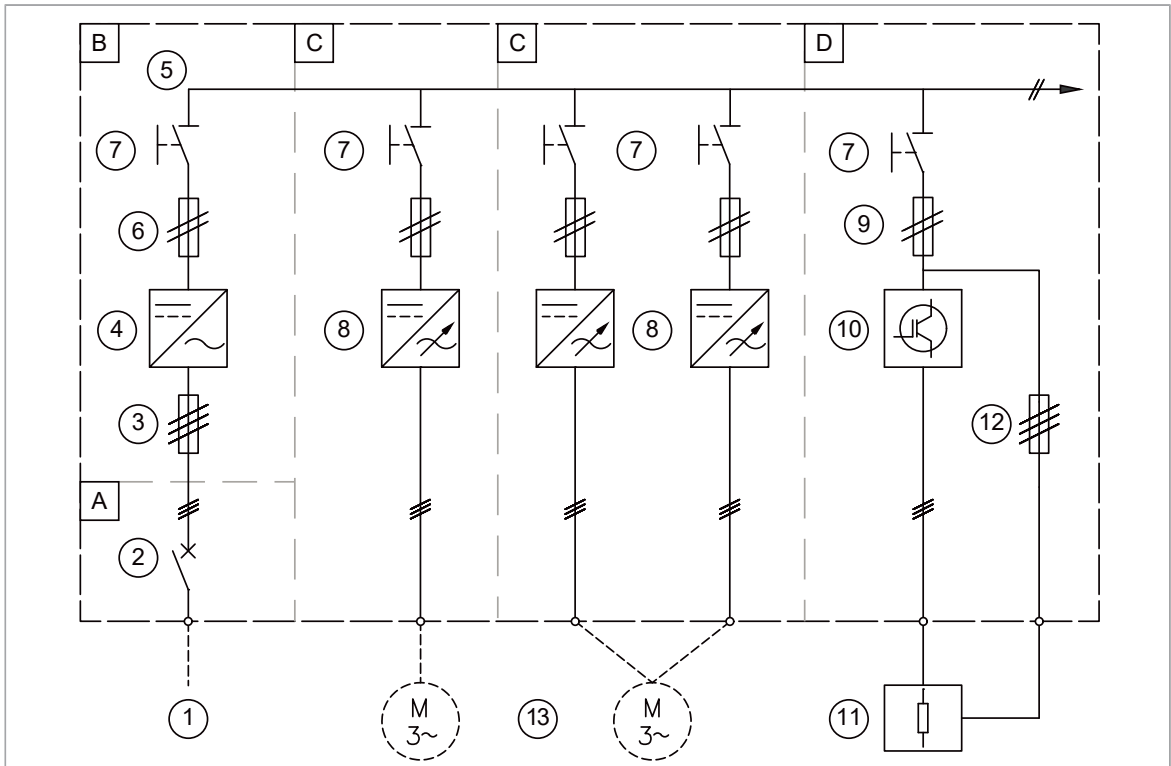


## Overview diagrams

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

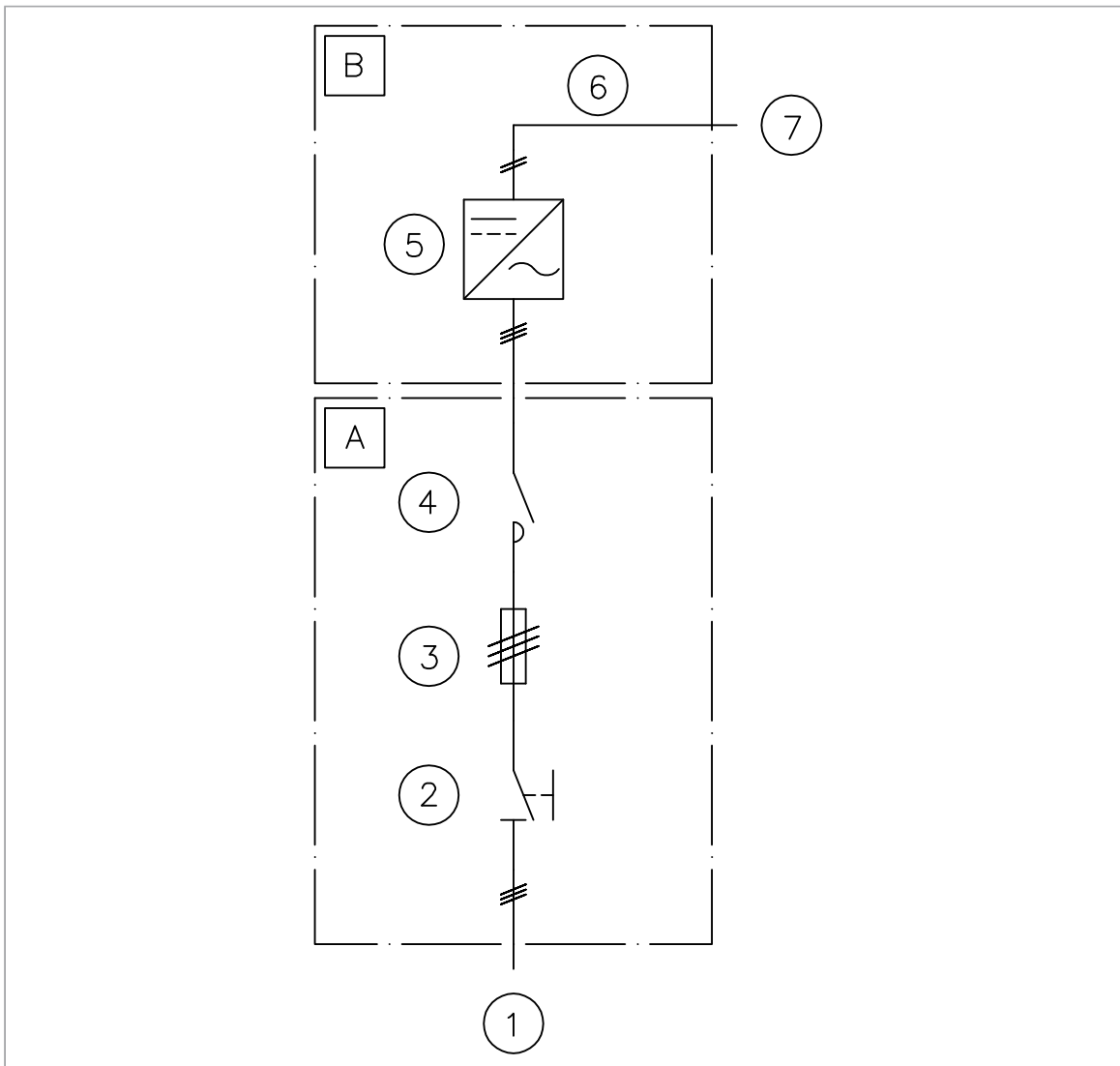
The diagram that follows shows an example of a multidrive. The supply unit connects the drive to the AC supply network. It converts the AC voltage into DC. The DC voltage is distributed through the DC bus to all inverter units and optional brake units. The inverter unit converts the DC back to AC that 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 the customer)
12	Fuses for the brake resistors
13	Motor(s) (acquired by the customer)

■ **Overview diagram – 1×D8T, 6-pulse**

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



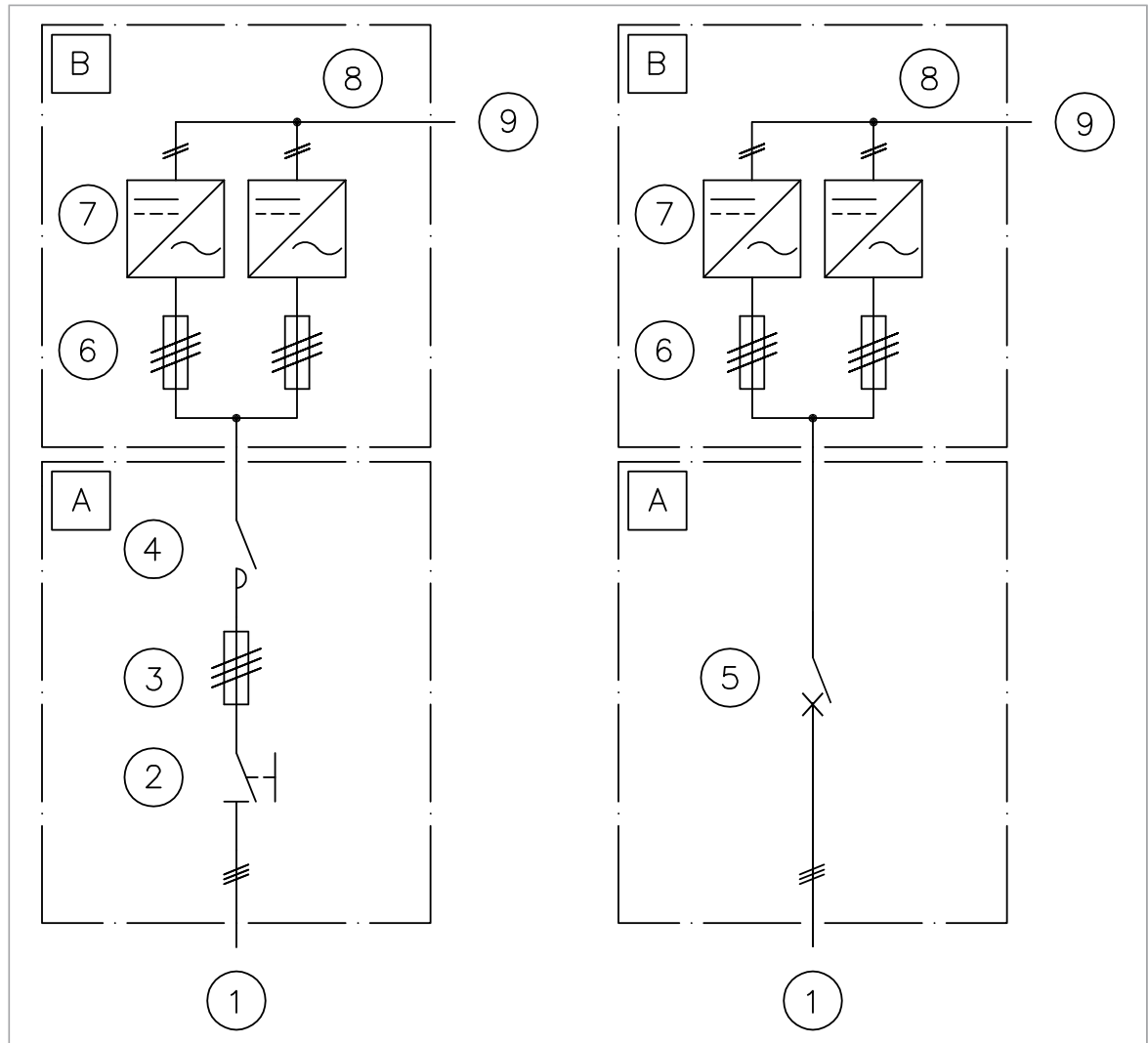
		1	AC supply
A	Incoming cubicle (ICU)	2	Main switch-disconnector <sup>1)</sup>
		3	Main AC fuses <sup>1)</sup>
		4	Main contactor <sup>1)</sup>
B	Diode supply module cubicle	5	Diode supply module (DC fuses included) <sup>2)</sup>
		6	DC link
		7	Connection to drive DC link

<sup>1)</sup> Available through ABB or third party

<sup>2)</sup> 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 \(page 41\)](#).



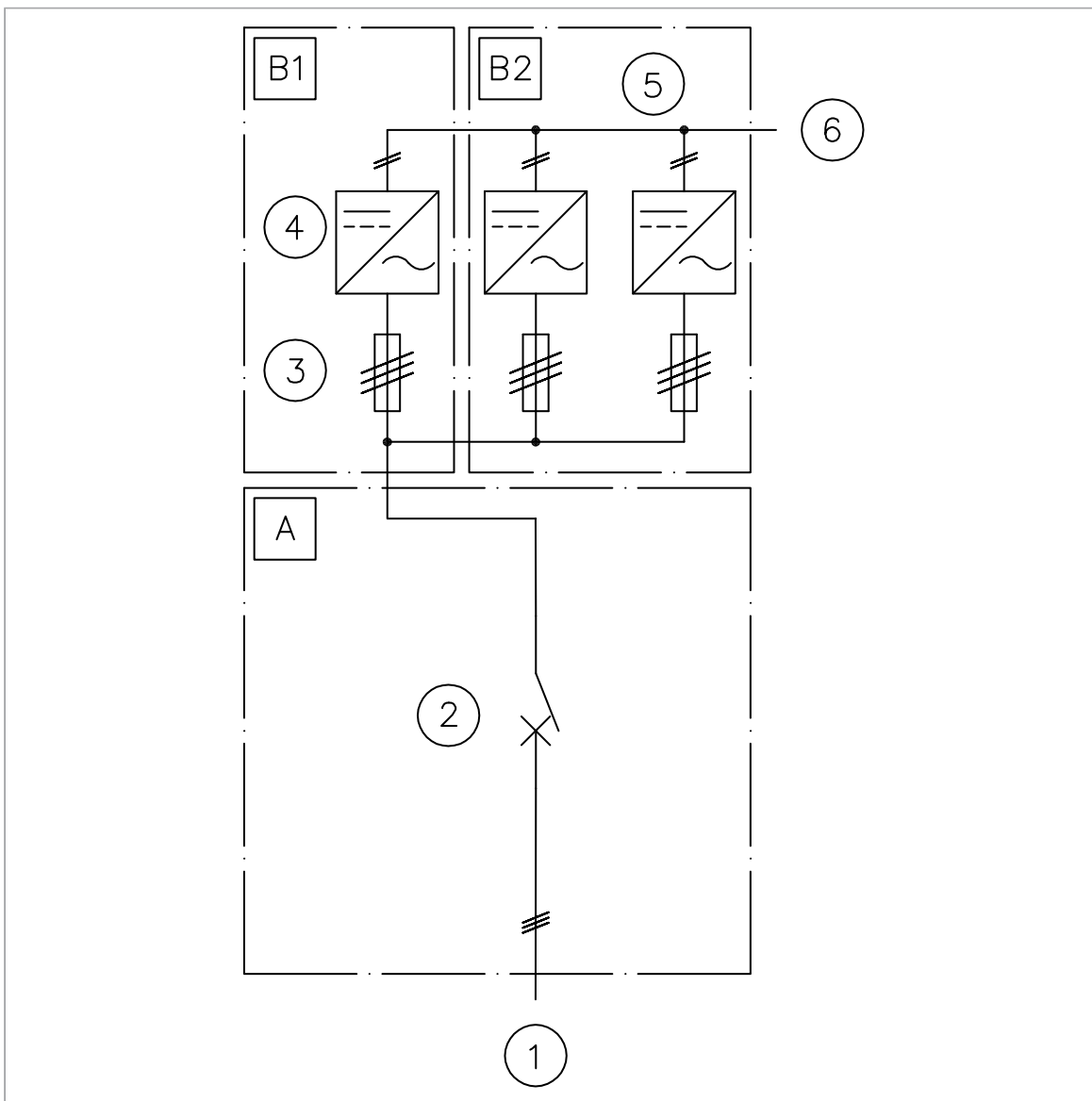
		1	AC supply
A	Incoming cubicle (ICU)	2	Main switch-disconnector <sup>1)</sup>
		3	Main AC fuse <sup>1)</sup>
		4	Contactor (optional) <sup>1)</sup>
		5	Main circuit breaker <sup>1)</sup>
B	Diode supply module cubicle	6	AC fuses for diode supply modules <sup>1)</sup>
		7	Diode supply modules (DC fuses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

<sup>1)</sup> Available through ABB or third party

<sup>2)</sup> 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.



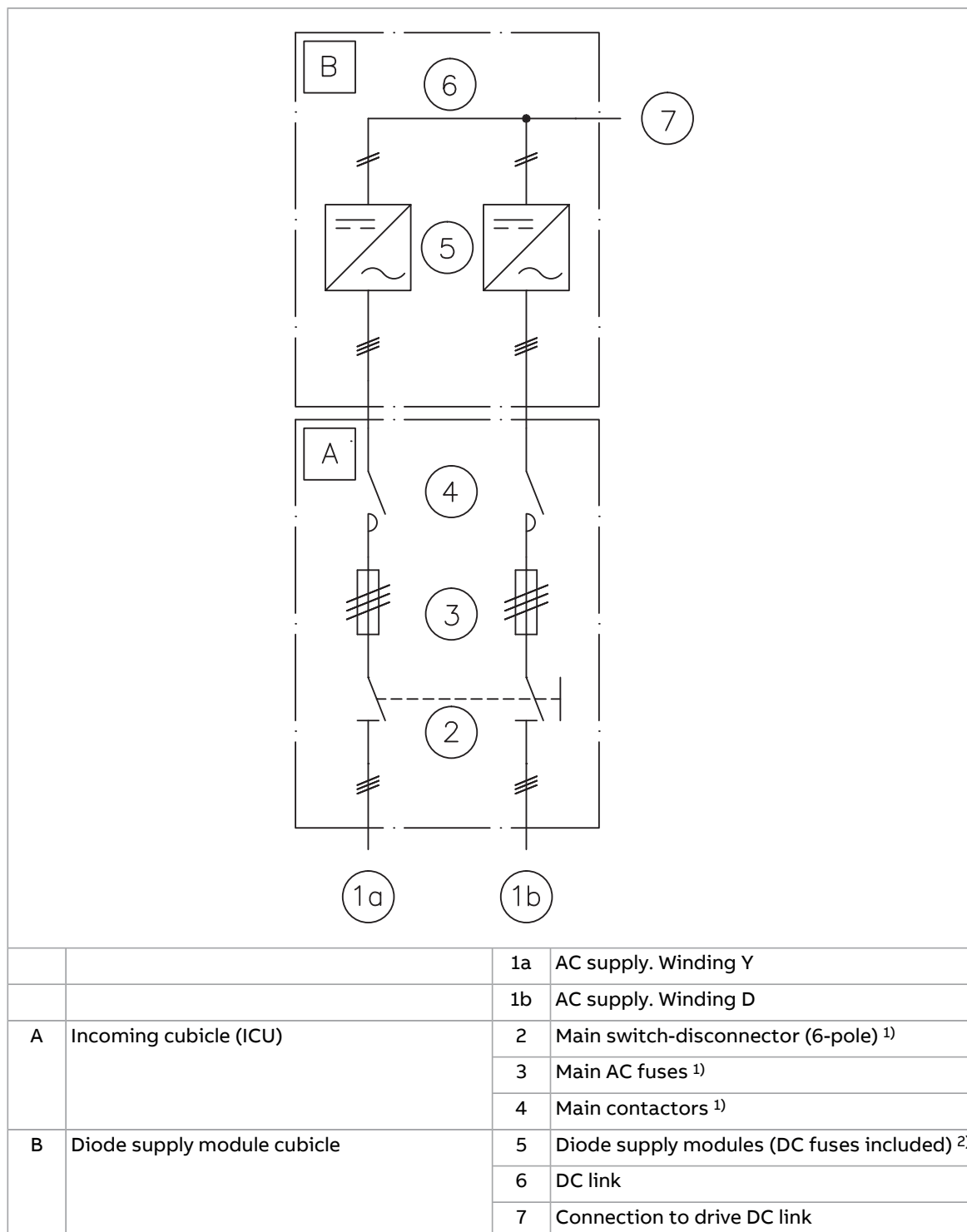
		1	AC supply
A	Incoming cubicle (ICU)	2	Main breaker <sup>1)</sup>
B	Diode supply module cubicle	3	AC fuses for diode supply modules <sup>1)</sup>
		4	Diode supply modules (DC fuses included) <sup>2)</sup>
		5	DC link
		6	Connection to drive DC link

<sup>1)</sup> Available through ABB or third party

<sup>2)</sup> Available through ABB

■ **Overview diagram – 2×D7T/D8T, 12-pulse**

This is an overview diagram of a 12-pulse supply unit with two D8T supply modules and is also valid for 12-pulse supply unit with two D7T supply modules.



<sup>1)</sup> Available through ABB or third party

<sup>2)</sup> 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].

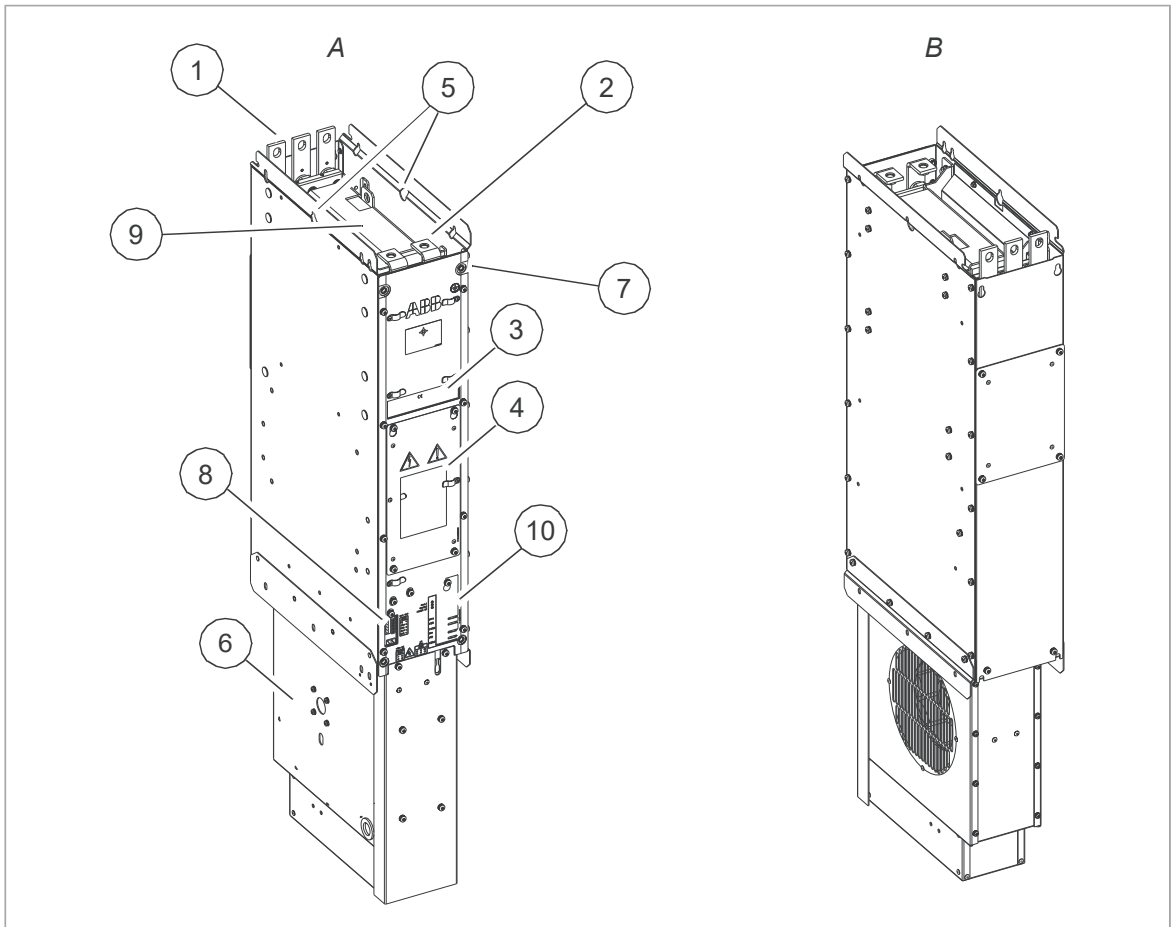
The supply modules are controlled by a single UCU or BCU control unit installed separately from the module(s). The control unit is connected to each supply module by a fiber optic link. The control unit can be powered from a module connector [X53], from an external 24 V DC supply, or both for redundancy. The control unit contains the basic I/Os and slots for optional I/O modules. For descriptions of the I/O terminals on the control unit, see chapter [Control unit \(UCU\) \(page 113\)](#) or [Control unit \(BCU\) \(page 125\)](#).

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

---

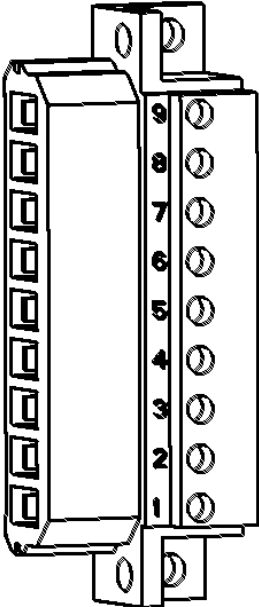
■ **Layout drawings of the supply modules**

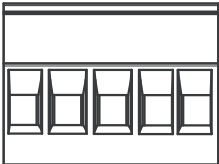
**Layout drawing of D7T supply module**



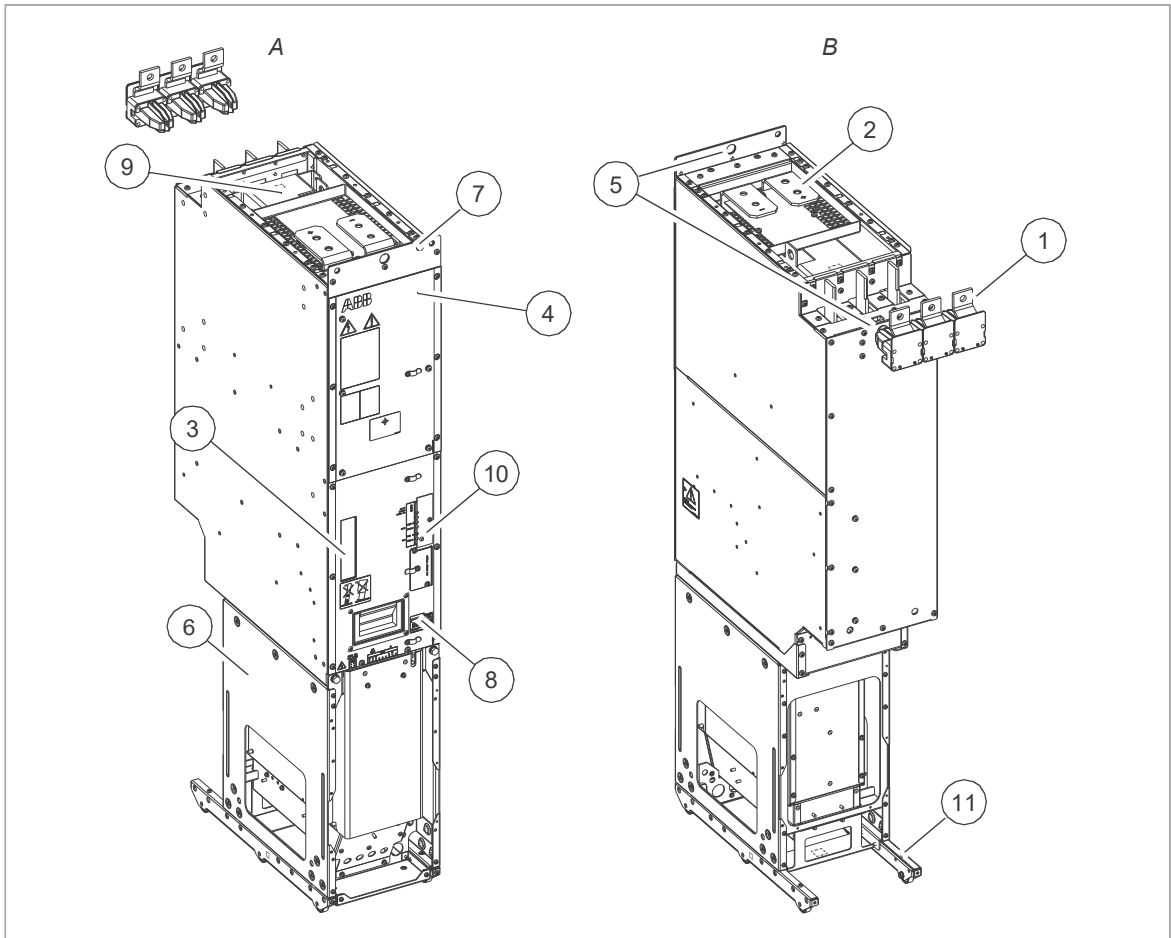
A	D7T supply module, front
B	D7T supply module, back
1	AC input busbars
2	DC output busbars
3	Type designation label
4	Cover of the module's DC fuses
5	Lifting eyes
6	Fan
7	Unpainted fastening hole. Grounding point (PE) between module frame and cabinet frame.
8	Terminal block [X53]. 24 V DC power for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

### Connectors X50 and X53 of D7T supply module

Connector X50 (D7T module)			
	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).
	2	N	
	1	L	<b>Note:</b> In modules without +C188, the DOL wiring is present but not in use.

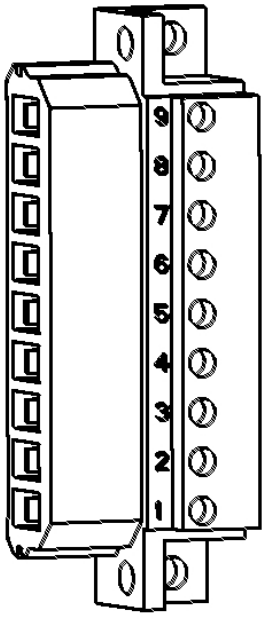
Connector X53																
	<table border="1"> <thead> <tr> <th colspan="5">24V OUT</th> </tr> <tr> <th colspan="5">X53</th> </tr> </thead> <tbody> <tr> <td>FE</td> <td>24V</td> <td>GND</td> <td>24V</td> <td>GND</td> </tr> </tbody> </table>	24V OUT					X53					FE	24V	GND	24V	GND
24V OUT																
X53																
FE	24V	GND	24V	GND												

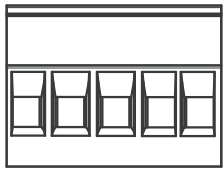
**Layout drawing of D8T supply module**



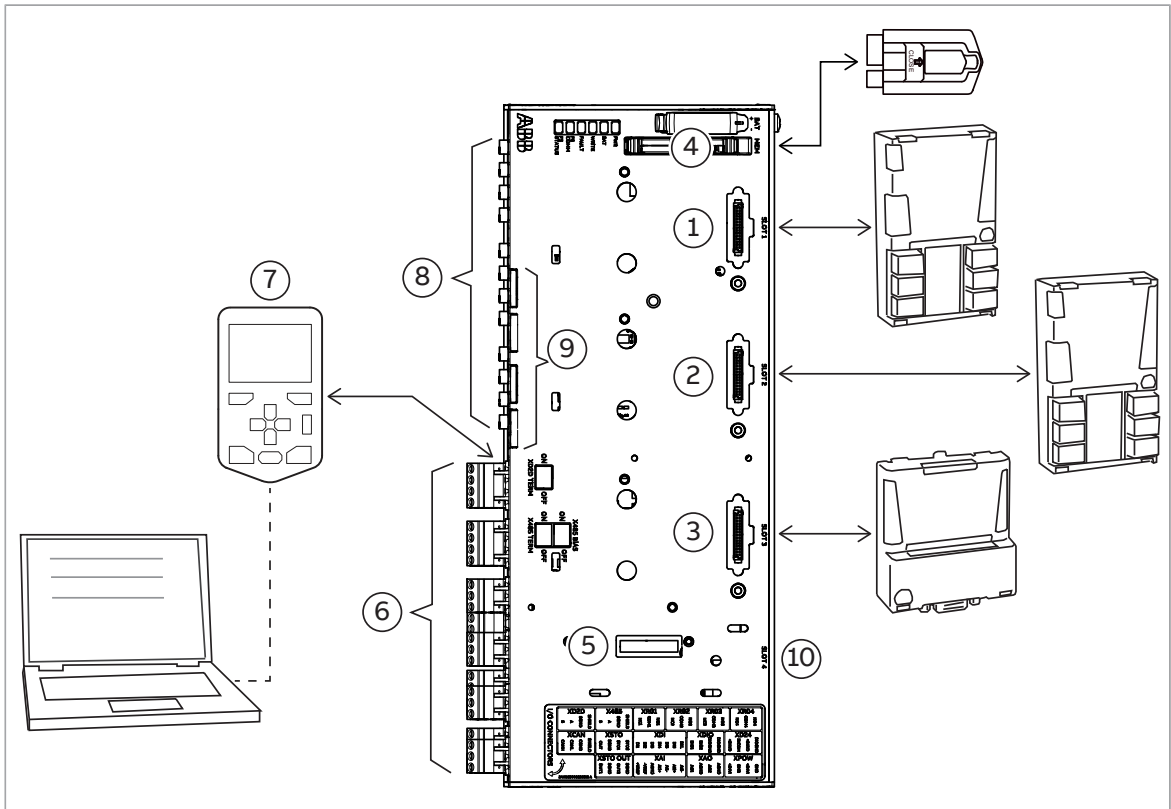
A	D8T supply module, front
B	D8T supply module, back
1	AC quick connector and AC input busbars
2	DC output busbars
3	Type designation label
4	Cover of the module's DC fuses
5	Lifting eyes
6	Fan
7	Unpainted fastening hole. Grounding point (PE) between module frame and cabinet frame.
8	Terminal block [X53] (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. <u>When speed-controlled fan is in use:</u> 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-on-line) cooling fan (option +C188).  <b>Note:</b> In modules without +C188, the DOL wiring is present but not in use.
	2	V	
	1	U	

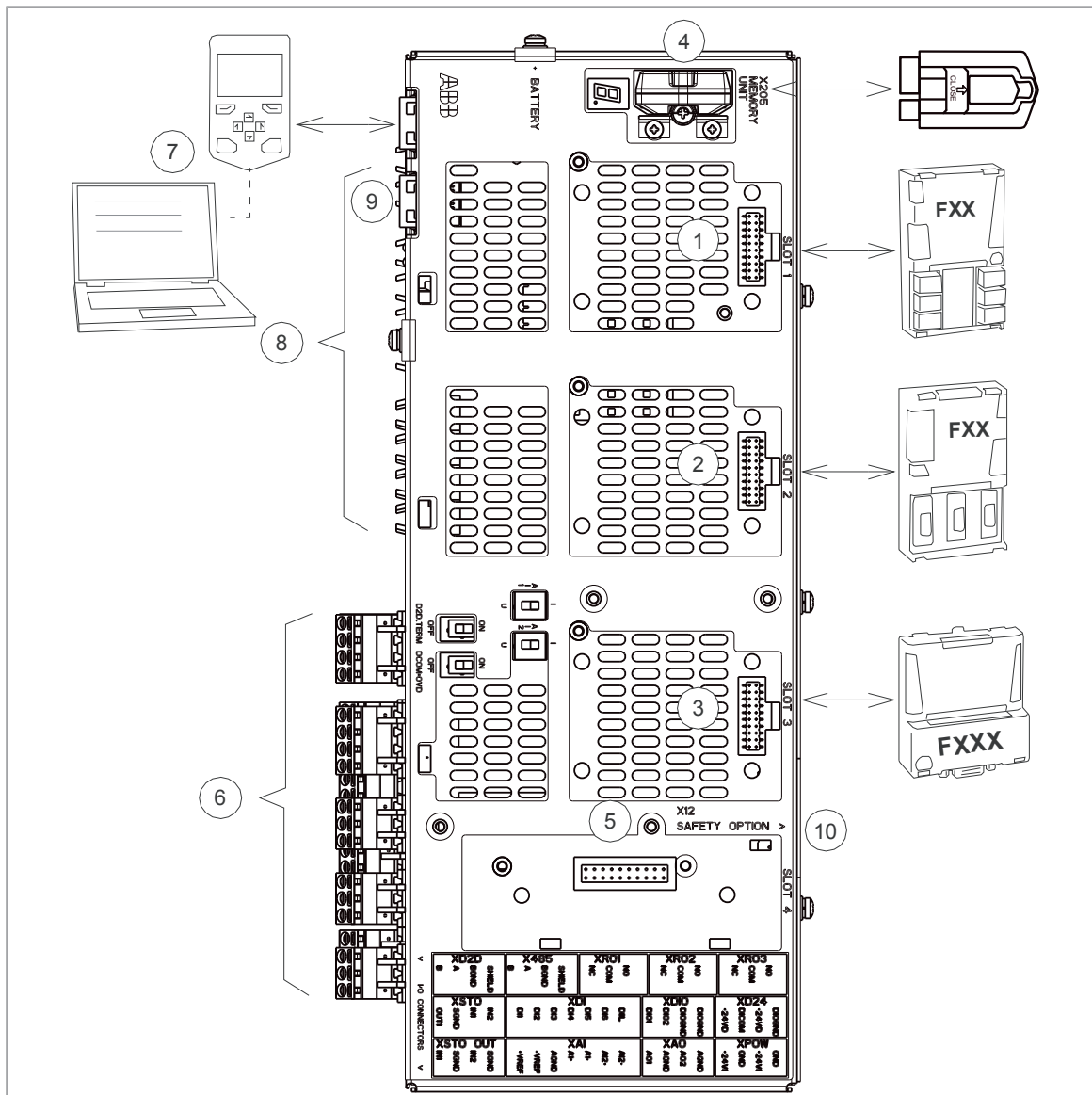
Connector X53																
	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">24V OUT</th> </tr> <tr> <th colspan="5">X53</th> </tr> </thead> <tbody> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">FE</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">24V</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">GND</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">24V</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">GND</td> </tr> </tbody> </table> <p style="text-align: center;">An output power of 60 W is available from X53.</p>	24V OUT					X53					FE	24V	GND	24V	GND
24V OUT																
X53																
FE	24V	GND	24V	GND												

## Overview of the control connections of the UCU control unit



1	Analog and digital I/O extension modules and fieldbus communication modules can be inserted into slots 1, 2 and 3. For F-type modules with USCA-02 adapter.	7	Control panel
4	Memory unit	8	Fiber optic links to power modules (inverter, supply, brake or converter)
5	Slot 4 for RDCO module	9	Ethernet ports
6	Terminal blocks	10	Safety option interface.

## Overview of the control connections of the BCU control unit



1	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 module	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 chapter [Control unit \(UCU\)](#) (page 113) or [Control unit \(BCU\)](#) (page 125).

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-charge.

For more information on the on/off control logic, see the firmware manual of the supply unit.

---

### ■ 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 or UCU control unit.

### ■ Control panel [A59]

The control panel is the user interface of the unit. An example control panel is shown below.



With the control panel, the user can:

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

The Loc/Rem key of the panel selects between the local and remote control modes.

### ■ PC connection

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

---

## ■ Fieldbus control

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

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

## Type designation 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 <a href="#">Type designation key (page 38)</a> .
4	Ratings. See the technical data.
5	Valid markings. See <a href="#">ACS880 multidrive cabinets and modules electrical planning instructions (3AUA0000102324 [English])</a> .
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
<b>Basic code</b>	
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).
<b>Option codes</b>	
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
V112	Module auxiliary and fan power supply connector change

\*) 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.

### 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.

**WARNING!**

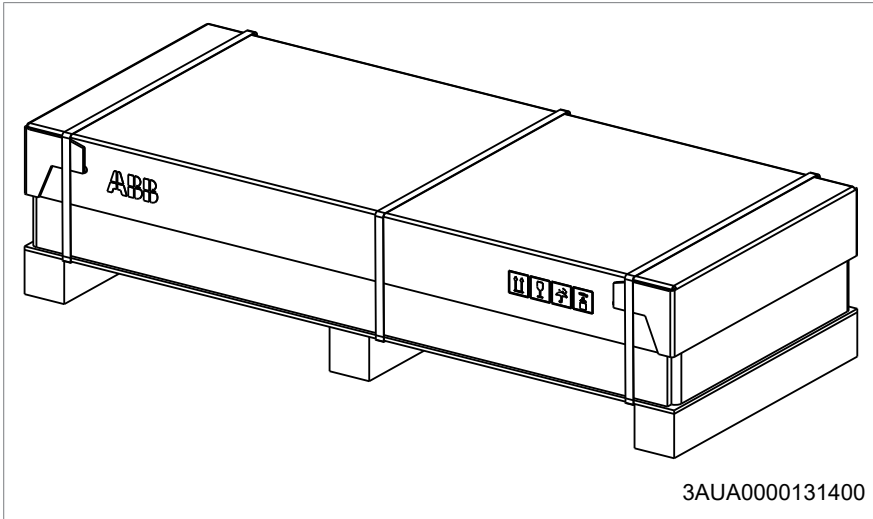
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur.

---

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, refer to [ACS880 multidrives cabinets and modules safety instructions \(3AUA0000102301 \[English\]\)](#).

For moving the module, see section [Replacing the D7T supply module \(page 160\)](#) and [Replacing the D8T supply module \(page 163\)](#).

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.

#### ■ North America

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

<sup>1</sup> National Fire Protection Association 70 (National Electric Code).

### 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 disconnect (main switch-disconnector or a main breaker) [Q1]. (A contactor is not obligatory.) See also [Main switch-disconnectors \(page 218\)](#) and [Main circuit breakers \(page 227\)](#). The disconnect 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 \(page 222\)](#).

See also [Electrical safety precautions \(page 98\)](#) and [Example circuit diagrams \(page 299\)](#).

## 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 \(page 49\)](#).

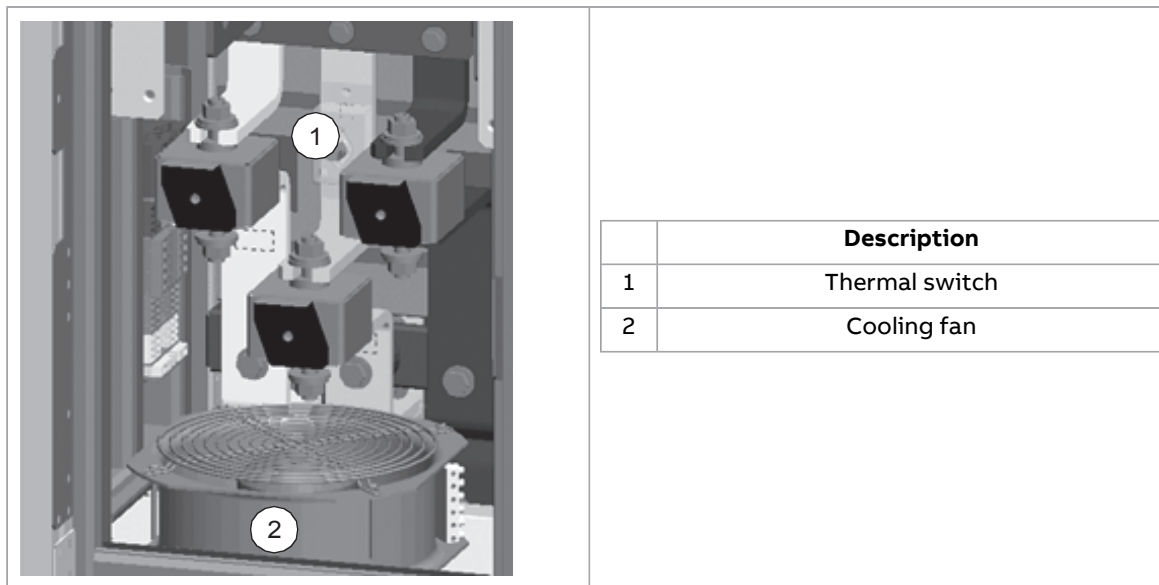
## Incoming cubicle

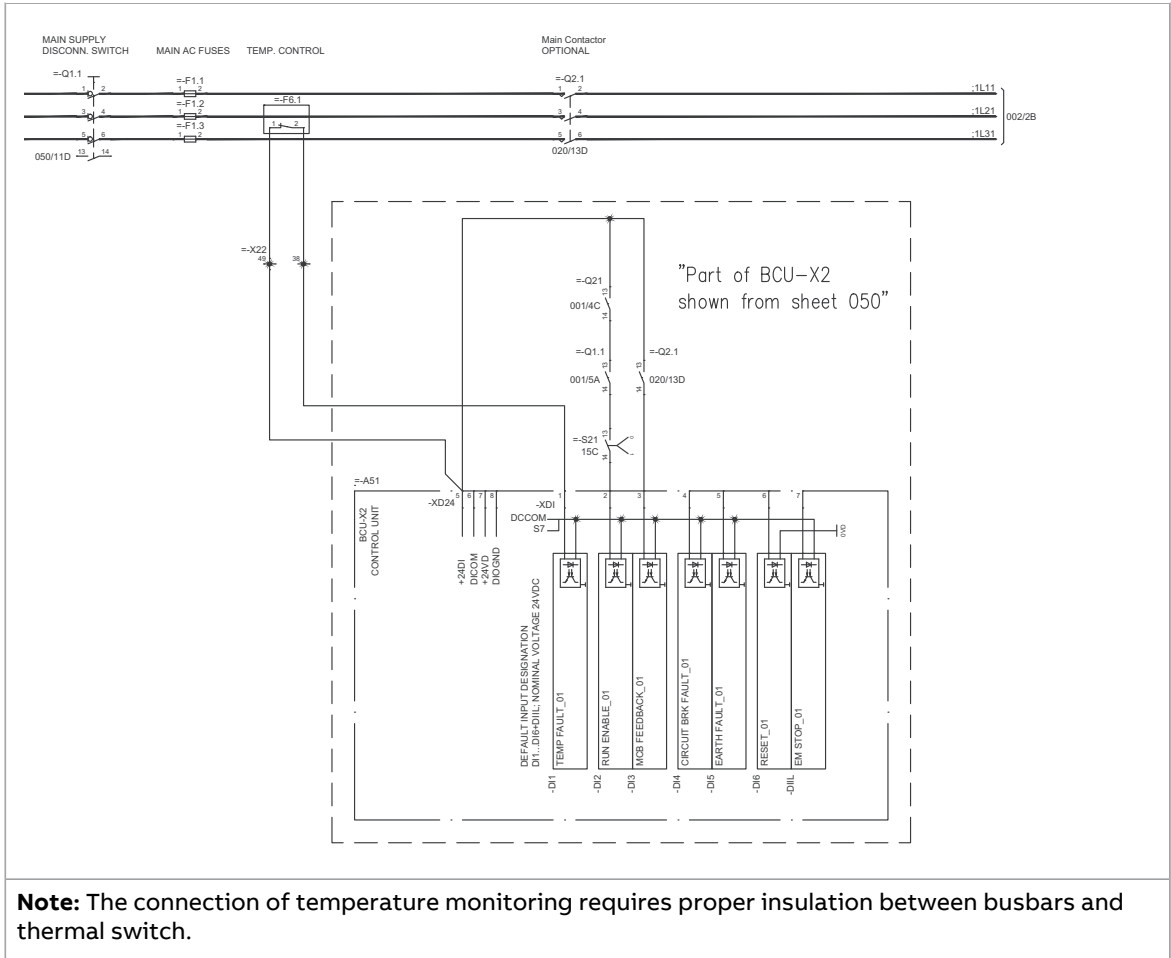
ABB recommends a separate incoming cubicle beside the supply module cubicle for the main AC fuses and switching and disconnecting devices. There is an example in section [Layout drawing of the supply unit \(page 49\)](#).

### ■ 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.







## Configuration overviews of the supply module cubicles

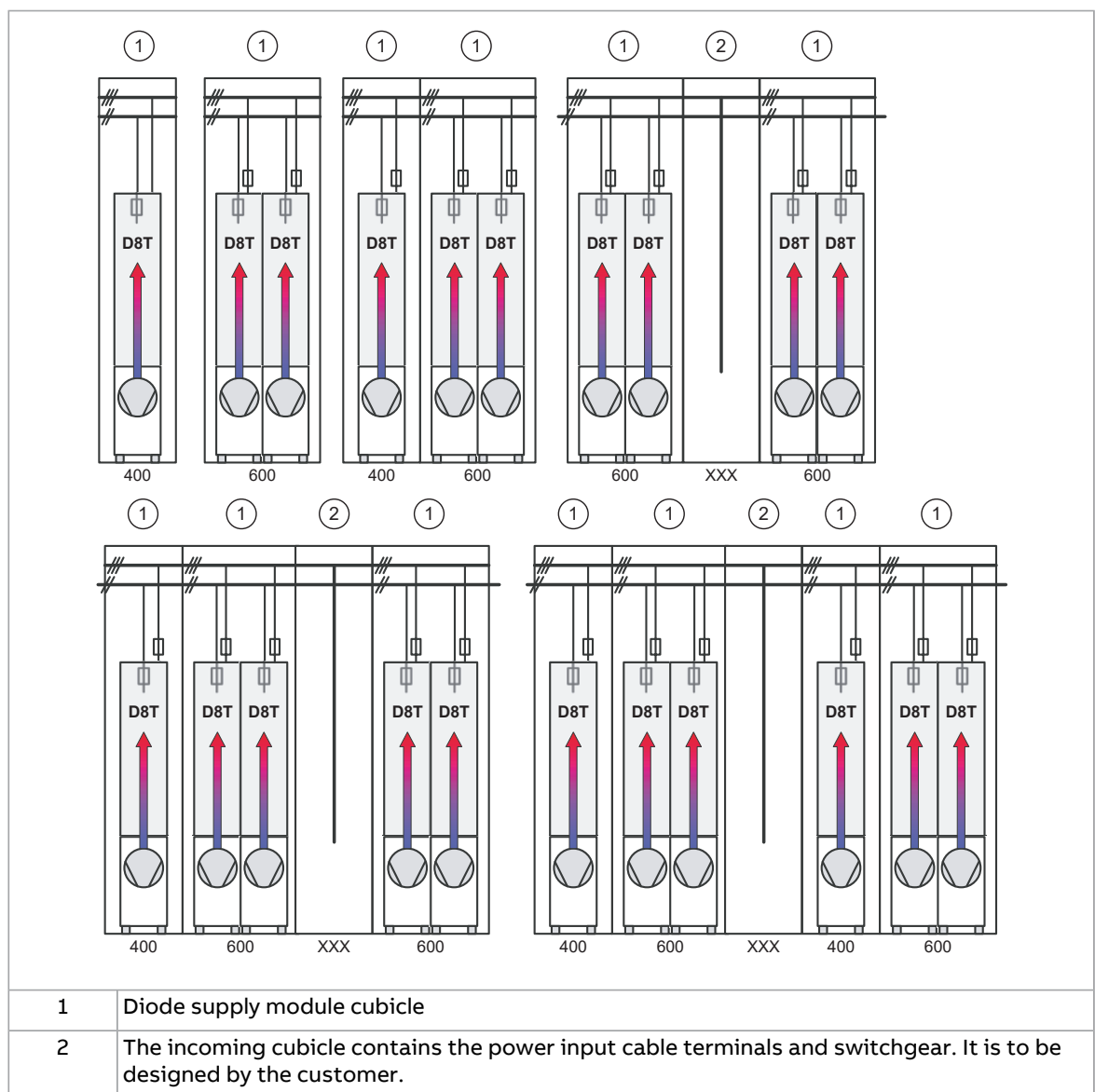
This section shows configuration examples of the supply module cubicles. You can build larger units by combining the basic configurations. Frame D7T modules are used in 12-pulse 2×D7T configurations. Frame D8T modules are used in both 6- and 12-pulse single or parallel configurations. You can supply 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.

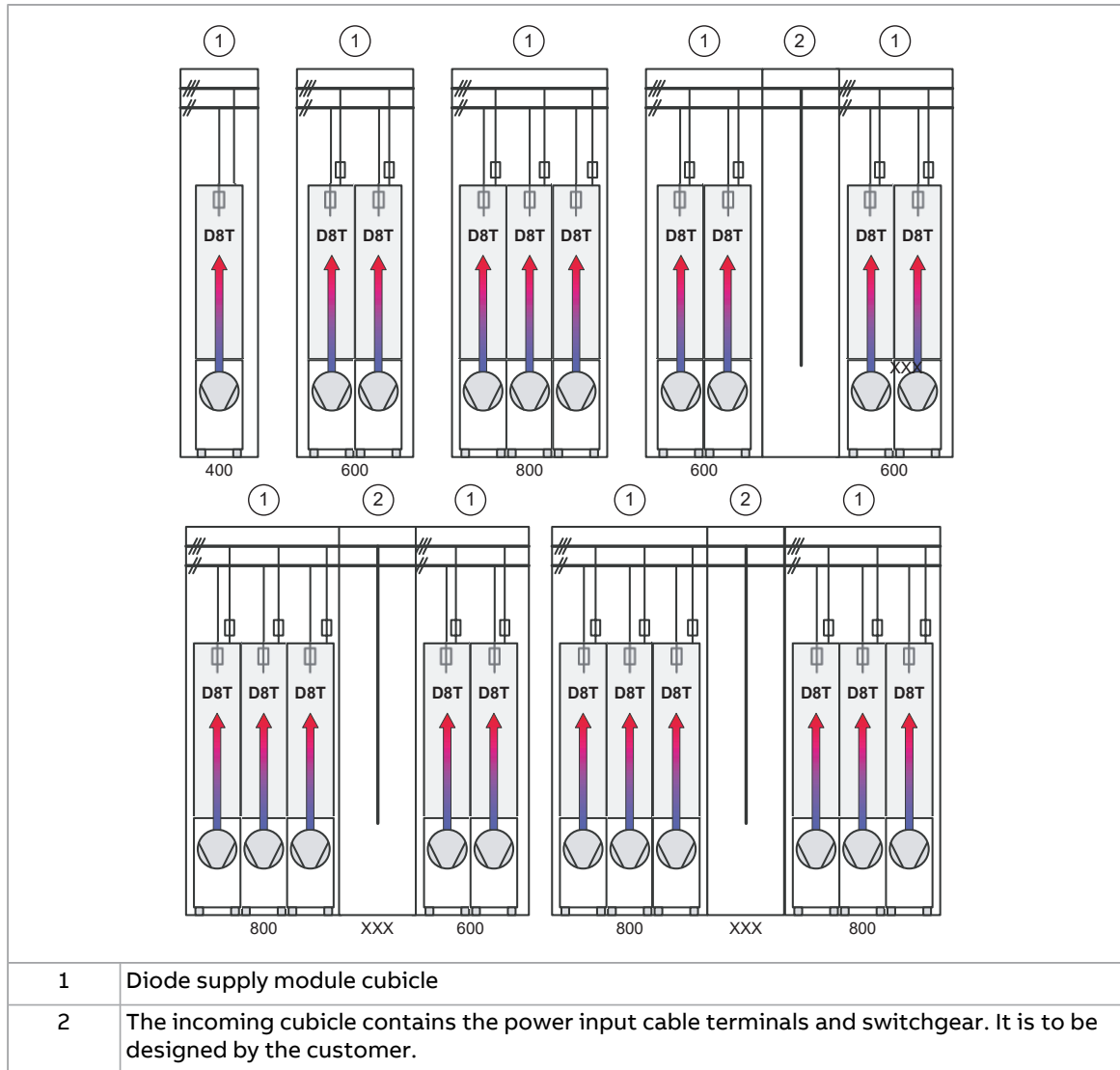
The values below each cubicle indicate the widths of the cubicles in millimeters.

### ■ Configuration overviews – 6-pulse

#### Rittal VX25

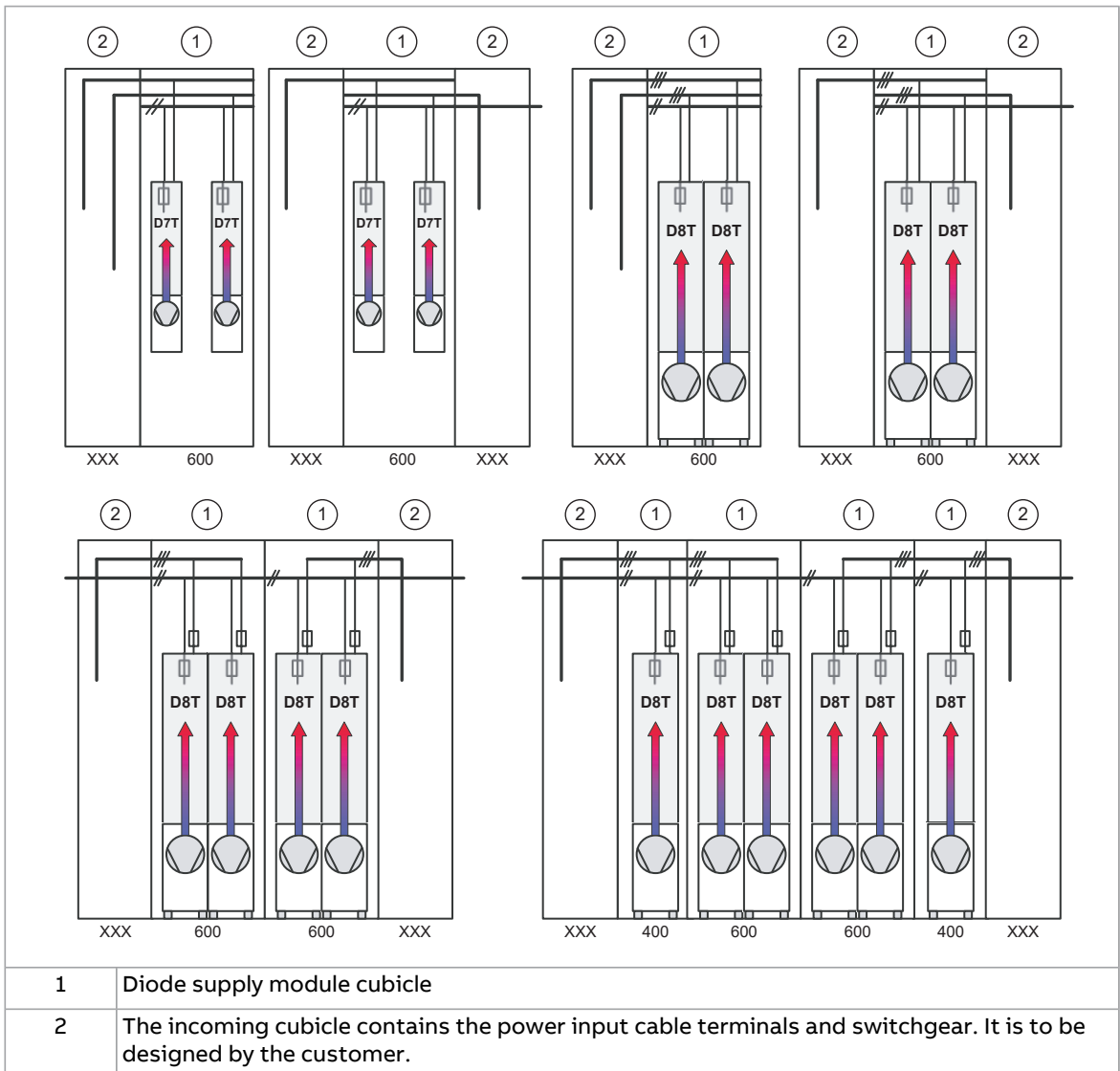


**Generic cabinets**

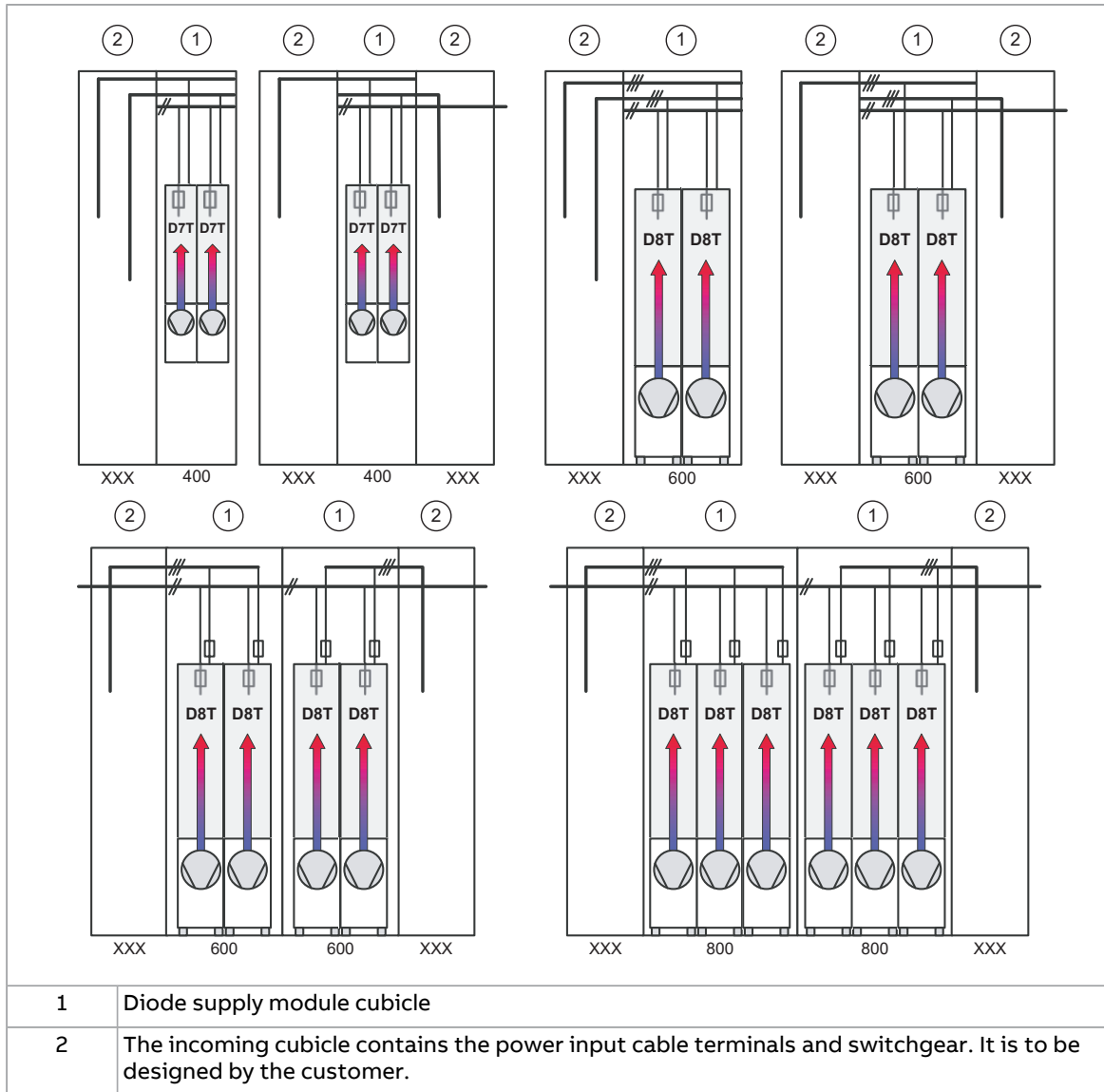


■ Configuration overviews – 12-pulse

Rittal VX25



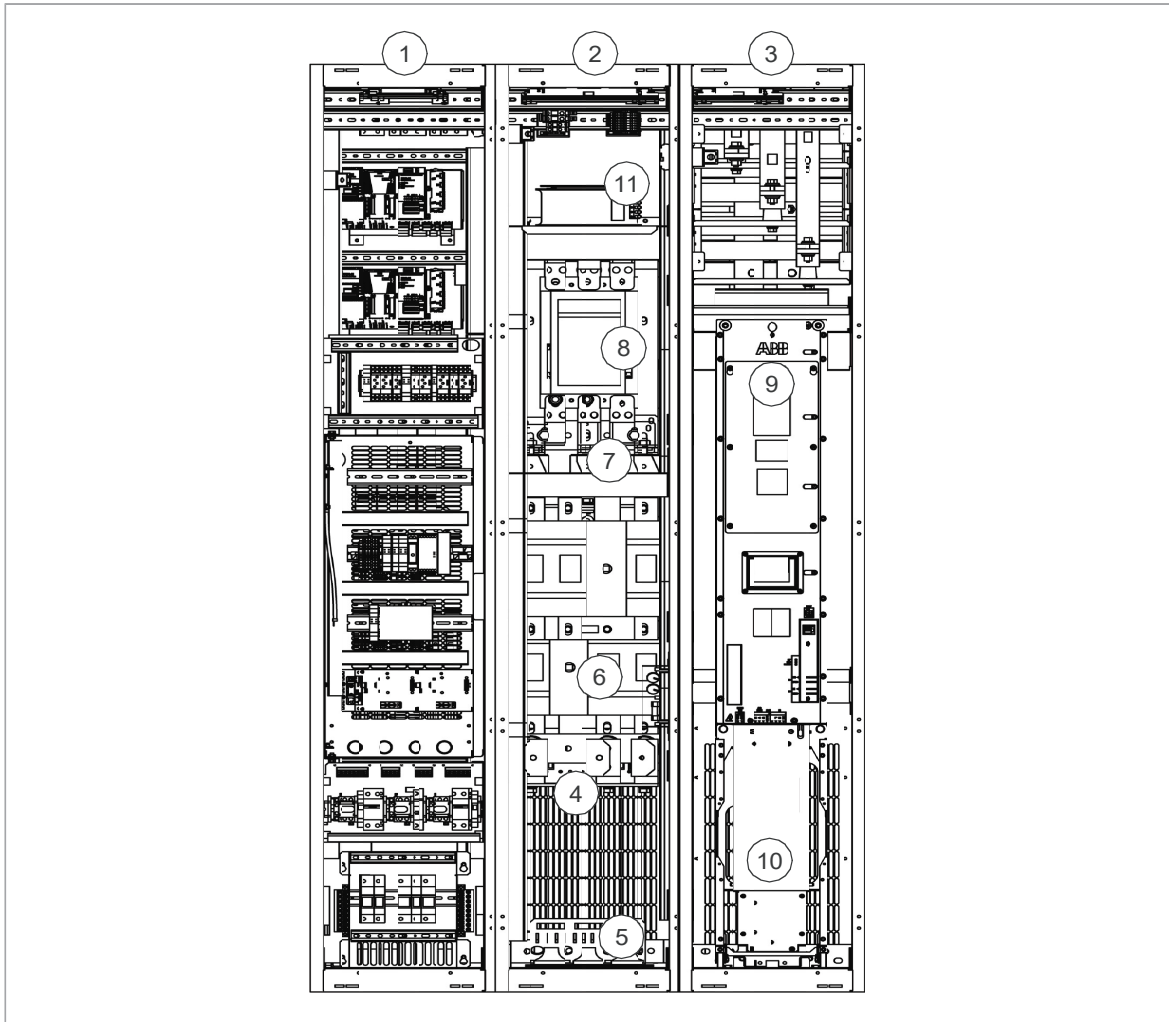
**Generic cabinets**



## Layout drawings

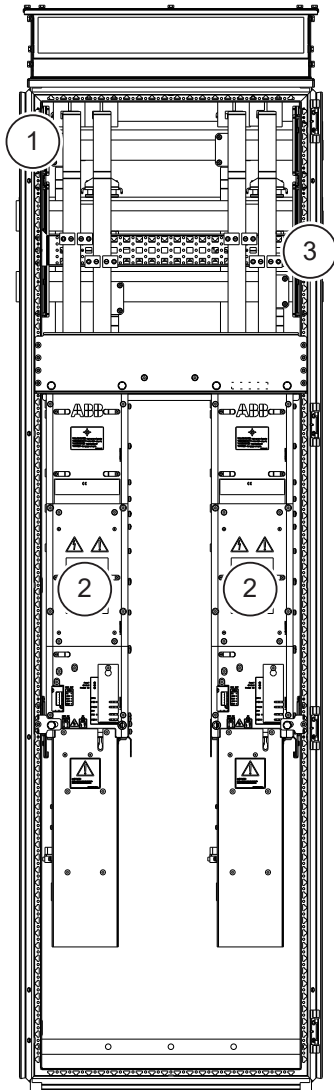
### ■ Layout drawing of the supply unit

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



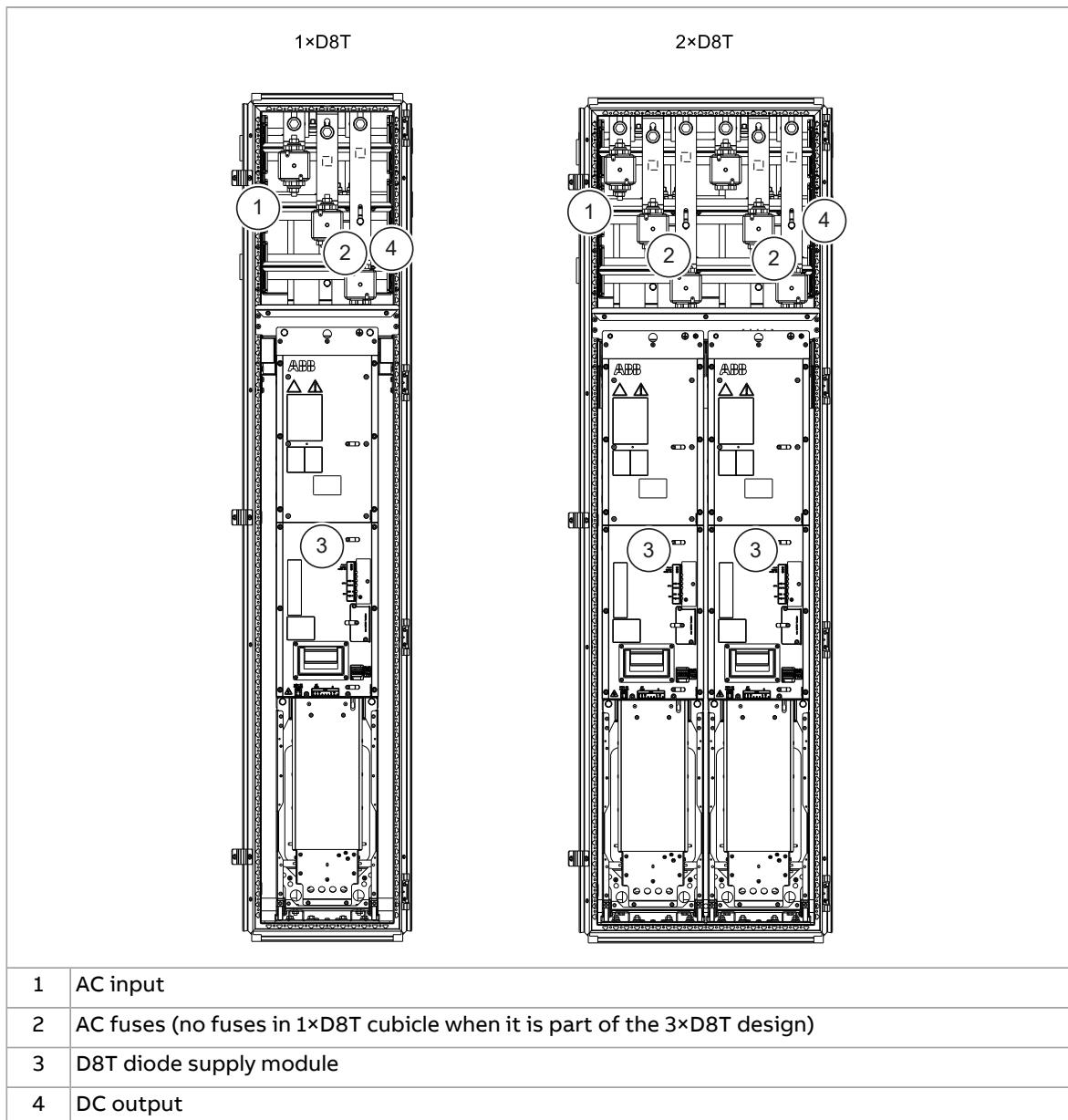
1	Auxiliary control cubicle. Contains control unit (UCU or BCU), and auxiliary control devices such as auxiliary voltage transformer, circuit breakers, terminal blocks for the control wirings etc.
2	Incoming cubicle
3	Supply module cubicle
4	Input power cable connection point
5	PE busbar
6	Main switch-disconnector
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**

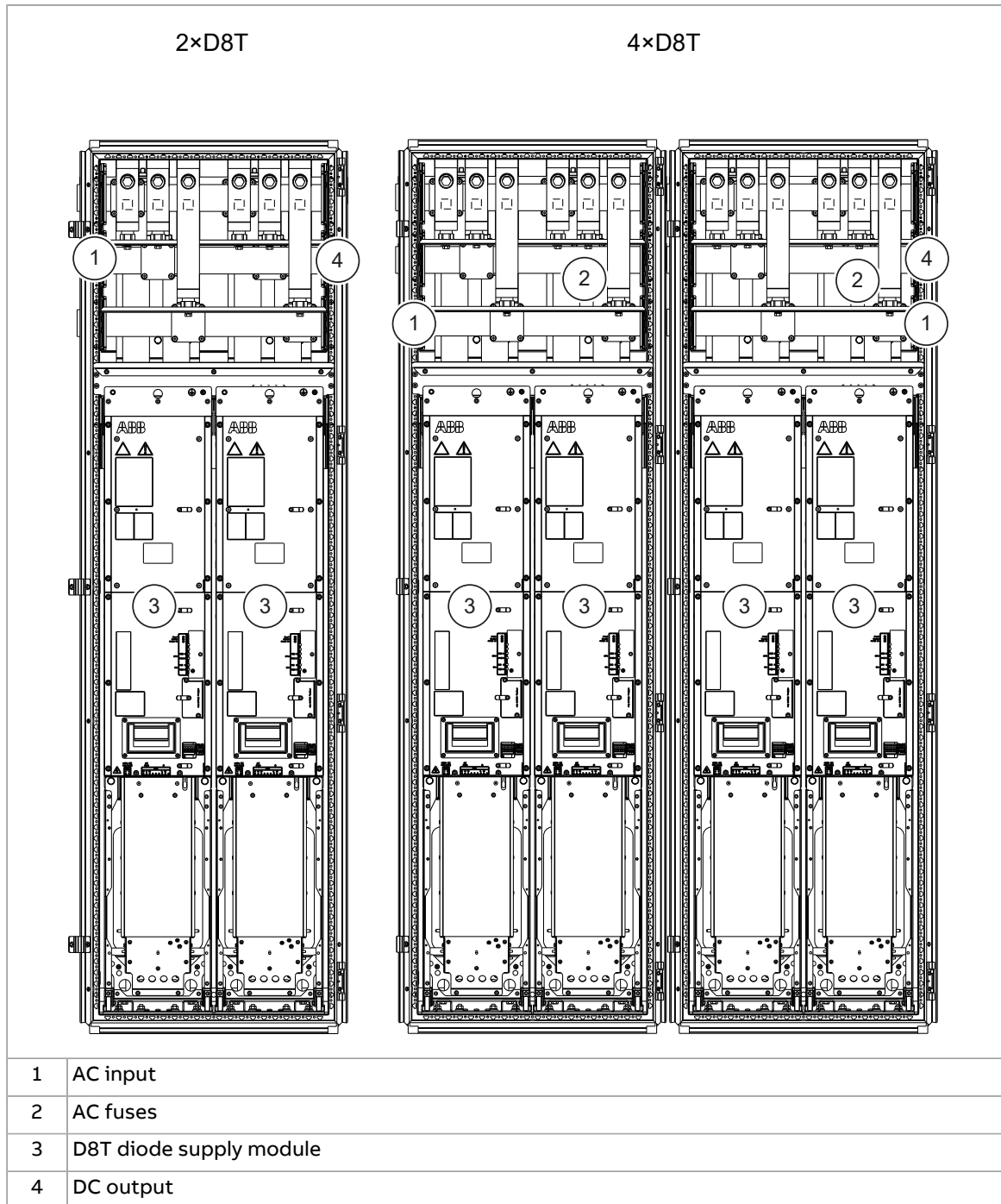


1	AC input
2	D7T diode supply module
3	DC output

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



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



## Installation examples

This section contains cabinet construction example(s). Each example presents the cubicle with the power module(s) and related main circuit components. These examples do not show the installation and connections of the control unit, or other components in control circuit or auxiliary power supply circuit.

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/lvacdrivesengineeringssupport/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 and in the technical data in the hardware manual.

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



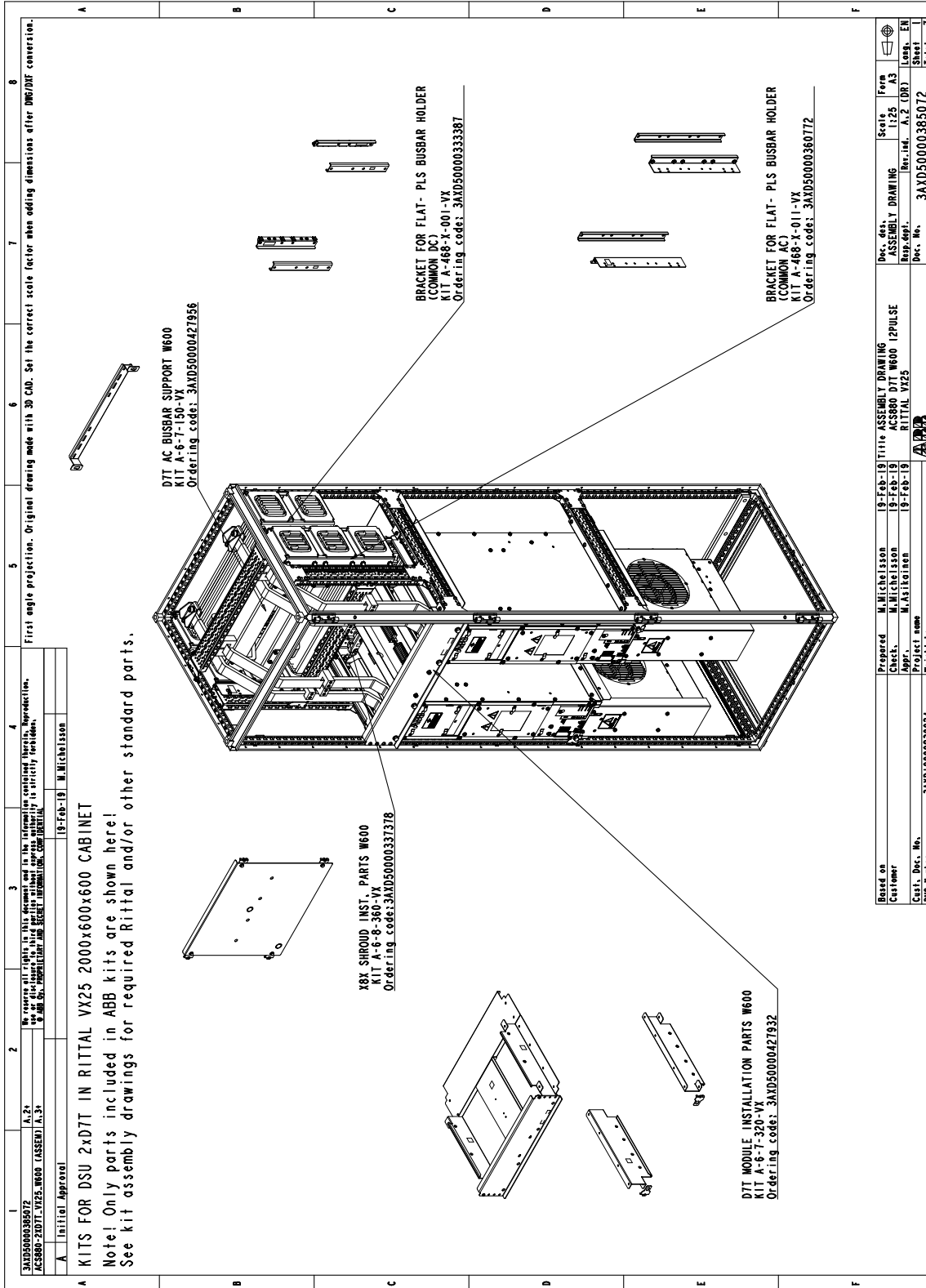
### WARNING!

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 2xD7T, 12-pulse, Rittal VX25

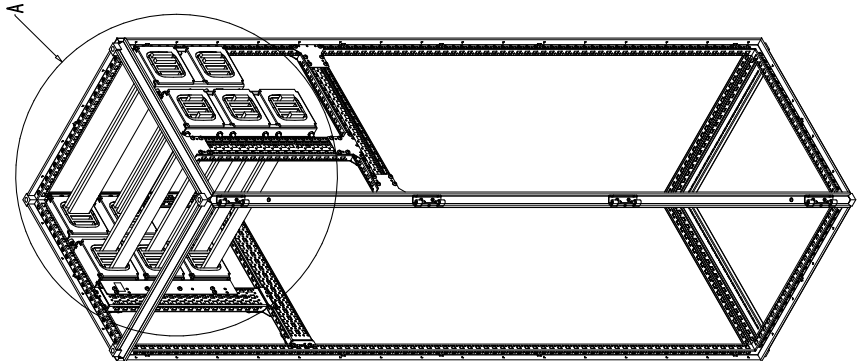


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Checked	M. Michalsson	19-Feb-19	11-Content	ASSEMBLY DRAWING	Box.incl.	A-2 (DR)	Long.	EN
Approved	M. Michalsson	19-Feb-19	12-Project name	RITTAL VX25	Doc. No.	3AXD50000385072	Sheet	7
Customer			13-Weight				Total	
Customer No.	3AXD10000839024							
DWG Number								

### Stage 1: Installation of common parts

1	2	3	4	5	6	7	8
3AXD50000385072 ACS880-230V1-XX25-W600 CASSEMI A1.31		No reserve allocation in this document and in the information contained therein. Reproduction, use or disclosure of this document without express authority is strictly forbidden. © 2018 Schneider Electric. All rights reserved.		19-Feb-19   M. Michalsson 19-Feb-19   M. Michalsson		19-Feb-19   M. Michalsson 19-Feb-19   M. Michalsson 19-Feb-19   M. Michalsson	
A. Initial Approval							

**Note:** Cabinet design and construction instructions for ACS880 multidrive modules [English].  
**Stage 1:** Installation of common parts.  
 See instruction drawings for details:  
 BAYING PARTS - 3AXD500003336340  
 PE BUS BAR - 3AXD50000336104  
 DIVIDER PANNEL - 3AXD50000336692  
 COMMON AC FLAT-PLS - 3AXD50000372782  
 COMMON DC FLAT-PLS - 3AXD50000333639

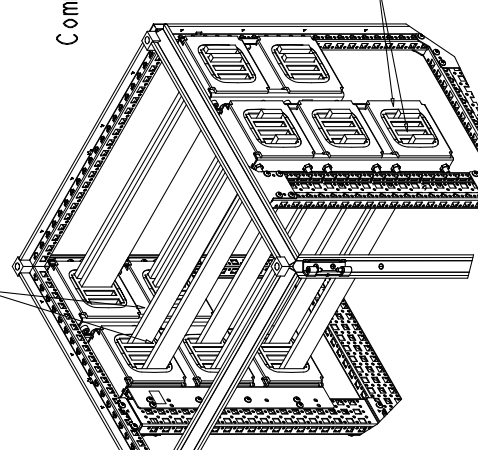


Only front and rear slots used for common AC busbars

Common AC busbars size 10x40mm

**Note:**  
Use filler pieces Rittal 9676.008 for empty slots

Empty space above the busbar close with spacers Rittal 9676.007  
24 pcs. req-d.



