



Graphical Installation Guide

Solar inverter

M100A_280 (Delta part number RPI104M280000, product version 0)



European Union



This manual applies to the inverter models:

- M100A_280 (Delta part number RPI104M280000, product version 0)

and DSS software version 6.0 or higher

The Delta part number can be found on the type plate of the inverter.

Delta manuals undergo continuous revision in order to provide you with complete information regarding the installation and operation of its inverters. Therefore, before starting installation work, **always** consult solutions.delta-emea.com to check whether a newer version of the Quick Installation Guide or the Installation and Operation Manual is available.

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This manual is intended for use by electrical installers who are trained and approved for installation and commissioning of grid-connected solar inverters.

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All information and specifications can be modified without prior notice.

All translations of this manual not authorized by Delta Electronics (Netherlands) B.V. must include the annotation: "Translation of the original operation manual".

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Information about the versions of this manual

Version	Date	Changes	Page
1.0	2022-01-03	First edition for product version 0	

M50A_260



Solar Inverter (太陽能變流器/光伏并网逆变器)

P/N: RPI503260000

DC Input (輸入/输入) 200-1000Vdc, MPPT 390-900Vdc
MAX Idc: 26A*6 MPPT, 1000Vdc max
MAX Idc: 50A*6 MPPT

AC Output (輸出/输出) 220/380Vac, 230/400Vac
3P4W/3P3W, 50/60Hz
83.4A max., cosφ 0.8ind ~ 0.8 cap
50kW/50kVA nom, 50kW/55kVA max

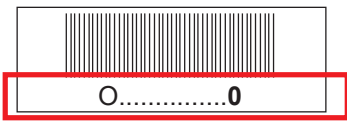
IP Code (IP防護等級/IP防护等级):
IP66 (Electronics/電子部份/电子部份)

Protective Class (防護等級/防护等级): I

Over Voltage Category (過電壓等級/过电压等级): AC:III / DC:II

Made in China

VDE-AR-N 4105  Authorized representative
VDE-AR-N 4110  Delta Electronics (Netherlands) B.V.
Zandsteen 15, 2132 MZ Hoofddorp,
The Netherlands



Product version

Changes to the previous model

0

This is a new product.

The last letter of the serial number indicates the product version.

Safety Instructions

DANGER



Electric shock

Potentially fatal voltages are present in the inverter during operation. When the inverter is disconnected from all power sources, this voltage remains in the inverter for up to 60 seconds.

You should therefore always carry out the following steps before working on the inverter:

1. Turn both DC isolating switches to the **OFF** position.
2. Disconnect the inverter from all AC and DC voltage sources and make sure that none of the connections can be restored accidentally.
3. Wait at least 60 seconds for the internal capacitors to discharge.

DANGER



Electric shock

Potentially fatal voltages are present at the DC connections of the inverter. When light falls on the solar modules, they immediately start to generate electricity. This also happens when light does not fall directly on the solar modules.

- ▶ Never disconnect the inverter from the solar modules when it is under load.
- ▶ Turn both DC isolating switches to the **OFF** position.
- ▶ Disconnect the connection to the grid so that the inverter cannot feed energy into the grid.
- ▶ Disconnect the inverter from all AC and DC voltage sources. Make sure that none of the connections can be restored accidentally.
- ▶ Ensure that the DC cables cannot be touched accidentally.

DANGER



Electric shock

The inverter has a high leakage current value.

- ▶ **Always** connect the ground cable first, then the AC and DC cables.

WARNING



Electric shock

The IP66 protection degree is no longer guaranteed when the door is open.

- ▶ Only open the door when absolutely necessary.
- ▶ Do not open the door if water or dirt might enter the inverter.
- ▶ After work is completed, ensure that the door is properly shut and tightened again. Check that the door is properly sealed.

WARNING



Heavy weight

The inverter is heavy.

- ▶ Lift and carry the inverter with at least two people, or use a suitable lifting device.

WARNING



Hot surfaces

The surface of the inverter can get very hot during operation.



- ▶ Always wear safety gloves when touching the inverter.

NOTICE



Use of aluminum cables

- ▶ Always observe the applicable regulations and rules for the use of aluminum cables. For detailed information, refer to the complete Installation and Operation Manual.

NOTICE



Working in freezing conditions

In freezing conditions, the rubber seal on the front door can freeze to the housing and tear when opened.

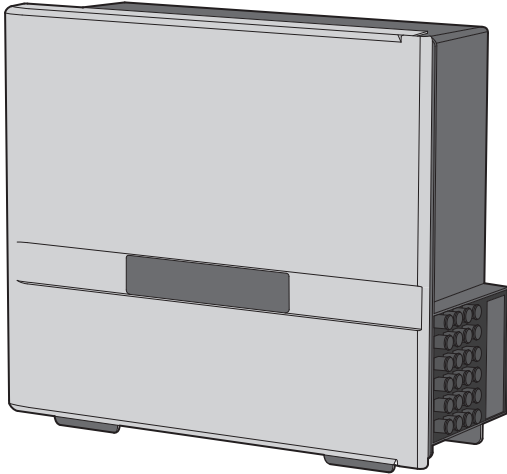
- ▶ Before opening the front door, defrost the rubber seal with some warm air.

- To comply with IEC 62109-5.3.3 safety requirements and avoid injury or material damage, the inverter must be installed and operated in accordance with the safety and operating instructions set out in this manual. Delta Electronics is not responsible for damage resulting from failure to follow the safety and operating instructions set out in this manual.
- The inverter may only be installed and commissioned by installers who have been trained and approved for the installation and operation of grid-connected solar inverters.
- All repair work on the inverter must be carried out by Delta Electronics. Otherwise the warranty will be void.

- Warning notices, warning symbols and other markings attached to the inverter by Delta Electronics must not be removed.
- To avoid the risk of arcing, do not disconnect cables when the inverter is under load.
- To prevent damage due to lightning strikes, follow the applicable regulations in your country.
- All external connections must be sufficiently sealed in order to ensure an IP66 protection degree. Seal any unused connections with the cover caps supplied.
- The covers inside the inverter do **not** have to be removed for the standard installation. All connections required for the standard installation are also accessible with the covers attached.
- Only equipment in accordance with SELV (EN 60950) may be connected to the RS485 interfaces.

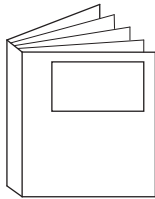
Scope of Delivery

INV-I



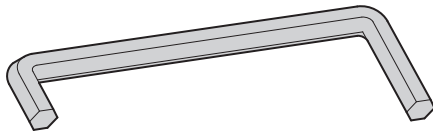
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INV-Q

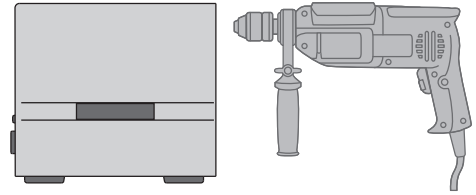


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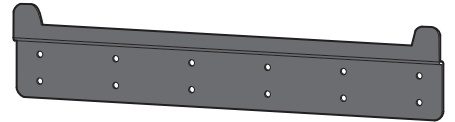
INV-X



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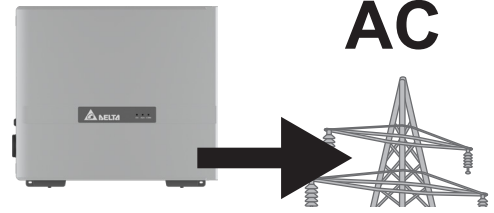
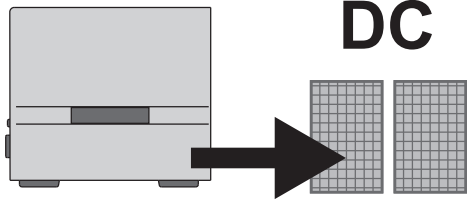


MOU-H



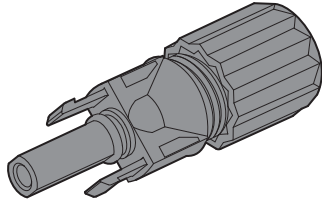
1x

Do not use any damaged components.



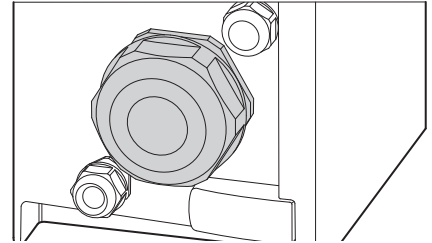
DC-P+

Amphenol H4 – 4/6 mm²
DC+ (H4CFC4D•MS)



16x

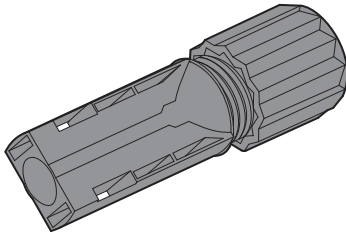
AC-C1



1x

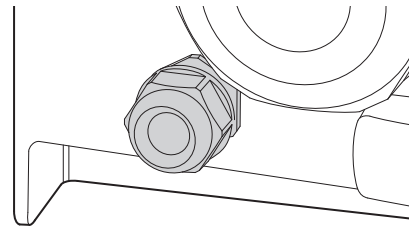
DC-P-

Amphenol H4 – 4/6 mm²
DC- (H4CMC4D•MS)



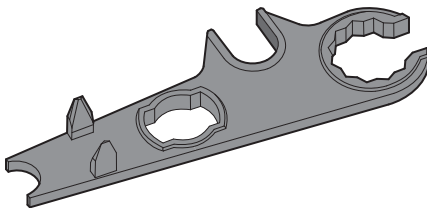
16x

AC-PE



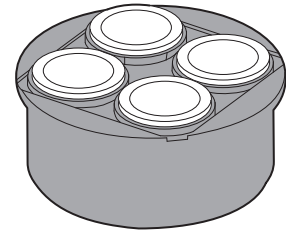
1x

DC-T



2x

AC-C2



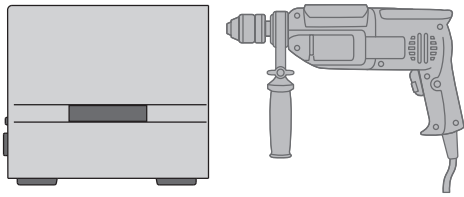
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DC-B

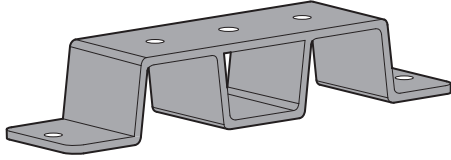


6x

Accessories and software



MOU-G



2x

Accessories must be ordered separately.

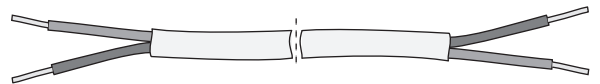
DOWNLOAD

partnerportal.delta-emea.com/en/portal-login.htm

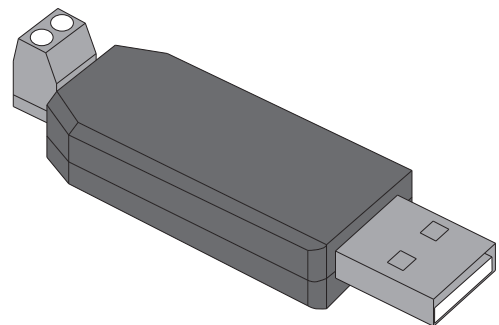
Delta Service Software (DSS)



Windows PC

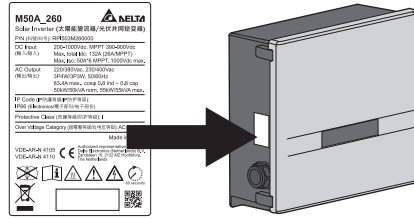


0,25 ... 1,5 mm²



RS485/USB Adapter

A Windows PC with a RS485/USB adapter is required.
Delta Service Software (DSS) must be installed on the PC.



Risk of death due to electric shock

Potentially fatal voltage is present inside the inverter during operation and this voltage remains for 60 seconds after the power supply is disconnected.



Before working on the inverter, read the supplied manual and follow the instructions provided.



The housing of the inverter must be grounded if local regulations require additional grounding or equipotential bonding.



