



Quick Installation Guide

Solar power inverter
M125HV



European Union



United Kingdom



This quick installation guide applies for the following inverter models:

- **M125HV (Delta part number RPI124M110000)**

with firmware versions:

DSP1: 1.12 / DSP2: 1.12 / RED: 1.12 / COMM: 1.12 /

ARC: 1.11 / SCM: 1.12 or higher

The Delta part number can be found on the type plate of the inverter. The Product Version is shown by the last letters of the serial number, which is also located on the type plate. You can find out the firmware version via the MyDeltaSolar app.

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 Therefore, before starting installation work, **always** consult www.solar-inverter.com to check whether a newer version of the Quick Installation Guide or of the comprehensive Installation and Operation Manual is available.

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This manual is intended for installers.

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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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Basic safety instructions	3
Scope of supply	4
Components of the inverter	6
LEDs	8
Type plate	8
Dimensions	9
Planning the installation	10
Cable requirements	12
AC cable	12
DC cables	13
Communications cables	13
Routing the cables	14
AC cable	14
Communications cables	14
Mounting the inverter - Floor mounting	15
Mounting the inverter – wall mounting	16
Grounding the inverter housing	18
Earthing via the external grounding screws	18
Grounding via the PE screw of the AC connection	19
Connecting the mains (AC) – general notes	20
Connecting the mains (AC) – cable gland	22
Connecting the mains (AC)– tips	23
Connecting the solar modules (DC)	24
Closing the inverter	25
Overview of communications card	26
Connecting a data logger via RS485	27
Connecting the digital inputs, dry contacts and external power-off (optional)	28
Commissioning via the commissioning software	29
Troubleshooting for the commissioning software	32
Technical data	34
Customer Service - Europe	36

DANGER



Electric shock

Potentially fatal voltages are present at the inverter during operation. When the inverter is disconnected from all power sources, this voltage remains in the inverter for up to 135 seconds.

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 accidentally restored.
3. Wait at least 135 seconds until the internal capacitors have discharged.

- To comply with the 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 be installed and commissioned only by installers who have been trained and certified for the installation and operation of mains-based solar inverters.
- All repair work on the inverter must be carried out by Delta Electronics. Otherwise, the warranty will be void.
- Warning instructions and warning symbols attached to the inverter by Delta Electronics must not be removed.
- The inverter has a high leakage current value. The grounding cable **must** be connected before commencing operation.
- Do not disconnect any cables while the inverter is under load due to risk of a fault arc.
- To prevent damage due to lightning strikes, follow the provisions that apply in your country.
- The surface of the inverter can get very hot during operation. Always wear safety gloves when you touch the inverter.
- The inverter is very heavy. For hoisting and moving, use a mechanical lifting device (e.g. crane or block and tackle). At least three persons are required for manual hoisting and moving.
- Only equipment in accordance with SELV (EN 60950) may be connected to the RS485 interfaces.
- All external connections must be sufficiently insulated in order to ensure the IP65 degree of protection. Seal any unused connection openings with the closure caps supplied.
- The covers in the interior of the inverter do **not** have to be removed for the installation. All connections required for the installation are also accessible with the covers installed.

DANGER



Electric shock

Potentially fatal voltages are present at the inverter DC connections. 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 mains so that the inverter cannot supply energy to the mains.
- ▶ Disconnect the inverter from all AC and DC voltage sources. Ensure that none of the connections can be restored accidentally.
- ▶ Ensure that the DC cables cannot be touched accidentally.

WARNING



Electric shock

If the doors of the inverter are open, the IP65 degree of protection is no longer guaranteed.

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

WARNING

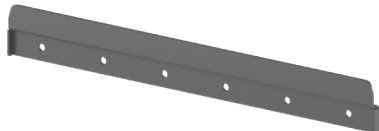
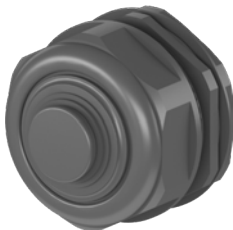


Heavy weight

The inverter is very heavy.

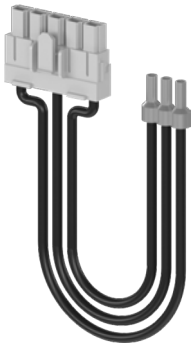
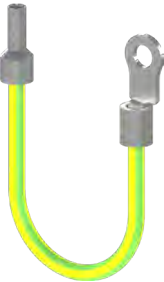
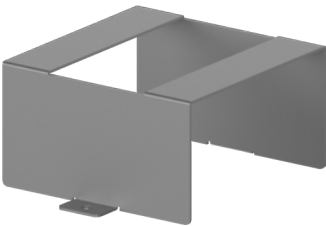
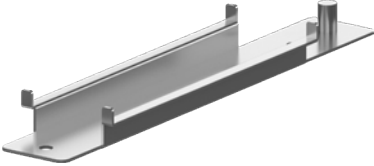
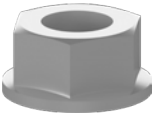
- ▶ The inverter must be lifted and carried by at least 3 people or using appropriate lifting gear.

Scope of supply

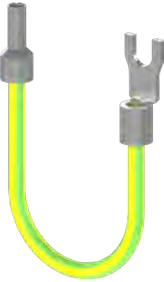
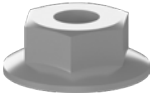
Part	Description	Part	Description
Installation material for the inverter			
Inverter	1 	Mounting plate	1  For hanging up the inverter
Mounting bracket for wall mounting	2  To screw the feet for wall mounting	Mounting bracket for floor mounting	4  To screw the feet for floor mounting
Screw set	1  To screw the mounting bracket to the feet of the inverter; 8 M10 screws with spring washers and washers	Mounting tool for DC plug	2  To disconnect the Amphenol UTX plugs from the DC connections of the inverter
DC plug for DC+	20  Amphenol UTX Female for DC+ (UTXCFA4A● for 4/6 mm ²)	DC plug for DC–	20  Amphenol UTX Male for DC– (UTXCMA4● for 4/6 mm ²)
AC cable gland	1  For feeding the AC cable into the junction box	Cable gland for the communication connection	1  For fastening the communication cables to the junction box
Quick installation guide and basic safety instructions	1  Quick Installation Guide Solar power inverter M125HV 	Allen wrench	2  To unscrew the door screws and to secure the open doors from slamming shut.

Part	Description	Part	Description
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Installation material for AC surge protection devices type 1

Signal cable	1		Power supply cable	1	
PE cable	1		Protective cover	1	
DIN rail	1		M6 mounting screw	1	
M4 mounting screw	2				

Installation material for DC surge protection devices type 1

PE cable	1		DIN rail	1	
M4 mounting screw	3				



All mounting material for the use of type 1 surge protection devices (SPD) is supplied with an inverter. The type 1 SPDs are not included in the scope of delivery!