Based on Customer	Prepared by M. Michalsson	19-Feb-19	Title	ASSEMBLY DRAWING	Scale	Form
Customer	Check. by M. Michalsson	19-Feb-19	ACS880 DT W600 72PULSE	ASSEMBLY DRAWING	1:25	A3
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Customer	Appr. by M. Michalsson	19-Feb-19	RITTAL XX25	Doc. No.	3AXD50000385072	Rev. no.
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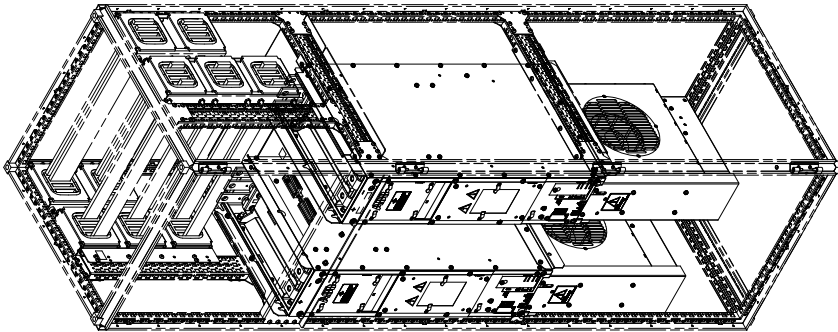


Stage 2: Module installation parts



1	2	3	4	5	6	7	8
<p>3AXD50000385072            CABINET 20071 - STEEL WOOD (ASSEMBLY) A-2-            A-2-            19-FEB-19 M. Michelsson</p> <p>2 M. MICHELSSON            19-FEB-19            19-FEB-19</p> <p>3 W. CRAMER (DIT) (A-2)            19-FEB-19            19-FEB-19</p> <p>4 M. MICHELSSON            19-FEB-19            19-FEB-19</p>							
<p>5 First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.</p>							
<p>6</p>							
<p>7</p>							
<p>8</p>							
A							F
B	<p>Stage 2: DTT module installation parts.</p> <p>See instruction drawing 3AXD50000426508 for details.</p>						F
C	<p>Ordering Code: 3AXD50000427932            KIT A-6-7-320-VX</p>						F
D	<p>Based on:            Customer: M. Michelsson            Project name: M. Michelsson            DWG Number: 3AXD100000839074            Weight: kg</p>						F
E	<p>Prepared by: M. Michelsson            Checked: M. Michelsson            Approved: M. Michelsson</p>						F
F	<p>Title: ASSEMBLY DRAWING            ACSS000_DTT_W600_12PULSE            INITIAL VIEWS</p>						F
						<p>Dec. No. 3AXD50000385072</p>	<p>Form A3</p>
						<p>Scale: 1:125</p>	<p>Part A3</p>
						<p>Rev. id. A-2 (DIT)</p>	<p>Leno. EN</p>
						<p>Dec. No. 3AXD50000385072</p>	<p>Sheet 3</p>
						<p>ABB</p>	<p>Total 7</p>

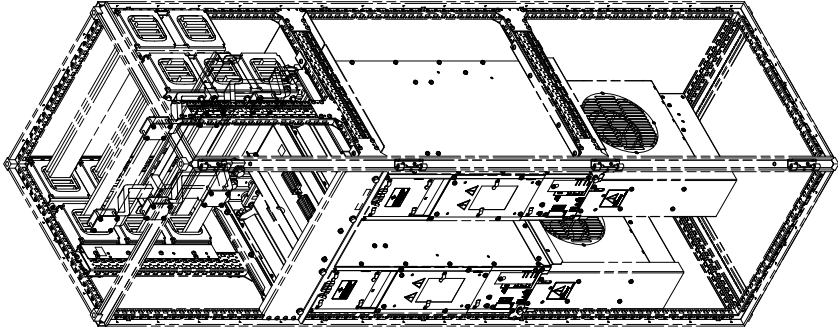
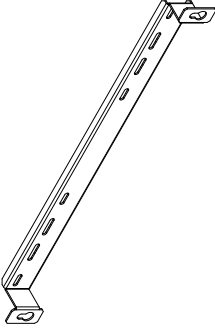
### Stage 3: Module installation

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<p>3AXD50000385072 ACS880-2D7T_VZ25_W000 (ASSEM)   A, 3*</p>							
<p>Initial Approval</p>							
<p>19-Feb-19   M. Michelsson</p>							
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<p>First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.</p>							
A	B	C	D	E	F		
<p>Stage 3: DTT module installation.</p> <p>See ACS880-04/304 Hardware Manual for details</p>							
<p>Based on</p>							
<p>Customer</p>							
<p>Prepared   M. Michelsson   9-Feb-19   Title   ASSEMBLY DRAWING</p>							
<p>Check   M. Michelsson   9-Feb-19   ACS880 DTT W000 / 2PULSE</p>							
<p>Appr.   M. Asikainen   9-Feb-19   RITVAL VZ25</p>							
<p>Project name</p>							
<p>Obj. No.   3AXD10000839024</p>							
<p>Obj. Name   RITVAL VZ25</p>							
<p>Dec. No.   3AXD50000385072</p>							
<p>Dec. Title   ASSEMBLY DRAWING</p>							
<p>Scale   1:25   A3</p>							
<p>Form   A, 2 (DR)</p>							
<p>Lang.   EN</p>							
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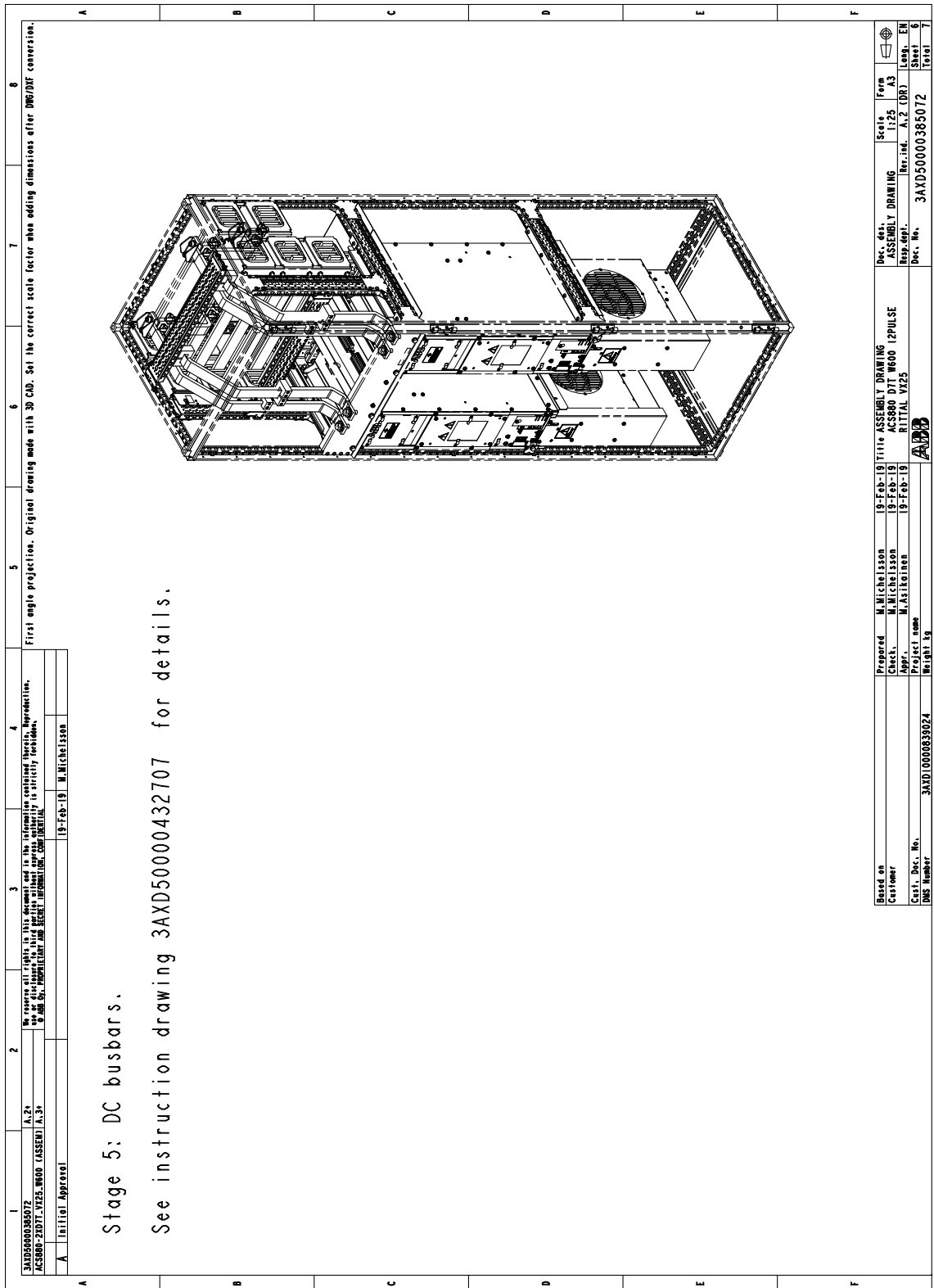


Stage 4: AC busbars to the module



1	2	3	4	5	6	7	8						
													
													
<p>DTT AC BUSBAR SUPPORT W600                  Ordering Code: 3AXD50000427956                  KIT A-6-7-150-VX</p>													
<p>Stage 4: AC busbars from main to module.                  See instruction drawing 3AXD50000431977 for details.</p>													
<p>First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.</p>													
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3AXD50000385072 ACS880-D2DTT-VX25-W600 (ASSEMBLY) A.31 A Initial Approval	M. Michälsson 19-Feb-19 M. Michälsson	Title ACS880 DTT W600 2PULSE RITTAL VX25	Dec. No. ASSEMBLY DRAWING 3AXD50000385072	Form A3 Scale 1:25 Rev. no. A.2 (DR)	Sheet 5 Total 7								

Stage 5: DC busbars to the module



1 2 3 4 5 6 7 8  
 A.2x  
 AC3800-21071\_VZ25\_W000 (ASSEMB) A.3x  
 Initial Approval  
 19-Feb-19 M. MICHELSSON  
 First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.

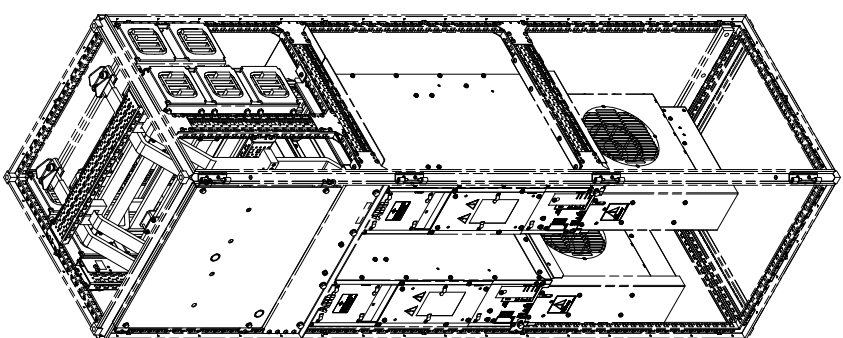
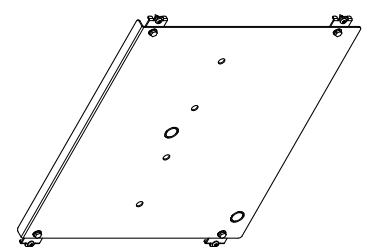
Stage 5: DC busbars.  
 See instruction drawing 3AXD50000432707 for details.

Based on	Prepared	M. MICHELSSON	19-Feb-19	Title	ASSEMBLY DRAWING	Scale	Form
Customer	Checked	M. MICHELSSON	19-Feb-19	AC3800 DT W00 72PULSE	ASSEMBLY DRAWING	1:25	A3
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IMS number	Draw. name	3AXD10000839024	REV. 1.4	AMB	Doc. No.	3AXD50000385072	Draw. 9
							TOTAL



### Stage 6: Shroud installation



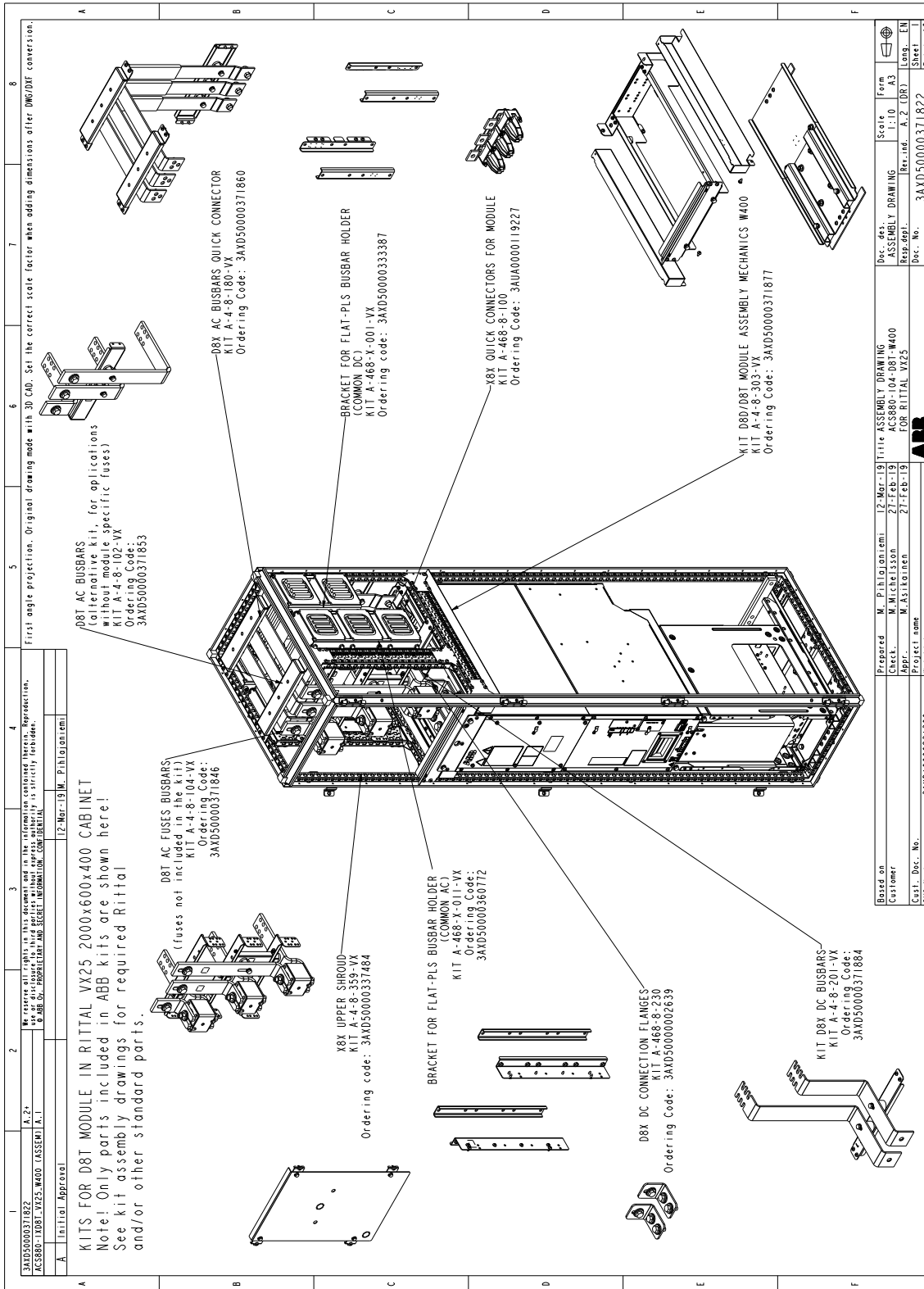
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<p>First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DF conversion.</p>																																																												
A	B	C	D	E	F																																																							
<p>Stage 6: X8X shroud installation.</p> <p>See instruction drawing 3AXD50000335022 for details.</p>																																																												
<p>Ordering Code: 3AXD50000337378                  KIT A-6-8-360-VX</p>																																																												
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Checked by	M. Michalison	19-Feb-19	ACS800 DIT W600	DIT W600	Rev. ind.	A.2 (DR)	Levs.	EN																																																				
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Project name				Weight																																																								
Customer				DMS Number	3AXD10000839024																																																							
<b>ABB</b>																																																												

## ■ 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	3AXD50000371884
			A-468-8-230	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 1x D8T, 6-pulse, Rittal VX25



## Stage 1: Installation of common parts

1	2	3	4	5	6	7	8	
3AXD50000371822 ACS880-104-D81-VZ25-W400 (ASSEMBLY) A.1 A.2* Initial Approval		We reserve all rights in this document and in the information contained therein. Reproduction, in any form, without the prior written permission of ABB Oyj is strictly forbidden. CONFIDENTIAL 12-Mar-19 M. Pihlajaniemi		First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.				
<p><b>Note!</b> See general engineering cabinet manual for common assembly principles</p> <p><b>STAGE 1:</b> Common assembly installations (Baying parts, PE bus bar, Divider panel, and Common DC). See assembly drawings for details</p>								
		Common AC Flat-PLS assembly See drawing 3AXD50000372782		Common DC Flat-PLS assembly See drawing 3AXD5000033639				
		Baying parts assembly See drawing 3AXD50000336340		Divider panel assembly See drawing 3AXD5000036692		PE bus bar design See drawing 3AXD50000336104		
Based on Customer		Prepared M. Pihlajaniemi 12-Mar-19	Title ASSEMBLY DRAWING ACS880-104-D81-W400 FOR INITIAL VZ25	Dec. des. ASSEMBLY DRAWING Rep. appl.	Scale 1:10 A3	Form A3	Total 10	
Cst. No. 3AXD10000831309 DWG Number		Project name 3AXD50000371822		Dec. No. 3AXD50000371822	Rev. no. A.2 (DR)	Lang. EN	Sheet 2	

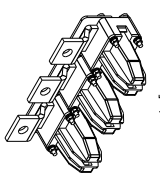
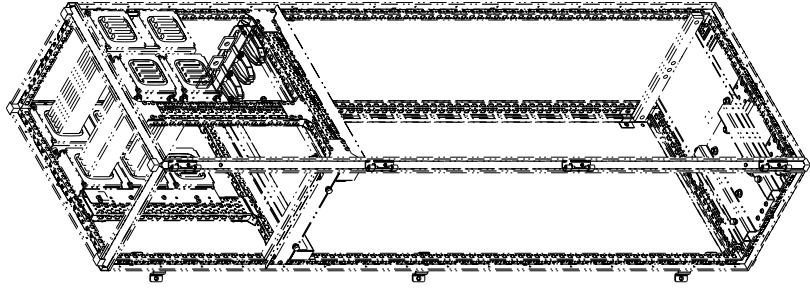


Stage 2: Module installation parts



1	2	3	4	5	6	7	8												
<p>Stage 2: D8D/D8T module installation parts.</p> <p>See instruction drawing 3AXD50000372799 for details.</p> <p style="text-align: right;">Ordering Code: 3AXD50000371877 KIT A-4-8-303-VX</p>																			
<p>First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.</p>																			
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3AXD50000371822 AC8800-1200-VX25-W400 (ASSEMBLY) A.1	Prepared by: M. Pihlajaniemi 12-Mar-19 (M. Pihlajaniemi)	Dec. des. ASSEMBLY DRAWING AC8800-104-D8T-W400 FOR RITTAL VV25	Scale: 1:10 Form: A3																
Initial Approval	Checked by: M. Michelsson 27-Feb-19	Project name: 3AXD10000831309	Rev. no. A.2 (DR)																
DMS Number: 3AXD10000831309		Weight: kg	Total: 10																

### Stage 3: Quick connector installation

1	2	3	4	5	6	7	8																																								
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<p>Initial Approval</p> <p style="text-align: right;">12-Mar-19 M. Pihlajantemi</p>																																															
<p>Stage 3: Quick connector installation</p> <p>See instruction drawing 3AUA0000115013 or 3AUA0000118667 for details</p>																																															
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<p>Ordering Code: 3AUA0000119227 KIT A-468-8-100</p>																																															
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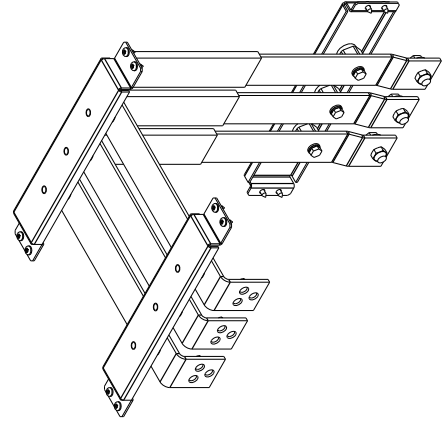
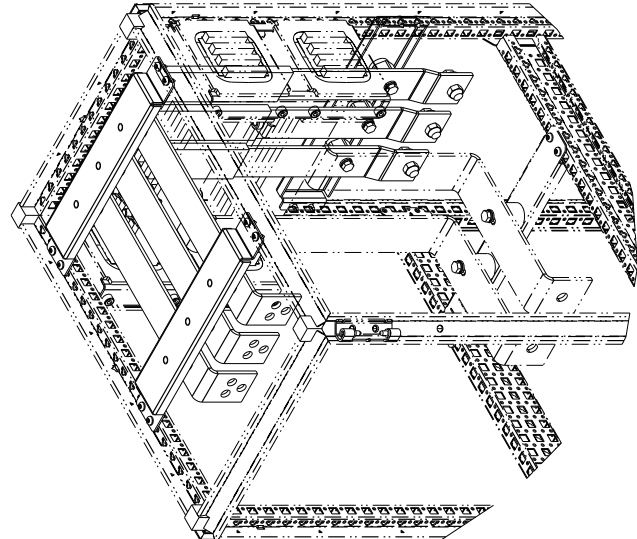


Stage 4: DC busbars to the module



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<p>3AXD50000371822                  ACS880-104-DBT-W400 (ASSEMBLY) Pt.1                  Initial Approval                  12-Mar-19 M. Pihlajaniemi</p>																																										
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<p>Stage 4: D8X DC busbar installation.                  See instruction drawing 3AXD50000373871 for details.</p>																																										
<p>Ordering Code: 3AXD50000371884                  KIT A-4-8-201-VX</p>																																										
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DWG Number	3AXD10000831309			Doc. No.	3AXD50000371822	Sheet 5																																				
				Weight kg		Total 10																																				

### Stage 5: AC busbars to quick connector

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A Initial Approval		12-Mar-19 M. Pihlajaniemi																																									
<p>Stage 5: D8X AC busbars to quick connector.</p> <p>See instruction drawing 3AXD50000379736 for details.</p>																																											
 <p style="text-align: center;">1:5</p>				 <p style="text-align: center;">1:5 PARTS REMOVED FOR CLARITY.</p>																																							
<p style="text-align: right;">Ordering Code: 3AXD50000371860 KIT A-4-8-180-VX</p>																																											
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Doc. Number				Sheet	6																																						
				Total	10																																						



Stage 6: AC busbar

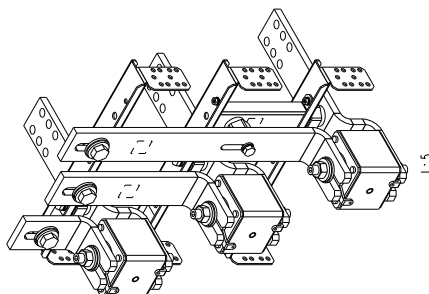


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Prepared by: M. Pihlajaniemi Checked by: M. Mikkelsson Approved by: M. Asikainen Project name: 3AXD10000831309 DWG Number: 3AXD10000831309							
Title: AC8800-102-D8T-W400 FOR RITTAL VX25 Date: 27-Feb-19 Project name: <b>ABB</b>							
Description: ASSEMBLY DRAWING Scale: 1:10 Form: A3 Drawing No.: 3AXD50000371822 Rev. No.: A.2 [DR] Rev. Ind.: Date: 27-Feb-19 Project name: 3AXD50000371822 DWG Number: 3AXD50000371822							

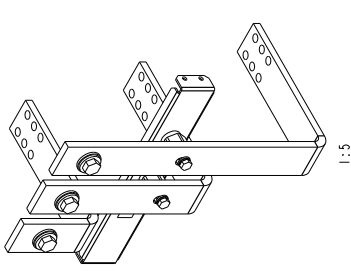
Stage 6: D8T AC busbar installation.

See instruction drawings 3AXD50000384594 and 3AXD50000417247 for details.

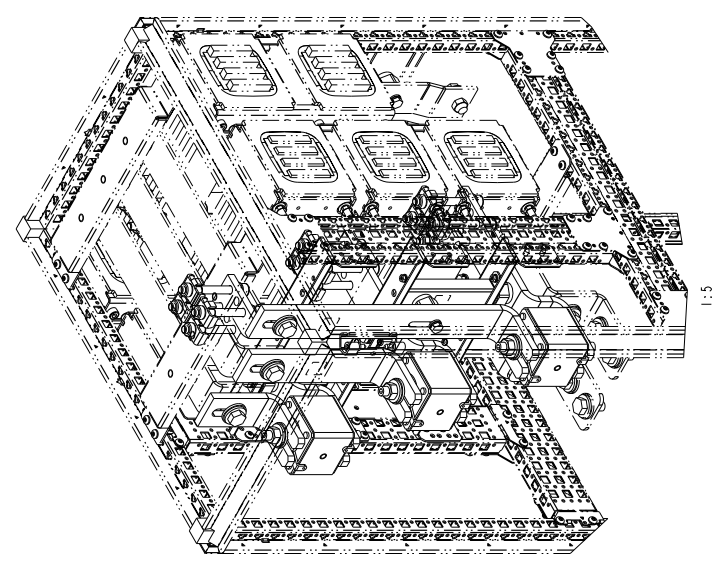


Alternative A (for 3xD8T module setup)  
 Ordering Code: 3AXD50000371846  
 KIT A-4-8-104-VX

NOTE. Fuses not included in the kit



Alternative B (for single module setup)  
 Ordering Code: 3AXD50000371853  
 KIT A-4-8-102-VX



1:5

## Stage 7: Module installation

1	2	3	4	5	6	7	8	
3AXD50000371822 A.2+ ACS880-104E-W400 (ASSEMBLY) A.1		We reserve all rights in this document and in the information contained herein. Reproduction, copying, distribution or any other use without the prior written permission of ABB CORPORATION is strictly forbidden.		First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.				
A Initial Approval		12-Mar-19 M. Pihlajaniemi						

Stage 7: D8X module installation.

See instruction drawing 3AUA0000118641 for details.

SEAL THE GAPS  
BETWEEN THE FRAME  
AND SUPPORTS AND  
AIR BLOCKERS TO  
AVOID HOT AIR  
BACKFLOW FROM MODULE

A  
2:5

B  
2:5

For module installation use temp\_3AXD50000303625.

Based on	Prepared	M. Pihlajaniemi	12-Mar-19	Title	ASSEMBLY DRAWING	Scale	Form
Customer	Check.	M. Michelsson	27-Feb-19	AC880-104-D8T-W400	ASSEMBLY DRAWING	1:10	A3
Cell. Doc. No.	Appr.	M. Asikainen	27-Feb-19	FOR INITIAL VZS	ASSEMBLY DRAWING	1:10	A3
DWG. Number	3AXD1000083109	Project name	ABB		Doc. No.	3AXD50000371822	Sheet
		Weight kg			Doc. No.	3AXD50000371822	Sheet
					Doc. No.	3AXD50000371822	Total



Stage 8: Shroud installation



1	2	3	4	5	6	7	8
<p>3AXD50000371822 AC8800-104-081-W400 (ASSEMBLY) A.1</p> <p>Initial Approval</p>							
<p>Based on: M. Pihlajaniemi 12-Mar-19 Title: ASSEMBLY DRAWING                  Check: M. Michelsson 27-Feb-19 AC8800-104-081-W400                  Appr.: M. Asikainen 27-Feb-19 FOR RITTAL VV25</p>							
<p>Customer: M. Asikainen 27-Feb-19 Project name: 3AXD10000831309                  DMS Number: 3AXD10000831309 Weight: kg</p>							
<p>Doc. des: ASSEMBLY DRAWING                  Resp. appl.: A.2 (DR)                  Doc. No.: 3AXD50000371822</p>							
<p>Scale: 1:10 Form: A3                  Rev. no.: A.2 (DR) Long: EN                  Sheet: 9                  Total: 10</p>							

Stage 8: D8X shroud installation.

See instruction drawing 3AXD50000335169 for details and required additional Rittal and standard parts.

1:5

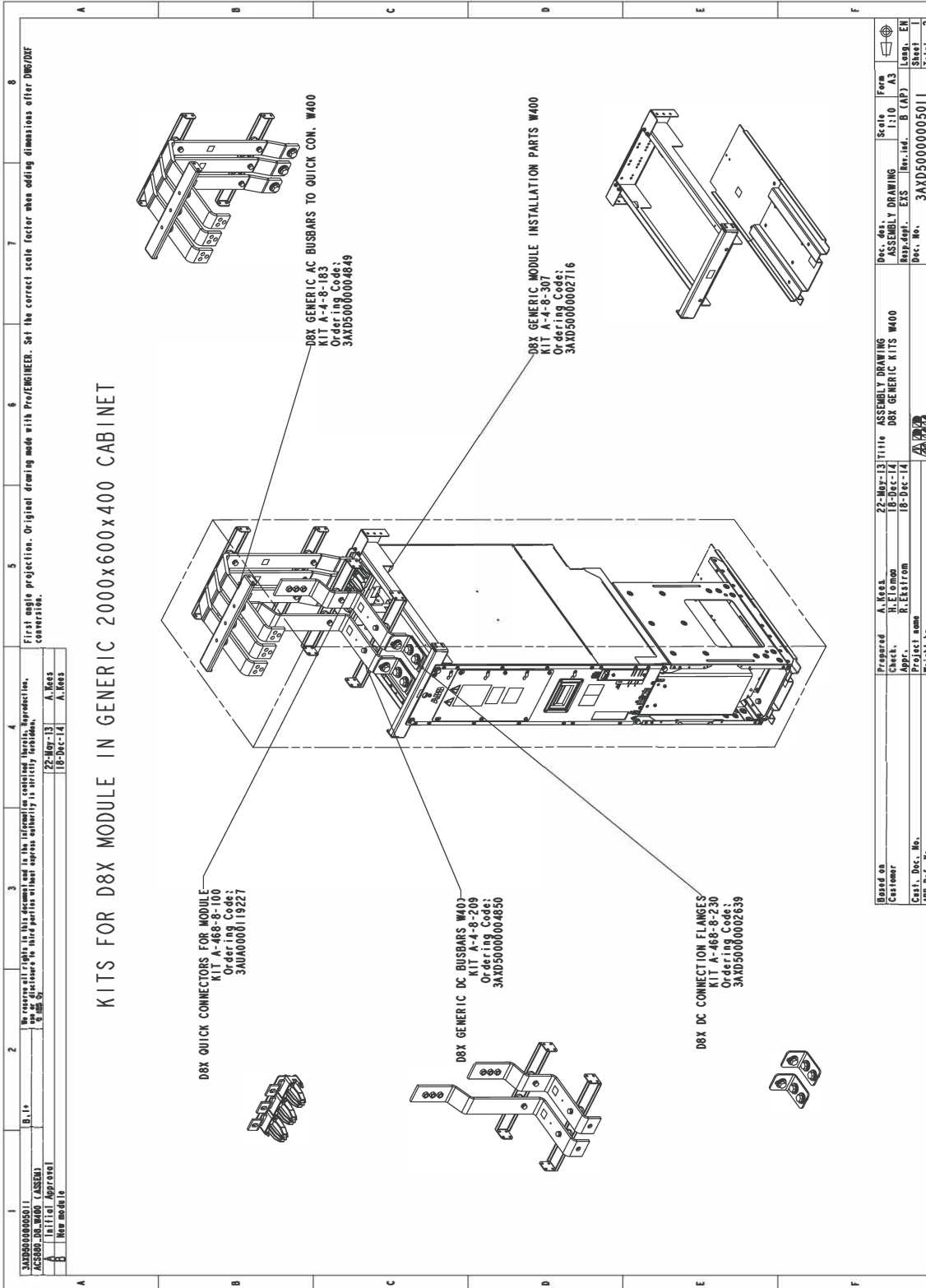
Ordering code: 3AXD50000337484  
 KIT A-4-8-359-VX

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

<b>Parts to be installed</b>	<b>Instruction code</b>	<b>Kit code</b>	<b>Kit ordering code</b>
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 1x D8T, 6-pulse generic cabinet

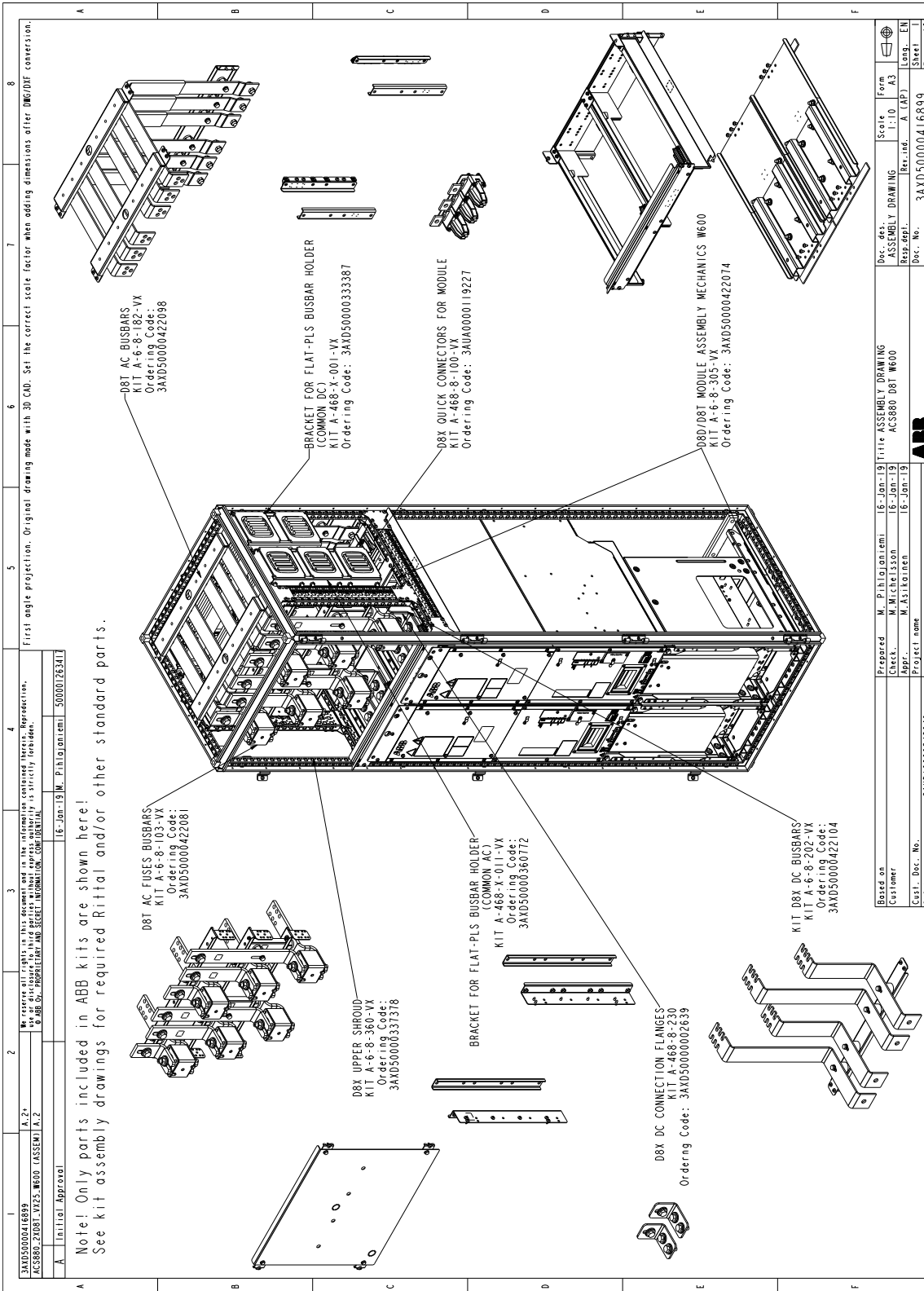


## ■ Construction of supply module cubicle – 2×D8T, 6-pulse, Rittal VX25

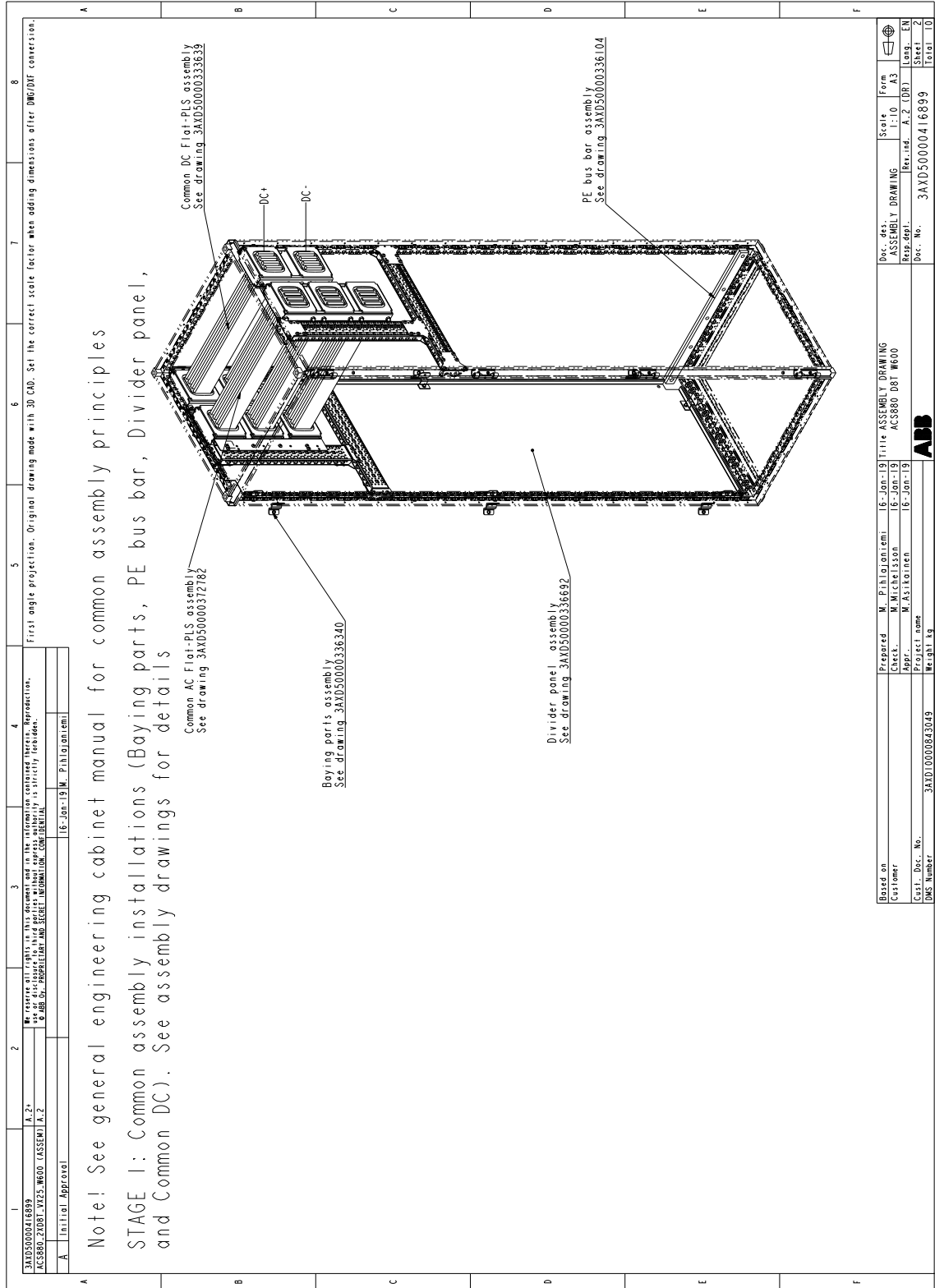
#	Installation stage	Instruction code	Kit code	Kit ordering code
1	Installation of common parts:			
	Baying parts	3AXD50000336340	-	-
	PE busbar [PE]	3AXD50000336104	-	-
	Divider panel	3AXD50000336692	-	-
	Bracket for Flat-PLS busbar holder (common AC)	3AXD50000372782	A-468-X-011-VX	3AXD50000360772
	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	3AXD50000422104
			A-468-8-230	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 2x D8T, 6-pulse, Rittal VX25



### Stage 1: Installation of common parts

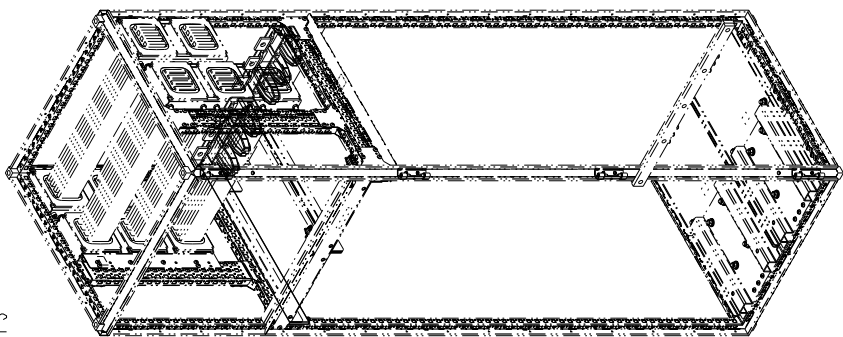
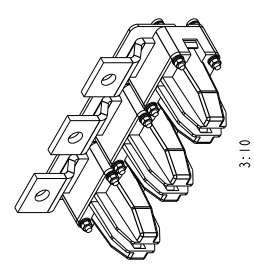


Stage 2: Module installation parts



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<p>Stage 2: D8D/D8T module installation parts. See instruction drawing 3AXD50000422401 for details.</p>																																																																
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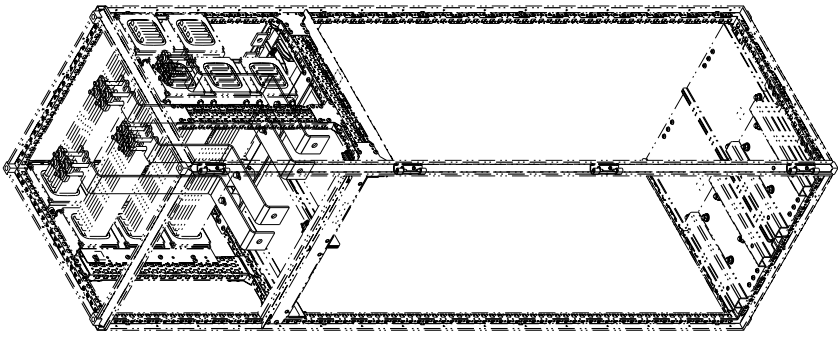
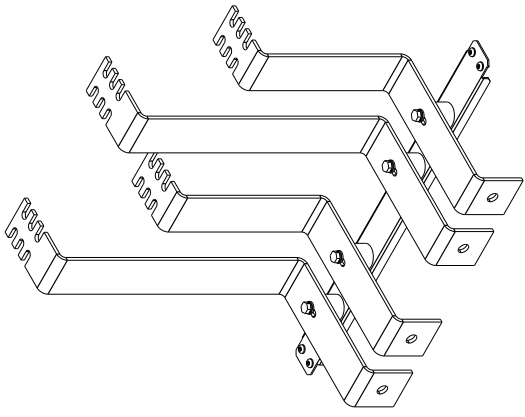
### Stage 3: Quick connector installation

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3AXD50000416899 ACS880-2AD1-VC25-W600 (ASSEMBLY) A.2 Initial Approval		We reserve all rights in this document and in the information contained herein. Reproduction, storage in retrieval systems, or any other use without the written permission of ABB Oy is strictly forbidden. © ABB Oy. PROPRIETARY AND CONFIDENTIAL INFORMATION. 16-Jan-19 M. Pihlajaniemi		First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.				
Stage 3: Quick connector installation See instruction drawing 3AXD5000001904 or 3AXD5000001886 for details								
 <p style="text-align: center;">3:10</p>		Ordering Code: 3AUA0000119227 KIT A-468-8-100						
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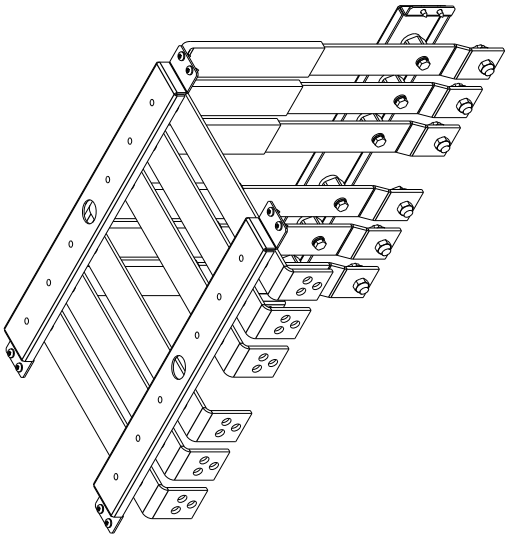
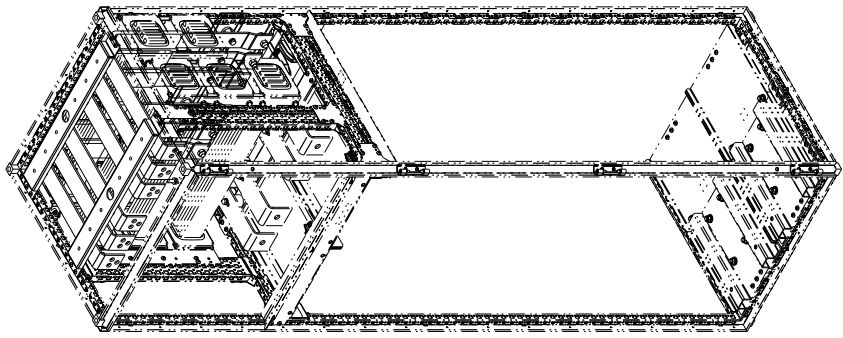



Stage 4: DC busbars



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<p>Stage 4: D8X DC busbar installation.</p> <p>See instruction drawing 3AXD50000430550 for details.</p>																																											
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<p>Ordering Code: 3AXD50000422104 KIT A-6-8-202-VX</p>																																											
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Based on	M. Pihlajaniemi	16-Jan-19	Title	ASSEMBLY DRAWING	Scale	1:10	Form	A3																																			
Customer	M. Mikkelsen	16-Jan-19	Responsible	AC8880_D8X_W600	Rev. ind.	A.2 [DR]	Lang.	EN																																			
Project name	M. Asikainen	16-Jan-19	Doc. No.	3AXD50000416899	Doc. No.	3AXD50000416899	Sheet	5																																			
DWG Number	3AXD10000843049		Weight	kg			Total	10																																			

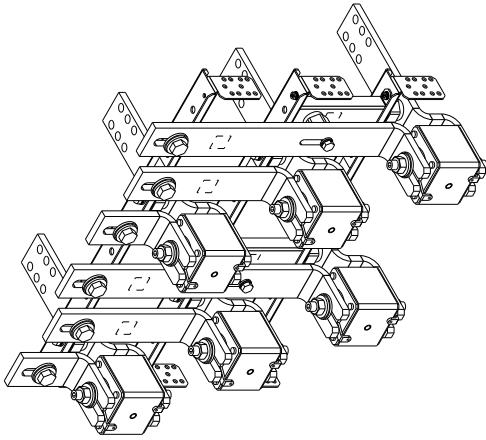
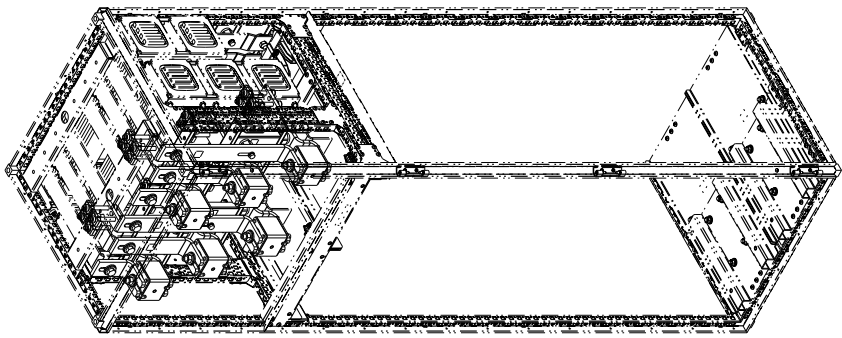
### Stage 5: AC busbars to quick connector

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<p>3AXD50000416899 AC8880_2208T_V025_W600 (ASSEM)   A.2</p> <p style="font-size: 8px;">We reserve all rights in this document and the information contained therein. Reproduction, distribution, copying, or any other use of this document without the prior written consent of ABB is strictly prohibited.</p>							
A. Initial Approval		16-Jan-19   M. Pihlajaniemi					
<p style="text-align: center;">Stage 5: D8X AC busbars to quick connector. See instruction drawing 3AXD50000430574 for details.</p>							
							
<p>1:5 Ordering Code: 3AXD50000422098 KIT A-6-8-182-VX</p>							
<p>Based on: _____ Customer: _____ Cell, Doc. No.: _____ Dwg. Number: 3AXD10000843049</p>				<p>Prepared: M. Pihlajaniemi   16-Jan-19   Title: ASSEMBLY DRAWING Checked: M. Micheliussen   16-Jan-19   AC8880 D8T W600 Approved: M. Asikainen   16-Jan-19 Project name: _____ McPart: L4</p>			
				<p>Doc. des.: ASSEMBLY DRAWING   Scale: Form A3 Revis. no.: _____   Revis. no.: A.2 (DR)   Cont.: EN Doc. No.: 3AXD50000416899   Cont.: 10</p>			
							

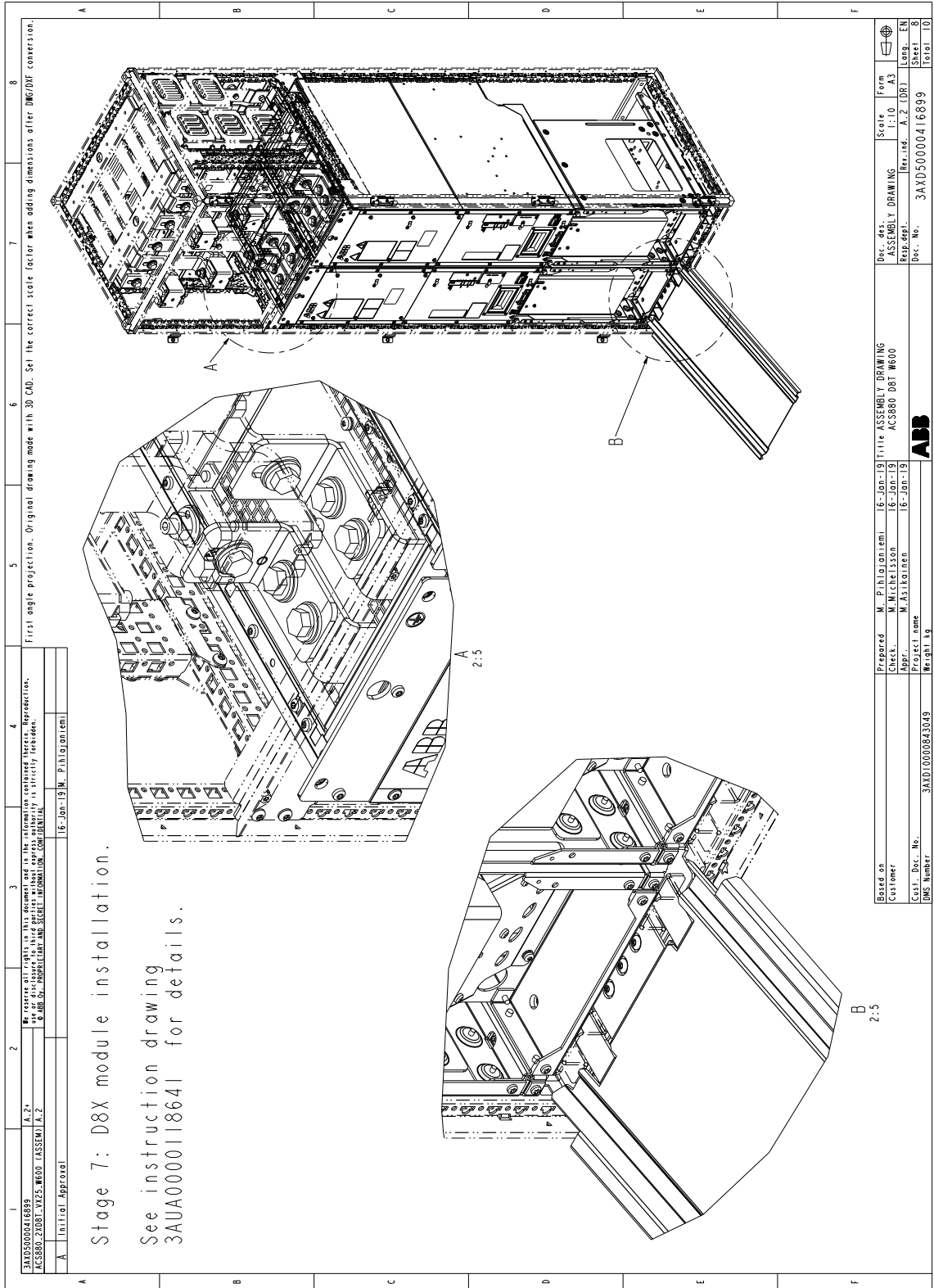


Stage 6: AC fuse busbars installation



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3AXD50000416899 - A.2 - ACS880-200T-V25-W60 (ASSEMBLY) A.2 Warnings: This document is the property of ABB. It is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without express written permission from ABB. All rights reserved.																																										
A Initial Approval 16-Jan-19 M. Pihlajaniemi																																										
Stage 6: D8T AC fuse busbars installation. See instruction drawing 3AXD50000431557 for details.																																										
 <p style="text-align: center;">1:5</p>																																										
Ordering Code: 3AXD50000422081 KIT A-6-8-103-VX NOTE. Fuses not included in the kit																																										
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Based on	M. Pihlajaniemi	16-Jan-19	Title	ASSEMBLY DRAWING	Scale	Form																																				
Customer	M. Mikkelsen	16-Jan-19	ACS880 D8T W60	ASSEMBLY DRAWING	1:10	A3																																				
Appr.	M. Asikainen	16-Jan-19		Rev. ind.	A.2 (DR)	Cons. EN																																				
Proj. name				Doc. No.	3AXD50000416899	Sheet 7																																				
Doc. No.	3AXD10000843049			Weight		Total 10																																				

Stage 7: Module installation



1 2 3 4 5 6 7 8  
 3AXD50000416899  
 AC5880\_2708T\_VXZ5\_W600 (ASSEMBLY) A.2  
 Initial Approval  
 M. Pihlajaniemi  
 16-Jan-19  
 M. Pihlajaniemi  
 First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.

2  
 A.2  
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 Initial Approval  
 M. Pihlajaniemi  
 16-Jan-19

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 M. Pihlajaniemi  
 16-Jan-19

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 M. Pihlajaniemi  
 16-Jan-19  
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 M. Pihlajaniemi  
 16-Jan-19  
 M. Astikainen  
 16-Jan-19

Doc. des. ASSEMBLY DRAWING  
 Scale 1:10  
 Form A3  
 Doc. No. 3AXD50000416899  
 Project name  
 M. Pihlajaniemi

Doc. No. 3AXD50000416899  
 Project name  
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 M. Pihlajaniemi

Doc. No. 3AXD50000416899  
 Project name  
 M. Pihlajaniemi



Stage 8: Shroud installation



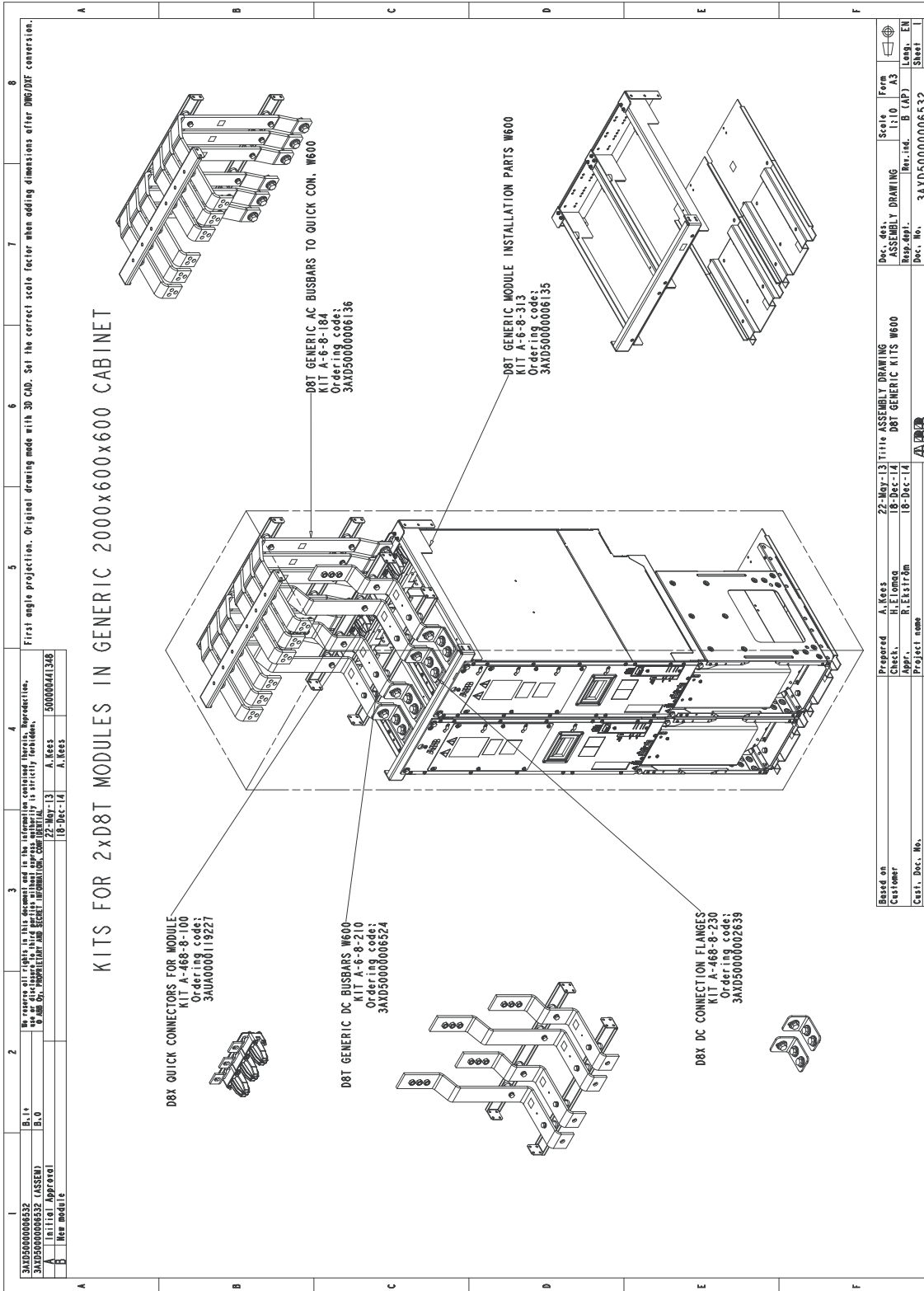
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Stage 8: D8X shroud installation. See instruction drawing 3AXD50000335022 for details.							
Ordering Code: 3AXD50000337378 KIT A-6-8-360-VX							
A	B	C	D	E	F	G	H

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

<b>Parts to be installed</b>	<b>Instruction code</b>	<b>Kit code</b>	<b>Kit ordering code</b>
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 2x D8T, 6- and 12-pulse, generic cabinet



3AXD5000006532	3AXD5000006532 (ASSEM)	INITIAT. APPROVAL	REV. MODIFIC.
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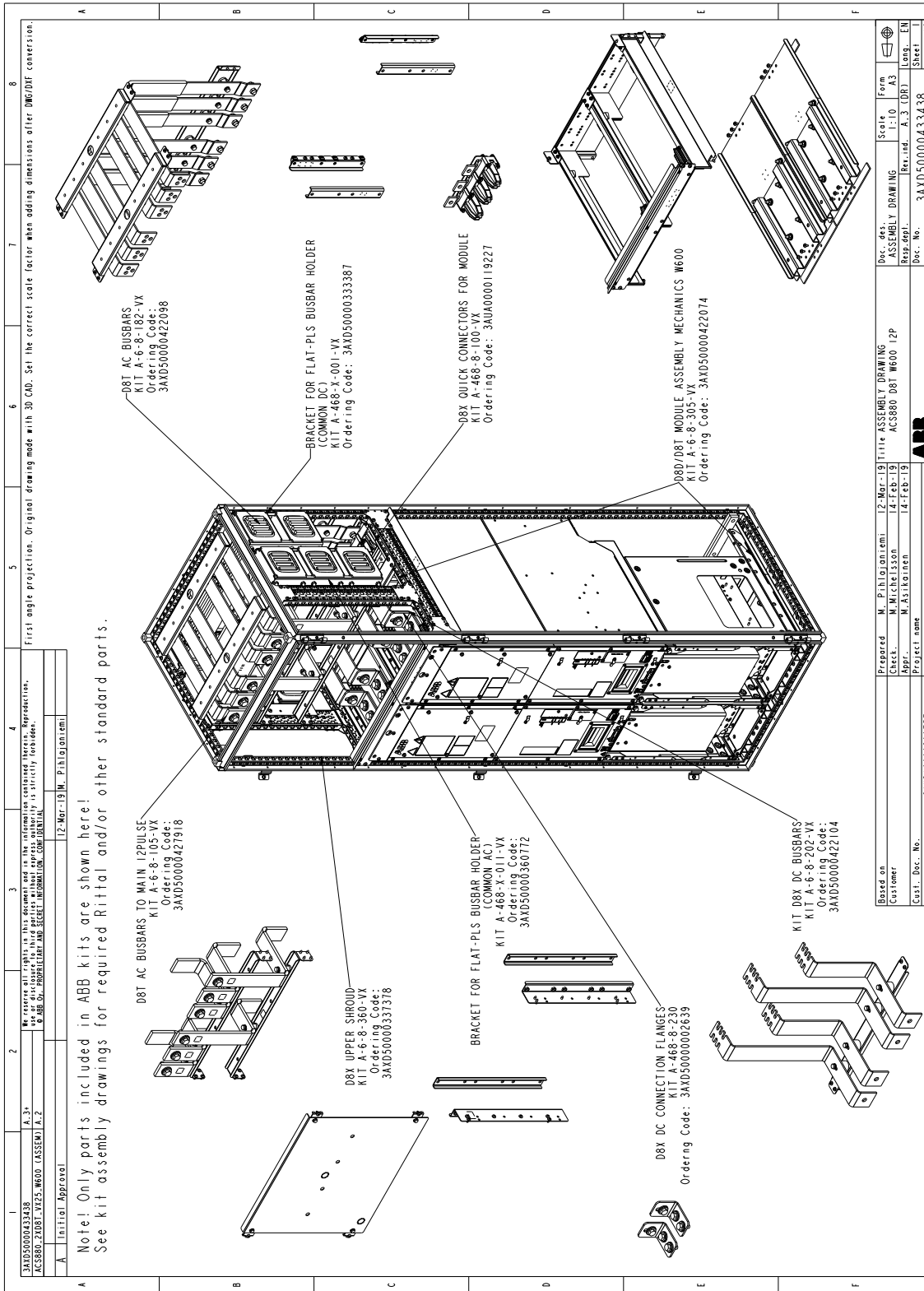
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Prepared: A. Kees Checked: H. E. Jönas Appl.: R. Ekström Project name: 3AXD10000234640 Date: 18-Dec-14 Date: 18-Dec-14 Date: 22-May-13 Title: ASSEMBLY DRAWING Title: D8T GENERIC KITS W600 Scale: 1:10 Scale: B (AP) Form: A3 Sheet: 1 Total: 2 Dec. No.: 3AXD5000006532 Res. No.: 3AXD5000006532							

## ■ 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	A-468-8-100	3AUA0000119227
		3AXD50000001886		
4	DC busbars DC connection flanges	3AXD50000430550	A-6-8-202-VX	3AXD50000422104
			A-468-8-230	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

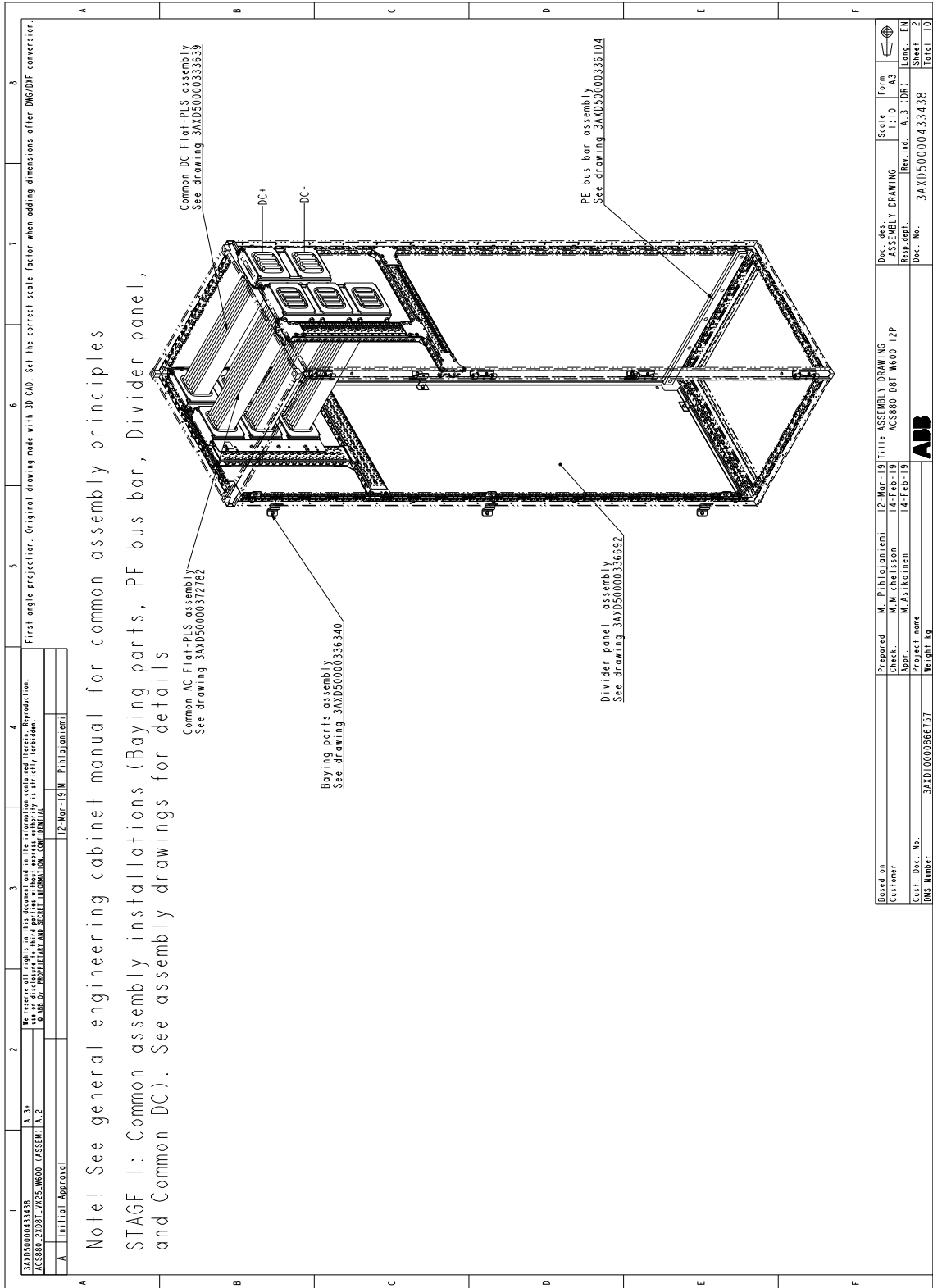


Kits for 2×D8T, 12-pulse, Rittal VX25



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ACS880-27001-XX25-W600 (ASSEMBLY) A.2									
Based on: Prepared M. Pihlajaniemi 12-Mar-19 Title ASSEMBLY DRAWING Customer: M. Michelsson 14-Feb-19 ACS880 D8T W600 12P Check: M. Michelsson 14-Feb-19 Approved: M. Asikainen 14-Feb-19 Project name: <b>ABB</b> DMS Number: 3AXD10000866757 Weight: kg									
							Scale	Form	Total
							1:10	A.3	10
							Rev. no.	Long. EN	Sheet
							A.3 (DR)	EN	1
							Doc. No.	3AXD5000043438	10

**Stage 1: Installation of common parts**

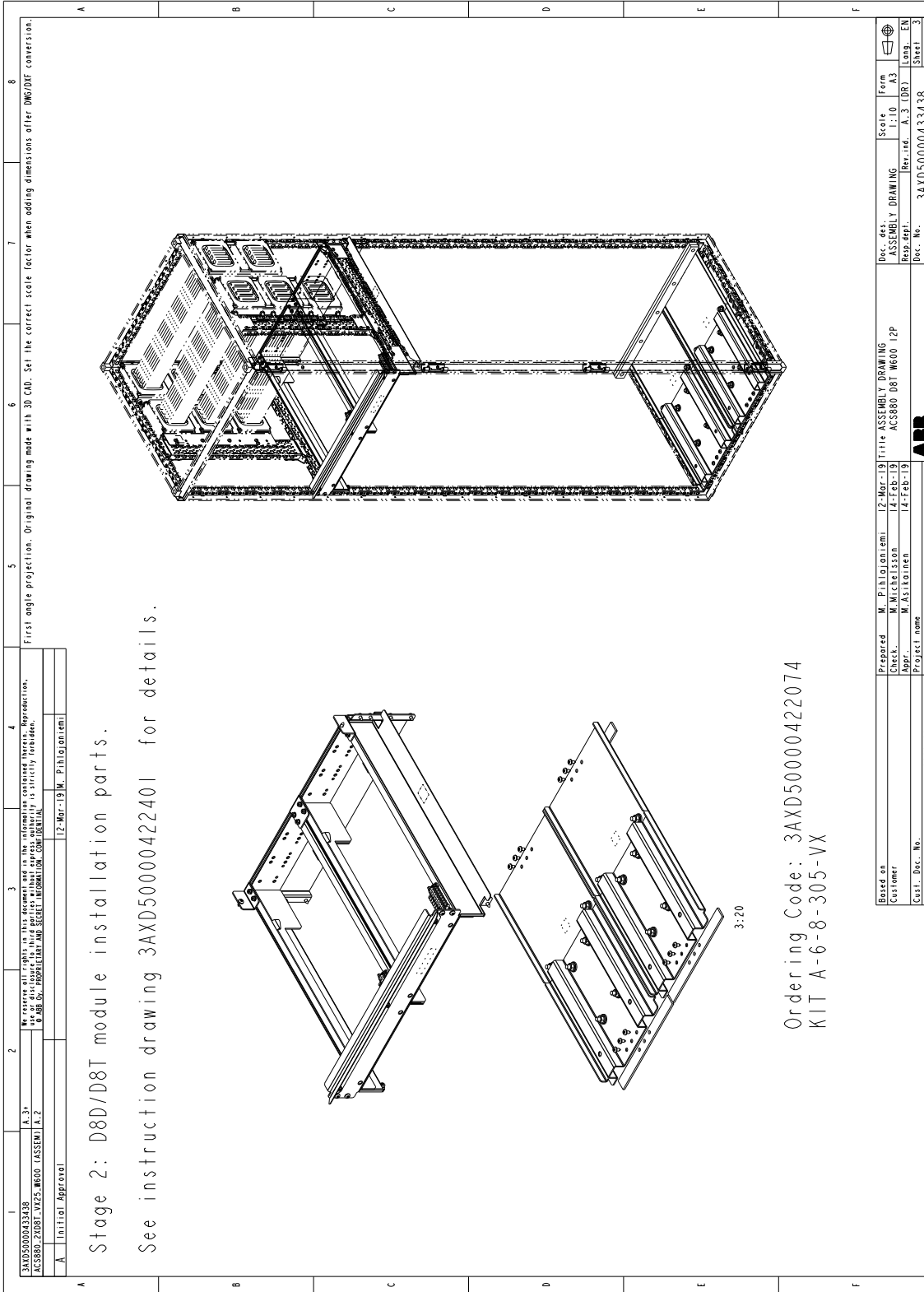


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A Initial Approval		12-Mar-19 M. Pihlajaniemi					

Based on	Prepared	M. Pihlajaniemi	12-Mar-19	Title	ASSEMBLY DRAWING	Scale	Form
Customer	Check.	M. Mikkelsen	14-Feb-19	AC8880 DB1 W600 12P	ASSEMBLY DRAWING	1:10	A3
Call. Desc. No.	Approved	M. Astikainen	14-Feb-19		Rev. no.	A.13 (DB1)	Rev. no.
DWG Number	3AXD1000866757	McHeli			Doc. No.	3AXD50000433438	Scale
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							Doc. No.



Stage 2: Module installation parts

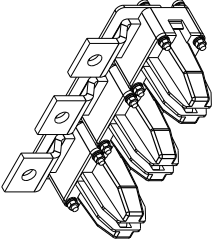


### Stage 3: Quick connectors

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A Initial Approval		12-Mar-19 M. P. H. J. van den Broek					

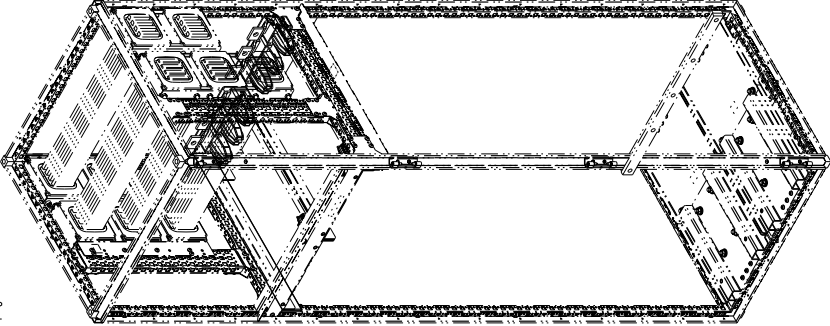
Stage 3: Quick connector installation

See instruction drawing 3AXD50000001904 or 3AXD50000001886 for details




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Ordering Code: 3AUA0000119227  
KIT A-468-8-100

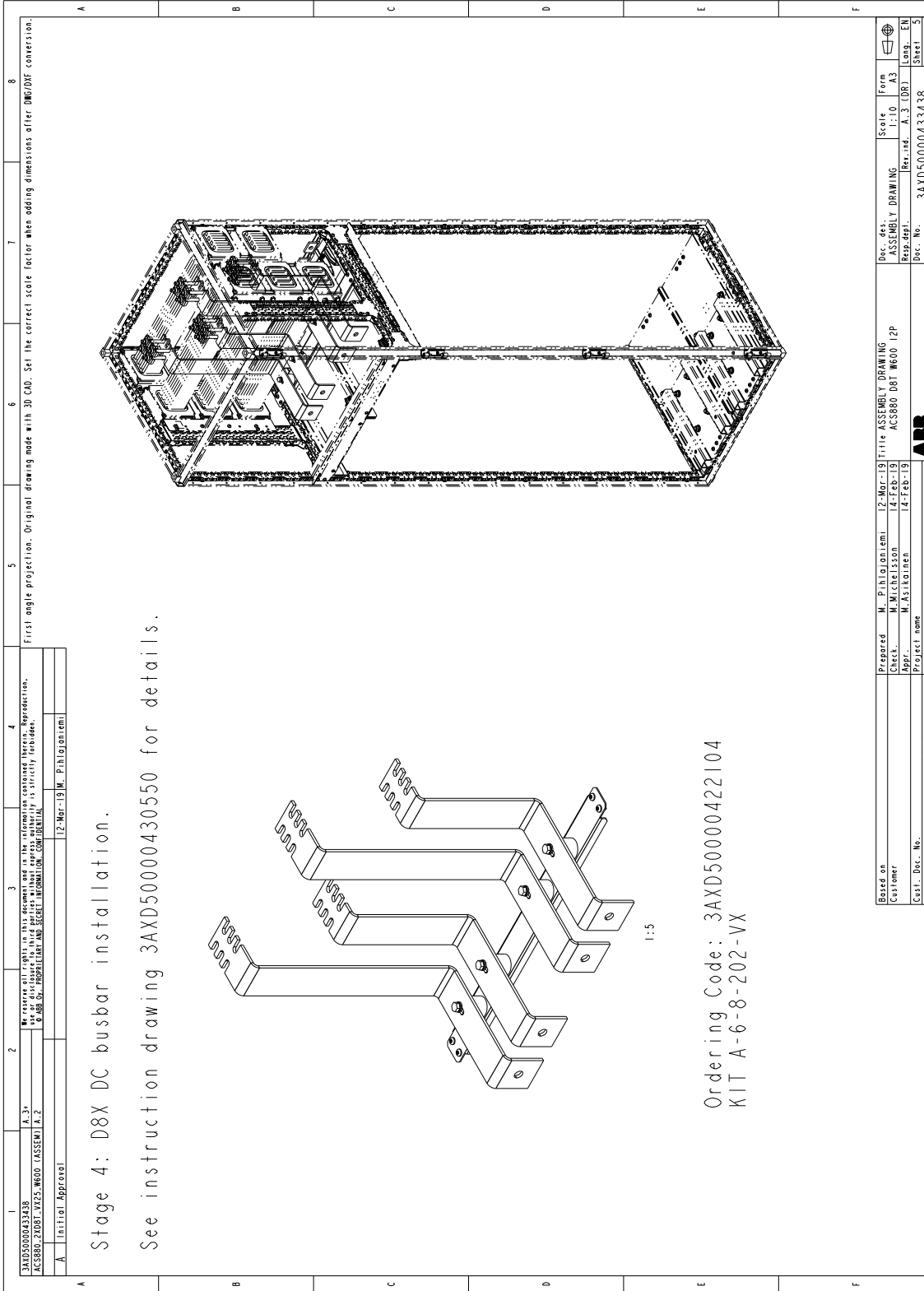


Based on	Prepared	M. P. H. J. van den Broek	12-Mar-19
Customer	Checked	M. P. H. J. van den Broek	14-Feb-19
	Approved	M. P. H. J. van den Broek	14-Feb-19
DWG Number	Project name	3AXD10000866757	
	Weight	kg	

Doc. No.	3AXD50000433438	Title	ASSEMBLY DRAWING
Rep. No.		Rev. No.	AC3880 DOT W600 12P
Sheet	4	Scale	1:10
Form		Form	
Look		Look	
EM		EM	



Stage 4: DC busbar installation



Stage 4: D8X DC busbar installation.

See instruction drawing 3AXD50000430550 for details.

Ordering Code: 3AXD50000422104  
KIT A-6-8-202-VX

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3AXD5000043438  
ACS880-2AD0-1-XX25-W600 (ASSEMBLY) R.2  
A Initial Approval

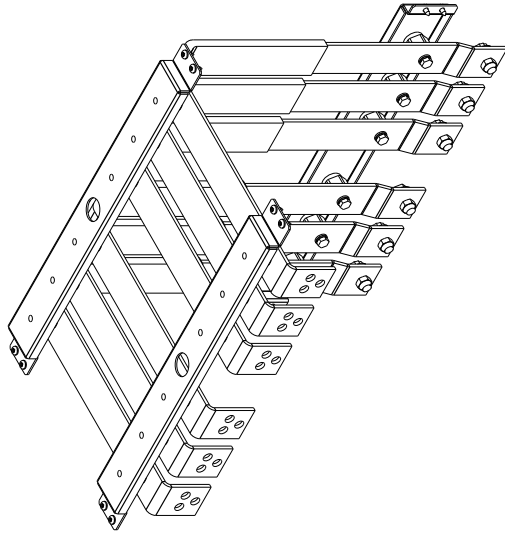
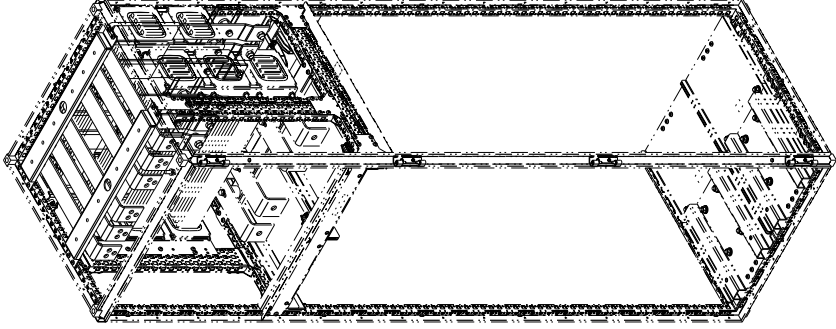
12-Mar-19 M. Pihlajaniemi

First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DMG/DWG conversion.

Based on	Prepared	M. Pihlajaniemi	12-Mar-19	Title	ASSEMBLY DRAWING	Scale	1:10	Form	A3
Customer	Check.	M. Michelsson	14-Feb-19	ACS880 D8T W600 2P	ASSEMBLY DRAWING	1:10	A3	Lang.	EN
Cust. Dec. No.	Appr.	M. Asikainen	14-Feb-19		Rev. ind.	A.3 (DR)		Sheet	5
DMS Number	Weight kg				Doc. No.	3AXD5000043438		Total	10

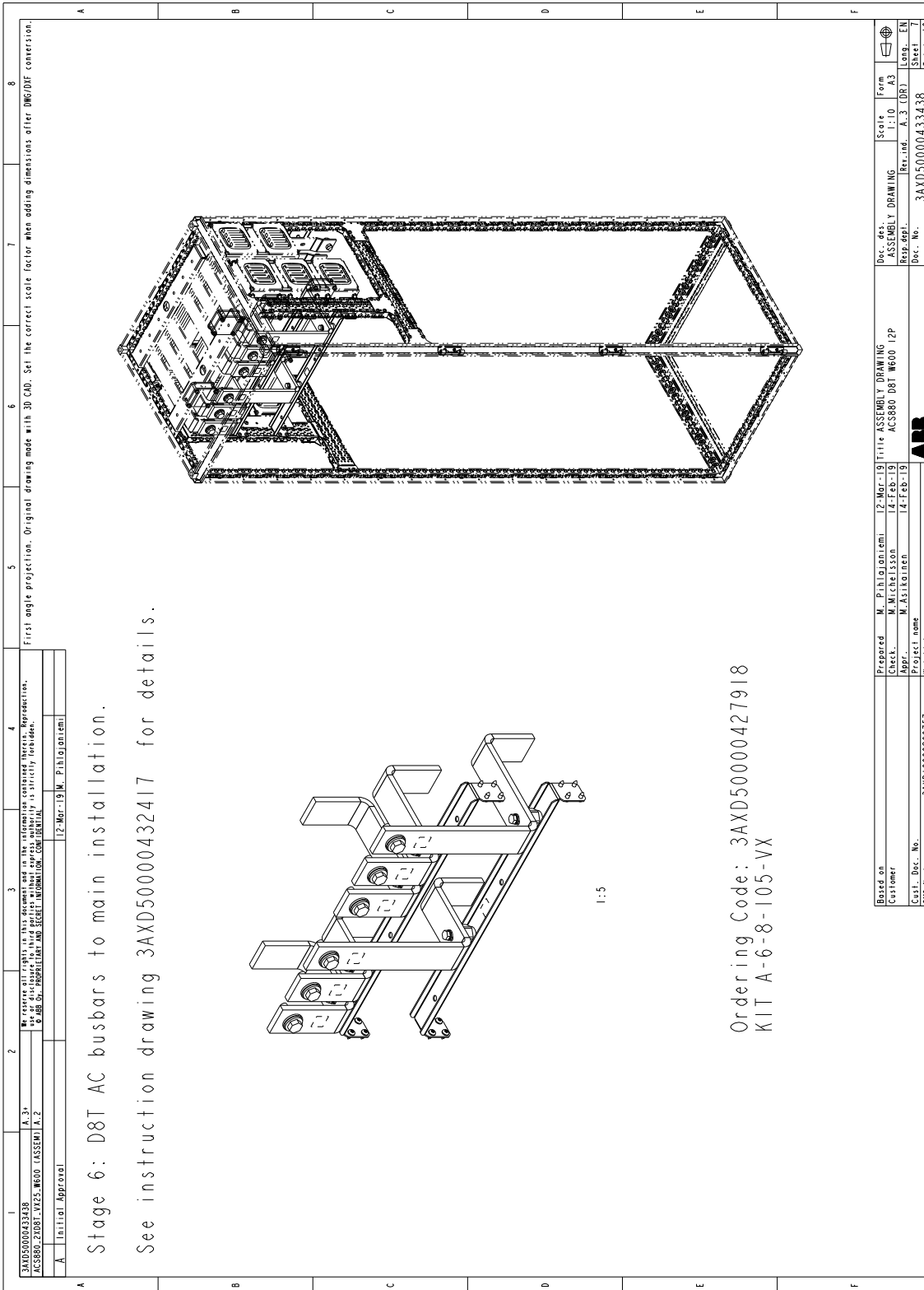


### Stage 5: AC busbars to quick connector

1	2	3	4	5	6	7	8	
3AXD50000433438 ACS880 Z1081 V1X5 W600 (ASSEM) A.2		We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure, in any form or by any means, without express authority is strictly forbidden. © ABB 2019. All rights reserved.		First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.				Form A3 Scale 1:10 Title ASSEMBLY DRAWING Drawn by M. ASIKKUNEN Checked by M. MICHELSSON Prepared by M. PHILAJANIEMI Date 14-Feb-19 Date 14-Feb-19 Date 12-Mar-19 Project name Weight kg
A Initial Approval		12-Mar-19 M. Philajaniemi		Title ASSEMBLY DRAWING AC880 081 W600 12P Drawn by M. ASIKKUNEN Checked by M. MICHELSSON Prepared by M. PHILAJANIEMI Date 14-Feb-19 Date 14-Feb-19 Date 12-Mar-19 Project name Weight kg				Form A3 Scale 1:10 Title ASSEMBLY DRAWING Drawn by M. ASIKKUNEN Checked by M. MICHELSSON Prepared by M. PHILAJANIEMI Date 14-Feb-19 Date 14-Feb-19 Date 12-Mar-19 Project name Weight kg
Stage 5: D8X AC busbars to quick connector. See instruction drawing 3AXD50000430574 for details.						1:5 Ordering Code: 3AXD50000422098 KIT A-6-8-182-VX		
A		B		C		D		
E		F						
G		H		Dec. des. ASSEMBLY DRAWING Scale 1:10 Form A3 Drawn by M. ASIKKUNEN Checked by M. MICHELSSON Prepared by M. PHILAJANIEMI Date 14-Feb-19 Date 14-Feb-19 Date 12-Mar-19 Project name Weight kg				



Stage 6: AC busbars to main AC installation



First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.

3AXD5000043438	A.3*	12-Mar-19	M. Pihtilainen
ACS880_200T_W600_ASSEMBLY A.2			
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A	Initial approval		

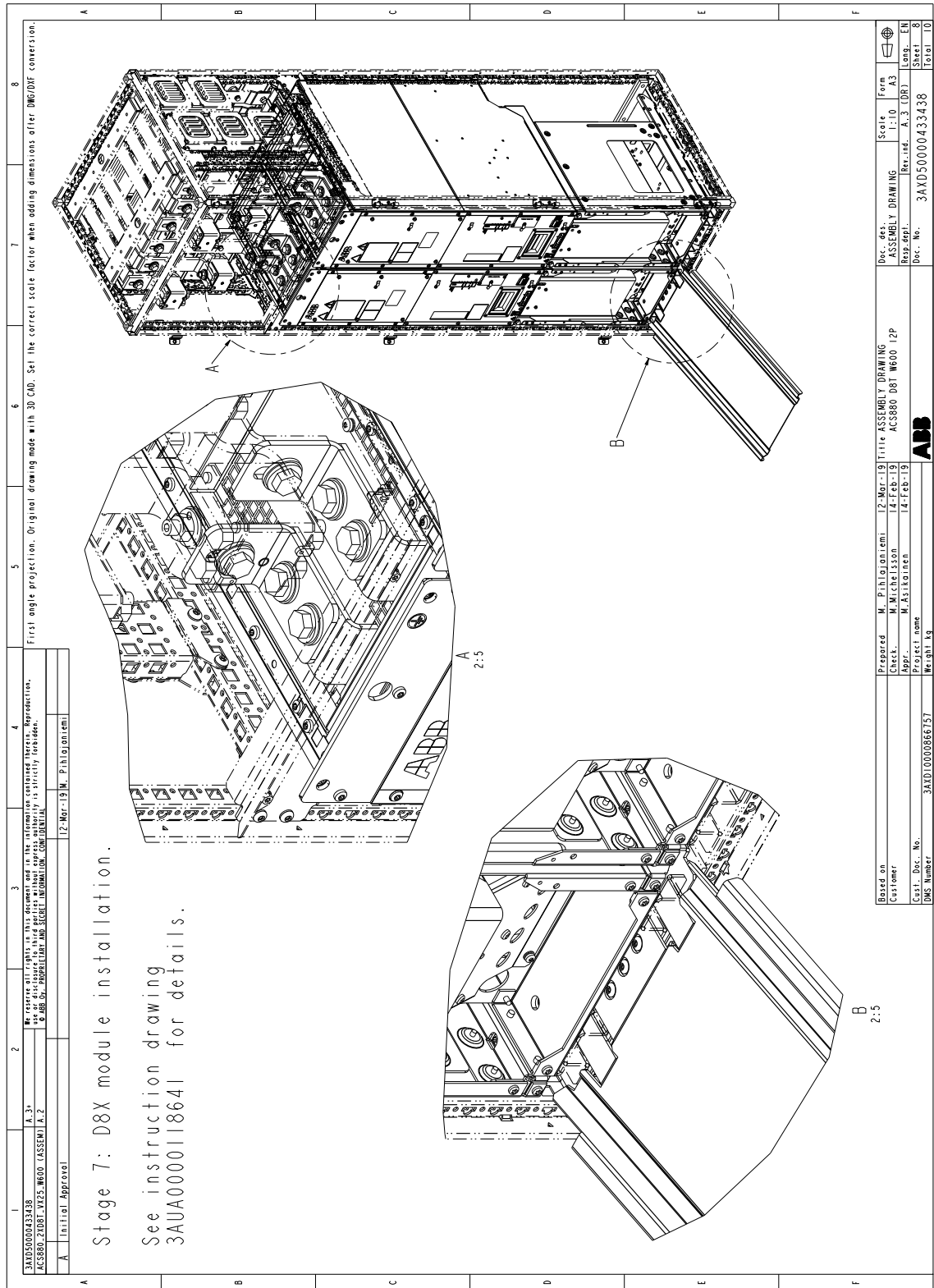
Stage 6: D8T AC busbars to main installation.  
See instruction drawing 3AXD50000432417 for details.