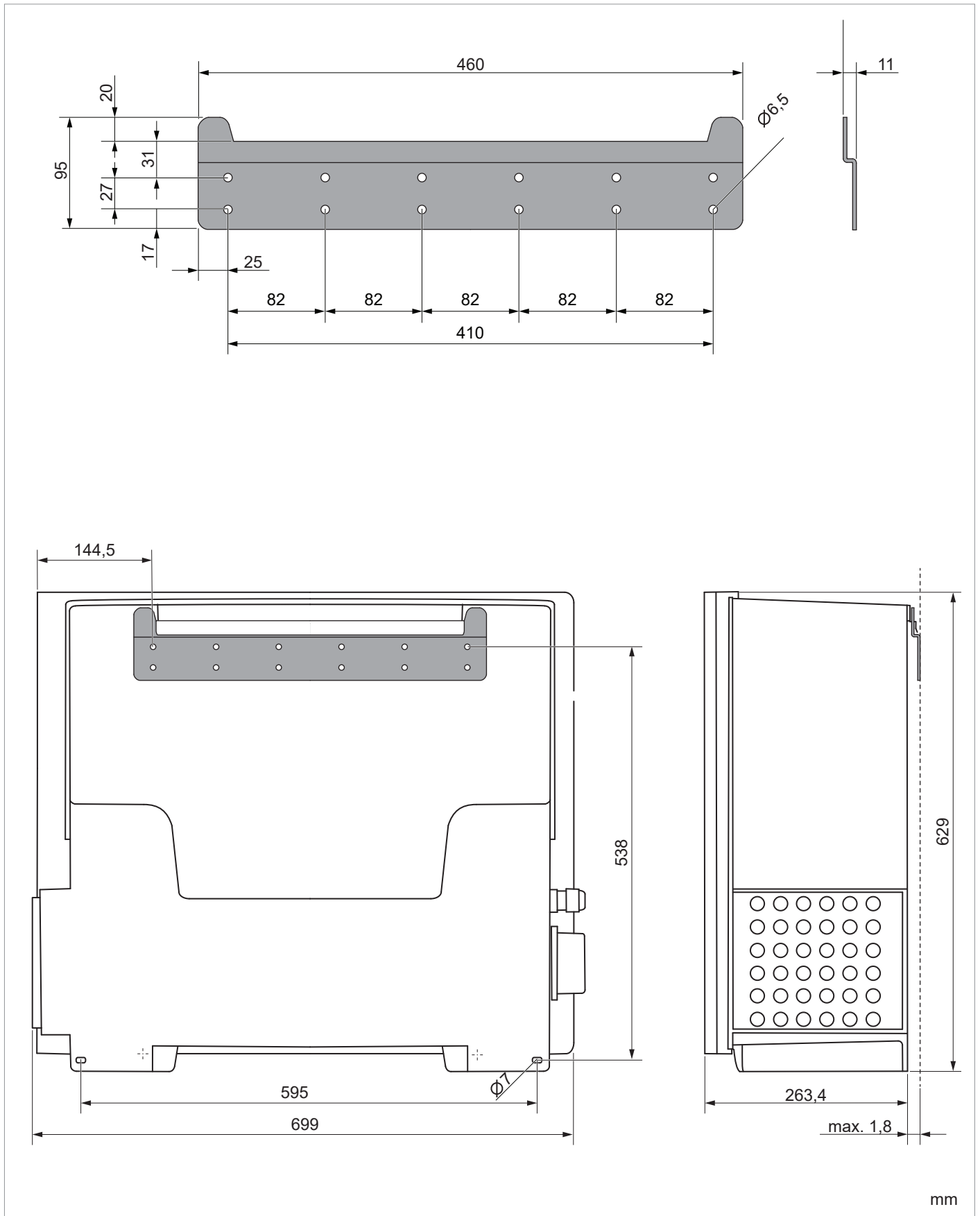
The inverter has no galvanic isolation.



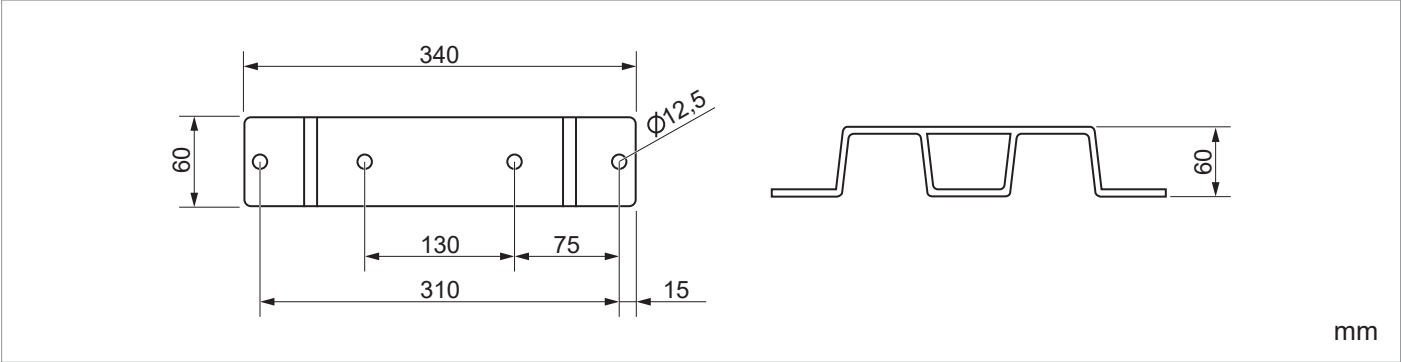
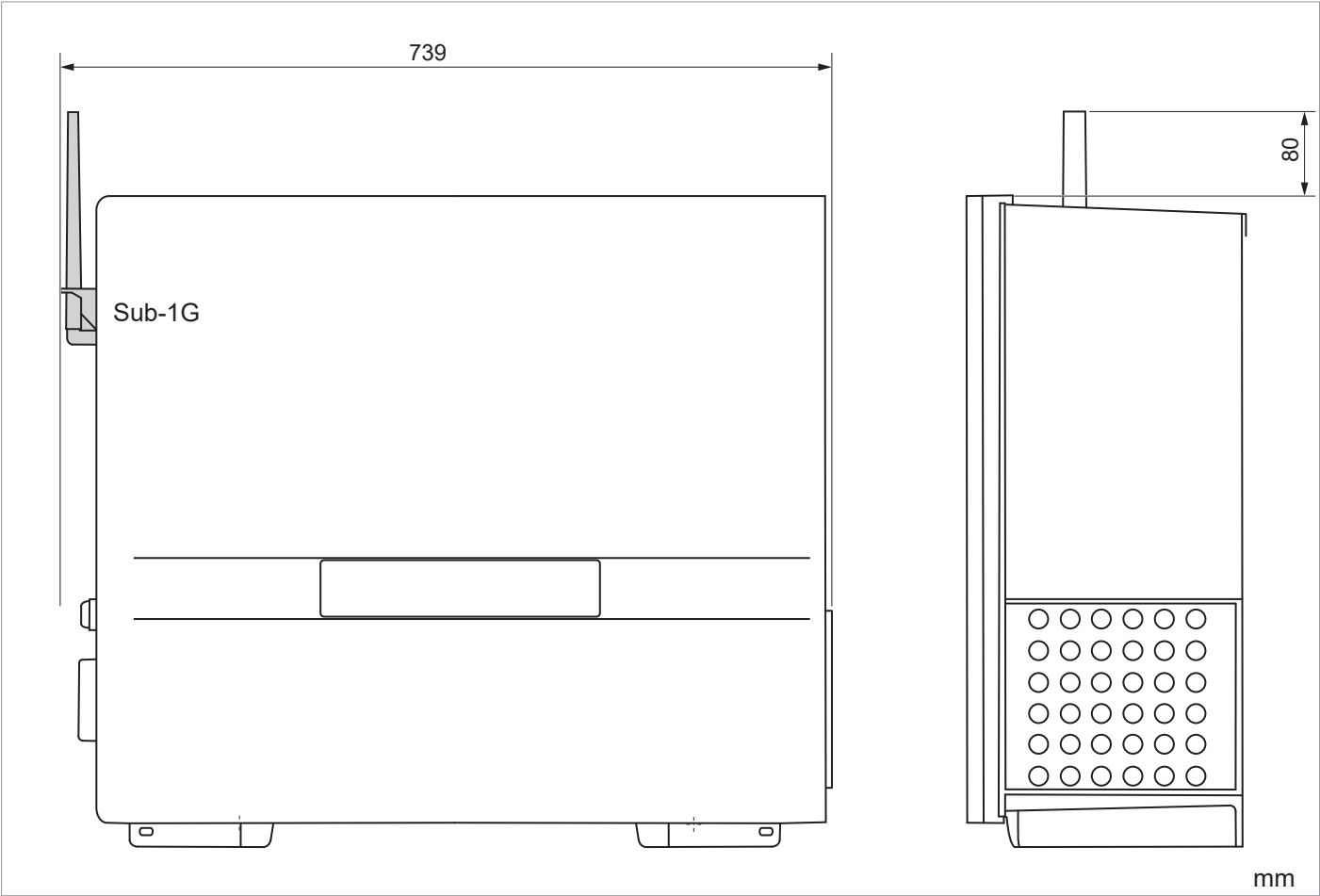
WEEE

The inverter may not be disposed of alongside normal household waste. Always follow the waste disposal regulations for electrical appliances in your country or region.