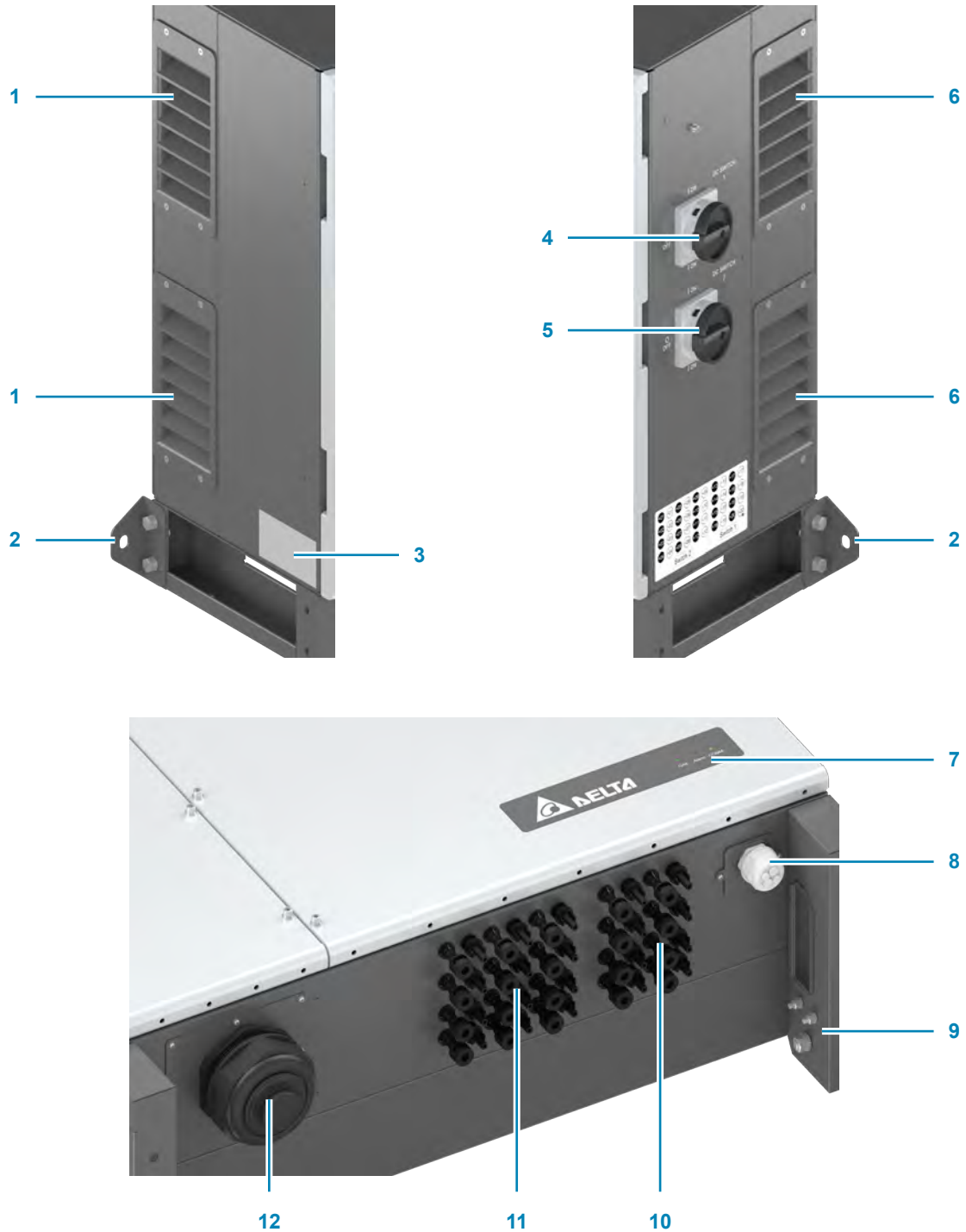
Before starting the installation work, check the scope of delivery for completeness and all components for damage.

Do not use damaged components.



Keep the packaging.

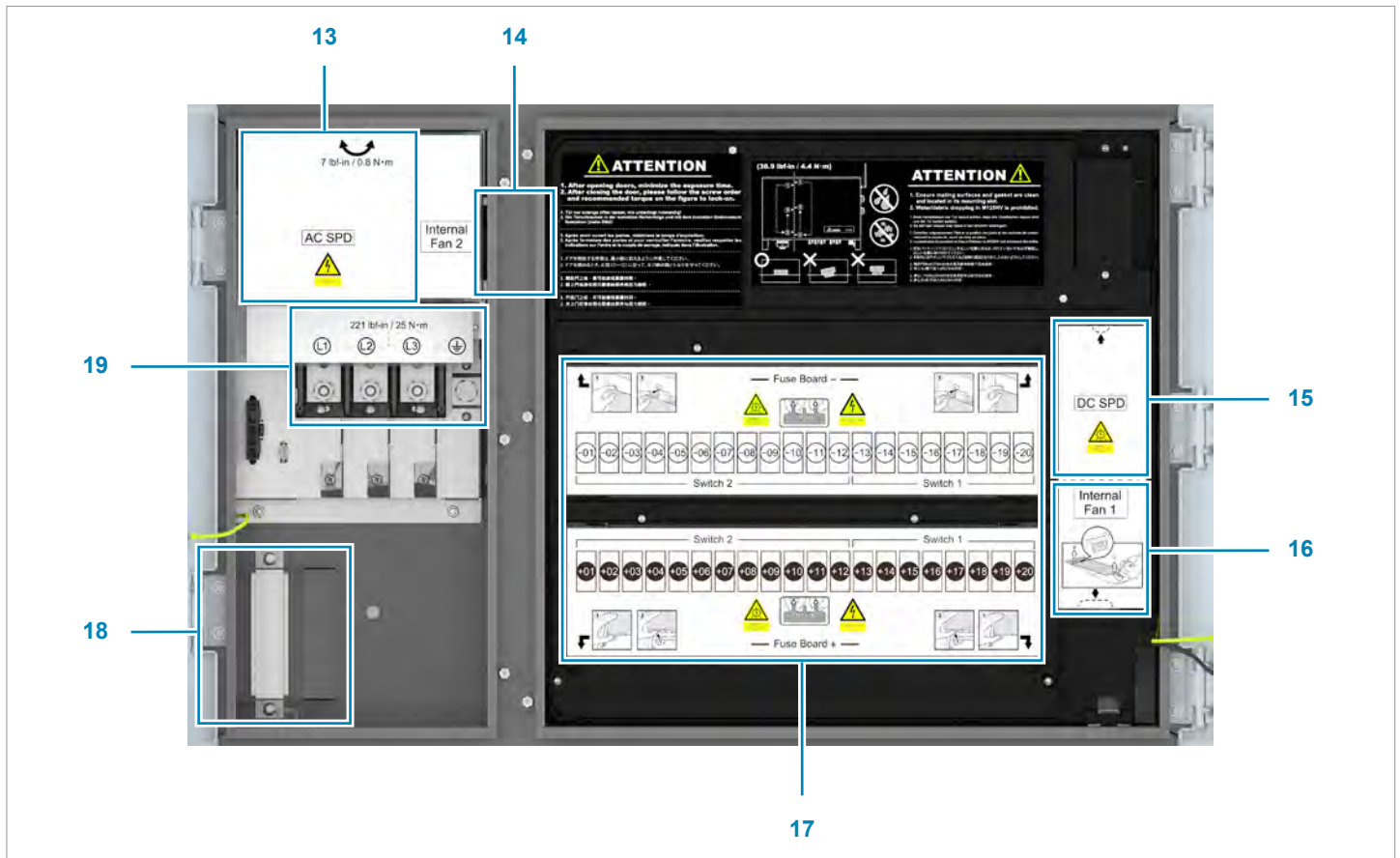
Components of the inverter



- 1 Air outlets
- 2 Additional mounting plate for wall mounting
- 3 Type plate
- 4 DC isolating switch 1
- 5 DC isolating switch 2
- 6 Air inlets with fan modules

- 7 Status LED
- 8 Communication card
- 9 Grounding connection
- 10 DC input connections 2
- 11 DC input connections 1
- 12 AC cable gland

Components of the inverter



- 13 Integrated AC surge protection devices type II
- 14 Internal fan 2
- 15 Integrated DC surge protection device type II can be replaced with DC surge protection device type I (not included in delivery).
- 16 Internal fan 1
- 17 DC string fuses minus (top) and plus (bottom)
- 18 DIN rail for DC surge protection devices type I (not included in delivery)
- 19 AC connection terminals

LEDs



<i>GRID</i>	Mains	LED Green
<i>ALARM</i>	Alarm	LED Red/yellow
<i>COMM.</i>	Communication	LED Red/yellow/green