Ordering Code: 3AXD50000427918  
KIT A-6-8-105-VX

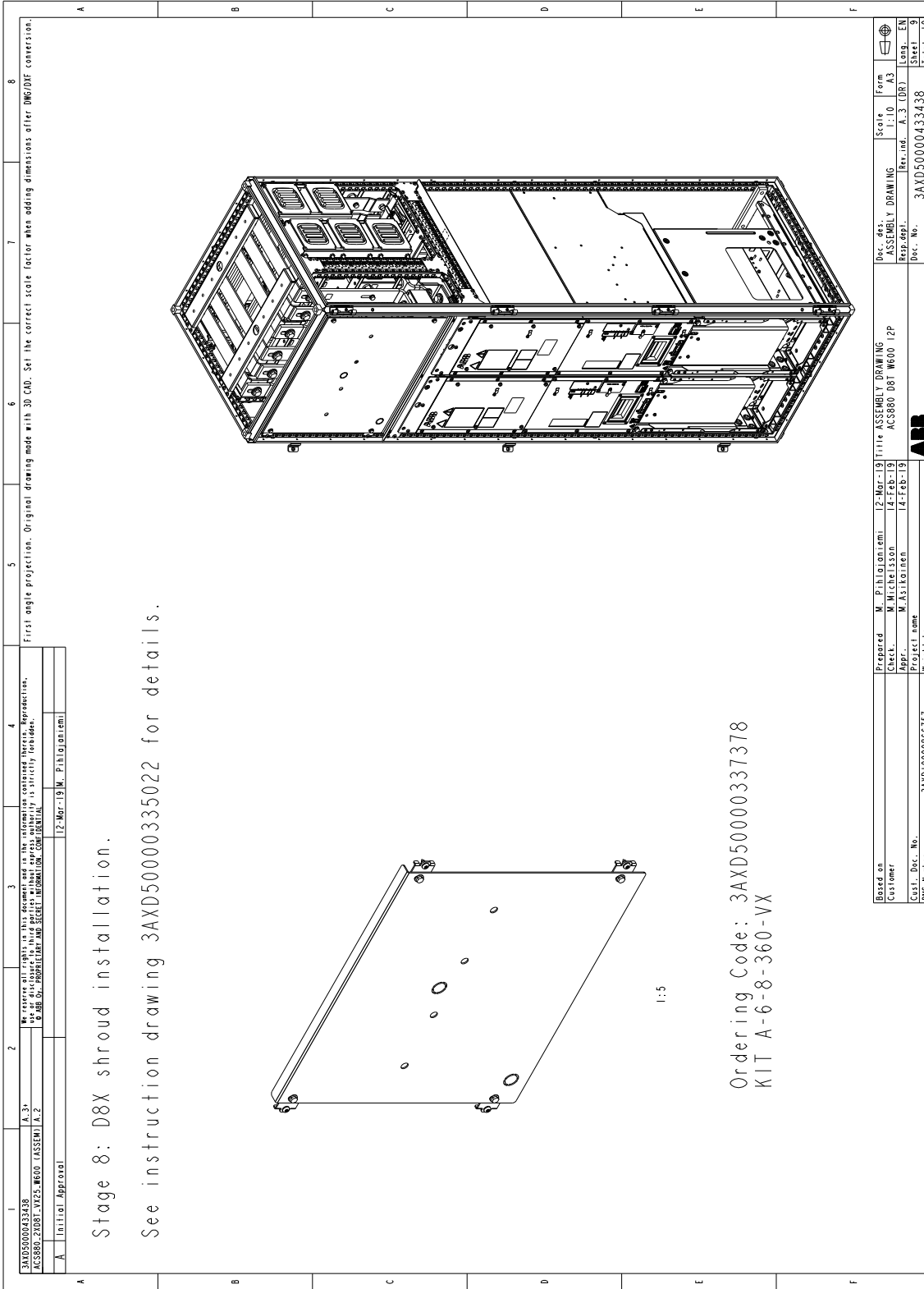
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Customer	Check.	M. Mikkelsen	14-Feb-19	ACS880 D8T W600 I2P	ASSEMBLY DRAWING	1:10	A3
Est. Doc. No.	Appr.	M. Astikainen	14-Feb-19		Rev. no.	A.3 (DR)	Loos. EN
DWG Number	Project name				Doc. No.	3AXD5000043438	Sheet 7
	Weight kg						Total 10



### Stage 7: Module installation, DC connection flanges



Stage 8: Shroud installation

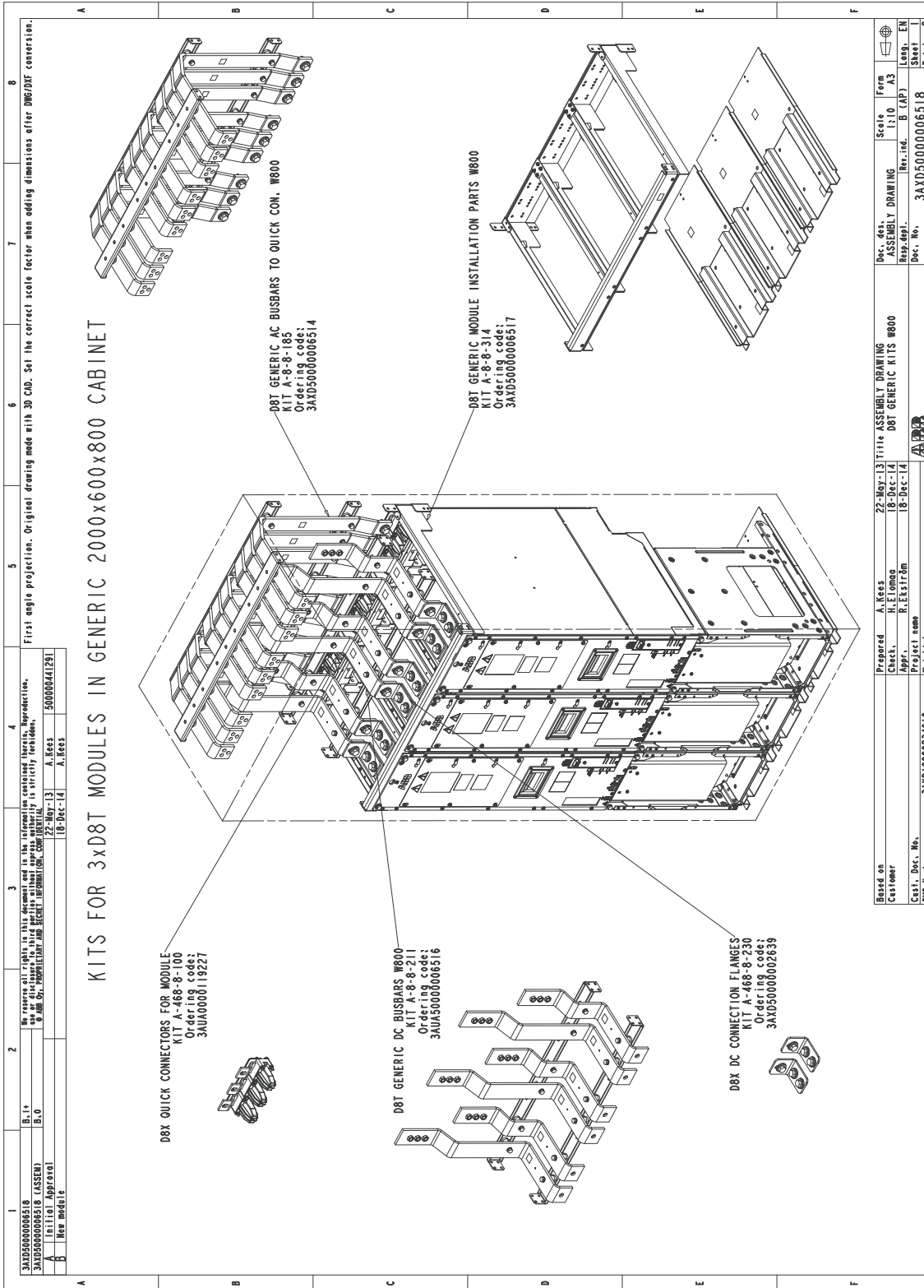


**■ Construction of supply module cubicle – 3×D8T, 6-pulse, generic cabinet**

<b>Parts to be installed</b>	<b>Instruction code</b>	<b>Kit code</b>	<b>Kit ordering code</b>
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 3xD8T, 6-pulse, generic cabinet



# 5

## Electrical installation

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### 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 multidrives cabinets and modules electrical planning instructions \(3AUA0000102324 \[English\]\)](#).

### Safety and 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 system may experience problems that the warranty does not cover.

---



## Electrical safety precautions

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

This procedure gives information on how to de-energize the drive and make it safe to do work on it. The procedure does not include all possible drive configurations.



### WARNING!

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

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

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

1. Prepare for the work.
  - Make sure that you have a work order.
  - Do an on-site risk assessment or job hazard analysis.
  - Make sure that you have the correct tools available.
  - Make sure that the workers are qualified.
  - Select the correct personal protective equipment (PPE).
  - Stop the drive and motor(s).
2. Clearly identify the work location and equipment.
3. Disconnect all possible voltage sources. Make sure that connection is not possible. Lock out and tag out.
  - If the drive is equipped with a DC/DC converter unit or a DC feeder unit: Open the disconnecting device of the energy storage connected to the unit. The disconnecting device is outside the drive cabinet. Then open the DC switch-disconnector [Q11] of the unit.
  - Open the main disconnecting device of the drive.
  - Open the charging switch if it is present.
  - Open the disconnecter 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.)
  - Open the auxiliary voltage switch-disconnector (if it is present), and all other possible disconnecting devices that isolate the drive from dangerous voltage sources.
  - If a permanent magnet motor connects to the drive, disconnect the motor from the drive with a safety switch or by other means.
  - Open the main isolating device of the drive.
  - Disconnect all dangerous external voltages from the control circuits.
  - After you disconnect power from the drive, wait 5 minutes to let the intermediate circuit capacitors discharge before you continue.
4. Protect other energized parts in the work location against contact and 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 electrical work. This includes, but is not limited to, electric shock and arc protection.

- Before and after you measure the installation, verify the operation of the voltage tester on a known voltage source.
- Make sure that the voltage between the drive input power terminals (L1, L2, L3) and the grounding (PE) busbar is zero.
- Make sure that the voltage between the drive output terminals (U, V, W) and the grounding (PE) busbar is zero.

Important! Repeat the measurement with the DC voltage setting of the voltage 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 busbars and the grounding (PE) busbar is zero.
  - If the drive is equipped with a DC/DC converter unit or a DC feeder unit: Make sure that the voltage between the energy storage terminals of the unit (ES+ and ES-) and the grounding (PE) busbar is zero.
6. Install temporary grounding as required by the local regulations.
  7. Ask for a permit to work from the person that is responsible for the electrical installation work.

## General notes



### WARNING!

Use ESD wristband when you handle printed circuit boards. Do not touch the boards unnecessarily. The boards are sensitive to electrostatic discharge.

### ■ Handling fiber optic cables



### WARNING!

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

- Handle the fiber optic cables with care.
- When you disconnect the fiber optic cables, always hold the connector, not the cable.
- Do not touch the ends of the fibers. They are 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 voltage withstand or insulation resistance tests on the drive. The tests can cause damage to the drive. Every drive is 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 EMC/RFI cat C2 filter is not suitable for use in IT (ungrounded) systems.

---



**WARNING!**

If a drive with an EMC/RFI cat C2 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.

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## Connecting the power cables and busbars

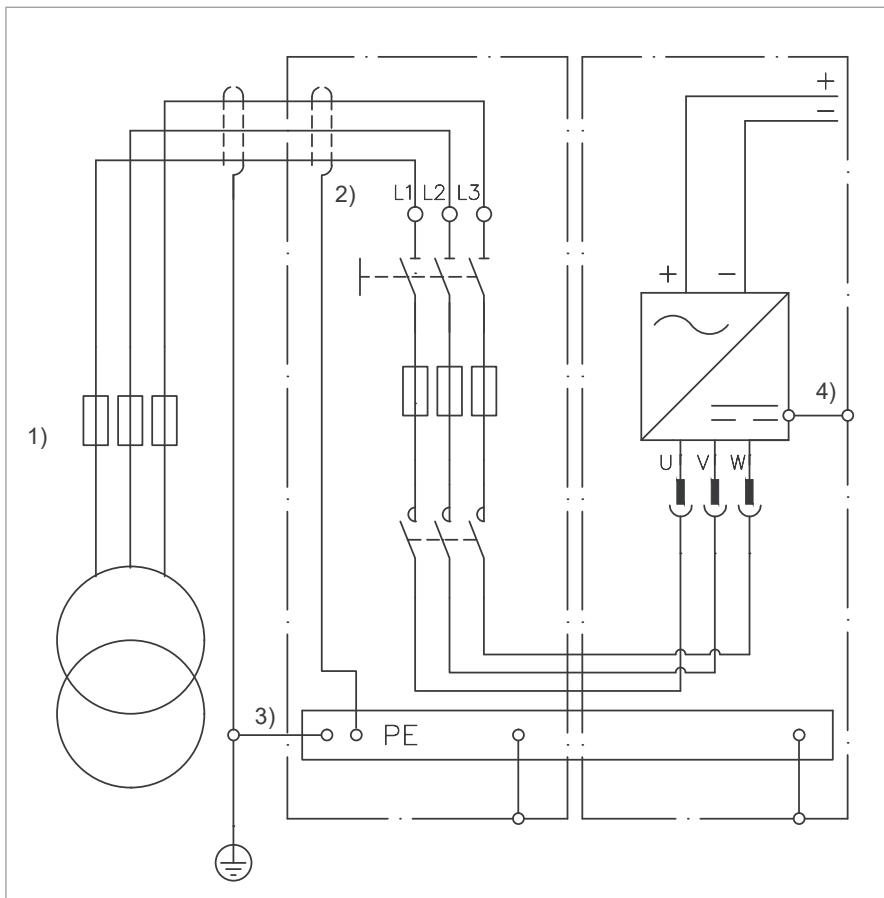
The connection diagrams in this section are templates for the final main circuit diagrams. They do not contain details, such as terminal markings, etc. and are not suitable for the installation work as such. The designer of the cabinet-installed drive must:

- 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.

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## ■ Connection diagram – 1×D8T, 6-pulse



1) Fuses or other protection means.

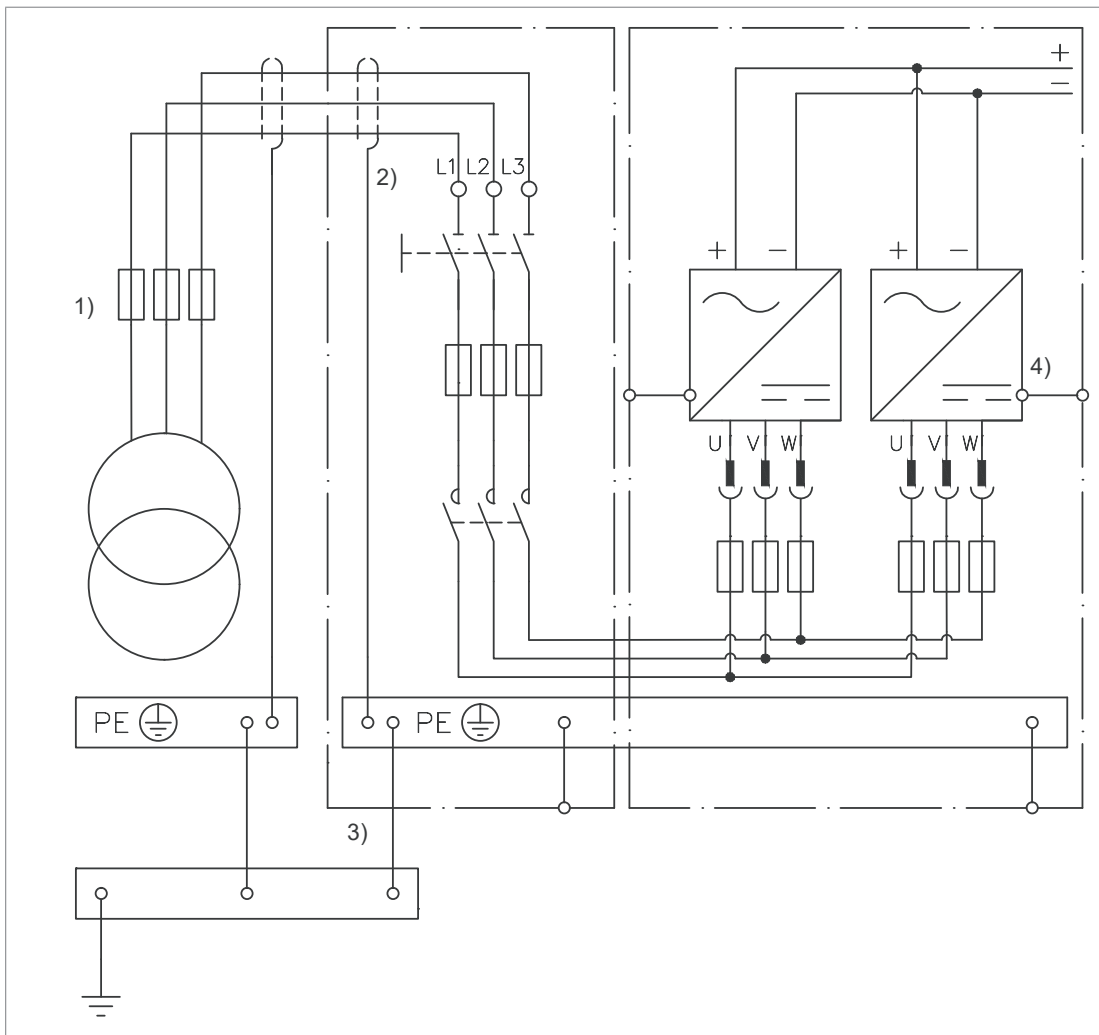
2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section [Connection procedure \(page 105\)](#).

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 \(page 105\)](#).

**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.

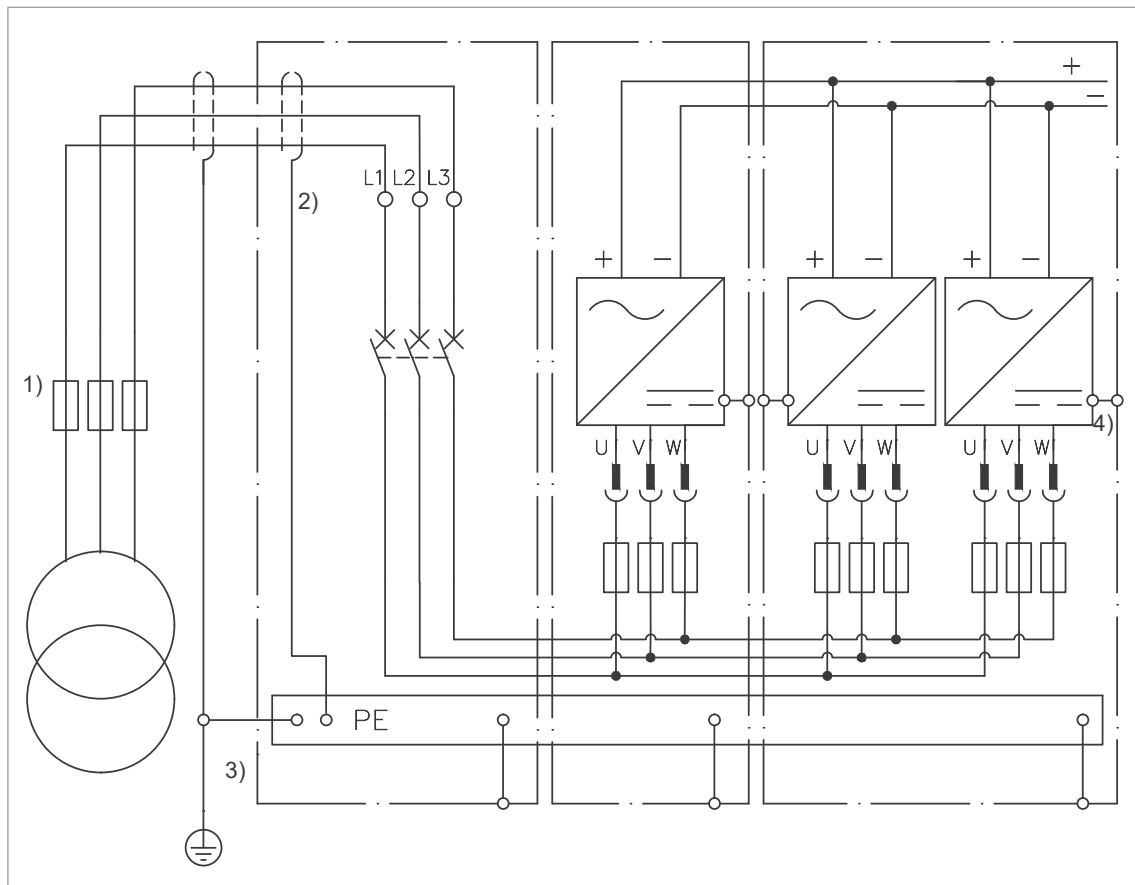
2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section [Connection procedure \(page 105\)](#).

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 \(page 105\)](#).

**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.

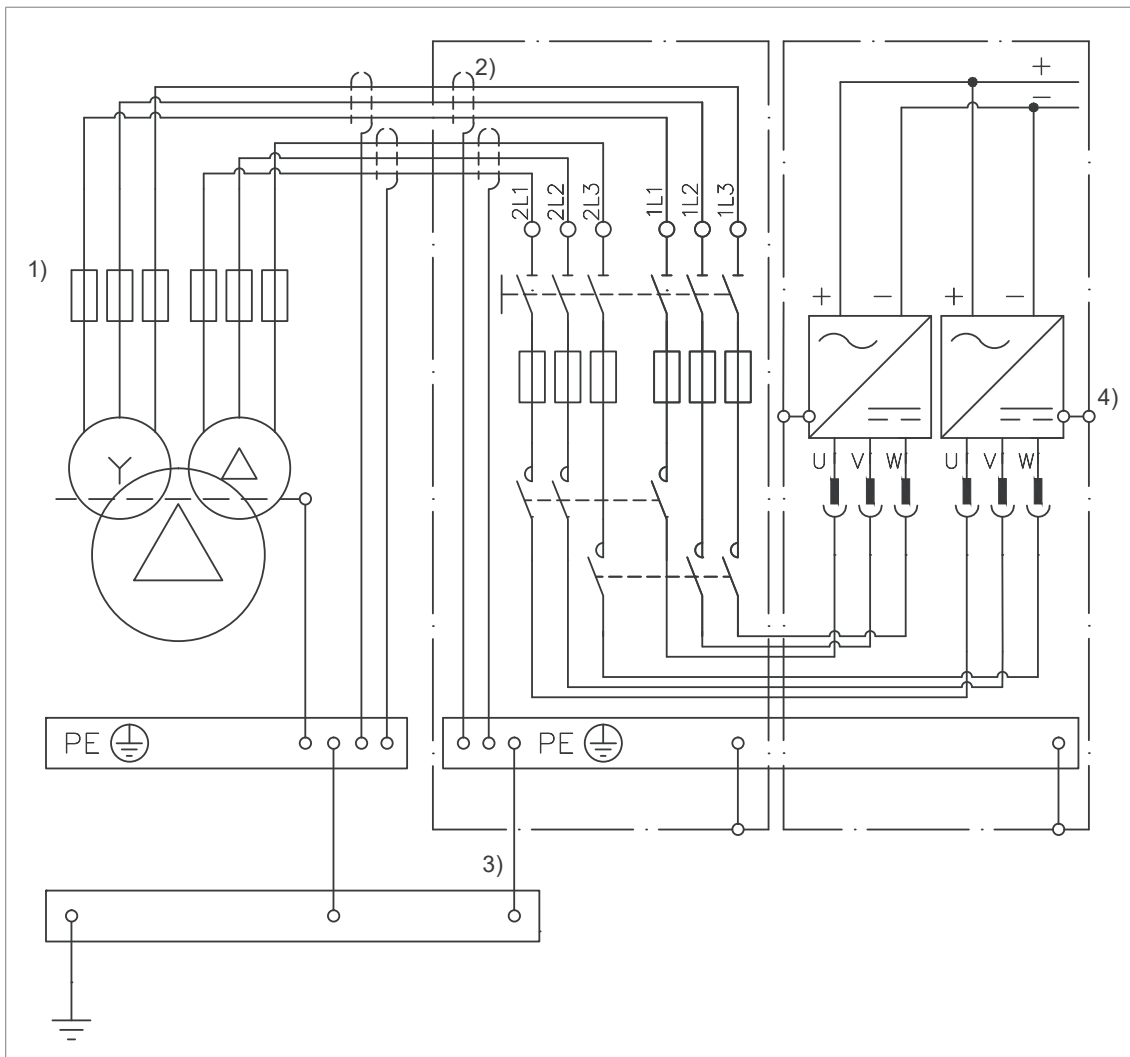
2) Ground the cable shield 360 degrees at the cable entry (recommendation). See section [Connection procedure \(page 105\)](#).

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 \(page 105\)](#).

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

## ■ Connection diagram – 2×D7T/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 \(page 105\)](#).

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 \(page 105\)](#).

**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 multidrives 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 you attach them to non-coated aluminum cable lugs. Obey the grease manufacturer's instructions. Aluminum-aluminum contact can cause oxidation in the contact surfaces.

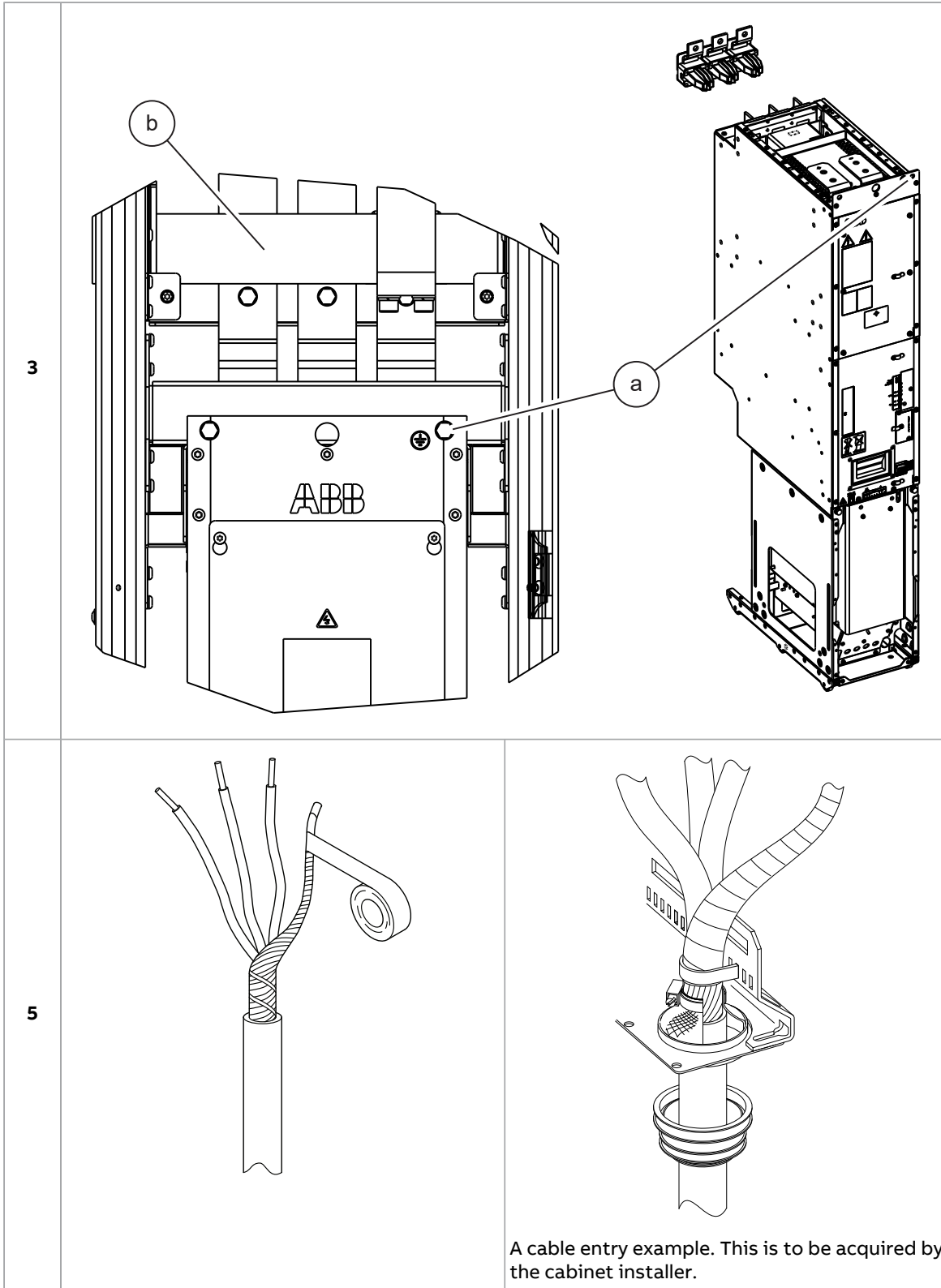
1. Disconnect the drive from the AC power line and make sure it is safe to start the work. Obey the instructions in section [Electrical safety precautions \(page 98\)](#).
2. Make the connections in between the main circuit components inside the cabinet if not done yet. Do the connections according to 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 \(page 264\)](#).
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 \(page 264\)](#).





## 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 \(page 217\)](#). See also section [Auxiliary circuit current/power consumption \(page 261\)](#).

### ■ Connection procedure



#### WARNING!

Obey the safety instructions given in [ACS880 multidrives 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 \(page 108\)](#).
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 [Control unit \(UCU\) \(page 113\)](#) or [Control unit \(BCU\) \(page 125\)](#) and sections [Auxiliary circuit current/power consumption \(page 261\)](#).

The plug connector is available from ABB. See section [Control circuit plug connectors for supply modules \(page 217\)](#).

## ■ Connection procedure



### **WARNING!**

Obey the safety instructions given in [ACS880 multidrives 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 \(page 108\)](#).
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.



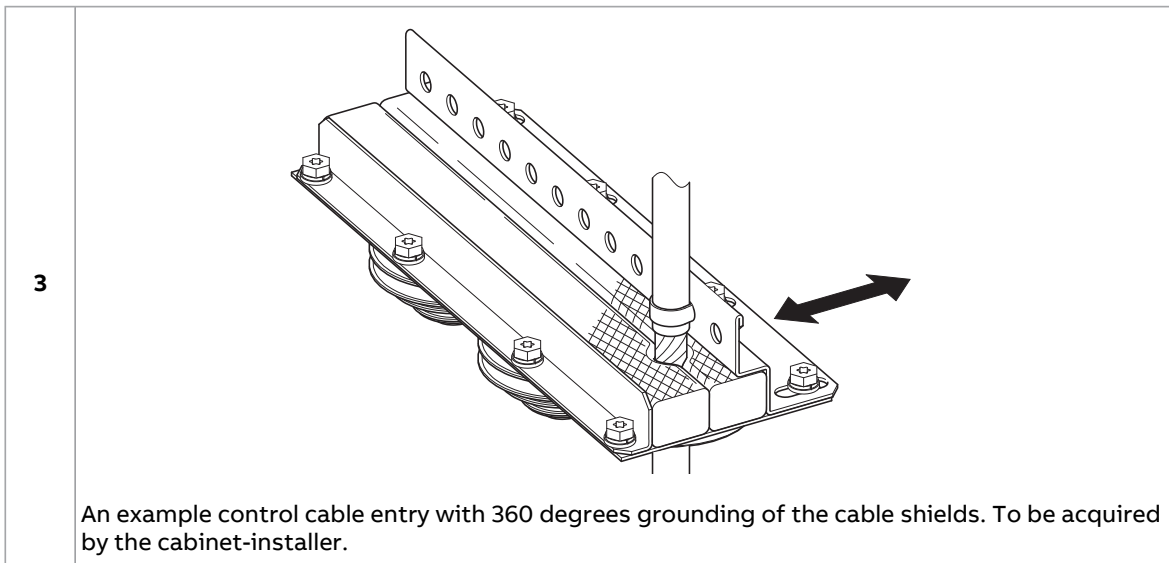
### **WARNING!**

Obey the safety instructions given in [ACS880 multidrives 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 \(page 128\)](#).
  8. Fasten the shrouds (if any) and close the doors.



### ■ Connecting a PC



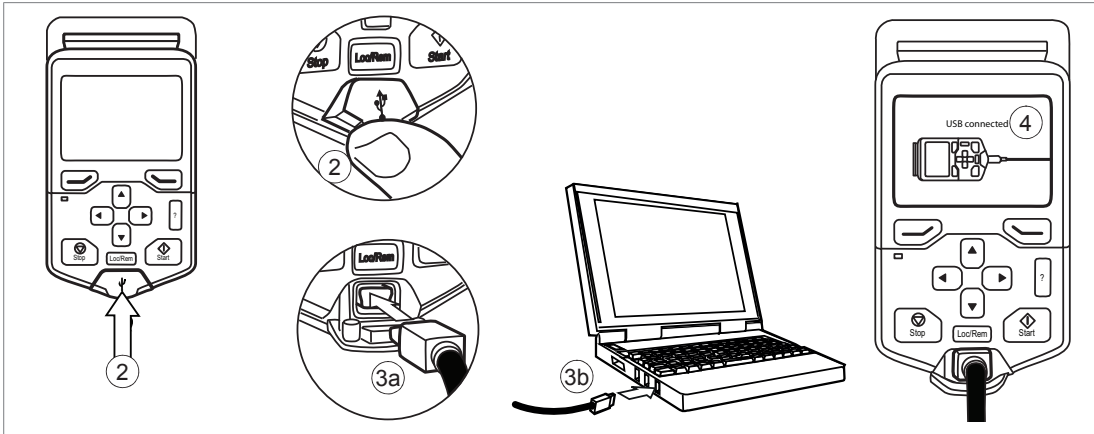
#### **WARNING!**

Do not connect the PC directly to the control panel connector of the control unit. It can cause damage.

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

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

## 110 Electrical installation



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



### WARNING!

Use ESD wristband when you handle printed circuit boards. Do not touch the boards unnecessarily. The boards are sensitive to electrostatic discharge.

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

1. Stop the drive and do the steps in section [Electrical safety precautions \(page 98\)](#) before you start the work.
2. Pull out the lock (a) with a screw driver.

**Note:** The location of the lock depends on the module type.

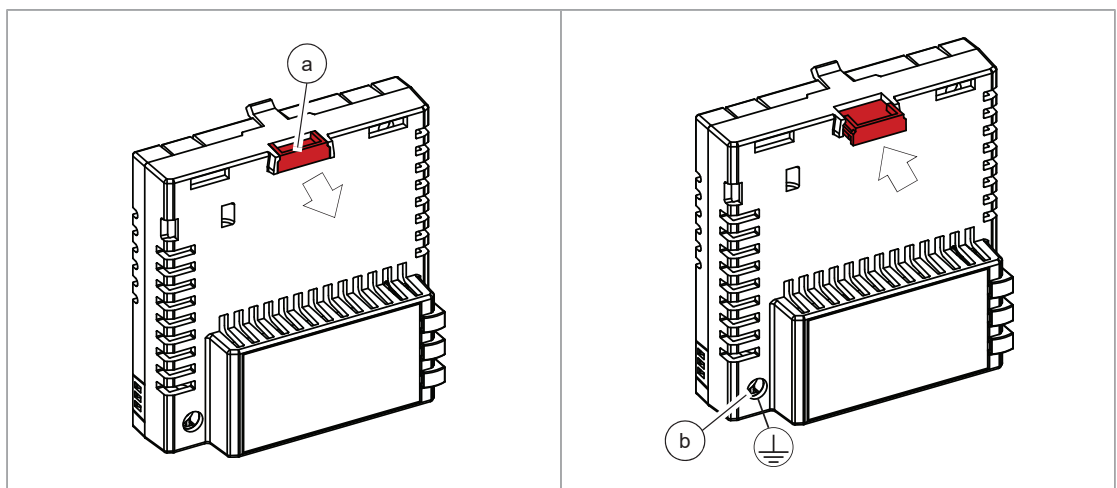
3. Install the module to a free option module slot on the control unit.
4. Push in the lock (a).
5. Tighten the grounding screw (b) to a torque of 0.8 N·m (7 lbf·in).

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



### WARNING!

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



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

If you must remove the option module after it is installed into the drive, use a suitable tool (for example, small pliers) to carefully pull out the lock.





## Control unit (UCU)

---

### Contents of this chapter

This chapter

- gives information on the connections of the control unit, and
- has the specifications of the inputs and outputs of the control unit.

### General

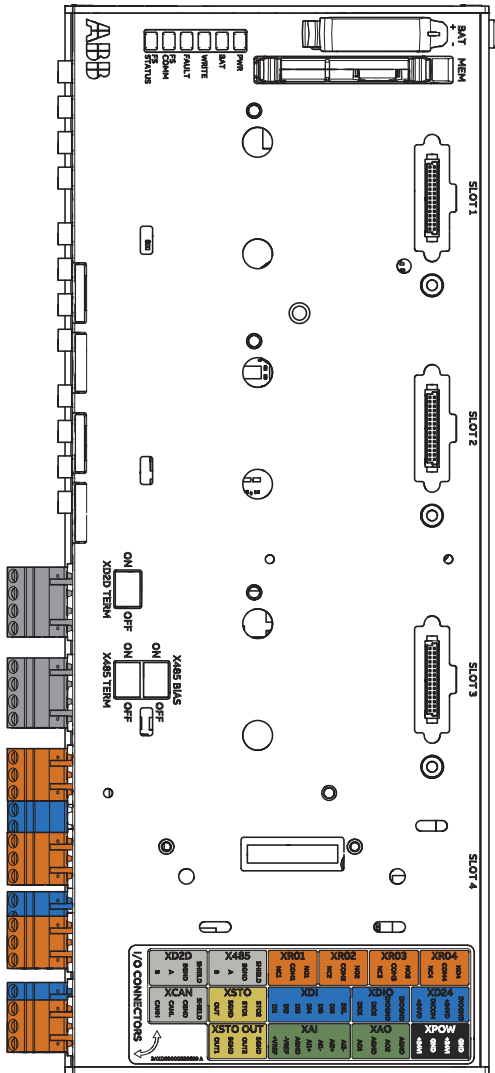
The UCU control units are used for controlling power modules (drive, inverter, supply, converter, etc) via fiber optic links. UCU-22 has two, UCU-23 has eight and UCU-24 has 14 power module connections. The UCU control units have integrated branching unit functionality for collecting and storing real-time data from the power modules to help fault tracing and analysis. The data is stored on a memory card which can be analyzed by ABB service personnel.

### Layout

The figures below show an example UCU-24 control unit.

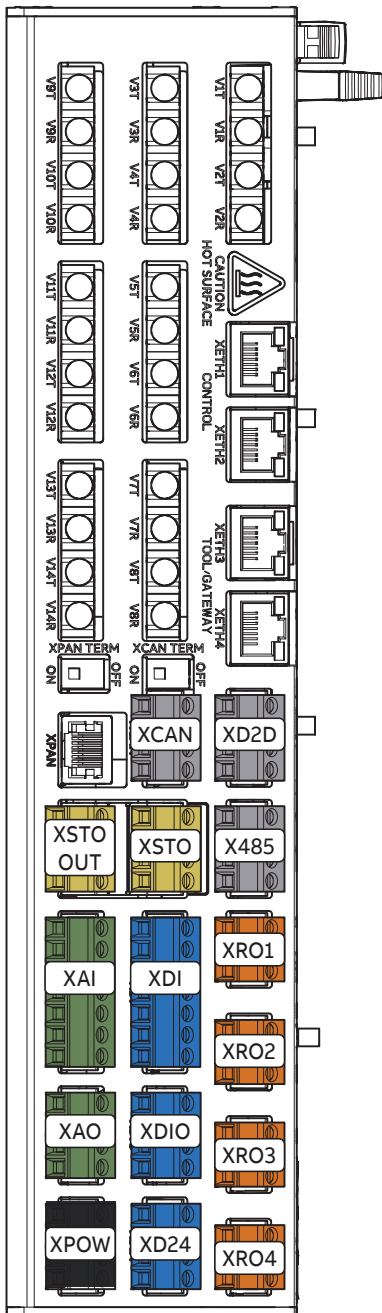
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# 114 Control unit (UCU)



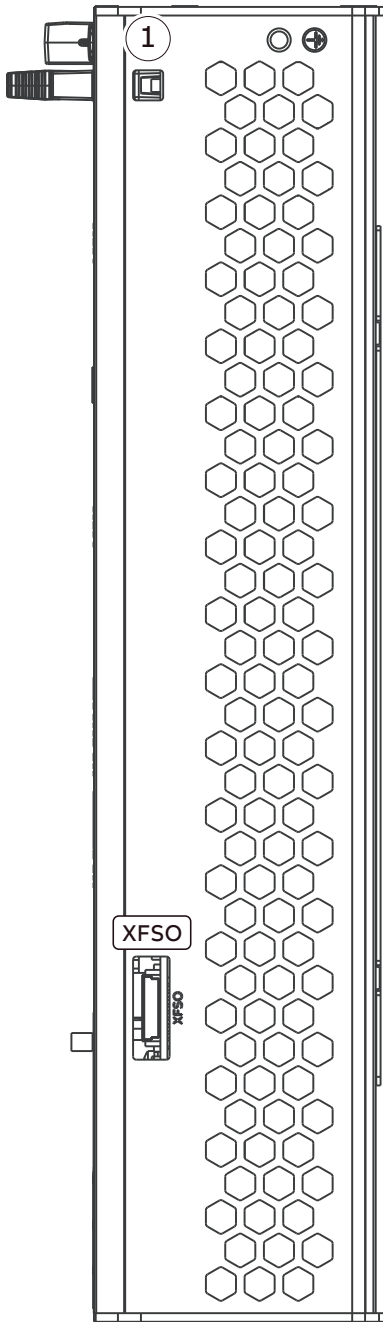
	Description
I/O	I/O terminals
SLOT 1	I/O extension, encoder interface or fieldbus adapter module connection. For F-type modules with USCA-02 adapter.
SLOT 2	
SLOT 3	
SLOT 4	RDCO-0x DDCS communication option module connection
MEM	UMU-01 memory unit connection. Data logger microSDHC memory card for inverter module communication is inside the memory unit.
BAT	Holder for real-time clock battery (BR2032)
XD2D TERM	Termination switches for drive-to-drive link (XD2D)
X485 TERM	RS-485 link termination switch
X485 BIAS	RS-485 link bias switch.
DICOM=DIOGND	Ground selection. Determines whether DICOM is separated from DIOGND (ie. the common reference for the digital inputs floats). Refer to the ground isolation diagram.

LED	Description
PWR	When the PWR LED is on, the voltage supply is sufficient.
BAT	When the BAT LED is on, the real-time clock battery voltage is higher than 2.5 V. If the LED is off, replace the battery.
WRITE	When the WRITE LED is on, writing to microSDHC memory card is in progress. Do not remove the microSDHC memory card.
FAULT	The control program has generated a fault. Refer to the firmware manual.
FS COMM	Reserved.
FS STATUS	Reserved.



	Description
XAI	Analog input
XAO	Analog output
XCAN	Not in use
XCAN TERM	CAN bus termination switch
XDI	Digital input
XDIO	Digital input/output
XD2D	Drive-to-drive link
XD24	+24 V output (for digital input)
XETH1	Ethernet ports for fieldbus, internal switch
XETH2	
XETH3	Ethernet ports for tool communication, internal switch
XETH4	
XPAN	Control panel connection
XPAN TERM	Panel bus termination switch
XPOW	External power input
XRO1	Relay output RO1
XRO2	Relay output RO2
XRO3	Relay output RO3
XRO4	Relay output RO4, reserved.
XSTO	Safe torque off connection (input signals)
XSTO OUT	Safe torque off connection (to inverter modules)
X485	RS-485 link
V1T/V1R ... V14T/V14R	Fiber optic connections to converter modules (VxT = transmitter, VxR = receiver)





116 Control unit (UCU)




	Description
XFSO	Not in use
1	Humidity and temperature measurements


## Default I/O diagram of the supply control unit

This table describes the use of the connections in the diode supply unit.

Terminal			Description
XD2D			Drive-to-drive link
1	1	B	Not supported
2	2	A	
3	3	BGND	
4	4	SHIELD	
	XD2D.TERM		Drive-to-drive link termination switch
X485			RS485 connection
5	5	B	Not in use by default
6	6	A	
7	7	BGND	
8	8	SHIELD	
	X485 BIAS		X485 bias selection switch
	X485 TERM		X485 termination switch
XCAN			CAN bus
9	9	CANH	Not supported
10	10	CANL	
11	11	CGND	
12	12	SHIELD	Control cable shield
	XCAN TERM		CANopen termination switch
XRO1			Relay output 1
11	11	NC1	Norm. closed
12	12	COM1	Common
13	13	NO1	Norm. open
			XRO1: Running <sup>1)</sup> (Energized = running) 250 V AC / 30 V DC, 2 A
XRO2			Relay output 2
21	21	NC2	Norm. closed
22	22	COM2	Common
23	23	NO2	Norm. open
			XRO2: Fault (-1) <sup>1)</sup> (Energized = no fault) 250 V AC / 30 V DC, 2 A
XRO3			Relay output 3
31	31	NC3	Norm. closed
32	32	COM3	Common
33	33	NO3	Norm. open
			XRO3: MCB ctrl <sup>2)</sup> (Energized = Closes main contactor/breaker.) 250 V AC / 30 V DC, 2 A
XRO4			Relay output 4

## 118 Control unit (UCU)

Terminal			Description
41	41	NC4	Norm. closed
42	42	COM4	Common
43	43	NO4	Norm. open
			XRO4: Not supported 250 V AC / 30 V DC, 2 A
XSTO			Safe torque off input connection
1	1	OUT	XSTO: STO1 and STO2 are connected to OUT at the factory. To enable start and operation, STO1 and STO2 must be connected to OUT.
2	2	SGND	
3	3	STO1	
4	4	STO2	
XSTO OUT			Safe torque off output connection (to inverter modules)
5	5	OUT1	XSTO OUT: Not in use
6	6	SGND	
7	7	OUT2	
8	8	SGND	
XDI			Digital inputs
1	1	DI1	Temp fault <sup>1)</sup> (0 = overtemperature)
2	2	DI2	Run enable and Start/Stop <sup>1)</sup> (1 = Run enable, Start)
3	3	DI3	MCB feedback <sup>2)</sup> (0 = main contactor/breaker open)
4	4	DI4	Auxiliary circuit breaker fault <sup>1)</sup>
5	5	DI5	Not in use by default. Can be used for eg, earth fault monitoring.
6	6	DI6	Reset <sup>1)</sup> (0 -> = fault reset)
7	7	DIIL	Not in use by default. DIIL is connected to XD24:5 at the factory.
XDIO			Digital input/outputs
1	1	DIO1	Not in use by default
2	2	DIO2	Not in use by default
3	3	DIOGND	Digital input/output ground
4	4	DIOGND	Digital input/output ground
XD24			Auxiliary voltage output
5	5	+24VD	+24 V DC 200 mA <sup>3)</sup>
6	6	DICOM	Digital input ground
7	7	+24VD	+24 V DC 200 mA <sup>3)</sup>
8	8	DIOGND	Digital input/output ground
	DICOM=DIOGND		Ground selection switch. Determines whether DICOM is separated from DIOGND (ie, common reference for digital inputs floats). ON: DICOM connected to DIOGND. OFF: DICOM and DIOGND separate.
XAI			Analog inputs, reference voltage output
1	1	+VREF	10 V DC, $R_L$ 1...10 kohm
2	2	-VREF	-10 V DC, $R_L$ 1...10 kohm
3	3	AGND	Ground
4	4	AI1+	Not in use by default. 0(2)...10 V, $R_{in} > 200$ kohm <sup>4)</sup>
5	5	AI1-	
6	6	AI2+	Not in use by default. 0(4)...20 mA, $R_{in} = 100$ ohm <sup>5)</sup>
7	7	AI2-	

Terminal		Description
XAO		Analog outputs
1	1	AO1
2	2	AGND
3	3	AO2
4	4	AGND
		Zero (no signal indicated) <sup>1)</sup> 0...20 mA, $R_L < 500$ ohm
		Zero (not signal indicated) <sup>1)</sup> 0...20 mA, $R_L < 500$ ohm
XPOW		External power input
1	1	+24VI
2	2	GND
3	3	+24VI
4	4	GND
		19...32 V DC, 1.5...2.9 A (depends on the load and supply voltage)
		External power input
		Two supplies can be connected to the control unit for redundancy.
XFSO		Safety functions module connection. Not supported in diode supply modules.
XETH1		Ethernet ports for fieldbus. Support depends on the firmware. Refer to the firmware manual.
XETH2		
XETH3		Ethernet ports for tool communication. Support depends on the firmware. Refer to the firmware manual.
XETH4		
XPAN		Control panel connection
	XPAN TERM	Control panel connection termination switch. Used for panel bus configuration.
MEM		Memory unit connection

<sup>1)</sup> Default use of the signal in the control program. The use can be changed by a parameter. For the delivery-specific use, see the delivery-specific circuit diagrams.

<sup>2)</sup> Use of the signal in the control program. The use is fixed and it cannot be changed by a parameter.

<sup>3)</sup> Total load capacity of these outputs is 4.8 W (200 mA at 24 V) minus the power taken by DIO1 and DIO2.

<sup>4)</sup> Current [0(4)...20 mA,  $R_{in} = 100$  ohm] or voltage [0(2)...10 V,  $R_{in} > 200$  kohm]. Change of setting requires reboot of control unit.

<sup>5)</sup> Current [0(4)...20 mA,  $R_{in} = 100$  ohm] or voltage [0(2)...10 V,  $R_{in} > 200$  kohm]. Change of setting requires reboot of control unit.

## Additional information on the connections

### ■ Power supply for the control unit (XPOW)

Connect a power supply to the control unit through terminal block XPOW.

Refer to the control unit connector data for the current and voltage ratings of the power supply.

Connect an additional external power supply to the free +24 V and GND terminals of the XPOW terminal block if:

- the control unit must be kept operational during input power breaks, for example, because of continuous fieldbus communication
- immediate restart is necessary after a power break (that is, no control unit power-up delay is permitted).

### ■ Digital interlock (DIIL)

Digital interlock input (DIIL) terminal is originally intended for interlock signals that stop the drive/unit when necessary. In the ACS880 primary control program, DIIL terminal is the source for the run enable signal by default. The inverter unit or drive

cannot start, or it stops when there is no DIIL signal. In other control programs (and units), the default use of the DIIL terminal varies. Refer to firmware manual for more information.

**Note:** This input is **not** SIL or PL classified.

### ■ **Control panel connection (XPAN)**

The XPAN connector can be used to connect an assistant control panel or FDPI-02 diagnostics and panel interface unit to the control unit. With FDPI-02, it is possible to connect one control panel to two or more control units in a chain topology, also known as a panel bus. For more information, refer to [FDPI-02 diagnostics and panel interface user's manual \(3AUA0000113618 \[English\]\)](#).

The XPAN TERM switch sets the termination for the panel bus. Must be set to ON if there is no panel bus, or if the control unit is the last one in a panel bus. On intermediate units in a panel bus, set termination to OFF (1).

### ■ **Safe torque off (XSTO, XSTO OUT)**

The XSTO input only acts as a true Safe torque off input on the inverter control unit. De-energizing the STO input terminals of other control units (supply, DC/DC converter, or brake unit) stops the unit but does not constitute a SIL/PL classified safety function.

### ■ **MicroSDHC memory card slot**

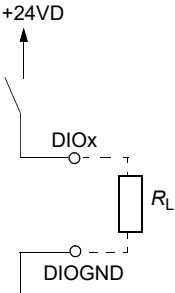
The control unit has an on-board data logger that collects real-time data from the power modules to help fault tracing and analysis. The data is stored onto the microSDHC memory card inserted into the UMU-01 memory unit and can be analyzed by ABB service personnel.

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## Connector data

The wire size accepted by all screw terminals (for both stranded and solid wire) is 0.5 ... 2.5 mm<sup>2</sup> (22...12 AWG). Connector pitch is 5 mm.

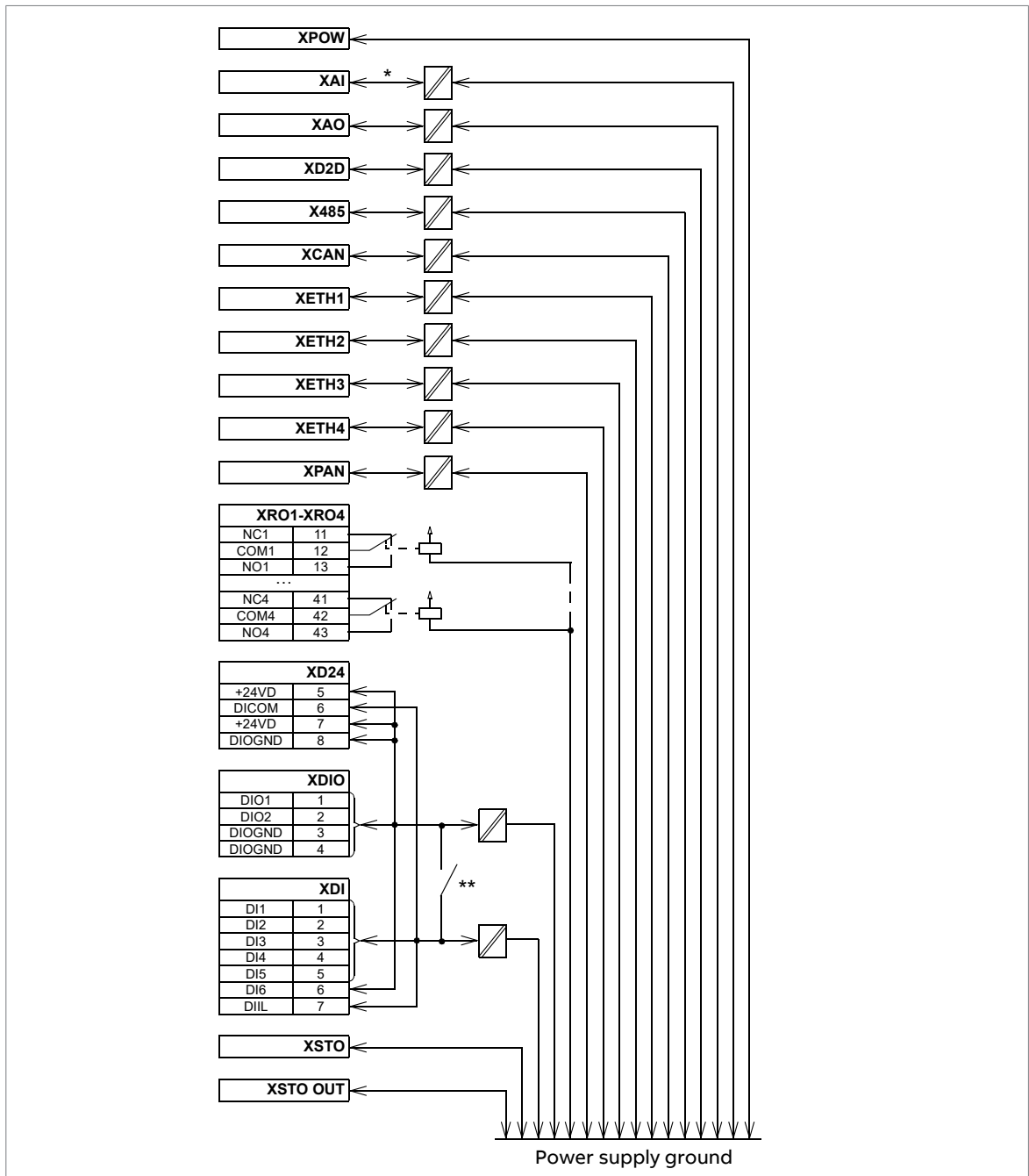
Maximum tightening torque of the screw terminals is 0.45 N·m (4 lbf·in).

Power supply (XPOW)	19...32 V DC, 1.5 ... 2.9 A (depends on the load and supply voltage) External power input. Two supplies can be connected to the control unit for redundancy.
Relay outputs XRO1...XRO4	250 V AC / 30 V DC, 2 A Protected by varistors
+24 V output (XD24:2 and XD24:4)	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)	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 $I_{max}$ : 15 mA (DI1...DI5), 5 mA (DI6)
Start interlock input DIIL (XDI:7)	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...100 kHz with hardware filtering of 4 microseconds) for 24 V level square wave signal (sinusoidal or other wave form cannot be used). In some control programs, DIO2 can be configured as a 24 V level square wave frequency output. Refer to the firmware manual, parameter group 11.	<p><u>As inputs:</u> 24 V logic levels: "0" &lt; 5 V, "1" &gt; 15 V. <math>R_{in}</math>: 2.0 kohm. Filtering: 1 ms.</p> <p><u>As outputs:</u> Total output current from +24VD is limited to 200 mA</p> 
Reference voltage for analog inputs +VREF and -VREF (XAI:1 and XAI:2)	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 parameters 12.15 AI1 unit selection and 12.25 AI2 unit selection	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 Resolution: 11 bit + sign bit Inaccuracy: 1% of full scale range
Analog outputs AO1 and AO2 (XAO)	0...20 mA, $R_{load}$ < 500 ohm Frequency range: 0...500 Hz Resolution: 11 bit + sign bit Inaccuracy: 2% of full scale range

## 122 Control unit (UCU)

XD2D connector	<p>Physical layer: RS-485</p> <p>Transmission rate: 8 Mbit/s</p> <p>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)</p> <p>Maximum length of link: 50 m (164 ft)</p> <p>Termination by switch</p>
RS-485 connection (X485)	<p>Physical layer: RS-485</p> <p>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)</p> <p>Maximum length of link: 50 m (164 ft)</p> <p>Termination and bias by switch (X485 TERM and X485 BIAS)</p>
CAN connection (XCAN)	<p>Termination by switch (XCAN TERM)</p> <p>This connection is not supported by the ACS880 control programs.</p>
Safe torque off connection (XSTO)	<p>Input voltage range: -3...30 V DC</p> <p>Logic levels: "0" &lt; 5 V, "1" &gt; 17 V.</p> <p><b>Note:</b> Both circuits must be closed to enable start and operation (STO1 and STO2 must be connected to OUT). This applies to all control units (including drive, inverter, supply, brake, DC/DC converter etc. control units), but SIL/PL classified Safe torque off functionality is only achieved through the XSTO connector of the drive/inverter control unit.</p> <p>Current consumption (continuous) per STO channel: 10 mA. The number of parallel inverter modules does not have an effect on the current consumption.</p> <p>EMC (immunity) according to IEC 61326-3-1 and IEC 61800-5-2</p>
Safe torque off output (XSTO OUT)	To STO connector of inverter module.
Control panel connection (XPAN)	<p>Connector: RJ-45</p> <p>Cable length &lt; 50 m (164 ft)</p> <p>Termination by switch (XPAN TERM)</p>
Fieldbus Ethernet connection with internal switch (XETH1 and XETH2)	<p>Connector: RJ-45</p> <p>Cable type: minimum requirement CAT5e</p>
microSDHC memory card slot (microSDHC CARD)	<p>Memory card type: microSDHC (minimum of class 4 speed grade)</p> <p>Supported memory size: 4 GB...32 GB</p>
Battery	Real-time clock battery type: BR2032
<p>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.</p>	

## ■ Ground isolation diagram



\*The maximum common mode voltage between each AI input and AGND is  $\pm 30$  V.

### \*\*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.





## Control unit (BCU)

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### Contents of this chapter

This chapter

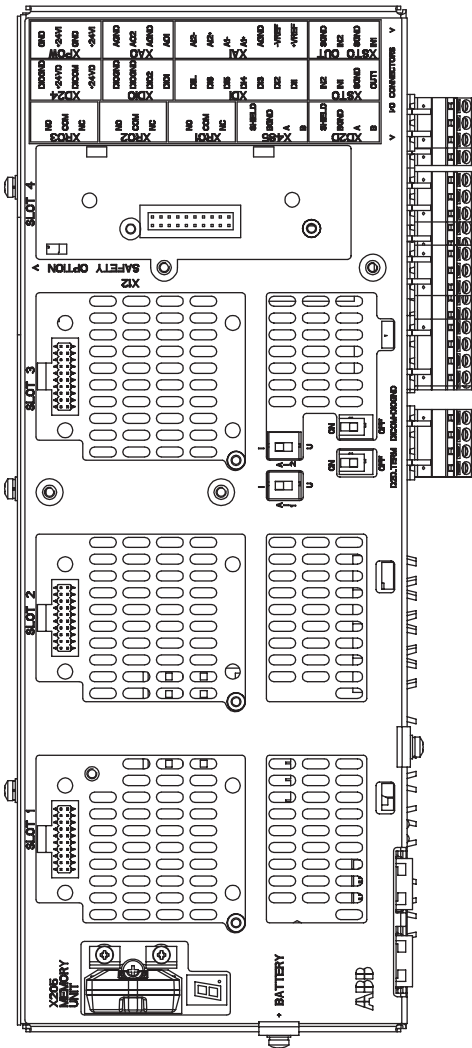
- gives information on the connections of the control unit, and
- has the specifications of the inputs and outputs of the control unit.

### General

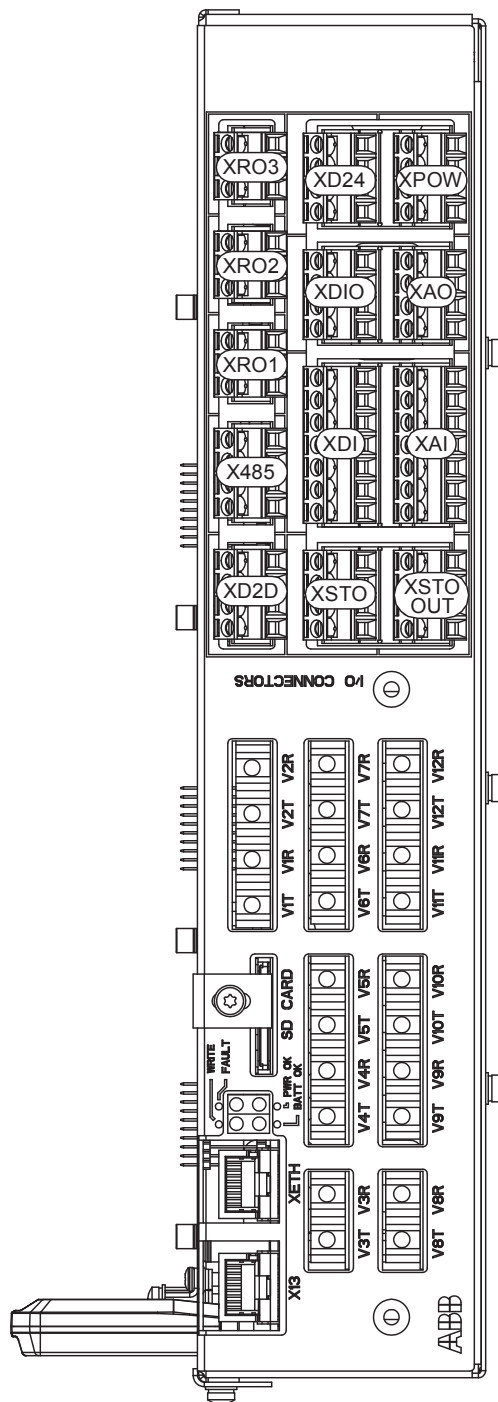
The control unit controls the supply unit. The control unit consists of a control board built in a metal housing.

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# 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 safety functions module connection
SLOT 4	RDCO 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.
<b>7-segment display</b>	
Multicharacter indications are displayed as repeated sequences of characters	
	("U" is indicated briefly before "o".) Control program running
	Control program startup in progress
	(Flashing) Firmware cannot be started. Memory unit missing or corrupted
	Firmware download from PC to control unit in progress
	At power-up, the display may show short indications of eg. "1", "2", "b" or "U". These are normal indications immediately after power-up. If the display ends up showing any other value than those described, it indicates a hardware failure.





























	Description
XAI	Analog inputs
XAO	Analog outputs
XDI	Digital inputs, Digital input interlock (DIIL)
XDIO	Digital input/outputs
XD2D	Drive-to-drive link
XD24	+24 V output (for digital inputs)
XETH	Ethernet port – Not in use
XPOW	External power input
XRO1	Relay output RO1
XRO2	Relay output RO2
XRO3	Relay output RO3
XSTO	Safe torque off connection (input signals)
XSTO OUT	Safe torque off connection (to inverter modules)
X12	(On the opposite side) Connection for FSO safety functions module (optional)
X13	Control panel, PC connection through the control panel
X485	Not in use by default
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 and BCU-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 is sufficient
WRITE	Writing to memory card in progress. Do not remove the memory card.

## Default I/O diagram of the supply control unit

This table describes the use of the connections in the diode supply unit.

Terminal			Description	
XD2D			Drive-to-drive link	
1	1	B	Not supported	
2	2	A		
3	3	BGND		
4	4	Shield		
	D2D.TERM		Drive-to-drive link termination switch	
X485			RS485 connection	
5	5	B	Not in use by default	
6	6	A		
7	7	BGND		
8	8	Shield		
XRO1, XRO2, XRO3			Relay outputs	
11	11	NC	Norm. closed	XRO1: Running <sup>1)</sup> (Energized = running) 250 V AC / 30 V DC, 2 A
	12	COM	Common	
	13	NO	Norm. open	
21	21	NC	Norm. closed	XRO2: Fault (-1) <sup>1)</sup> (Energized = no fault) 250 V AC / 30 V DC, 2 A
	22	COM	Common	
	23	NO	Norm. open	
31	31	NC	Norm. closed	XRO3: MCB ctrl <sup>2)</sup> (Energized = Closes main contactor/breaker.) 250 V AC / 30 V DC, 2 A
	32	COM	Common	
	33	NO	Norm. open	
XSTO			Safe torque off input connection	
1	1	OUT	XSTO: IN1 and IN2 are connected to OUT at the factory. To enable start and operation, IN1 and IN2 must be connected to OUT.	
2	2	SGND		
3	3	IN1		
4	4	IN2		
XSTO OUT			Safe torque off output connection (to inverter modules)	
5	5	IN1	XSTO OUT: Not in use	
6	6	SGND		
7	7	IN2		
8	8	SGND		
XDI			Digital inputs	
1	1	DI1	Temp fault <sup>1)</sup> (0 = overtemperature)	
2	2	DI2	Run enable and Start/Stop <sup>1)</sup> (1 = Run enable, Start)	
3	3	DI3	MCB feedback <sup>2)</sup> (0 = main contactor/breaker open)	
4	4	DI4	Auxiliary circuit breaker fault <sup>1)</sup>	
5	5	DI5	Not in use by default. Can be used for eg. earth fault monitoring.	
6	6	DI6	Reset <sup>1)</sup> (0 -> 1 = fault reset)	
7	7	DIIL	Not in use by default. DIIL is connected to XD24:5 at the factory.	

Terminal		Description	
XDIO		Digital input/outputs	
	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	+24VD	+24 V DC 200 mA <sup>3)</sup>
	6	DICOM	Digital input ground
	7	+24VD	+24 V DC 200 mA <sup>3)</sup>
	8	DIOGND	Digital input/output ground
	DICOM=DIOGND		Ground selection switch. Determines whether DICOM is separated from DIOGND (ie, common reference for digital inputs floats). ON: DICOM connected to DIOGND. OFF: DICOM and DIOGND separate.
XAI		Analog inputs, reference voltage output	
	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 <sup>4)</sup>
	5	AI1-	
	6	AI2+	Not in use by default. 0(4)...20 mA, $R_{in} = 100$ ohm <sup>5)</sup>
	7	AI2-	
	AI1		AI1 current/voltage selection switch
	AI2		AI2 current/voltage selection switch
XAO		Analog outputs	
	1	AO1	Zero (no signal indicated) <sup>1)</sup> 0...20 mA, $R_L < 500$ ohm
	2	AGND	
	3	AO2	Zero (not signal indicated) <sup>1)</sup> 0...20 mA, $R_L < 500$ ohm
	4	AGND	
XPOW		External power input	
	1	+24VI	24 V DC ( $\pm 10\%$ ), 2 A External power input Two supplies can be connected to the control unit for redundancy.
	2	GND	
	3	+24VI	
	4	GND	
X12		Safety functions module connection. Not in use by default in diode supply unit.	
X13		Control panel connection	
X205		Memory unit connection	

1) Default use of the signal in the control program. The use can be changed by a parameter. For the delivery-specific use, see the delivery-specific circuit diagrams.

2) Use of the signal in the control program. The use is fixed and it cannot be changed by a parameter.

3) Total load capacity of these outputs is 4.8 W (200 mA at 24 V) minus the power taken by DIO1 and DIO2.

4) 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.

5) 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.

## Additional information on the connections

### ■ Power supply for the control unit (XPOW)

Connect a power supply to the control unit through terminal block XPOW.

Refer to the control unit connector data for the current and voltage ratings of the power supply.

Connect an additional external power supply to the free +24 V and GND terminals of the XPOW terminal block if:

- the control unit must be kept operational during input power breaks, for example, because of continuous fieldbus communication
- immediate restart is necessary after a power break (that is, no control unit power-up delay is permitted).

### ■ Digital interlock (DIIL)

Digital interlock input (DIIL) terminal is originally intended for interlock signals that stop the drive/unit when necessary. In the ACS880 primary control program, DIIL terminal is the source for the run enable signal by default. The inverter unit or drive cannot start, or it stops when there is no DIIL signal. In other control programs (and units), the default use of the DIIL terminal varies. Refer to firmware manual for more information.

**Note:** This input is **not** SIL or PL classified.

### ■ FSO safety functions module connection (X12)

In drives or inverter units with a compatible control program, an optional FSO safety functions module can be connected to the X12 connector. The control program in supply, brake, and DC/DC converter units does not support the FSO safety functions module.

For more information on the FSO safety functions module, refer to the applicable FSO module user's manual.

**Note:** Inverter modules and control units that have a sticker with the text “No FSO support” are not compatible with the FSO safety functions module.

### ■ SDHC memory card slot

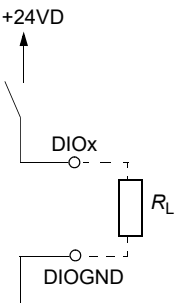
The control unit has an on-board data logger that collects real-time data from the power modules to help fault tracing and analysis. The data is stored onto the SDHC memory card inserted into the SD CARD slot and can be analyzed by ABB service personnel.

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## Connector data

The wire size accepted by all screw terminals (for both stranded and solid wire) is 0.5 ... 2.5 mm<sup>2</sup> (22...12 AWG). Connector pitch is 5 mm.

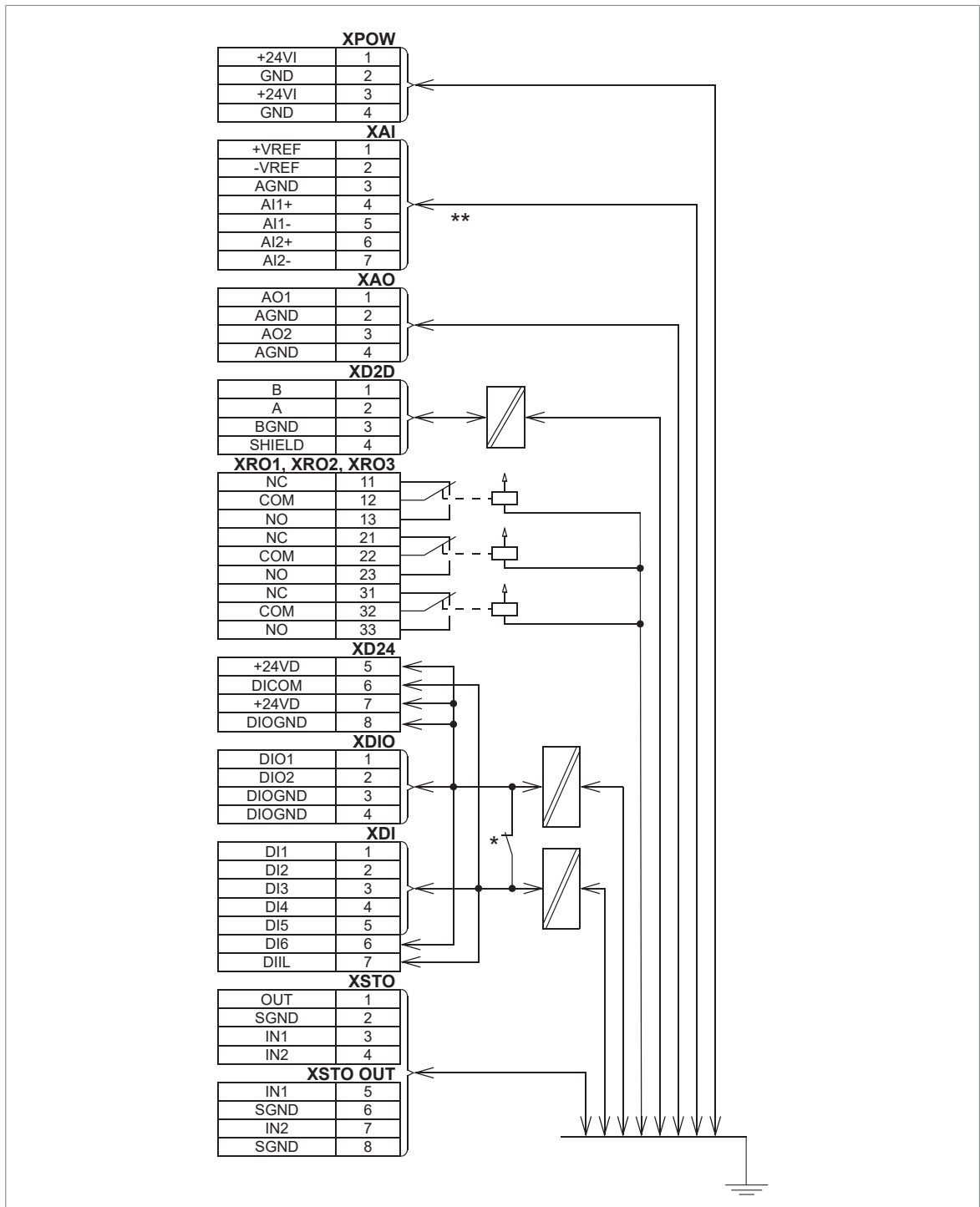
The maximum tightening torque for screw terminals is 0.45 N·m (4 lbf·in).

Power supply (XPOW)	24 V DC ( $\pm 10\%$ ), 2 A External power input. Two supplies can be connected to the BCU control unit for redundancy.
Relay outputs RO1...RO3 (XRO1...XRO3)	250 V AC / 30 V DC, 2 A Protected by varistors
+24 V output (XD24:5 and XD24:7)	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)	24 V logic levels: "0" < 5 V, "1" > 15 V $R_{in}$ : 2.0 kohm (DI1...DI5) Input type: NPN/PNP (DI1...DI5), PNP (DI6) Hardware filtering: 0.04 ms, digital filtering up to 8 ms $I_{max}$ : 15 mA (DI1...DI5), 5 mA (DI6)
Start interlock input DIIL (XDI:7)	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). In some control programs, DIO2 can be configured as a 24 V level square wave frequency output. Refer to the firmware manual, parameter group 11.	<u>As inputs:</u> 24 V logic levels: "0" < 5 V, "1" > 15 V. $R_{in}$ : 2.0 kohm. Filtering: 1 ms. <u>As outputs:</u> Total output current from +24VD is limited to 200 mA 
Reference voltage for analog inputs +VREF and -VREF (XAI:1 and XAI:2)	10 V $\pm 1\%$ and -10 V $\pm 1\%$ , $R_{load}$ 1...10 kohm Maximum output current: 10 mA
Analog inputs AI1 and AI2 (XAI:4 ... XAI:7). Current/voltage input mode selection by switches	Current input: -20...20 mA, $R_{in}$ = 100 ohm Voltage input: -10...10 V, $R_{in}$ > 200 kohm Differential inputs, common mode range $\pm 30$ V Sampling interval per channel: 0.25 ms Hardware filtering: 0.25 ms Resolution: 11 bit + sign bit Inaccuracy: 1% of full scale range
Analog outputs AO1 and AO2 (XAO)	0...20 mA, $R_{load}$ < 500 ohm Frequency range: 0...500 Hz Resolution: 11 bit + sign bit Inaccuracy: 2% of full scale range

## 132 Control unit (BCU)

XD2D connector	<p>Physical layer: RS-485</p> <p>Transmission rate: 8 Mbit/s</p> <p>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)</p> <p>Maximum length of link: 50 m (164 ft)</p> <p>Termination by switch</p>
RS-485 connection (X485)	<p>Physical layer: RS-485</p> <p>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)</p> <p>Maximum length of link: 50 m (164 ft)</p>
Safe torque off connection (XSTO)	<p>Input voltage range: -3...30 V DC</p> <p>Logic levels: "0" &lt; 5 V, "1" &gt; 17 V.</p> <p><b>Note:</b> Both circuits must be closed to enable start and operation (IN1 and IN2 must be connected to OUT). This applies to all control units (including drive, inverter, supply, brake, DC/DC converter etc. control units), but SIL/PL classified Safe torque off functionality is only achieved through the XSTO connector of the drive/inverter control unit.</p> <p>Current consumption: 66 mA (continuous) per STO channel per drive/inverter module</p> <p>EMC (immunity) according to IEC 61326-3-1 and IEC 61800-5-2</p>
Safe torque off output (XSTO OUT)	To STO connector of inverter module.
Control panel connection (X13)	<p>Connector: RJ-45</p> <p>Cable length &lt; 100 m (328 ft)</p>
Ethernet connection (XETH)	<p>Connector: RJ-45</p> <p>This connection is not supported by the firmware</p>
SDHC memory card slot (SD CARD)	<p>Memory card type: SDHC</p> <p>Maximum memory size: 4 GB</p>
Battery	Real-time clock battery type: BR2032
<p>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.</p>	

## ■ BCU 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



## 8

# Installation checklist

## Contents of this chapter

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

## Checklist

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



### WARNING!

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



### WARNING!

Do the steps in section [Electrical safety precautions \(page 98\)](#) before you start the work.

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

136 Installation checklist

<b>Make sure that ...</b>	<input checked="" type="checkbox"/>
The cooling air can flow freely in and out of the drive. Air recirculation inside the cabinet is not possible (air baffle plates are installed, or there is another air guiding solution).	<input type="checkbox"/>
<u>If the drive is connected to a network other than a symmetrically grounded TN-S system:</u> 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.	<input type="checkbox"/>
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.	<input type="checkbox"/>
The main circuit connections inside the drive cabinet correspond to the circuit diagrams.	<input type="checkbox"/>
The control unit has been connected. See the circuit diagrams.	<input type="checkbox"/>
Appropriate AC fuses and main disconnecting device are installed.	<input type="checkbox"/>
There is an adequately sized protective earth (ground) conductor(s) between the drive and the switchboard, the conductor is connected to correct terminal, and the terminal is tightened to the correct torque. Grounding has also been measured according to the regulations.	<input type="checkbox"/>
<u>If the drive is equipped with a DC/DC-converter unit:</u> There is an adequately sized protective earth (ground) conductor between the energy storage and the DC/DC-converter, 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.	<input type="checkbox"/>
<u>If the drive is equipped with a DC/DC-converter unit:</u> The energy storage cable is connected to the correct terminals of the DC/DC-converter and energy storage, and the terminals are tightened to the correct torque.	<input type="checkbox"/>
<u>If the drive is equipped with a DC/DC-converter unit:</u> The energy storage is equipped with fuses for protecting the energy storage cable in a cable short-circuit situation.	<input type="checkbox"/>
<u>If the drive is equipped with a DC/DC-converter unit:</u> The energy storage is equipped with a disconnecting device.	<input type="checkbox"/>
The input power cable is connected to the correct terminals, the phase order is correct, and the terminals are tightened to the correct torque.	<input type="checkbox"/>
There is an adequately sized protective earth (ground) conductor between the motor and the drive. The conductor is connected to the correct terminal, and the terminal is tightened to the correct torque. Grounding has also been measured according to the regulations.	<input type="checkbox"/>
The motor cable is connected to the correct terminals, the phase order is correct, and the terminals are tightened to the correct torque.	<input type="checkbox"/>
The motor cable is routed away from other cables.	<input type="checkbox"/>
No power factor compensation capacitors are connected to the motor cable.	<input type="checkbox"/>
<u>If an external brake resistor is connected to the drive:</u> There is an adequately sized protective earth (ground) conductor between the brake resistor and the drive, and the conductor is connected to the correct terminal, and the terminals are tightened to the correct torque. Grounding has also been measured according to the regulations.	<input type="checkbox"/>
<u>If an external brake resistor is connected to the drive:</u> The brake resistor cable is connected to the correct terminals, and the terminals are tightened to the correct torque.	<input type="checkbox"/>
<u>If an external brake resistor is connected to the drive:</u> The brake resistor cable is routed away from other cables.	<input type="checkbox"/>
The control cables are connected to the correct terminals, and the terminals are tightened to the correct torque.	<input type="checkbox"/>
<u>If a drive bypass connection will be used:</u> 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.	<input type="checkbox"/>
There are no tools, foreign objects or dust from drilling inside the drive.	<input type="checkbox"/>

<b>Make sure that ...</b>	<input checked="" type="checkbox"/>
The area in front of the drive is clean: the drive cooling fan cannot draw any dust or dirt inside.	<input type="checkbox"/>
The terminal box cover of the motor is in place. Cabinet shrouds are in place and doors are closed.	<input type="checkbox"/>
The motor and the driven equipment are ready for power-up.	<input type="checkbox"/>

---



# 9

## 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!**


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

### ■ Safety

<b>Action</b>	<input checked="" type="checkbox"/>
 <p><b>WARNING!</b> Obey the safety instructions during the start-up procedure. See <a href="#">ACS880 multidrives cabinets and modules safety instructions (3AJA0000102301 [English])</a>. If you ignore the safety instructions, injury or death, or damage to the equipment can occur.</p> <p>If you are not a qualified electrical professional, do not do installation or maintenance work.</p>	<input type="checkbox"/>

### ■ Checks/Settings with no voltage connected

<b>Action</b>	<input checked="" type="checkbox"/>
Disconnect the drive from the AC power line and make sure it is safe to start the work. See section <a href="#">Electrical safety precautions (page 98)</a> .	<input type="checkbox"/>
Disconnect all dangerous voltages from the drive and make sure that it is safe to start the work. Do the steps in section <a href="#">Electrical safety precautions (page 98)</a> .	<input type="checkbox"/>
<u>If the supply unit is equipped with a main switch-disconnector [Q1] and contactor [Q2]:</u> Open first the main contactor, and then the main switch-disconnector.	<input type="checkbox"/>
<p><u>If the supply unit is equipped with a main breaker [Q1]:</u> 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.</p> <p><b>General rule</b> 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 avoid unnecessary trips during the intermediate DC circuit load peak at start.</p> <p><b>Long term current limit</b> Rule of thumb: Set to the rated AC current of the drive.</p> <p><b>Peak current limit</b> Rule of thumb: Set to a value 3...4 times the rated AC current of the drive.</p>	<input type="checkbox"/>
Make sure that the mechanical and electrical installation of the drive is completed. See <a href="#">Installation checklist (page 135)</a> .	<input type="checkbox"/>
Check the settings of breakers/switches in the auxiliary circuits.	<input type="checkbox"/>
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).	<input type="checkbox"/>
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.	<input type="checkbox"/>

### ■ Powering up the auxiliary circuit of the drive



<b>Action</b>	<input checked="" type="checkbox"/>
Remove the temporary grounding system (if installed).	<input type="checkbox"/>
Close the circuit breakers supplying the auxiliary circuits.	<input type="checkbox"/>

<b>Action</b>	<input checked="" type="checkbox"/>
Close the cabinet doors.	<input type="checkbox"/>
Make sure that it is safe to connect voltage: <ul style="list-style-type: none"> <li>nobody is working on the unit or circuits that are wired from outside into the cabinets</li> <li>covers of the motor terminal boxes are on</li> <li>cabinet doors are closed</li> <li>the disconnecting device [Q1] is open.</li> </ul>	<input type="checkbox"/>
Close the main breaker of the supply transformer.	<input type="checkbox"/>

## ■ Setting up the supply unit parameters


<b>Action</b>	<input checked="" type="checkbox"/>
<u>Supply modules with option +C188 (direct-on-line cooling fan)</u> : Set bit 13 of parameter 195.20 HW options word 1.	<input type="checkbox"/>
<u>If the supply unit includes one supply module</u> : Make sure that value of parameter 195.31 Parallel connection rating id is Not selected. <u>If the supply unit includes more than one supply module</u> : Make sure that the value of parameter 195.31 Parallel connection rating id corresponds to the actual supply unit type. If it does not, adjust the selection: <ul style="list-style-type: none"> <li>Filter down the unit type list with parameter 195.30 Parallel type list filter.</li> <li>Select the correct supply unit type with parameter 195.31 Parallel connection rating id.</li> </ul>	<input type="checkbox"/>
Make sure that supply voltage range selection is correct (parameter 195.01 Supply voltage).	<input type="checkbox"/>
If you changed parameter settings, reboot the control unit by parameter 196.08 Control board boot.	<input type="checkbox"/>
Switch the control panel to the remote mode (Loc/Rem key) to enable control of the supply unit with the operating switch [S21].	<input type="checkbox"/>
<u>Drives with ground fault monitoring device for IT ungrounded systems (option +Q954)</u> : If necessary, adjust the settings of the device. See the circuit diagrams of the delivery and the manual of the device.	<input type="checkbox"/>

## ■ Powering up the main circuit of the drive

<b>Action</b>	<input checked="" type="checkbox"/>
<u>Drive with main breaker [Q1]</u> : Unlock the withdrawn breaker, and crank it in.	<input type="checkbox"/>
 <b>WARNING!</b> Never use the start button of the air circuit breaker to close it. Start button bypasses charging circuit and may damage the module.	
<u>Drive with main switch-disconnector [Q1]</u> : Unlock the main switch-disconnector, and close it.	
 <b>WARNING!</b> Do not use excessive force. If the unit is equipped with a grounding switch [Q9], electro-magnetic interlocking is also used. You cannot switch the main switch-disconnector [Q1] before its lock release relay [K1] is energized, that is: <ul style="list-style-type: none"> <li>the main input terminals [L1, L2 and L3] are powered, and</li> <li>grounding switch [Q9] is switched off, and</li> <li>auxiliary voltage switch [Q21] is switched on, and</li> <li>circuit breakers [F22, F23] in between the relay [K1] and auxiliary voltage switch [Q21] are switched on.</li> </ul>	

<b>Action</b>	<input checked="" type="checkbox"/>
<u>Drive with brake chopper:</u> 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.	<input type="checkbox"/>
Turn the operating switch [S21] to <i>on</i> (1) position to activate the Run enable signal and to close the main contactor [Q2] / main breaker [Q1].	<input type="checkbox"/>

## ■ Validating the safety functions

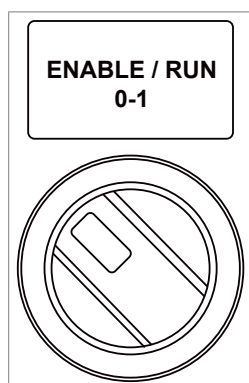
<b>Action</b>	<input checked="" type="checkbox"/>
Validate the operation of safety functions (for example, emergency stop).	<input type="checkbox"/>
 <b>WARNING!</b> The safety functions are not safe before they are validated according to the instructions. See the function-specific manual for the validation tasks.	
Safety functions are optional. See the function-specific manual for the validation tasks.	