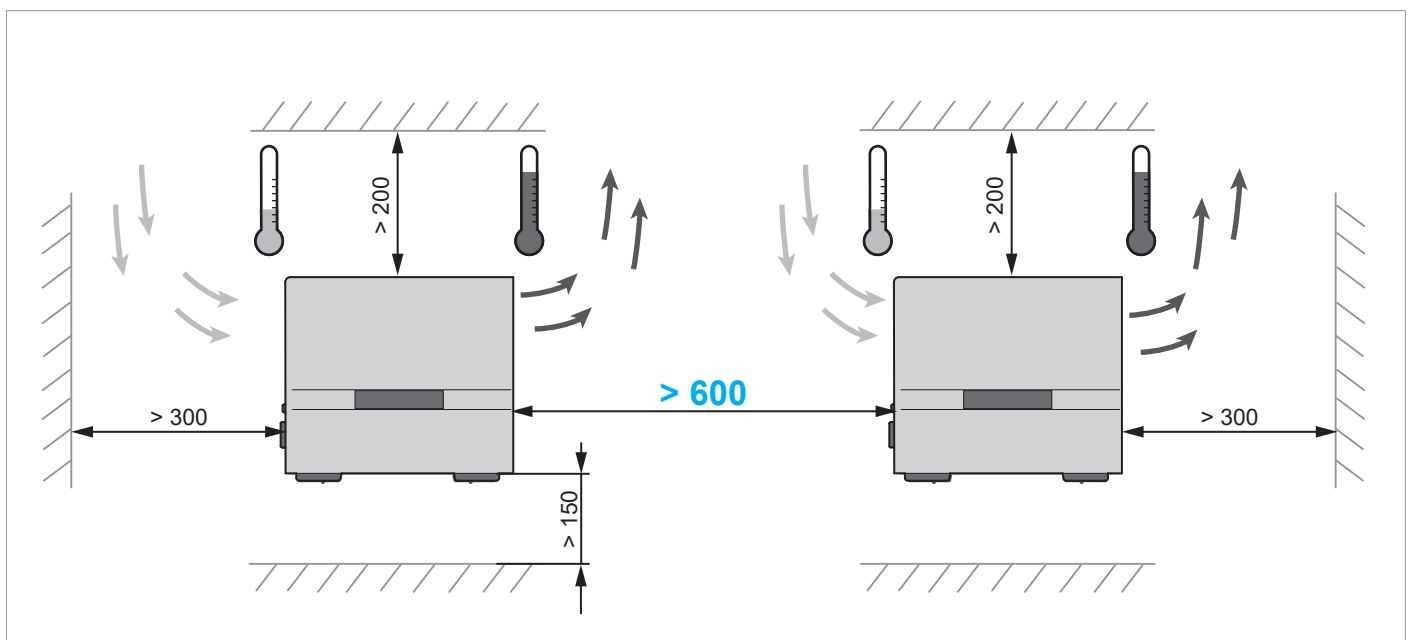
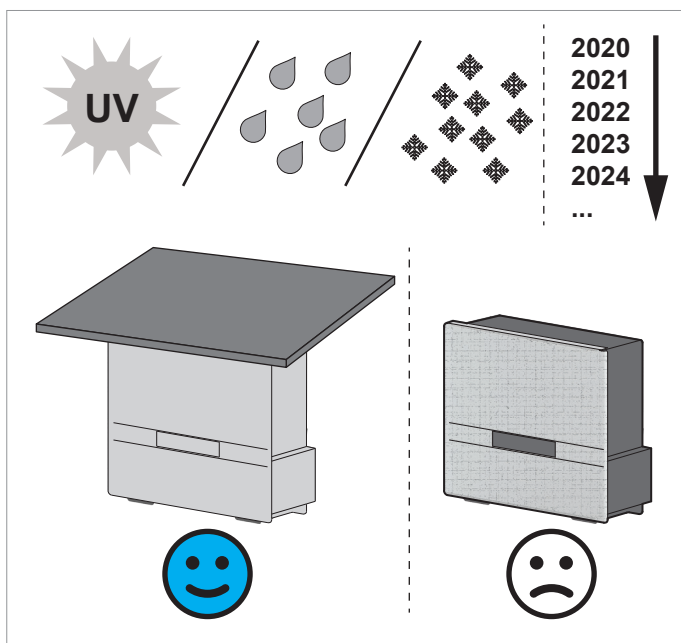
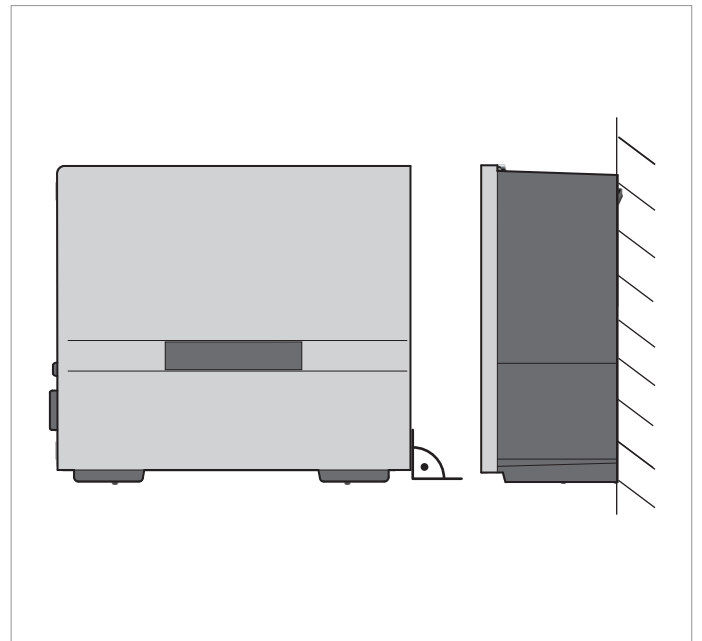
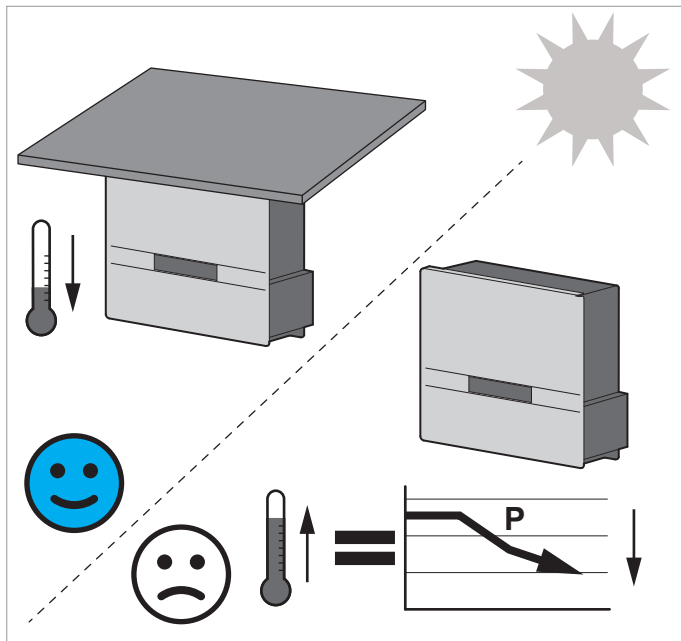
Dimensions

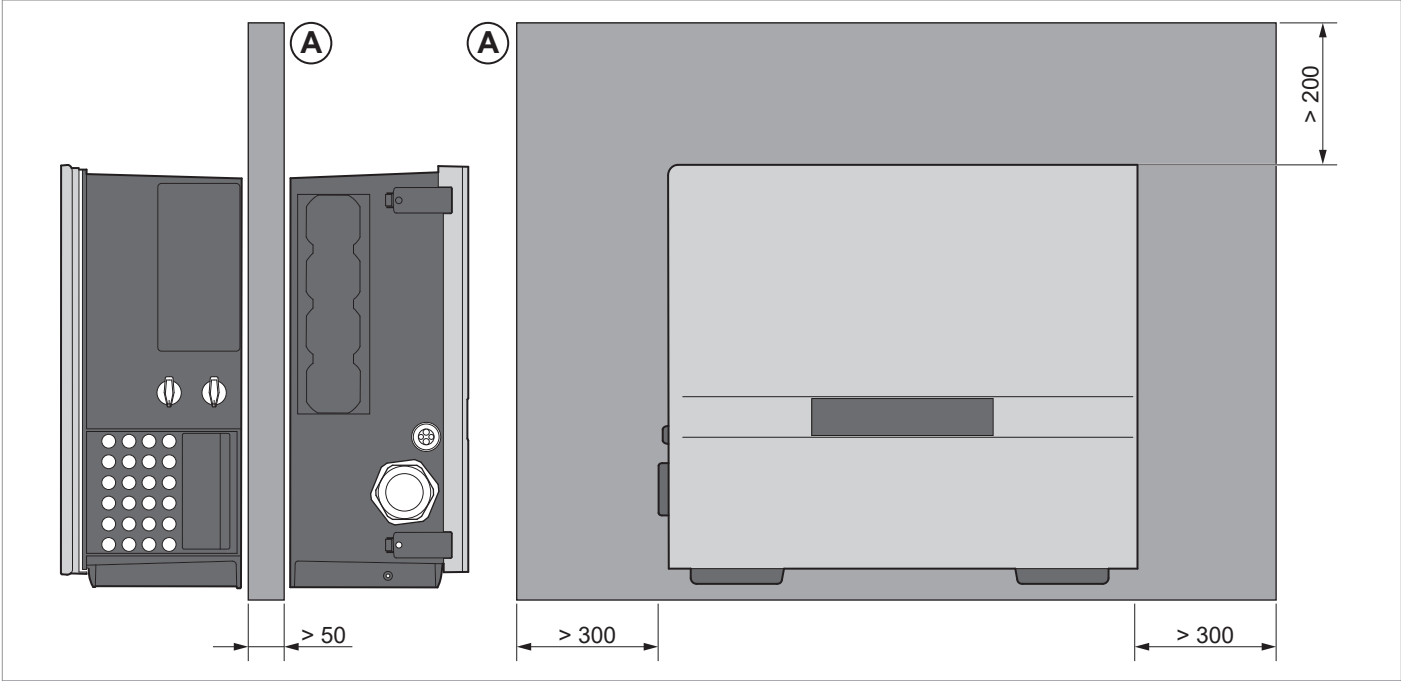
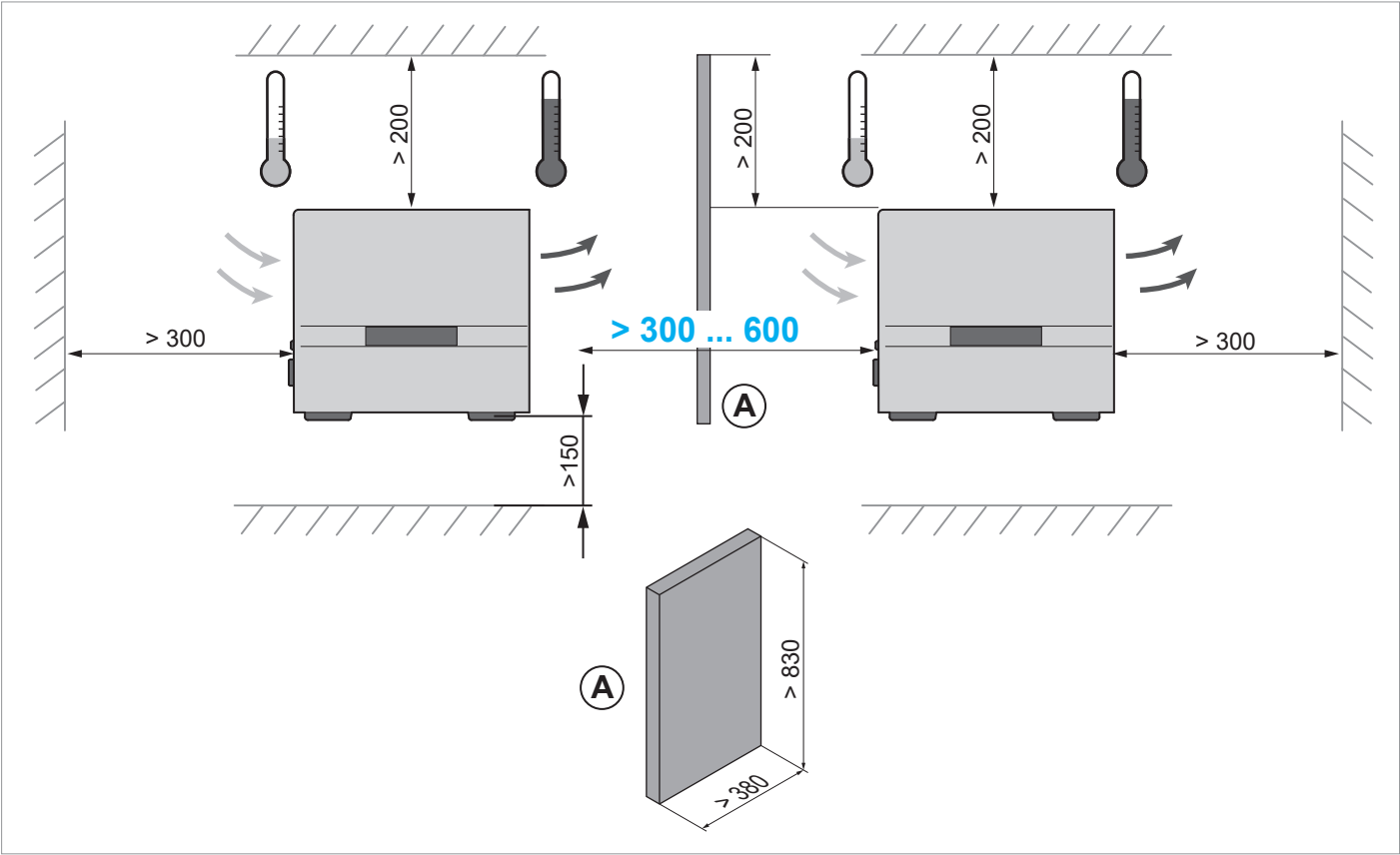