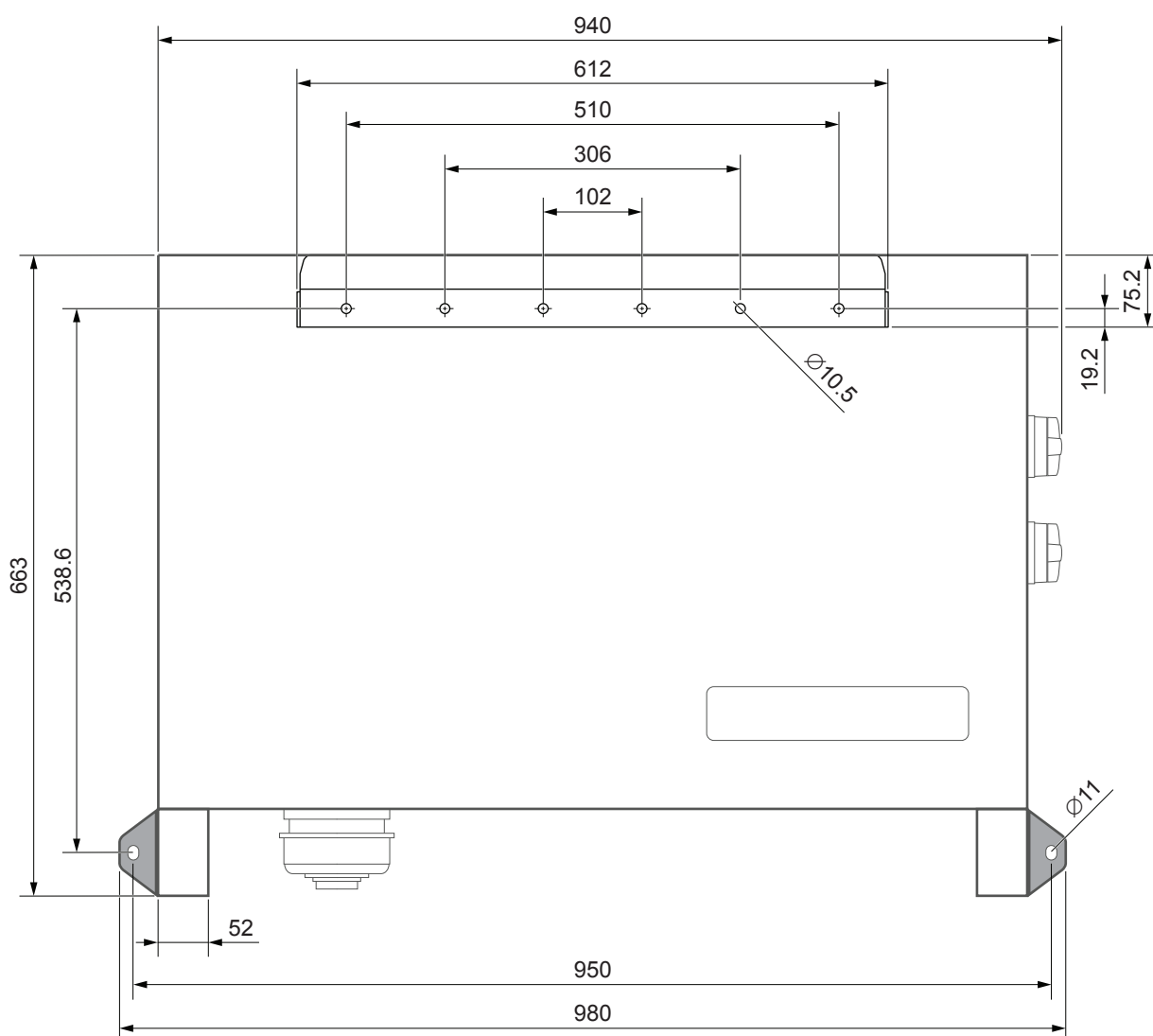
	LED is off.	
	LED flashes green.	LED lights up green.
	LED flashes yellow.	LED lights up yellow.
	LED flashes red.	LED lights up red.

<i>GRID</i>	<i>ALARM</i>	Explanation
		Countdown (inverter starts).
		The inverter is connected to the mains.
		Error. Power-off via external signal.
		Warning.
		Solar system failure.
		Solar system warning.
		No DC. Also appears after both DC isolating switches have been opened.
		Updating firmware.
		Standby mode.

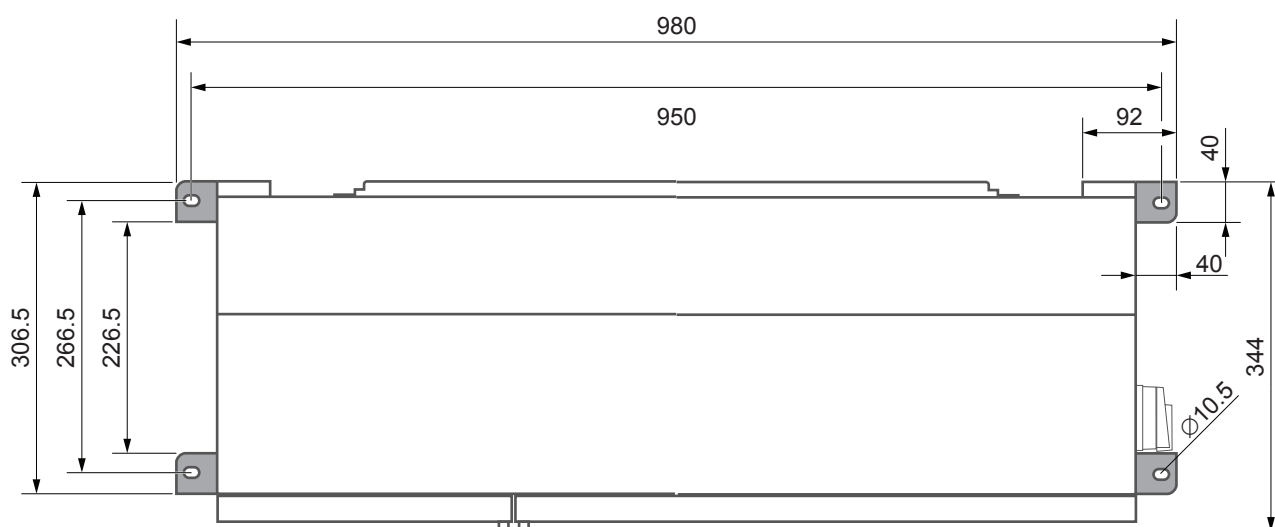
Type plate

Danger to life through electric shock	
	Potentially fatal voltage is present inside the inverter during operation and this voltage remains present for up to 135 seconds after disconnection from the power supply.
Only the wiring box may be opened. All other device parts may not be opened.	
	Before working on the inverter, read the supplied manual and follow the instructions contained therein.
	This inverter is not separated from the grid by a transformer.
	The housing of the inverter must be grounded if this is required by local regulations.
	WEEE mark
	The inverter must not be disposed of as standard household waste, but in accordance with the applicable electronic waste disposal regulations of your country or region.
	The inverter can be very loud when in operation. Wear hearing protection when working on or in the vicinity of the inverter.