## ■ On-load checks

<b>Action</b>	<input checked="" type="checkbox"/>
Make sure that the supply module cooling fan [G41] rotates freely in the right direction.	<input type="checkbox"/>

## 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 \(page 98\)](#).

# 10

## Maintenance

---

### Contents of this chapter

This chapter contains the maintenance instructions.

### Maintenance intervals

The tables show the maintenance tasks that can be done by the end user. For the ABB Service offering, contact your local ABB Service representative ([new.abb.com/contact-centers](http://new.abb.com/contact-centers)).

#### ■ 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	...	
<b>Cooling fans</b>															
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	
<b>Batteries</b>															
Control unit battery					R				R					R	
Control panel battery							R							R	
<b>Control unit</b>															
Control unit									R						
<b>Connections and environment</b>															
Cabinet door filters (IP54)	R	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	P
<b>Spare parts</b>															
Spare part stock	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
<b>Other useful tasks</b>															
Cleaning IP42 air inlet and outlet meshes	I	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	I
Checking ambient conditions (dustiness, corrosion, temperature)	I	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	I
ABB-SACE main circuit breaker maintenance	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
<b>Functional safety</b>															

Maintenance task / object	Years from start-up													
	1	2	3	...	6	...	9	...	12	...	15	...	18	...
Safety function test	1 See the maintenance information of the safety function.													
Safety component expiry (Mission time, $T_M$ )	20 years													

**Note:**

- The maintenance and component replacement intervals are based on the assumption that the equipment operates 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. Contact 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!**

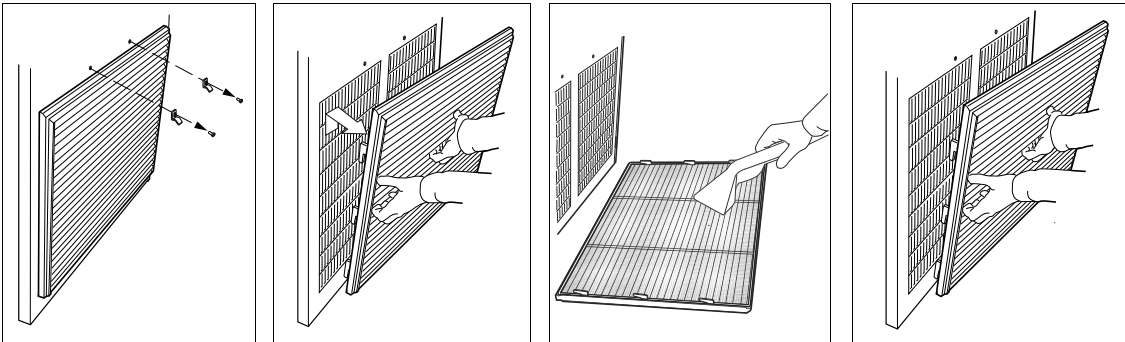
Use a vacuum cleaner with antistatic hose and nozzle, and wear a grounding wristband. Using a normal vacuum cleaner creates static discharges which can damage circuit boards.

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)**

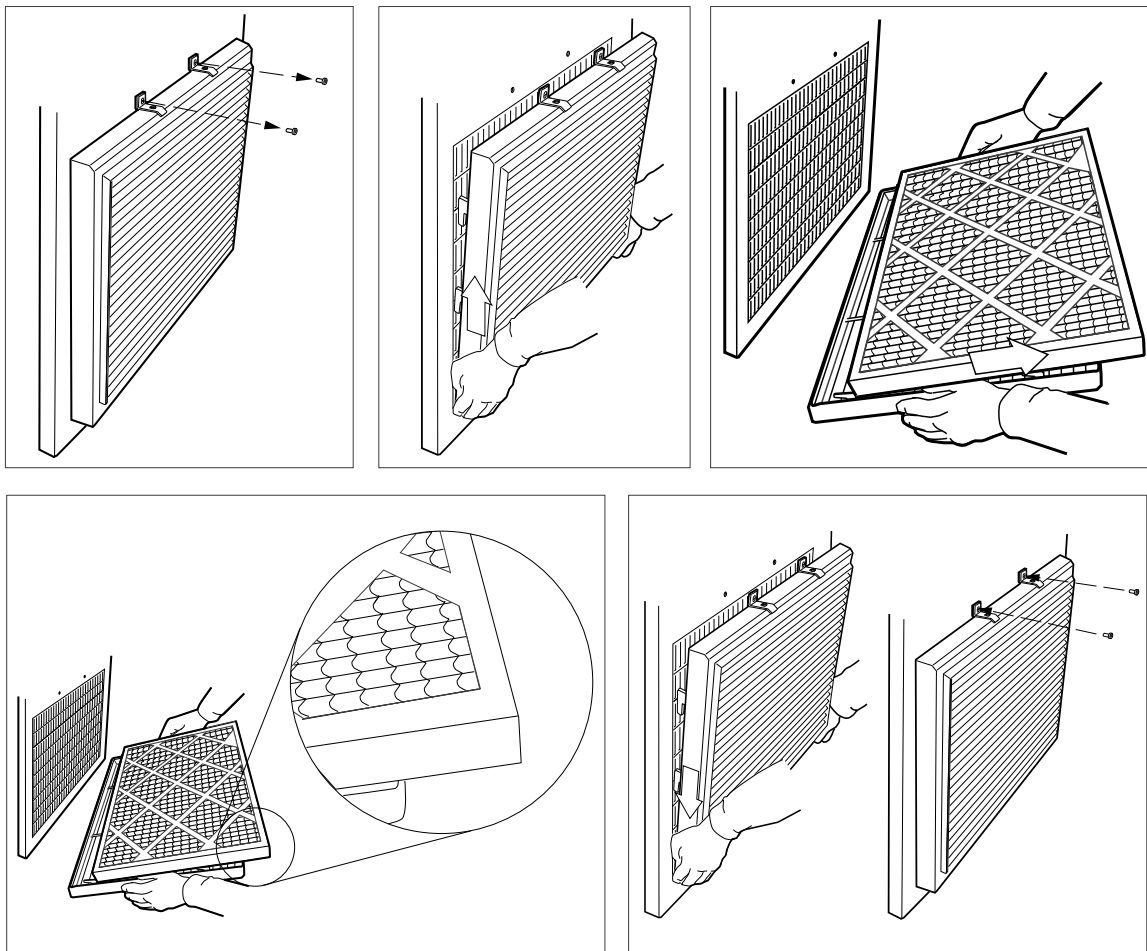
Check the dustiness of the air inlet meshes. If the dust cannot be removed by vacuum cleaning from outside through the grating holes with a small nozzle, proceed as follows:

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.

## Fuses

### ■ Checking and replacing the DC fuses of a D7T supply module



#### **WARNING!**

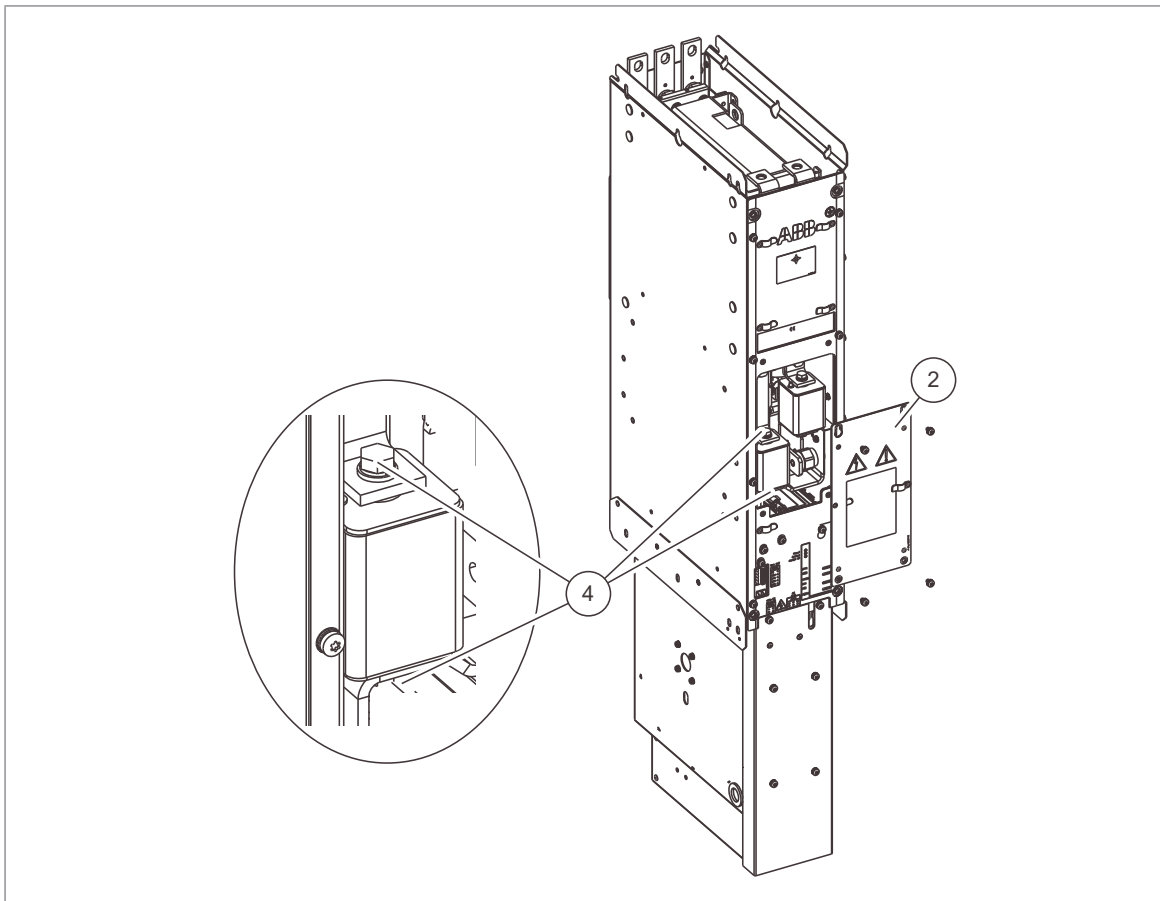
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

**WARNING!**

Use 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!**

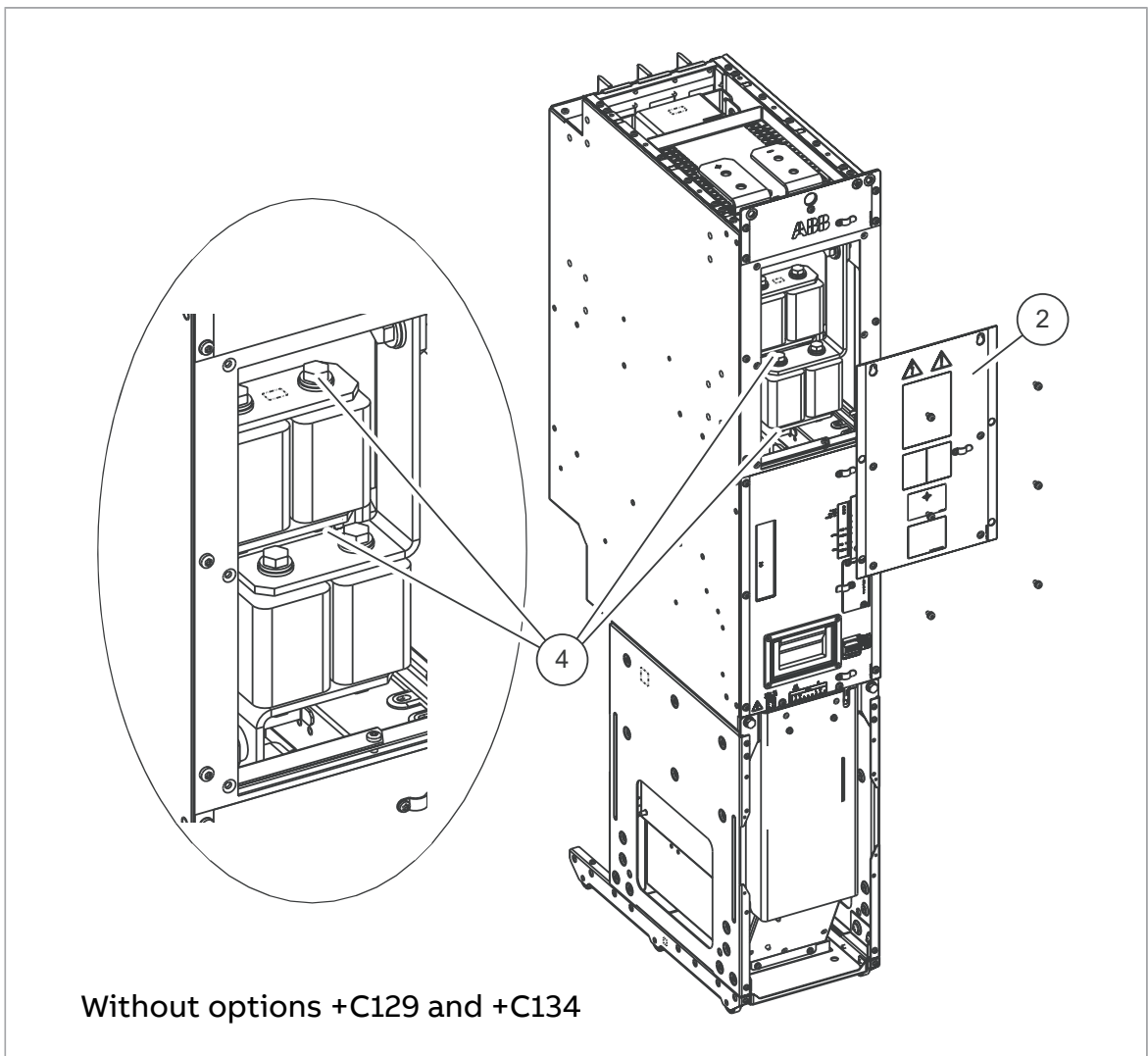
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

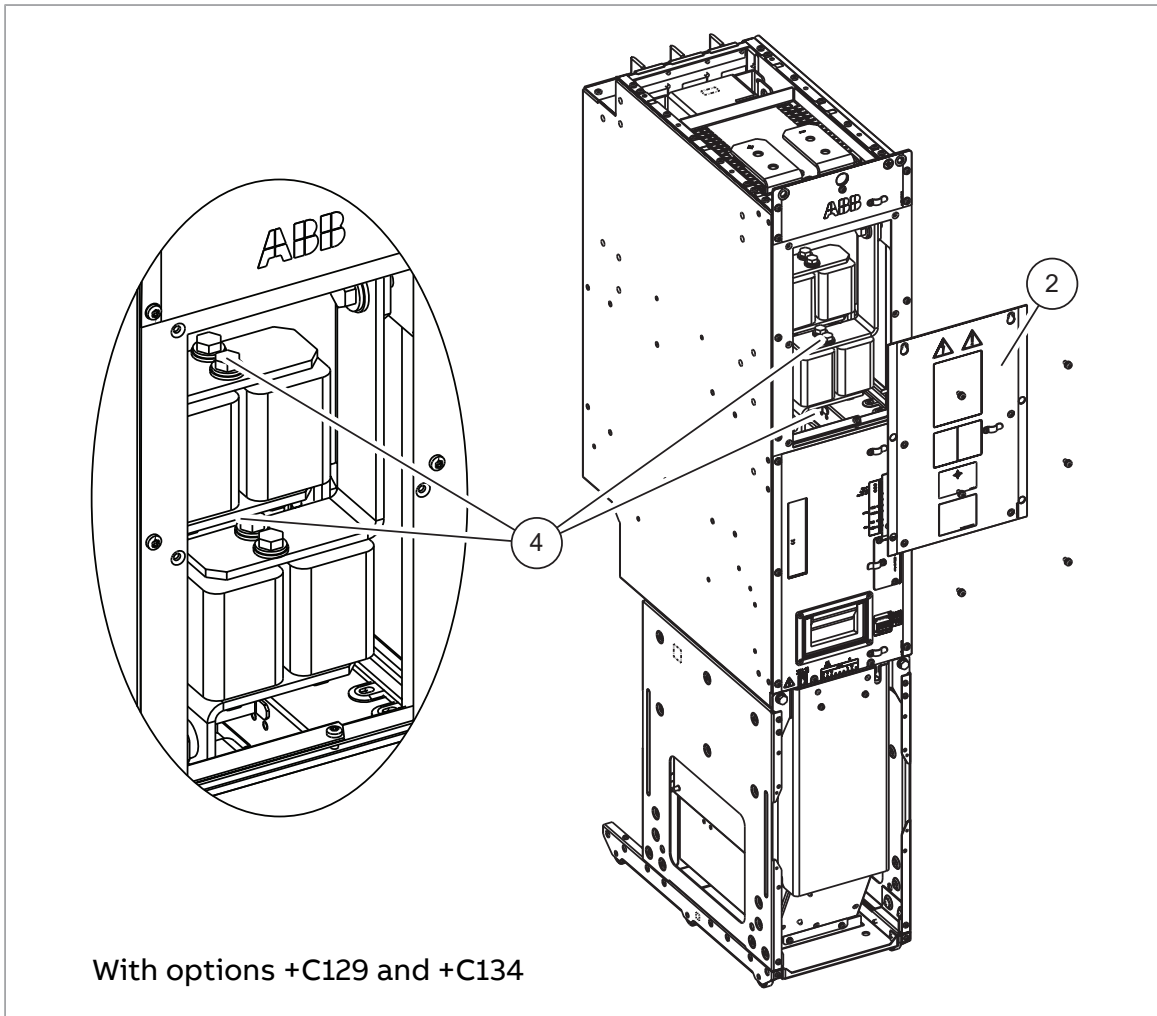
---

**WARNING!**

Use 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 AC fuses



#### **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.

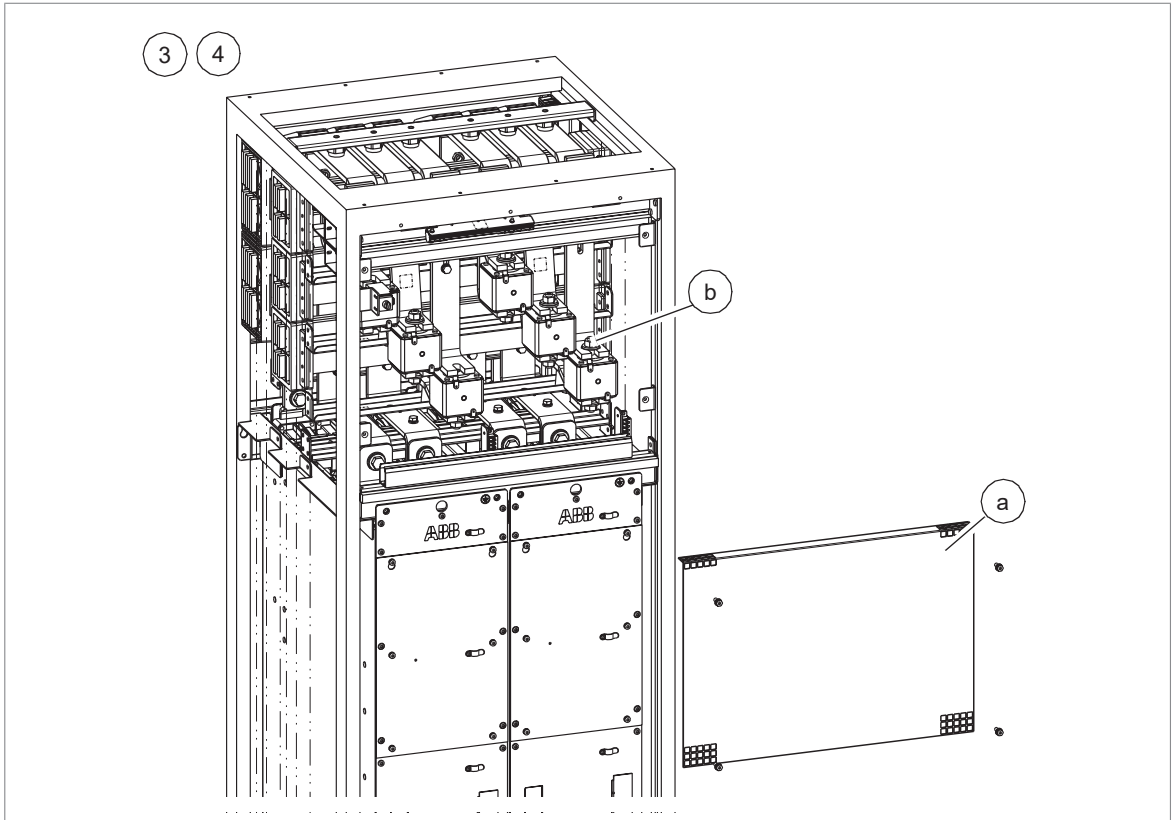


#### **WARNING!**

Use 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 and pull 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 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.

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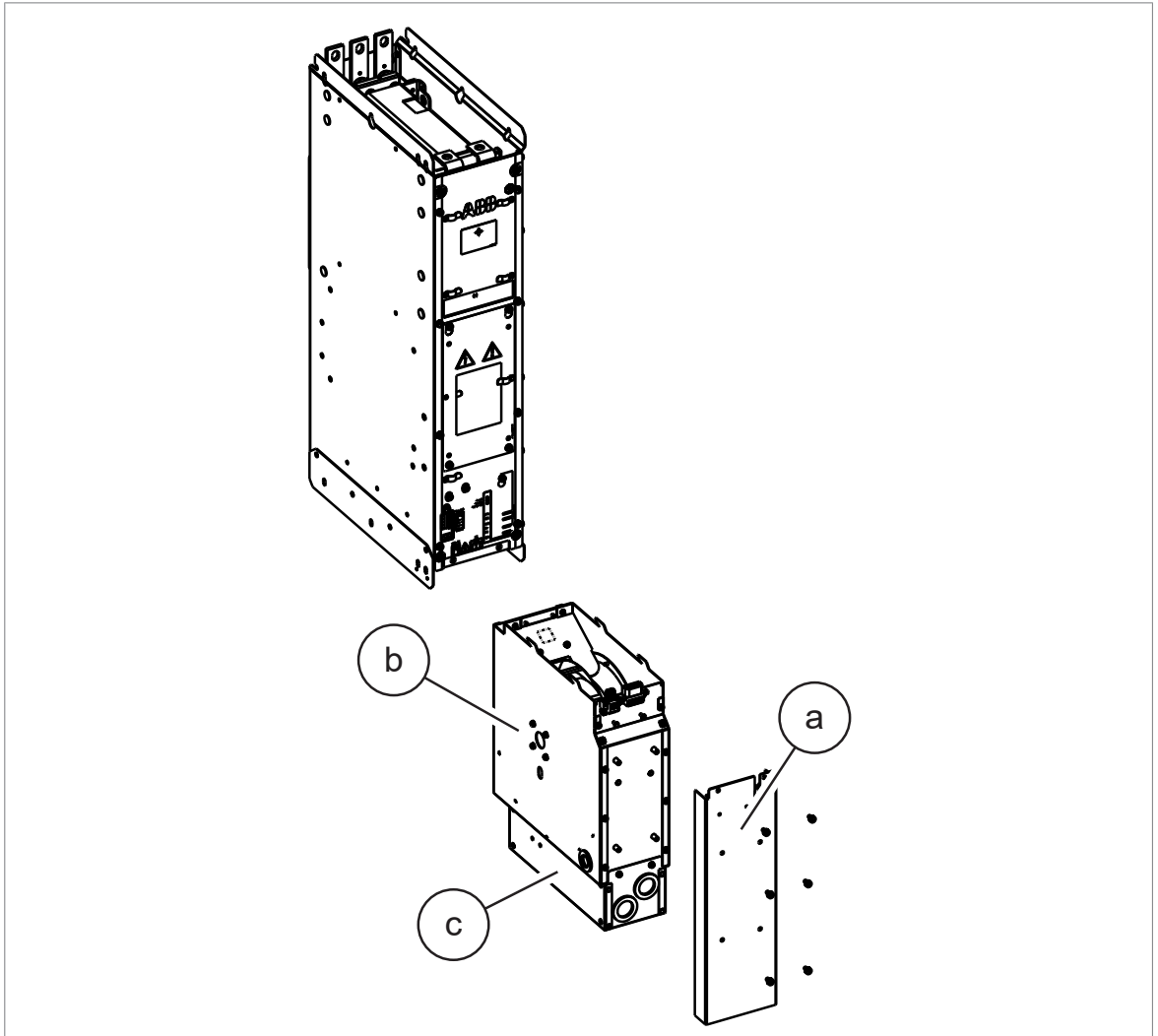


**WARNING!**

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.
-



## ■ Replacing the fan of the D8T supply module

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

**WARNING!**

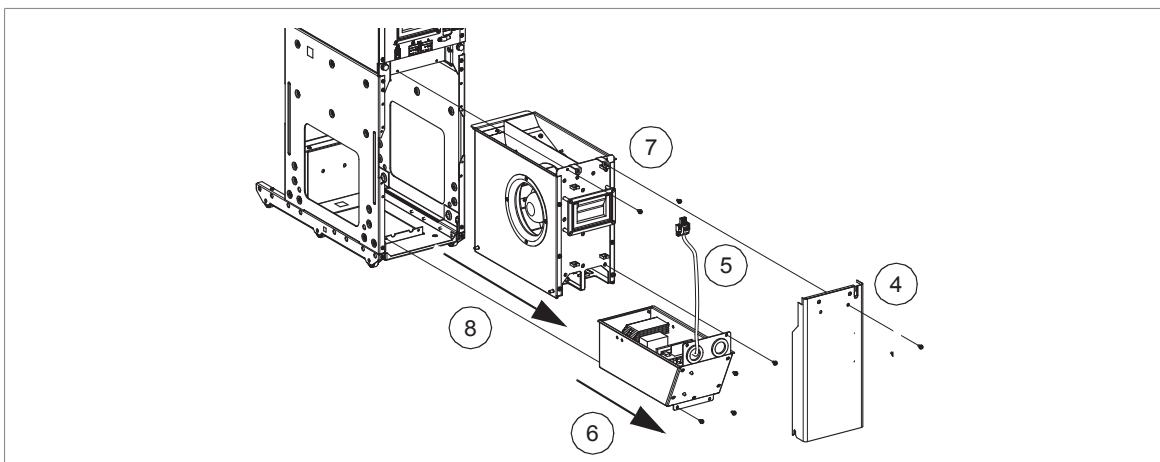
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

**WARNING!**

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

Before you start replacing the fan kit of the converter module, make sure that the connector at the end of the fan kit cable is compatible with the counterpart in the module. Black connector is compatible only with the black counterpart, and gray connector only with the gray counterpart. If the connectors are not compatible, replace the connector at the end of the fan kit cable. Use the connector in the old fan kit, or order a suitable connector from ABB.

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 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.

---

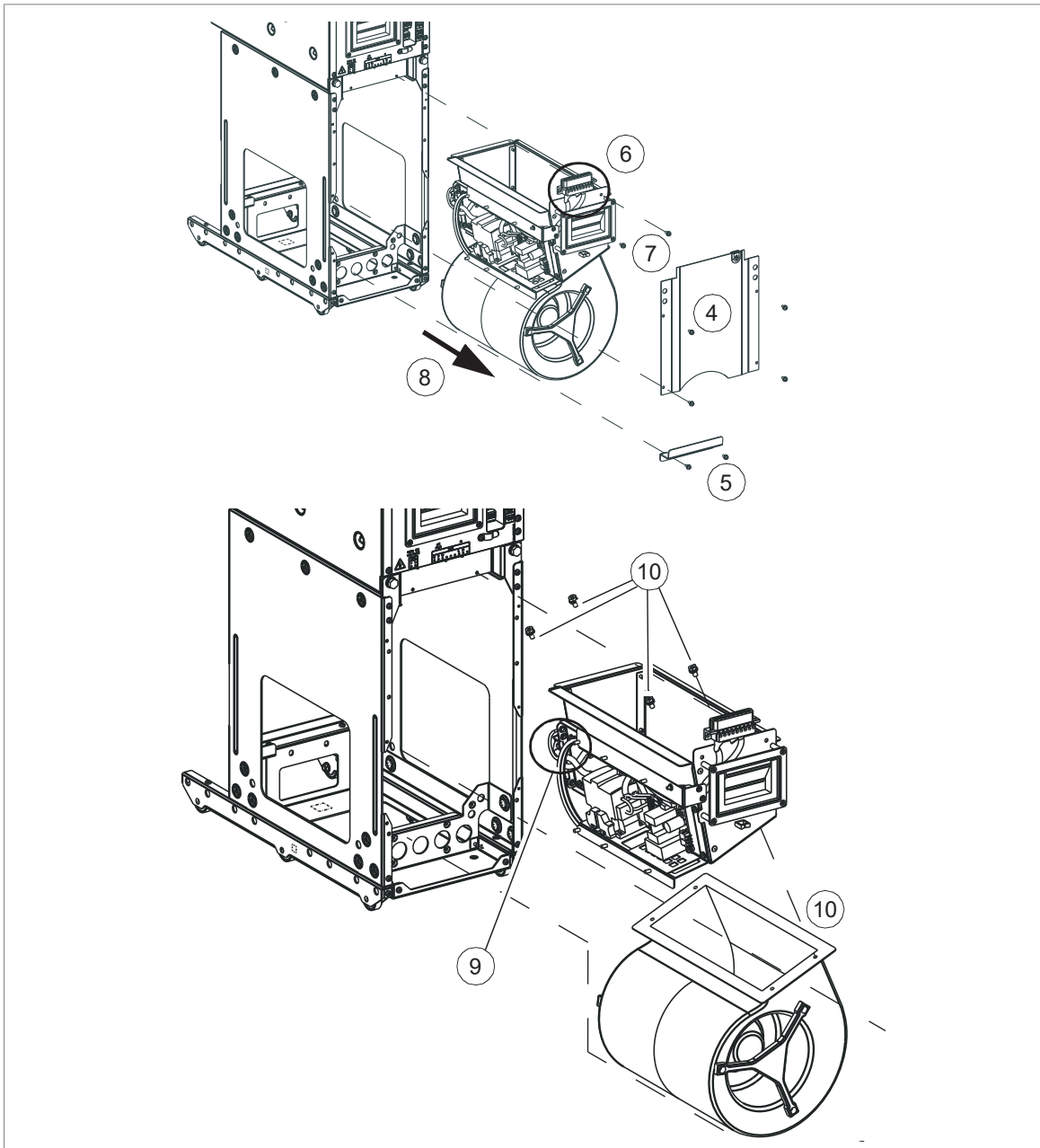
**WARNING!**

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

---

Before you start replacing the fan kit of the converter module, make sure that the connector at the end of the fan kit cable is compatible with the counterpart in the module. Black connector is compatible only with the black counterpart, and gray connector only with the gray counterpart. If the connectors are not compatible, replace the connector at the end of the fan kit cable. Use the connector in the old fan kit, or order a suitable connector from ABB. Refer to [Connector replacement guide for ACS880-x04 R8i/D8T, BLCL-2X, BL-2X and BLHF DOL fan \(3AXD50001059903 \[English\]\)](#).

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.
-



### ■ Replacing the circuit board compartment fan of the D8T supply module

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.

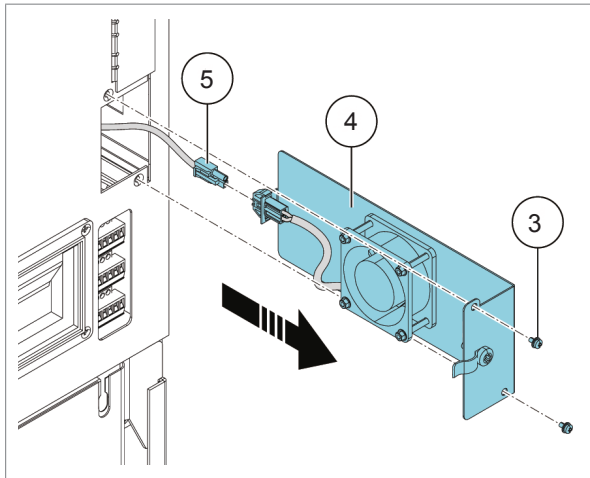


#### **WARNING!**

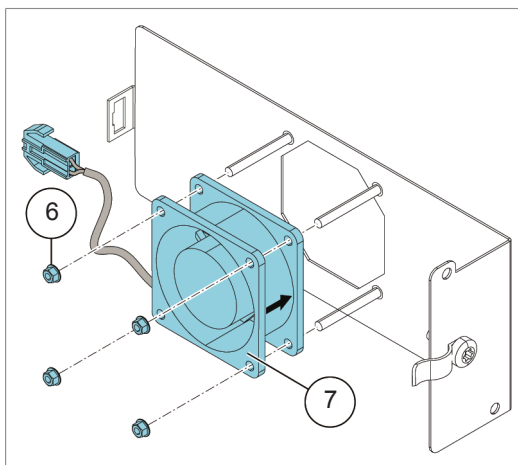
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.

1. Stop the drive and do the steps in section [Electrical safety precautions \(page 98\)](#) before you start the work.
2. Open the door of the module cubicle.
3. Remove the two M4×12 (T20) screws which lock the fan holder.

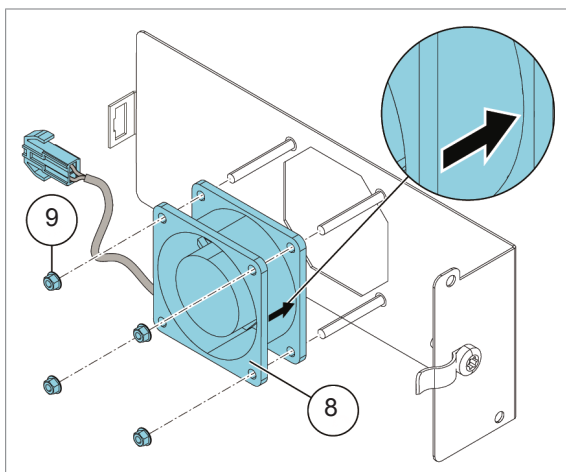
4. Pull the fan holder out of the module.
5. Disconnect the fan cable.



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

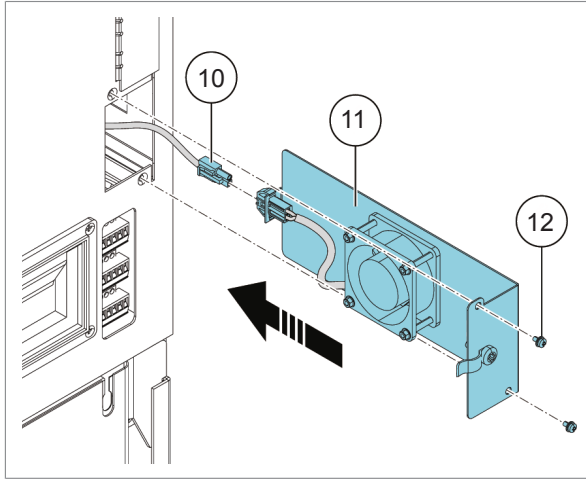


8. Put the fan onto the threaded studs on the fan holder with the airflow direction arrow pointing towards the fan holder.
9. Install and tighten the four nuts removed earlier.



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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 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. 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. There are several outlet air kit designs available. Refer to the Ordering info chapter. The assembly drawings for each kit are available from ABB or directly from <https://sites-apps.abb.com/sites/lvacdrivesengineeringssupport/content>.
3. Install new fan in reverse order.

### Cabinets with other fan types

---

**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. Follow the instructions of the manufacturer of the air outlet or enclosure system.
-

## Supply module

### ■ Cleaning the heatsink

The heatsink of the power module (drive, supply, inverter, converter, etc.) pick up dust from the cooling air. This can cause overtemperature warnings and faults. 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). Refer to the separate instructions.
3. Protect the adjacent equipment from dust.
4. 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.
5. Reinstall the cooling fan.

### ■ Replacing the D7T supply module

This section contains instructions on replacing the D7T supply 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 enclosure, use lifting device 3AXD50000047447.

For the lifting devices ordering information, see section [Lifting device for the D7T supply module \(page 250\)](#).

---



**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!**

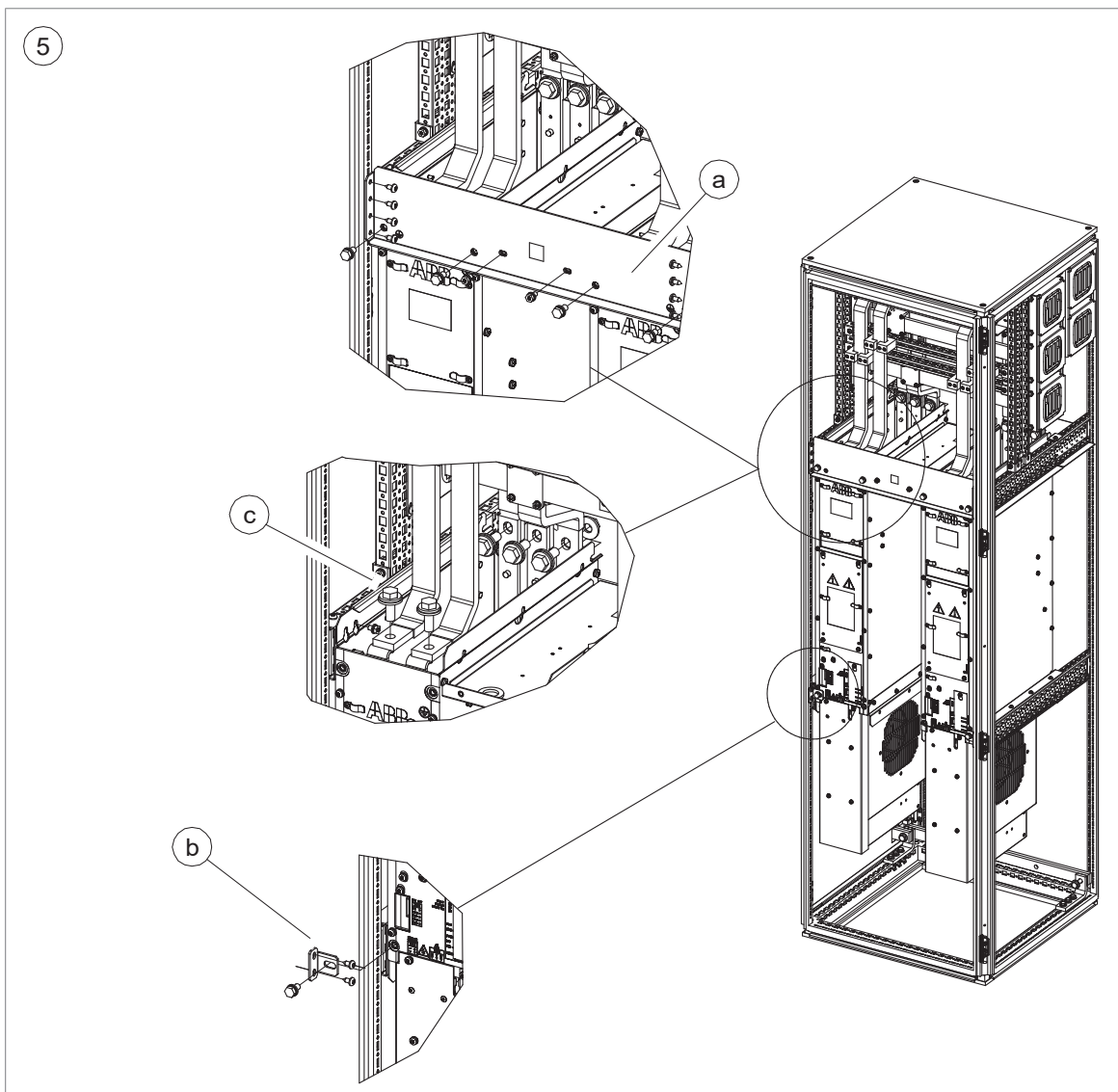
Use extreme caution when maneuvering the supply module. It is heavy and has a high center of gravity. Ignoring the following instructions can cause physical injury, or damage to the equipment.

- 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.
- 

Before you start replacing the supply module, make sure that the connector at the end of the auxiliary power supply cable in the cabinet is compatible with the counterpart in the module. Black connector is compatible only with the black counterpart, and gray connector only with the gray counterpart. If the connectors are not compatible, replace the connector in the new module. Use the connector in the old module, or order suitable connector from ABB. Refer to [+V112 connector replacement guide for ACS880-x04 R8i/D8T/D7T module change \(3AXD50001060015 \[English\]\)](#).

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 D8T supply 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 ([Insertion/Extraction ramp \(page 250\)](#)). If you do not have the ramp, always use a lifting device when you remove the module.



### **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.

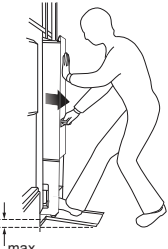


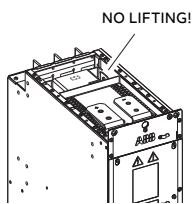

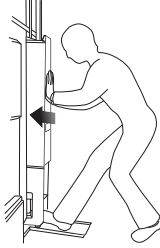
---



**WARNING!**

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.

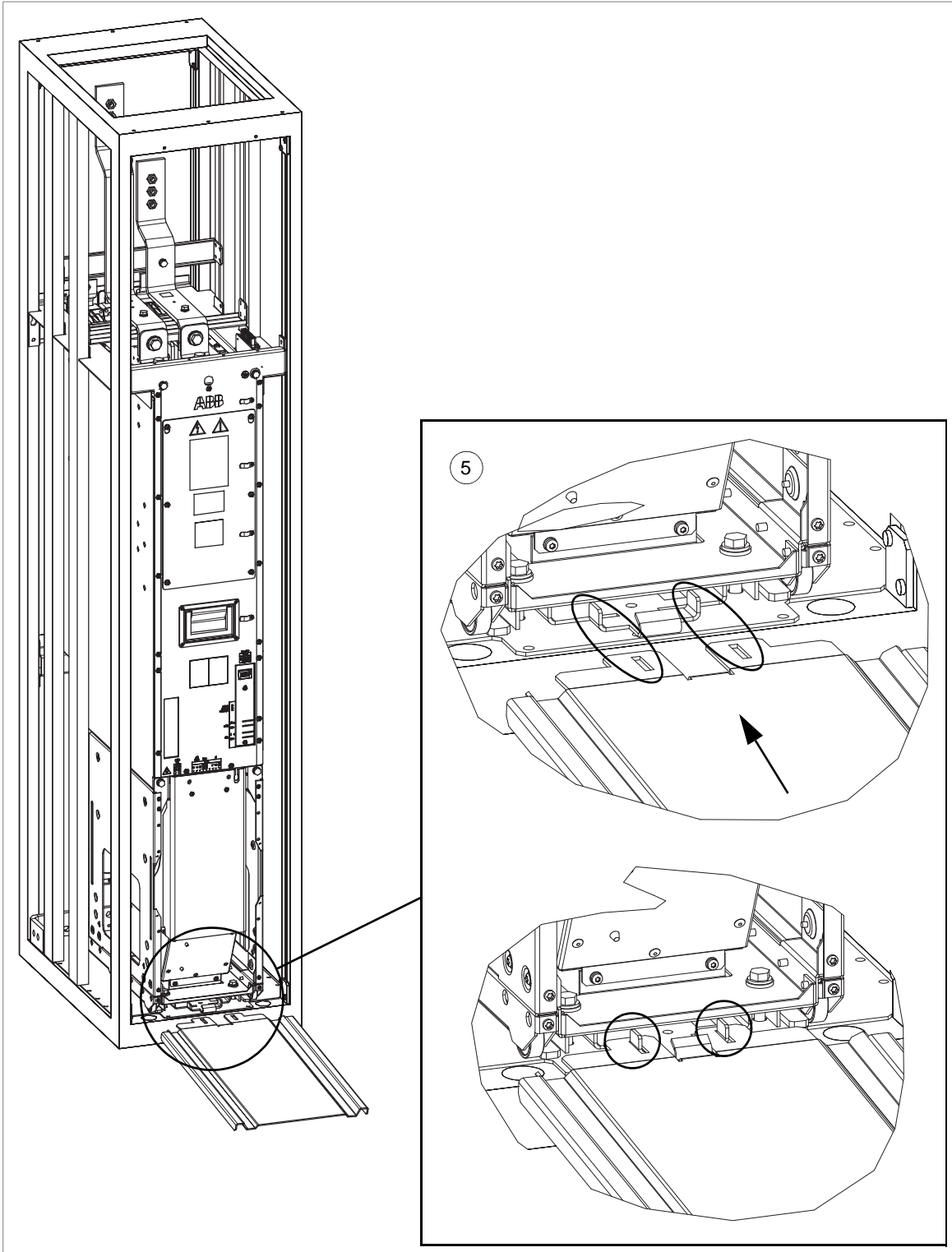
- Do not move the module carelessly. It is heavy (approximately 175 kg) (386 lbs) and has a high center of gravity. It topples over easily.
  - When you remove the module, use the module pull-out ramp. Pull the module carefully out of the cubicle along the ramp. While pulling on the handle, keep a constant 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).
-

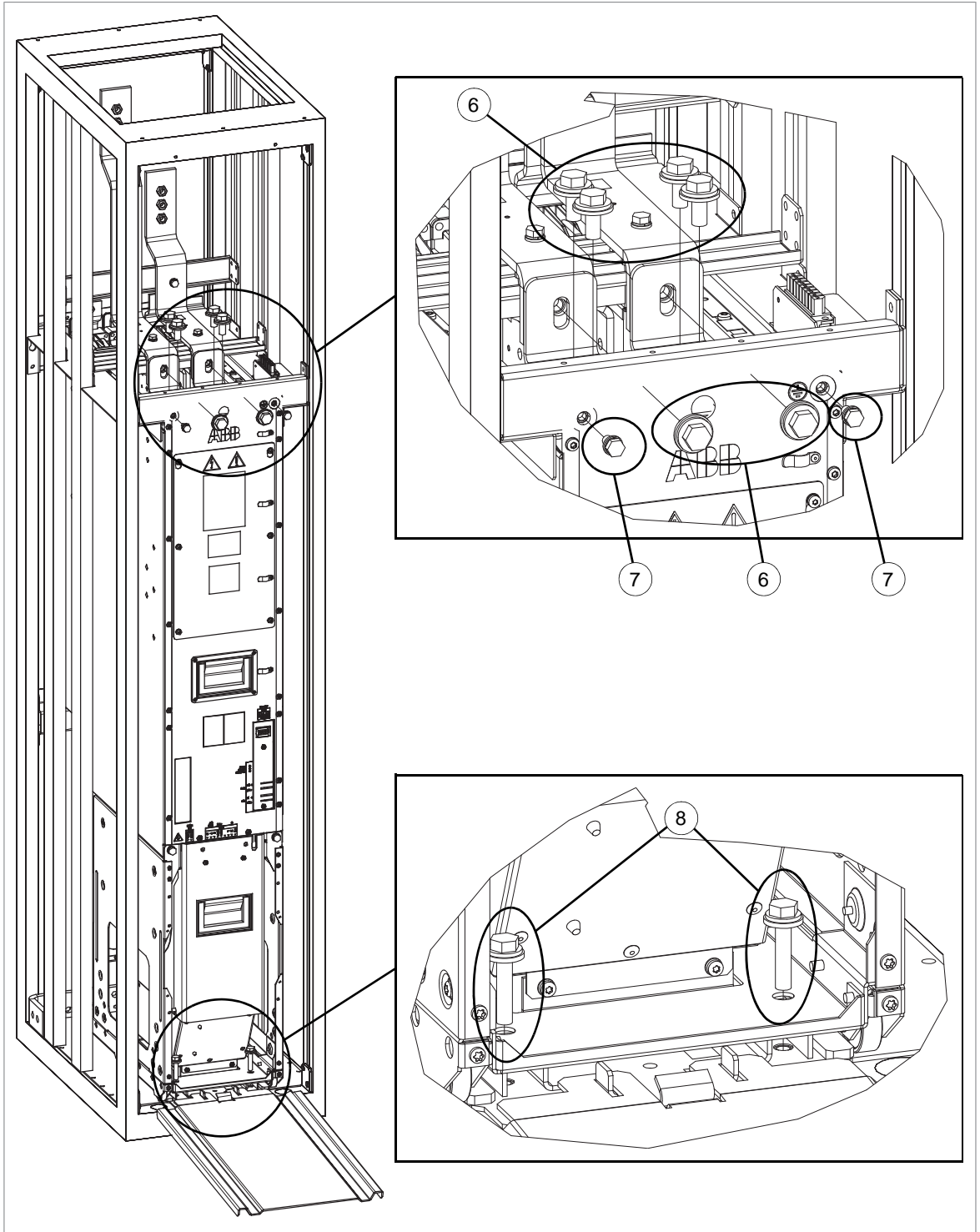
 <p>Support the top and bottom of the module!</p>	 <p>Do not tilt!</p>	 <p>Do not leave the module unattended on a sloping floor!</p>
<p>max: 100 mm</p>		
 <p>Do not use this hole for lifting!</p>	 <p>Mind your fingers!</p>	 <p>Support the top and bottom of the module!</p>

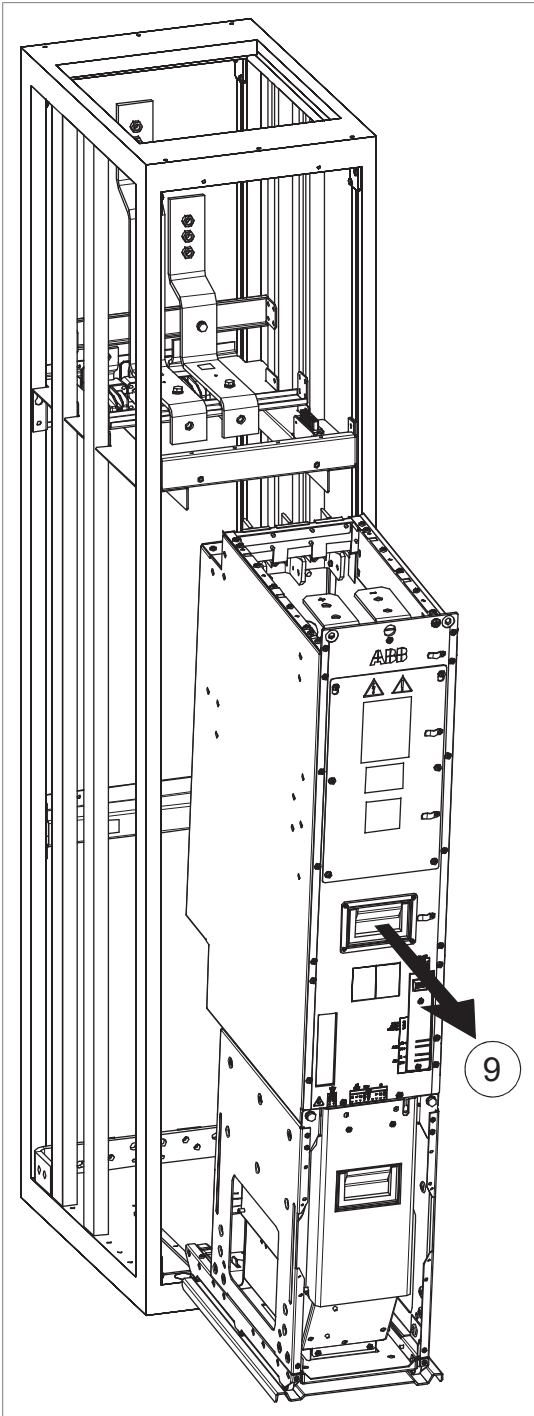
Before you start replacing the supply module, make sure that the connector at the end of the auxiliary power supply cable in the cabinet is compatible with the counterpart in the module. Black connector is compatible only with the black counterpart, and gray connector only with the gray counterpart. If the connectors are not compatible, replace the connector in the new module. Use the connector in the old module, or order suitable connector from ABB. Refer to [+V112 connector replacement guide for ACS880-x04 R8i/D8T/D7T module change \(3AXD50001060015 \[English\]\)](#).

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.







## Control panel

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

Refer to [ACS-BP-S basic control panels user's manual \(3AXD50000032527 \[English\]\)](#).

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## UCU control unit

### ■ UCU control unit types

There are three variants of the UCU control unit used in ACS880: UCU-22, UCU-23 and UCU-24. These have a different number of converter module connections but are otherwise identical. The UCU types are interchangeable if the number of connections is sufficient and the control program is the same. For example, UCU-24 can be used as a direct replacement for both UCU-22 and UCU-23.

### ■ Replacing the memory unit of the UCU control unit

If you replace the control unit, move the memory unit from the old control unit to the new control unit to keep the existing parameter settings.



#### **WARNING!**

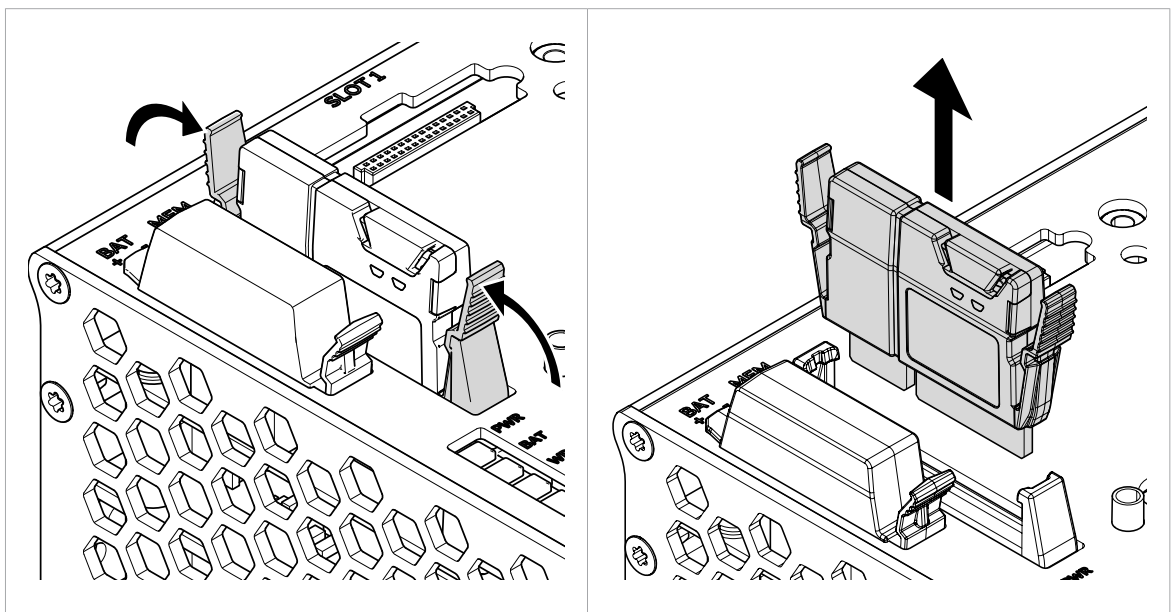
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.



#### **WARNING!**

Do not remove or install the memory unit when the control unit is powered.

1. Stop the drive and do the steps in section Electrical safety precautions in the hardware manual before you start work.
2. Make sure that the control unit is not powered.
3. Push and hold in the clips on the memory unit. Pull the memory unit out.
4. Push the new memory unit in.



## ■ Replacing the UCU control unit battery

When the BAT LED is on, the real-time clock battery voltage is high enough. If the LED is off, replace the battery.



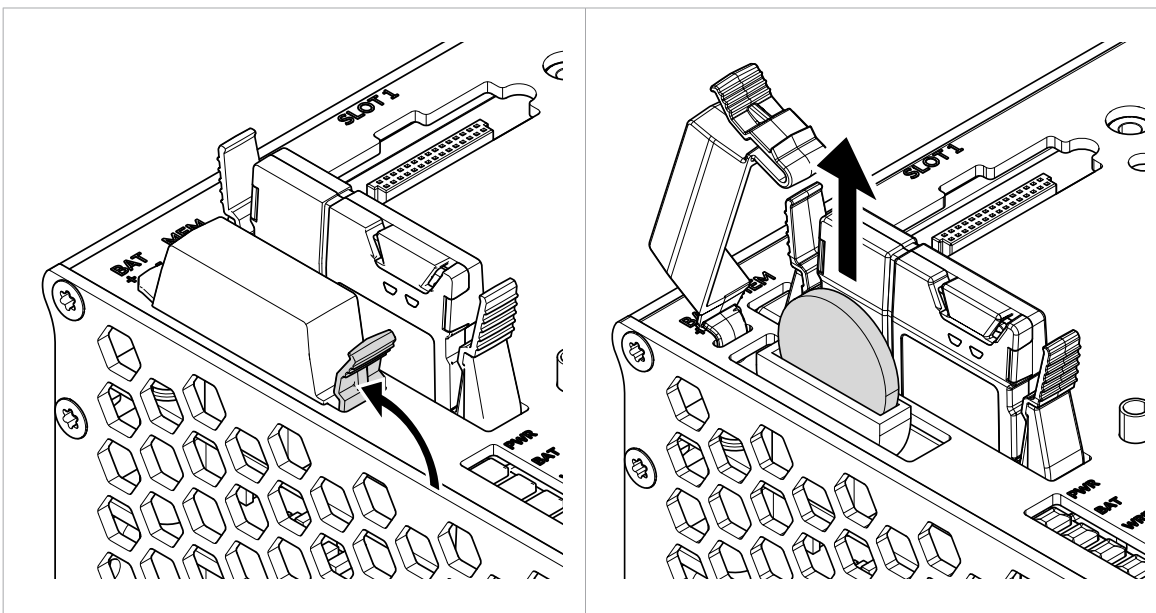
### WARNING!

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. Open the battery cover.
3. Replace the battery with a new BR2032 battery.

**Note:** The real-time clock stays set for 2 minutes without battery.

4. Close the battery cover.
5. If necessary, set the real-time clock.
6. Dispose of the old battery according to local disposal rules or applicable laws.



## ■ Replacing the microSD/microSDHC memory card of UCU control unit



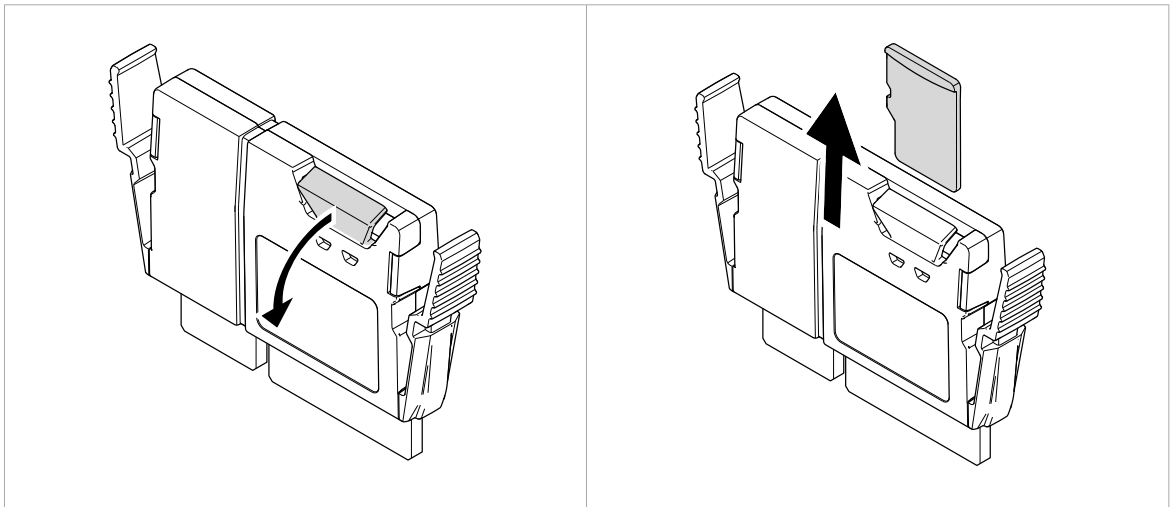
### WARNING!

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.

For the replacement card type, refer to the technical data.

1. Stop the drive and do the steps in section [Electrical safety precautions](#) in the hardware manual before you start work.
2. Remove the UMU-01 memory unit from the control unit.
3. Open the memory card cover in the memory unit.

4. Push the card to remove it.
5. Install a new card in reverse order.



## BCU 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 but are otherwise identical. The BCU types are interchangeable if the number of connections is sufficient and the control program is the same. For example, BCU-22 can be used as a direct replacement for both BCU-02 and BCU-12.

### ■ Replacing the memory unit of BCU control unit

If you replace the control unit, move the memory unit from the old control unit to the new control unit to keep the existing parameter settings.



#### **WARNING!**

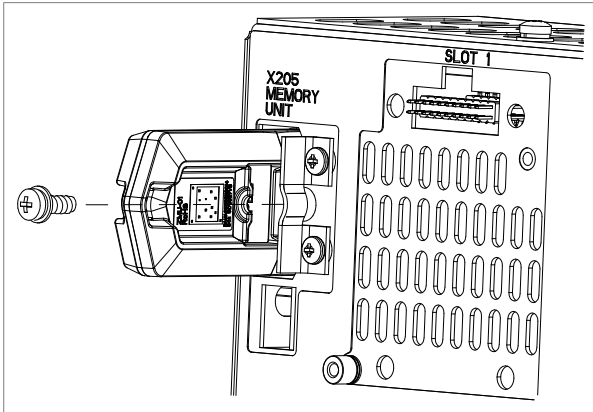
Obey the safety instructions of the drive. If you ignore them, injury or death, or damage to the equipment can occur. If you are not a qualified electrical professional, do not do installation, commissioning or maintenance work.



#### **WARNING!**

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

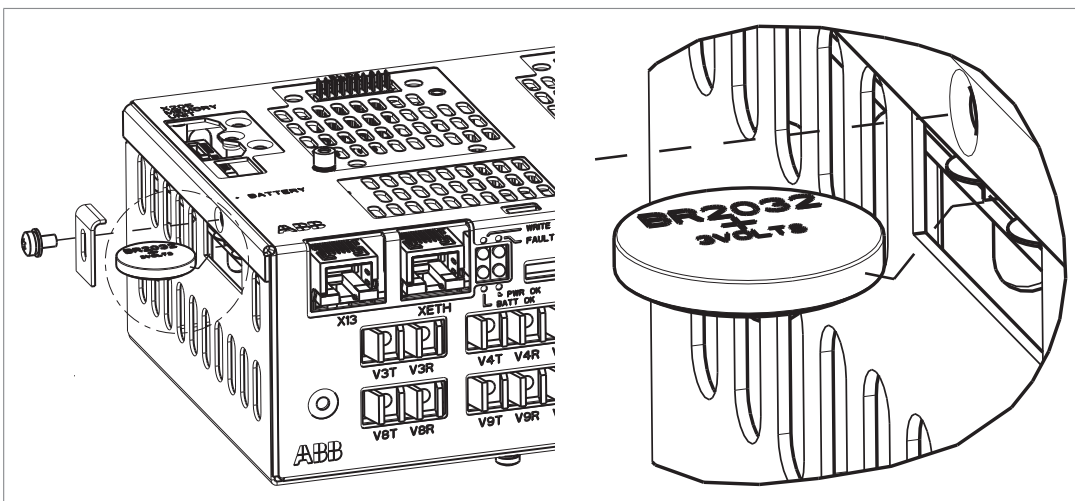


### WARNING!

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.

Replace the real-time clock battery if the BATT OK LED is off 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. Remove the fastening screw.
3. Replace the battery with a new BR2032 battery.
4. If necessary, set the real-time clock.
5. Discard the old battery according to local disposal rules or applicable laws.



## 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 unit LEDs (UCU-22...26)

LED		Indication
BAT	Green	Battery voltage of the real-time clock is sufficient (higher than 2.5 V).
	Off	Battery voltage is below 2.5 V, the battery is missing or the control unit is not powered.
PWR	Green	Internal voltage is sufficient.
FAULT	Red	Control program indicates that the equipment is faulty. See the appropriate firmware manual.
WRITE	Yellow	Writing to microSDHC card in progress.
FS COMM	Green	Reserved
FS STATUS	Green	Reserved

### ■ Control unit LEDs (BCU-x2)

LED	Color	Indication
BATT OK	Green	Battery voltage of the real-time clock is OK (higher than 2.8 V). When the LED is not lit, <ul style="list-style-type: none"> <li>• battery voltage is below 2.8 V,</li> <li>• the battery is missing, or</li> <li>• the control unit is not powered.</li> </ul>
PWR OK	Green	Internal voltage is sufficient.
FAULT	Red	The control program indicates that the equipment is faulty. See the appropriate firmware manual.
WRITE	Yellow	Writing to SD card in progress.

### ■ 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 status LED indications, see the following table.

Location	LED	Indication
Control panel	Continuous green	The unit operates normally.
	Flickering green	Data is transferred between the PC and the unit through the USB connection of the control panel.
	Flashing green	There is an active warning in the unit.
	Continuous red	There is an active fault in the unit.
	Flashing red	There is a fault that requires the stopping and restarting of the drive/converter/inverter.
	Flashing 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 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 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 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 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. 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.
-



# 11

## Ordering information

---

### Contents of this chapter

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

You can find the kit-specific assembly drawings, step-by-step instructions and detailed kit information on the Internet. Go to <https://sites-apps.abb.com/sites/lvackdrivesengineeringssupport/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/lvackdrivesengineeringssupport/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
-

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- 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
$U_n = 400\text{ V}$		<ul style="list-style-type: none"> <li>• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard</li> </ul>
ACS880-304-0910A-3+A004+A018	2×D7T	
$U_n = 500\text{ V}$		
ACS880-304-0910A-5+A004+A018	2×D7T	
$U_n = 690\text{ V}$		
ACS880-304-0760A-7+A004+A018	2×D7T	

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

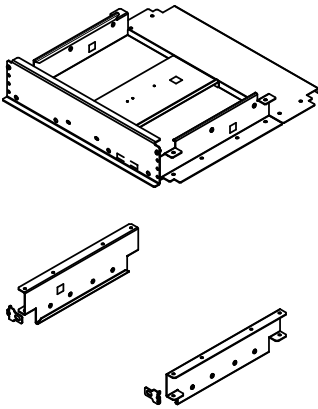
**Note:** The following components are always required to construct a working unit out of the modules and you must order them separately:

- Control unit kit. See section [BCU control units – 12-pulse \(page 216\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).

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

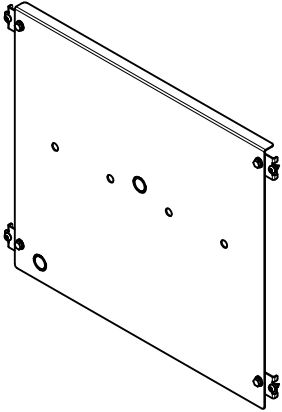
**Module installation parts**

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	 <p>Instruction code: 3AXD50000426508</p>

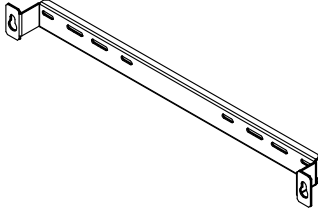
## Shrouds

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	 <p>Instruction code: 3AXD50000335022</p>

## 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	 <p>Instruction code: 3AXD50000431977</p>

## 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	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main contactor	<a href="#">Main contactors (page 225)</a>

## 182 Ordering information

<b>Component</b>	<b>See section ...</b>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25 )	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Lifting device	<a href="#">Lifting device for the D7T supply module (page 250)</a>

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## 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 \(page 253\)](#). The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
$U_n = 400\text{ V}$		<ul style="list-style-type: none"> <li>• Diode supply module with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard</li> </ul>
ACS880-304-0650A-3+A018	D8T	
ACS880-304-0980A-3+A018	D8T	
$U_n = 500\text{ V}$		
ACS880-304-0650A-5+A018	D8T	
ACS880-304-0980A-5+A018	D8T	
$U_n = 690\text{ V}$		
ACS880-304-0570A-7+A018	D8T	
ACS880-304-0820A-7+A018	D8T	

Ordering code format	Option codes
[Module type] + code [+code] ... For example, <b>ACS880-304-0650A-3 +A018</b>	<b>+A004:</b> 12-pulse option of half-controlled diode-thyristor bridge <b>+C129:</b> cULus listed <b>+C132:</b> Marine type approval. For more information, see <i>ACS880 +C132 marine type-approved drive modules and module packages supplement (3AXD50000037752 [English])</i> . <b>+C134:</b> CSA certified <b>+C183:</b> Internal heating element in the module <b>+C188:</b> Direct-on-line (DOL) cooling fan (400 V) <b>+G304:</b> 115 V auxiliary voltage supply <b>+V112:</b> 2023 revised version of X50 connector <b>Note:</b> 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:

- Control unit kits. See section [Control units \(page 213\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).
- Quick connectors (3AUA0000119227) for each module. See section [Quick connector for D8T module \(page 218\)](#).

■ **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	 <p>Instruction code: 3AXD50000372799</p>

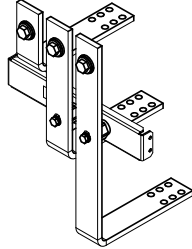
**Shrouds**

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	 <p>Instruction code: 3AXD50000335169</p>

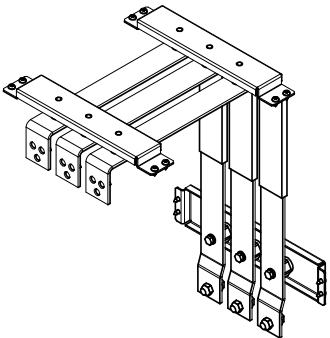
### AC busbars

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
1xD8T	400 mm (15.75 in)	1	A-4-8-102-VX	3AXD50000371853	 <p>Instruction code: 3AXD50000417247</p>

### 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
1xD8T	400 mm (15.75 in)	1	A-4-8-180-VX	3AXD50000371860	 <p>Instruction code: 3AXD50000379736</p>


### 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	 <p>Instruction code: 3AXD50000373871</p>

### 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	 <p>Instruction code: 3AXD50000002638</p>

## ■ 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	 <p>Instruction code: 3AXD50000002715</p>

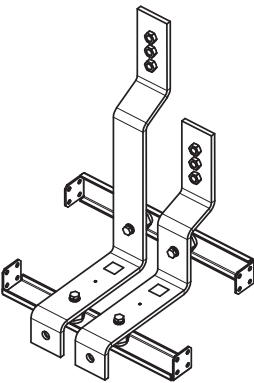
### AC busbars to quick connector

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	 <p>Instruction code: 3AXD50000006192</p>


### 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	 <p>Instruction code: 3AXD50000006191</p>

### 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	 <p>Instruction code: 3AXD50000002638</p>

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

Component	See section ...
Main switch-disconnector	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main contactor	<a href="#">Main contactors (page 225)</a>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25)	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Pull-out ramp	<a href="#">Insertion/Extraction ramp (page 250)</a>

## 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 \(page 253\)](#). The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
$U_n = 400\text{ V}$		<ul style="list-style-type: none"> <li>• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard</li> </ul>
ACS880-304-1210A-3+A018	2×D8T	
ACS880-304-1820A-3+A018	2×D8T	
$U_n = 500\text{ V}$		
ACS880-304-1210A-5+A018	2×D8T	
ACS880-304-1820A-5+A018	2×D8T	
$U_n = 690\text{ V}$		
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, <b>ACS880-304-1210A-3+A018</b>	<b>+A004:</b> 12-pulse option of half-controlled diode-thyristor bridge <b>+C129:</b> cULus listed <b>+C132:</b> Marine type approval. For more information, see <i>ACS880 +C132 marine type-approved drive modules and module packages supplement (3AXD50000037752 [English])</i> . <b>+C134:</b> CSA certified <b>+C183:</b> Internal heating element in the module <b>+C188:</b> Direct-on-line (DOL) cooling fan (400 V) <b>+G304:</b> 115 V auxiliary voltage supply <b>Note:</b> D8T DOL fan is always 400 V.

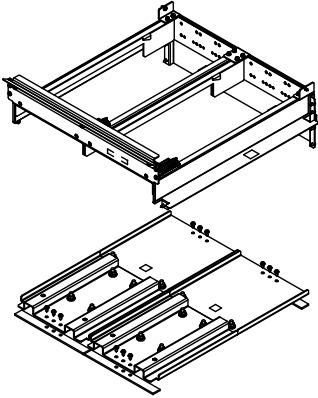
**Note:** The following components are always required to construct a working unit out of the modules and you must order them separately:

- Control unit kits. See section [Control units \(page 213\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).
- Quick connectors (3AUA0000119227) for each module. See section [Quick connector for D8T module \(page 218\)](#).

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

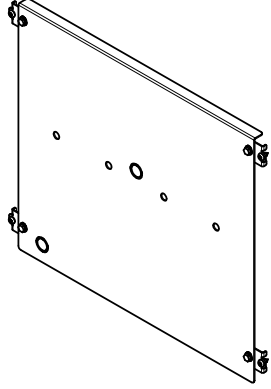
**Module installation parts**

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	 <p>Instruction code: 3AXD50000422401</p>

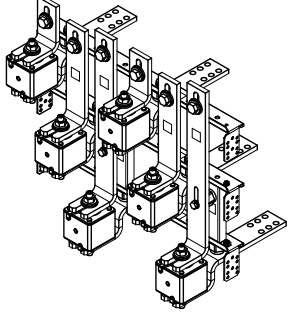
**Shrouds**

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	 <p>Instruction code: 3AXD50000335022</p>

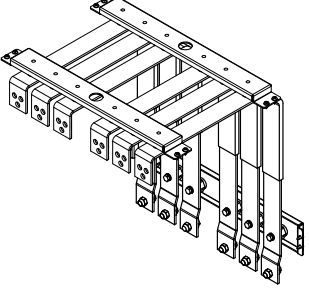
### AC busbars

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	 <p>Instruction code: 3AXD50000431557</p>

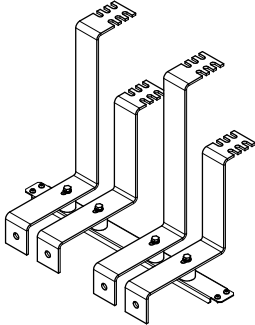
### AC busbars to quick connector

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	 <p>Instruction code: 3AXD50000430574</p>


### 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	 <p>Instruction code: 3AXD50000430550</p>

### DC connection flanges

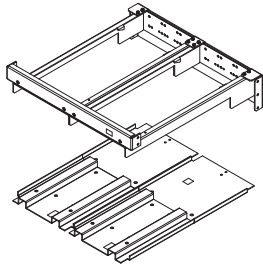
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

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	 <p>Instruction code: 3AXD50000002638</p>

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

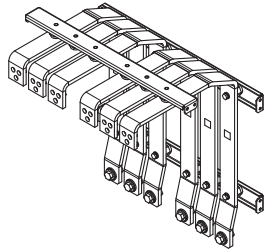
### Module installation parts

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	 <p>Instruction code: 3AXD50000006128</p>

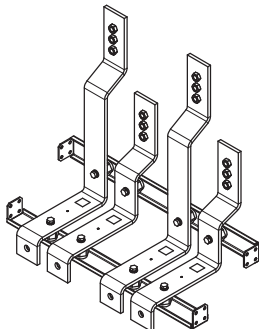
### AC busbars to quick connector

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	 <p>Instruction code: 3AXD50000006270</p>


### 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	 <p>Instruction code: 3AXD50000006281</p>

### 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	 <p>Instruction code: 3AXD50000002638</p>

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

Component	See section ...
Main switch-disconnector	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main contactor	<a href="#">Main contactors (page 225)</a>
Main circuit breaker	<a href="#">Main circuit breakers (page 227)</a>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25)	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Pull-out ramp	<a href="#">Insertion/Extraction ramp (page 250)</a>

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## 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 \(page 253\)](#). The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
$U_n = 400\text{ V}$		<ul style="list-style-type: none"> <li>• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard</li> </ul>
ACS880-304-1210A-3+A004+A018	2×D8T	
ACS880-304-1820A-3+A004+A018	2×D8T	
$U_n = 500\text{ V}$		
ACS880-304-1210A-5+A004+A018	2×D8T	
ACS880-304-1820A-5+A004+A018	2×D8T	
$U_n = 690\text{ V}$		
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, <b>ACS880-304-1210A-3 +A004+A018</b>	<b>+C129:</b> cULus listed <b>+C132:</b> Marine type approval. For more information, see <i>ACS880 +C132 marine type-approved drive modules and module packages supplement (3AXD50000037752 [English])</i> . <b>+C134:</b> CSA certified <b>+C183:</b> Internal heating element in the module <b>+C188:</b> Direct-on-line (DOL) cooling fan (400 V) <b>+G304:</b> 115 V auxiliary voltage supply <b>Note:</b> D8T DOL fan is always 400 V.

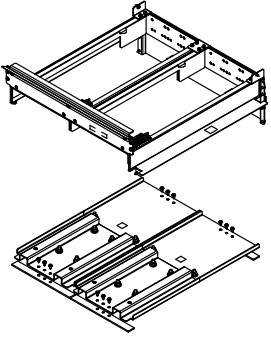
**Note:** The following components are always required to construct a working unit out of the modules and you must order them separately:

- Control unit kits. See section [Control units \(page 213\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).
- Quick connectors (3AUA0000119227) for each module. See section [Quick connector for D8T module \(page 218\)](#).

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

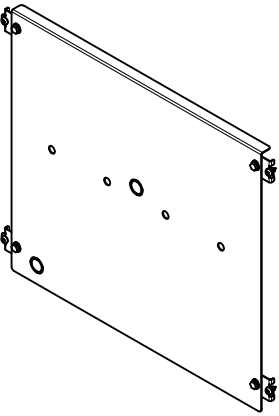
**Module installation parts**

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	 <p>Instruction code: 3AXD50000422401</p>

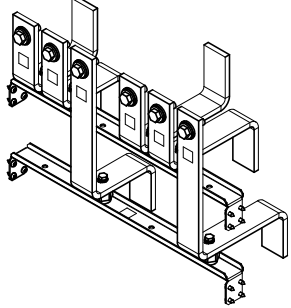
**Shrouds**

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	 <p>Instruction code: 3AXD50000335022</p>

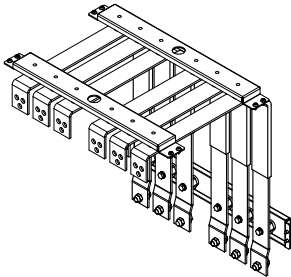
### AC busbars

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	 <p>Instruction code: 3AXD50000432417</p>

### 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	 <p>Instruction code: 3AXD50000430574</p>


**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
2xD8T	600 mm (23.62 in)	1	A-6-8-202-VX	3AXD50000422104	 <p>Instruction code: 3AXD50000430550</p>

**DC connection flanges**

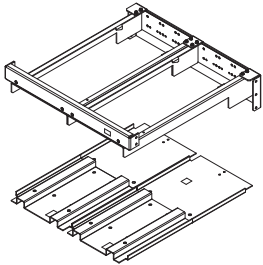
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

Module size	Enclosure width	Qty	Kit code	Ordering code	Illustration
2xD8T	600 mm (23.62 in)	2	A-468-8-230 (Rittal VX25 and generic enclosures)	3AXD50000002639	 <p>Instruction code: 3AXD50000002638</p>

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

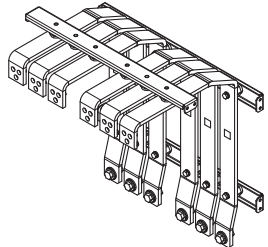
### Module installation parts

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	 <p>Instruction code: 3AXD50000006128</p>

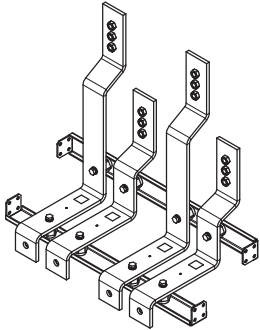
### AC busbars to quick connector

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	 <p>Instruction code: 3AXD50000006270</p>


### 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	 <p>Instruction code: 3AXD50000006281</p>

### 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	 <p>Instruction code: 3AXD50000002638</p>

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

Component	See section ...
Main switch-disconnector	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main contactor	<a href="#">Main contactors (page 225)</a>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25)	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Pull-out ramp	<a href="#">Insertion/Extraction ramp (page 250)</a>

## 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 \(page 253\)](#). The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
$U_n = 400\text{ V}$		<ul style="list-style-type: none"> <li>• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard</li> </ul>
ACS880-304-2730A-3+A018	3×D8T	
$U_n = 500\text{ V}$		
ACS880-304-2730A-5+A018	3×D8T	
$U_n = 690\text{ V}$		
ACS880-304-2280A-7+A018	3×D8T	

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

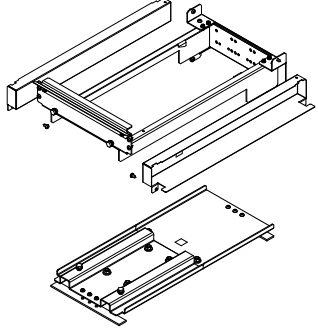
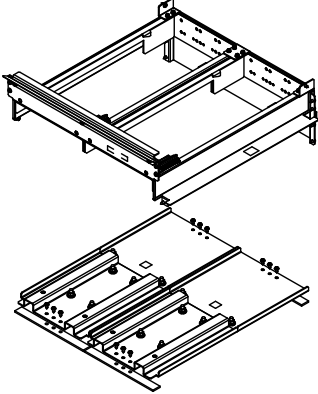
**Note:** The following components are always required to construct a working unit out of the modules and you must order them separately:

- Control unit kits. See section [Control units \(page 213\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).
- Quick connectors (3AUA0000119227) for each module. See section [Quick connector for D8T module \(page 218\)](#).

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

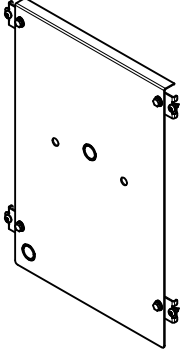
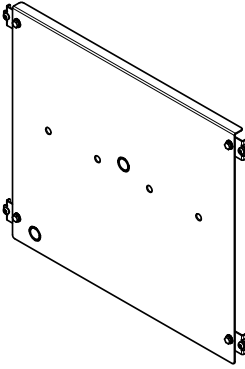
**Module installation parts**

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	 <p>Instruction code: 3AXD50000372799</p>
2×D8T	600 mm (23.62 in)	1	A-6-8-305-VX	3AXD50000422074	 <p>Instruction code: 3AXD50000422401</p>

## Shrouds

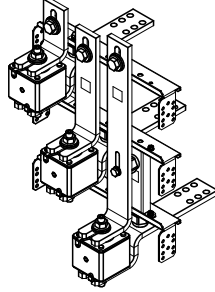
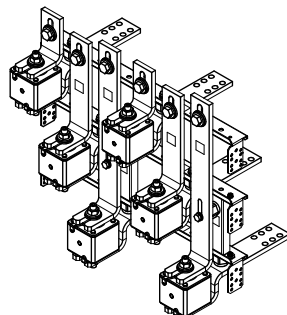
Shrouds are used for IP20 touch protection with the cabinet doors open.

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

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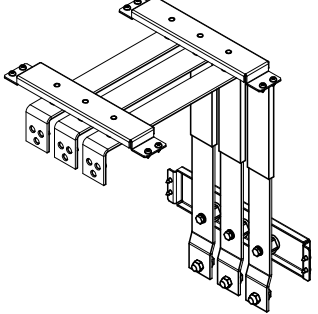
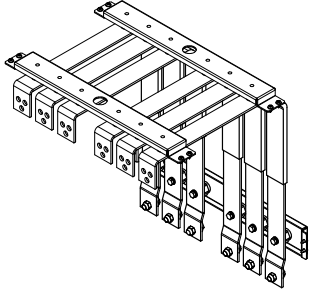
**AC busbars**

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	 <p>Instruction code: 3AXD50000384594</p>
2×D8T	600 mm (23.62 in)	1	A-6-8-103-VX	3AXD50000422081	 <p>Instruction code: 3AXD50000431557</p>

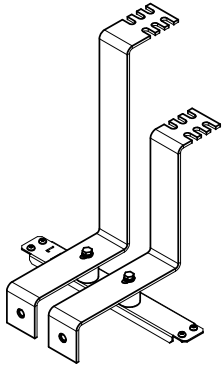
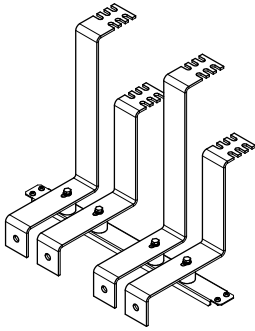
**AC busbars to quick connector**

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	 <p>Instruction code: 3AXD50000379736</p>
2×D8T	600 mm (23.62 in)	1	A-6-8-182-VX	3AXD50000422098	 <p>Instruction code: 3AXD50000430574</p>


### 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	 <p>Instruction code: 3AXD50000373871</p>
2×D8T	600 mm (23.62 in)	1	A-6-8-202-VX	3AXD50000422104	 <p>Instruction code: 3AXD50000430550</p>

### DC connection flanges

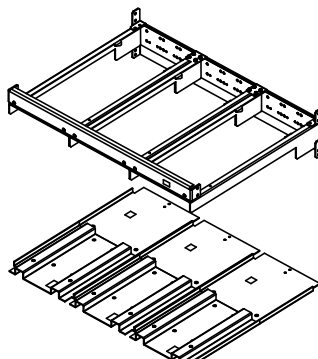
The common DC Flat-PLS busbars of the cabinet connect to the supply module DC terminals via the DC busbars and the DC connection flanges.