Dimensions

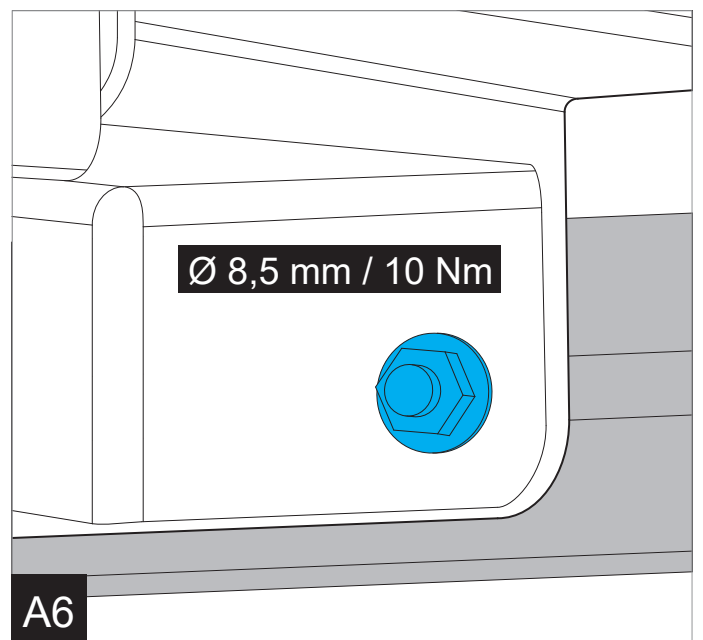
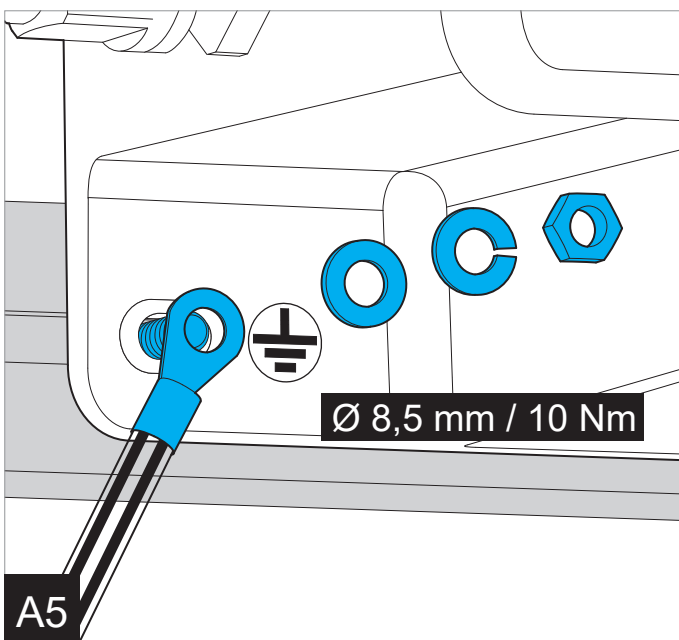
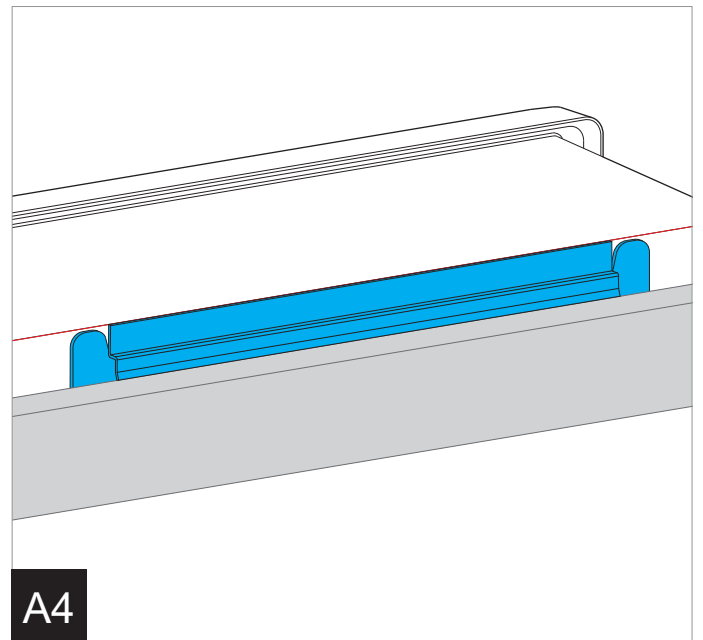
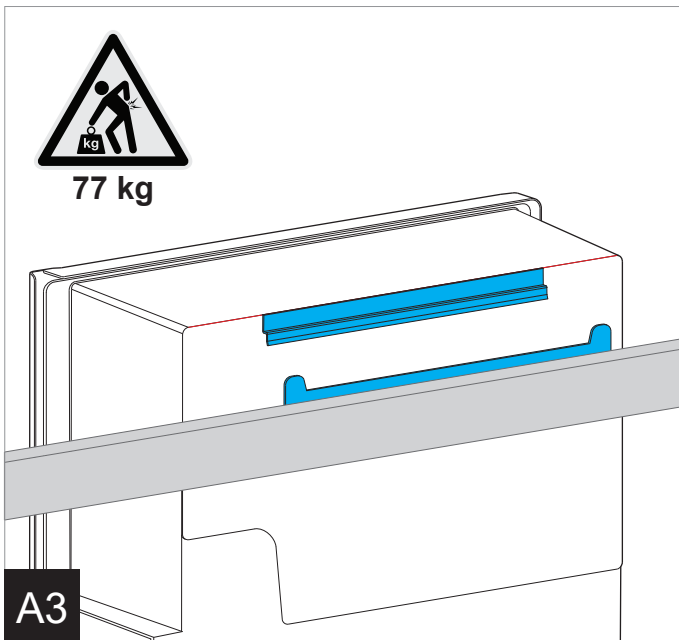
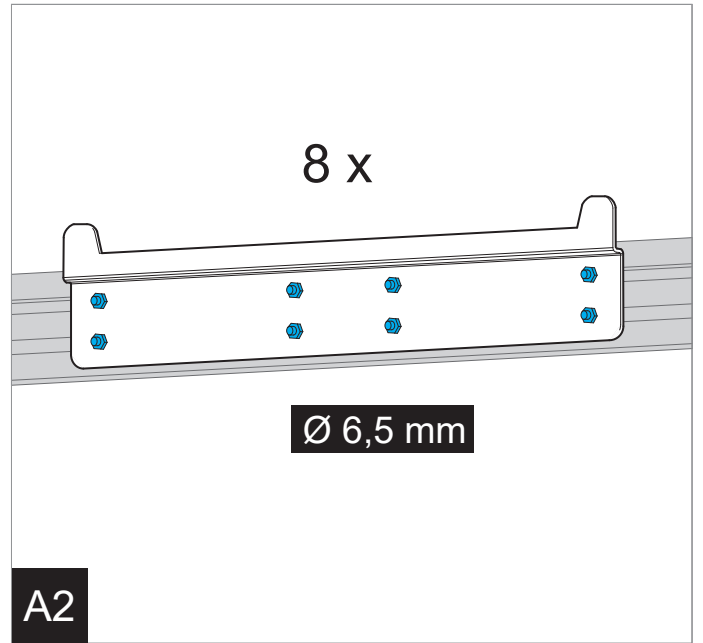
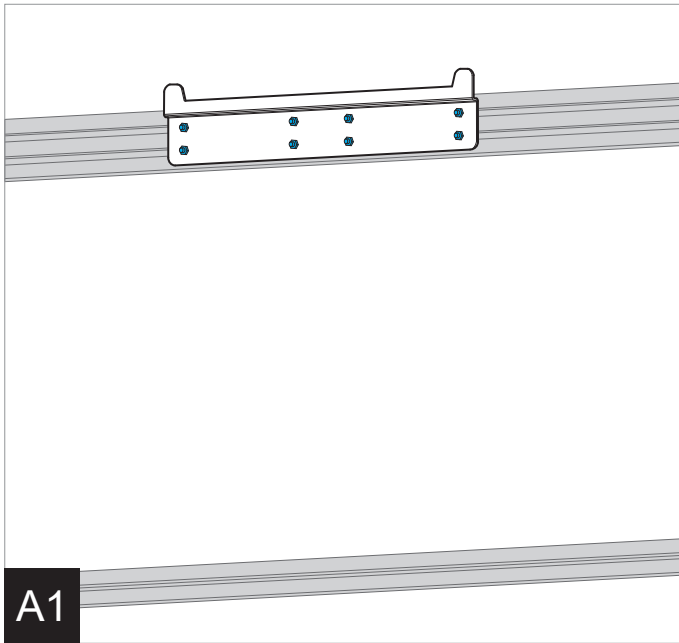


Installation

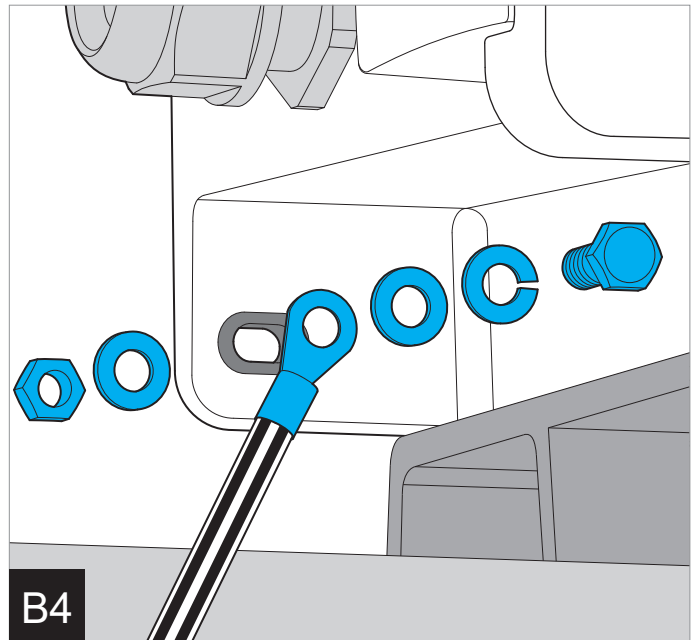
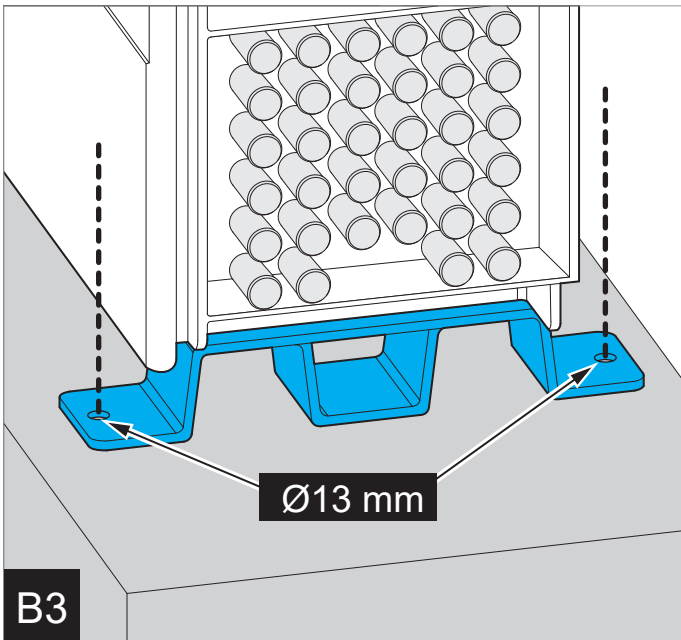
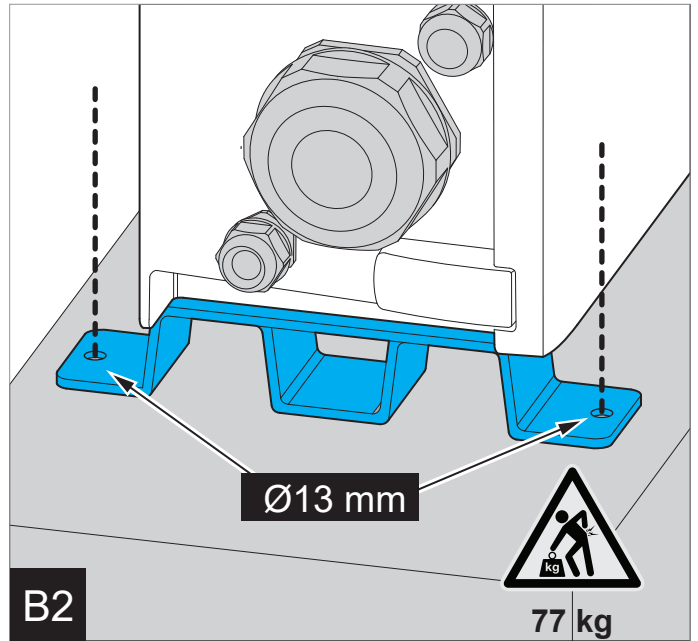
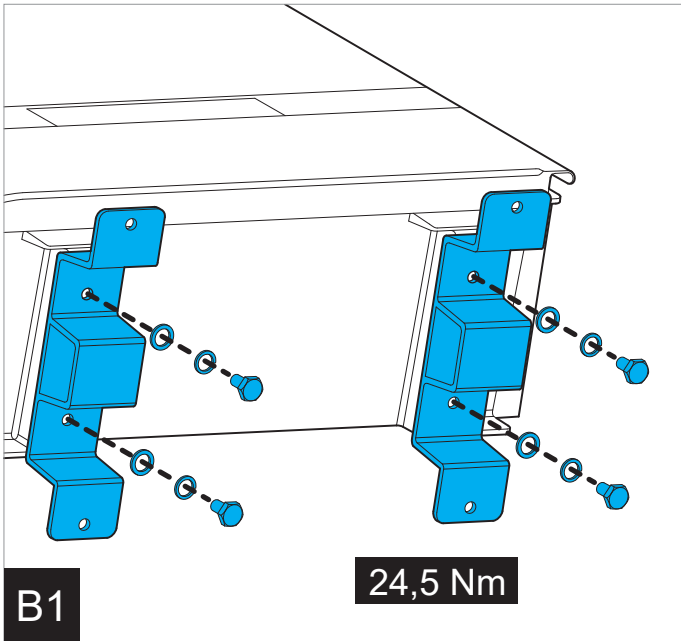