Ansicht von vorne mit Montagewinkeln für die Wandmontage



Ansicht von oben mit Montagewinkeln für die Bodenmontage



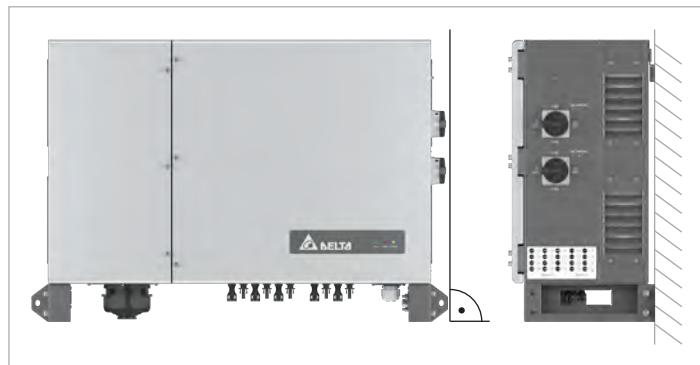
Abmessungen in mm

Planning the installation

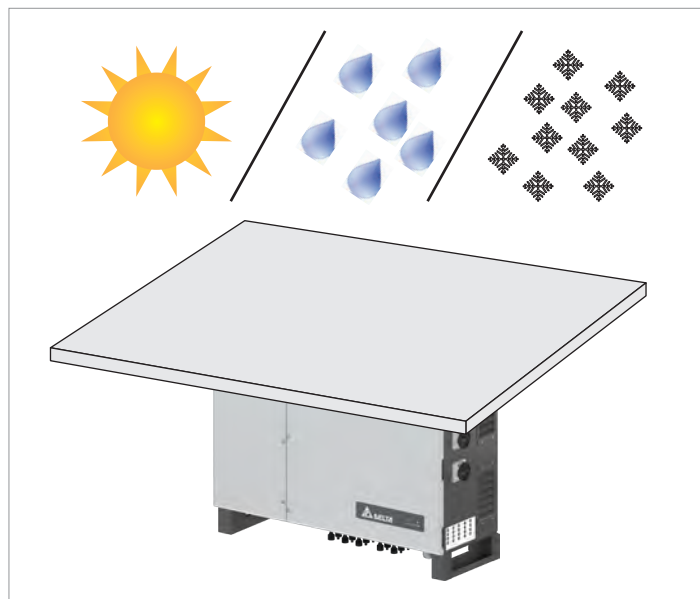
Installation location

- ▶ The inverter is very heavy. The wall or mounting system must be able to bear the heavy weight of the inverter.
- ▶ Always use the mounting plates supplied with the inverter.
- ▶ Use mounting materials (dowels, screws etc.) that are suitable for the wall or the mounting system, as well as the heavy weight of the inverter.
- ▶ Mount the inverter on a vibration-free wall to avoid disruptions.
- ▶ When using the inverter in residential areas or in buildings with animals, possible noise emissions can be disturbing. Therefore, carefully choose the place of installation.
- ▶ Mount the inverter on a fireproof wall.

Mounting alignment



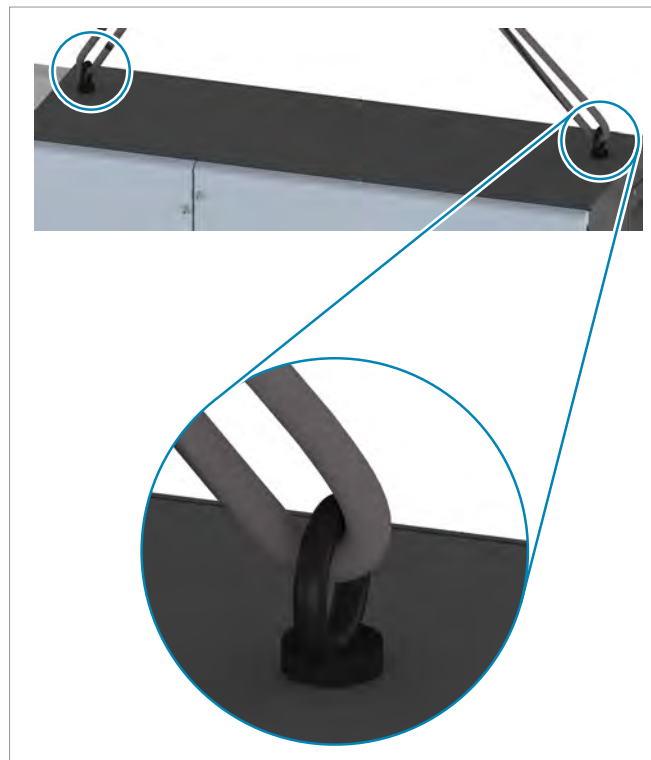
Outdoor installations



- ▶ The inverter has a protection degree of IP65 and can be installed indoors and outdoors. Despite this, the inverter should be protected by a roof against direct solar irradiation, rain and snow. For example, the power of the inverter will be reduced if it is too heavily heated by solar radiation. This is normal operating behavior for the inverter and is necessary to protect the internal electronics.

Lifting and transporting the inverter

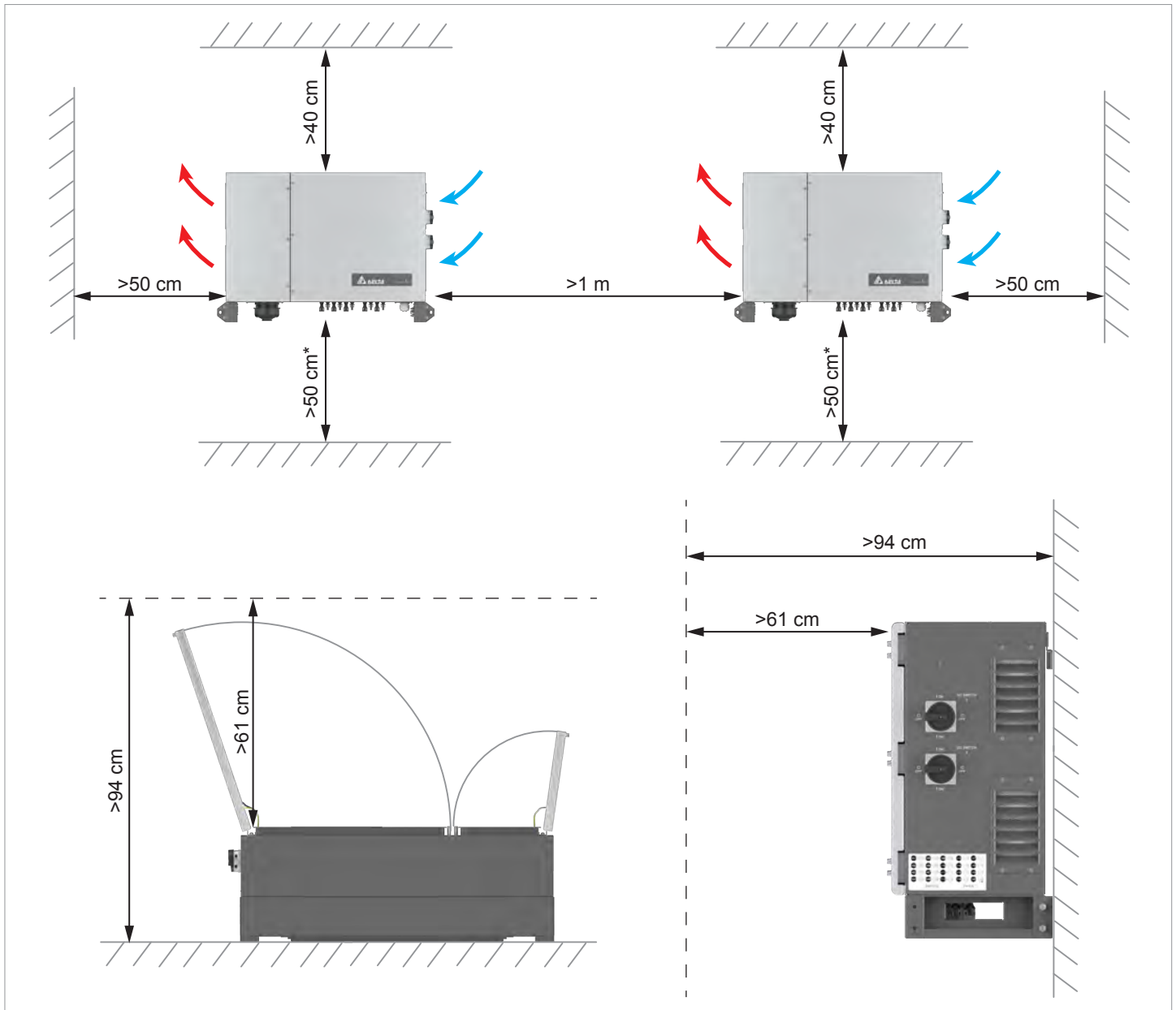
- ▶ Screw the M12 eyebolts onto the top side of the inverter. The screw eyebolts are not included in the scope of delivery.



- ▶ Lift the inverter using a block and tackle or crane.



Installation clearances and air circulation



- Ensure sufficient air circulation. Hot air must be able to dissipate upwards. Leave enough space around each inverter.
- Position the inverters so that they do not heat each other.
- Note the *Operating temperature range without derating* and the *Operating temperature range*. When the *Operating temperature range without derating* is exceeded, the inverter reduces the AC power fed into the mains grid. When the *Operating temperature range* is exceeded, the inverter stops feeding AC power into the mains. This is normal operating behavior for the inverter and is necessary to protect the internal electronics.
- In areas with many trees or meadows, pollen and parts of plants can block air inlets and outlets and obstruct the air flow.