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	 <p>Instruction code: 3AXD50000002638</p>

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

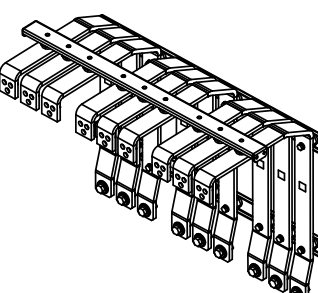
**Module installation parts**

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	 <p>Instruction code: 3AXD50000006142</p>

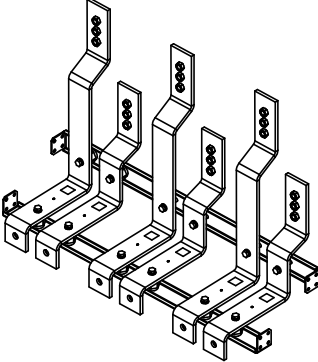
**AC busbars to quick connector**

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	 <p>Instruction code: 3AXD50000006272</p>

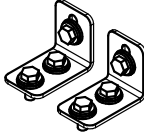
## DC busbars

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	 <p>Instruction code: 3AXD50000006284</p>

## 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	 <p>Instruction code: 3AXD50000002638</p>

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

Component	See section ...
Main switch-disconnector	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main circuit breaker	<a href="#">Main circuit breakers (page 227)</a>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25)	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Pull-out ramp	<a href="#">Insertion/Extraction ramp (page 250)</a>

## 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 \(page 253\)](#). The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
$U_n = 400\text{ V}$		<ul style="list-style-type: none"> <li>• Diode supply modules with half-controlled diode-thyristor bridges and speed-controlled cooling fans as standard</li> </ul>
ACS880-304-3640A-3+A018	4×D8T	
ACS880-304-4560A-3+A018	5×D8T	
ACS880-304-5470A-3+A018	6×D8T	
$U_n = 500\text{ V}$		
ACS880-304-3640A-5+A018	4×D8T	
ACS880-304-4560A-5+A018	5×D8T	
ACS880-304-5470A-5+A018	6×D8T	
$U_n = 690\text{ V}$		
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, <b>ACS880-304-3640A-3 +A018</b>	<ul style="list-style-type: none"> <li><b>+A004:</b> 12-pulse option of half-controlled diode-thyristor bridge</li> <li><b>+C129:</b> cULus listed</li> <li><b>+C132:</b> Marine type approval. For more information, see <i>ACS880 +C132 marine type-approved drive modules and module packages supplement (3AXD50000037752 [English])</i>.</li> <li><b>+C134:</b> CSA certified</li> <li><b>+C183:</b> Internal heating element in the module</li> <li><b>+C188:</b> Direct-on-line (DOL) cooling fan (400 V)</li> <li><b>+G304:</b> 115 V auxiliary voltage supply</li> </ul> <p><b>Note:</b> D8T DOL fan is always 400 V.</p>

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

- Control unit kits. See section [Control units \(page 213\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).
- Quick connectors (3AUA0000119227) for each module. See section [Quick connector for D8T module \(page 218\)](#).

#### ■ **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 \(page 184\)](#)
- [Mechanical installation accessories – 2×D8T, 6-pulse, Rittal VX25 \(page 190\)](#)
- [Mechanical installation accessories – 2×D8T, 6-pulse, generic cabinet \(page 192\)](#)
- [Mechanical installation accessories and tools – 3×D8T, 6-pulse, generic cabinet \(page 207\)](#)

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

Component	See section ...
Main switch-disconnector	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main circuit breaker	<a href="#">Main circuit breakers (page 227)</a>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25)	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Pull-out ramp	<a href="#">Insertion/Extraction ramp (page 250)</a>

## 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 \(page 253\)](#). The type designation is the ordering code for the modules.

Diode supply module type	Frame size	Contents
$U_n = 400\text{ V}$		• 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	
$U_n = 500\text{ V}$		
ACS880-304-2430A-5+A004+A018	4×D8T	
ACS880-304-3640A-5+A004+A018	4×D8T	
ACS880-304-5470A-5+A004+A018	6×D8T	
$U_n = 690\text{ V}$		
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, <b>ACS880-304-2430A-3 +A004+A018</b>	<b>+C129:</b> cULus listed <b>+C132:</b> Marine type approval. For more information, see <i>ACS880 +C132 marine type-approved drive modules and module packages supplement (3AXD50000037752 [English])</i> . <b>+C134:</b> CSA certified <b>+C183:</b> Internal heating element in the module <b>+C188:</b> Direct-on-line (DOL) cooling fan (400 V) <b>+G304:</b> 115 V auxiliary voltage supply <b>Note:</b> 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:

- Control unit kits. See section [Control units \(page 213\)](#).
- 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 \(page 216\)](#).
- Control circuit plug connectors for each supply module and the necessary cabling. See section [Control circuit plug connectors for supply modules \(page 217\)](#).
- Quick connectors (3AUA0000119227) for each module. See section [Quick connector for D8T module \(page 218\)](#).

### ■ 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 \(page 184\)](#)
- [Mechanical installation accessories – 2×D8T, 12-pulse, Rittal VX25 \(page 196\)](#)
- [Mechanical installation accessories and tool – 2×D8T, 12-pulse, generic cabinet \(page 199\)](#)
- [Mechanical installation accessories and tools – 3×D8T, 6-pulse, generic cabinet \(page 207\)](#)

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

Component	See section ...
Main switch-disconnector	<a href="#">Main switch-disconnectors (page 218)</a>
AC fuses	<a href="#">AC fuses (page 222)</a>
Main circuit breaker	<a href="#">Main circuit breakers (page 227)</a>
Control panel and its door mounting	<a href="#">Control panel (page 243)</a>
Ventilation kits	<a href="#">Ventilation kits (page 244)</a>
Bracket for Flat-PLS busbar holder (Rittal VX25)	<a href="#">Bracket for Rittal Flat-PLS busbar holder (common AC) (page 250)</a> <a href="#">DC bus installation parts (for Rittal VX25 enclosures) (page 251)</a>
Pull-out ramp	<a href="#">Insertion/Extraction ramp (page 250)</a>

## Control units

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

### ■ UCU control units - 6-pulse

Supply module	Size	Control unit	Qty	Ordering code
$U_N = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
ACS880-304-0650A-3+A018	1xD8T	ACS880UCU-304-22-0	1	ACS880UCU-304-22-0
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	ACS880UCU-304-23-0	1	ACS880UCU-304-23-0
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				

### ■ UCU control units - 12-pulse

Supply module	Size	Control unit	Qty	Ordering code
$U_N = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
ACS880-304-0910A-3+A004+A018	2xD7T	ACS880UCU-304-22-0	1	ACS880UCU-304-22-0
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			
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				

## ■ BCU control units – 6-pulse

Supply module	Size	Control unit	Qty	Ordering code
$U_N = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
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				

## ■ BCU control units – 12-pulse

Supply module	Size	Control unit	Qty	Ordering code
$U_N = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
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			
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 contain a pair of plastic fibre optic cables. They are needed in communication between the control unit and the power (inverter/supply/brake/converter) module.

Length	Kit type designation	Ordering code
2 m (6.6 ft)	NLWC-02	58988821
3 m (9.8 ft)	NLWC-03	58948233
5 m (16.4 ft)	NLWC-05	58948250
7 m (23 ft)	NLWC-07	58948268
10 m (32.8 ft)	NLWC-10	58948276

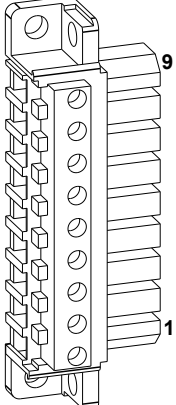
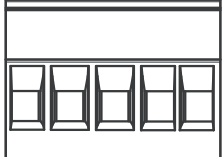
## Control circuit plug connectors for supply modules

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 \(page 107\)](#).

Connect- or	Data	Qty	Ordering code	Illustration
X50	STV S 9 SB 9-pole 6 KV/3 (female) 4 mm <sup>2</sup> , 500 V, 32 A	1 per module	3AUA0000059813	
X53	MSTB 2.5/5-ST-5.08 2.50 mm <sup>2</sup> , 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 \(page 274\)](#).

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

## 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 \(page 280\)](#).

**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 \(page 227\)](#).

### ■ IEC main switch-disconnector kits – 6-pulse

Supply module	Size	IEC switch-disconnectors		Qty	Ordering code
		Type	Data		
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
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					

Supply module	Size	IEC switch-disconnectors		Qty	Ordering code
		Type	Data		
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*		OT1250E12	1250 A, 1000 V	1	3AXD50000006185
ACS880-304-1060A-7+A018					
ACS880-304-1520A-7+A018*					

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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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		
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
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				
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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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 \(page 285\)](#).

### ■ IEC/UL main AC fuses – 6-pulse

Supply module	Size	AC fuses (IEC, UL)		Qty	Ordering code
		Type	Data		
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
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		
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
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		
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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 \(page 287\)](#).

### ■ IEC/UL main contactors – 6-pulse

Supply module type	Size	Main contactor (IEC, UL)		Qty	Ordering code
		Type	Data		
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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		
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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 on the Internet.

### ■ IEC main circuit breakers – 6-pulse 230 V

Main circuit breaker (IEC)					
Supply module ACS880-304-...	Size	Type	Data	Qty	Ordering code
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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-A 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048346
2730A-5+A018	3×D8T	E4.2S-A 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-A 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-A 6300	6300 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000048350
5470A-5+A018	6×D8T	E6.2V-A 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)

## 228 Ordering information

<b>Content of the 6-pulse 230 V main circuit breakers</b>	
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 <sup>1)</sup>	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S) 1SDA083028R1 (E6.2V)

<sup>1)</sup> Certificate not included in E4.2S 3200 and E6.2V 6300.

<b>Wagon (IEC)</b>				
Supply module ACS880-304-...	Type	Data	Qty	Ordering code
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
1210A-3+A018*	E2.2-A_W_FP_2000	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	3-pole rear HR-HR term., IEC	1	3AXD50000048356
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018	E4.2_W_FP_3200	3-pole rear HR-HR term., IEC	1	3AXD50000048356
4560A-3+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-5+A018				
3800A-7+A018				
5470A-3+A018	E6.2X_W_FP_6300	3-pole rear HR-HR term., IEC	1	3AXD50000048353
5470A-5+A018				
4560A-7+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402

<b>Content of the 6-pulse 230 V wagons</b>	
W FP $I_u=2000$ 3p HR HR UL /	1SDA079698R1 (E2.2-A_W_FP_2000)
W FP $I_u=2500$ 3p HR HR UL /	1SDA079700R1 (E4.2-A_W_FP_2500)
WAGON W FP $I_u=5000$ HR HR UL	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 $I_u=3200$ HR HR, IEC	1SDA073913R1 (E4.2_W_FP_3200)
W FP $I_u=6300$ or X version 3p HR HR	1SDA073920R1 (E6.2X_W_FP_6300)

Content of the 6-pulse 230 V wagons	
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

### ■ UL main circuit breakers – 6-pulse 230 V

Main circuit breaker (UL)					
Supply module ACS880-304-...	Size	Type	Data	Qty	Ordering code
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
1210A-3+A018	2×D8T	E2.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850396
1820A-3+A018	2×D8T	E2.2V-A 2000	2000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850402
1210A-5+A018	2×D8T	E2.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850396
1820A-5+A018	2×D8T	E2.2V-A 2000	2000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850402
1520A-7+A018	2×D8T	E4.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	1	3AXD50000826025
2730A-3+A018	3×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
2730A-5+A018	3×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048348
2280A-7+A018	3×D8T	E4.2V-A 2500	2500 A, 600 V, 3P, 100 kA, UL	1	3AXD50000826049
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	4000 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
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)

230 Ordering information

<b>Wagon (UL)</b>				
<b>Supply module ACS880-304-...</b>	<b>Type</b>	<b>Data</b>	<b>Qty</b>	<b>Ordering code</b>
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
1210A-3+A018	E2.2-A_W_FP_2000	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_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000	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_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402

<b>Content of the 6-pulse 230 V wagons</b>	
W FP I <sub>u</sub> =2000 3p HR HR UL /	1SDA079698R1 (E2.2-A_W_FP_2000)
W FP I <sub>u</sub> =2500 3p HR HR UL /	1SDA079700R1 (E4.2-A_W_FP_2500)
WAGON W FP I <sub>u</sub> =5000 HR HR UL	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
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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-A 3200	3200 A, 690 V, 3P, 66 kA, IEC	2	3AXD50000048346
5470A-5+A004+A018	6×D8T	E4.2S-A 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 <sup>1)</sup>	1SDA083022R1 (E2.2S) 1SDA083025RI (E4.2S)

<sup>1)</sup> Certificate not included in E4.2S 3200

232 Ordering information

<b>Wagon (IEC)</b>				
<b>Supply module ACS880-304-...</b>	<b>Type</b>	<b>Data</b>	<b>Qty</b>	<b>Ordering code</b>
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
2430A- 3+A004+A018*	E2.2-A_W_FP_2000	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	3-pole rear HR-HR term., IEC	2	3AXD50000048356
5470A- 5+A004+A018				
4560A- 7+A004+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	2	3AXD50000039281

<b>Content of the 12-pulse 230 V wagons</b>	
W FP I <sub>u</sub> =2000 3p HR HR UL / W FP I <sub>u</sub> =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 I <sub>u</sub> =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
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
2430A-3+A004+A018	4×D8T	E2.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	2	3AXD50000850396
3640A-3+A004+A018	4×D8T	E2.2V-A 2000	2000 A, 600 V, 3P, 100 kA, UL	2	3AXD50000850402
2430A-5+A004+A018	4×D8T	E2.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	2	3AXD50000850396
3640A-5+A004+A018	4×D8T	E2.2V-A 2000	2000 A, 600 V, 3P, 100 kA, UL	2	3AXD50000850402
2130A-7+A004+A018	4×D8T	E4.2V-A 1600	1200 A, 600 V, 3P, 100 kA, UL	2	3AXD50000826025
3040A-7+A004+A018	4×D8T	E4.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	2	3AXD50000826025
5470A-3+A004+A018	6×D8T	E6.2V-A 4000	4000A, 600 V, 3P, 100 kA, UL	2	3AXD50000048348
5470A-5+A004+A018	6×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	2	3AXD50000048348
4560A-7+A004+A018	6×D8T	E4.2V-A 2500	2500 A, 600 V, 3P, 100 kA, UL	2	3AXD50000826049

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

234 Ordering information

<b>Wagon (UL)</b>				
<b>Supply module ACS880-304-...</b>	<b>Type</b>	<b>Data</b>	<b>Qty</b>	<b>Ordering code</b>
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
2430A- 3+A004+A018	E2.2-A_W_FP_2000	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_5000	3-pole rear HR-HR term., UL	2	3AXD50000048402
5470A- 5+A004+A018				
4560A- 7+A004+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	2	3AXD50000039281

<b>Content of the 12-pulse 230 V wagons</b>	
W FP I <sub>u</sub> =2000 3p HR HR UL /	1SDA079698R1 (E2.2-A_W_FP_2000)
W FP I <sub>u</sub> =2500 3p HR HR UL /	1SDA079700R1 (E4.2-A_W_FP_2500)
WAGON W FP I <sub>u</sub> =5000 HR HR UL	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
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
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-A 3200	3200 A, 690 V, 3P, 66 kA, IEC	1	3AXD50000048341
2730A-5+A018	3×D8T	E4.2S-A 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-A 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-A 6300	6300 A, 690 V, 3P, 100 kA, IEC	1	3AXD50000048344
5470A-5+A018	6×D8T	E6.2V-A 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
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 <sup>1)</sup>	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S) 1SDA083028R1 (E6.2V)

<sup>1)</sup> Certificate not included in E4.2S 3200 and E6.2V 6300.

236 Ordering information

<b>Wagon (IEC)</b>				
<b>Supply module ACS880-304-...</b>	<b>Type</b>	<b>Data</b>	<b>Qty</b>	<b>Ordering code</b>
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
1210A-3+A018*	E2.2-A_W_FP_2000	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	3-pole rear HR-HR term., IEC	1	3AXD50000048356
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018	E4.2_W_FP_3200	3-pole rear HR-HR term., IEC	1	3AXD50000048356
4560A-3+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-5+A018				
3800A-7+A018				
5470A-3+A018	E6.2X_W_FP_6300	3-pole rear HR-HR term., IEC	1	3AXD50000048353
5470A-5+A018				
4560A-7+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402

<b>Content of the 6-pulse 115 V wagons</b>	
W FP I <sub>u</sub> =2000 3p HR HR UL /	1SDA079698R1 (E2.2-A_W_FP_2000)
W FP I <sub>u</sub> =2500 3p HR HR UL /	1SDA079700R1 (E4.2-A_W_FP_2500)
WAGON W FP I <sub>u</sub> =5000 HR HR UL	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 I <sub>u</sub> =3200 HR HR, IEC /	1SDA073913R1 (E4.2_W_FP_3200)
W FP I <sub>u</sub> =6300 or X version 3p HR HR	1SDA073920R1 (E6.2X_W_FP_6300)
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

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

Main circuit breaker (UL)					
Supply module ACS880-304-...	Size	Type	Data	Qty	Ordering code
$U_n = 400 \text{ V}, 500 \text{ V}, 690 \text{ V}$					
1210A-3+A018	2×D8T	E2.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850631
1820A-3+A018	2×D8T	E2.2V-A 2000	2000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850655
1210A-5+A018	2×D8T	E2.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850631
1820A-5+A018	2×D8T	E2.2V-A 2000	2000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000850655
1520A-7+A018	2×D8T	E4.2V-A 1600	1600 A, 600 V, 3P, 100 kA, UL	1	3AXD50000826155
2730A-3+A018	3×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
2730A-5+A018	3×D8T	E6.2V-A 4000	4000 A, 600 V, 3P, 100 kA, UL	1	3AXD50000048347
2280A-7+A018	3×D8T	E4.2V-A 2500	2500 A, 600 V, 3P, 100 kA, UL	1	3AXD50000826179
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	4000 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
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.

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<b>Wagon (UL)</b>				
<b>Supply module ACS880-304-...</b>	<b>Type</b>	<b>Data</b>	<b>Qty</b>	<b>Ordering code</b>
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
1210A-3+A018	E2.2-A_W_FP_2000	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_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
2730A-5+A018				
2280A-7+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	1	3AXD50000039281
3640A-3+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
3640A-5+A018				
3040A-7+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-3+A018	E6.2-A_W_FP_5000	3-pole rear HR-HR term., UL	1	3AXD50000048402
4560A-5+A018				
3800A-7+A018				
4560A-7+A018				

<b>Content of the 6-pulse 115 V wagons</b>	
W FP I <sub>u</sub> =2000 3p HR HR UL /	1SDA079698R1 (E2.2-A_W_FP_2000)
W FP I <sub>u</sub> =2500 3p HR HR UL /	1SDA079700R1 (E4.2-A_W_FP_2500)
WAGON W FP I <sub>u</sub> =5000 HR HR UL	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
Un = 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-A 3200	3200 A, 690 V, 3P, 66 kA, IEC	2	3AXD50000048341
5470A-5+A004+A018	6×D8T	E4.2S-A 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 <sup>1)</sup>	1SDA083022R1 (E2.2S) 1SDA083025R1 (E4.2S)

<sup>1)</sup> Certificate not included in E4.2S 3200.

## 240 Ordering information

<b>Wagon (IEC)</b>				
<b>Supply module ACS880-304-...</b>	<b>Type</b>	<b>Data</b>	<b>Qty</b>	<b>Ordering code</b>
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
2430A- 3+A004+A018*	E2.2-A_W_FP_2000	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	3-pole rear HR-HR term., IEC	2	3AXD50000048356
5470A- 5+A004+A018				
4560A- 7+A004+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	2	3AXD50000039281

<b>Content of the 12-pulse 115 V wagons</b>	
W FP I <sub>u</sub> =2000 3p HR HR UL / W FP I <sub>u</sub> =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 I <sub>u</sub> =3200 HR HR, IEC	1SDA073913R1 (E4.2_W_FP_3200)
AUP 5 contacts 400V E2.2...E6.2, IEC	1SDA073764R1

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

Main circuit breaker (UL)					
Supply module ACS880-304-...	Size	Type	Data	Qty	Ordering code
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$					
2430A-3+A004+A018	4×D8T	E2.2V-A 1600	1600°A, 600°V, 3P, 100°kA, UL	2	3AXD50000850631
3640A-3+A004+A018	4×D8T	E2.2V-A 2000	2000°A, 600°V, 3P, 100°kA, UL	2	3AXD50000850655
2430A-5+A004+A018	4×D8T	E2.2V-A 1600	1600°A, 600°V, 3P, 100°kA, UL	2	3AXD50000850631
3640A-5+A004+A018	4×D8T	E2.2V-A 2000	2000°A, 600°V, 3P, 100°kA, UL	2	3AXD50000850655
2130A-7+A004+A018	4×D8T	E4.2V-A 1600	1200°A, 600°V, 3P, 100°kA, UL	2	3AXD50000826155
3040A-7+A004+A018	4×D8T	E4.2V-A 1600	1600°A, 600°V, 3P, 100°kA, UL	2	3AXD50000826155
5470A-3+A004+A018	6×D8T	E6.2V-A 4000	4000°A, 600°V, 3P, 100°kA, UL	2	3AXD50000048347
5470A-5+A004+A018	6×D8T	E6.2V-A 4000	4000°A, 600°V, 3P, 100°kA, UL	2	3AXD50000048347
4560A-7+A004+A018	6×D8T	E4.2V-A 2500	2500°A, 600°V, 3P, 100°kA, UL	2	3AXD50000826179

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.

## 242 Ordering information

Wagon (UL)				
Supply module ACS880-304-...	Type	Data	Qty	Ordering code
$U_n = 400\text{ V}, 500\text{ V}, 690\text{ V}$				
2430A- 3+A004+A018	E2.2-A_W_FP_2000	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_5000	3-pole rear HR-HR term., UL	2	3AXD50000048402
5470A- 5+A004+A018				
4560A- 7+A004+A018	E4.2-A_W_FP_2500	3-pole rear HR-HR term., UL	2	3AXD50000039281

Content of the 12-pulse 115°V wagons	
W FP I <sub>u</sub> =2000 3p HR HR UL /	1SDA079698R1 (E2.2-A_W_FP_2000)
W FP I <sub>u</sub> =2500 3p HR HR UL /	1SDA079700R1 (E4.2-A_W_FP_2500)
WAGON W FP I <sub>u</sub> =5000 HR HR UL	1SDA079706R1 (E6.2-A_W_FP_5000)
AUP 5 contacts 400V E2.2...E6.2 - left set	1SDA080373R1

### ■ Main circuit breaker and wagon cover


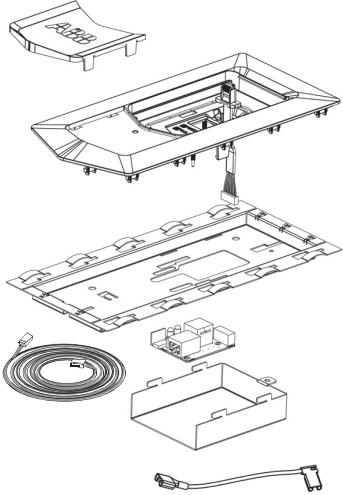
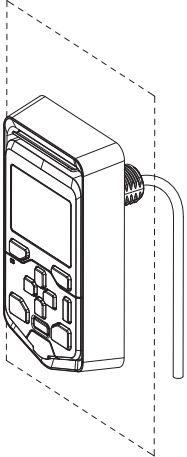
One cover is needed for each main circuit breaker/wagon pair. For further details regarding arc protection, see *Drive modules cabinet design and construction instructions* (3AUA0000107668 [English]).

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

Type	Description	Ordering code	Illustration
ACS-AP-W	Control panel with Bluetooth	3AXD50000025965	 A photograph of the ACS-AP-W control panel. It is a handheld device with a black top section containing a screen and a white bottom section with several buttons. The screen displays 'Bluetooth' at the top, 'Mobile device connected' in the middle, and a Bluetooth symbol. Below the screen is a 'Disconnect' button. The bottom section has buttons for 'Stop', 'Loc/Rem', and 'Start', along with directional arrows and a question mark.
DPMP-01	Door mounting kit (IP55)	3AUA0000108878	 A technical line drawing of the DPMP-01 door mounting kit. It shows an exploded view of the components: a top mounting plate, a main mounting plate, a bottom plate, a cable, a connector, and a small box. The top plate has 'ABB' written on it.
DPMP-02	Door mounting kit (IP65)	3AXD50000009374	 A technical line drawing of the DPMP-02 door mounting kit. It shows a control panel being mounted onto a door. The panel is shown in a dashed-line outline to indicate its position on the door. A cable is connected to the back of the panel.

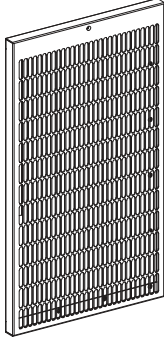
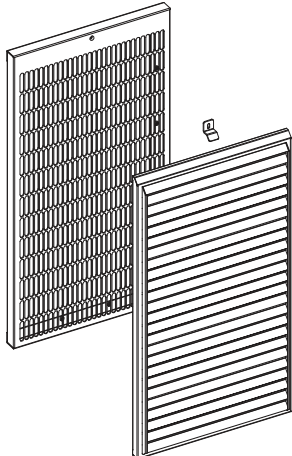
For more information on the door mounting kits, such as the contents of the kit, see the installation manuals:

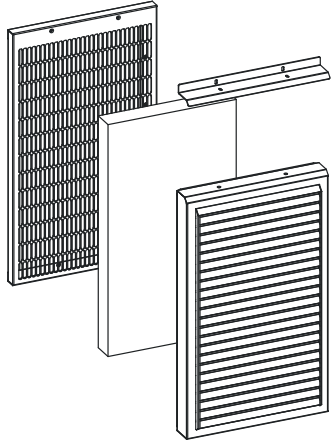
- [DPMP-01 mounting platform for control panels installation guide \(3AUA0000100140 \[English\]\)](#)
- [DPMP-02/03 mounting platform for control panels installations guide \(3AUA0000136205 \[English\]\)](#).

## Ventilation kits

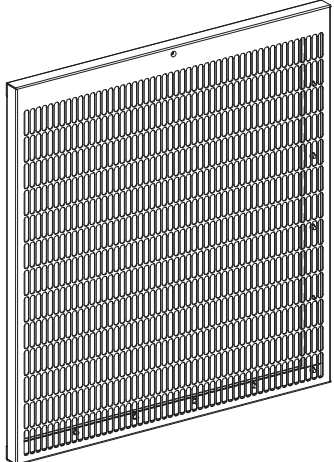
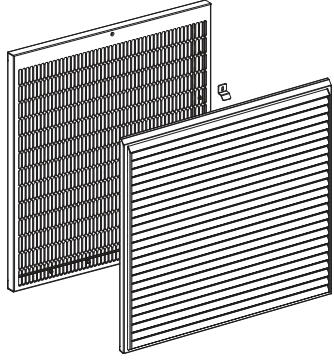
### ■ Air inlet kits

#### Air inlet kits 400 mm cabinet

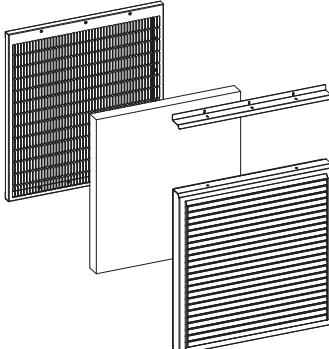
Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117002	A-4-X-021	 <p>Instruction code: 3AUA0000116879</p>
IP42	1	3AUA0000117007	A-4-X-024	 <p>Instruction code: 3AUA0000116873</p>

Used with ...	Qty	Ordering code	Kit code	Illustration
IP54	1	3AXD50000009184	A-4-X-027	 <p>Instruction code: 3AXD50000009989</p>

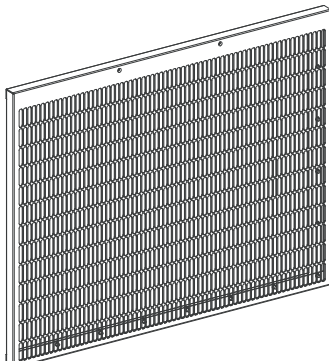
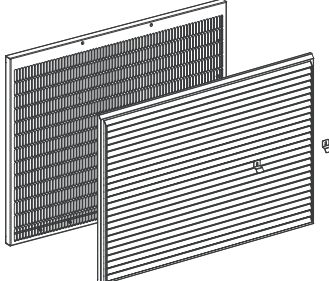
**Air inlet kits 600 mm cabinet**

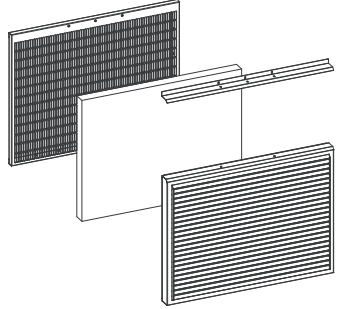
Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117003	A-6-X-022	 <p>Instruction code: 3AUA0000116880</p>
IP42	1	3AUA0000117008	A-6-X-025	 <p>Instruction code: 3AUA0000116874</p>

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Used with ...	Qty	Ordering code	Kit code	Illustration
IP54	1	3AXD50000009185	A-6-X-028	 <p>Instruction code: 3AXD50000009990</p>

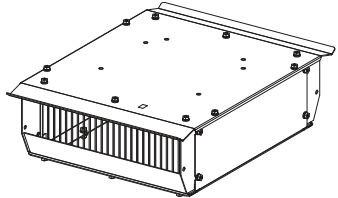
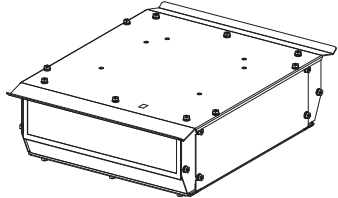
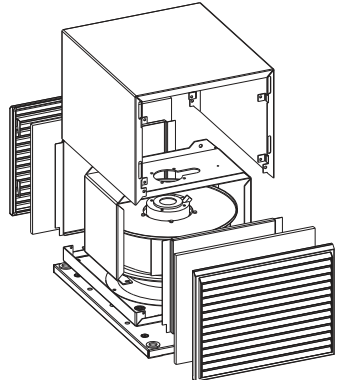
**Air inlet kits 800 mm cabinet**

Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000117005	A-8-X-023	 <p>Instruction code: 3AUA0000116887</p>
IP42	1	3AUA0000117009	A-8-X-026	 <p>Instruction code: 3AUA0000116875</p>

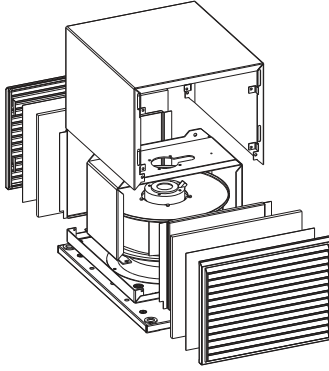
Used with ...	Qty	Ordering code	Kit code	Illustration
IP54	1	3AXD50000009186	A-8-X-029	 <p>Instruction code: 3AXD50000010001</p>

## ■ Air outlet kits

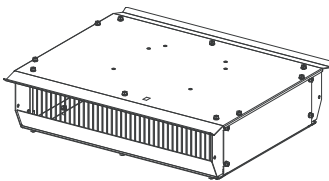
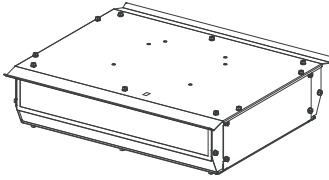
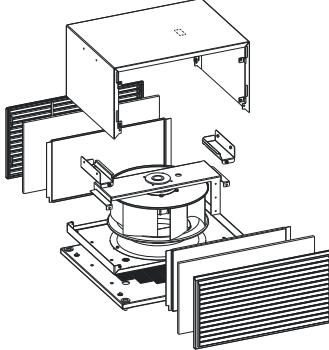
### Air outlet kits 400 mm cabinet

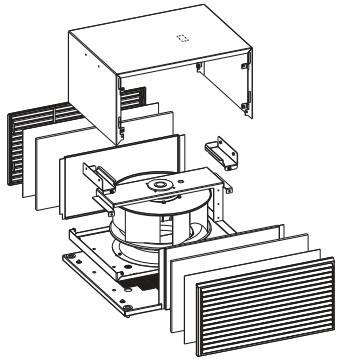
Used with ...	Qty	Ordering code	Kit code	Illustration
IP20	1	3AUA0000125203	A-4-X-042	 <p>Instruction code: 3AXD50000001983</p>
IP42	1	3AUA0000114968	A-4-X-040	 <p>Instruction code: 3AUA0000115292</p>
IP54 (230 V)	1	3AXD50000009187	A-4-X-064	 <p>Instruction code: 3AXD50000010284</p> <p><b>Note:</b> Fan to be ordered separately</p>

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

**Air outlet kits 600 mm cabinet**

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

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

### ■ 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 $\mu$ F, 600 V	1	3AXD50000006959
	Connector	PLUG; 12 AWG; 2.50 mm <sup>2</sup>	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm <sup>2</sup>	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 $\mu$ F, 600 V	1	3AXD50000006885
	Connector	PLUG; 12 AWG; 2.50 mm <sup>2</sup>	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm <sup>2</sup>	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 $\mu$ F; 220 V	1	68713188
	Connector	PLUG; 12 AWG; 2.50 mm <sup>2</sup>	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm <sup>2</sup>	1	3AXD50000000724

UL/CSA				
Enclosure / Degree of protection (Auxiliary voltage)	Component		Qty	Ordering code
	Name	Data		
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 <sup>2</sup>	1	3AXD50000000723
	Connector	SOCKET; 12 AWG; 2.50 mm <sup>2</sup>	1	3AXD50000000724

## Miscellaneous

### ■ Lifting device for the D7T supply module

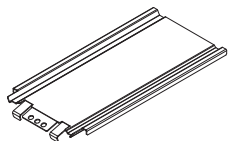
Use the lifting device when replacing a frame D7T module in ABB drives ACx enclosure or in the Rittal VX25 enclosure. See also section [Replacing the D7T supply module \(page 160\)](#).

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

### ■ Insertion/Extraction ramp

The ramp can be used when inserting or extracting wheeled modules.

Do not use the ramp with plinth heights over 100 mm (3.93 in). The ramp is designed for a plinth height of 100 mm (the standard plinth height of Rittal VX25 enclosures).

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

### ■ 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.

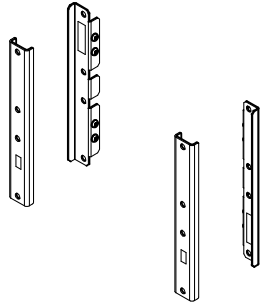
**Note:** The designs presented in this manual for Rittal VX25 enclosures employ the Rittal Flat-PLS busbar system. Make sure that the current carrying capability of the busbars is not exceeded at any point of the drive system.

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	 <p>Instruction code: 3AXD50000372782</p>

■ **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	 <p>Instruction code: 3AXD50000333639</p>

### ■ EMC/RFI cat C2 filters

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

ACS880-304-...	EMC/RFI cat C2 filter				Assembly kit for toroid		
	Type	Data	Qty	Ordering code	Type	Qty	Ordering code
$U_n = 400\text{ V}$							
0650A-3+A018	B84143B	1250 A, 500 V	1	3AXD50000009256	Assembly kit including 20 $\mu\text{H}$ toroid	1	3AUA0000094324
0980A-3+A018	1250S080						
$U_n = 500\text{ V}$							
0650A-5+A018	B84143B	1250 A, 500 V	1	3AXD50000009256	Assembly kit including 20 $\mu\text{H}$ toroid	1	3AUA0000094324
0980A-5+A018	1250S080						

For dimension drawing, see section [EMC/RFI cat C2 filter and related accessories](#) (page 296).

# 12

## 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)
$U_n = 400\text{ V}$									
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

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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

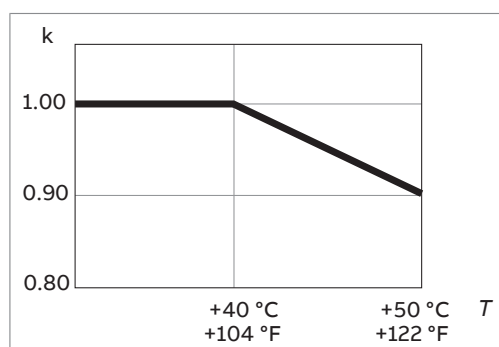
### Note:

- 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
<b><math>U_n = 400\text{ V}</math></b>		
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
<b><math>U_n = 500\text{ V}</math></b>		
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
<b><math>U_n = 690\text{ V}</math></b>		
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 \(page 222\)](#). 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 <sup>2</sup> s	$U_n$ 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
<b><math>U_n = 400\text{ V}</math></b>								
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
<b><math>U_n = 500\text{ V}</math></b>								
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
<b><math>U_n = 690\text{ V}</math></b>								
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

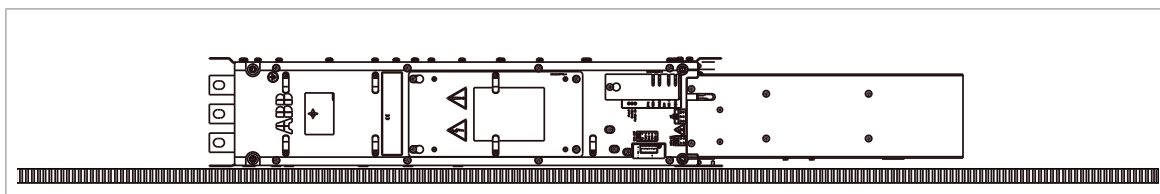
Left Free space for smooth installation

Right Free space for smooth installation

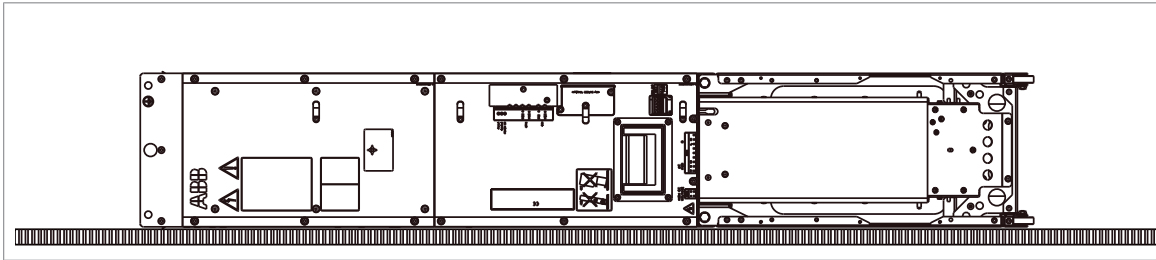
## Allowable mounting orientations

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 <sup>1)</sup> kW	Air flow		Efficiency %	Noise level dB
		m <sup>3</sup> /h	ft <sup>3</sup> /min		
$U_n = 400\text{ V}$					
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
$U_n = 500\text{ V}$					
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 <sup>1)</sup> kW	Air flow		Efficiency %	Noise level dB
		m <sup>3</sup> /h	ft <sup>3</sup> /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
<b><math>U_n = 690</math> V</b>					
<b>6-pulse</b>					
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
<b>12-pulse</b>					
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

<sup>1)</sup> 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
UCU control unit	24 V DC (+30%/-20%)	-	2.5 <sup>1)</sup>	-	60
BCU Control unit	24 V DC $\pm$ 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-online 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-online 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

1) The value is applicable in these conditions: UCU-24 control unit, with 24 V DC power supply, with control panel, with 4 relay outputs in use, with all analog outputs at maximum current, with RDCO module and 3 option modules installed, and with 8 inverter modules in the STO circuit.

$U_n$	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 the current carrying capacity ( $I_{Lmax}$ ) and typical size for copper and aluminum cables with PVC or XLPE insulation. A correction factor  $K = 0.70$  is used. Time const. is the temperature time constant of the cable.

The cable sizing is based on a maximum of 9 cables installed side by side on a ladder type cable tray, with three trays on top of each other (with 30 cm of space between the trays), and an ambient temperature of 30 °C (IEC 60364-5-52).

Conductor cross-section (copper)		PVC insulation		XLPE insulation		Typical dimensions of copper cable	
		Conductor temperature 70°		Conductor temperature 90°			
mm <sup>2</sup>	AWG / kcmil	$I_{Lmax}$ (A)	Time const. (s)	$I_{Lmax}$ (A)	Time const. (s)	Size	ø [mm]
1.5	16	13	85	16	67	3 × 1.5 + 1.5	13
2.5	12	18	121	23	88	3 × 2.5 + 2.5	14

Conductor cross-section (copper)		PVC insulation Conductor temperature 70°		XLPE insulation Conductor temperature 90°		Typical dimensions of copper cable	
mm <sup>2</sup>	AWG / kcmil	$I_{Lmax}$ (A)	Time const. (s)	$I_{Lmax}$ (A)	Time const. (s)	Size	ø [mm]
4	12	24	175	30	133	3 × 4 + 4	16
6	10	30	251	38	186	3 × 6 + 6	18
10	8	42	359	53	268	3 × 10 + 10	21
16	6	56	514	70	391	3 × 16 + 16	23
25	4	71	791	89	598	3 × 25 + 16	24
35	1	88	1000	110	760	3 × 35 + 16	26
50	1/0	107	1308	134	990	3 × 50 + 25	29
70	2/0	137	1613	171	1230	3 × 70 + 35	32
95	4/0	167	2046	209	1551	3 × 95 + 50	38
120	250	193	2441	241	1859	3 × 120 + 70	41
150	300	223	2820	279	2139	3 × 150 + 70	44
185	400	255	3329	319	2525	3 × 185 + 95	50
240	500	301	4073	376	3099	3 × 240 + 120	55
300	600	348	4779	435	3636	3 × 300 + 150	58

Conductor cross-section (aluminum)		PVC insulation Conductor temperature 70°		XLPE insulation Conductor temperature 90°		Typical dimensions of aluminum cable	
mm <sup>2</sup>	AWG / kcmil	$I_{Lmax}$ (A)	Time const. (s)	$I_{Lmax}$ (A)	Time const. (s)	Size	ø [mm]
35	1	67	736	84	669	3 × 35 + 10 Cu	26
50	1/0	82	959	102	874	3 × 50 + 15 Cu	29
70	2/0	105	1182	131	1079	3 × 70 + 21 Cu	32
95	4/0	128	1492	159	1376	3 × 95 + 29 Cu	38
120	250	148	1776	184	1637	3 × 120 + 41 Cu	41
150	300	171	2042	213	1881	3 × 150 + 41 Cu	44
185	400	196	2422	243	2237	3 × 185 + 57 Cu	49
240	500	231	2967	286	2740	3 × 240 + 72 Cu	54
300	600	267	3478	330	3229	3 × 300 + 88 Cu	58

## Tightening torques

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

### ■ Electrical connections

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

### ■ Mechanical connections

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

### ■ Insulation supports

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

### ■ Cable lugs

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

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## Electrical power network specification

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

Voltage ( $U_1$ )	<p>400 V units: 380...415 V AC 3-phase <math>\pm 10\%</math>. This is indicated in the type designation label as typical input voltage level (3~ 400 V AC).</p> <p>500 V units: 380...500 V AC 3-phase <math>\pm 10\%</math>. This is indicated in the type designation label as typical input voltage levels (3~ 400/480/500 V AC).</p> <p>690 V units: IEC: 525...690 V AC 3-phase <math>\pm 10\%</math> In corner-grounded TN systems: 525...600 V AC UL/CSA: 525...600 V AC</p> <p>The voltage range is indicated in the type designation label as typical input voltage levels for example, 3~ 525/600/690 V AC.</p>
Network type	TN (grounded) and IT (ungrounded) systems
Frequency	50/60 Hz, variation $\pm 5\%$ of nominal frequency
Imbalance	Max. $\pm 3\%$ of nominal phase-to-phase input voltage
Short-circuit withstand strength (IEC/EN 61439-1)	<p><u>Rectifier units with the ABB-defined main switch-disconnector and fuses:</u> Rated peak withstand current (<math>I_{pk}</math>): 105 kA Rated short-time withstand current (<math>I_{cw}</math>): 50 kA/1 s</p> <p><u>Rectifier units with ABB-defined main breaker and fuses:</u> Rated peak withstand current (<math>I_{pk}</math>): 143 kA Rated short-time withstand current (<math>I_{cw}</math>): 65 kA/1 s</p>
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)

## DC connection data

Voltage ( $U_2$ ), 6-pulse modules	<p>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.</p> <p>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.</p> <p>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).</p>
Voltage ( $U_2$ ), 12-pulse modules	<p>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.</p> <p>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.</p> <p>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).</p>

## 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. Multidrive 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 [Control unit \(BCU\) \(page 125\)](#) or [Control unit \(UCU\) \(page 113\)](#).

## Protection classes

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

## Ambient conditions

This section gives the environmental requirements for the converter module.

The converter module must be used in a heated indoor controlled environment.

	<b>Operation</b> installed for stationary use	<b>Storage</b> in protective package	<b>Transportation</b> in protective package
<b>Altitude above sea level</b>	0...2000 m (0...6561.7 ft) no derating. For altitudes over 2000 m (6561.7 ft), contact ABB.	-	-
<b>Air temperature</b>	0...40 °C (32...104 °F) without derating. Output derated in the range 40...50 °C (104...122 °F). No condensation permitted.	-40...+70 °C (-40...+158 °F)	-40...+70 °C (-40...+158 °F)
<b>Relative humidity</b>	Maximum 95%, no condensation permitted.	Maximum 95%, no condensation permitted.	Maximum 95%, no condensation permitted.

<b>Contamination</b>	IEC/EN 60721-3-3:2002: Classification of environmental conditions - Part 3-3: Classification of groups of environmental parameters and their severities - Stationary use at weatherprotected locations	IEC 60721-3-1:1997: Classification of environmental conditions - Part 3 Classification of groups of environmental parameters and their severities - Section 1: Storage	IEC 60721-3-2:1997: Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 2: Transportation
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 permitted.	-	-
<b>Vibration</b> 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: 1 g	IEC/EN 60721-3-2:1997 2...9 Hz: max. 3.5 mm amplitude 9...200 Hz: 10 m/s <sup>2</sup> (32.8 ft/s <sup>2</sup> )
<b>Shock</b> IEC 60068-2-27:2008, EN 60068-2-27:2009 Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	Not permitted	With packing max. 100 m/s <sup>2</sup> (330 ft./s <sup>2</sup> ) 11 ms	With packing max. 100 m/s <sup>2</sup> (330 ft./s <sup>2</sup> ) 11 ms

## Cooling

<b>Method</b>	Forced air cooling
---------------	--------------------

## Colors

PMS 1C Cool Gray, PMS Process Black

## Materials

### ■ Module

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

### ■ Packaging of module

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

- Cardboard (heavy duty quality with wet strength glue in large modules)
- Molded pulp

- Plywood
- Wood
- PP (strapping)
- EPP (foam)
- PE (plastic bag and/or VCI film)
- Metal (fixing clamps, screws).

#### ■ **Packaging of options**

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

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

#### ■ **Manuals**

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

## **Disposal**

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

Generally all metals, such as steel, aluminum, copper and its alloys, and precious metals can be recycled as material. Plastics, rubber, cardboard and other packaging material can be used in energy recovery.

Printed circuit boards and DC capacitors need selective treatment according to IEC 62635 guidelines.

To aid recycling, most plastic parts are marked with an appropriate identification code. In addition, components containing substances of very high concern (SVHCs) are listed in European Chemicals Agency's SCIP database. SCIP is the database for information on Substances of Concern In articles as such or in complex objects (Products) established under the Waste Framework Directive (2008/98/EC). For further information, contact your local ABB distributor or consult European Chemicals Agency's SCIP database to find out which SVHCs are used in the drive, and to find out where those components are located.

Contact your local ABB distributor for further information on environmental aspects. End of life treatment must follow international and national regulations.

For more information on ABB end of life services, refer to [new.abb.com/service/end-of-life-services](http://new.abb.com/service/end-of-life-services).

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## 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.

### ■ Cyber security disclaimer

This product is designed to be connected to and to communicate information and data via a network interface. 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, 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.

ABB and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.

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# 13

## Dimension drawings

---

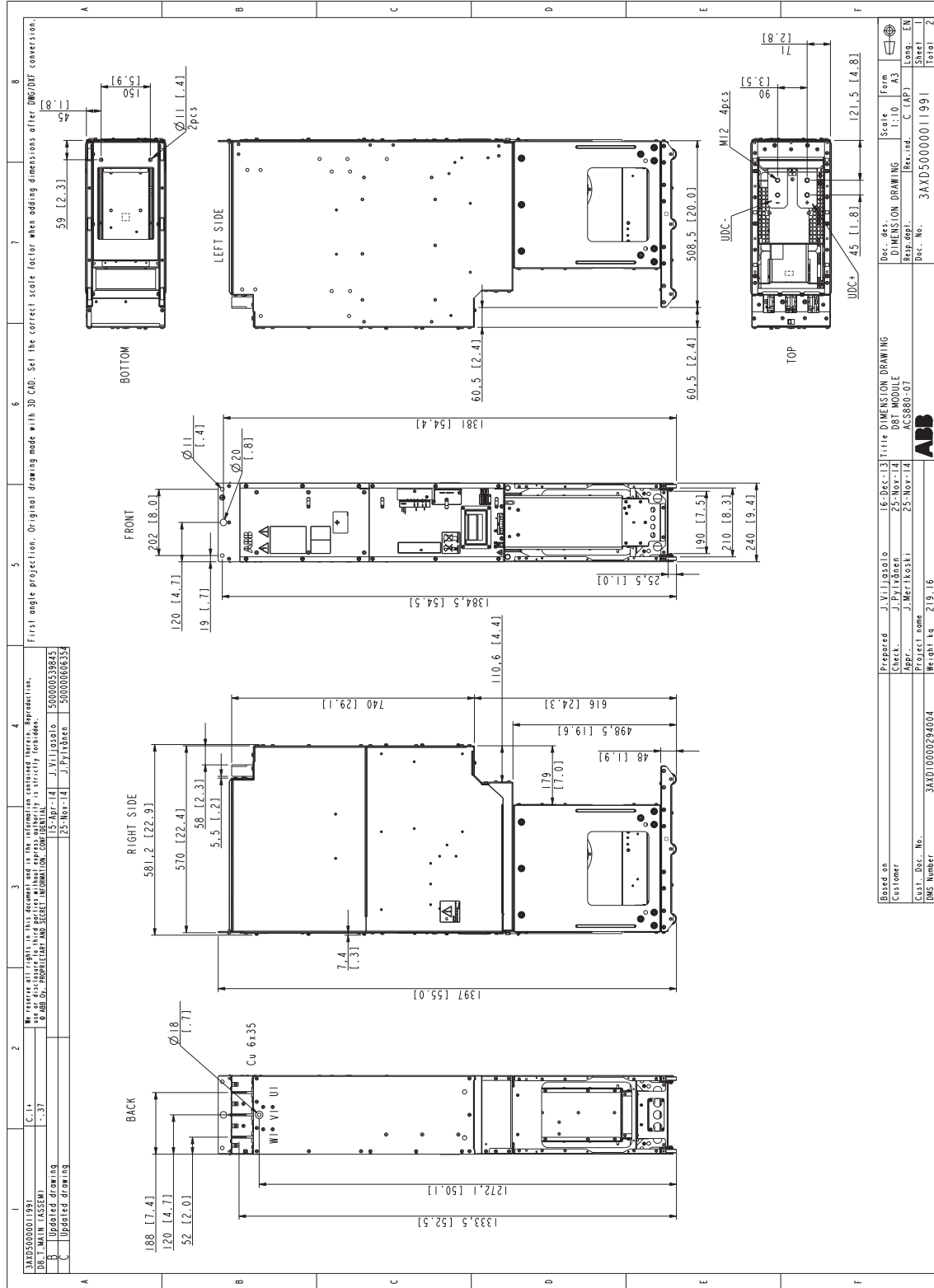
### Contents of this chapter

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

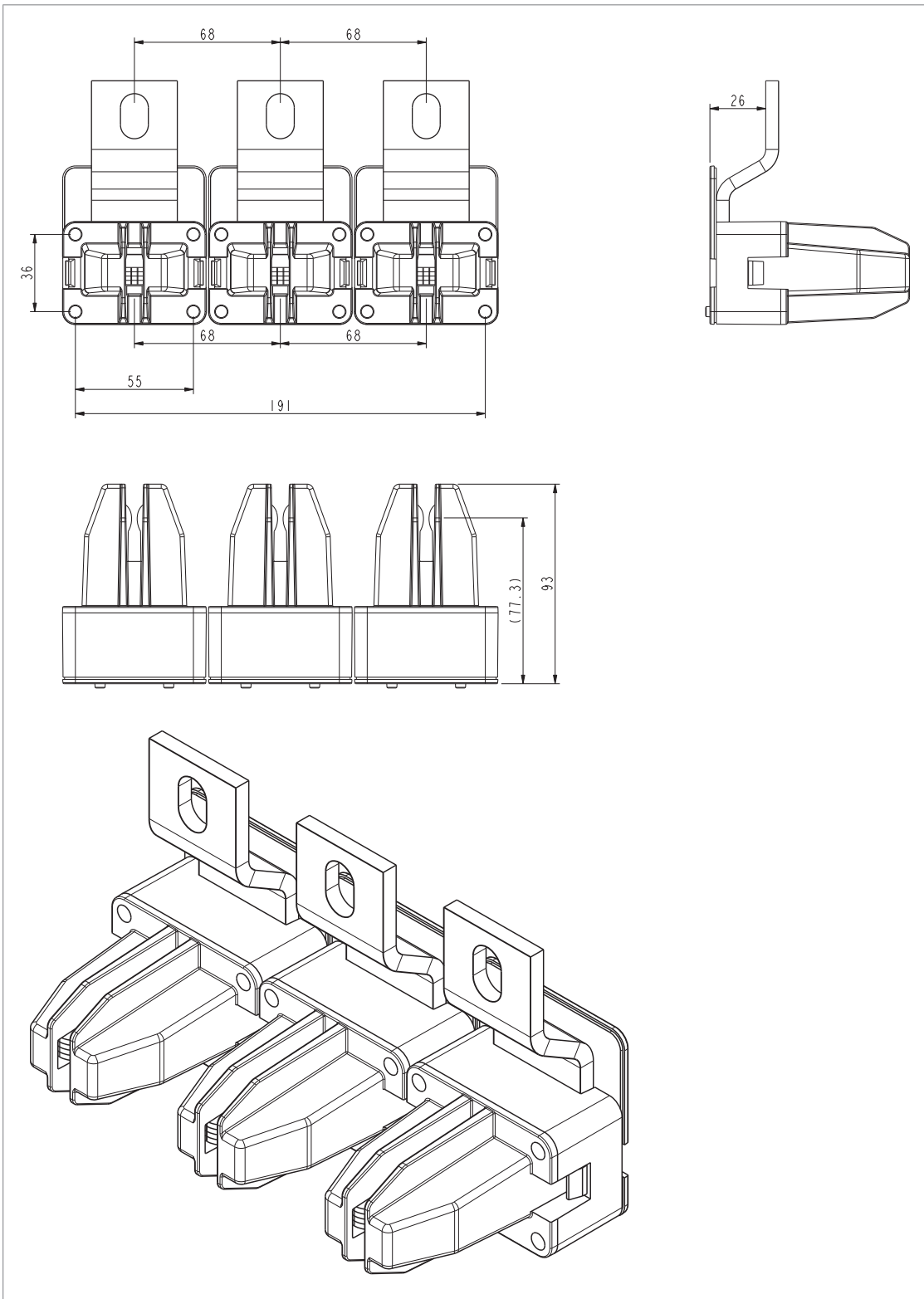
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# Dimensions of D8T supply module

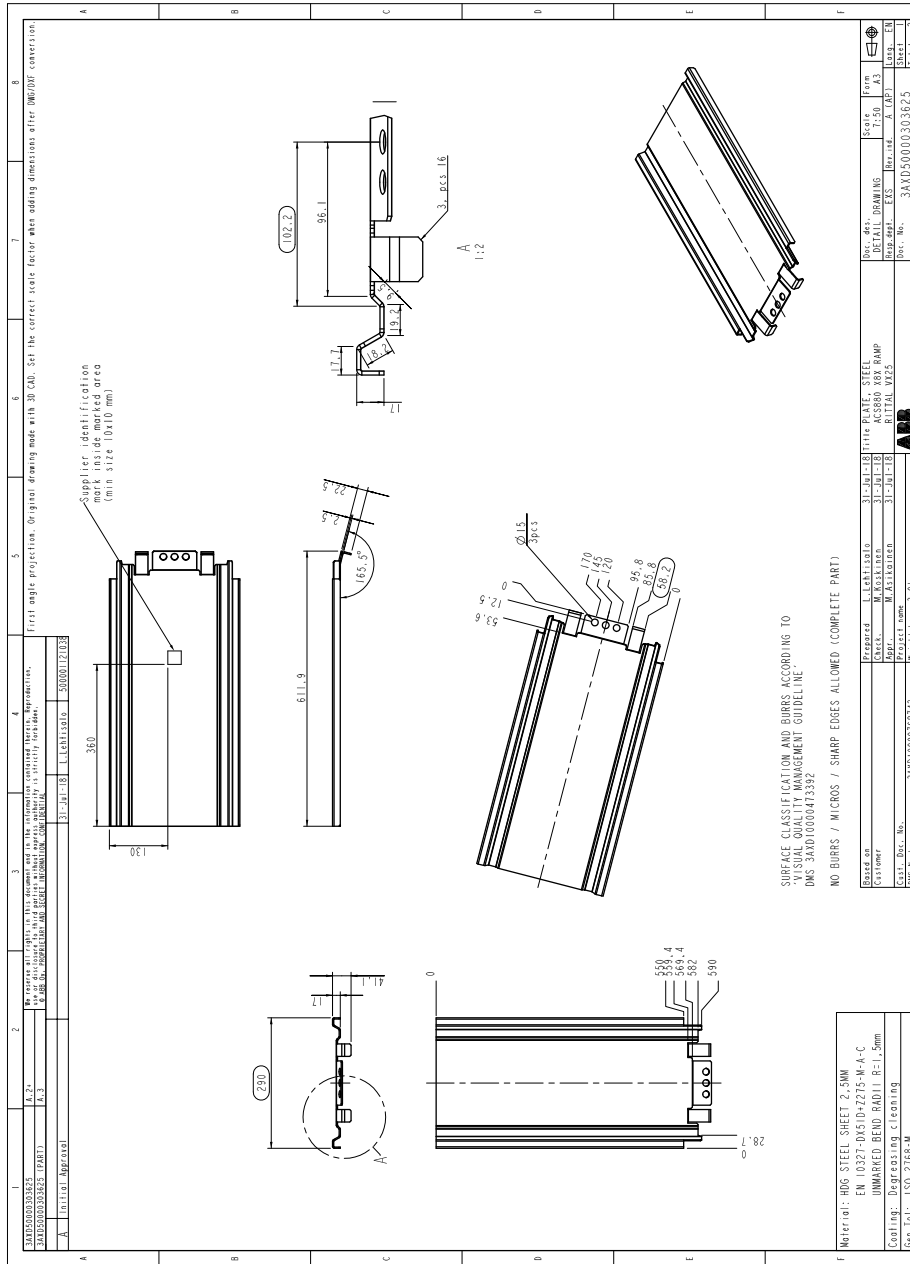


## Dimensions of quick connector for D8T module

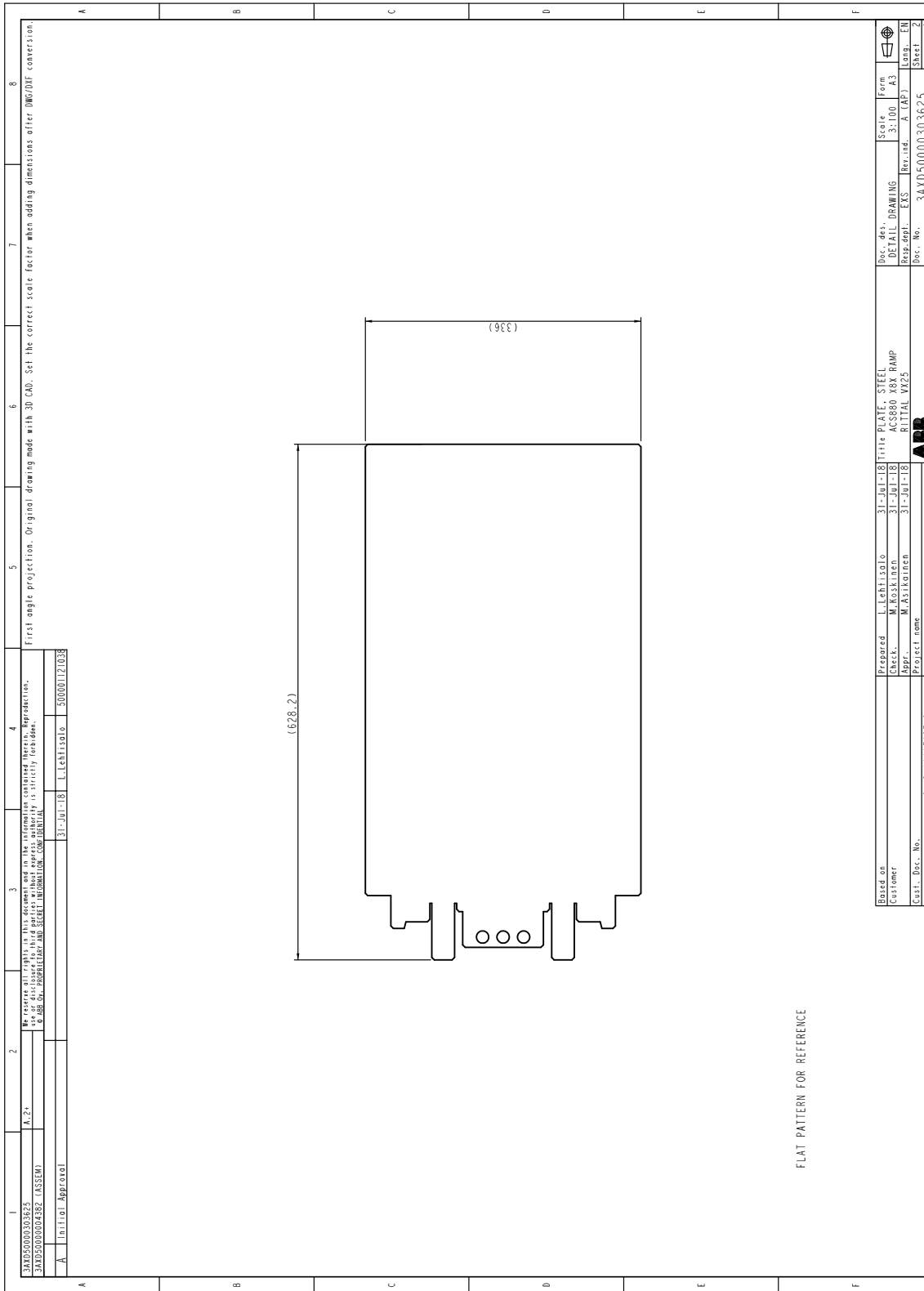


Dimensions in mm  
(1 mm = 0.0394 in)

# Dimensions of the pull-out ramp for D8T module

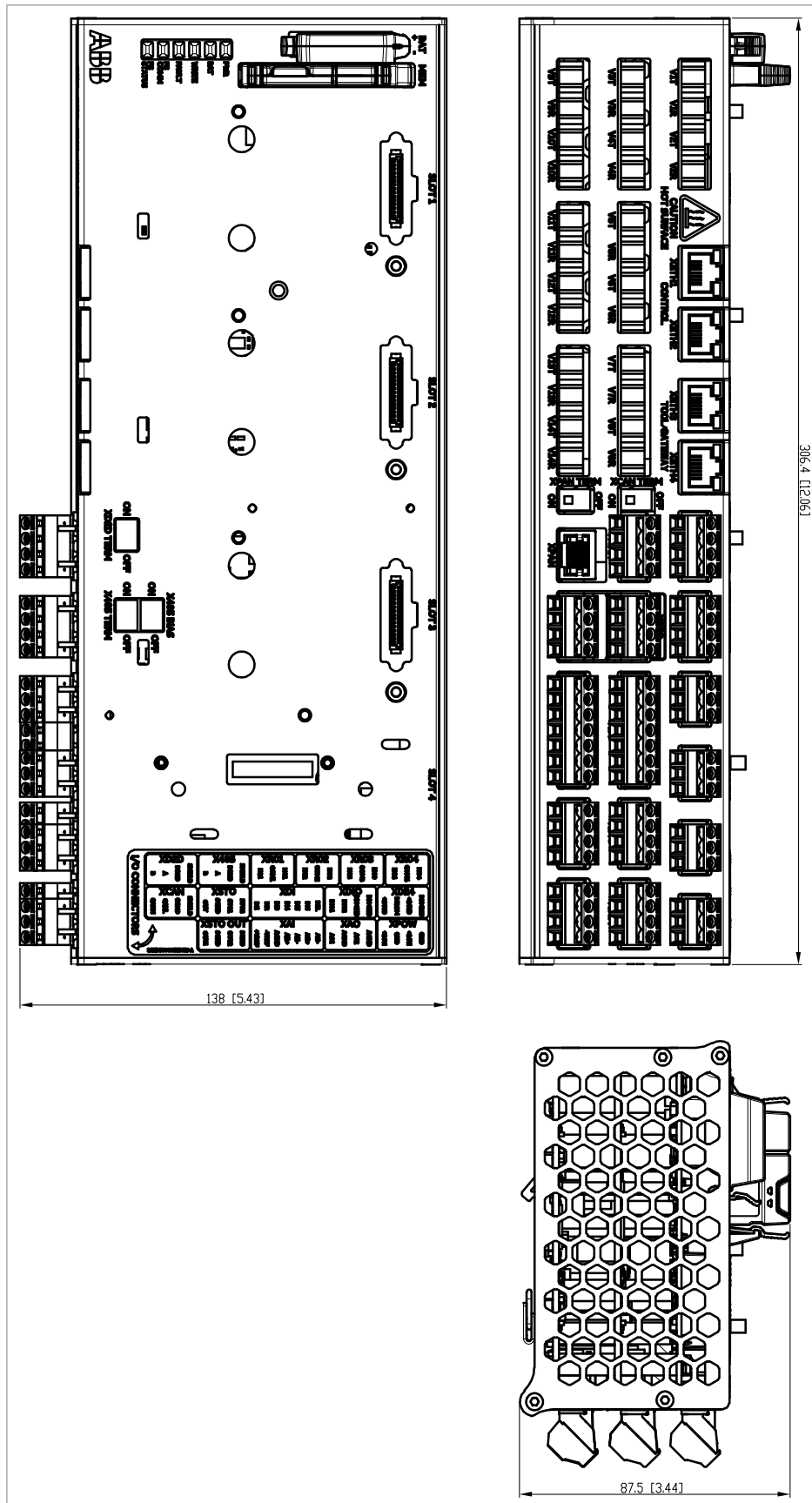


276 Dimension drawings

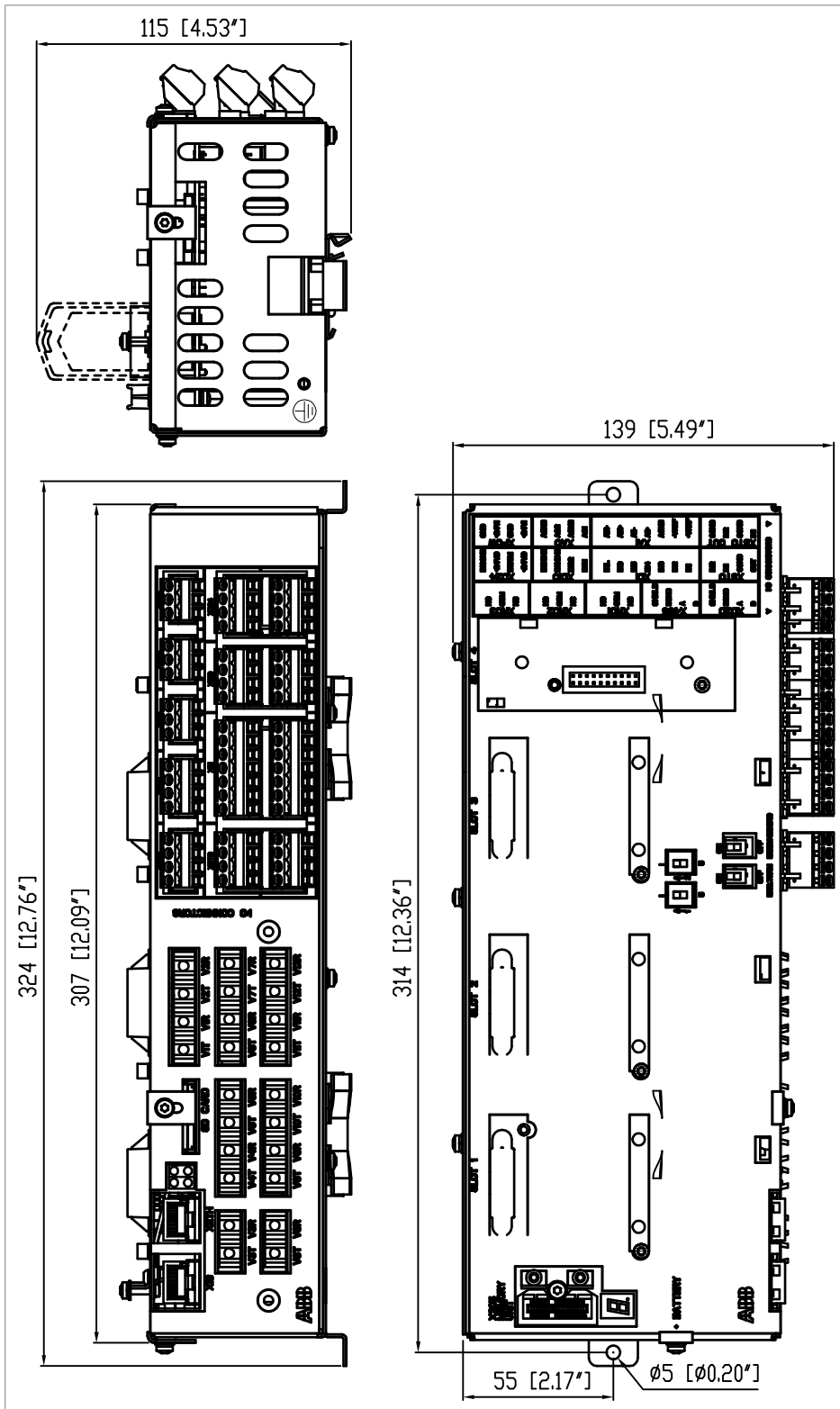


Prepared by	L. Lehtinen	31-11-18	Title	PLATE STEEL
Checked by	M. Koskela	31-11-18		AC8860 88X RAMP
Approved by	M. Asikainen	31-11-18		RITTAL VV25
Project name				
Draw. No.	<b>ABB</b>			
DWG Number	3AXD10000768742			

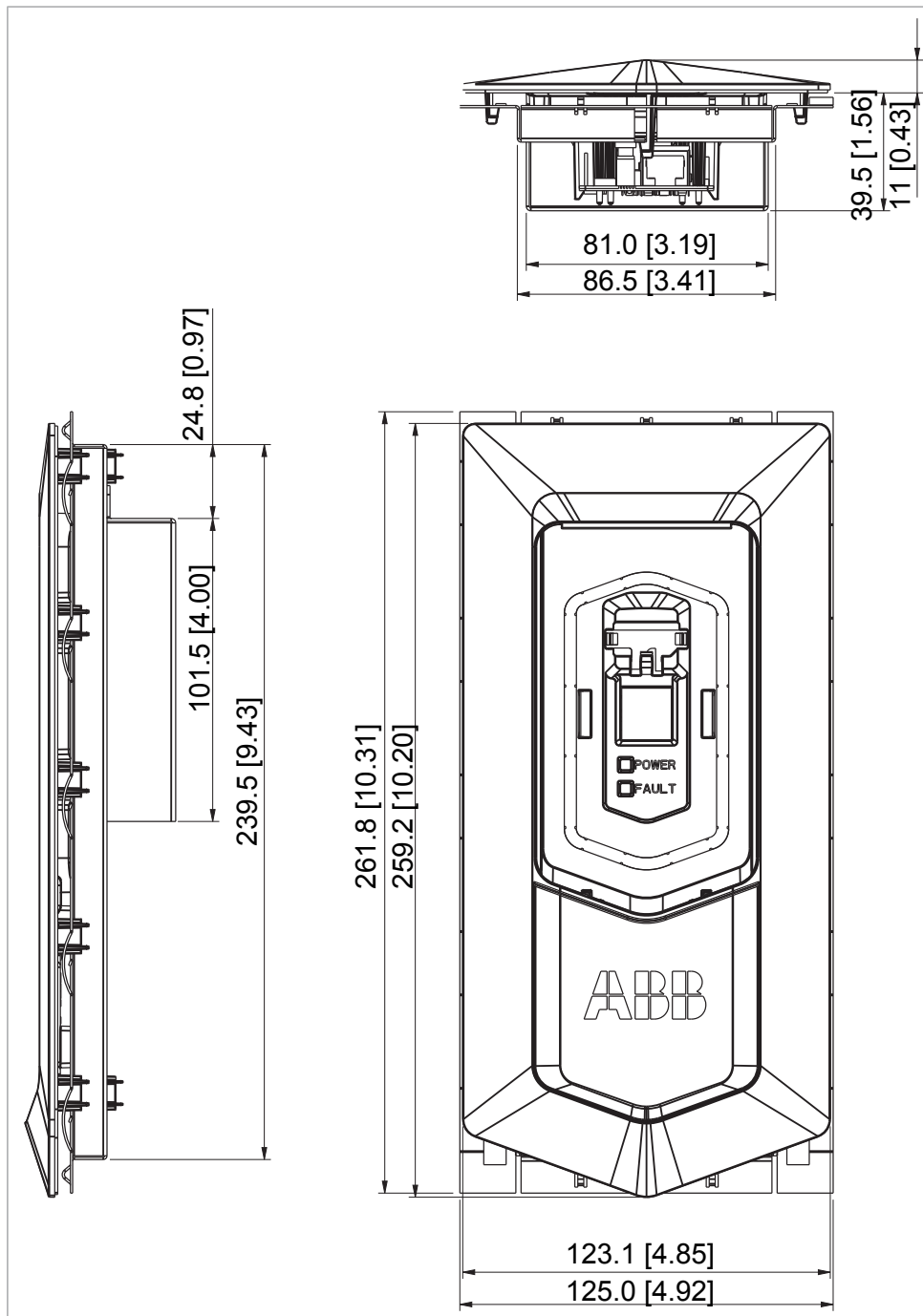
### Dimensions of UCU control unit



## Dimensions of BCU control unit



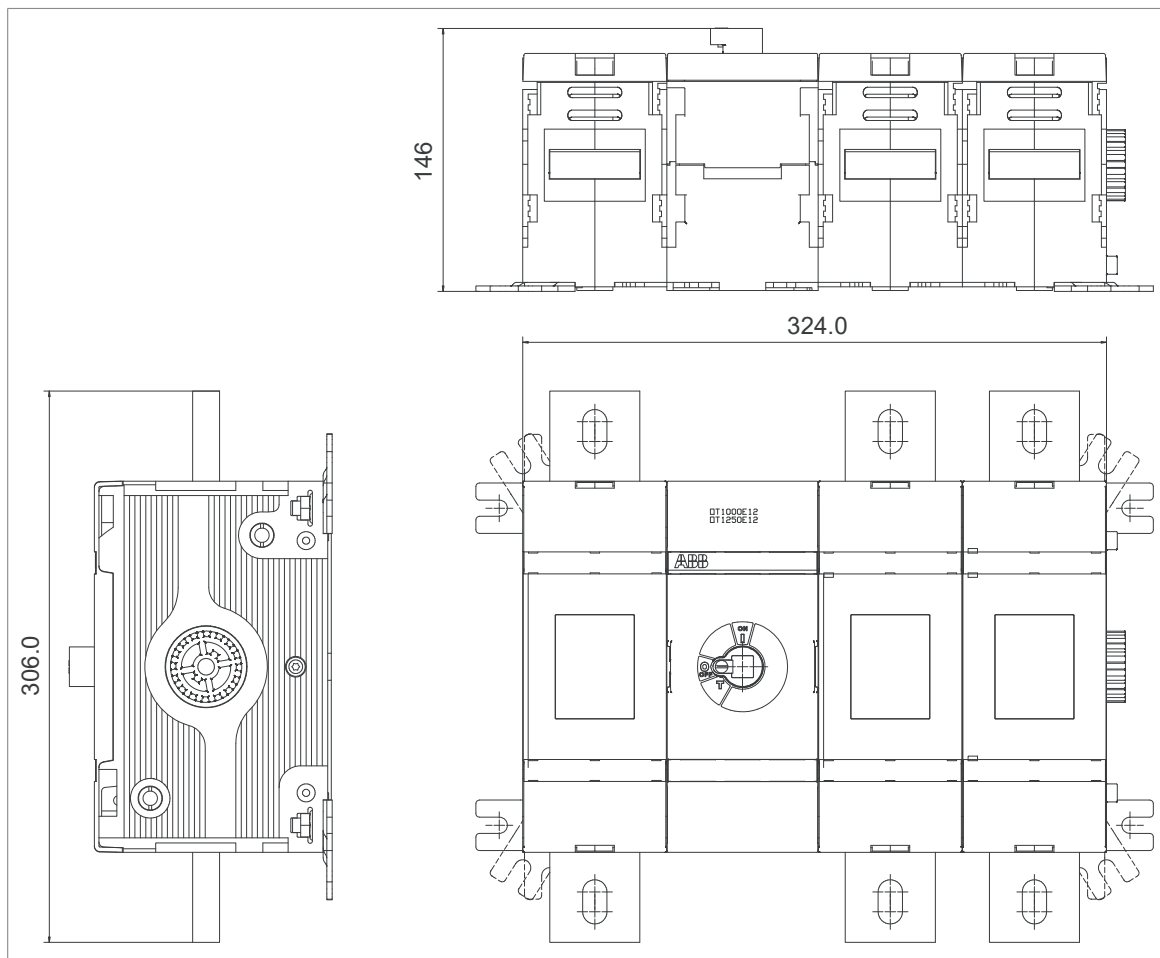
## Dimensions of ACS-AP-x control panel with DPMP-01 door mounting kit



- 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

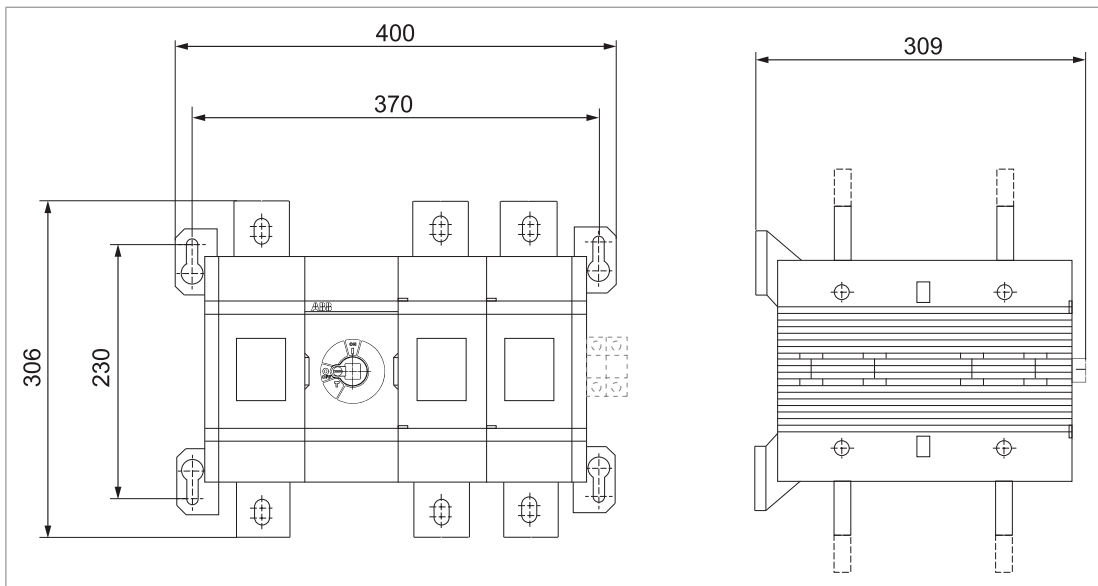
### ■ Dimensions of OT1250E12



[www.abb.com](http://www.abb.com)

Dimensions in mm  
(1 mm = 0.0394 in)

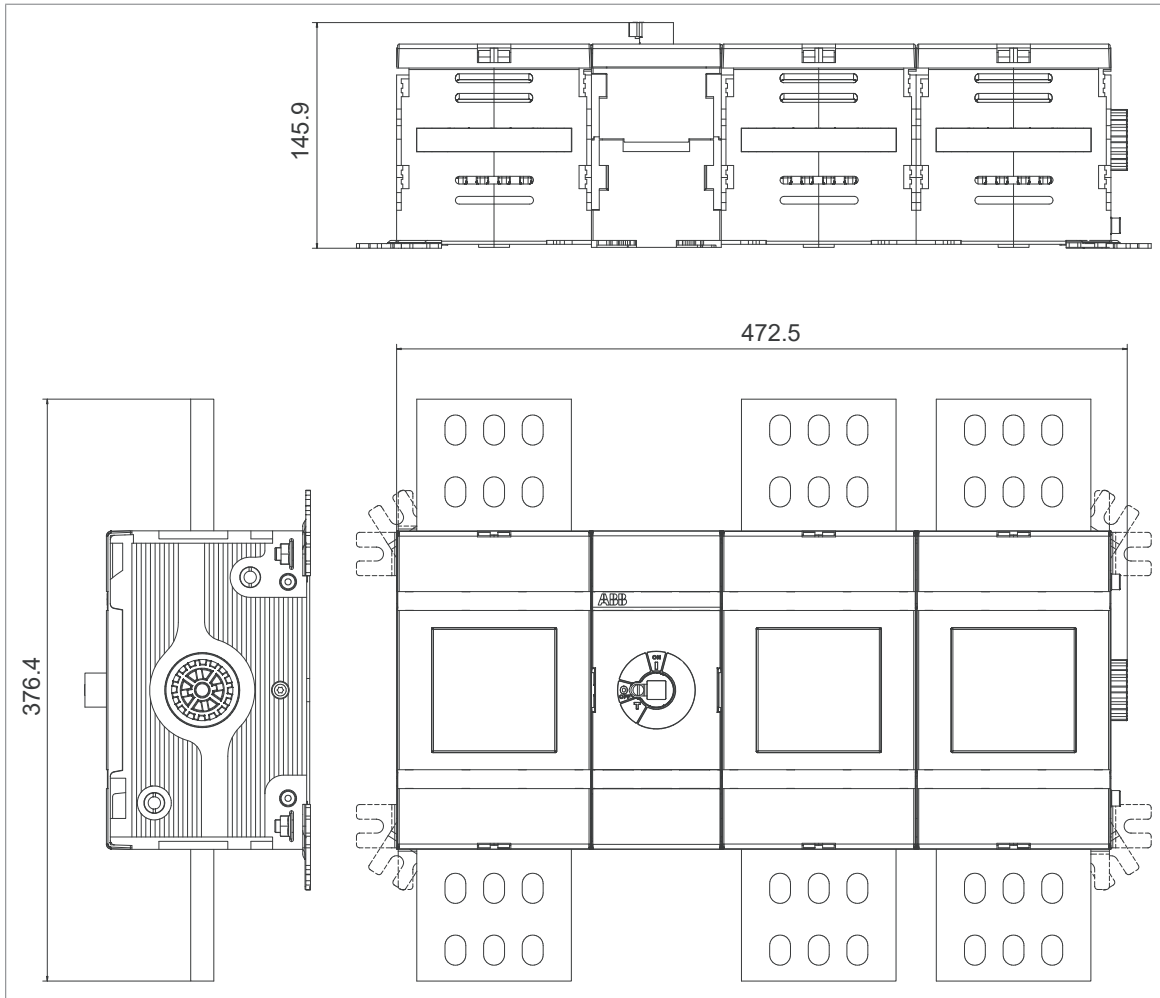
■ **Dimensions of OT1250E12DD (IEC)**



[www.abb.com](http://www.abb.com)

Dimensions in mm  
(1 mm = 0.0394 in)

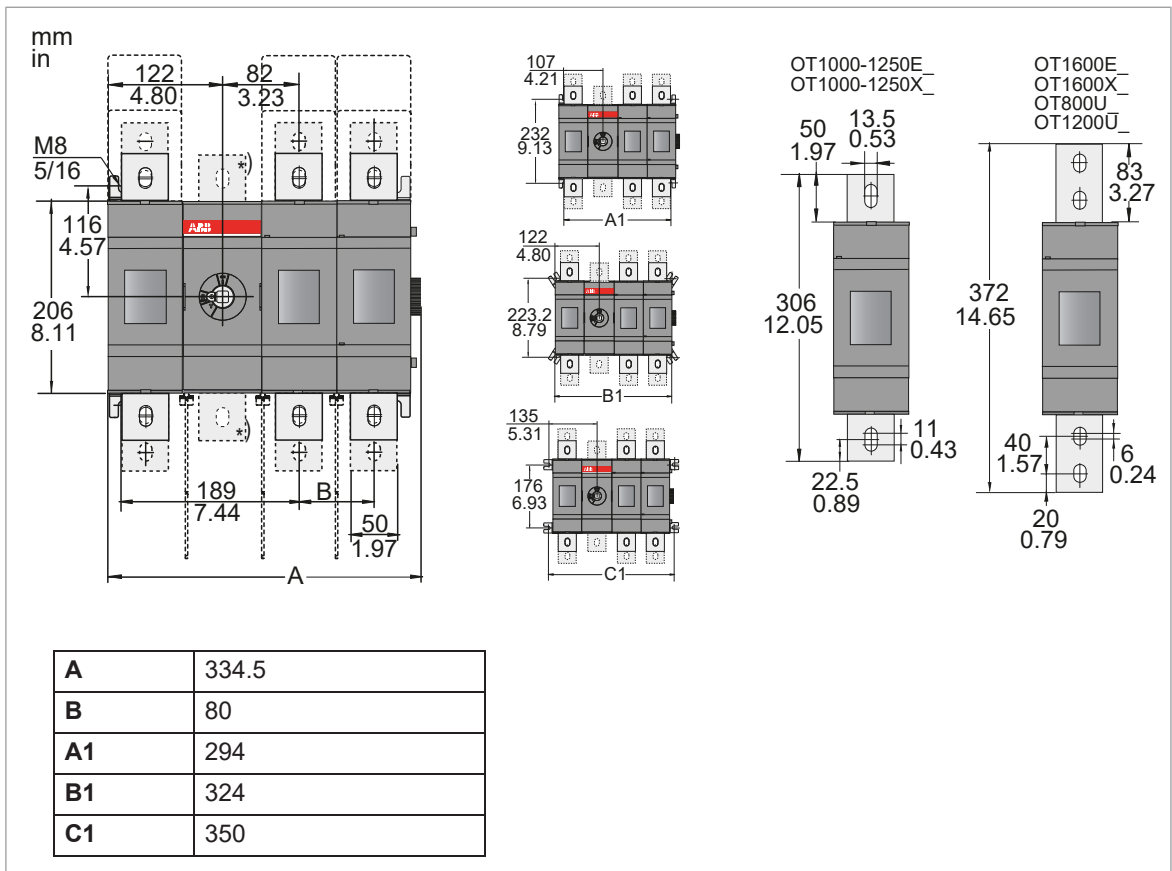
■ **Dimensions of OT2000E12 (IEC)**



[www.abb.com](http://www.abb.com)