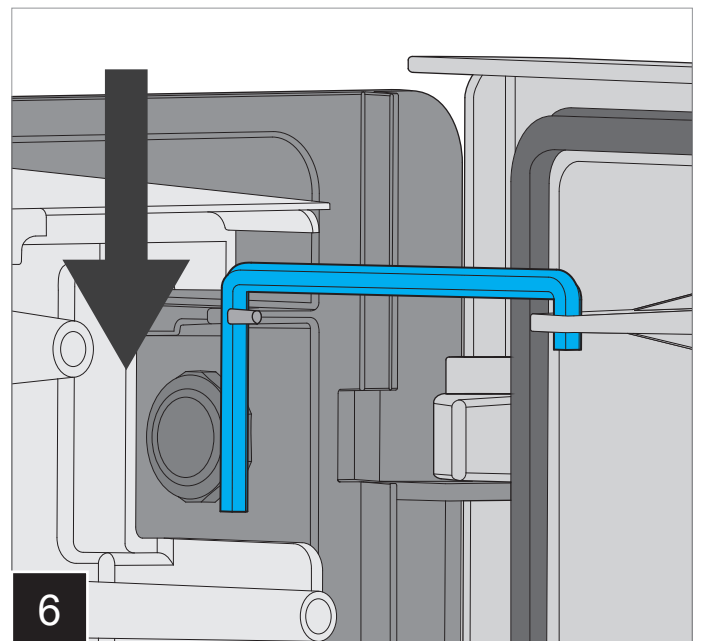
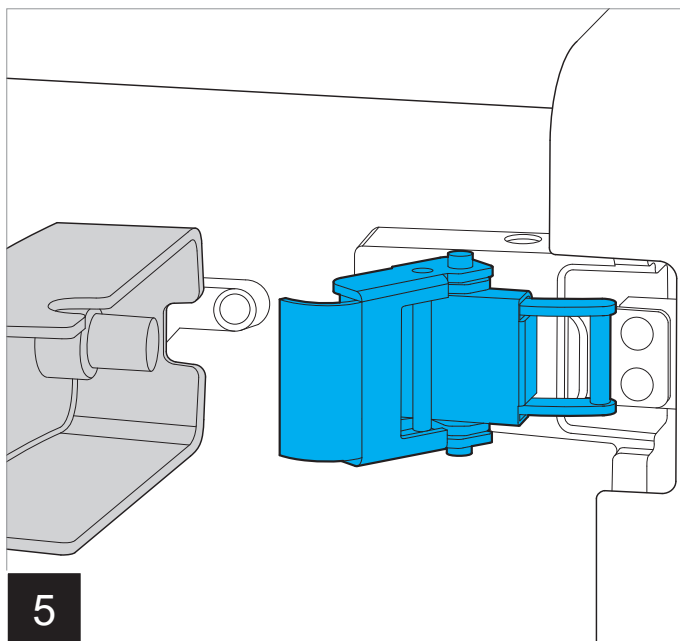
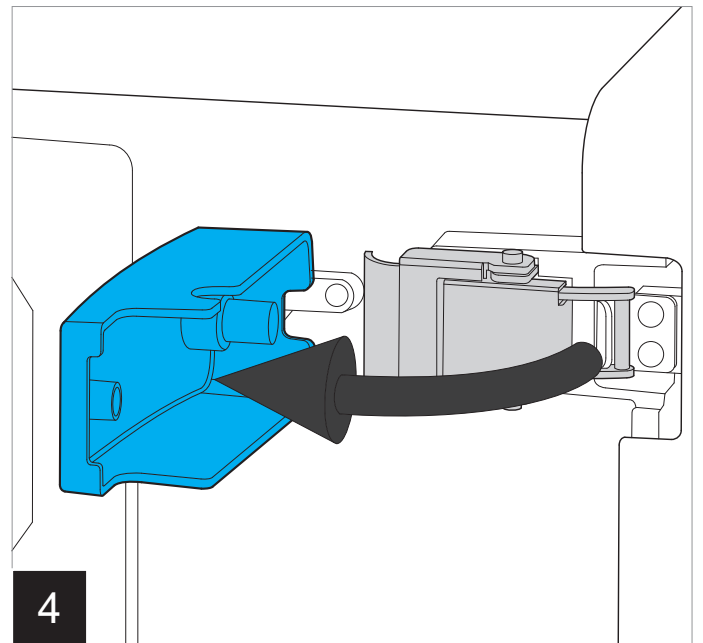
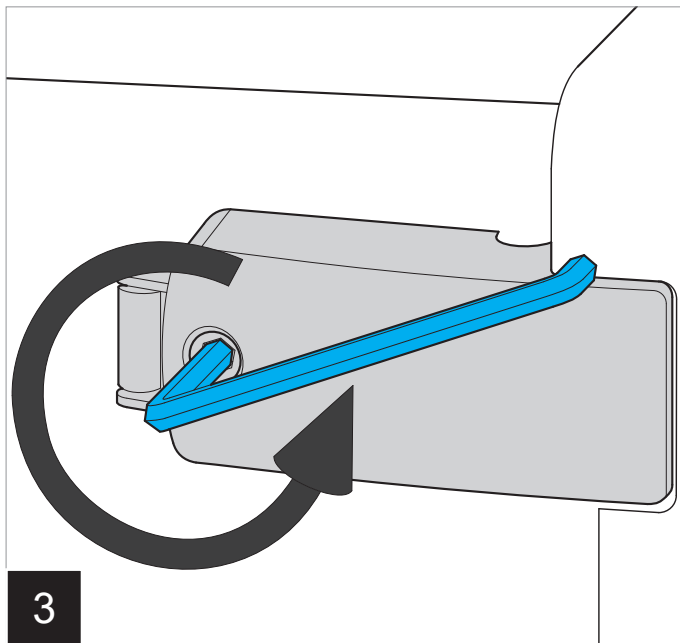
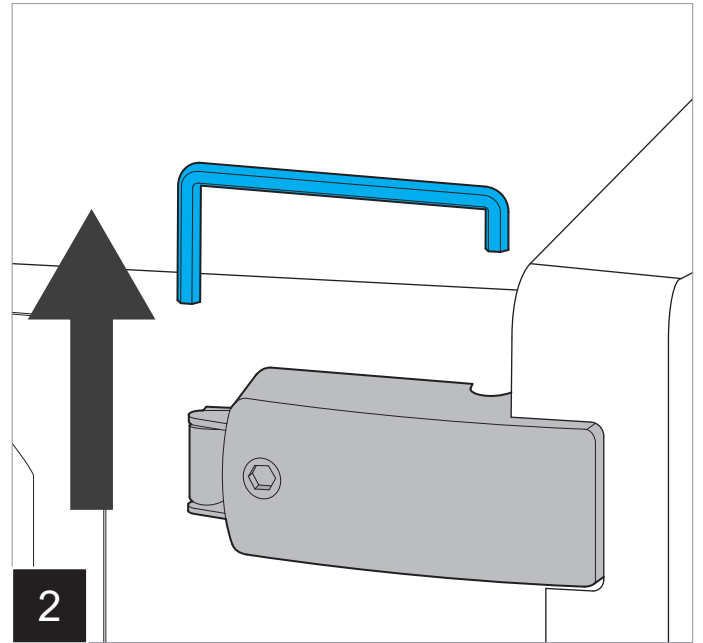
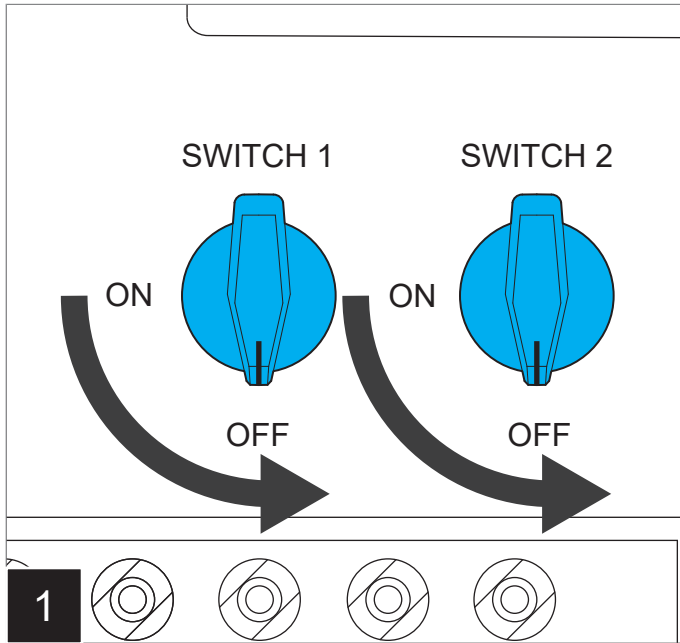
Wall mounting

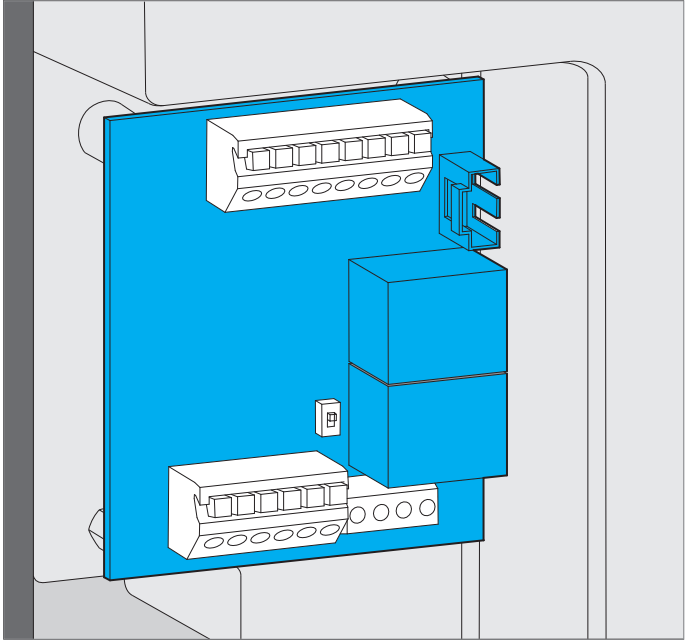
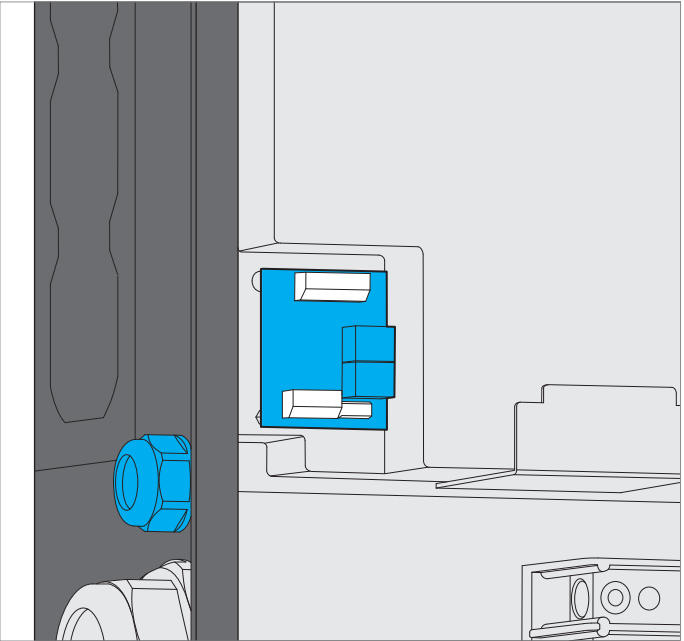
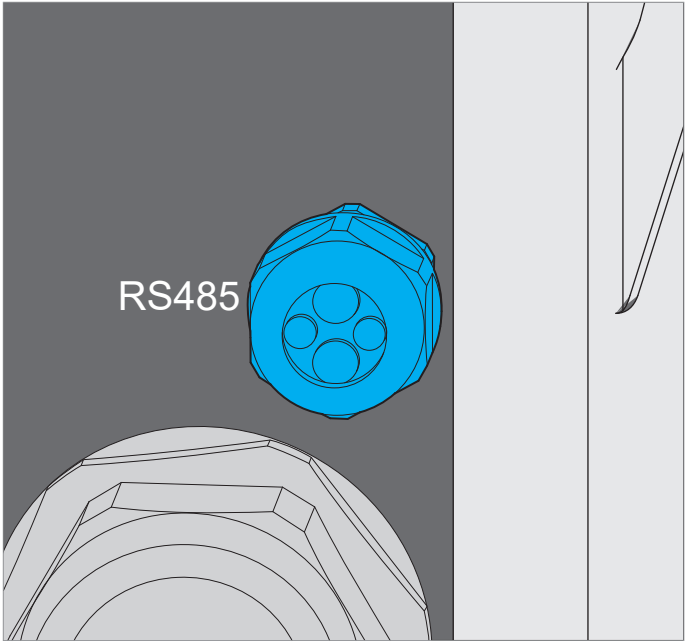