Commissioning software



To commission the inverter, you need a PC on which the commissioning software and the Delta Service Software (DSS) are installed. Both can be downloaded from www.solar-inverter.com. Instructions for this software can also be downloaded there.

To connect the PC to the inverter, you need a USB/RS485 adapter.

The software allows you to set up all inverters that are connected to each other via RS485 at the same time.

Install the software on your PC before going to the installation site. Otherwise, you will need an Internet connection at the installation location to download the software.

Cable requirements

AC cable

ATTENTION



Danger of a cable fire.

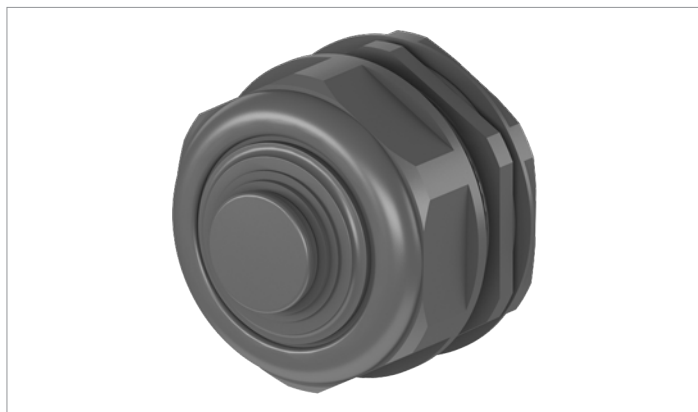
Bending and twisting causes damage to the inner structure of the conductor, which leads to punctiform increase in electrical resistance. This can result in an overheating of the conductor and destruction of the insulation.

- ▶ When bending and twisting cables or conductors, always comply with the manufacturer's instructions.

Min./max. Conductor cross-section

- | | |
|-------------------|----------------------------|
| • Copper cables | 50 ... 185 mm ² |
| • Aluminum cables | 95 ... 185 mm ² |

AC cable gland



The inverter has 1 AC cable gland with 1 cable feed-through.

Min./max. Cable diameter	33.0 ... 76.8 mm
--------------------------	------------------

Notes on calculating the cable cross-section

Consider the following factors when calculating the cable diameter:

- Cable material
- Temperature conditions
- Cable length
- Installation type
- Voltage drop
- Loss of power in the cable

Always follow the IEC 60364-5-52 requirements and your country-specific installation instructions.

France: Follow the installation instructions of UTE 15-712-1. This standard contains the requirements for minimum cable diameters and for avoiding overheating due to high currents.

Germany: Follow the installation instructions of UTE VDE 0100-712. This standard contains the requirements for minimum cable diameters and for avoiding overheating due to high currents.

Handling aluminum conductors during installation work

The special properties of aluminum must be taken in to consideration when using aluminum:

- Aluminum "flows", i.e. it gives way under pressure.
- A thin non-conductive oxide layer forms within a few minutes on de-insulation, which increases the contact resistance between the conductor and cable lug.
- The specific conductivity and hence the current carrying capacity is approximately one third less than that of copper.

ATTENTION



Extreme temperature rise at the clamping point

If the contact resistance between the aluminum conductor and cable lug is too high, the clamping point can become very hot and even catch fire in extreme cases.

To ensure a safe and reliable contact, **always** perform the following work steps:

- ▶ Keep the installation location as free as possible from moisture or corrosive atmospheres.
- ▶ Connect the aluminum cables quickly.
- ▶ Mechanically clean the stripped end of the aluminum conductor (using for instance a knife blade to scrape off the oxide layer), then immediately dip the aluminum conductor into acid-free and alkaline-free (= neutral) Vaseline and straight away insert it into the cable lug.
- ▶ Tighten the nut on the cable lug with the maximum permissible tightening torque.

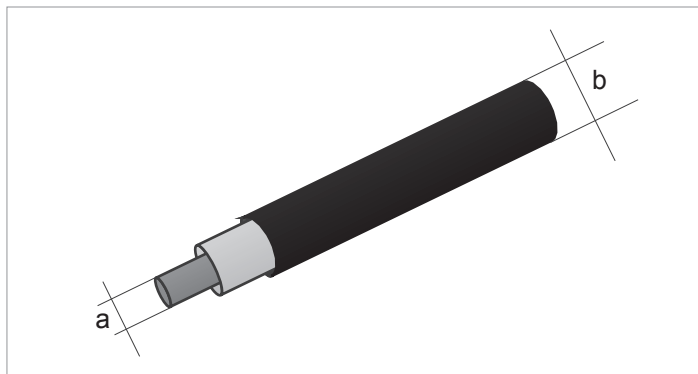
DC cables

The DC plugs for all DC connections are supplied with the inverter.

The plugs are only suitable for copper wire.

You can download the assembly instructions for the DC plug from Amphenol: <http://www.amphenol-industrial.com/utx>.

If you want to order more or need a different size, see the information in the following table.

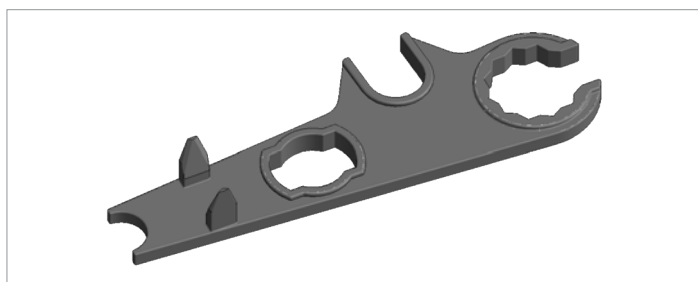


	DC connections on the inverter	DC plugs for DC cables
DC-		
DC+		

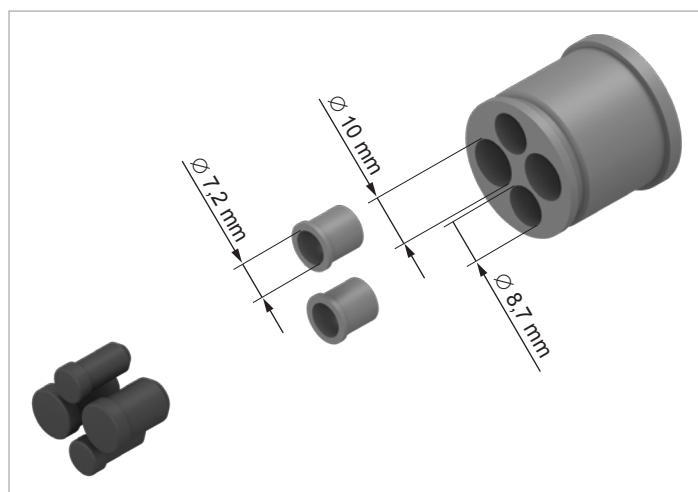
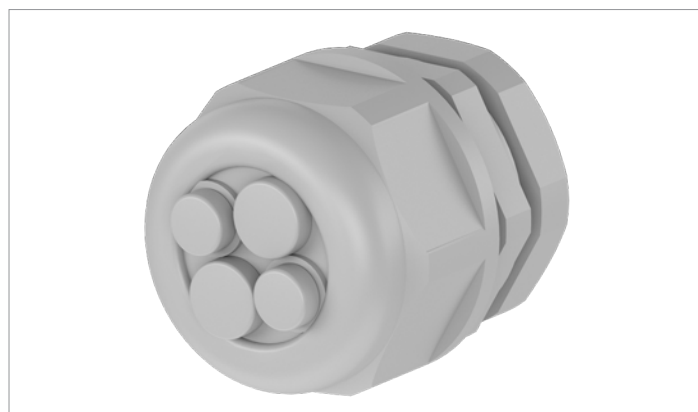
a	b	Amphenol
mm ²	mm	
4/6	5.3 ... 7.65	UTXCFA4A●
4/6	5.3 ... 7.65	UTXCMA4A●

¹⁾ Included in delivery

Always use the mounting tools supplied to remove the DC plug from the DC connections on the inverter.