Dimensions in mm  
(1 mm = 0.0394 in)

■ **Dimensions of OT1200U12 (UL)**

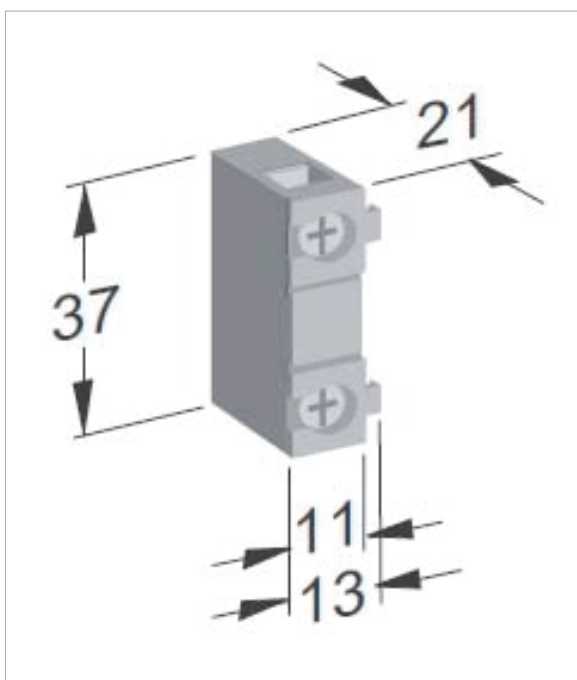


www.abb.com

Dimensions in mm  
(1 mm = 0.0394 in)

■ **Dimensions of switch-disconnector auxiliary contacts**

OA1G10, OA3G01

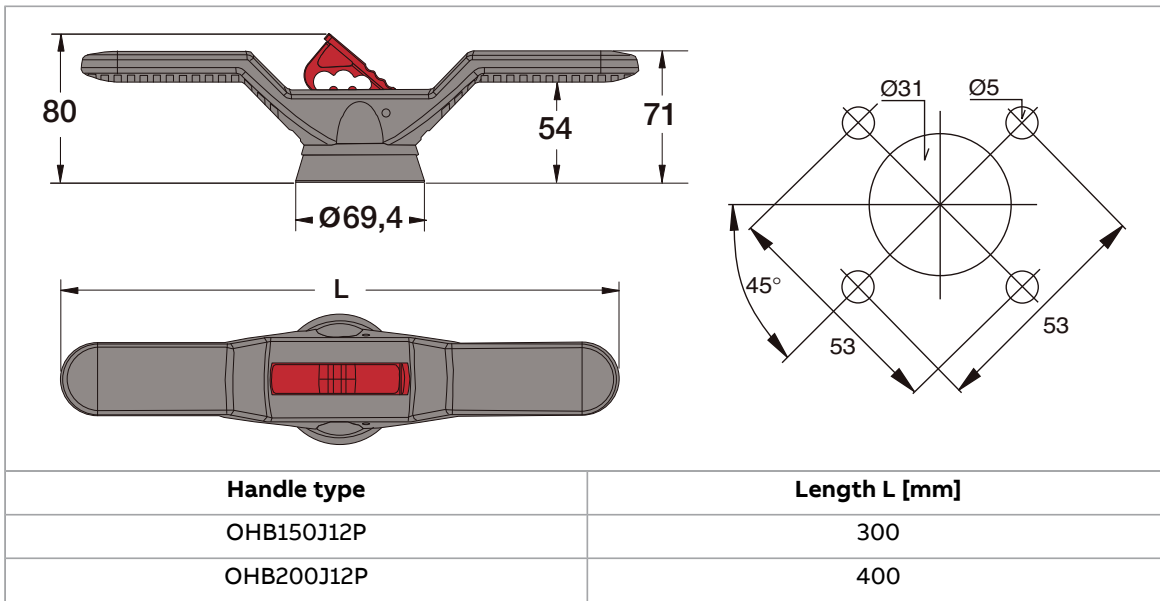


2×0.75...2.5 mm<sup>2</sup> (2×18...14 AWG)

0.8 N·m (7 lbf·in)

Pozidriv M3.5 Form 2

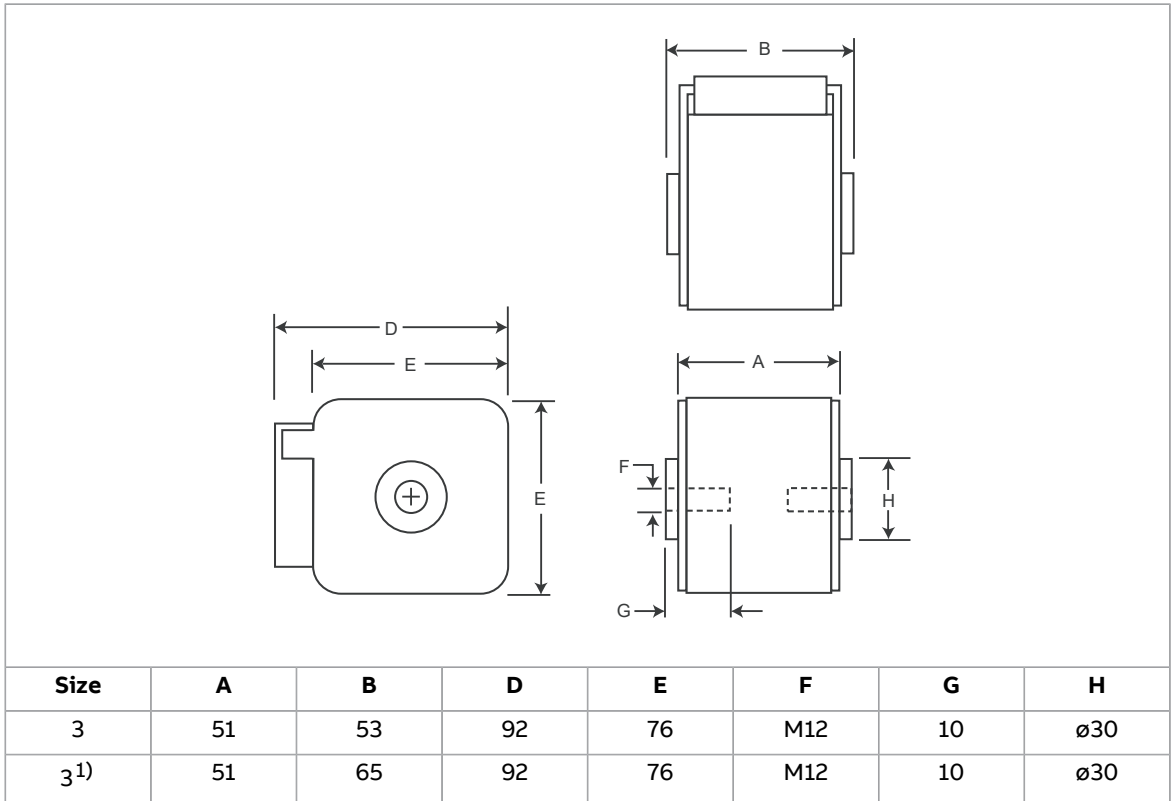
■ **Dimensions of switch-disconnector handle**



Dimensions in mm  
(1 mm = 0.0394 in)

## Dimensions of AC fuses

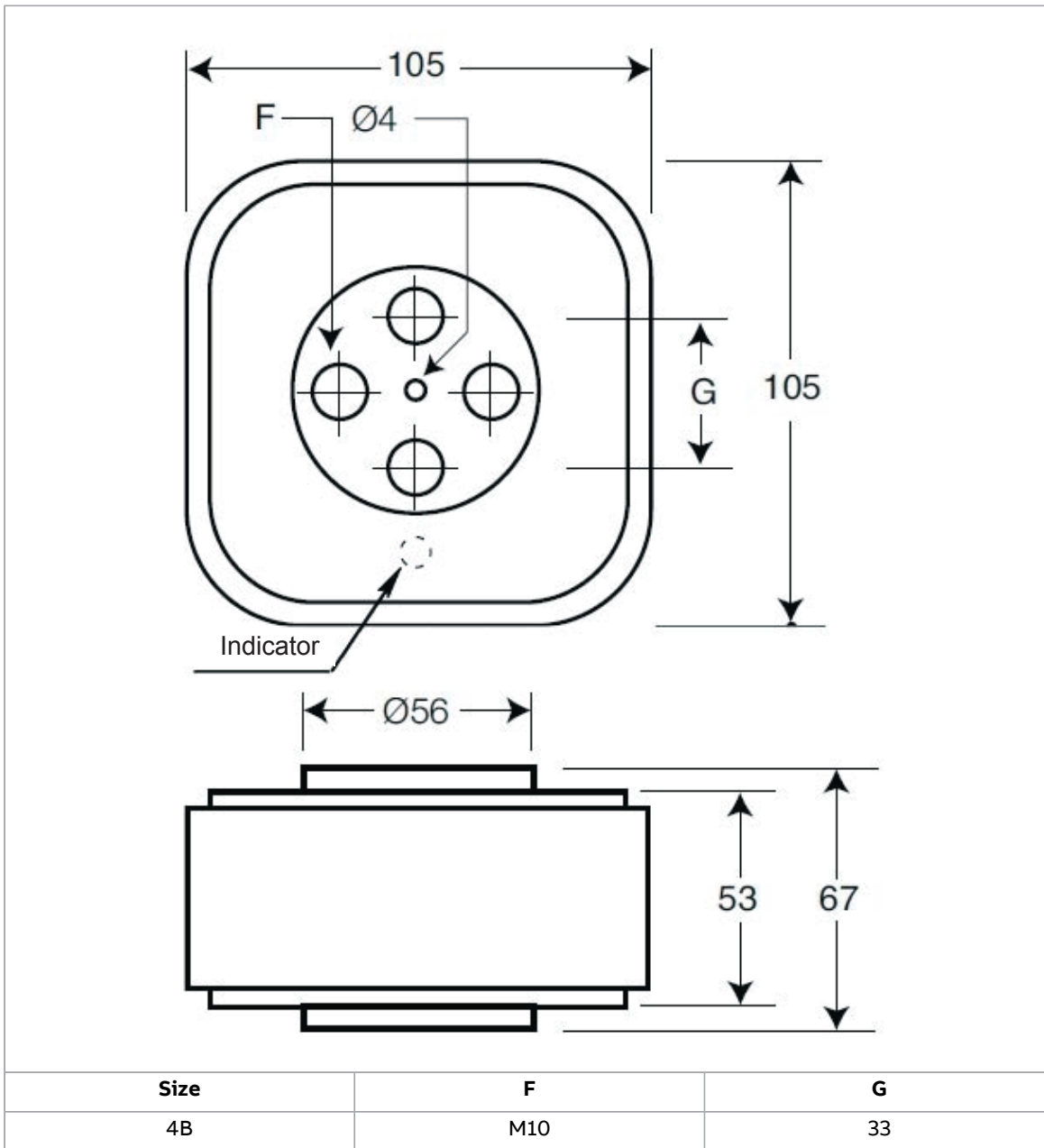
- Dimensions of 170M6411, 170M6412, 170M6413, 170M6414, 170M6415, 170M6416, 170M6417, 170M6419



1) For size 3 1600...2000 A

Dimensions in mm  
(1 mm = 0.0394 in)

■ Dimensions of 170M7062, 170M7063, 170M7064

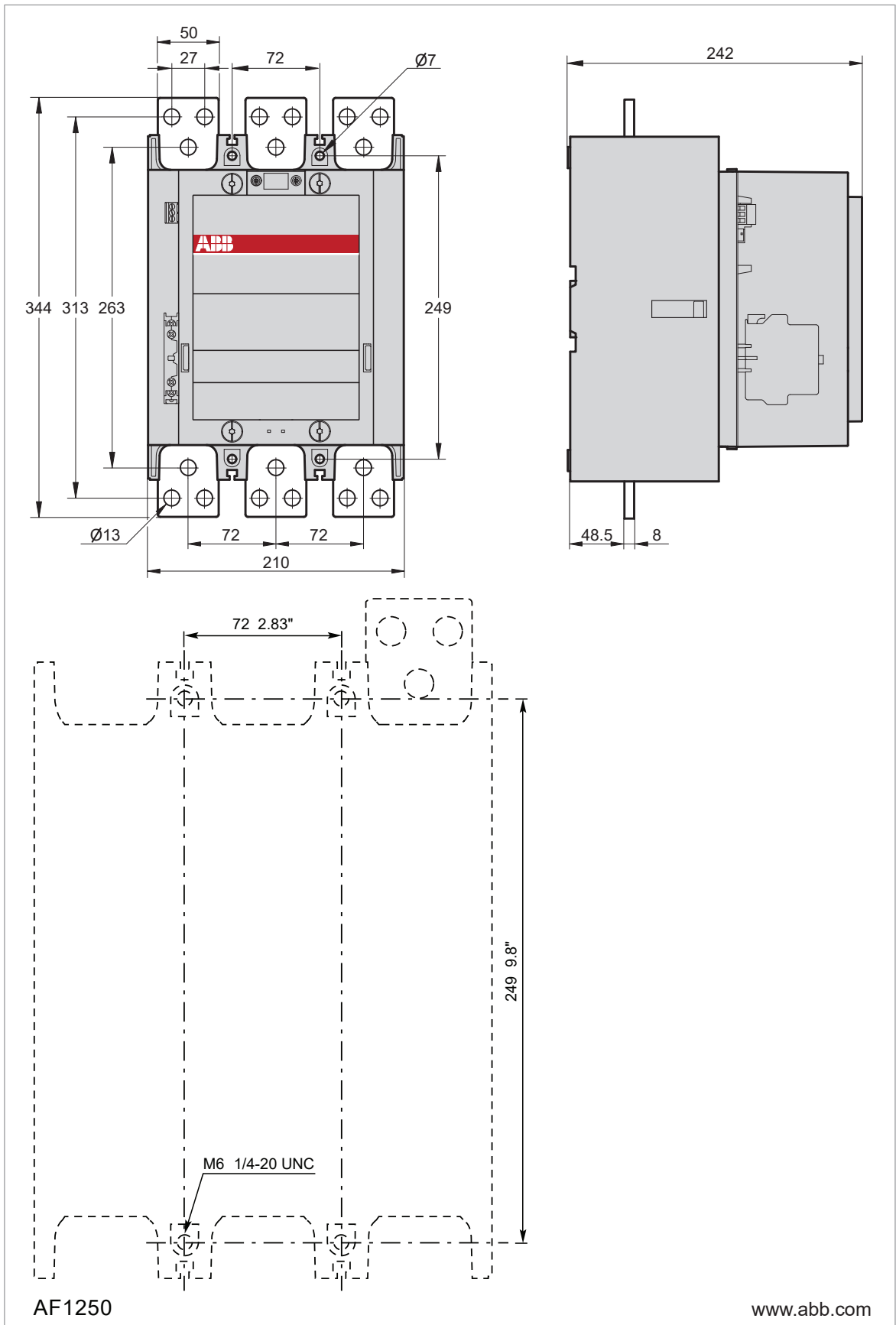


Dimensions in mm  
(1 mm = 0.0394 in)

[www.cooperindustries.com](http://www.cooperindustries.com)

## Dimensions of main contactors

### ■ Dimensions of AF1250-30-22-70

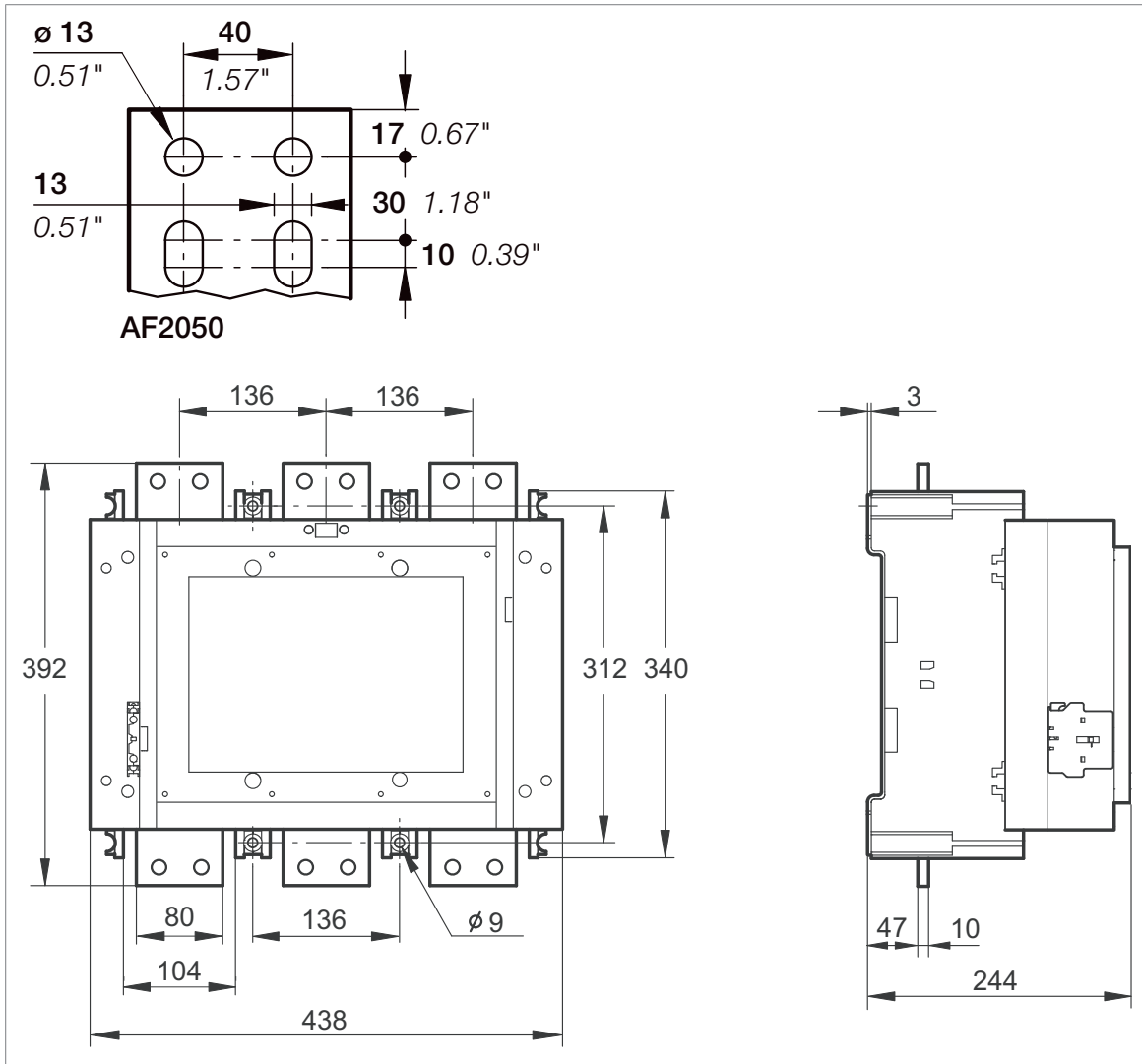


288 Dimension drawings

Dimensions in mm

(1 mm = 0.0394 in)

■ **Dimensions of AF2050-30-22-70**

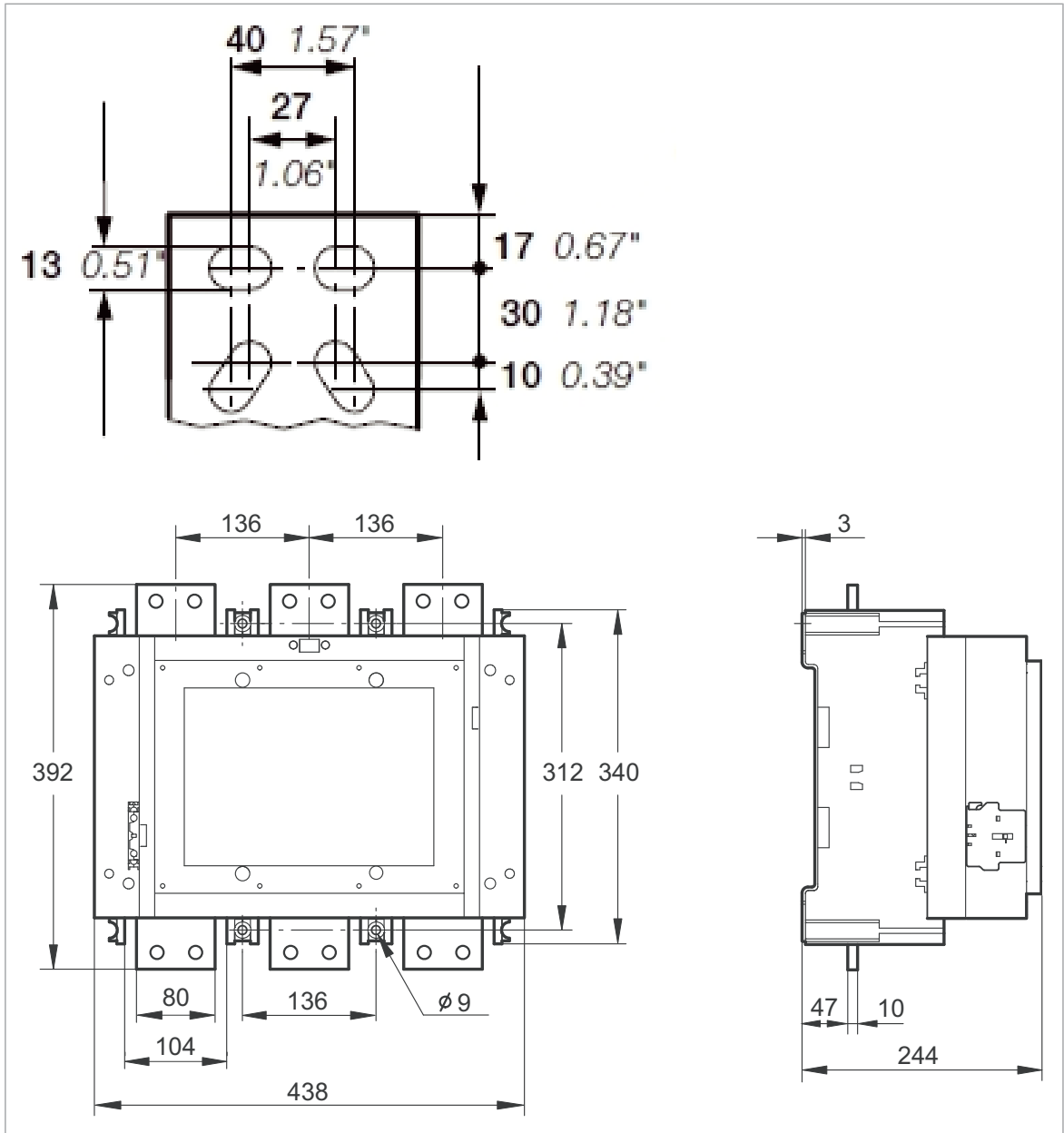


www.abb.com

Dimensions in mm

(1 mm = 0.0394 in)

■ Dimensions of AF1650-30-22-70

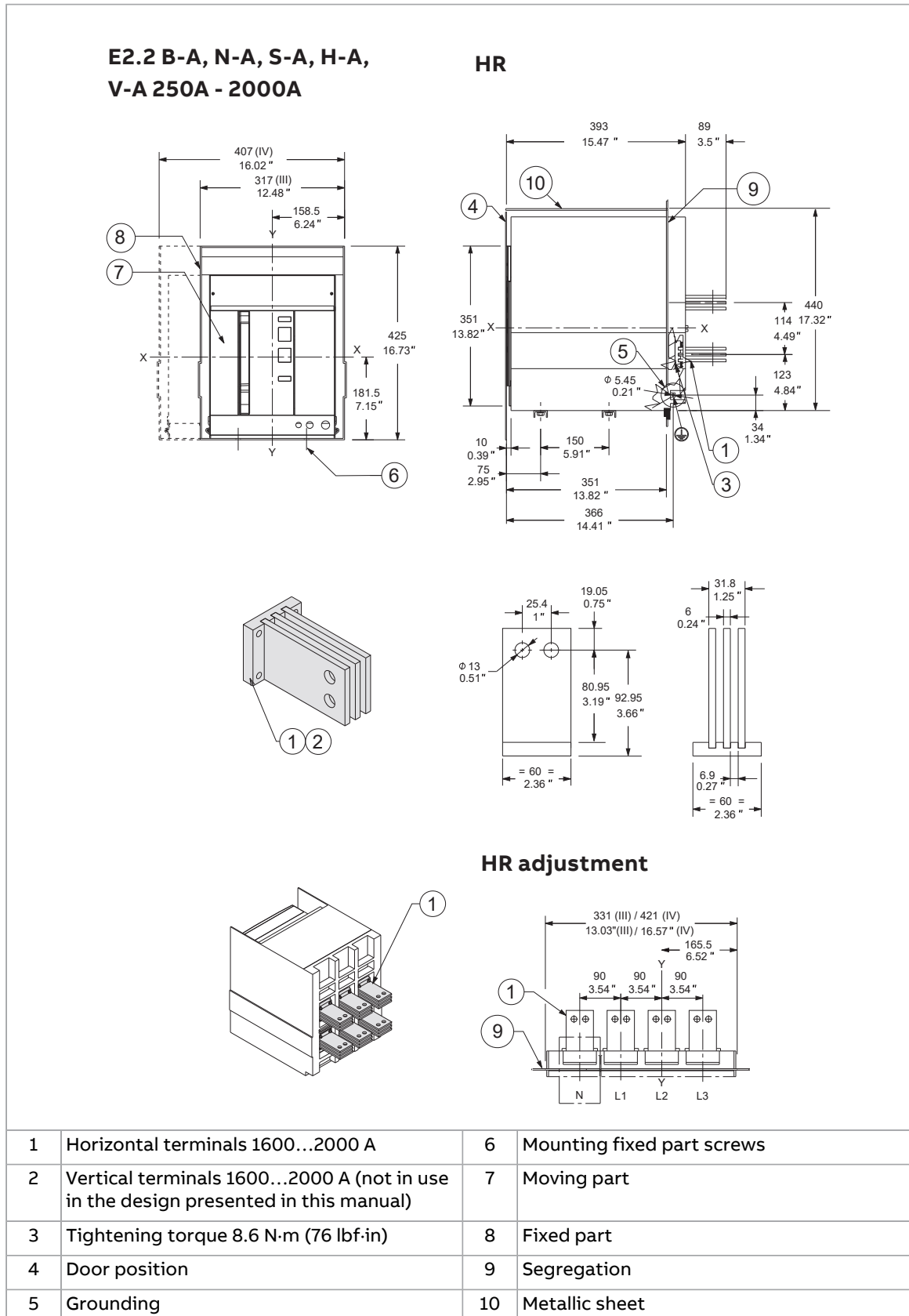


www.abb.com

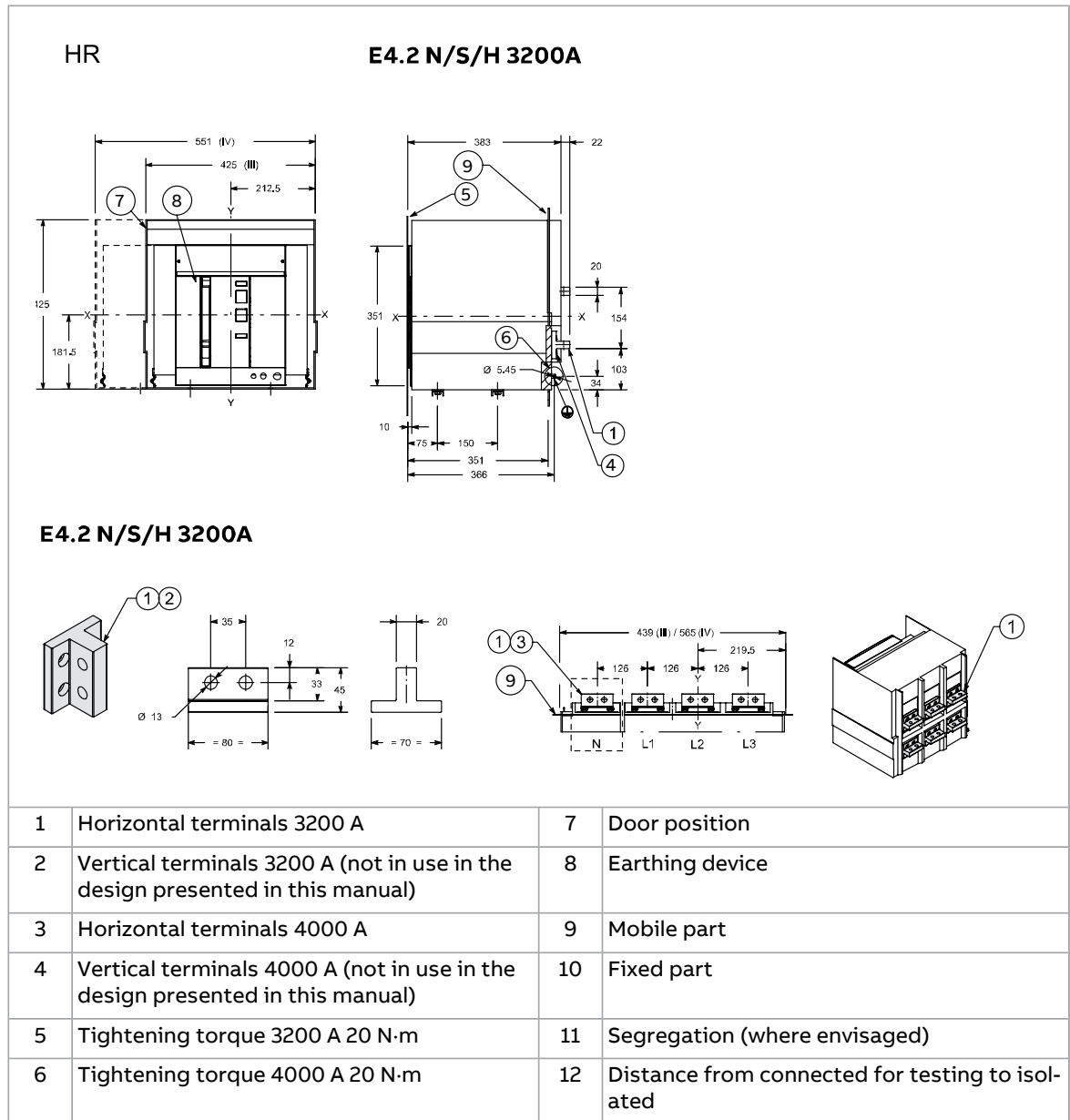
Dimensions in mm  
(1 mm = 0.0394 in)

## Dimensions of main circuit breakers

### ■ E2.2V-A (UL/CSA)

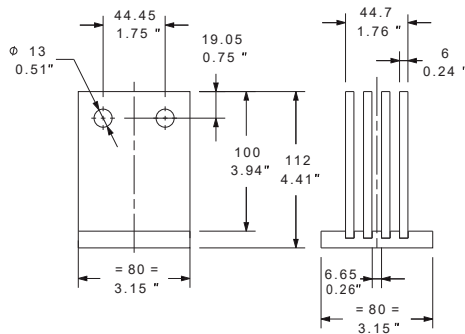
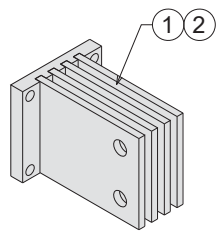
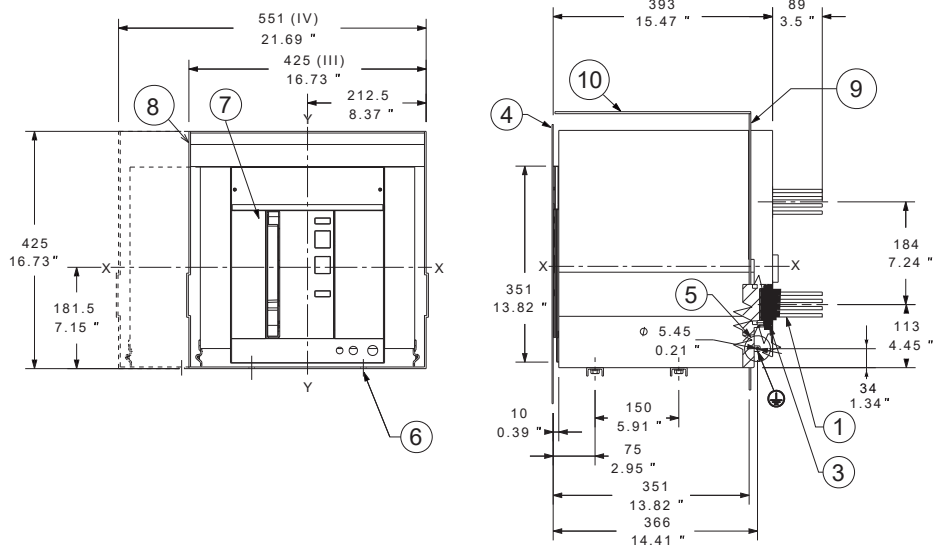


■ E4.2S-A (IEC)

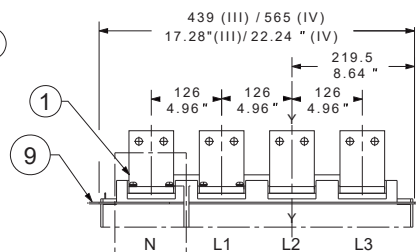
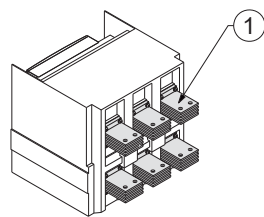


■ E4.2V-A (UL/CSA)

**E4.2 S-A, H-A, V-A 800A - 2500A HR adjustment**



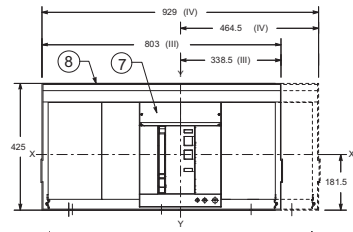
**HR adjustment**



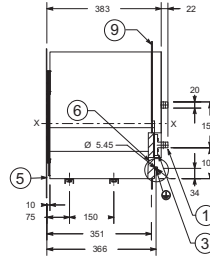
1	Horizontal terminals 2500 A	6	Mounting fixed part screws
2	Vertical terminals 2500 A (not in use in the design presented in this manual)	7	Moving part
3	Tightening torque 20 N·m (177 lbf·in)	8	Fixed part
4	Door position	9	Segregation
5	Grounding	10	Roof insulation or insulated material

■ E6.2V (IEC)

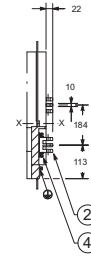
HR



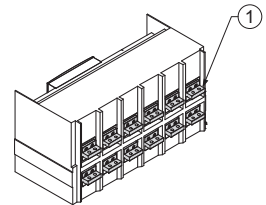
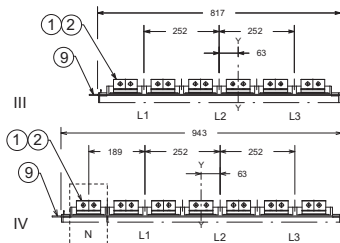
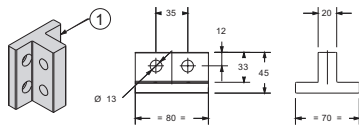
E6.2 H/V 4000-5000A



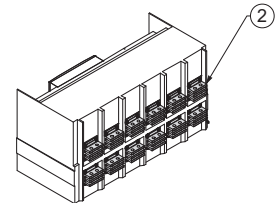
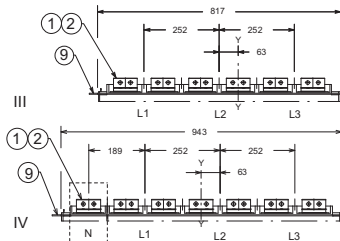
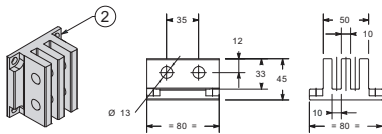
E6.2 H/V 6300A  
E6.2 X 4000...6300A



E6.2 H/V 4000-5000A



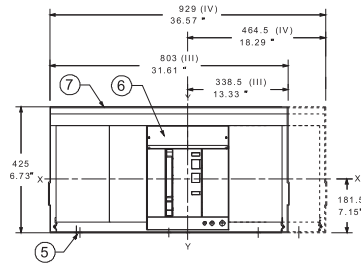
E6.2 H/V 6300A  
E6.2 X 4000...6300A



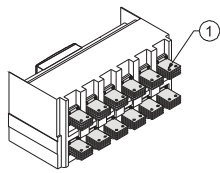
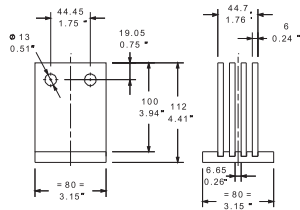
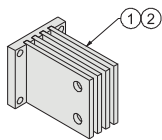
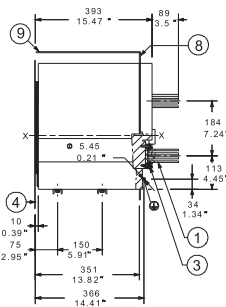
1	Horizontal terminals 4000...5000 A	6	Earthing device
2	Vertical terminals 6300 A (not in use in the design presented in this manual)	7	Mobile part
3	Tightening torque 4000...5000 A 20 N·m	8	Fixed part
4	Tightening torque 6300 A 20 Nm	9	Segregation (where envisaged)
5	Door position		

■ E6.2V-A (UL/CSA)

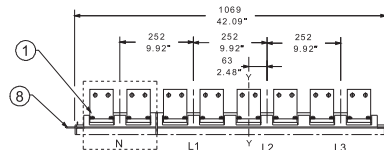
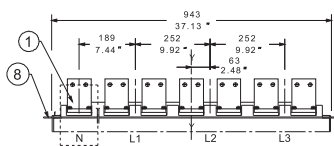
E6.2 H-A, V-A, L-A 4000A - 5000A



HR



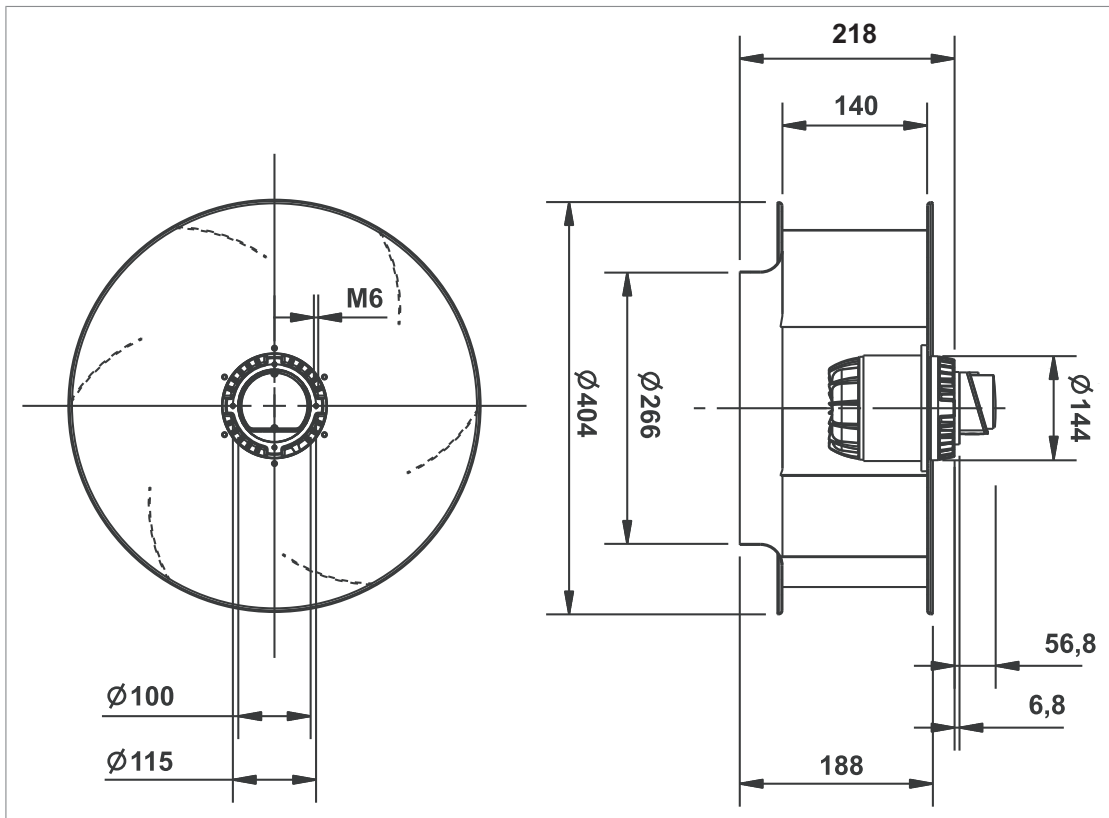
HR adjustment



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 (not in use in the design presented in this manual)	6	Moving part
3	Tightening torque 20 N·m (177 lbf·in)	7	Fixed part
4	Door position	8	Segregation

## Miscellaneous components

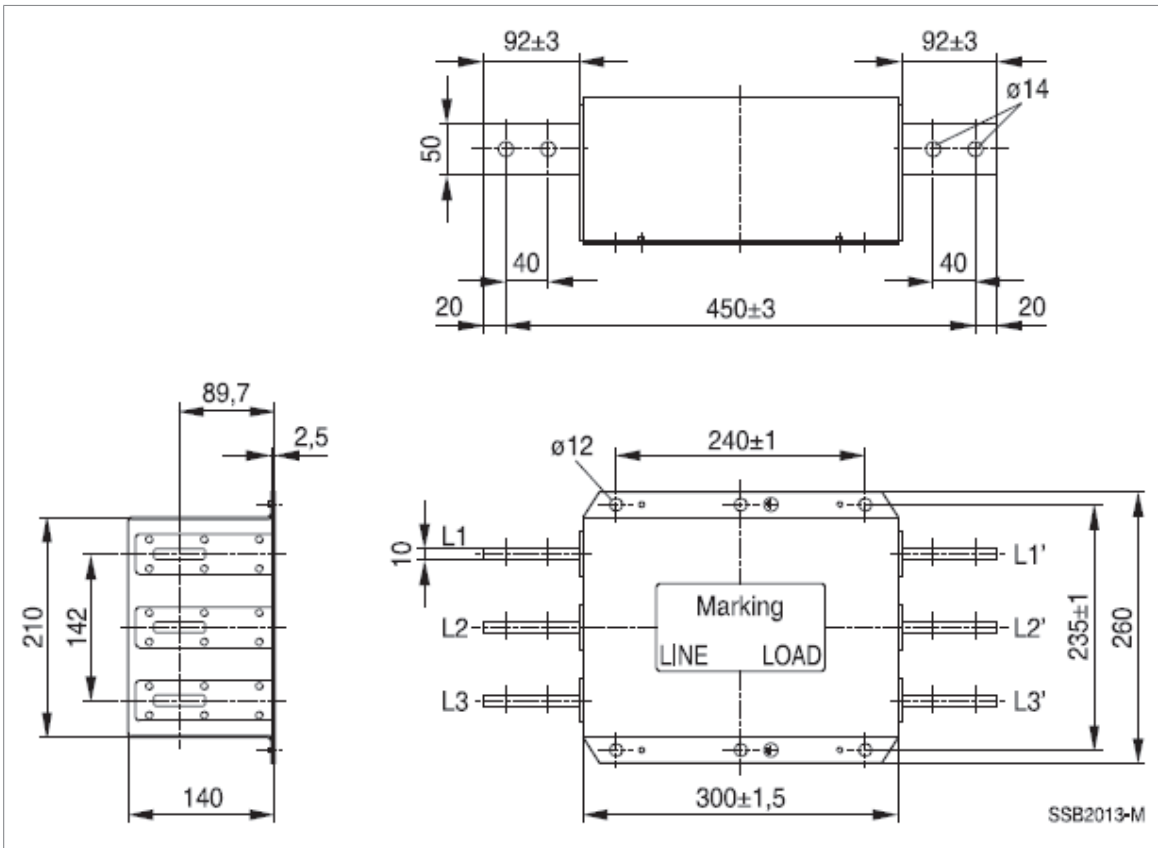
- IP54 roof fan (IEC/UL) in 600 mm enclosure



Dimensions in mm  
(1 mm = 0.0394 in)

■ EMC/RFI cat C2 filter and related accessories

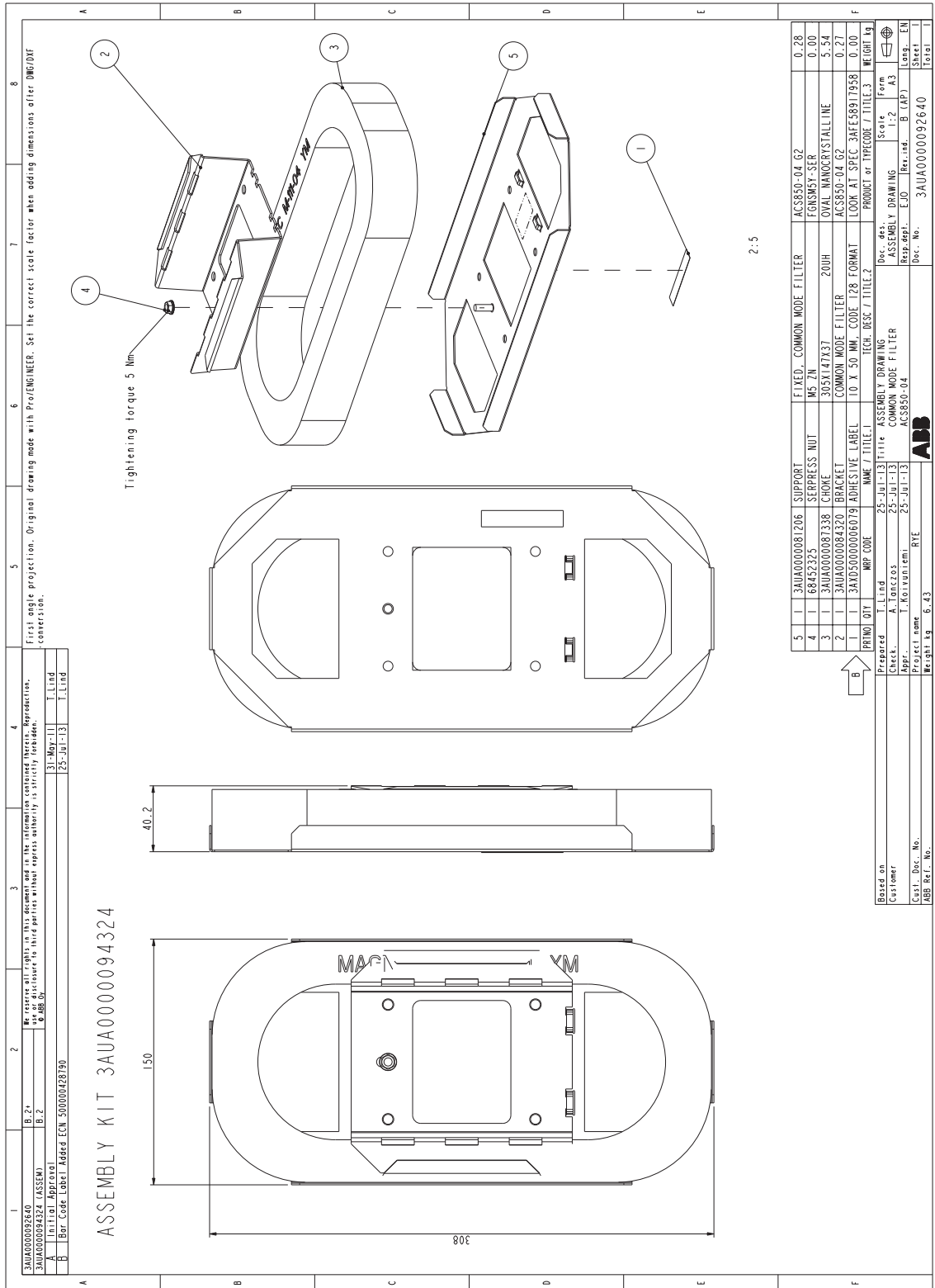
EMC/RFI cat C2 filter



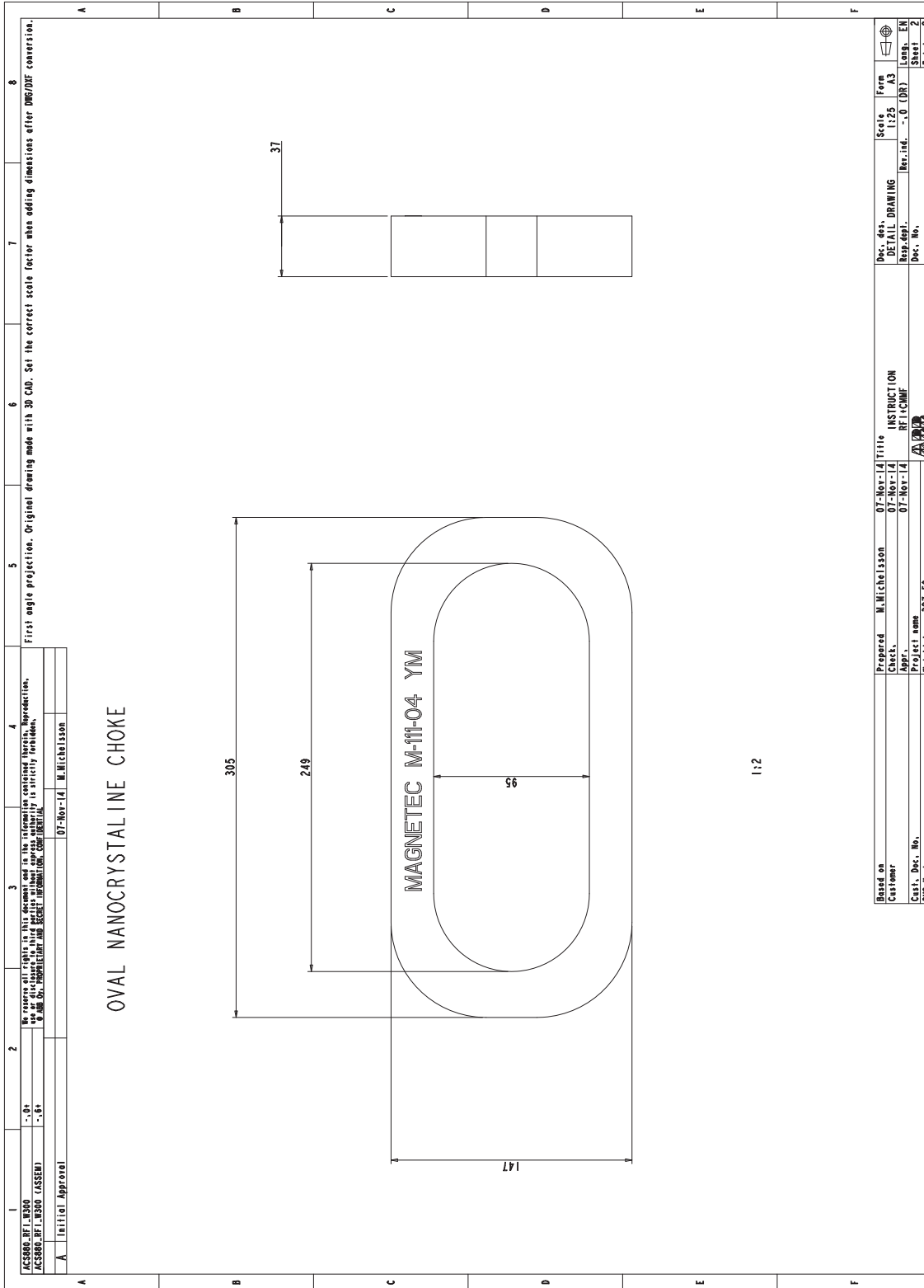
Dimensions in mm

(1 mm = 0.0394 in)

Oval toroid kit



Oval toroid



1	2	3	4	5	6	7	8
ACS880_RFI_W300	-04						
ACS880_RFI_W300 (ASSEMB)	-04						
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Prepared on: 07-Nov-14 M. Michelsson							

Initial Approval		First angle projection. Original drawing made with 3D CAD. Set the correct scale factor when adding dimensions after DWG/DXF conversion.	
OVAL NANOCRYSTALINE CHOKE			
MAGNETEC M-11-04 YM			
1:2			

Based on	Prepared	M. Michelsson	07-Nov-14	Title	INSTRUCTION	Scale	1:25	Form	A3
Customer	Checked		07-Nov-14	Prefix	RFI-CMF	Rev. ind.	-0 (DR)	Lenb.	EN
Cast. Dec. No.	Appr.		07-Nov-14	Project name		Doc. No.		Sheet	2
DMS Number	Weight	kg	327,50	Drawn		Total		Sheet	2

# 14. 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 <a href="#">Switching, disconnecting and protecting solution (page 41)</a> .
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 <a href="#">Switching, disconnecting and protecting solution (page 41)</a> .
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 disconnecter, 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

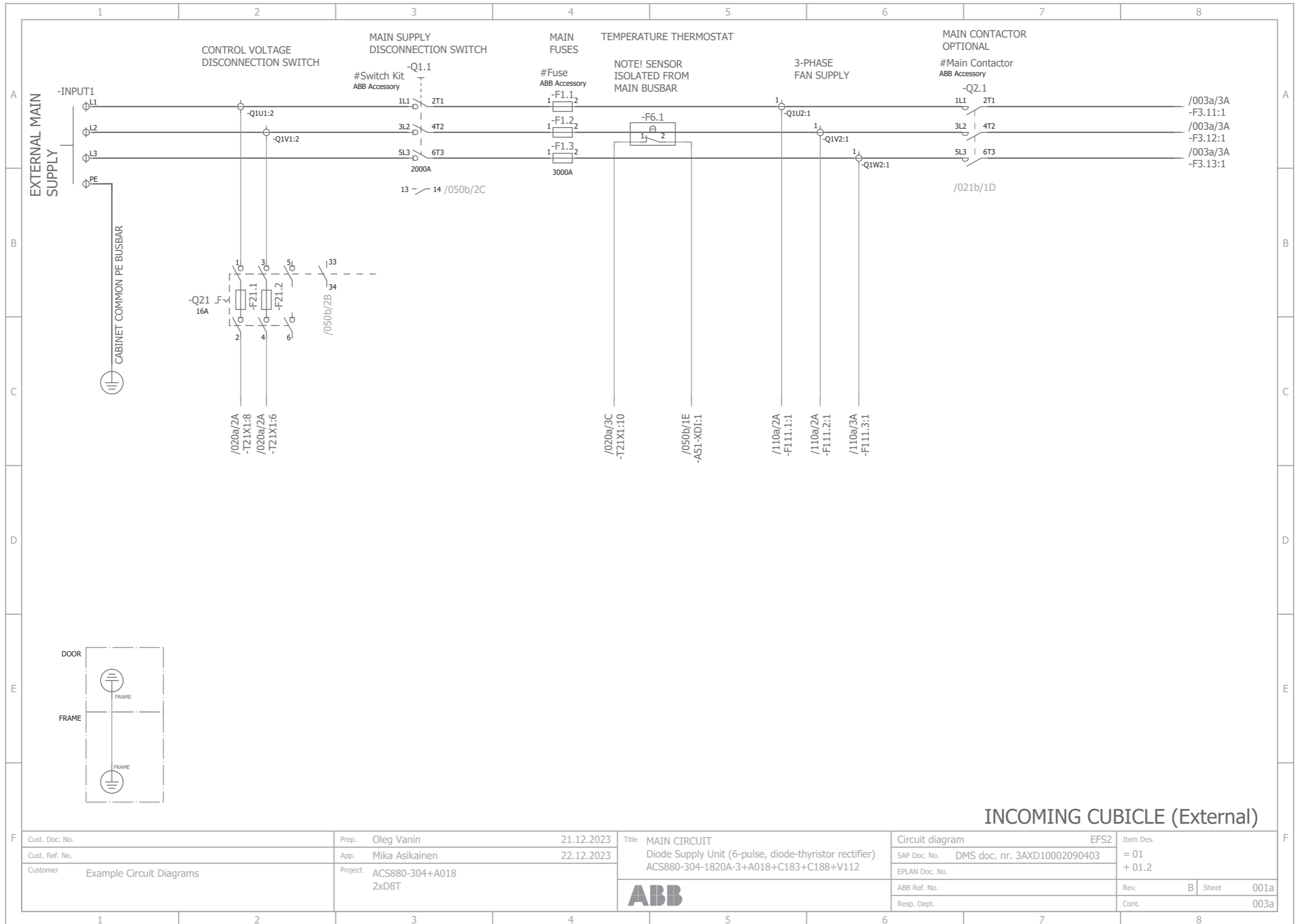
ACS880-304+A018, 2xD7T 12-pulse (3AXD10000285689)

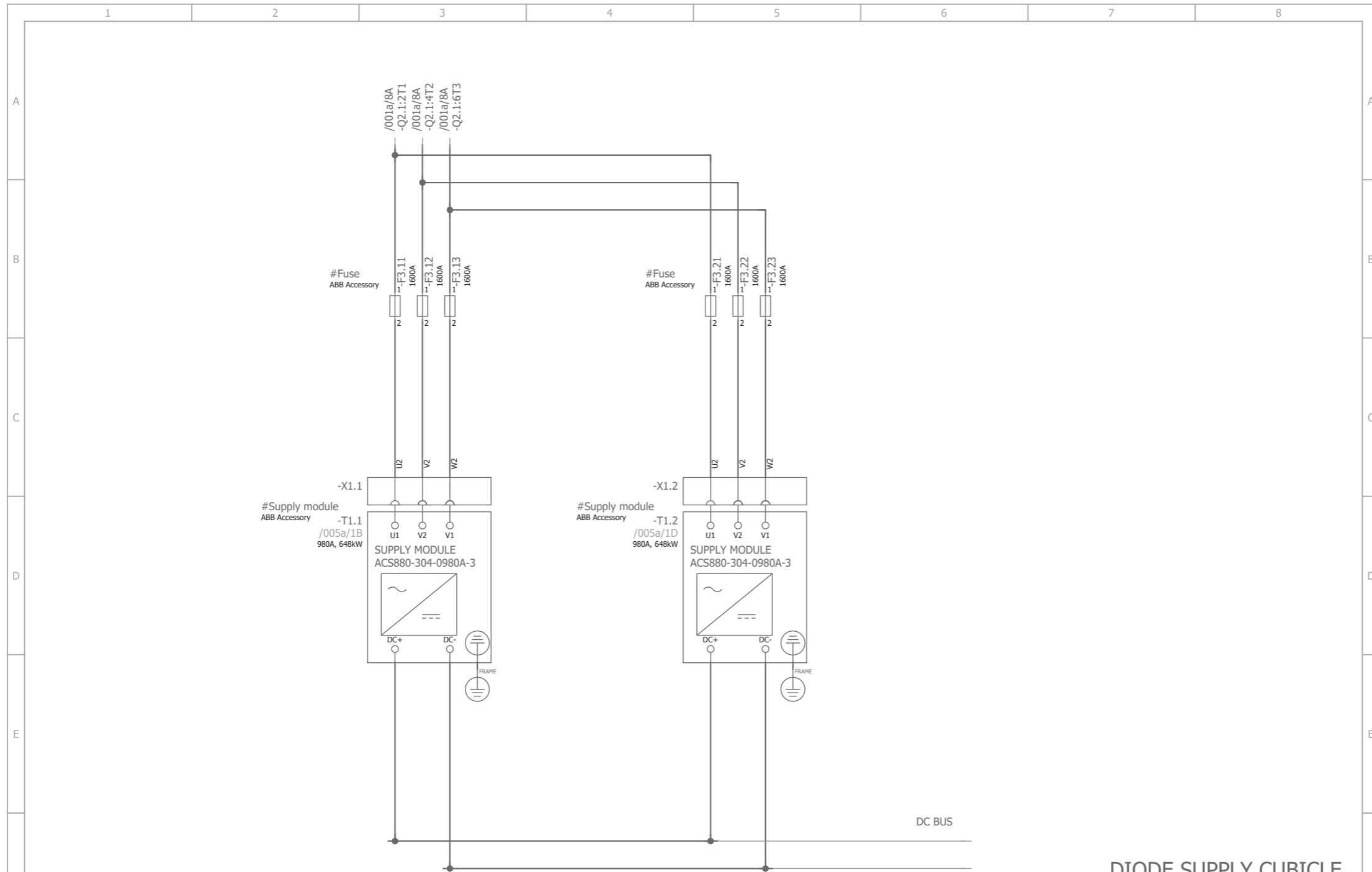
- Main switch disconnecter, AC fuses
- Main contactor
- Temperature control
- Module DOL fan supply (+C188)
- Internal auxiliary voltage distribution
- Incoming unit fan
- BCU-12 Control unit

302 Example circuit diagrams

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

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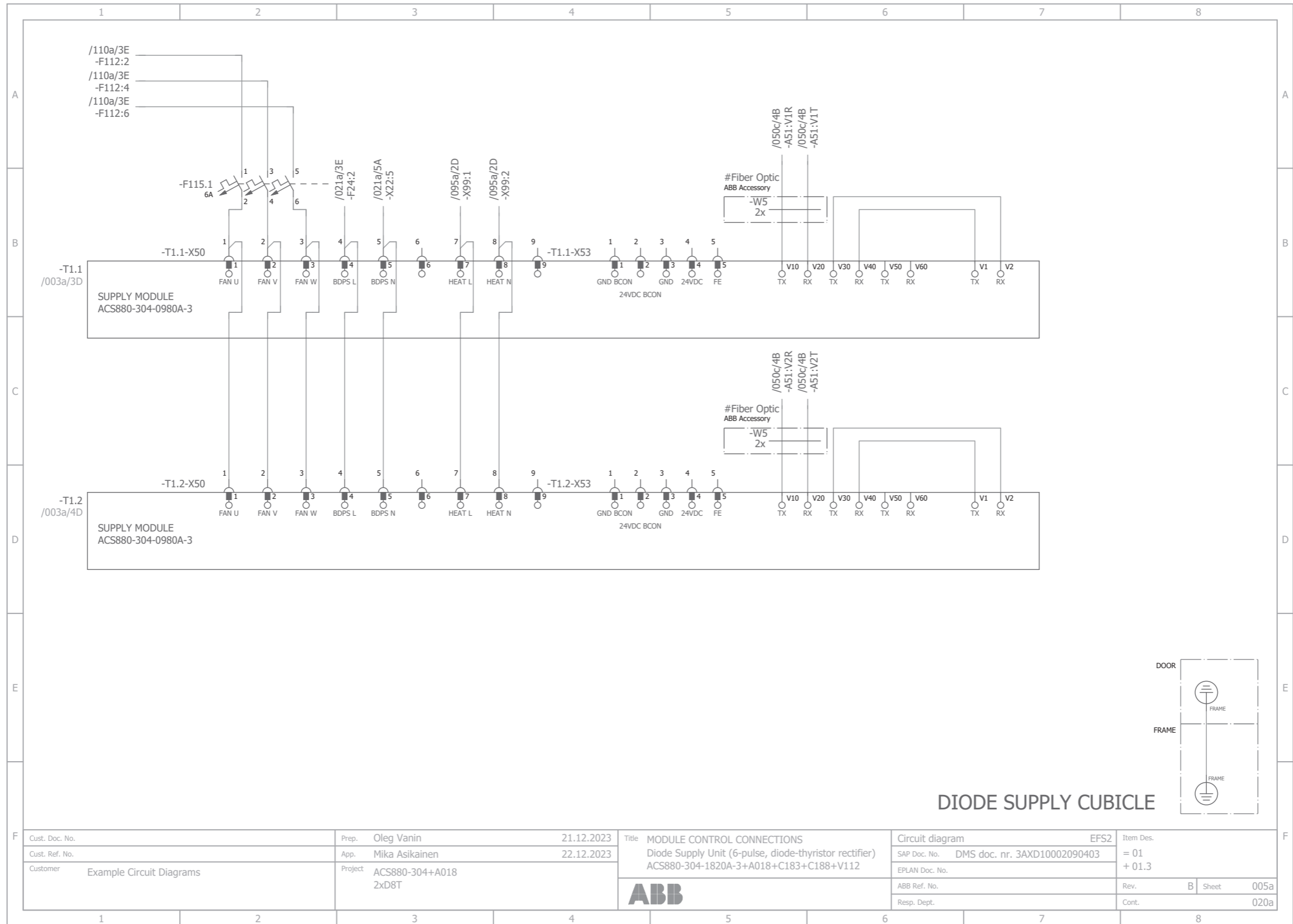




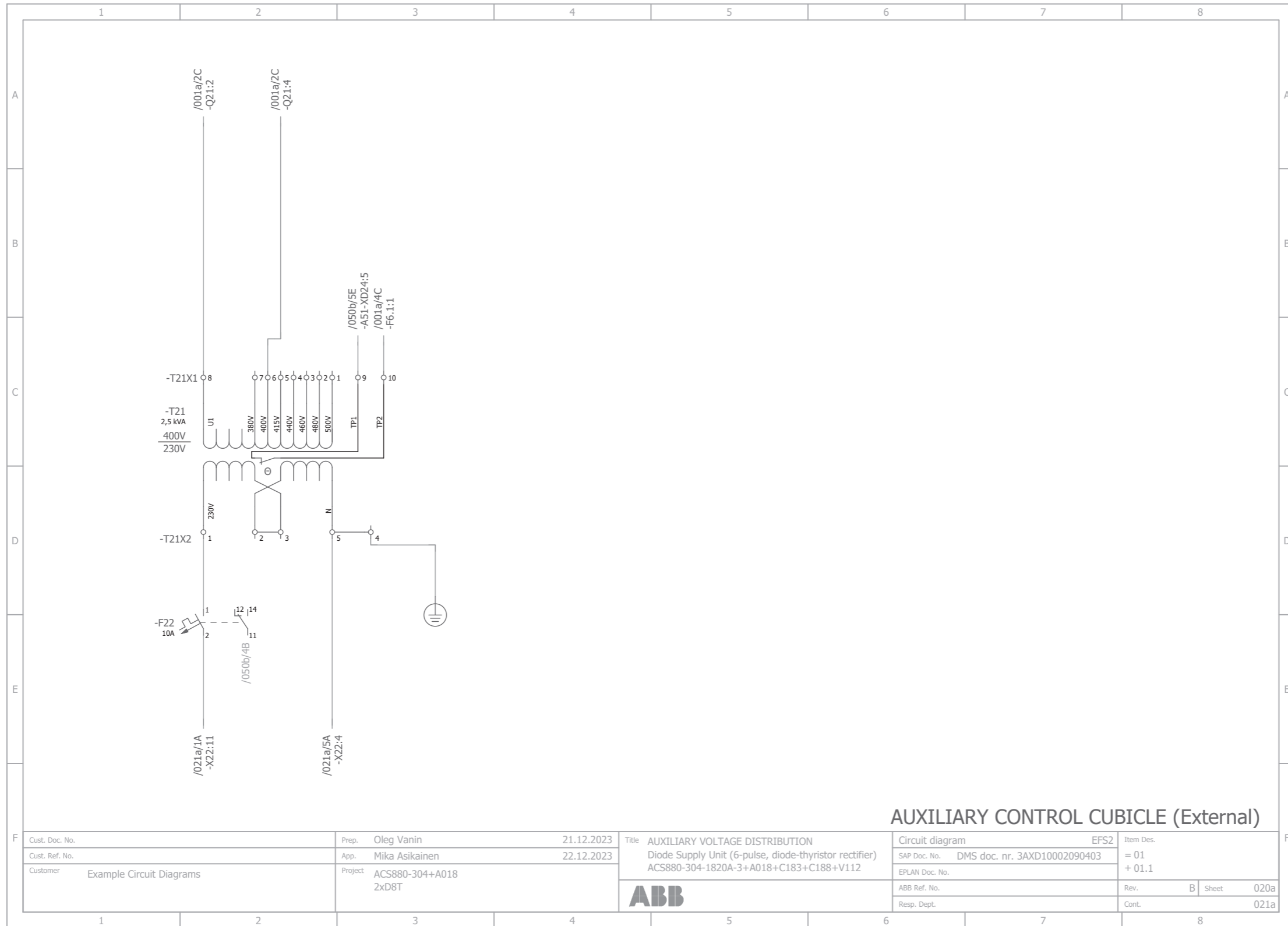
DIODE SUPPLY CUBICLE

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Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10002090403	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018		2xD8T	EPLAN Doc. No.		+ 01.3
			<b>ABB</b>	ABB Ref. No.		Rev. B Sheet 003a
				Resp. Dept.		Cont. 005a

■ Sheet 005a



F	Cust. Doc. No.	Prep. Oleg Vanin	21.12.2023	Title MODULE CONTROL CONNECTIONS	Circuit diagram	EFS2	Item Des.
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	Customer Example Circuit Diagrams	Project ACS880-304+A018 2xD8T		ACS880-304-1820A-3+A018+C183+C188+V112	EPLAN Doc. No.		+ 01.3
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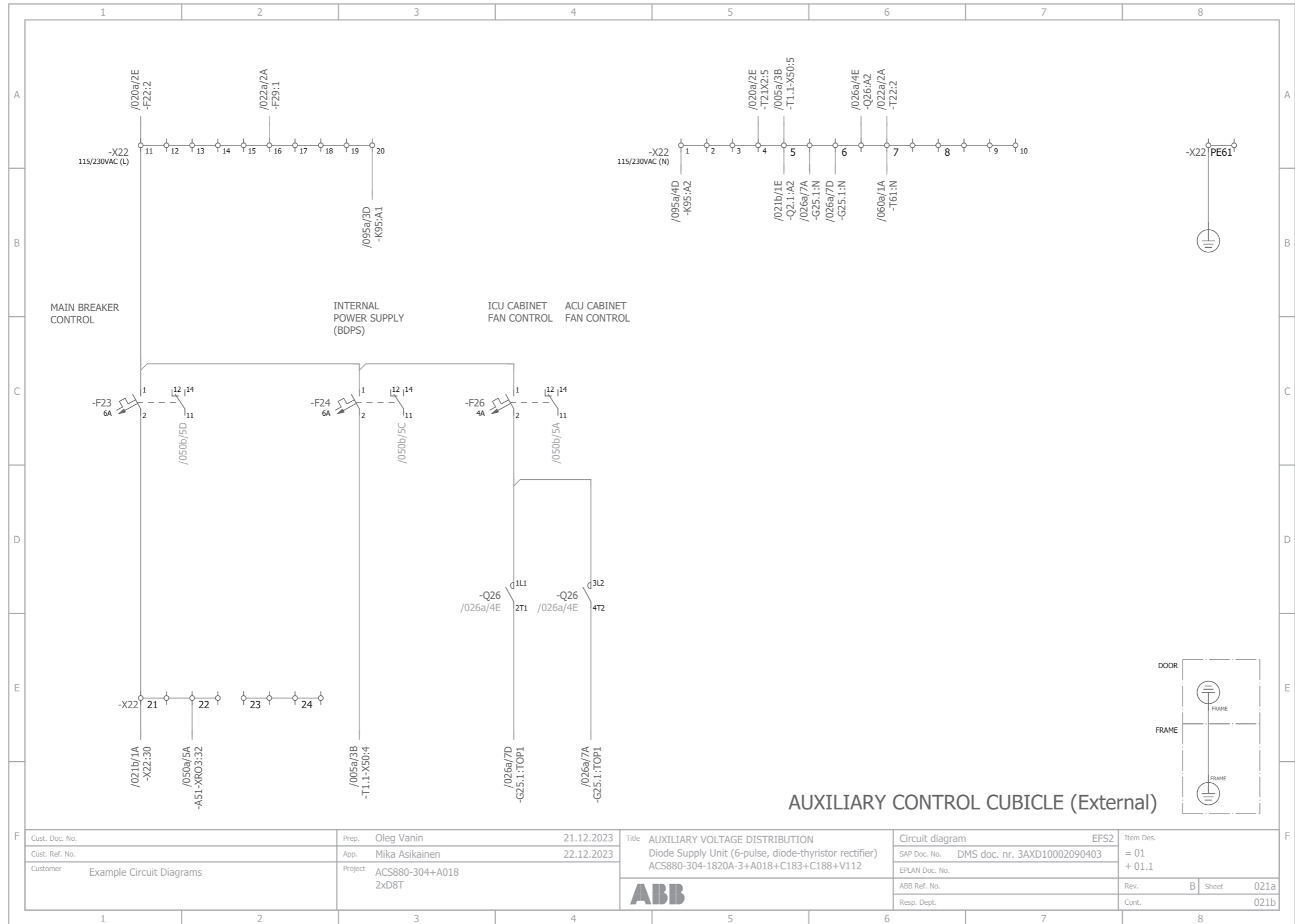


**AUXILIARY CONTROL CUBICLE (External)**

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Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10002090403	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018		ACS880-304-1820A-3+A018+C183+C188+V112	EPLAN Doc. No.		+ 01.1
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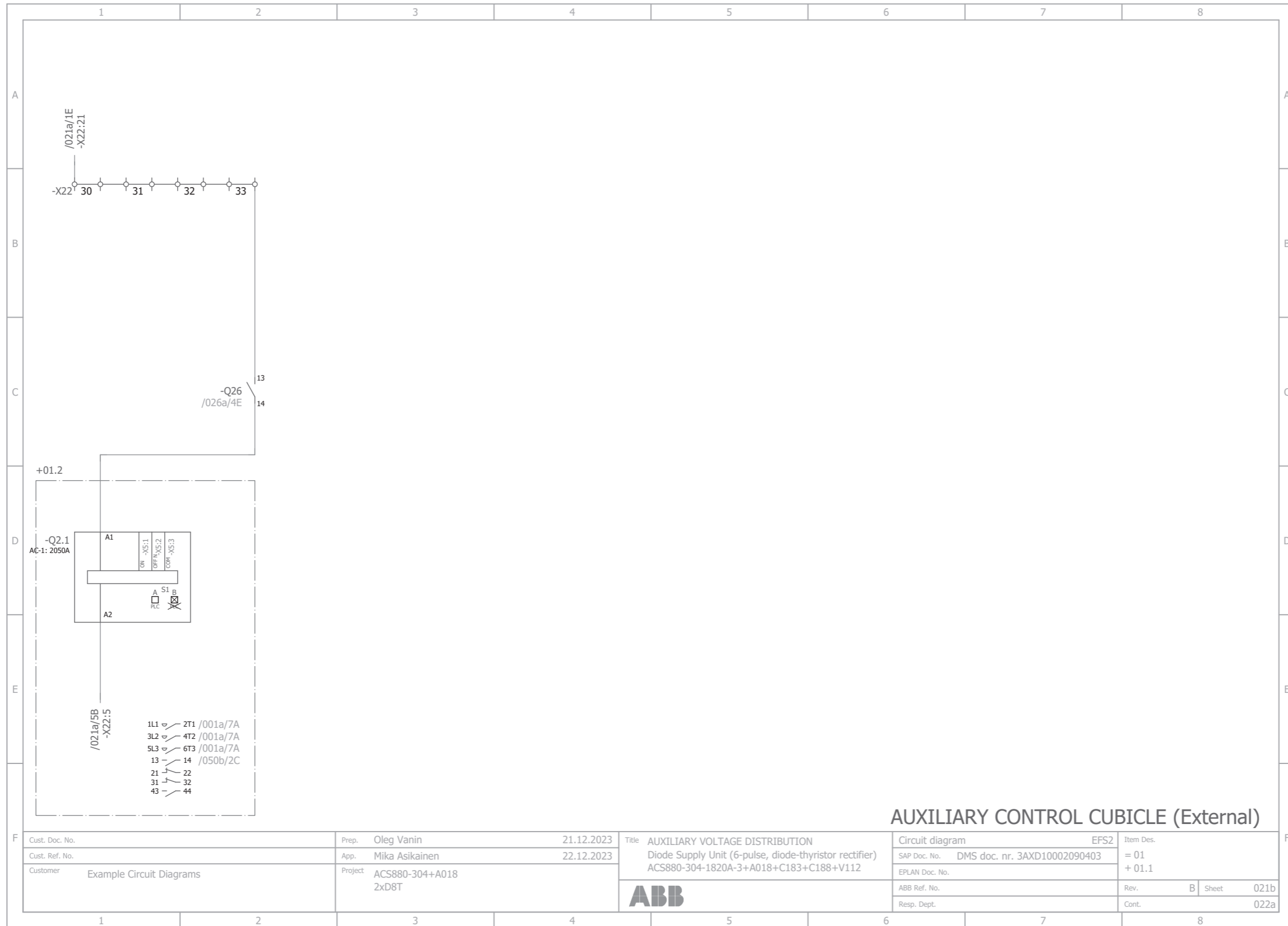


■ Sheet 021a



AUXILIARY CONTROL CUBICLE (External)

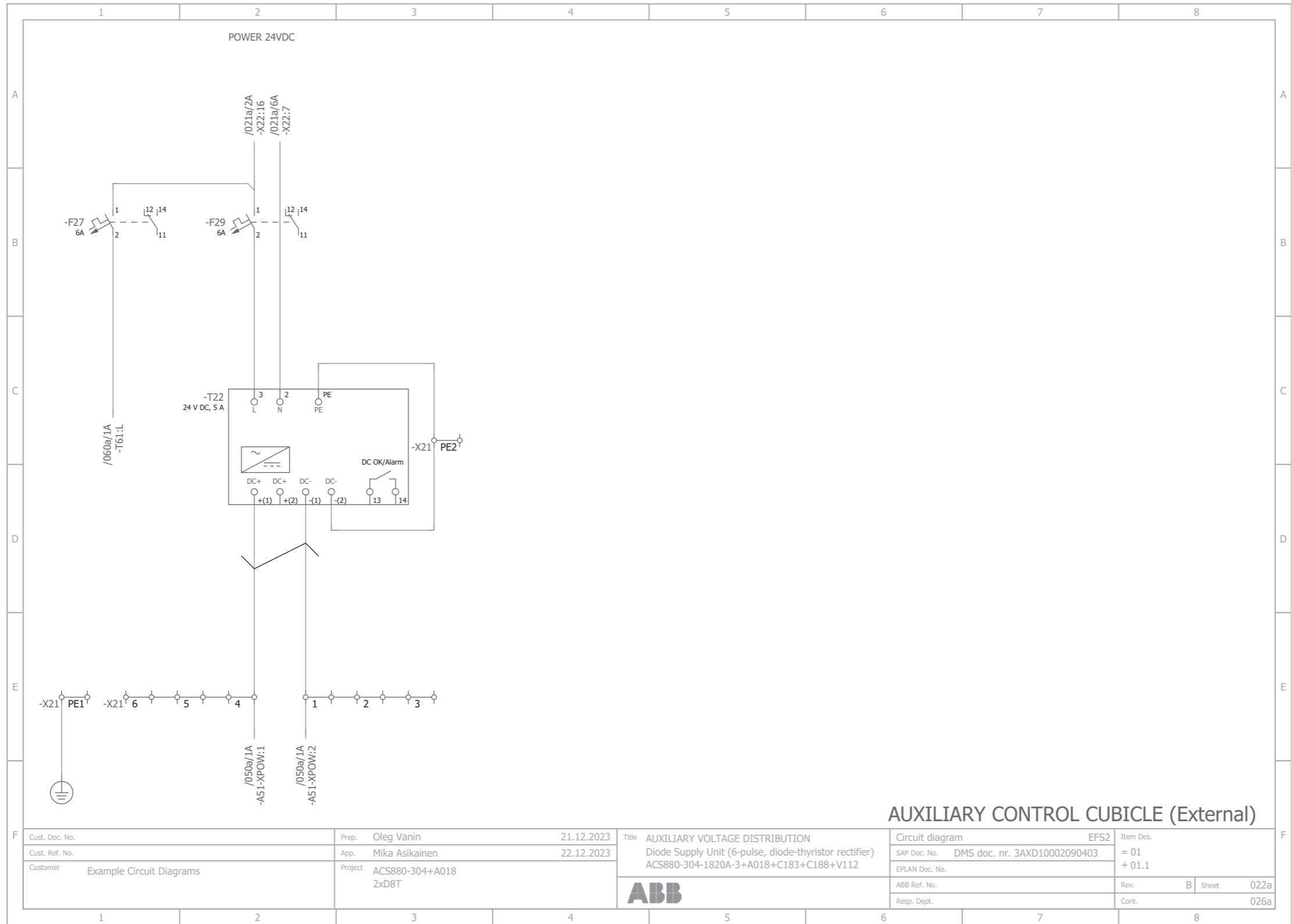
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	Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10002090403	= 01
	Customer Example Circuit Diagrams	Project ACS880-304+A018 2xD8T		ACS880-304-1820A-3+A018+C183+C188+V112	EPLAN Doc. No.		+ 01.1
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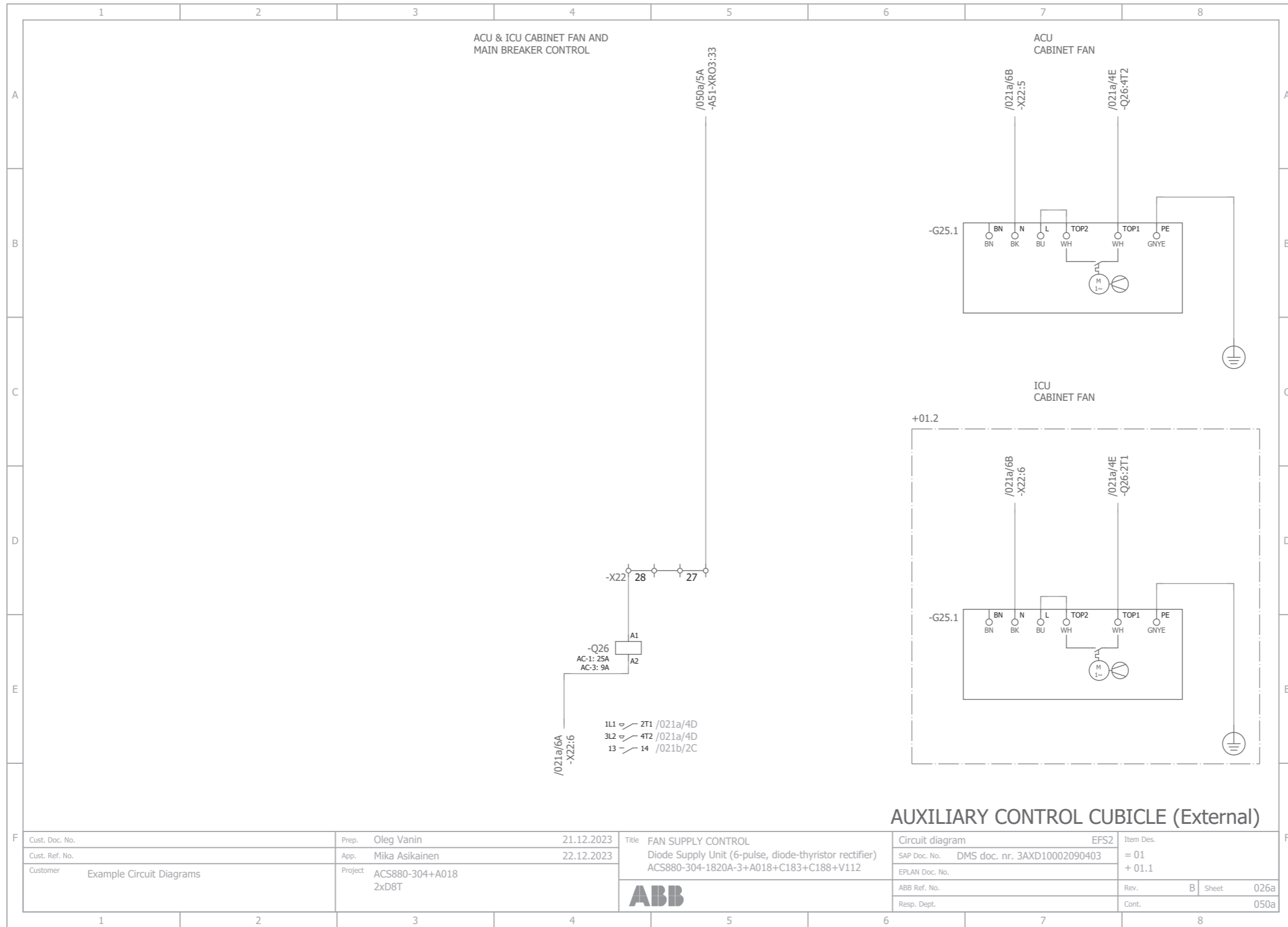
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Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10002090403	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018		ACS880-304-1820A-3+A018+C183+C188+V112	EPLAN Doc. No.		+ 01.1
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■ Sheet 022a