Floor mounting

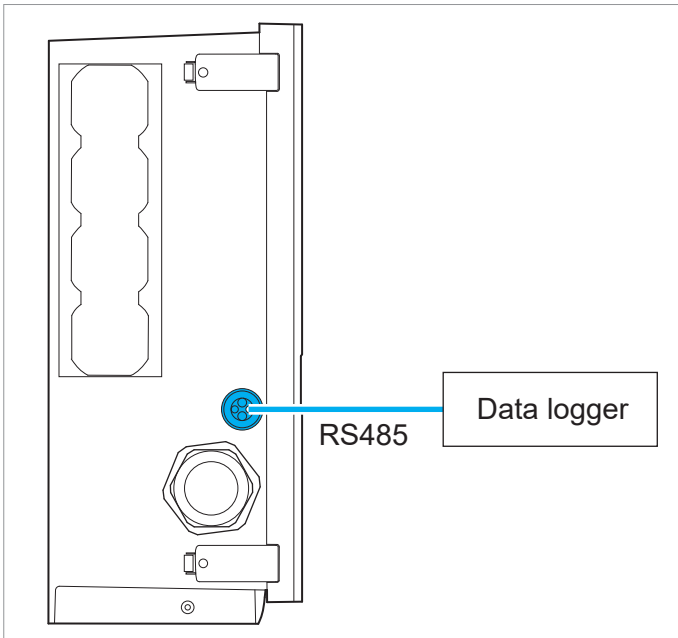
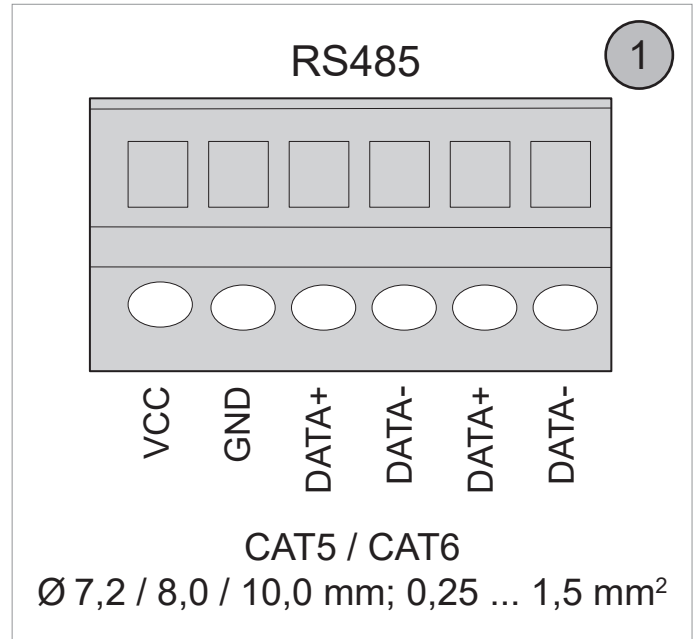
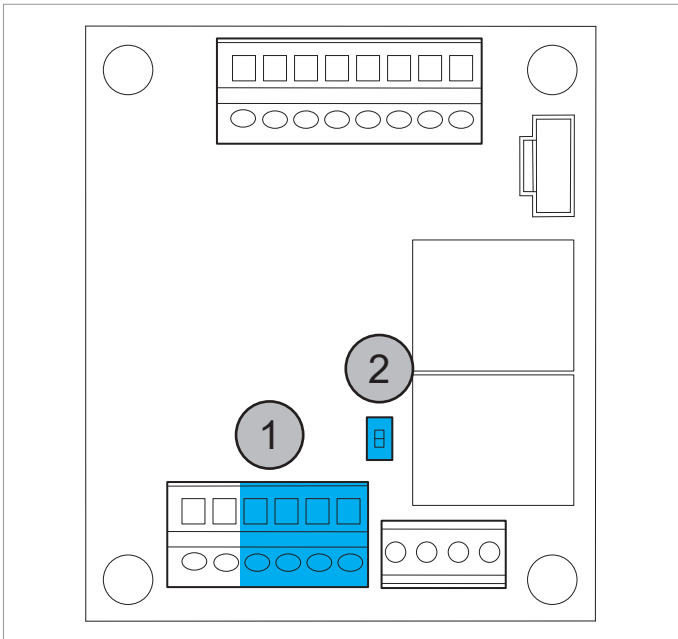


Mounting





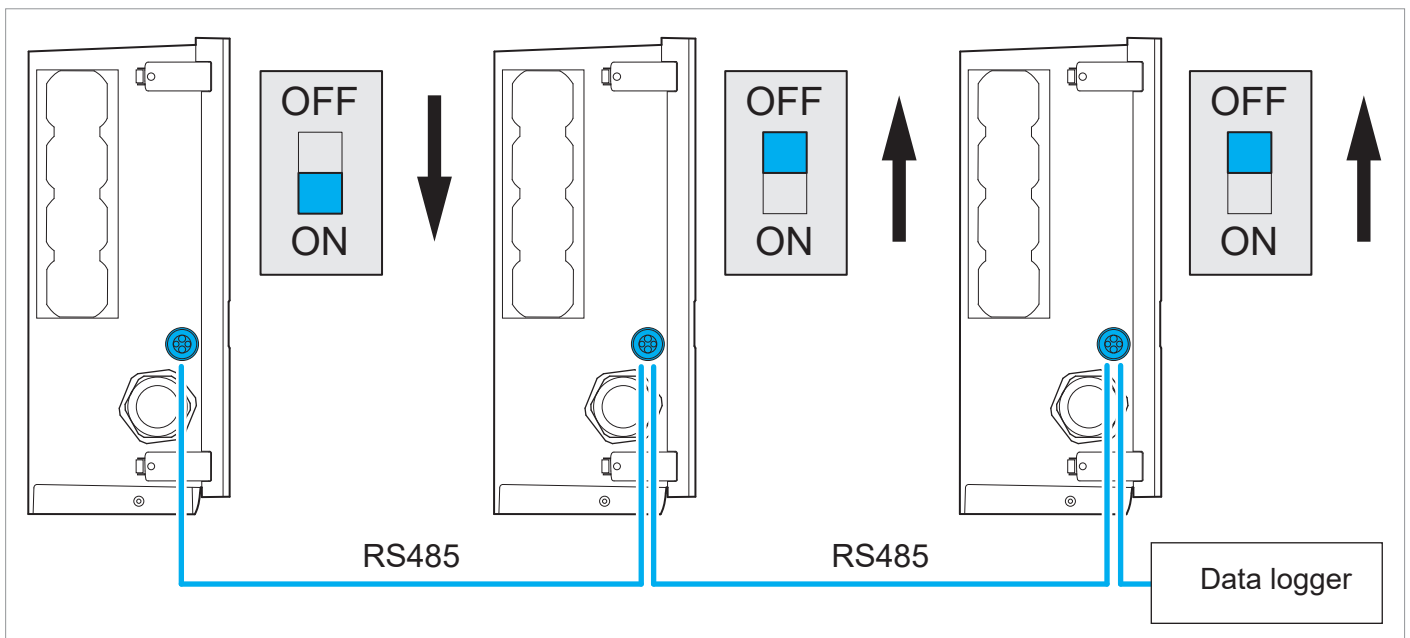
RS485

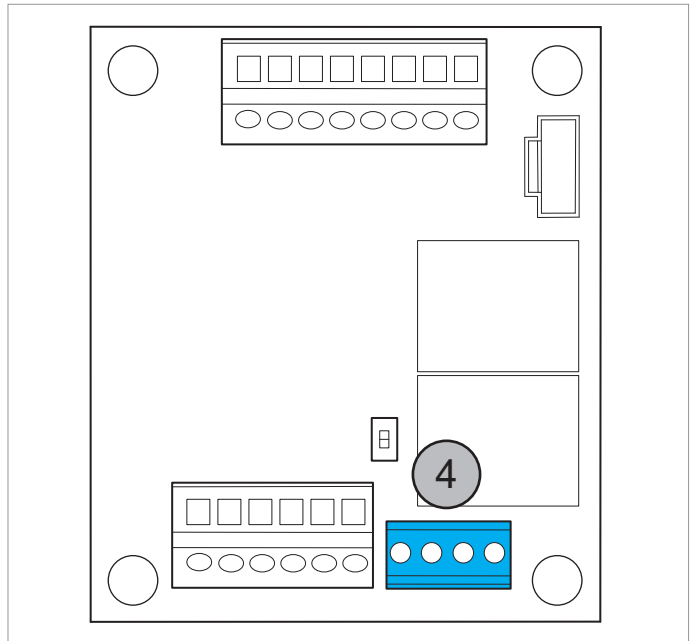
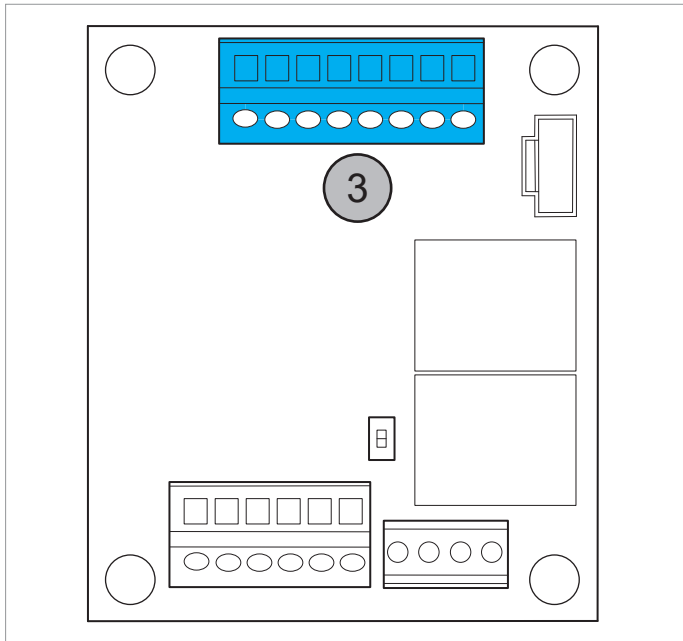


(1) RS485 terminal block • (2) DIP switch for RS485 termination resistor

Switch on the RS485 terminator resistor of the data logger or connect a termination resistor.

If the data logger does not have an integrated RS485 terminator resistor, connect the data logger in the middle of the RS485 bus.