Communications cables



The inverter has 1 cable gland for the communications cable with 2x2 cable feed-throughs.

- Shielded twisted-pair cable (CAT5 or CAT6)
- Cable diameter: 7.2 / 8.7 / 10.0 mm
- Wire cross-section: 0.25 ... 1.5 mm²

The communications cable is required for connection to the following units:

- Data logger
- External alarm unit
- Ripple control receiver
- External power-off
- PC

Routing the cables

This section describes the optimum routing for the cables in the region of the inverter.



When bending and twisting cables or conductors, always comply with the manufacturer's instructions so as to avoid breakage of the conductors or the insulation.

AC cable



When mounting the inverter, always allow sufficient space downwards so that the AC cable can be easily inserted into the inverter.

Fasten the cable with a strain relief element.



Recommended feeding of the AC cable with strain relief for wall mounting

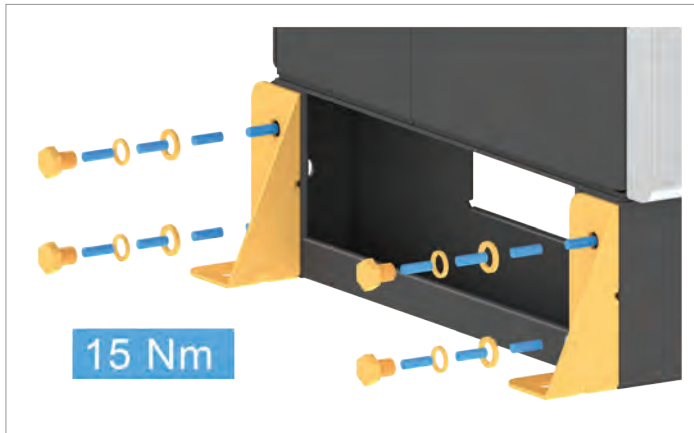


Recommended feeding of the AC cable with strain relief for floor mounting

Communications cables

Lay the cable with a suitable clearance to the AC and DC cables to prevent interference in the data connection and inductive coupling to the communication interface.

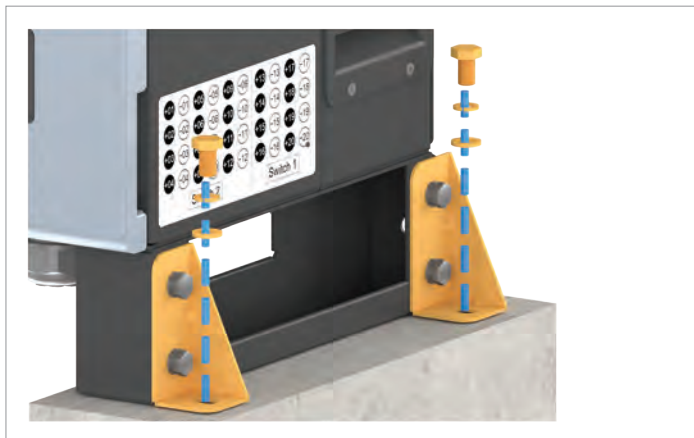
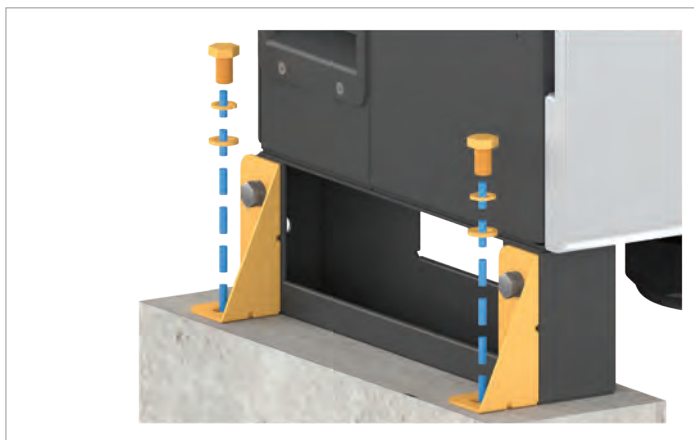
Mounting the inverter - Floor mounting



1. Fasten the 4 mounting brackets for floor mounting to the feet of the inverter with 2 M10 screws each (torque: 15 Nm), spring washer and washer. The screws are included in the scope of delivery.



2. Fix the 4 mounting brackets to the floor with 1 M10 screw each.

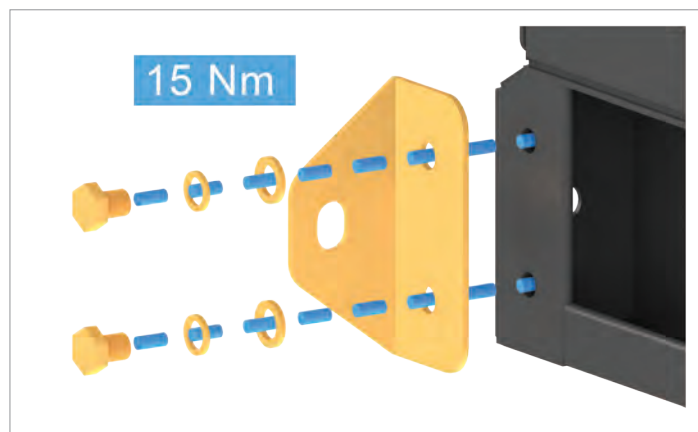


Mounting the inverter – wall mounting

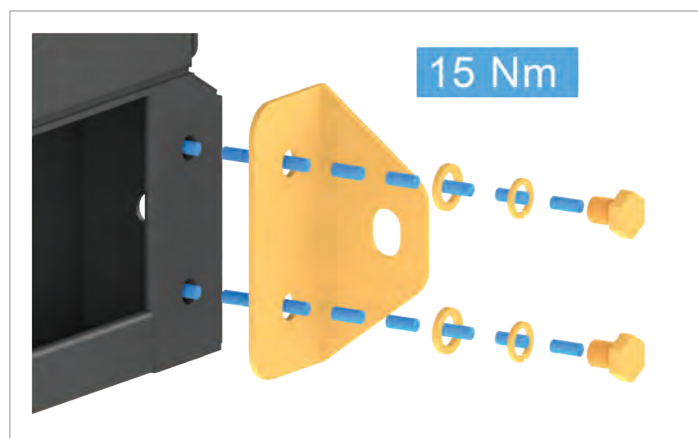
Special case: Mounting the inverter without screwing the feet



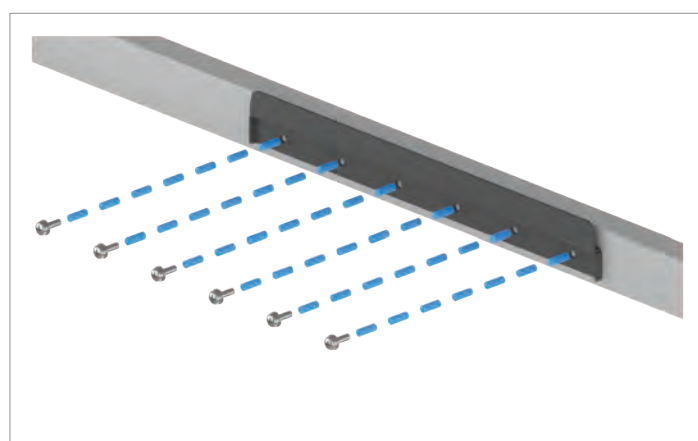
In general, the inverter must **always** be screwed down by the feet. Deviations from this are only allowed in exceptional cases approved by Delta Electronics. Always check with Delta Customer Service **first** if you want to deviate from the work instructions given in this section.



1. Screw the mounting bracket for wall mounting to the feet of the inverter with 2 M10 screws (torque: 15 Nm), a spring washer and a washer each. The screws are supplied in the scope of delivery.