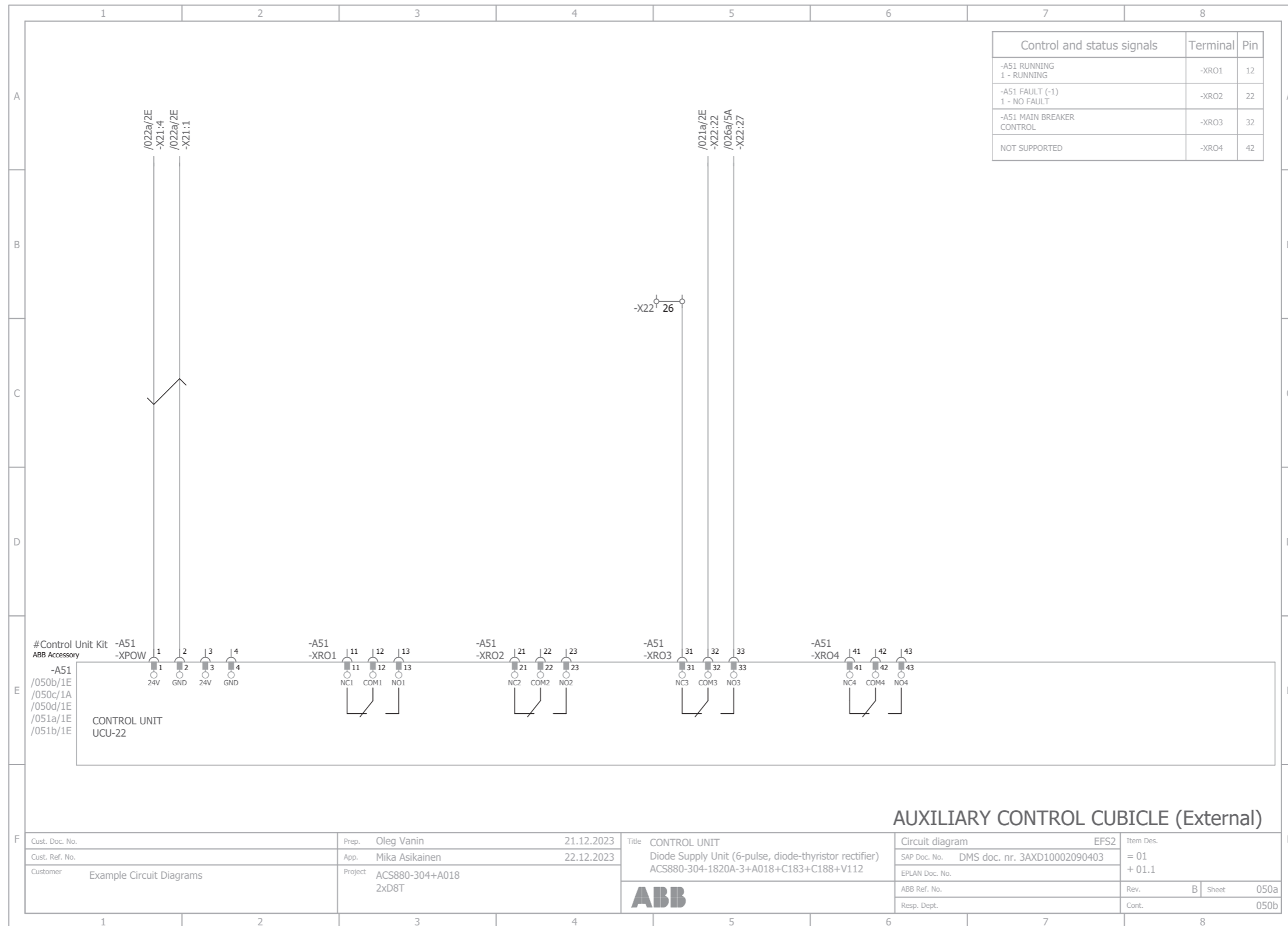
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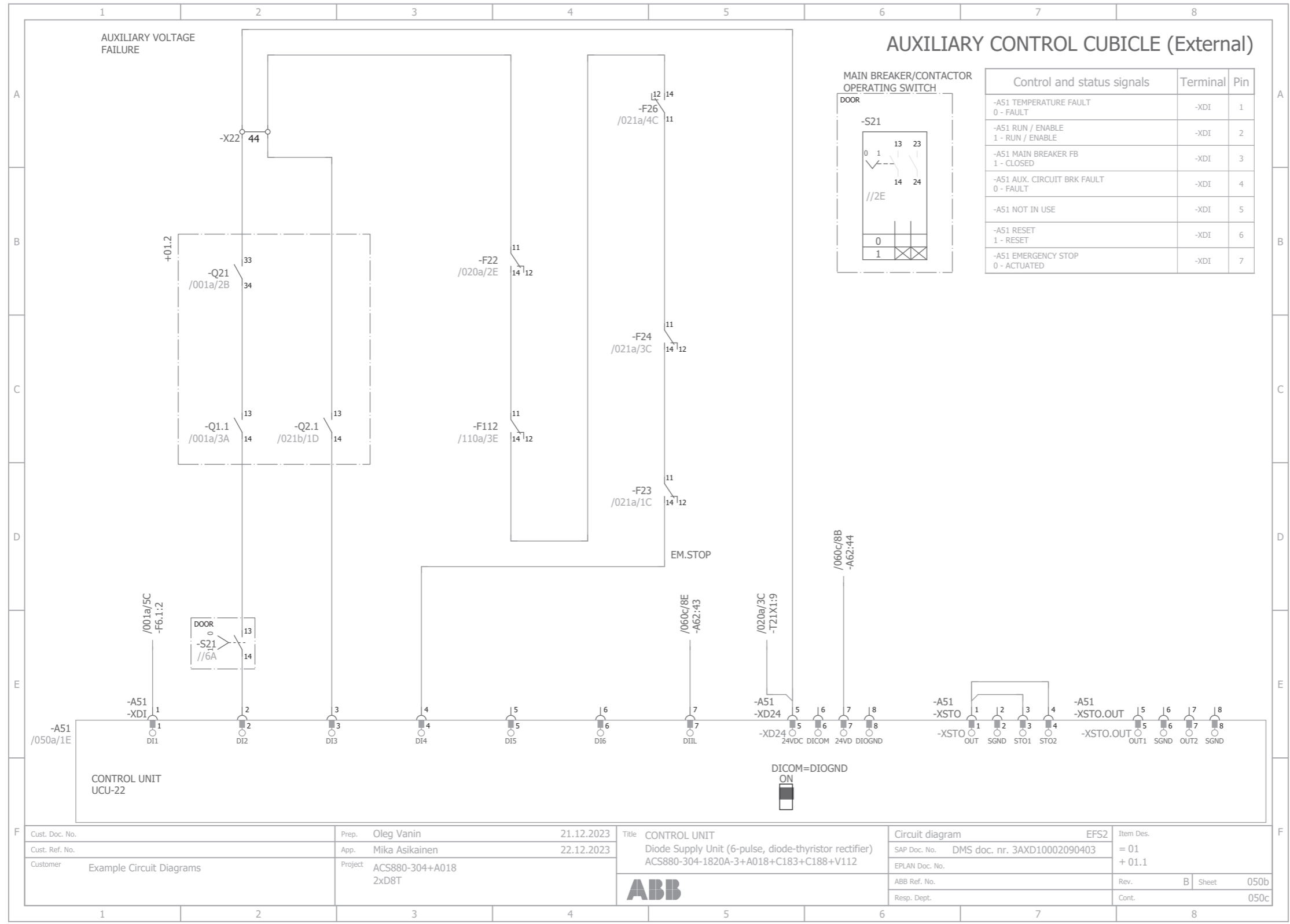
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	Cust. Ref. No.	App. Mika Asikainen	22.12.2023		SAP Doc. No.	DMS doc. nr. 3AXD10002090403		
	Customer Example Circuit Diagrams	Project ACS880-304+A018 2xD8T	ABB		EPLAN Doc. No.			
					ABB Ref. No.		Rev. B	Sheet 022a
					Resp. Dept.		Cont.	026a



Cust. Doc. No.	Prep. Oleg Vanin	21.12.2023	Title FAN SUPPLY CONTROL	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10002090403	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018		ACS880-304-1820A-3+A018+C183+C188+V112	EPLAN Doc. No.		+ 01.1
	2xD8T			ABB Ref. No.		Rev. B Sheet 026a
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■ Sheet 050a



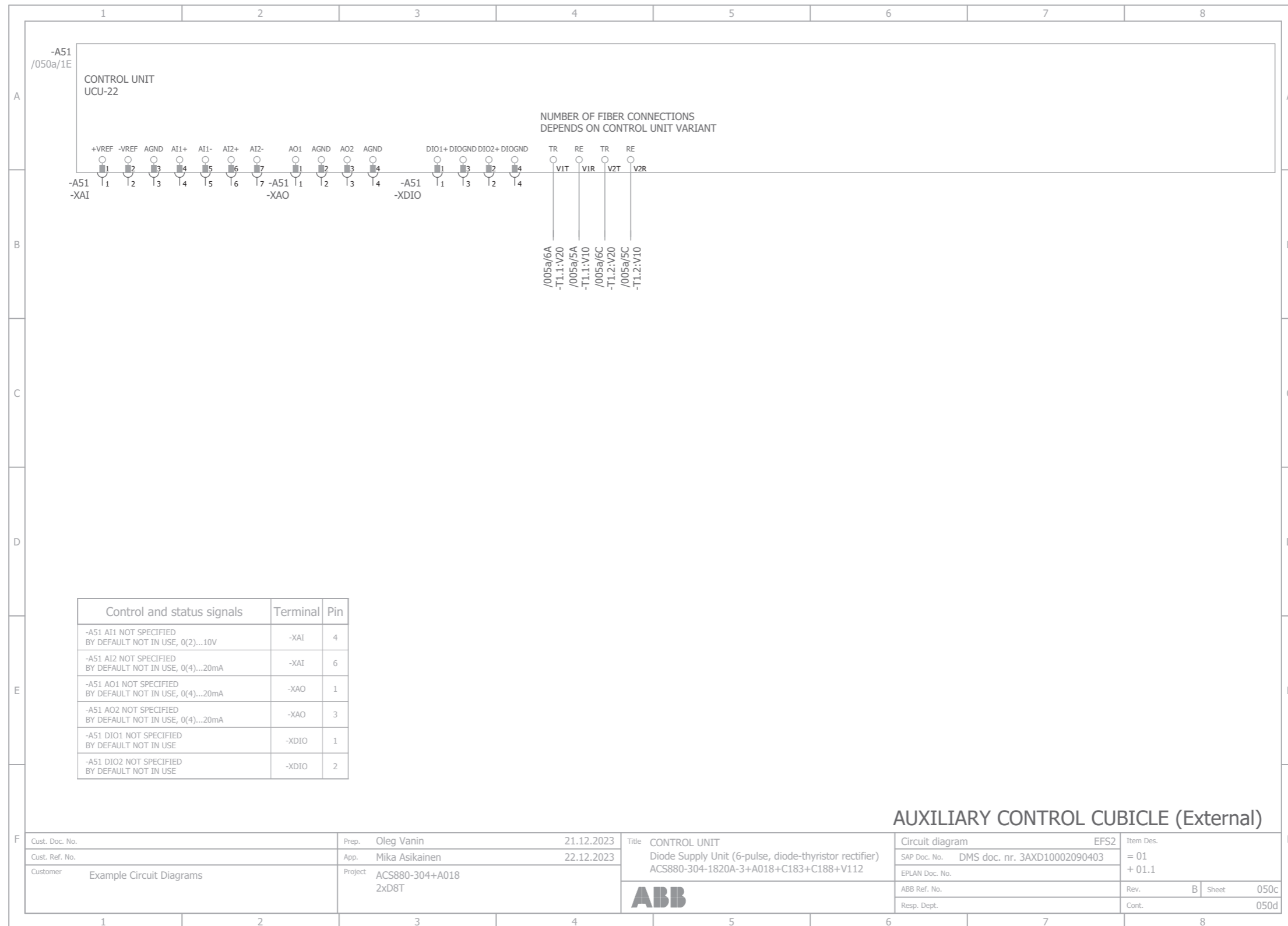


Control and status signals	Terminal	Pin
-A51 TEMPERATURE FAULT 0 - FAULT	-XDI	1
-A51 RUN / ENABLE 1 - RUN / ENABLE	-XDI	2
-A51 MAIN BREAKER FB 1 - CLOSED	-XDI	3
-A51 AUX. CIRCUIT BRK FAULT 0 - FAULT	-XDI	4
-A51 NOT IN USE	-XDI	5
-A51 RESET 1 - RESET	-XDI	6
-A51 EMERGENCY STOP 0 - ACTUATED	-XDI	7

Cust. Doc. No.	Prep. Oleg Vanin	21.12.2023	Title CONTROL UNIT	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10002090403	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018		ACS880-304-1820A-3+A018+C183+C188+V112	EPLAN Doc. No.		+ 01.1
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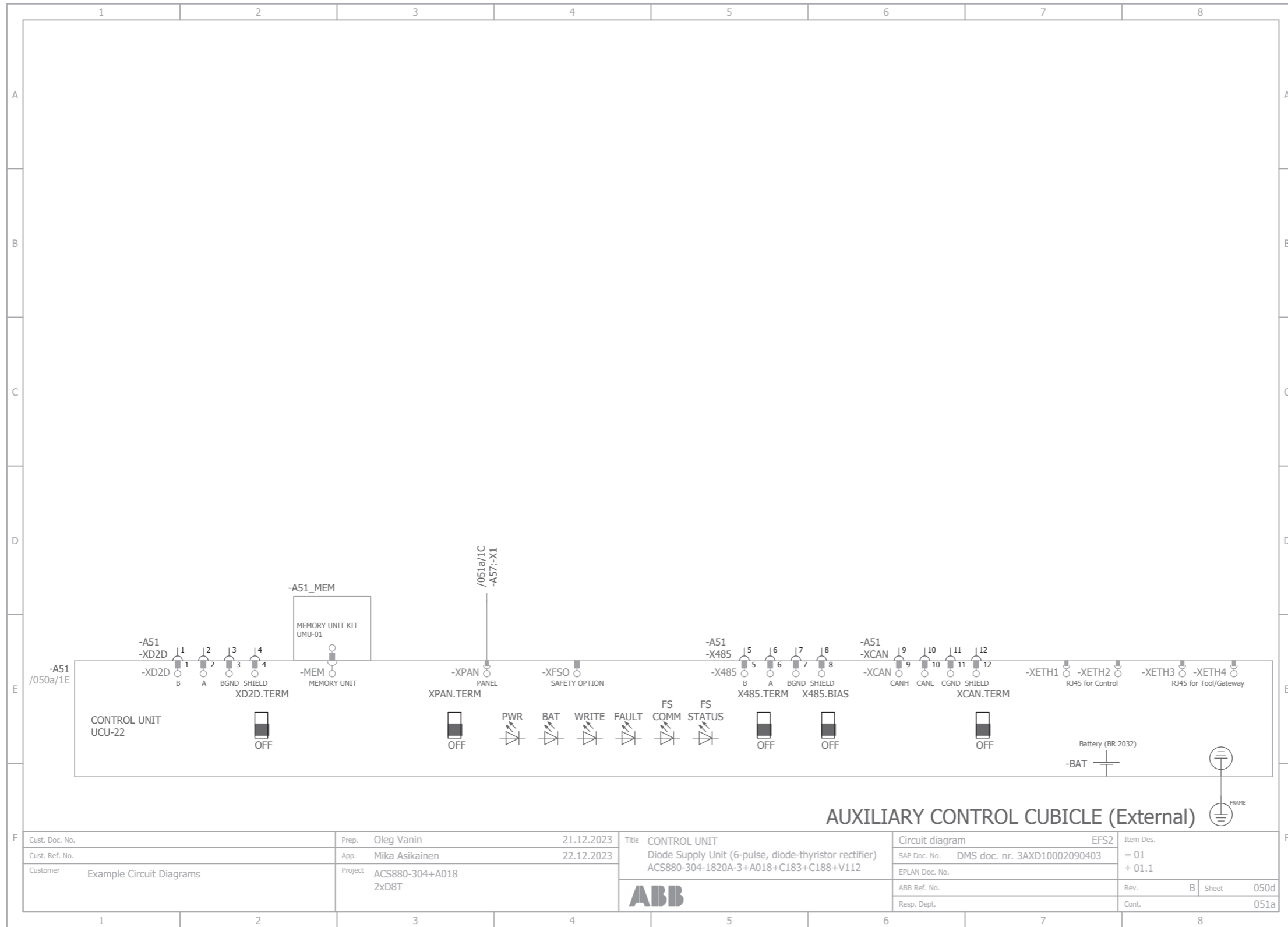


■ Sheet 050c

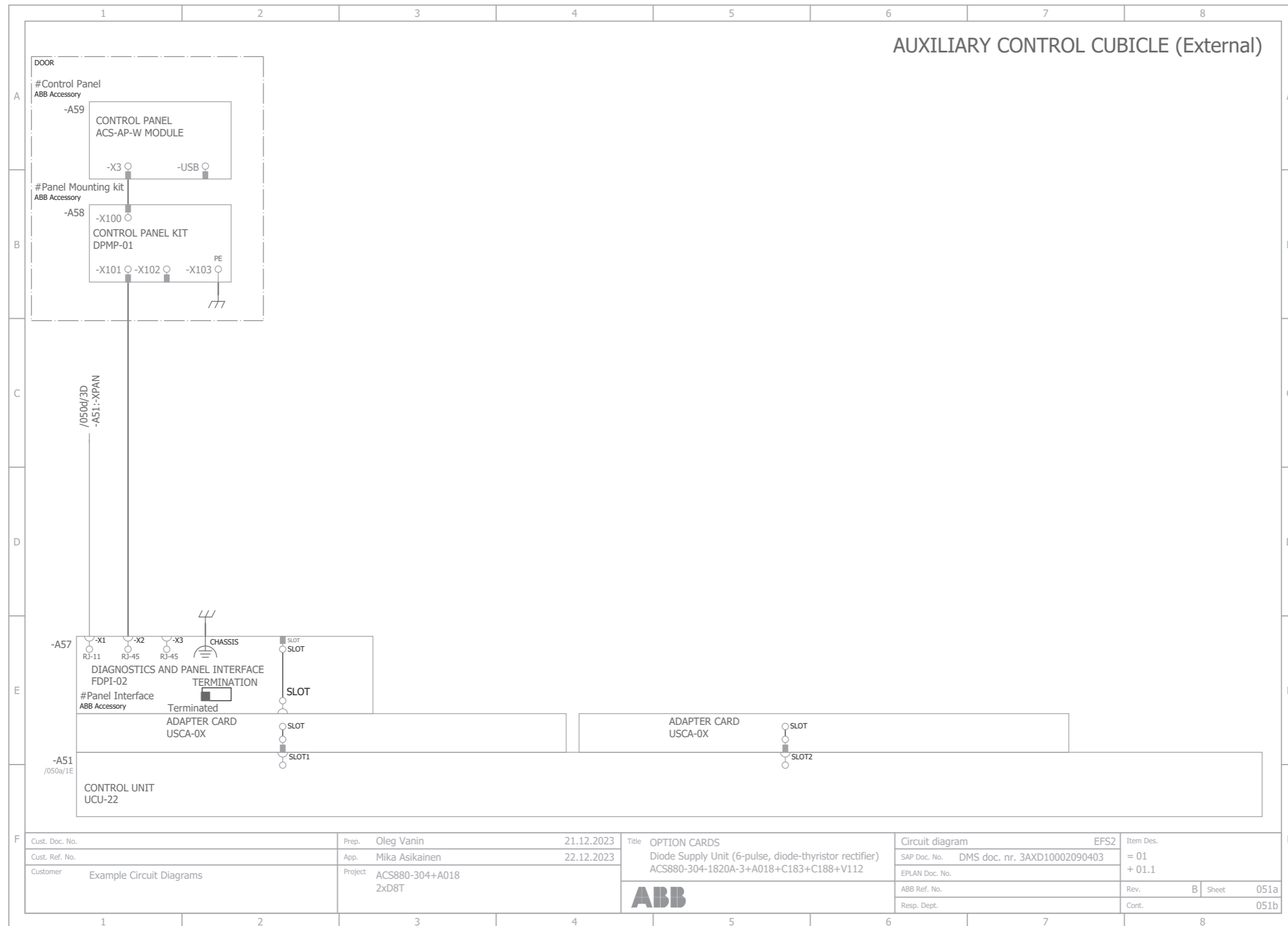


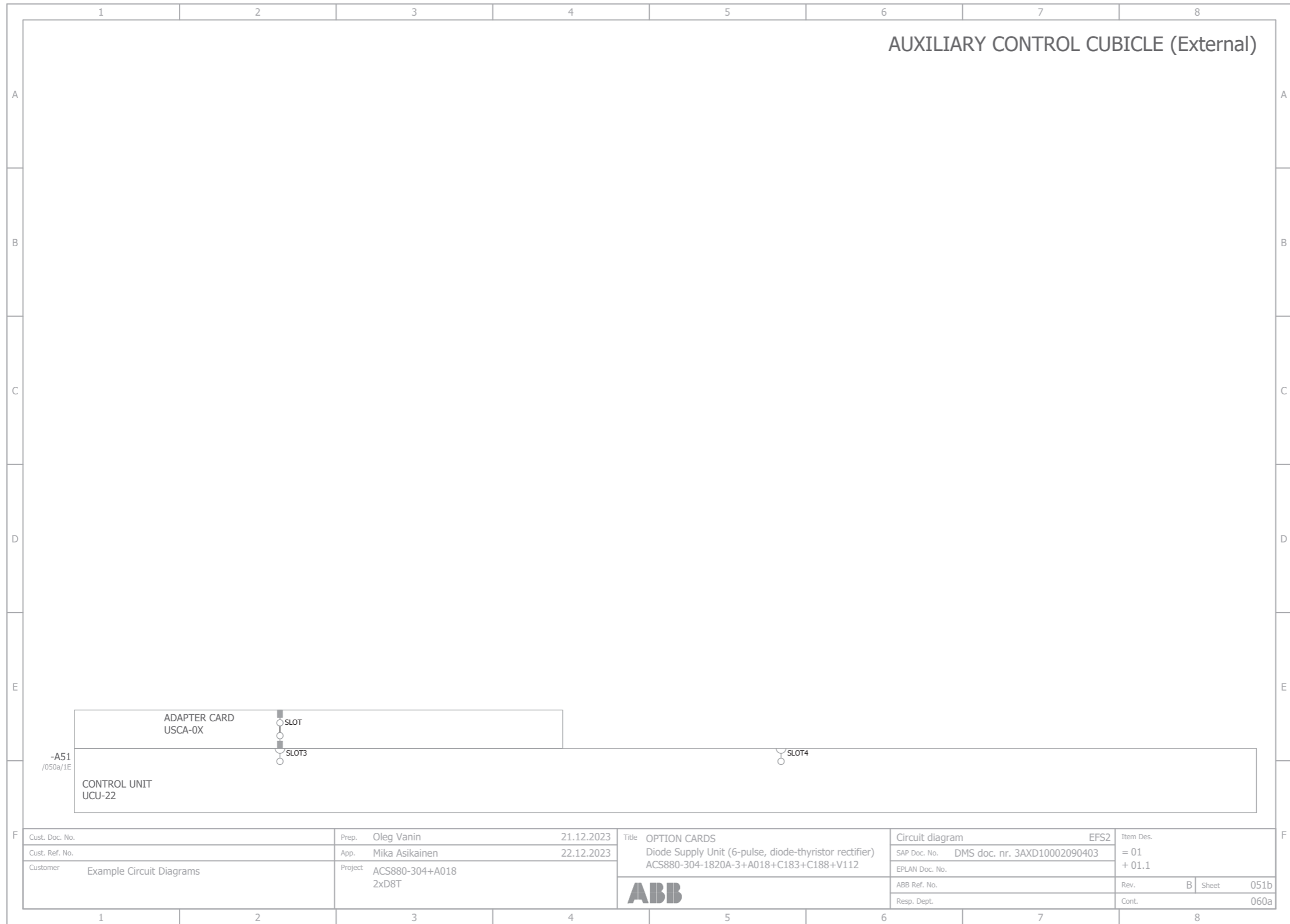
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Customer Example Circuit Diagrams	Prep. Oleg Vanin 21.12.2023	Title CONTROL UNIT Diode Supply Unit (6-pulse, diode-thyristor rectifier) ACS880-304-1820A-3+A018+C183+C188+V112	Circuit diagram EFS2	Item Des.
	App. Mika Asikainen 22.12.2023		SAP Doc. No. DMS doc. nr. 3AXD10002090403	= 01 + 01.1
	Project ACS880-304+A018 2xD8T		EPLAN Doc. No.	ABB Ref. No.
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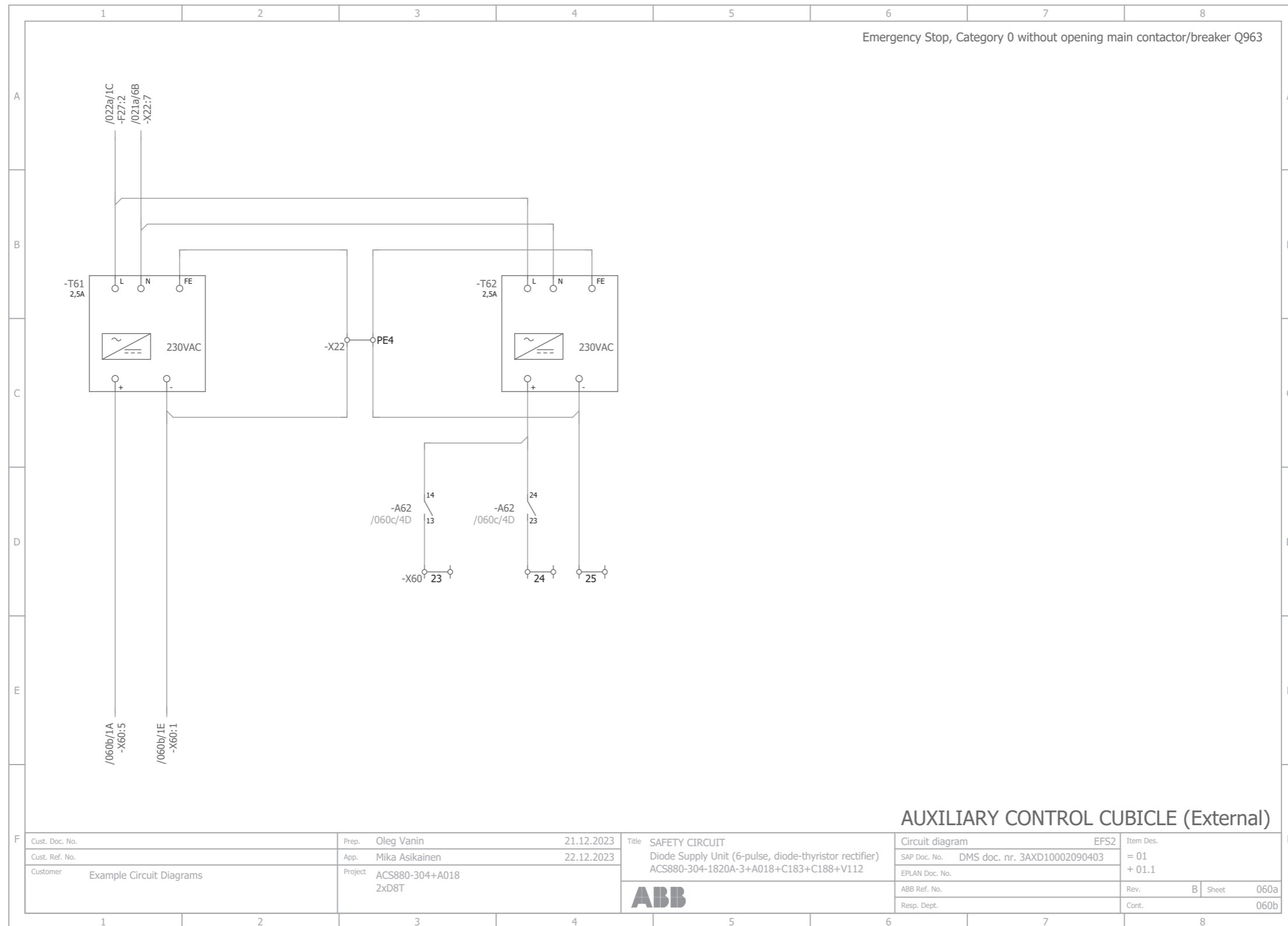


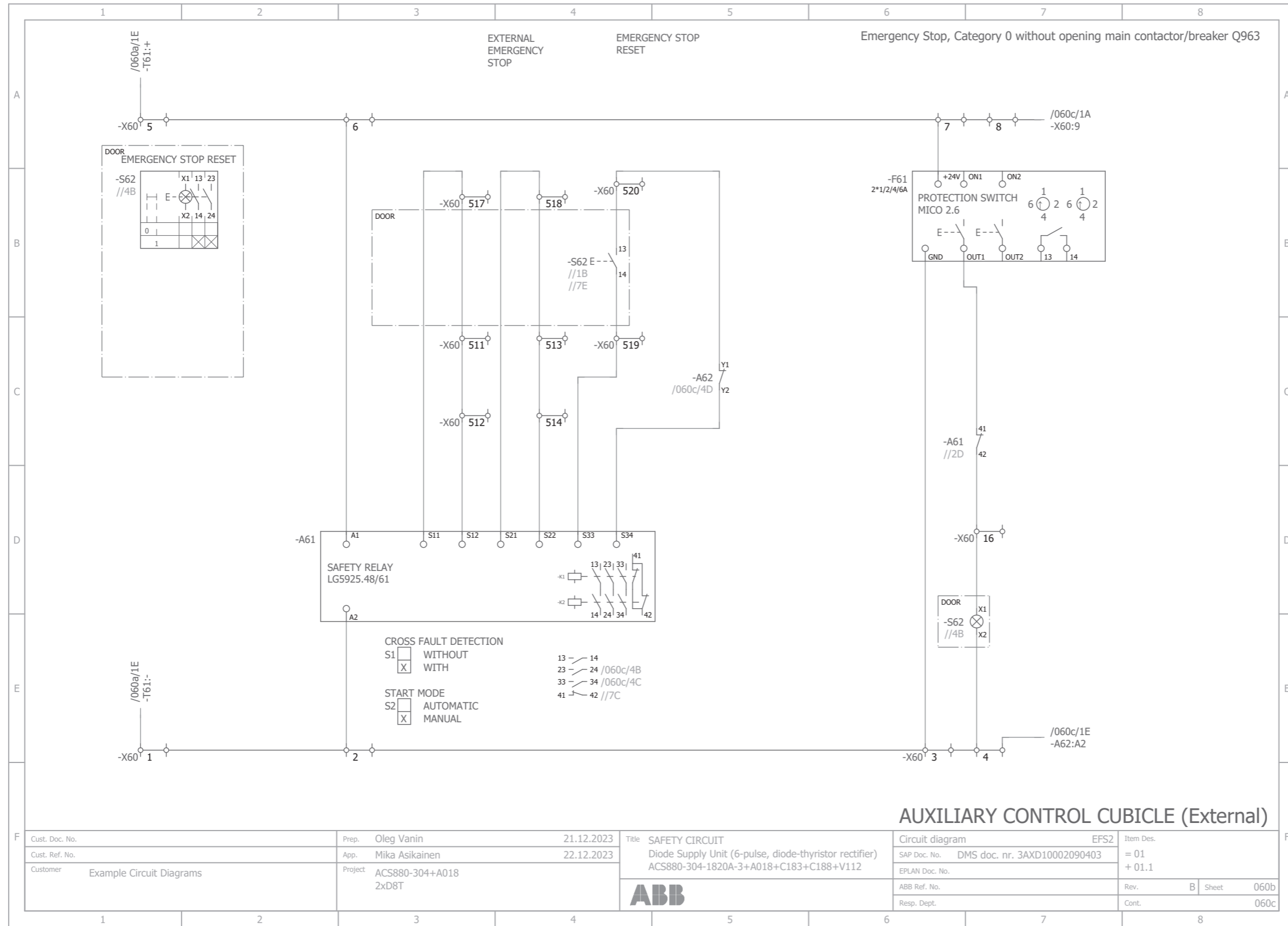
■ Sheet 051a



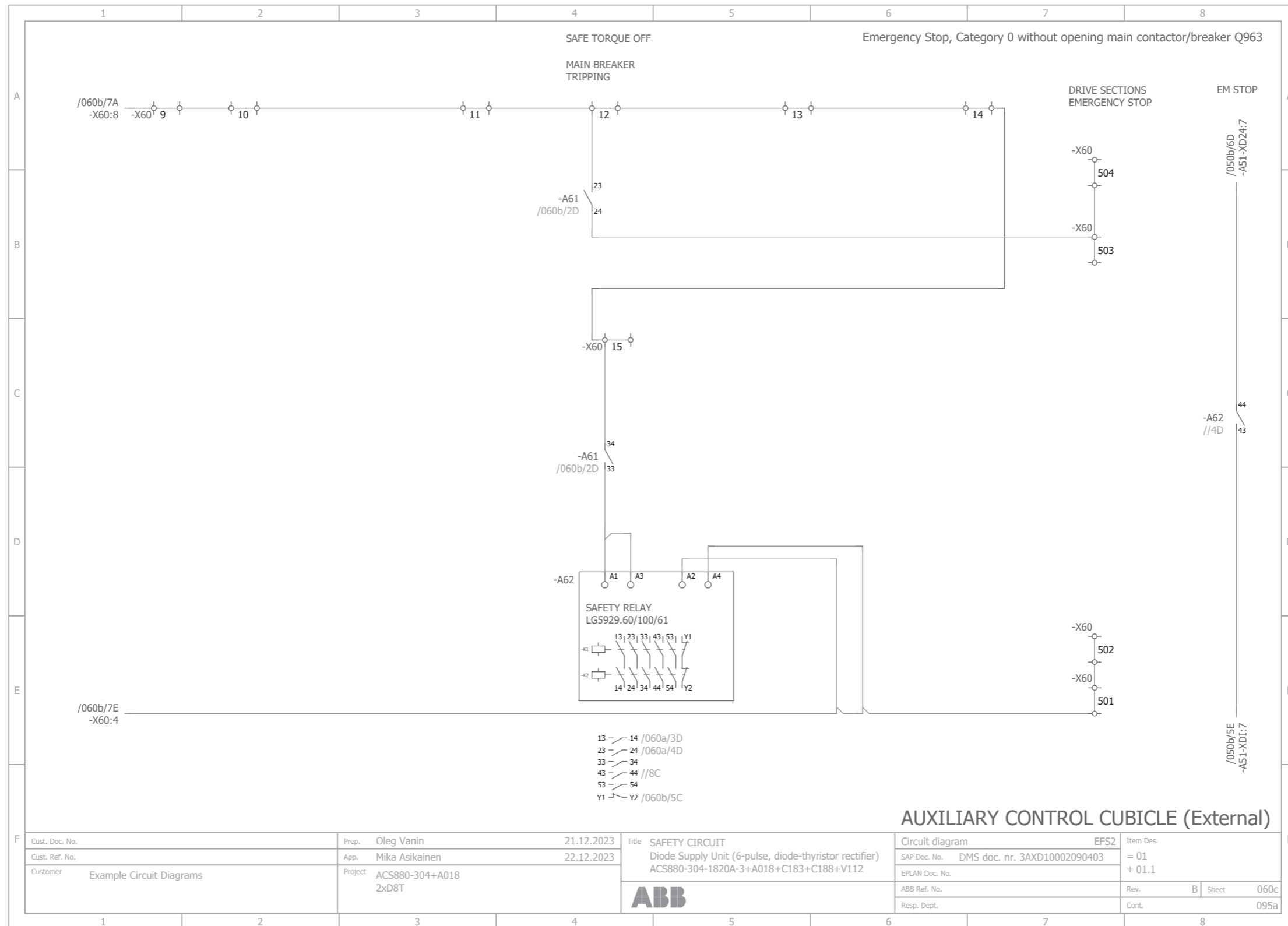


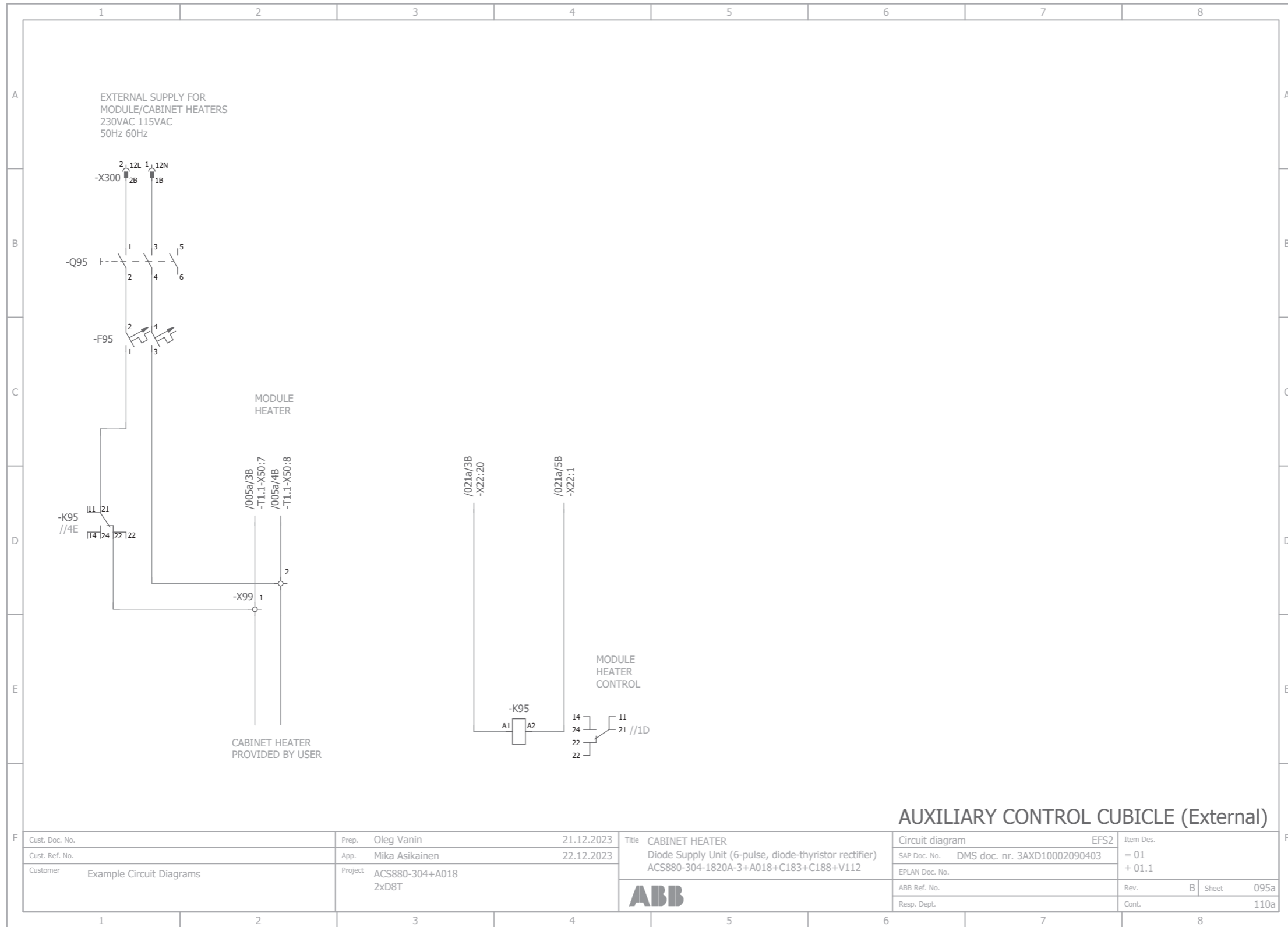
■ Sheet 060a



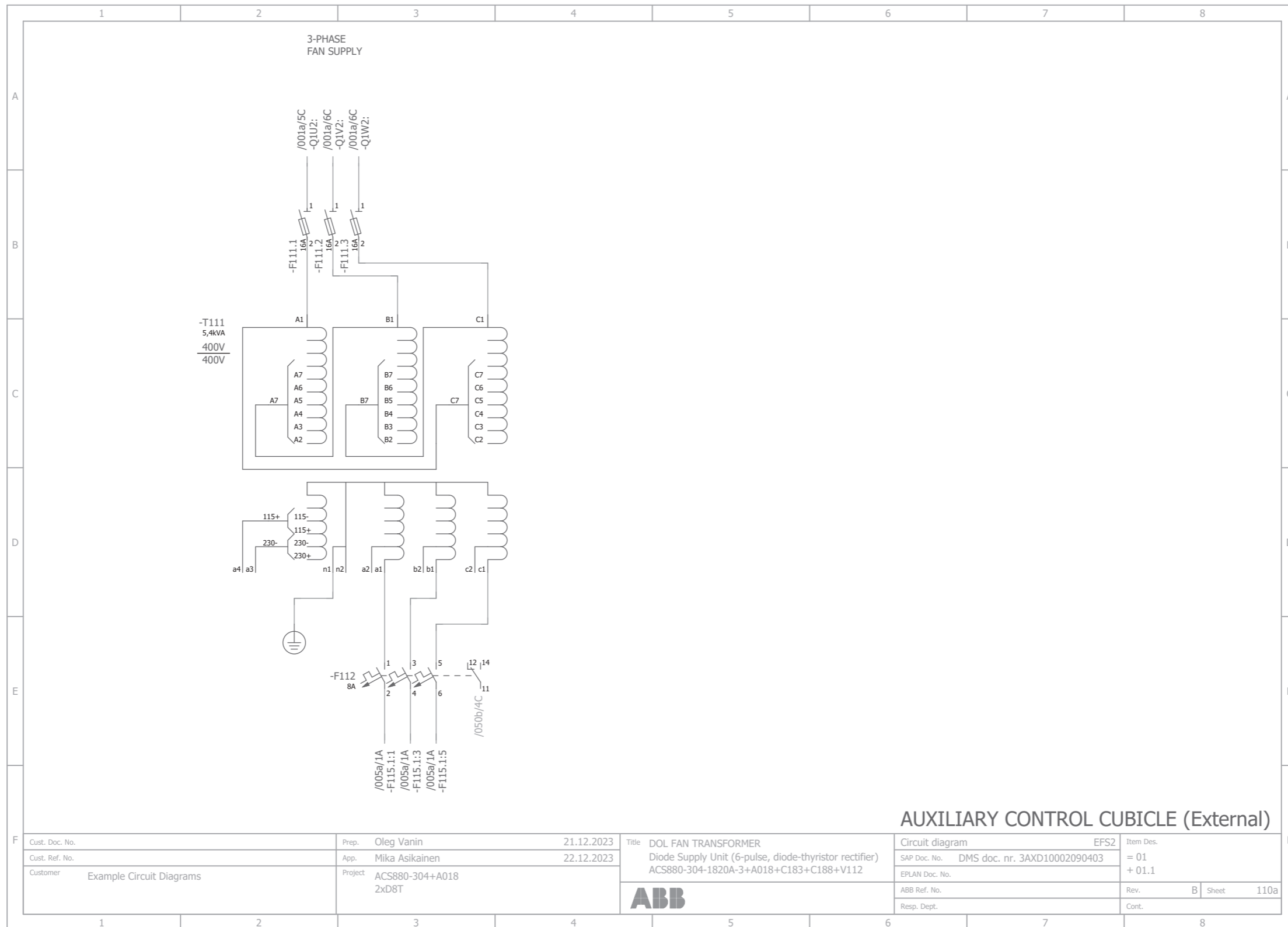


■ Sheet 060c



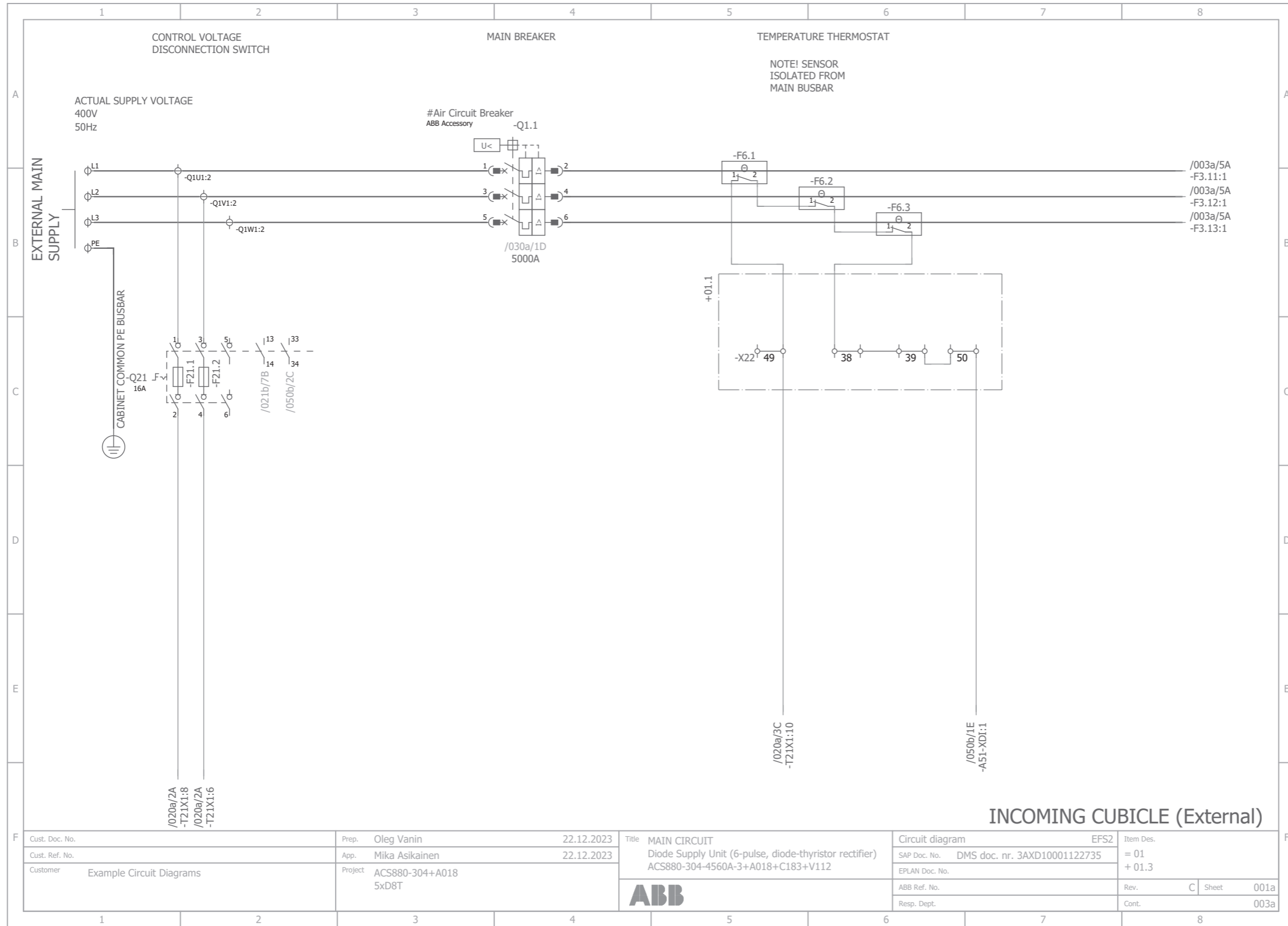


■ Sheet 110a

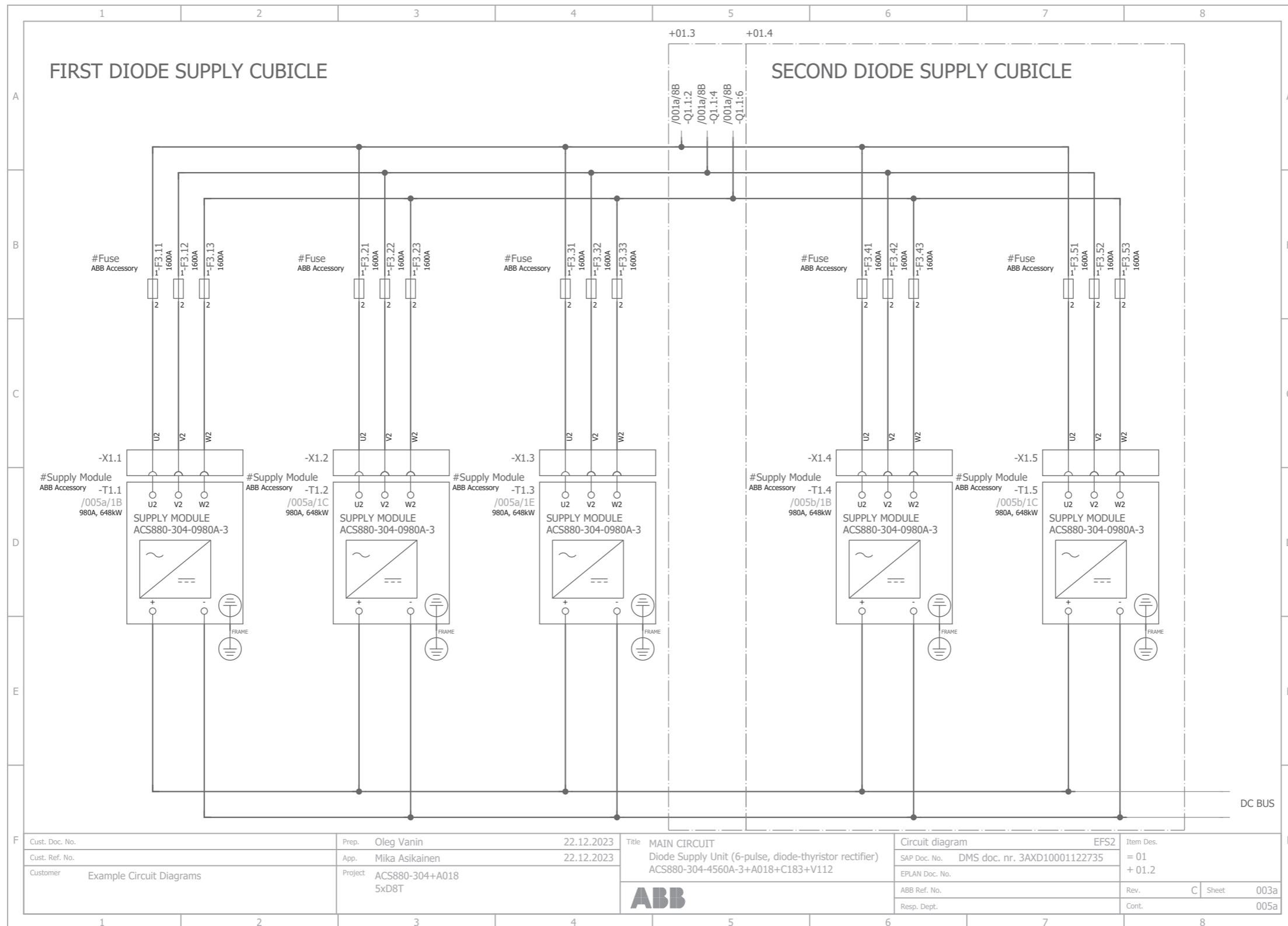


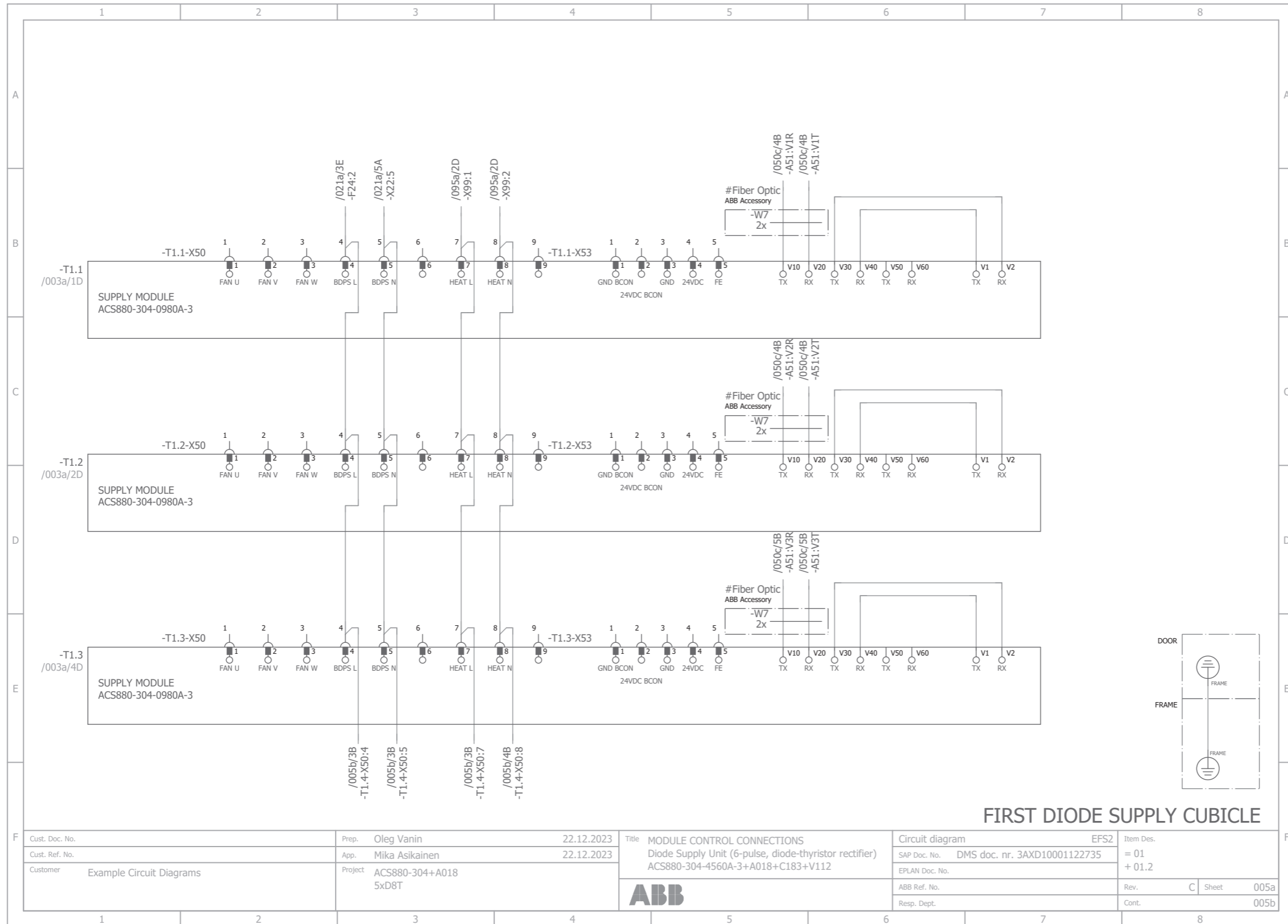
# ACS880-304-4560A-3+A018+C183 (5x D8T 6-pulse connection)

■ Sheet 001a

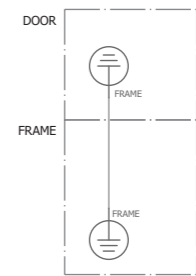
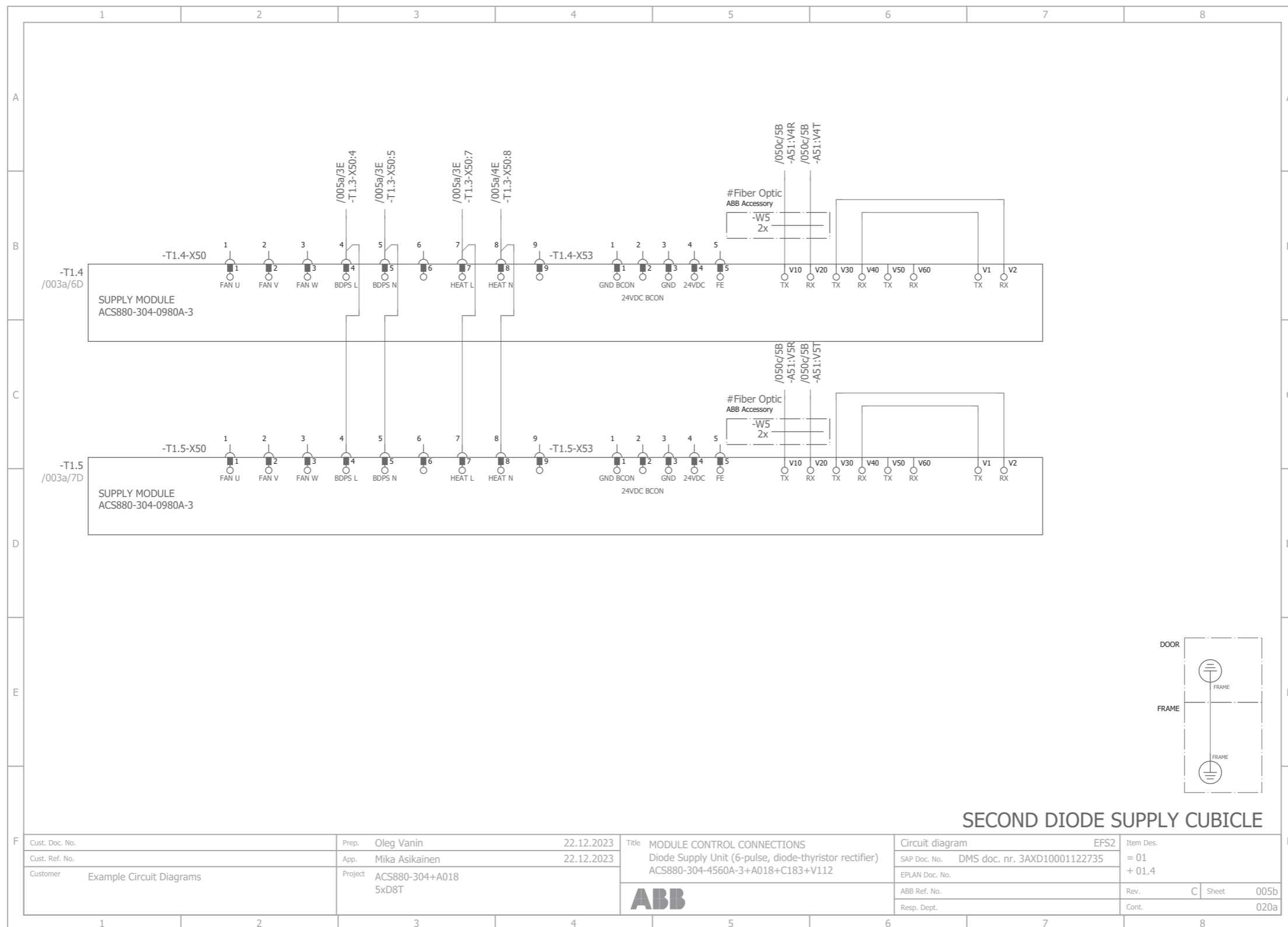


Sheet 003a



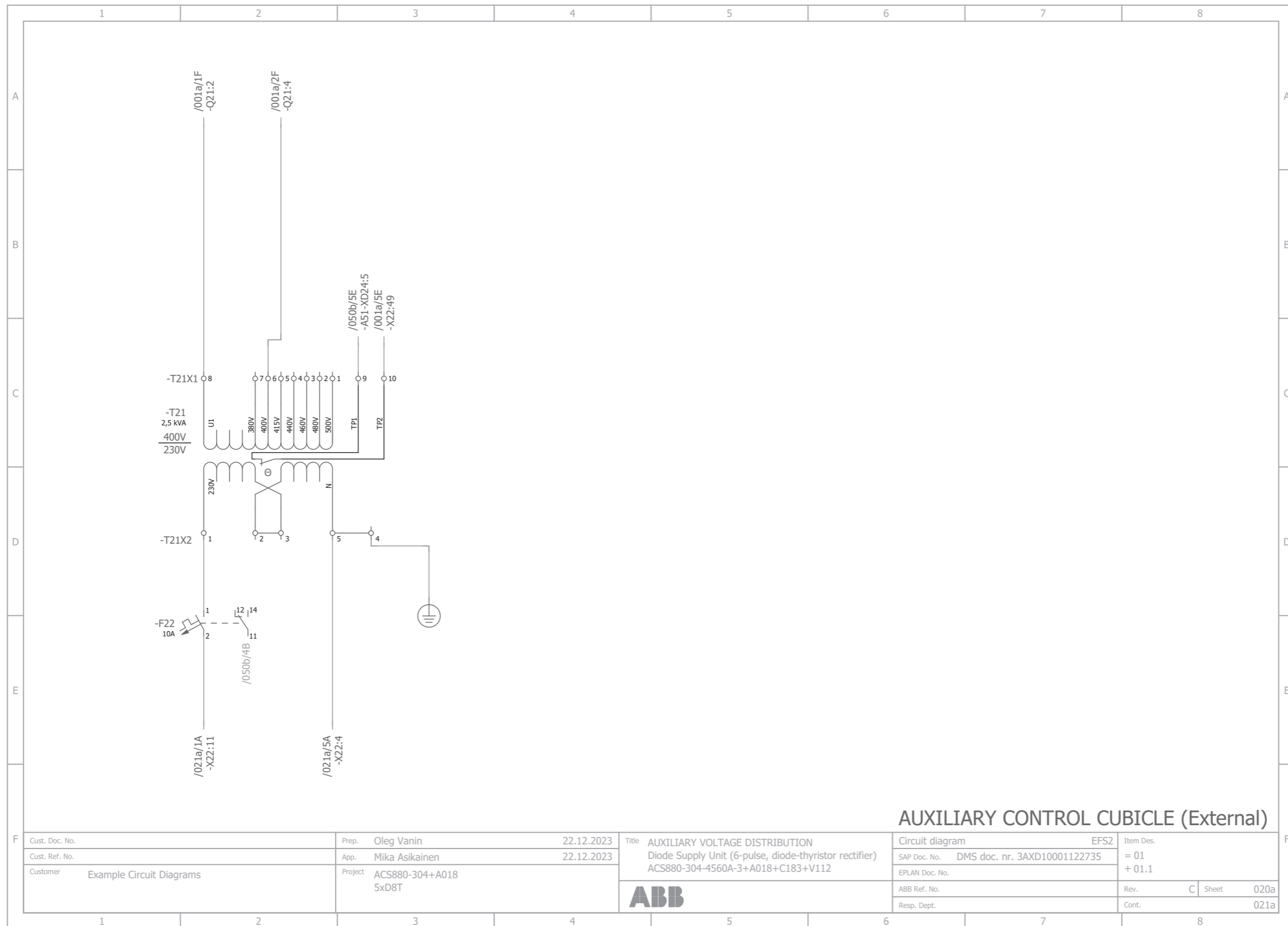


Sheet 005b



SECOND DIODE SUPPLY CUBICLE

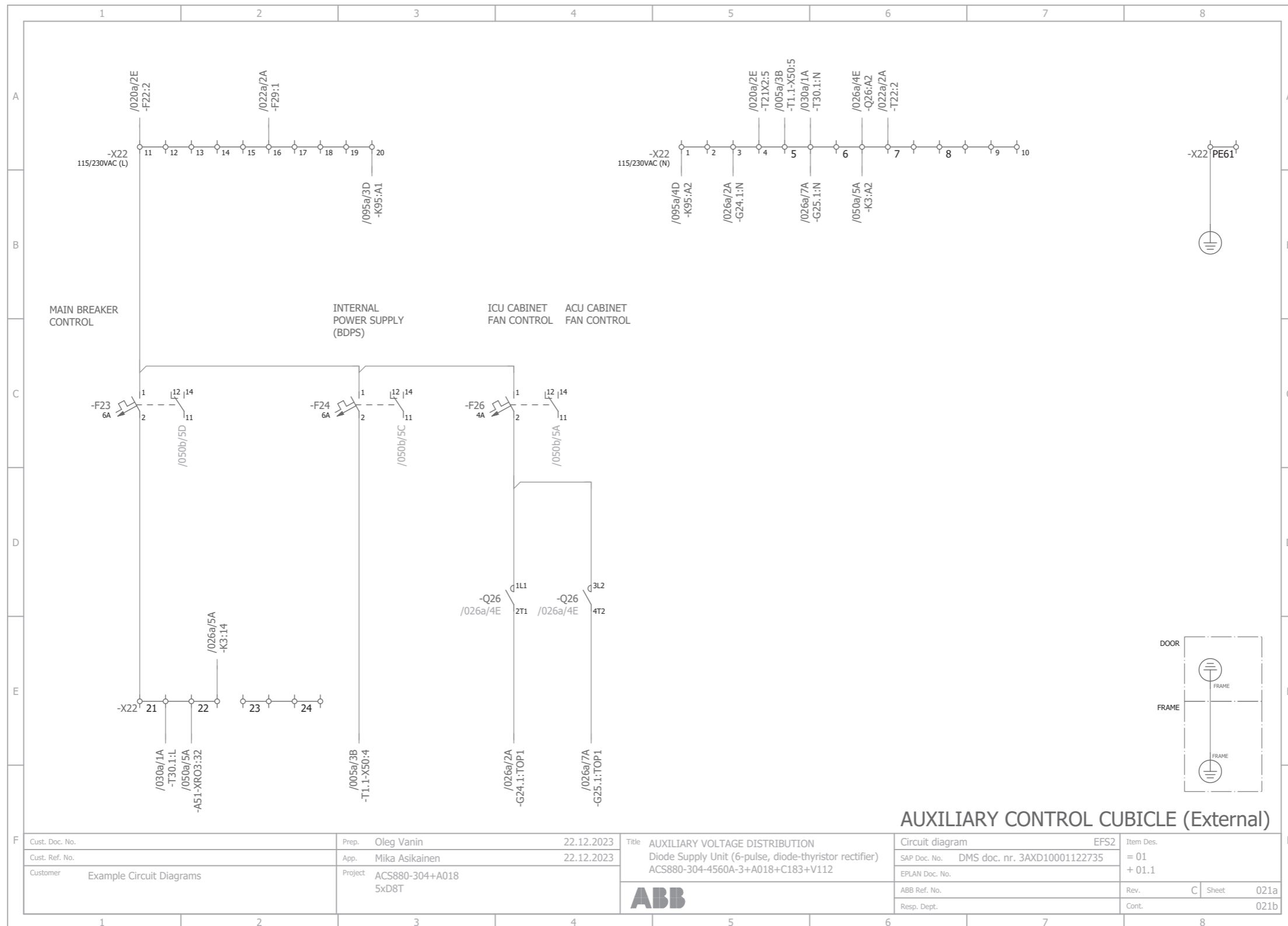
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Cust. Ref. No.	App. Mika Asikainen 22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No. DMS doc. nr. 3AXD10001122735	+ 01.4
Customer Example Circuit Diagrams	Project ACS880-304+A018 5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.	Rev. C Sheet 005b
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**AUXILIARY CONTROL CUBICLE (External)**

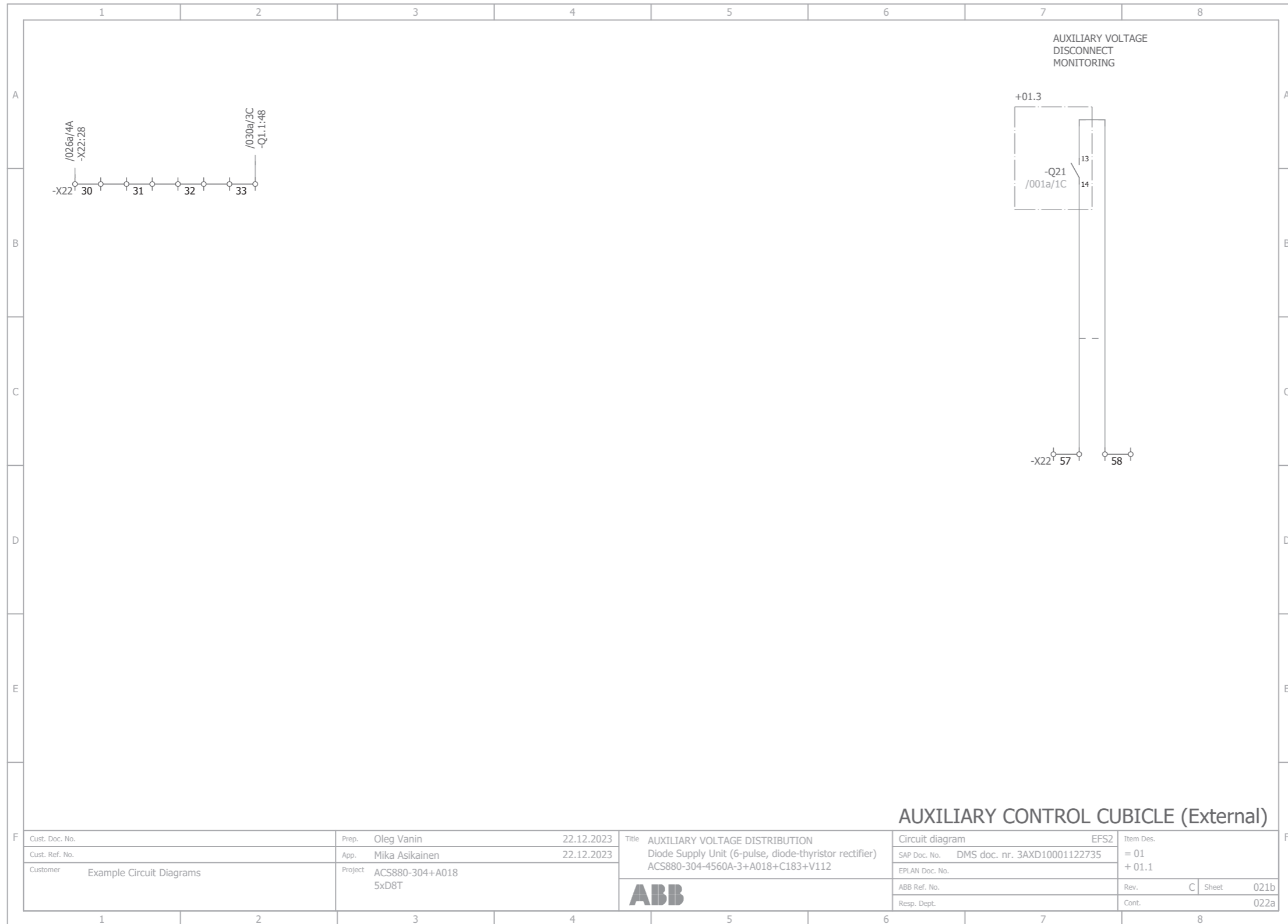
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Customer Example Circuit Diagrams	Project ACS880-304+A018	5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.		+ 01.1
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■ Sheet 021a



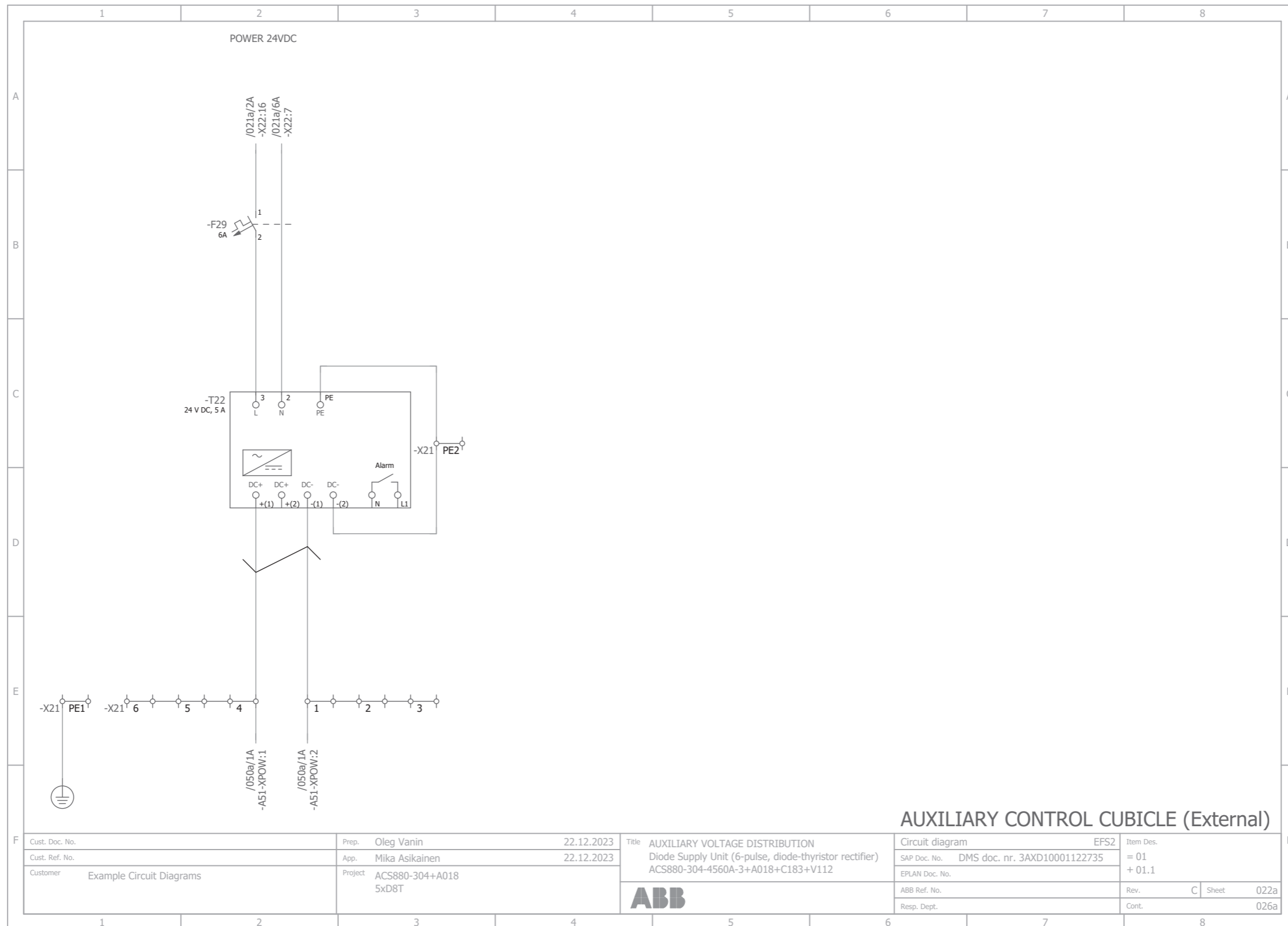
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Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10001122735	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018	5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.		+ 01.1
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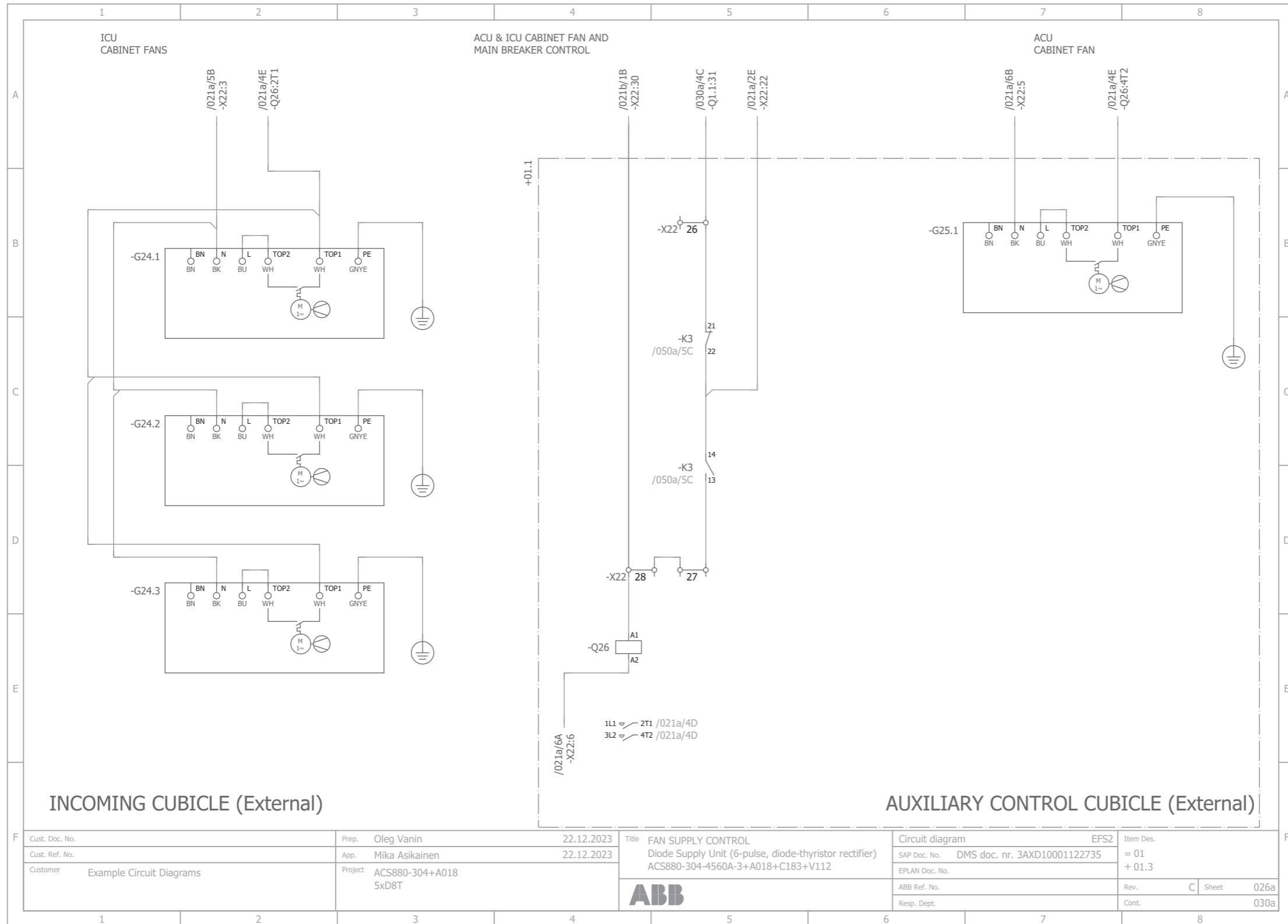
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Customer Example Circuit Diagrams		Project ACS880-304+A018		ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.		+ 01.1
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■ Sheet 022a

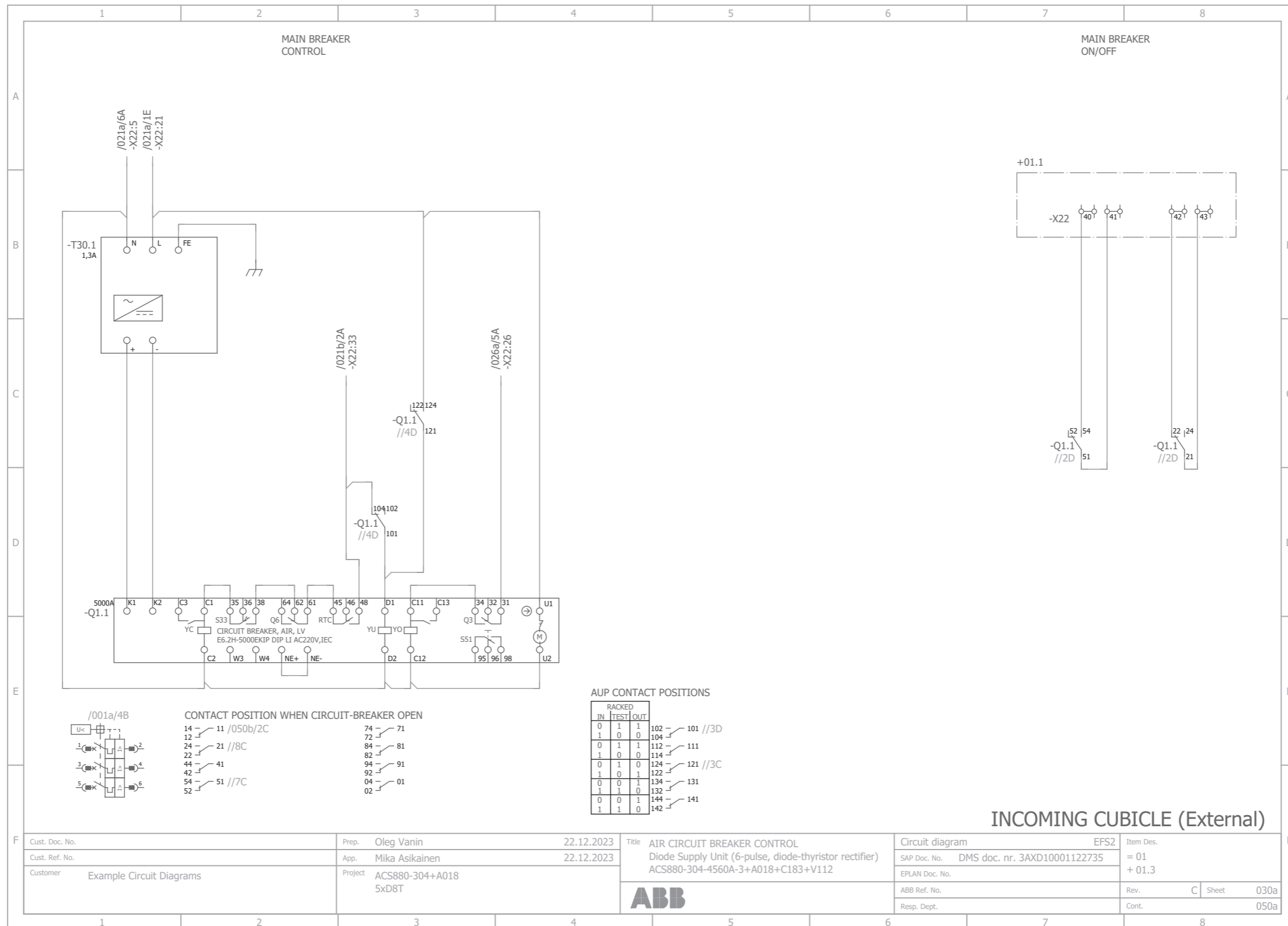


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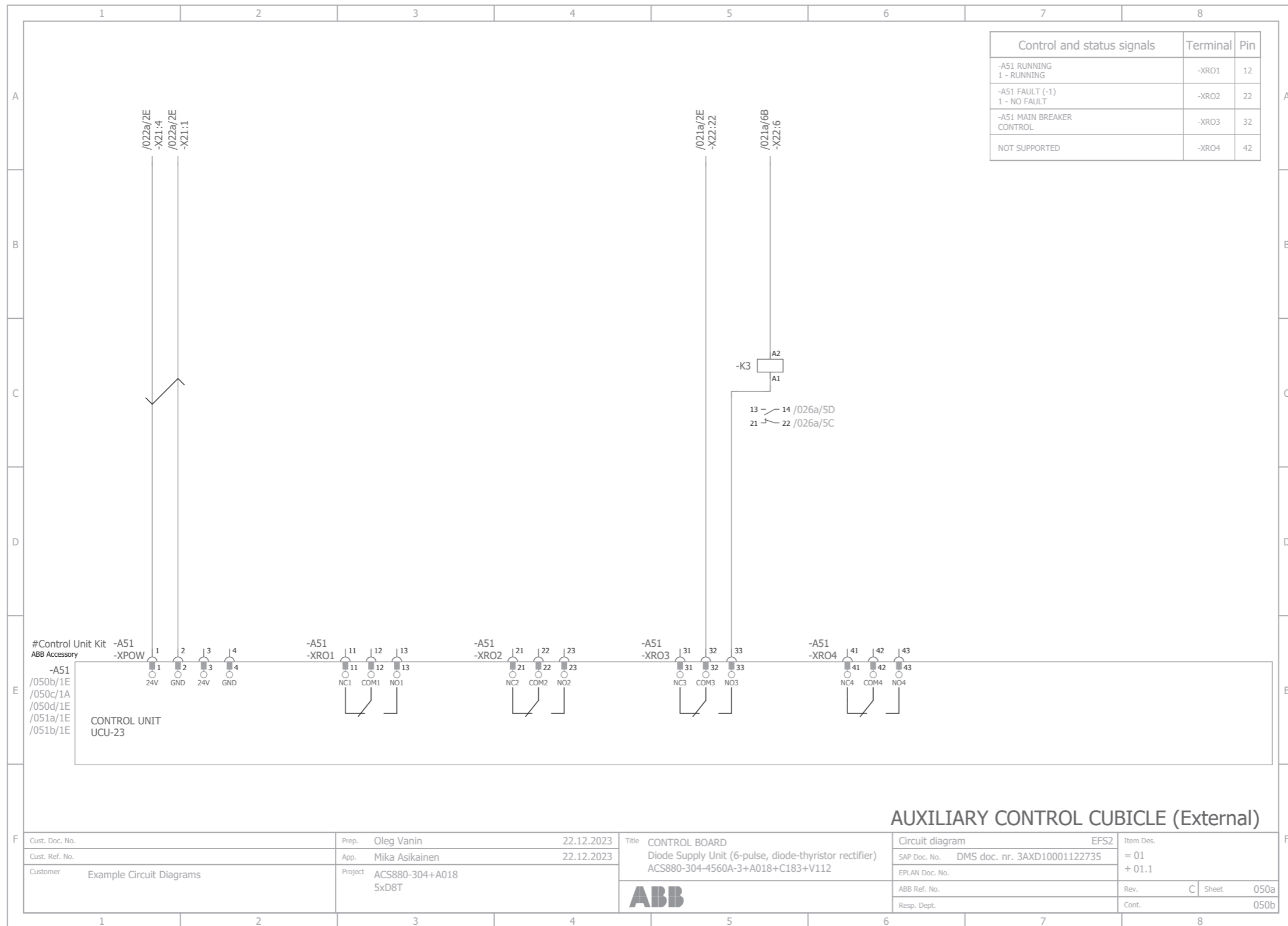
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Cust. Ref. No.	App. Mika Asikainen 22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No. DMS doc. nr. 3AXD10001122735	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018 5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.	+ 01.1
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■ Sheet 030a