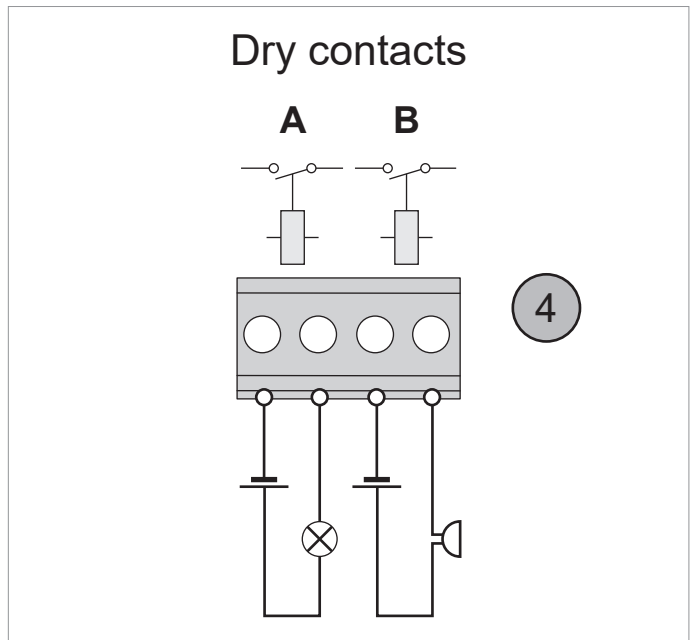




Digital inputs 3

V1 K0 K1 K2 K3 K4 K5 K6

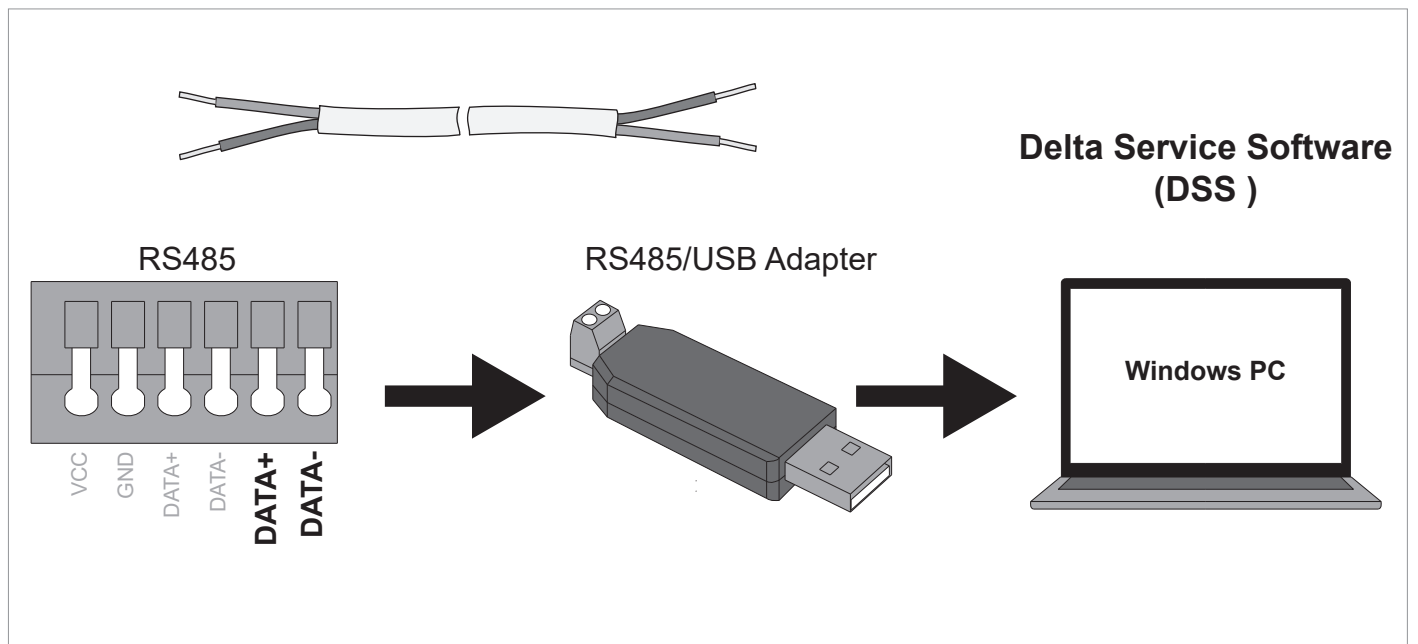
CAT5 / CAT6
 Ø 7,2 / 8,0 / 10,0 mm; 0,25 ... 1,5 mm²



The event at which the relays of the dry contacts trip can be set with the Delta Service software.

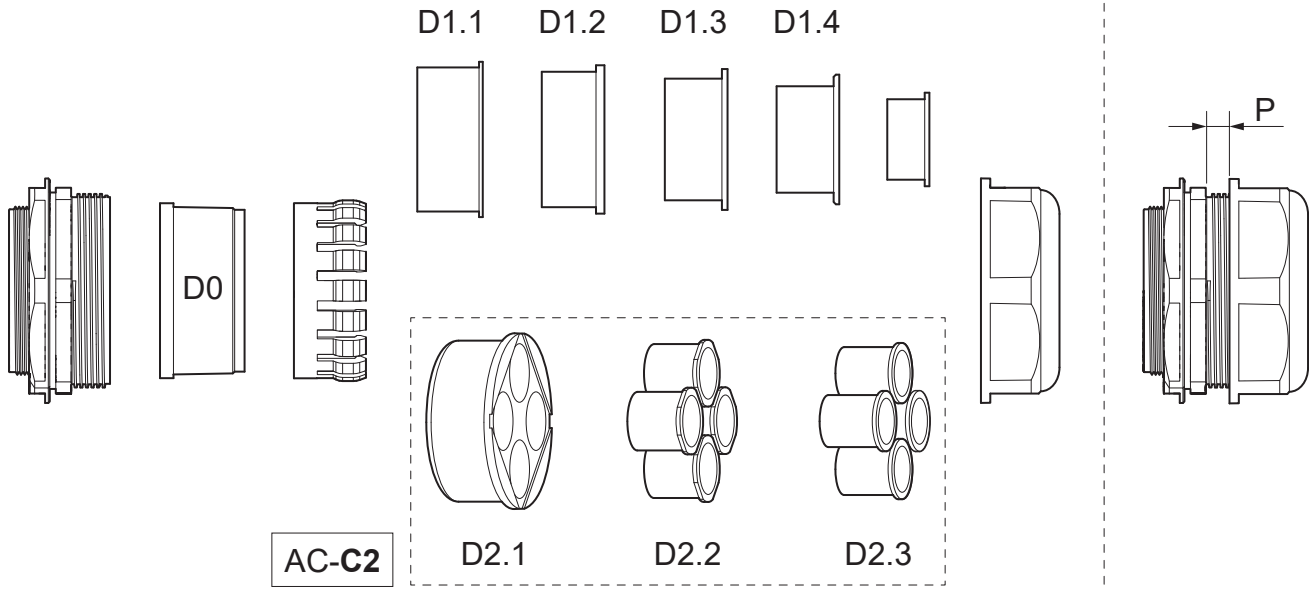
Pin	Pin	
V1	-	-
K0	-	External power-off (EPO)
K1	V1 + K1	$P_{max} = 0\%$
K2	V1 + K1	$P_{max} = 30\%$
K3	V1 + K1	$P_{max} = 60\%$
K4	V1 + K1	$P_{max} = 100\%$
K5	Reserved	-
K6	Reserved	-

Connect a PC



Connect the PC to the inverter via the RS485/USB adapter.

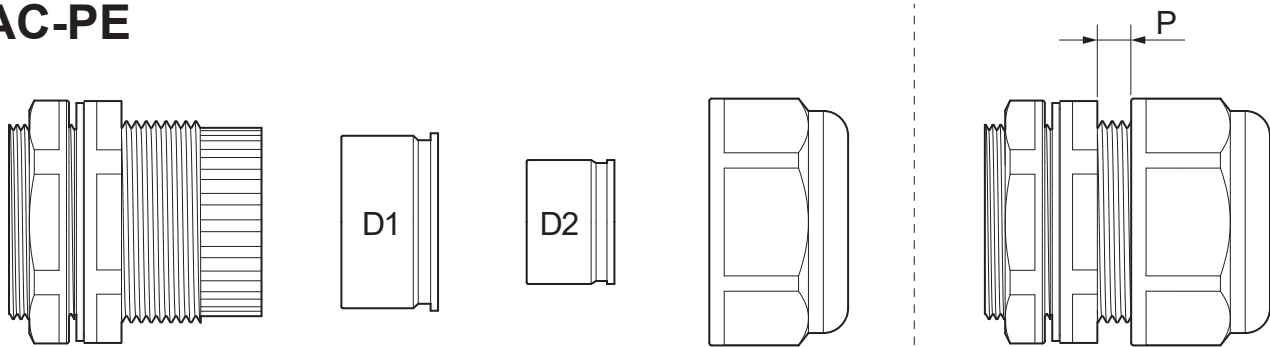
AC-C1 + AC-C2



	d [mm]	M [Nm]	P [mm]
D0	72 ... 77 mm	10 Nm	6,5 ... 4,5 mm
D2.1	65 ... 72 mm	12 Nm	6,0 ... 3,0 mm
D3.1	57 ... 65 mm	15 Nm	5,5 ... 2,0 mm
D4.1	45 ... 57 mm	15 Nm	5,5 ... 0 mm
D5.1	33 ... 45 mm	15 ... 20 Nm	4,5 ... 0 mm

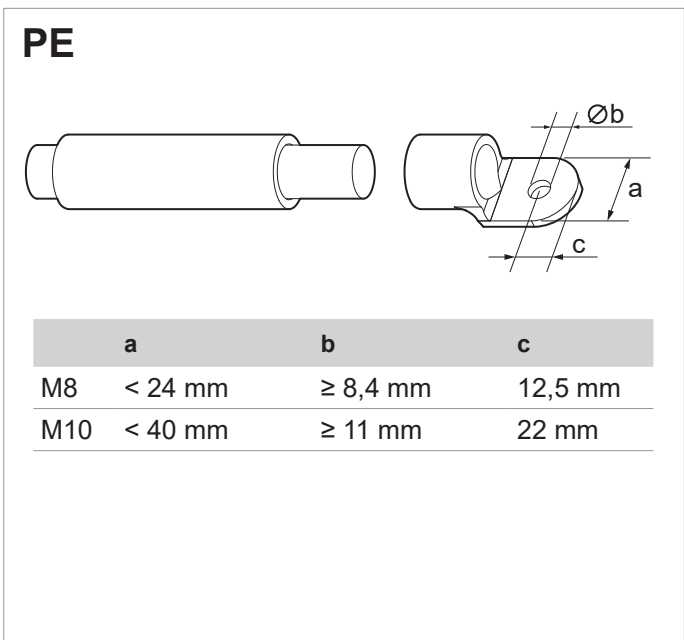
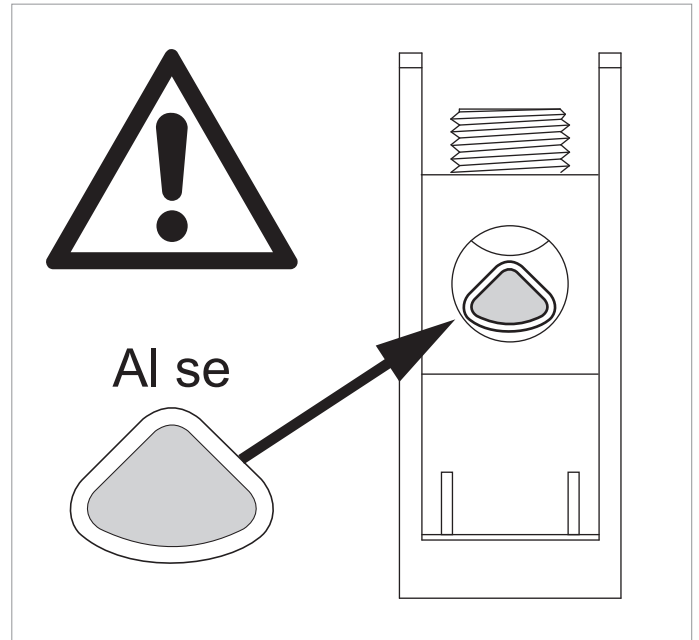
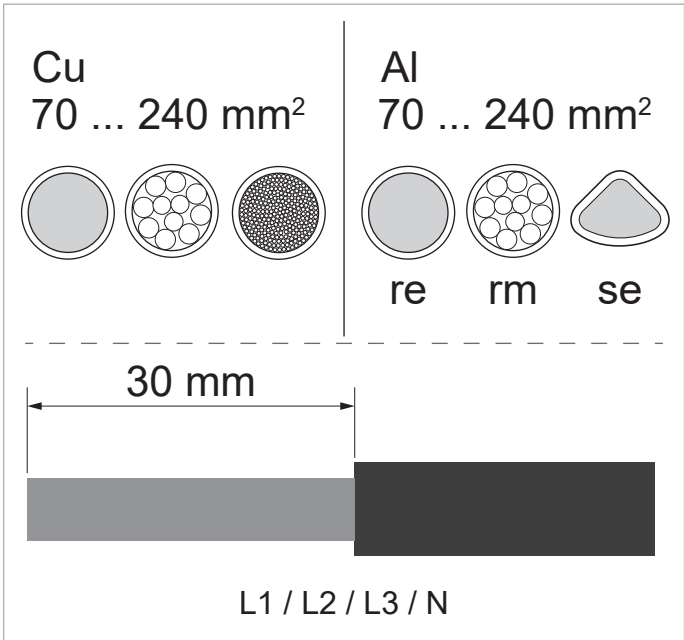
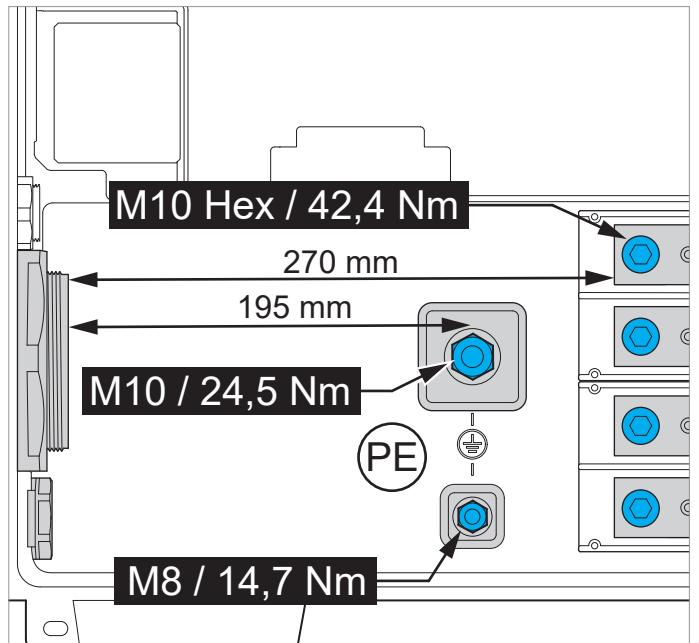
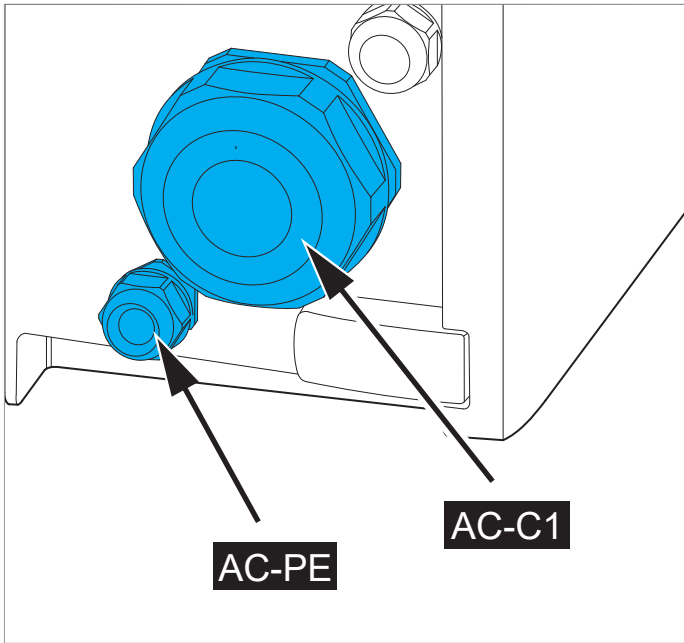
	d [mm]	M [Nm]	P [mm]
D2.1	25 ... 28 mm		6,5 ... 2,0 mm
D2.2	22 ... 25 mm	15 ... 20 Nm	6,0 ... 2,0 mm
D2.3	19 ... 22 mm		6,0 ... 2,0 mm