2. Attach the mounting plate to the wall/the mounting system with 6 M10 screws.



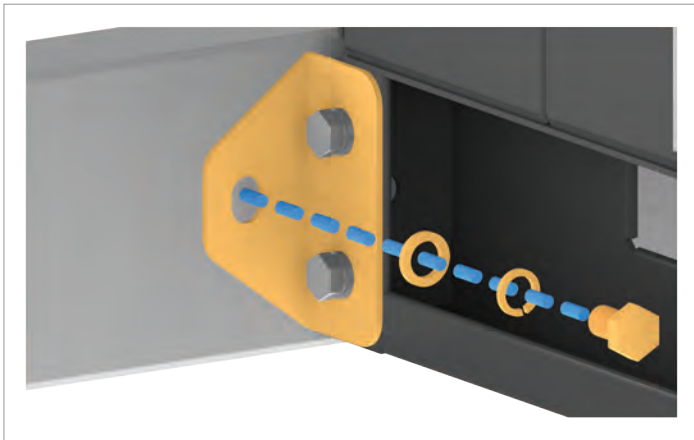
Mounting the inverter – wall mounting



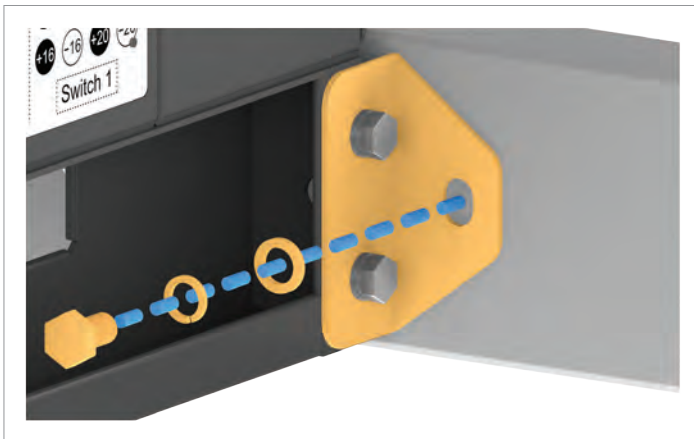
3. Mount the inverter on the mounting plate using a lifting device.



4. Check that the inverter is correctly mounted on the mounting plate.



5. Attach the mounting plate on the inverter feet to wall/the mounting system with 1 M10 screw each.



Grounding the inverter housing

WARNING



High current

- ▶ Always observe the local regulations relating to grounding cable requirements.
- ▶ To increase the safety of the system, always ground the inverter housing even when this is not required by the local regulations.
- ▶ Always ground the inverter housing **before** connecting the inverter to the mains and solar modules.
- ▶ The grounding cable cross-section must be at least 6 mm².



The inverter housing can be earthed at 2 points:

- outside, on the right foot
- inside, on the PE screw of the AC connection

DANGER

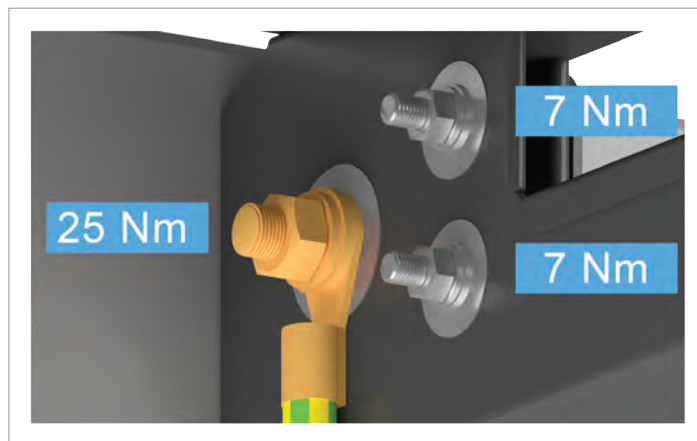
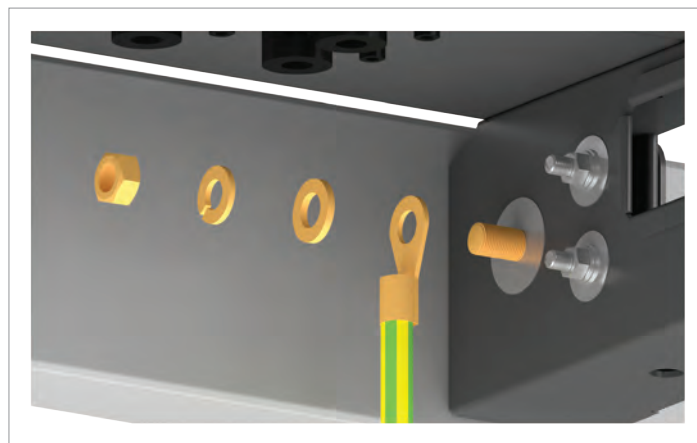


Electric shock

In IT grids, a twofold insulation fault can lead to high error voltages on the inverter housing.

- ▶ Ground the housing of the inverter via the grounding connection.
- ▶ Set up a permanent insulation monitoring system.
- ▶ The first time an insulation fault occurs, this insulation fault must be rectified **immediately!**

Grounding via the external grounding screws



1. Bolt the grounding cable onto the right foot of the inverter. Nuts, spring washers and washers are already mounted on the inverter.

Available grounding screws:

1 x M10, torque: 25 Nm

2 x M6, torque: 7 Nm

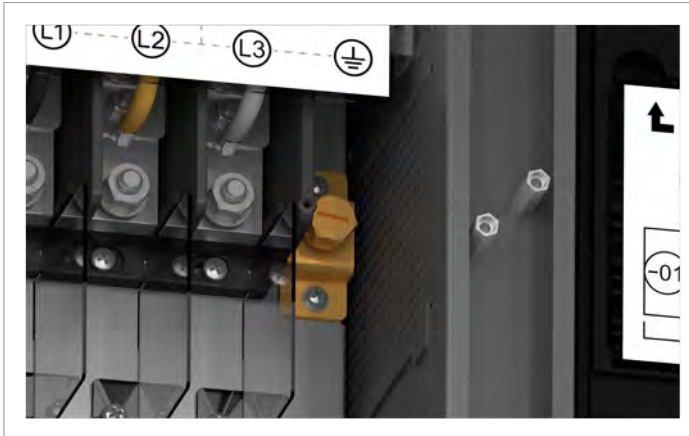
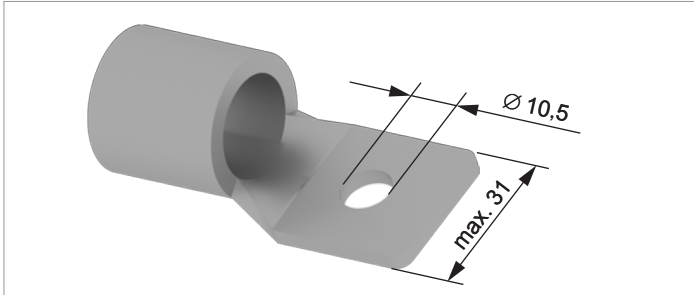
2. Perform a continuity check of the grounding connection

Grounding the inverter housing

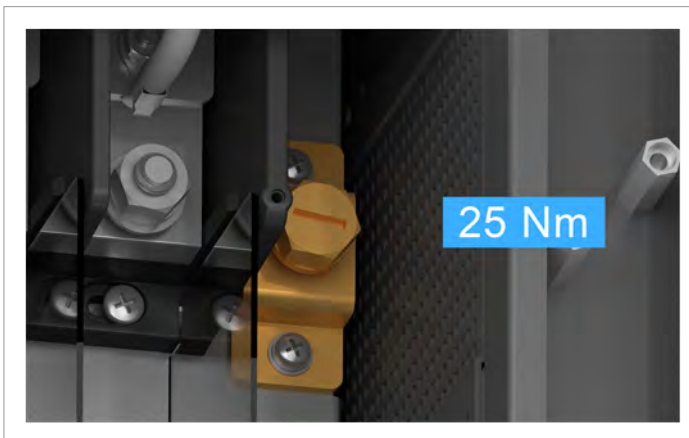
Grounding via the PE screw of the AC connection

Cable lug selection

- Use copper cable lugs covered with tin for copper cables. Use aluminum cables cable lugs covered with tin for aluminum cables.
- Always follow the cable lug manufacturer's installation instructions.