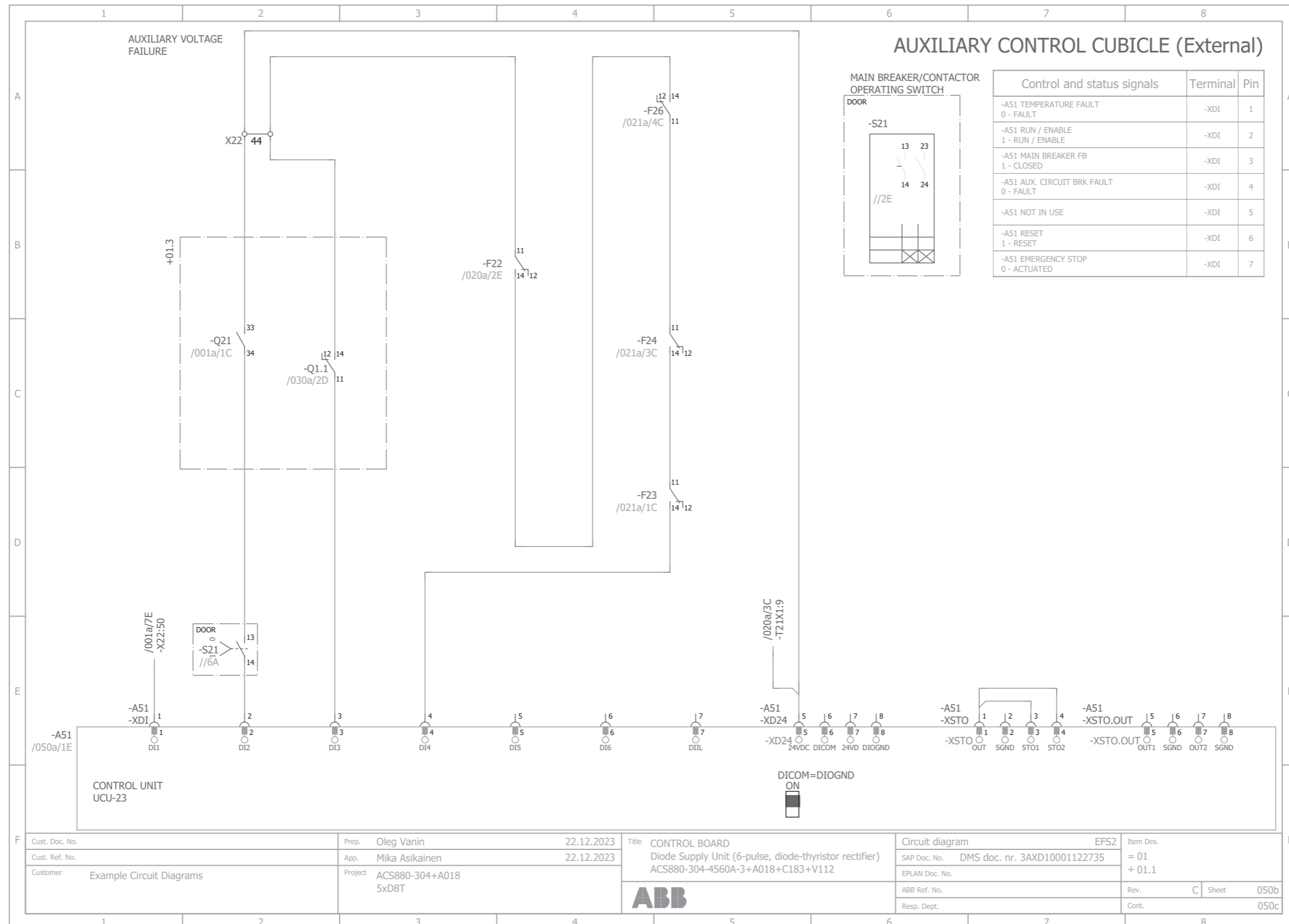
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Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10001122735	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018	5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.		+ 01.3
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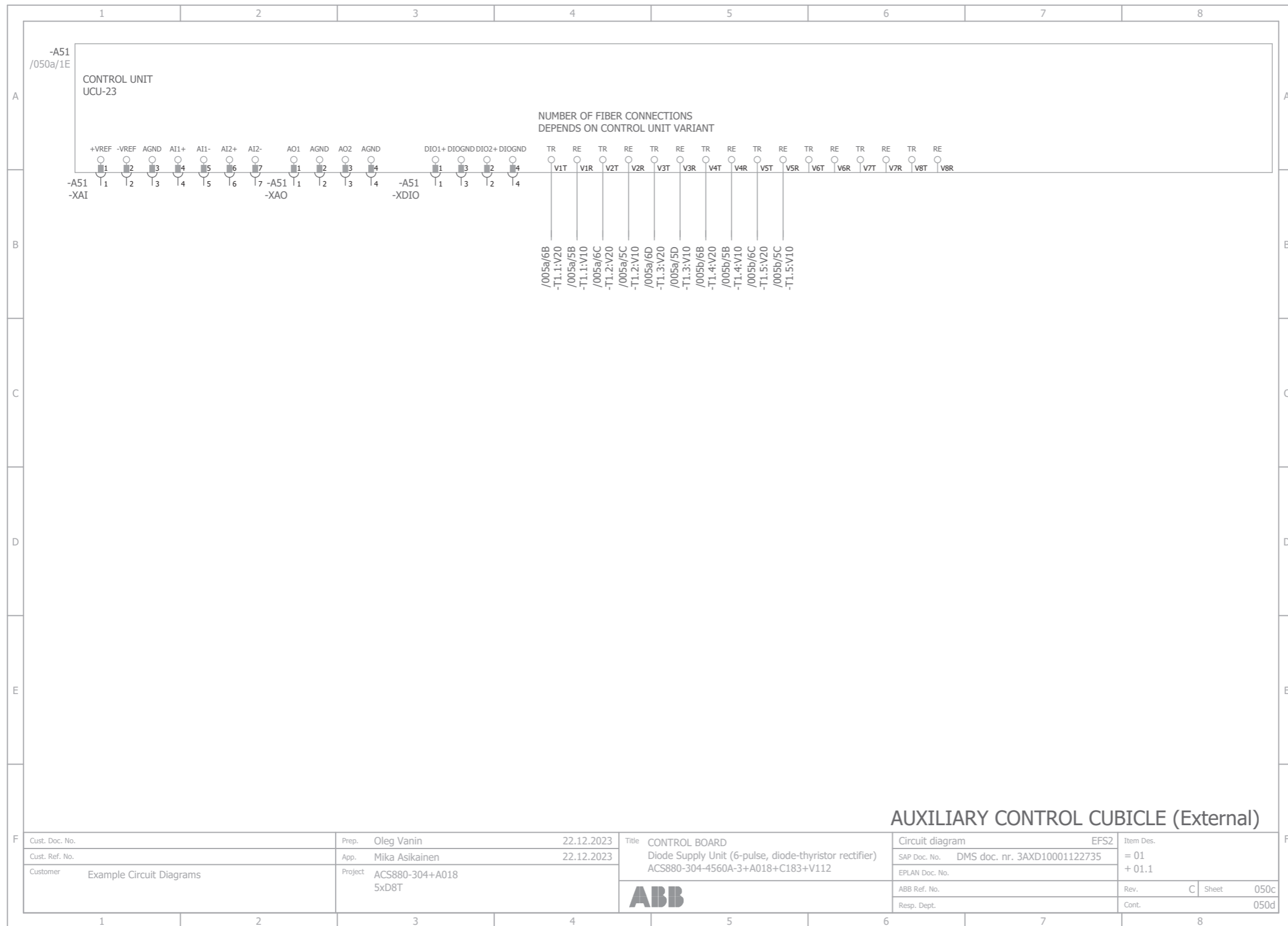
AUXILIARY CONTROL CUBICLE (External)

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Cust. Ref. No.	App. Mika Asikainen 22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10001122735	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018 5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.		+ 01.1
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■ Sheet 050b

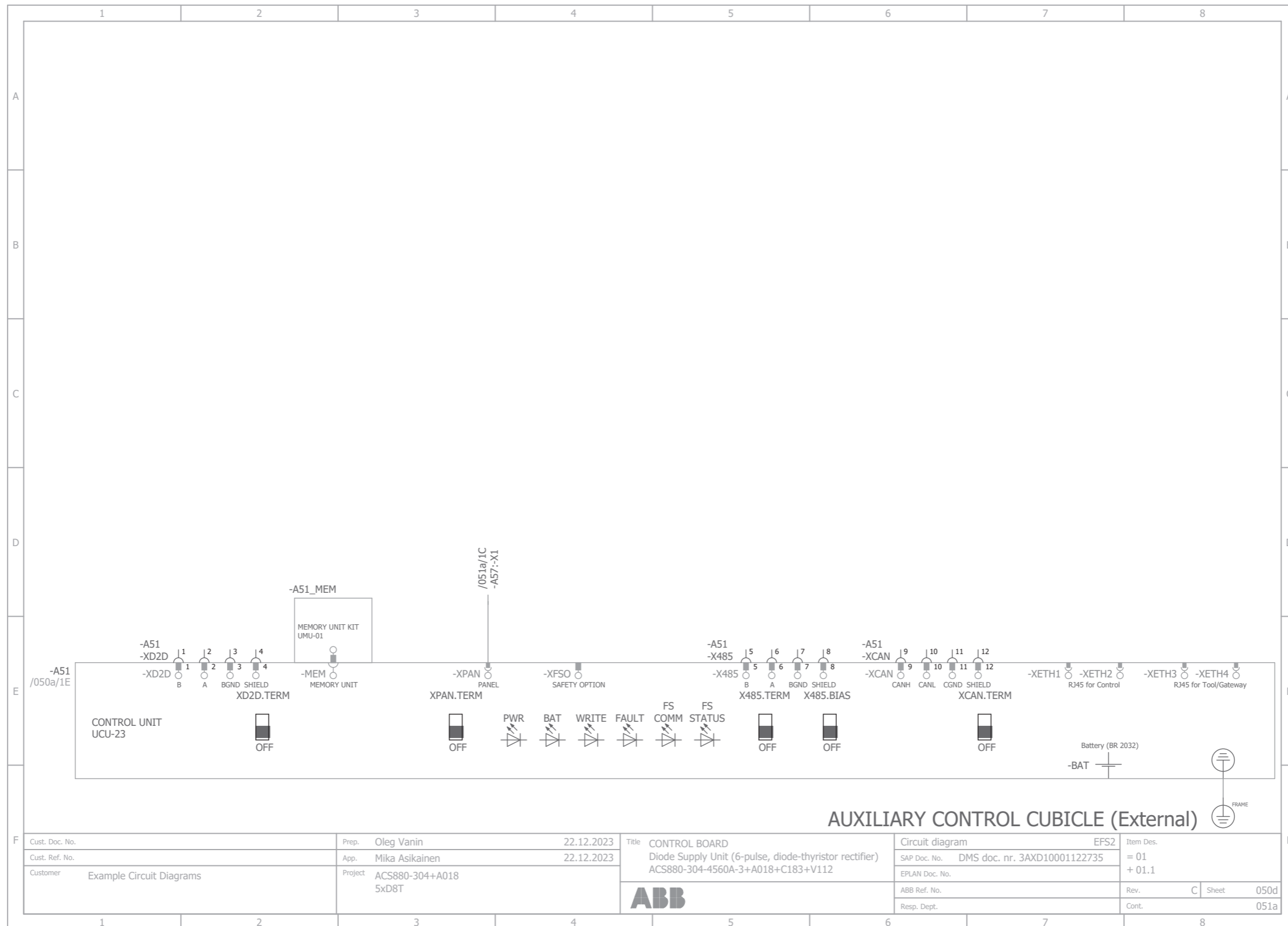


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Customer Example Circuit Diagrams	Project ACS880-304+A018 5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.	Rev. C Sheet 050b
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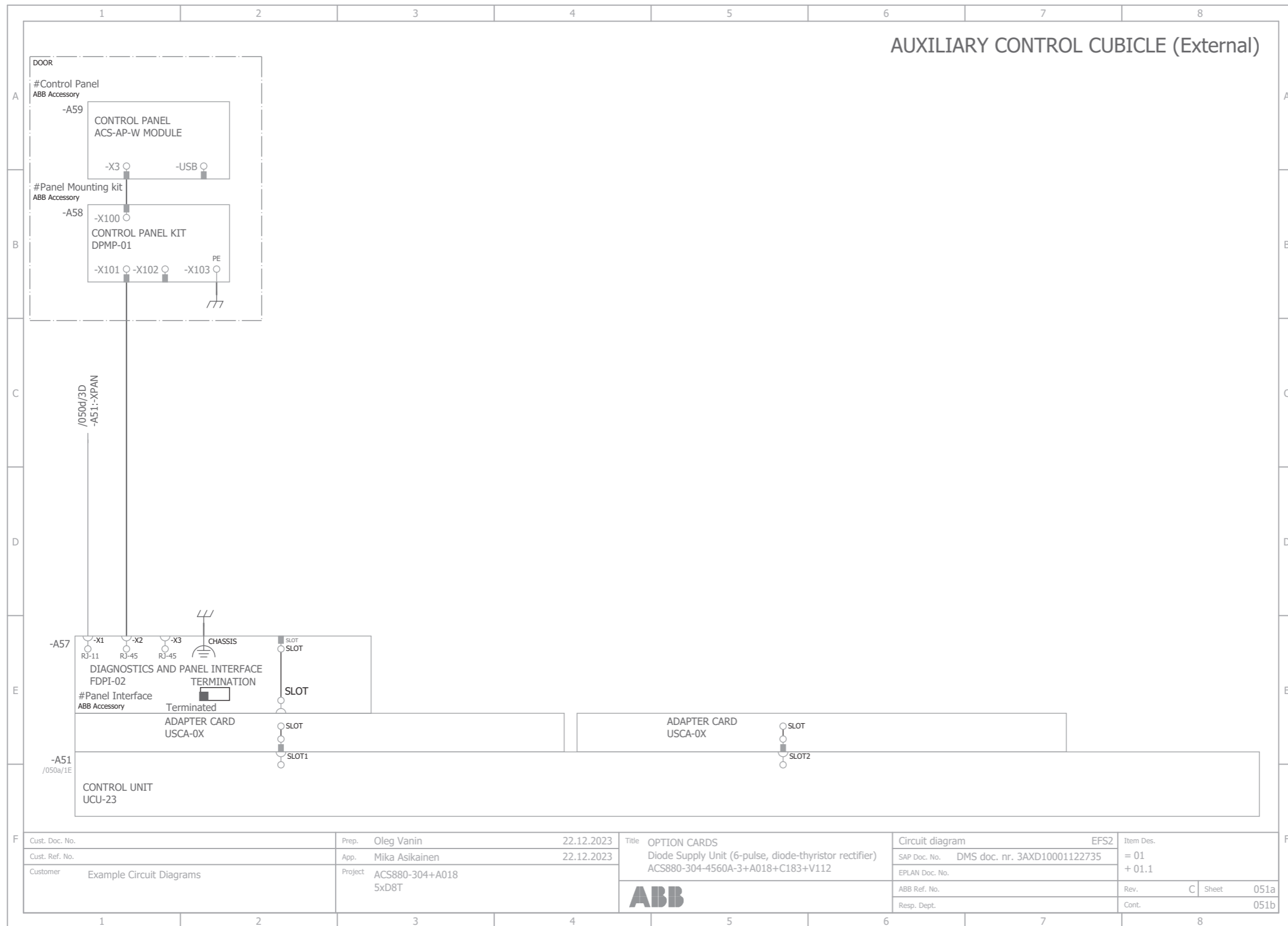


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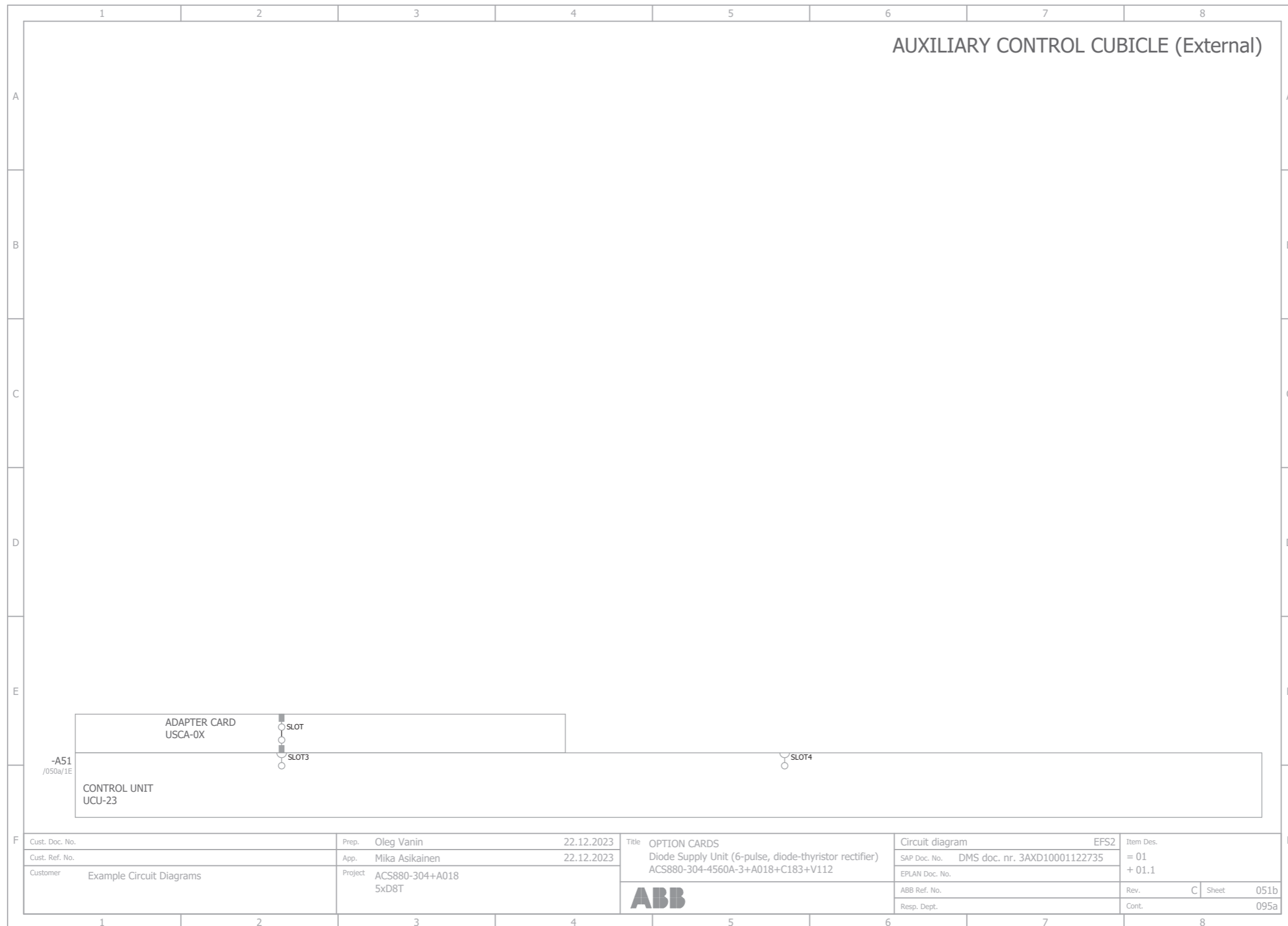
■ Sheet 050d

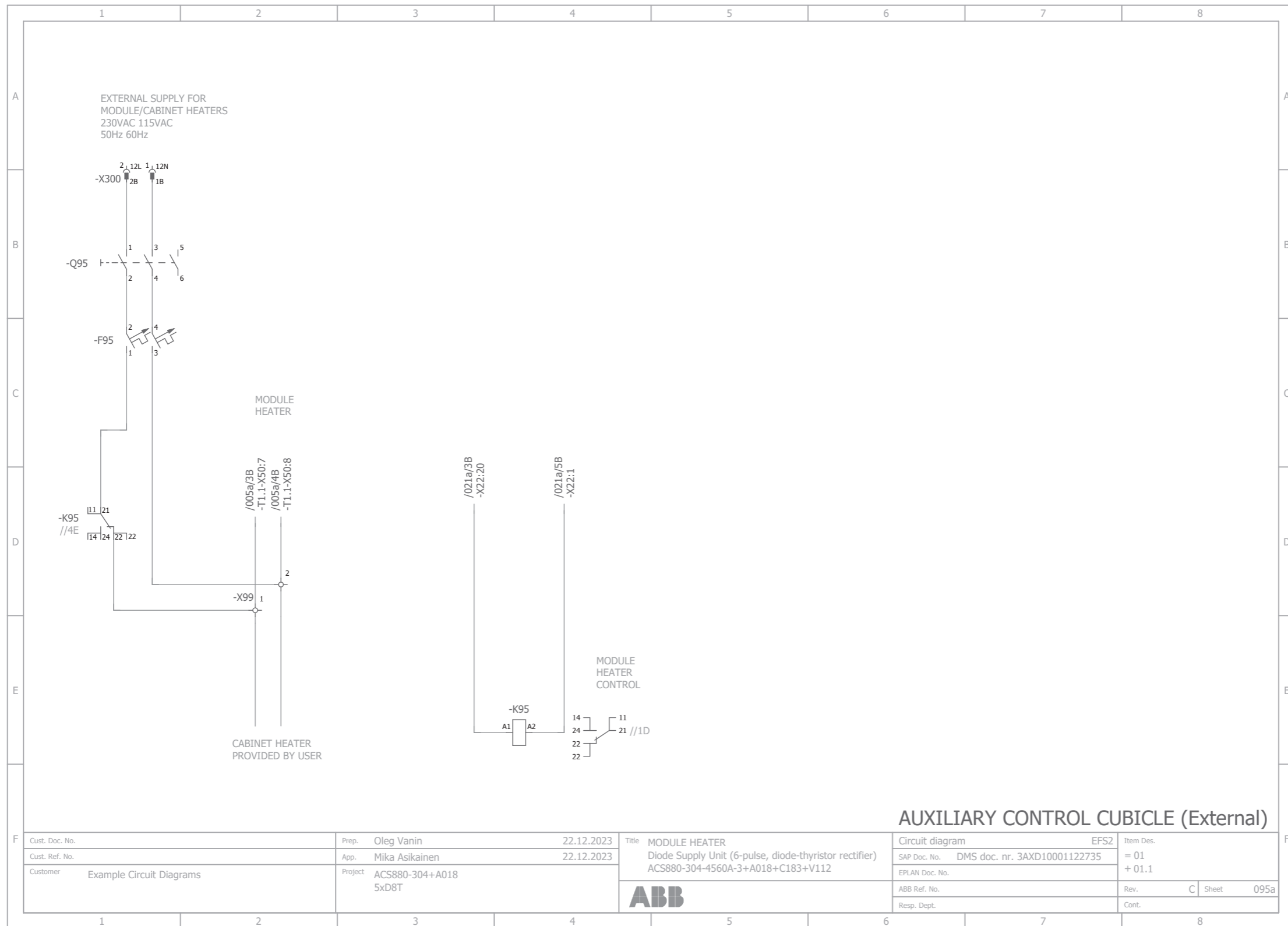


Cust. Doc. No.		Prep. Oleg Vanin	22.12.2023	Title CONTROL BOARD Diode Supply Unit (6-pulse, diode-thyristor rectifier) ACS880-304-4560A-3+A018+C183+V112	Circuit diagram EFS2		Item Des. = 01 + 01.1
Cust. Ref. No.		App. Mika Asikainen	22.12.2023		SAP Doc. No. DMS doc. nr. 3AXD10001122735	EPLAN Doc. No.	
Customer Example Circuit Diagrams		Project ACS880-304+A018 5xD8T			ABB Ref. No.		Rev. C
					Resp. Dept.		Cont. 051a



■ Sheet 051b



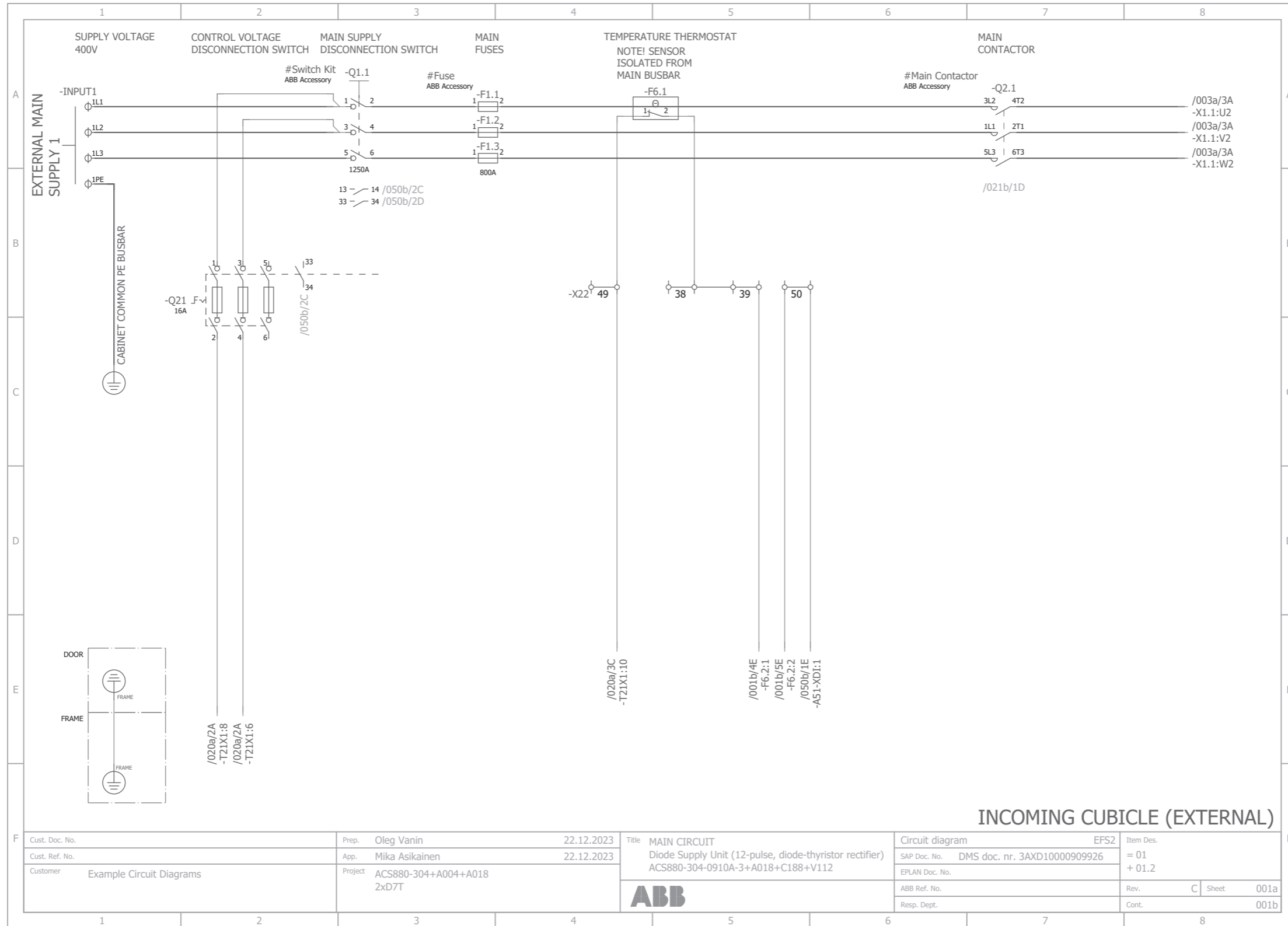


AUXILIARY CONTROL CUBICLE (External)

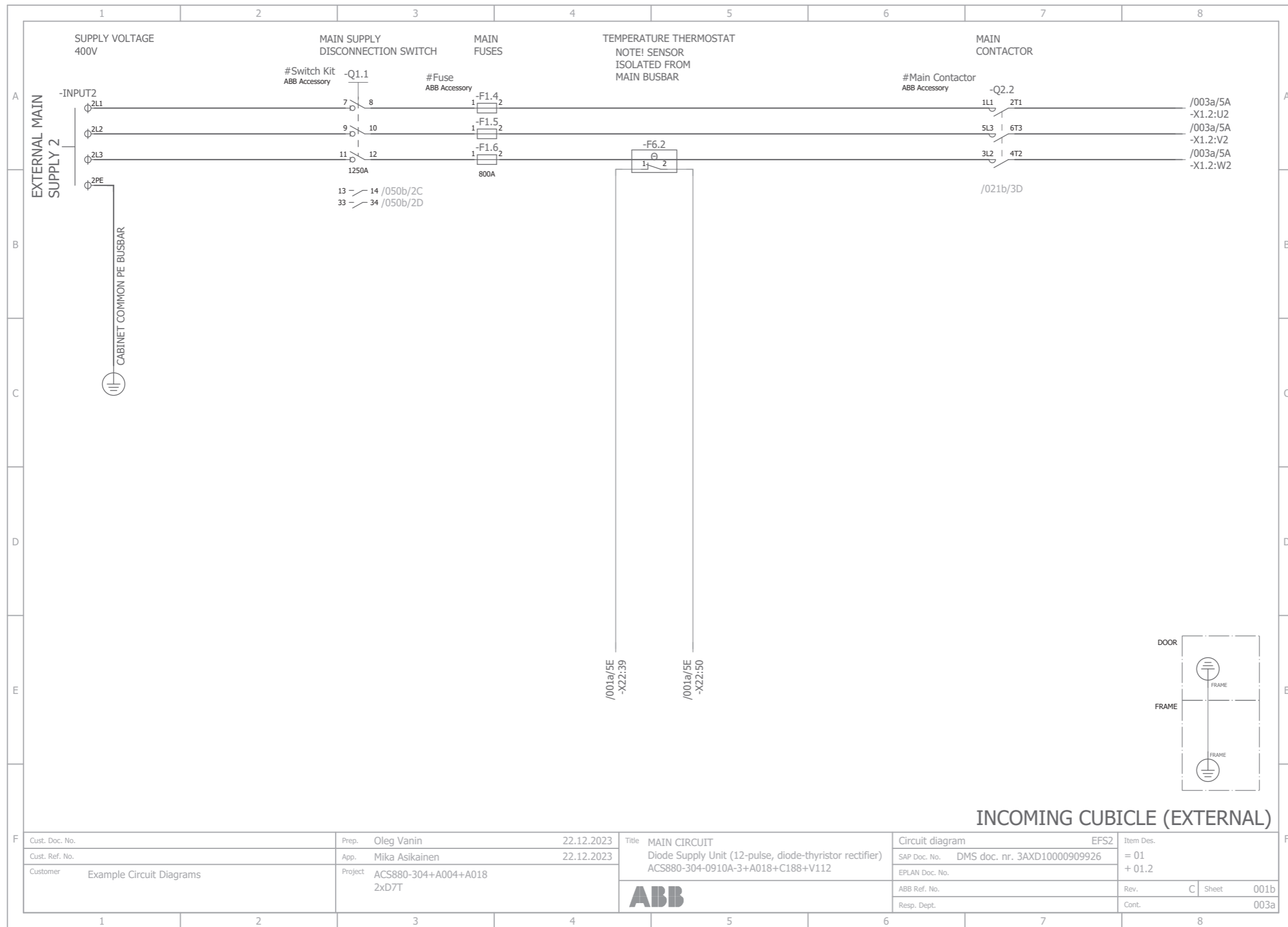
Cust. Doc. No.	Prep. Oleg Vanin	22.12.2023	Title MODULE HEATER	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (6-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10001122735	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A018	5xD8T	ACS880-304-4560A-3+A018+C183+V112	EPLAN Doc. No.		+ 01.1
			<b>ABB</b>	ABB Ref. No.		Rev. C Sheet 095a
				Resp. Dept.		Cont.

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

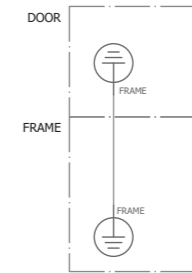
■ Sheet 001a



Cust. Doc. No.	Prep. Oleg Vanin	22.12.2023	Title MAIN CIRCUIT	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018		ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.		+ 01.2
	2xD7T		<b>ABB</b>	ABB Ref. No.		Rev. C Sheet 001a
				Resp. Dept.		Cont. 001b

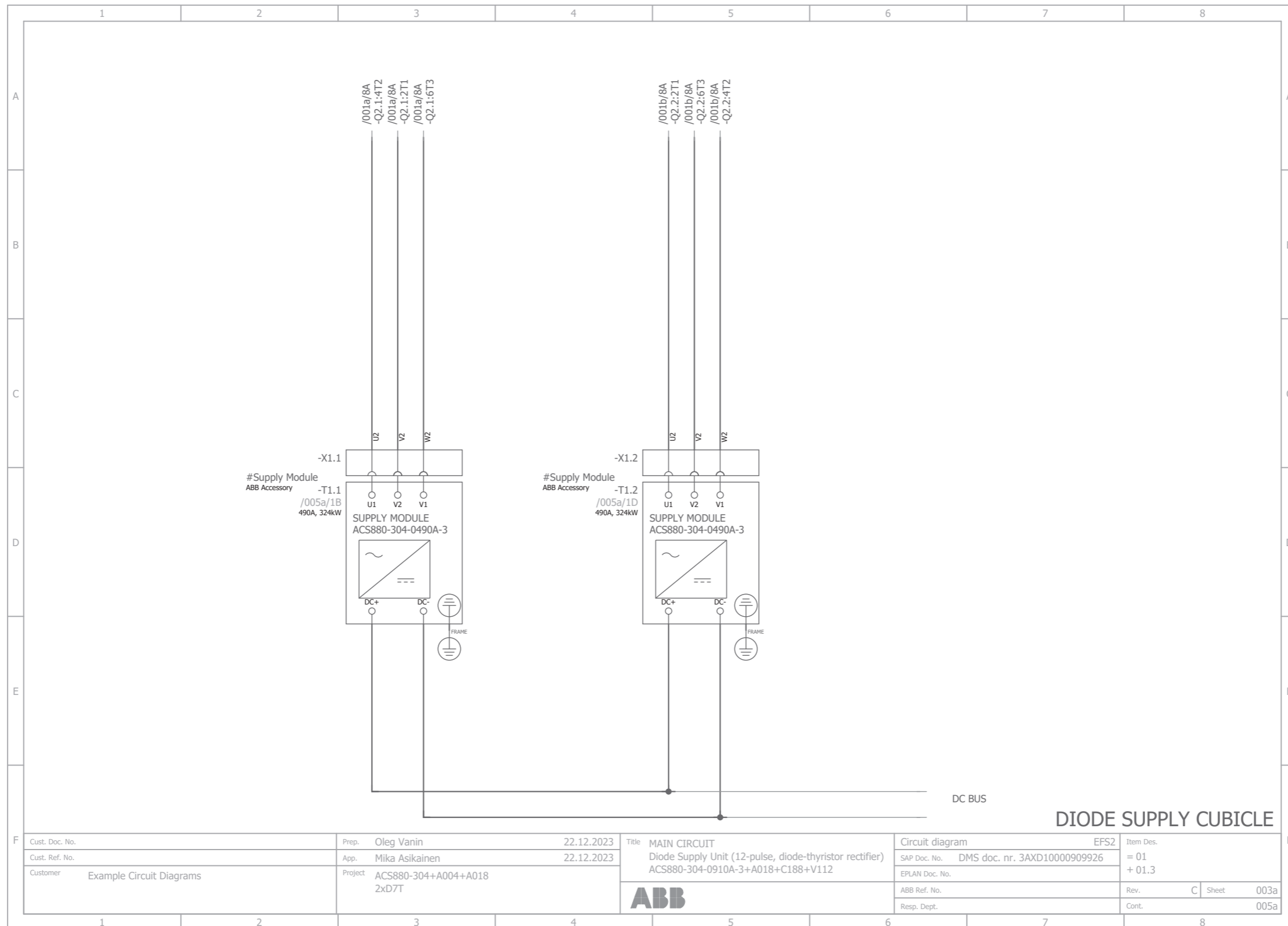


INCOMING CUBICLE (EXTERNAL)



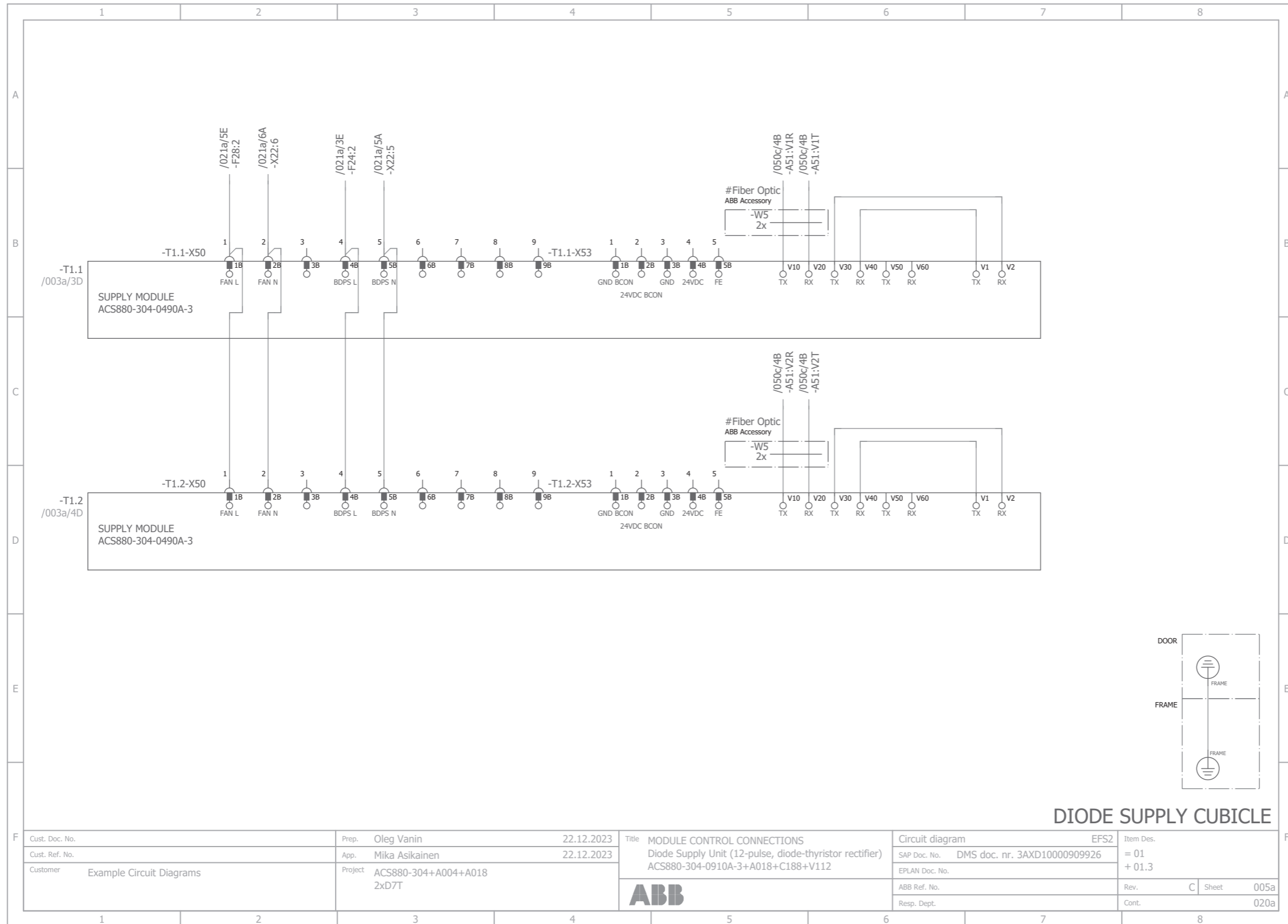
Cust. Doc. No.	Prep. Oleg Vanin	22.12.2023	Title MAIN CIRCUIT	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018		ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.		+ 01.2
	2xD7T		<b>ABB</b>	ABB Ref. No.		Rev. C Sheet 001b
				Resp. Dept.		Cont. 003a

■ Sheet 003a



DIODE SUPPLY CUBICLE

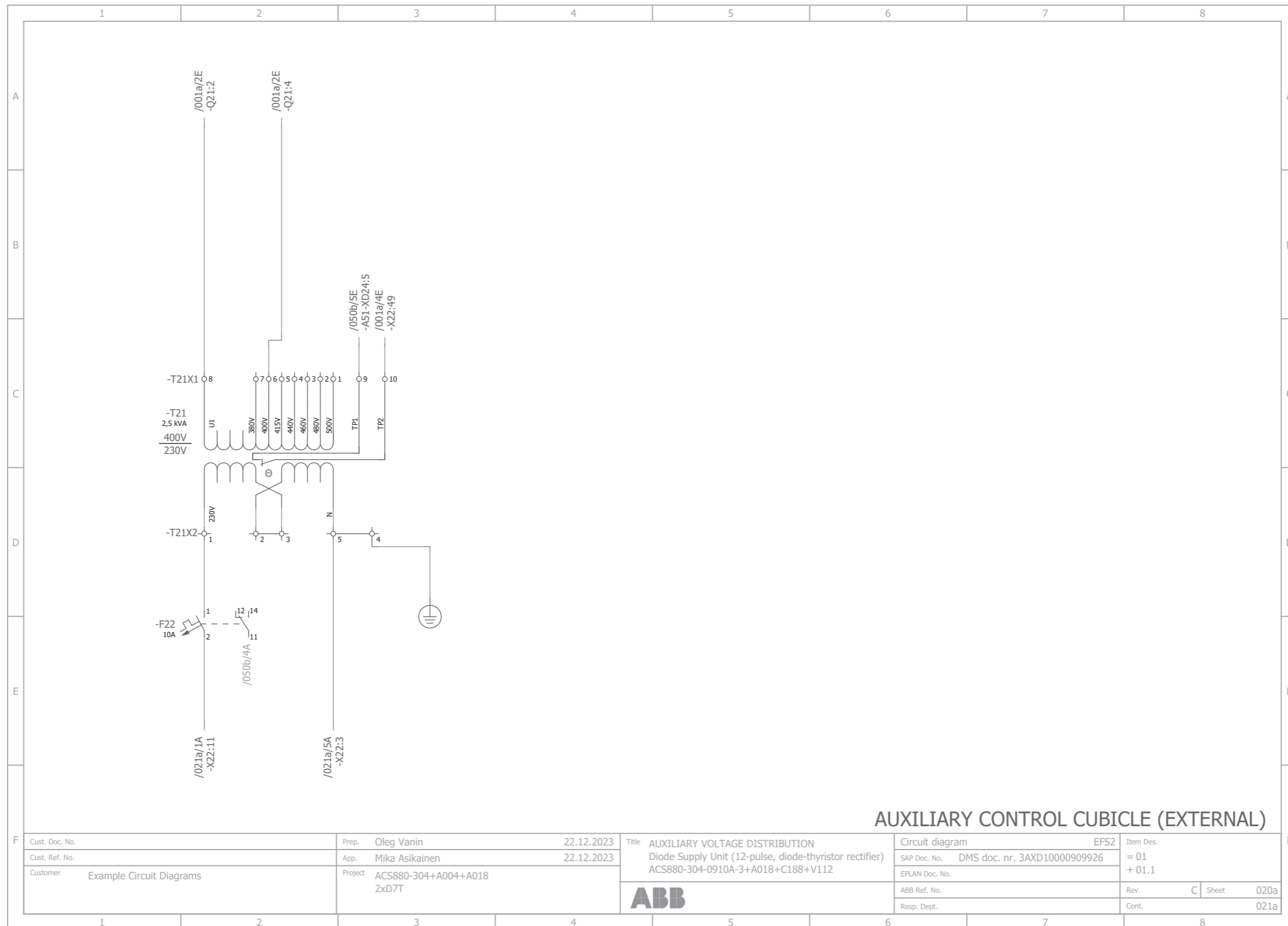
Cust. Doc. No.	Prep. Oleg Vanin 22.12.2023	Title MAIN CIRCUIT	Circuit diagram EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen 22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No. DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018 2xD7T	ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.	+ 01.3
		<b>ABB</b>	ABB Ref. No.	Rev. C Sheet 003a
			Resp. Dept.	Cont. 005a



DIODE SUPPLY CUBICLE

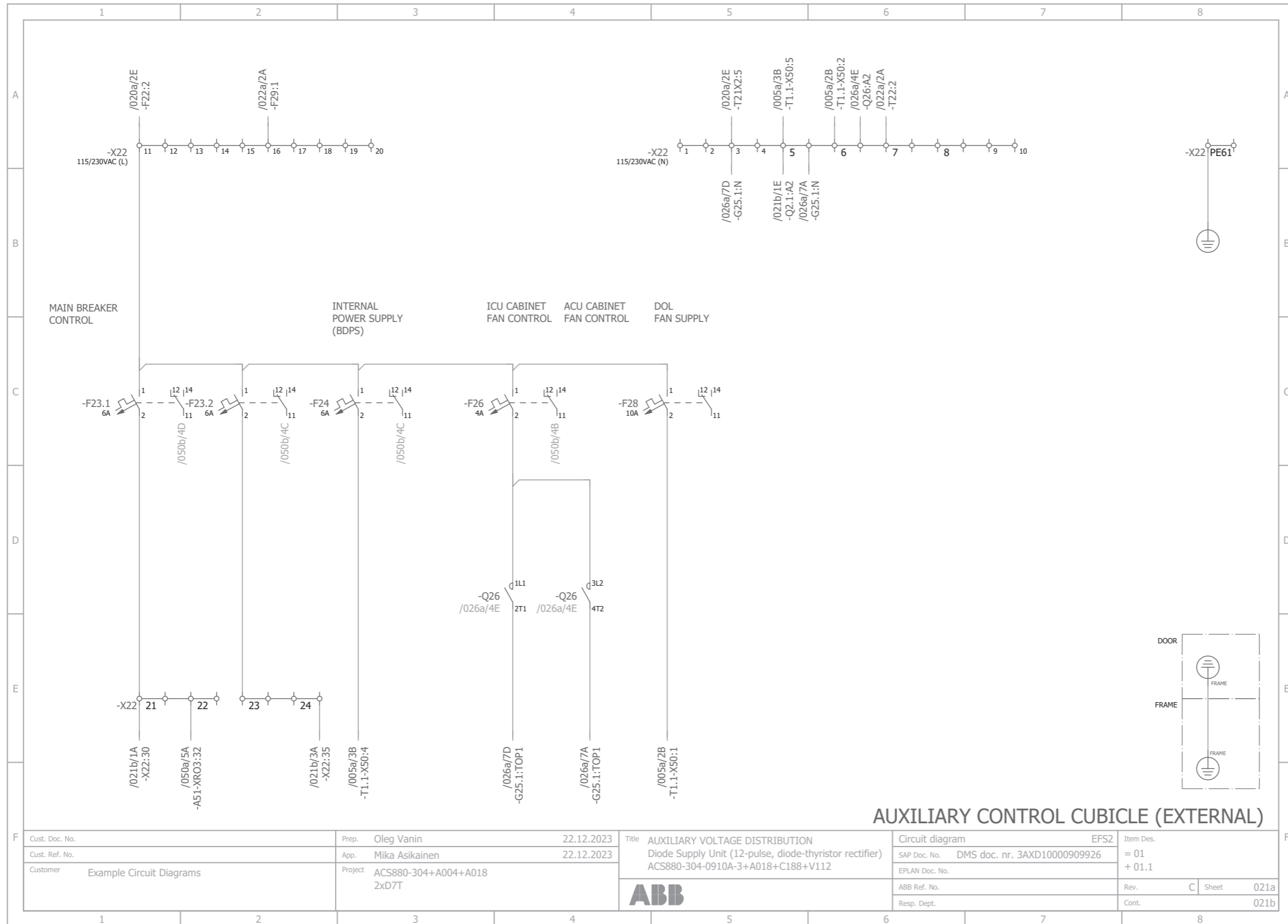
Cust. Doc. No.	Prep. Oleg Vanin	22.12.2023	Title MODULE CONTROL CONNECTIONS	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018		ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.		+ 01.3
	2xD7T		<b>ABB</b>	ABB Ref. No.		Rev. C Sheet 005a
				Resp. Dept.		Cont. 020a

■ Sheet 020a

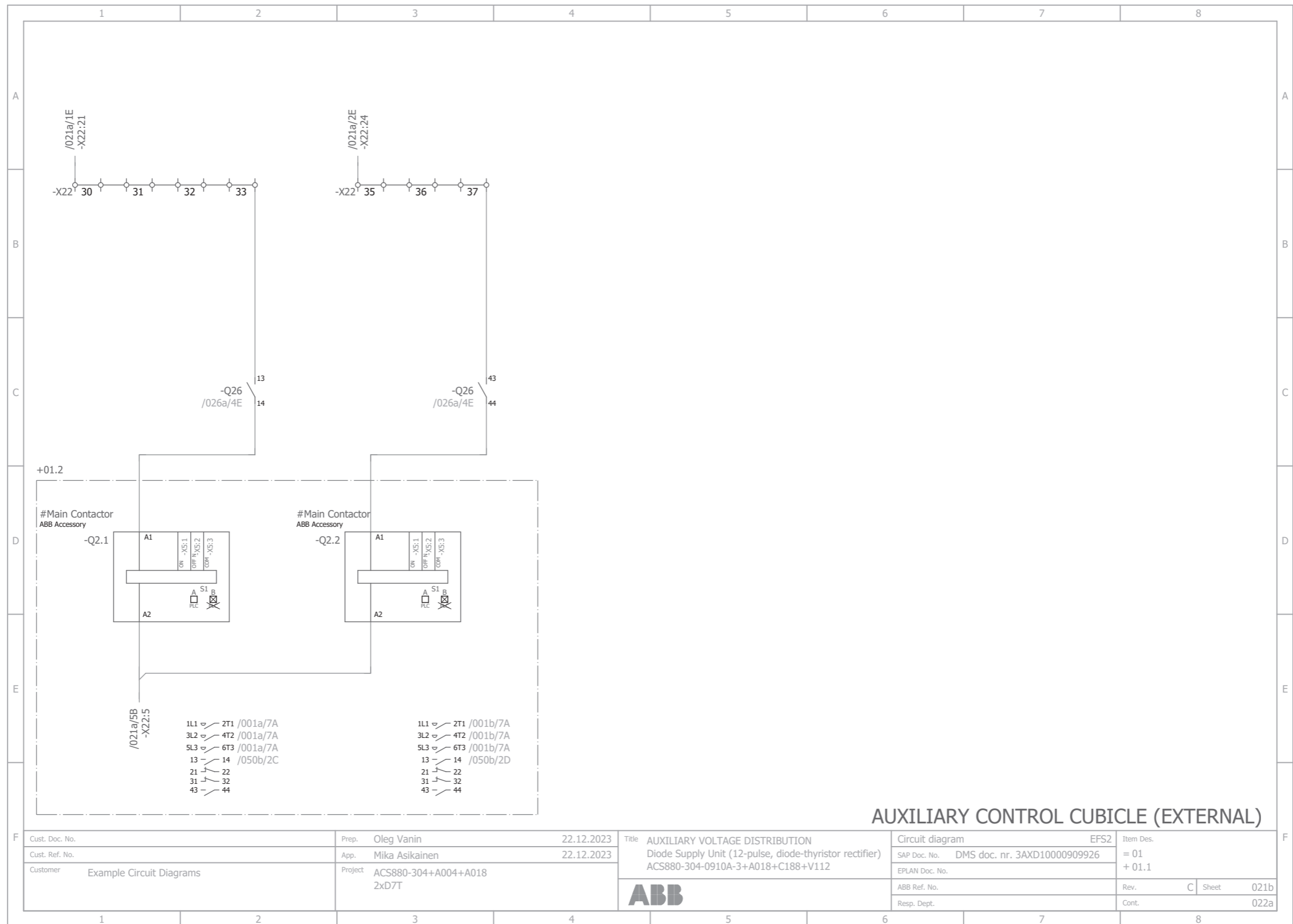


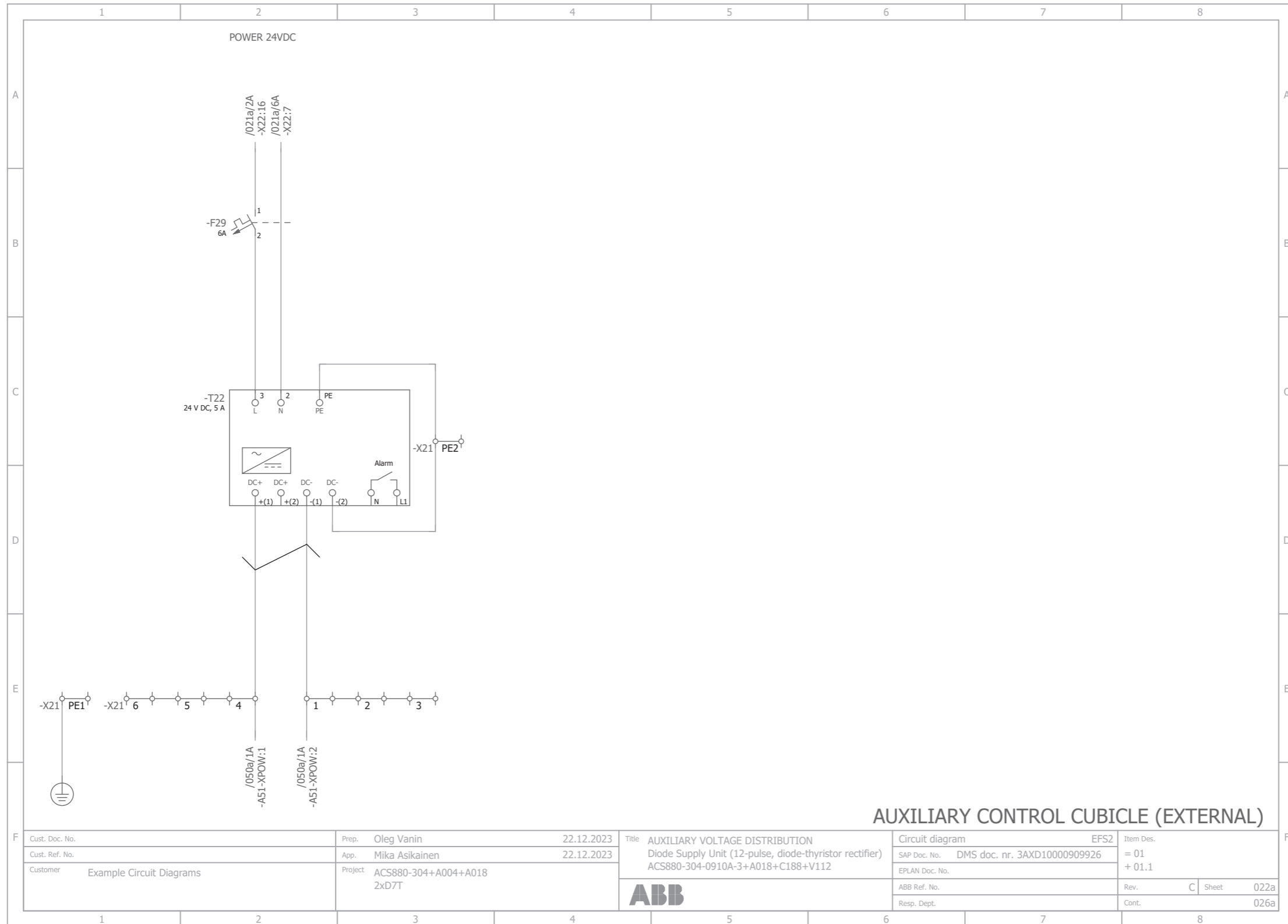
AUXILIARY CONTROL CUBICLE (EXTERNAL)

Cust. Doc. No.	Prep. Oleg Vanin 22.12.2023	Title AUXILIARY VOLTAGE DISTRIBUTION	Circuit diagram EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen 22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No. DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018 2xD7T	ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.	+ 01.1
		<b>ABB</b>	ABB Ref. No.	Rev. C Sheet 020a
			Resp. Dept.	Cont. 021a



■ Sheet 021b

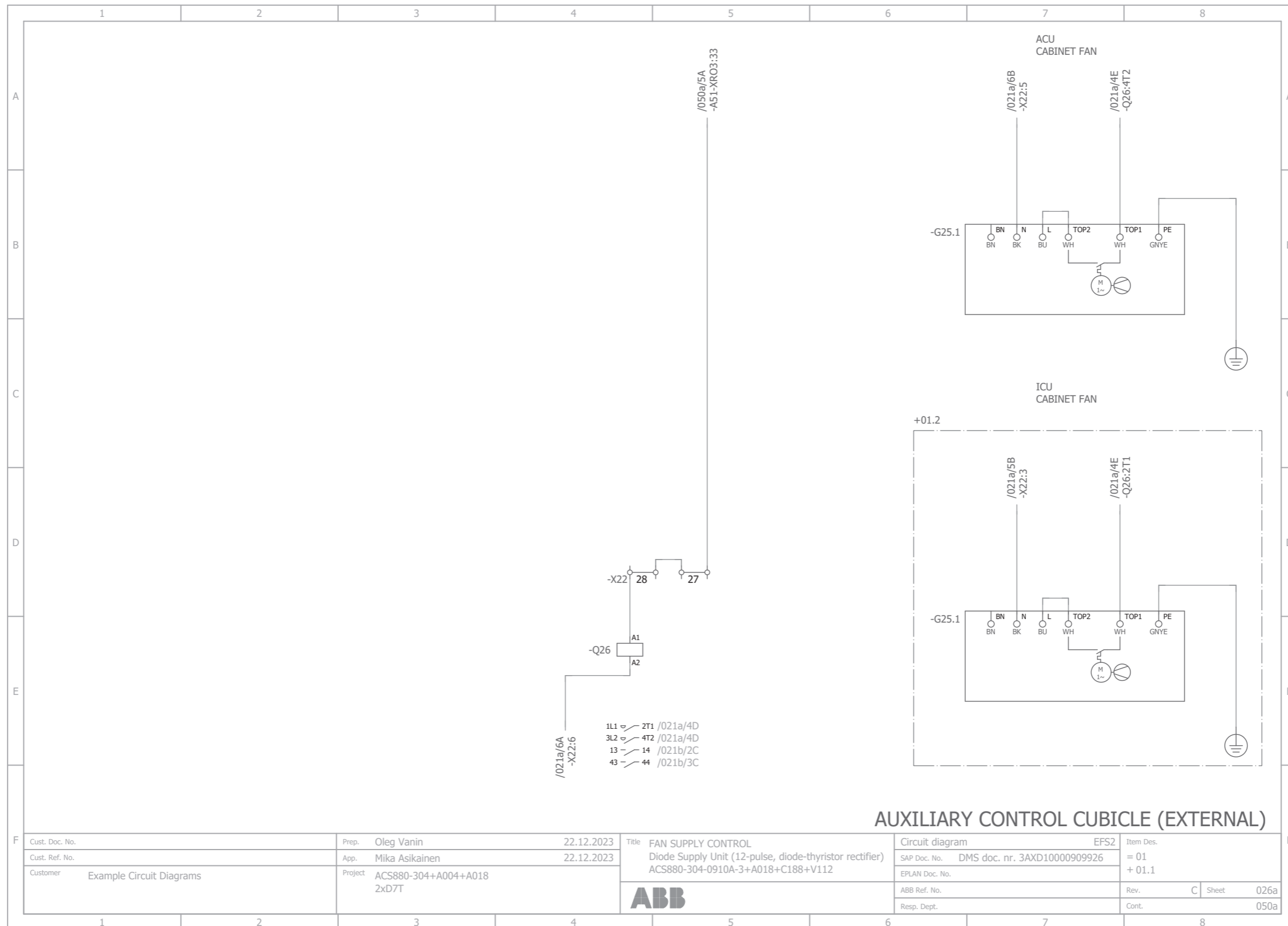


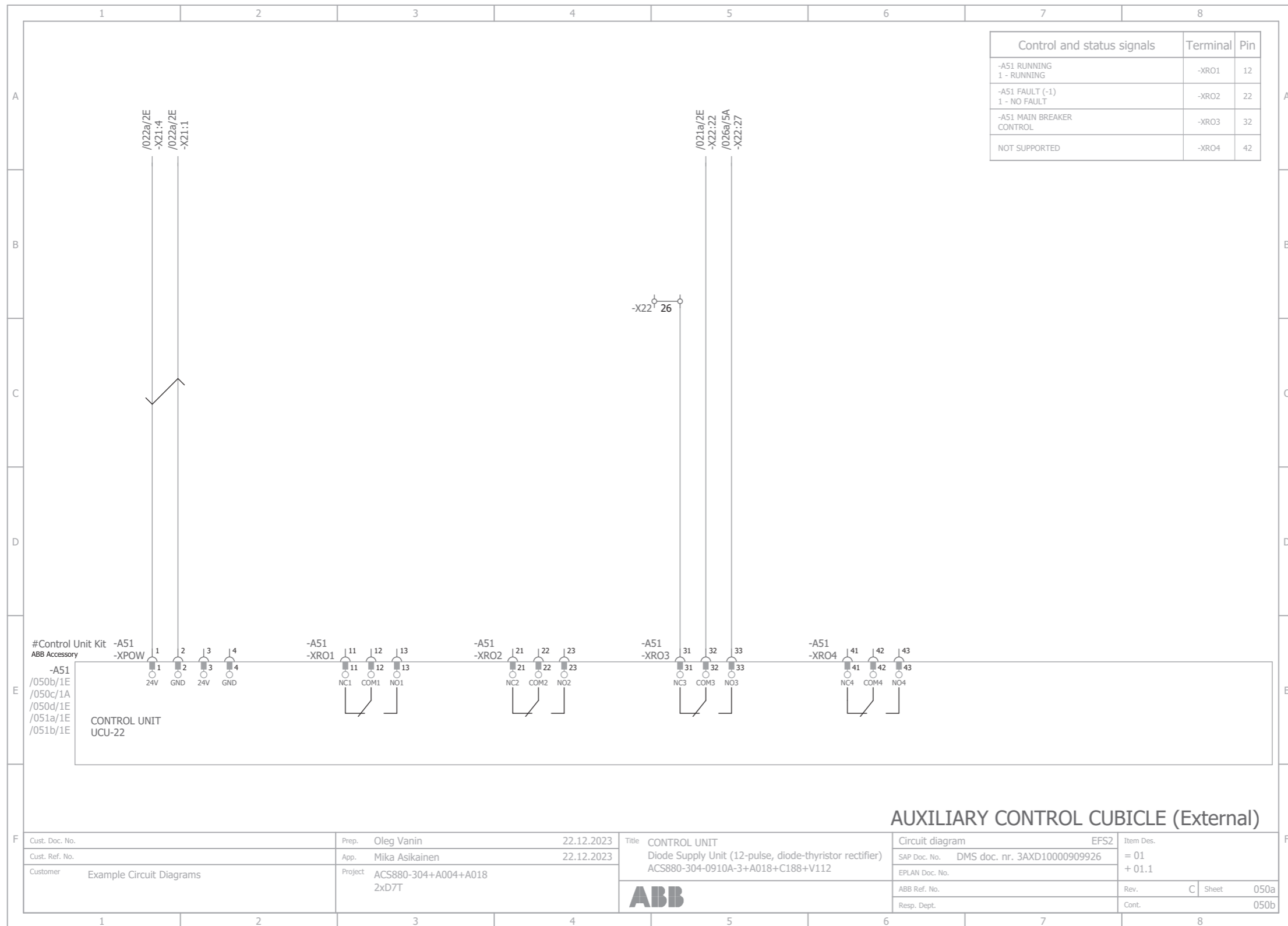


AUXILIARY CONTROL CUBICLE (EXTERNAL)

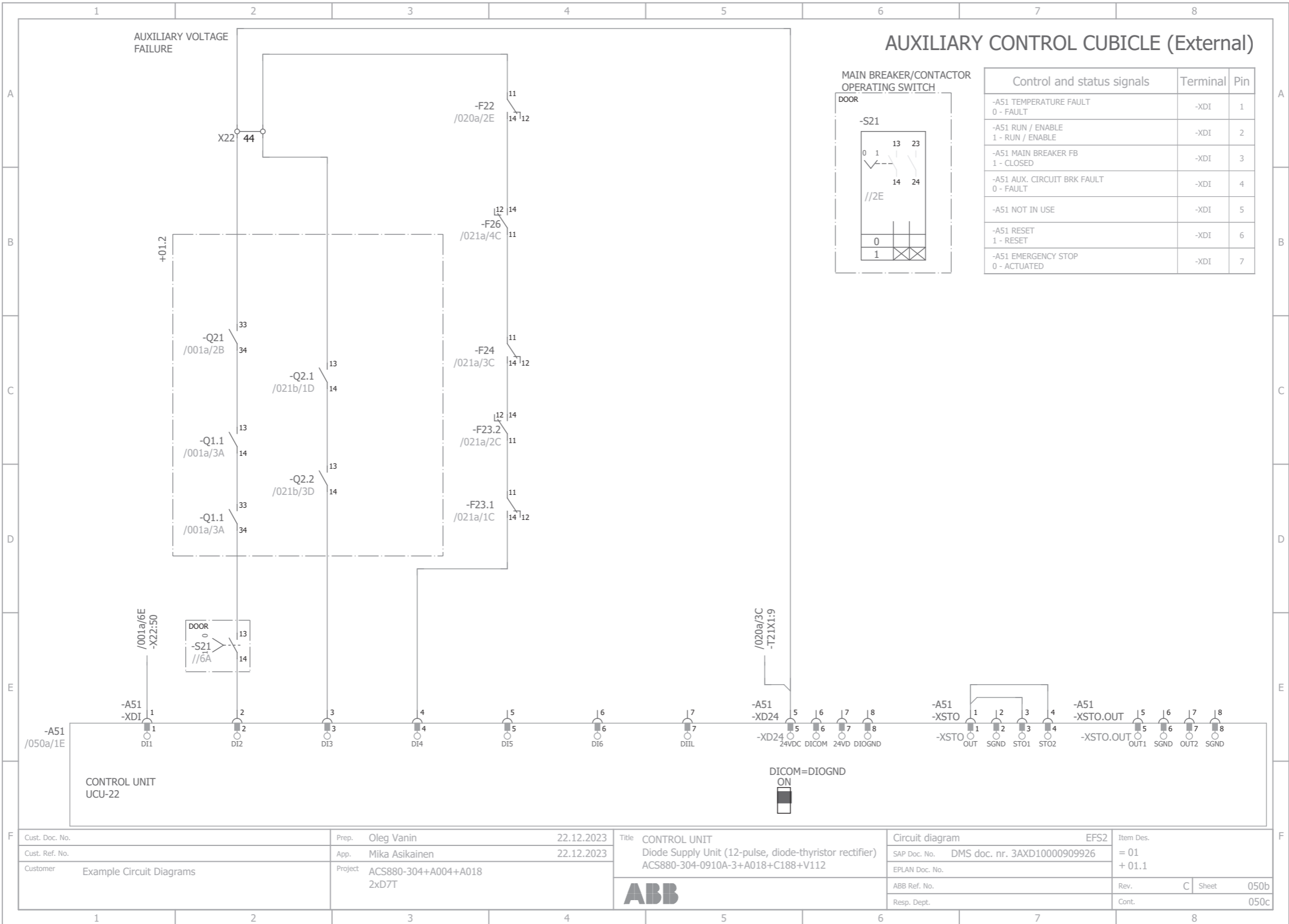
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Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018		ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.		+ 01.1
	2xD7T		<b>ABB</b>	ABB Ref. No.		Rev. C Sheet 022a
				Resp. Dept.		Cont. 026a

■ Sheet 026a

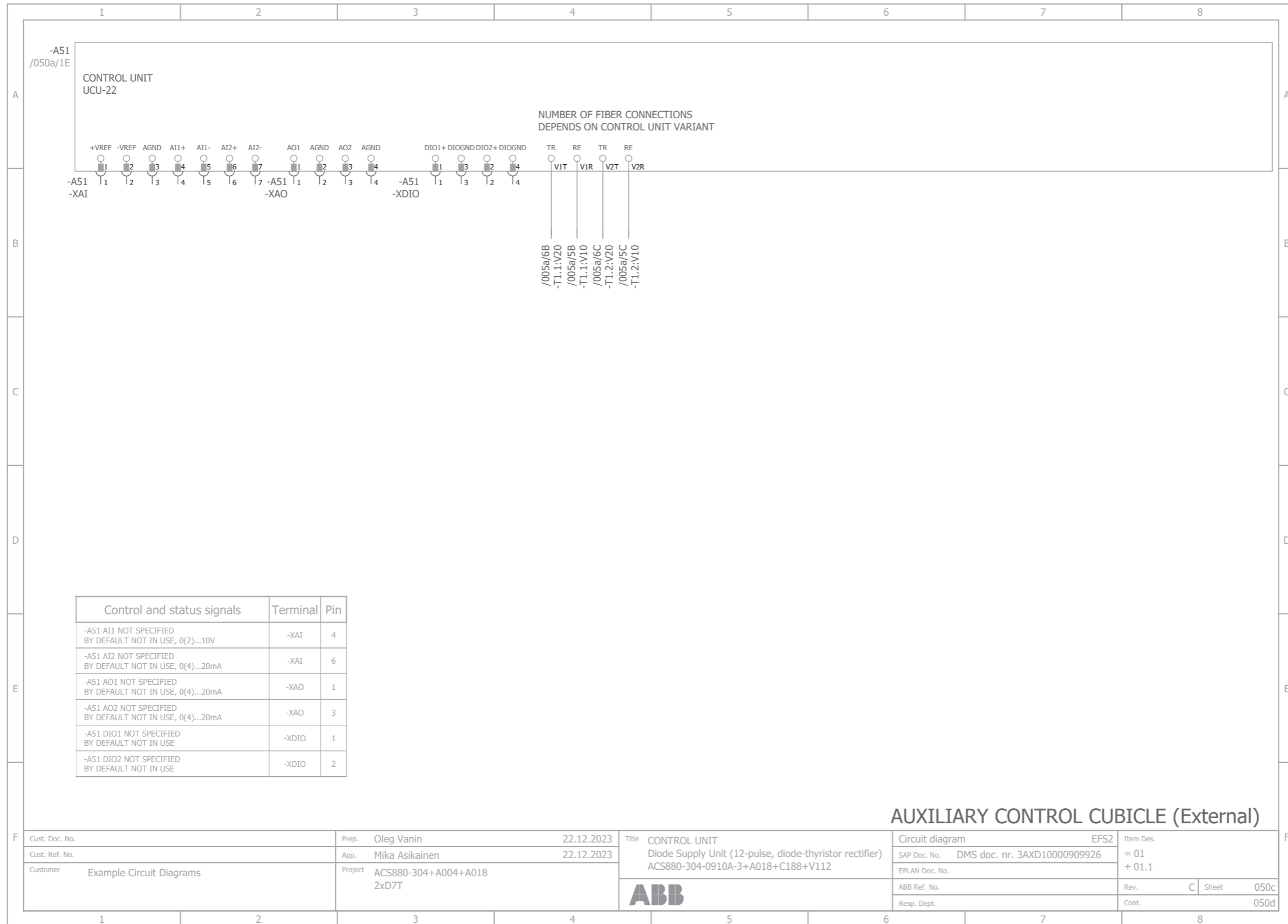




Sheet 050b



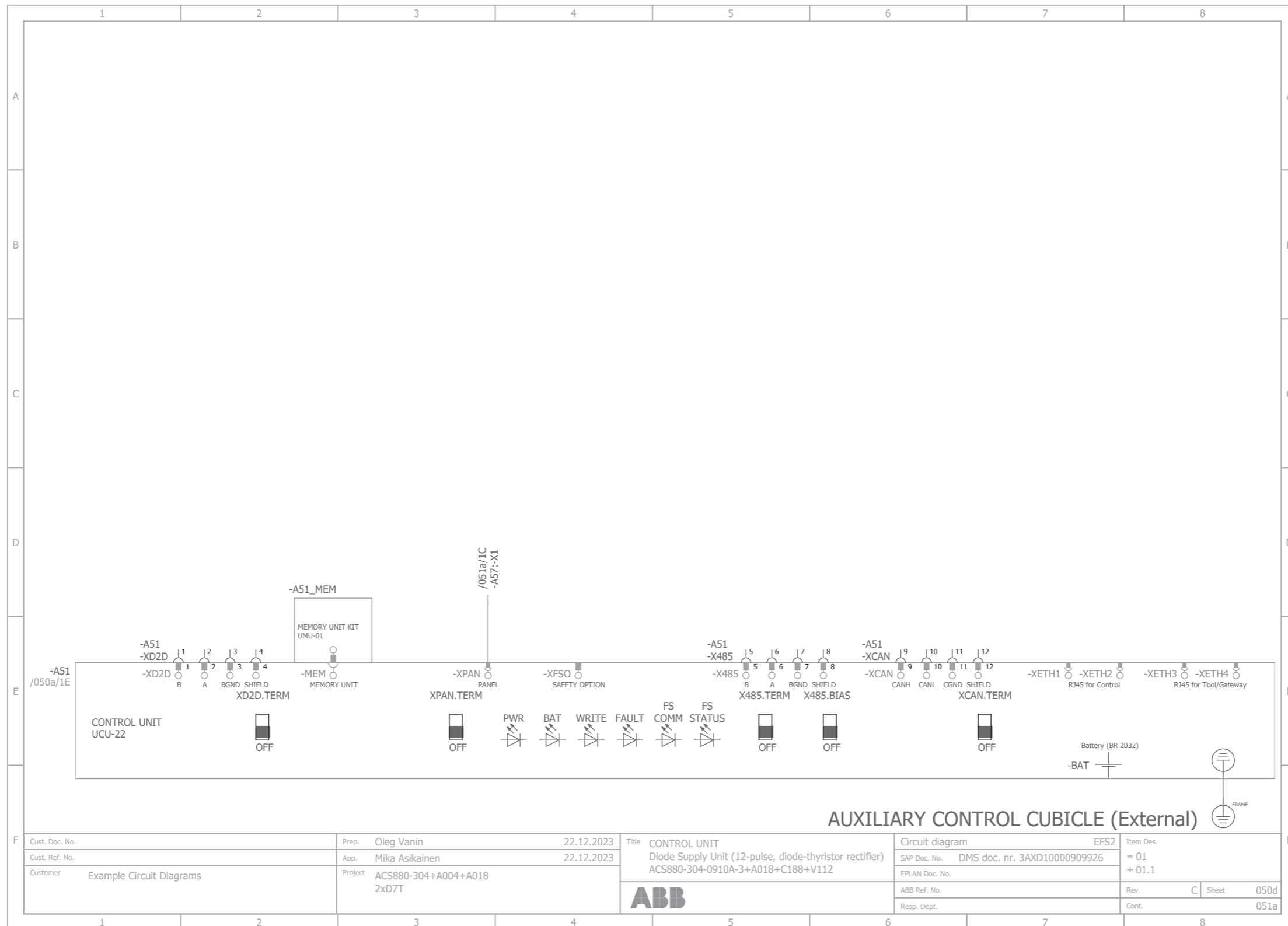
Cust. Doc. No.	Prep. Oleg Vanin 22.12.2023	Title CONTROL UNIT	Circuit diagram EFS2	Item Des. = 01
Cust. Ref. No.	App. Mika Asikainen 22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No. DMS doc. nr. 3AXD10000909926	+ 01.1
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018 2xD7T	ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.	Rev. C Sheet 050b
		<b>ABB</b>	ABB Ref. No.	Cont. 050c
			Resp. Dept.	



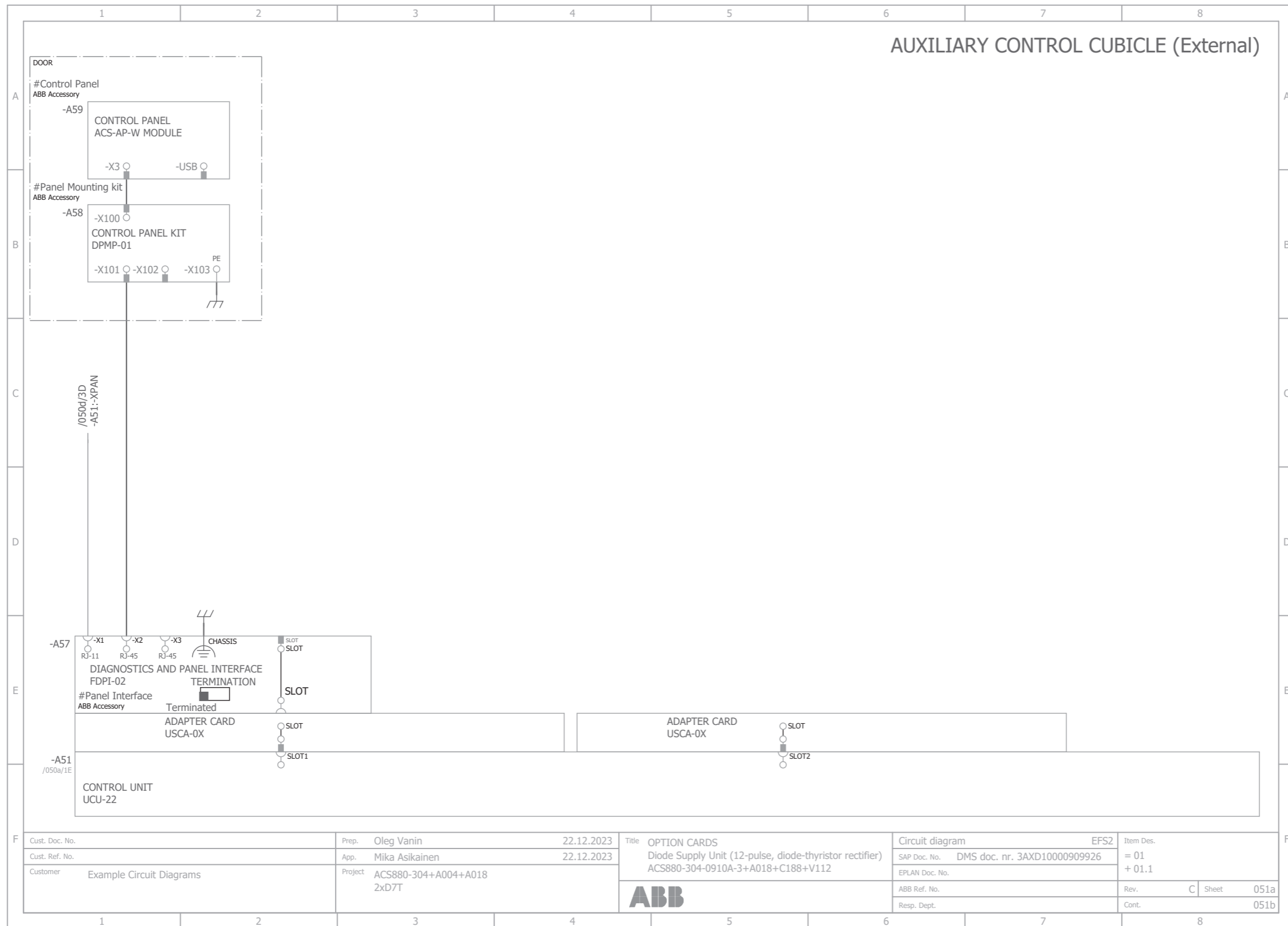
AUXILIARY CONTROL CUBICLE (External)

Cust. Doc. No.	Prep. Oleg Vanin	22.12.2023	Title CONTROL UNIT	Circuit diagram	EFS2	Item Des.
Cust. Ref. No.	App. Mika Asikainen	22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)	SAP Doc. No.	DMS doc. nr. 3AXD10000909926	= 01
Customer Example Circuit Diagrams	Project ACS880-304+A004+A018	2xD7T	ACS880-304-0910A-3+A018+C188+V112	EPLAN Doc. No.		+ 01.1
			<b>ABB</b>	ABB Ref. No.		Rev. C Sheet 050c
				Resp. Dept.		Cont. 050d

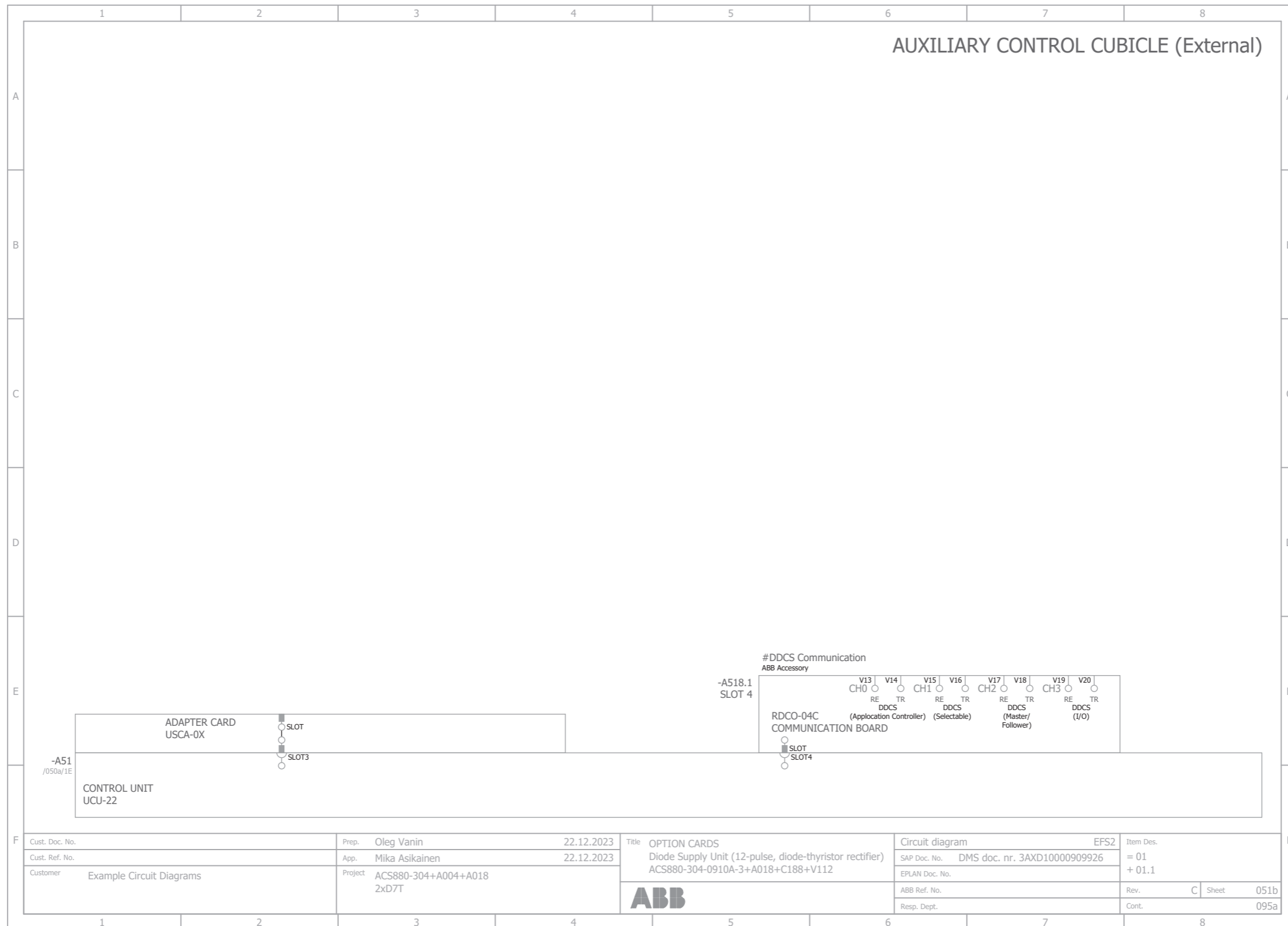
■ Sheet 050d

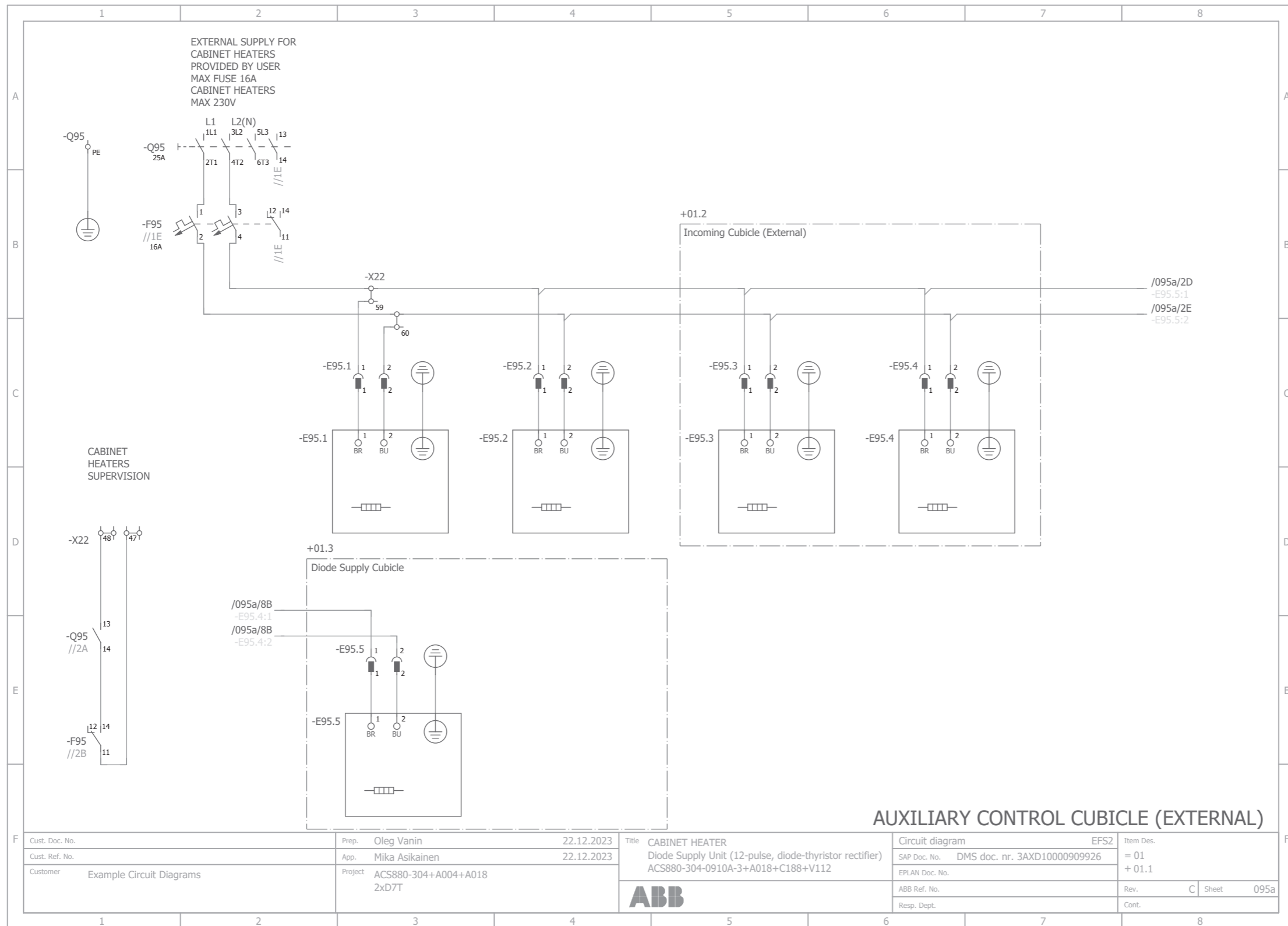


Cust. Doc. No.		Prep. Oleg Vanin	22.12.2023	Title CONTROL UNIT		Circuit diagram EFS2		Item Des.	
Cust. Ref. No.		App. Mika Asikainen	22.12.2023	Diode Supply Unit (12-pulse, diode-thyristor rectifier)		SAP Doc. No. DMS doc. nr. 3AXD10000909926		= 01	
Customer Example Circuit Diagrams		Project ACS880-304+A004+A018 2xD7T		ACS880-304-0910A-3+A018+C188+V112		EPLAN Doc. No.		+ 01.1	
				<b>ABB</b>		ABB Ref. No.		Rev. C Sheet 050d	
						Resp. Dept.		Cont. 051a	



■ Sheet 051b







# 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/contact-centers](http://www.abb.com/contact-centers).

## Product training

For information on ABB product training, navigate to [new.abb.com/service/training](http://new.abb.com/service/training).

## Providing feedback on ABB manuals

Your comments on our manuals are welcome. Navigate to [forms.abb.com/form-26567](http://forms.abb.com/form-26567).

## 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](http://www.abb.com/drives/documents).



[www.abb.com/drives](http://www.abb.com/drives)



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