AC-PE



	D [mm]	M [Nm]	P [mm]
D1	15 ... 23 mm	3,5 ... 5,2 Nm	1,5 ... 5 mm
D2	10 ... 15 mm	3,5 Nm	1,5 ... 5 mm

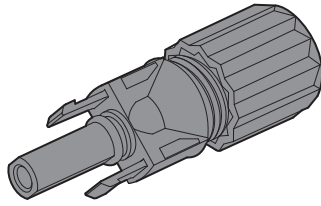
Connecting the grid (AC)



Connecting the Solar Modules (DC)

DC-P+

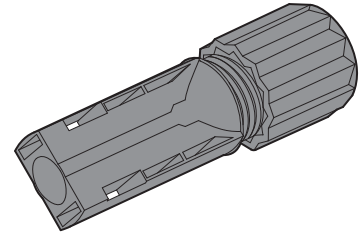
Amphenol H4 – 4/6 mm²
DC+ (H4CFC4D●MS)



16x

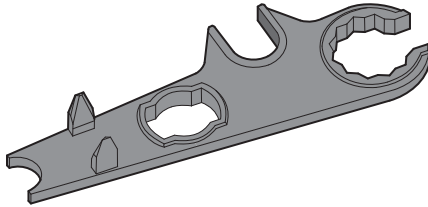
DC-P-

Amphenol H4 – 4/6 mm²
DC- (H4CMC4D●MS)



16x

DC-T

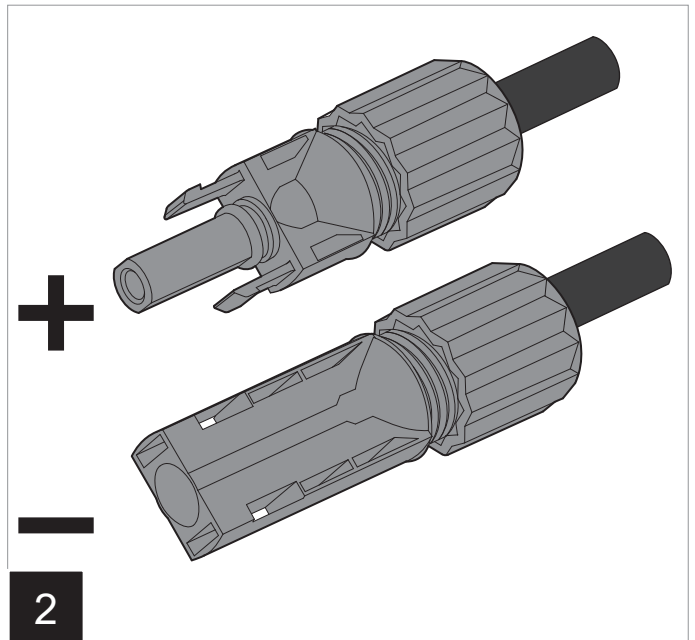
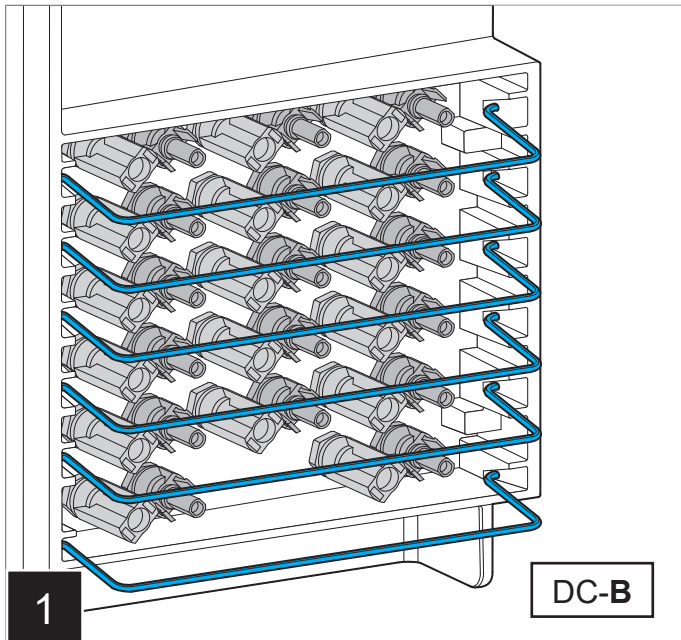


2x

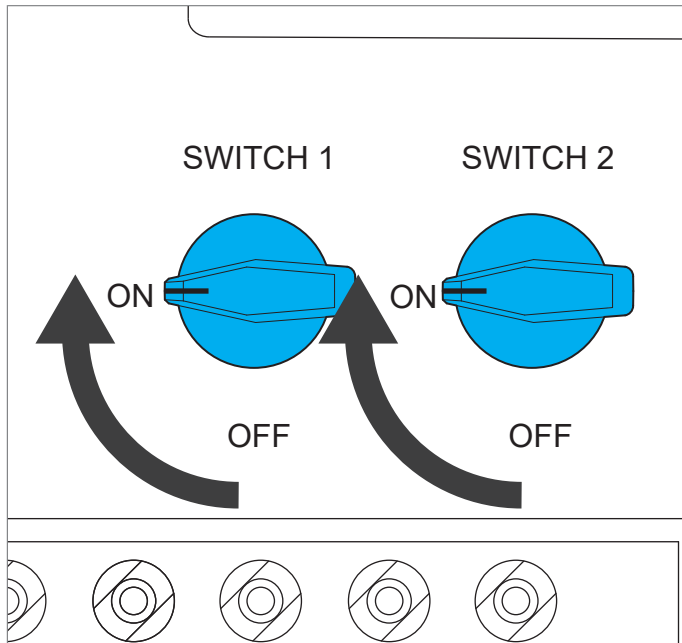
DC-B



6x



Commissioning



The inverter must be supplied with alternating current (grid) and/or direct current (solar modules).



Start the software and commission the inverter.

Technical data

Input (DC)	M100A
Maximum input power (per MPP Tracker/total)	12.7 kW / 110 kW
Rated power	100 kW
Input voltage range for operation	200 to 1000 V _{DC}
Maximum input voltage	1100 V _{DC} ¹⁾
Nominal voltage	610 V _{DC}
Number of MPP trackers	8
Total MPP input voltage range	200 to 1000 V _{DC}
MPP input voltage range with full power	at 20 °C: 470 to 860 V _{DC} at 30 °C: 470 to 840 V _{DC} at 40 °C: 520 to 800 V _{DC}
Maximum input current (per MPP Tracker/total)	30 A / 240 A
DC short-circuit current I _{sc}	50 A per MPP tracker
Open-circuit voltage V _{OC}	1000 V _{DC} /1100 V _{DC} without damage
DC connector panel	
Connector type	Amphenol H4 connector
Number of DC connections	16 pairs
DC cable specifications	4/6 mm ²
Use of external string fuses	No external string fuses required
Overvoltage category ²⁾	II
Surge protection devices	1 or 2 strings per MPPT: No external string fuses required
Galvanic isolation	No
Output (AC)	M100A
Maximum apparent power	110 kVA ³⁾
Maximum active power	110 kW ³⁾⁴⁾
Nominal apparent power	100 kVA ³⁾
Nighttime reactive power supply	60 kVAr
Nominal voltage ⁵⁾	380/400/480 V -20%/+30%, 3 phases + PE (Δ), 3 phases + N + PE (Y)
Nominal current	160 A
Maximum current	168 A at 380/400 V; 133 A at 480 V
Frequency range ⁵⁾	50/60 Hz ± 5 Hz
Adjustment range power factor	0.8 cap to 0.8 ind (0.9 cap to 0.9 ind at maximum active power)
Total harmonic distortion	<3% at nominal apparent power
Power consumption in night mode	<3.5 W ⁶⁾
AC connection	
Connector type	L1, L2, L3, N: Terminal with hexagon socket screw PE: 1x M8 / 1x M10 threaded bolt with nut, spring washer and washer
Copper cable specifications	70 to 240 mm ² (single wire, multi-wire, fine-wire with wire end sleeve)
Aluminum cable specifications	70 to 240 mm ² (round single wire, round multi-wire, sector shaped)
Overvoltage category ²⁾	III
Surge protection devices	Type 2 (EN 61463-11), replaceable
Mechanical details	M100A
Dimensions (W x H x D)	699 × 629 × 264 mm
Weight	77 kg
Cooling	1x fan module containing 4 fans for circulating ambient air, replaceable 2x internal fans for preventing heat buildup, replaceable
Mounting options	suspended (mounting plate included in the scope of delivery) free-standing (mounting feet available as an accessory)

Communication and Data Visualization	M100A
Communication interfaces	2 x RS485, 2 x Dry contacts, 1 x EPO, 1 x 12 V _{DC} power supply, 6 x digital inputs
Communication	RS485, Sub-1G (optional), Wi-Fi (optional)
Communication protocols	Modbus RTU

General specifications	M100A
Delta model name	M100A_280
Delta part number	RPI104M280000
Overall operating temperature range	-25 to +60 °C
Relative humidity	0 to 100%, non-condensing
Max. operating height	4000 m above sea level
Noise level	<65.2 dB(A)

Standards and guidelines	M100A
Protection degree	IP66
Safety class	II
Pollution degree	II
Overload behavior	Current limitation, power limitation
Safety	IEC 62109-1/-2, CE compliance
EMC	EN 61000-6-2/-6-3/-3-11/-3-12
Noise immunity	IEC 61000-4-2/-3/-4/-5/-6/-8
Distortion factor	EN 61000-3-2
Voltage fluctuations and flicker	EN 61000-3-3
Grid connection guidelines	You will find the current list at solarsolutions.delta-emea.com

- 1) The maximum voltage withstand is 1100 V_{DC}. The inverter starts to work if the input voltage falls below 1000 V_{DC}.
- 2) IEC 60664-1, IEC 62109-1
- 3) For cos phi = 1 (VA = W)
- 4) At ambient temperatures ≤ 33 °C
- 5) AC voltage and frequency range will be programmed according to the individual country requirements.
- 6) Power consumption with standby communication

Delta customer service

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