1. Screw the earthing cable to the PE screw (torque: 25 Nm). M10 screw, spring washer and washer are already mounted on the inverter.



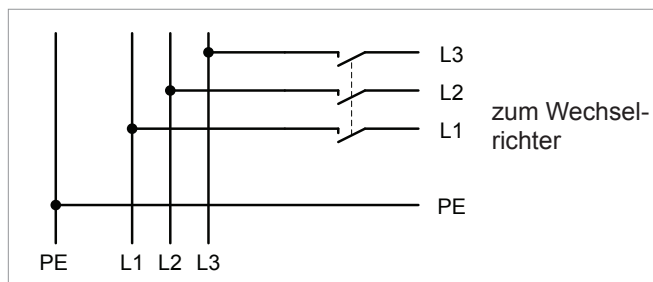
2. Perform a continuity check of the grounding connection.

Connecting the mains (AC) – general notes

Important safety instructions

- ▶ Always follow the specific regulations of your country or region.
- ▶ Always follow the specific regulations of your energy provider.
- ▶ Install all the stipulated safety and protective devices (such as automatic circuit breakers and/or surge protection devices).
- ▶ Protect the inverter with a suitable upstream circuit breaker:

Upstream line protection	175 A
--------------------------	-------



- ▶ Selection of the protective devices for the network cable to the transformer of the mains feed-in point: Always take into account the impedance between the PE of the inverter and the system and/or operational ground of the distribution network. This applies in particular for IT networks.

Residual current circuit breaker

Due to its design, the inverter cannot supply the mains with DC residual current. This means that the inverter meets the requirements of DIN VDE 0100-712.

Possible error events were assessed by Delta in accordance with the current installation standards. The assessments showed that no hazards arise from operating the inverter in combination with an upstream, type A residual current circuit breaker (FI circuit breaker, RCD). There is no need to use a type B residual current circuit breaker.

Minimum tripping current of the type A residual current circuit breaker	≥300 mA
---	---------



The required tripping current of the residual current circuit breaker depends first and foremost on the quality of the solar modules, the size of the PV system, and the ambient conditions (e.g. humidity). The tripping current must not, however, be less than the specified minimum tripping current.

Integrated residual current monitoring unit

The integrated, universal current-sensitive residual current monitoring unit (RCMU) is certified in accordance with VDE 0126 1-1:2013-08 §6.6.2.

AC Surge protection devices

AC SPD type 2 are installed in the inverter. When replacing, the complete card is replaced. Replacement can be ordered from Delta Electronics.

Alternatively, AC SPD type 1 can be used. The accessories required for the connection are included in the scope of delivery. The type 1 SPD themselves are not included in the scope of delivery.

Requirements for the mains voltage

3 phases + PE	Voltage range
L1-L2	600 V _{AC} -36%/+15%
L2-L3	600 V _{AC} -36%/+15%
L3-L1	600 V _{AC} -36%/+15%

Tools

Use an insulated torque wrench with M10 bit for the contact nuts.

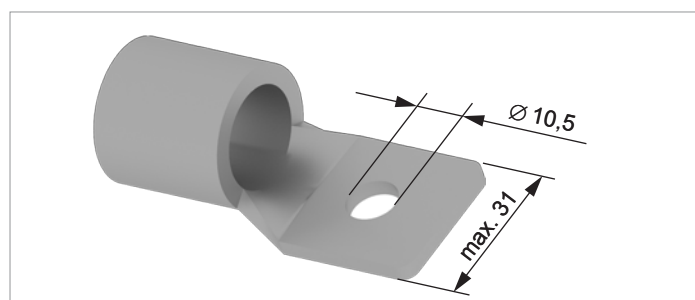


To loosen and tighten the AC cable gland, we recommend using a rubber band wrench.



Cable lug selection

- ▶ Use copper cable lugs covered with tin for copper cables. Use aluminum cables cable lugs covered with tin for aluminum cables.
- ▶ Always follow the cable lug manufacturer's installation instructions.



Connecting the mains (AC) – general notes

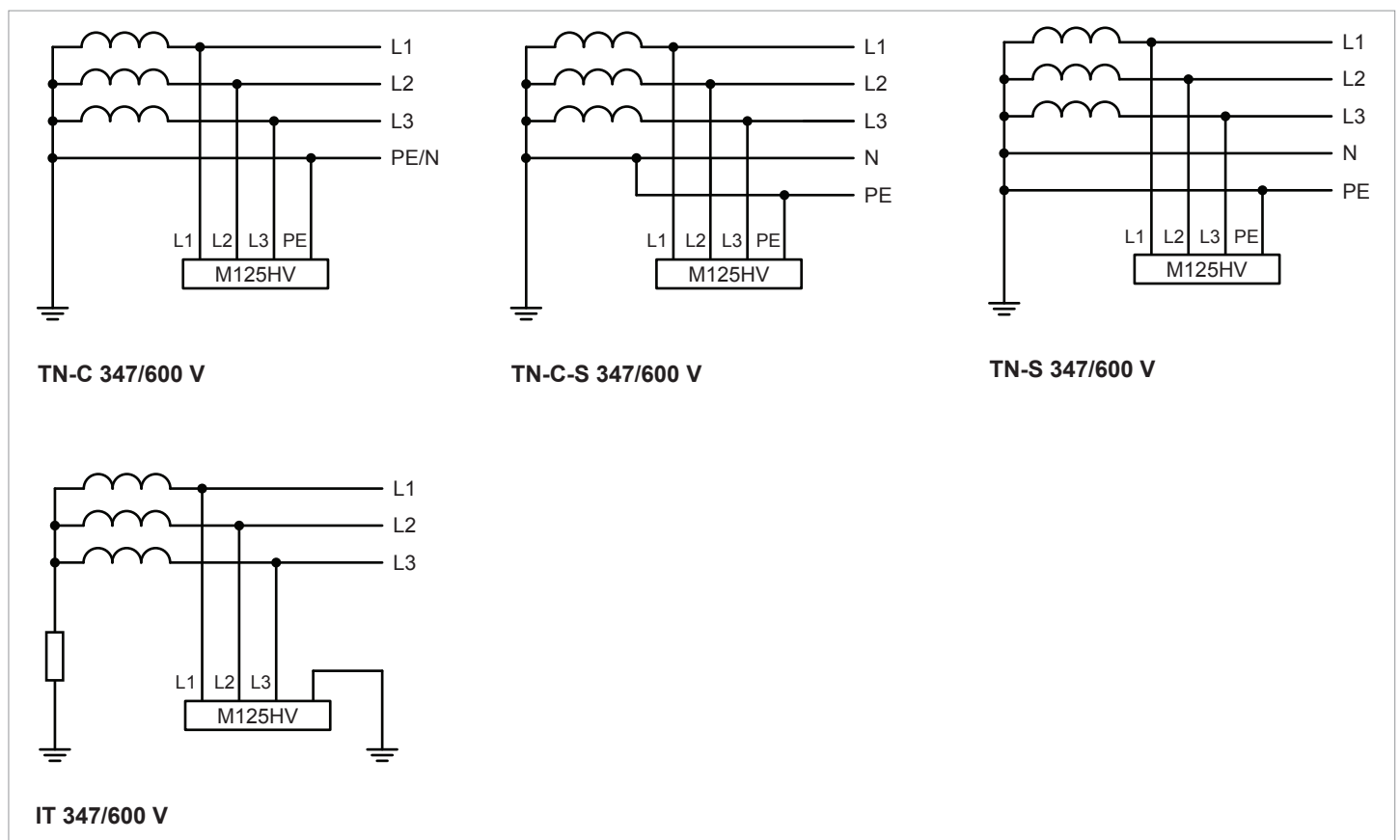
Grounding the inverter

If the selected grounding system contains a PE/PEN conductor (TN-C, TN-S, TN-S, TN-C-S) and this is contained in the AC cable, use the PE terminal provided for this purpose (near the AC connection terminal block). In addition, for the protection of users, the inverter enclosure must always be grounded via one of the external terminals.

In an IT type earth connection scheme, the inverter housing can be connected to earth, either through one of the external terminals or by using the provided PE terminal (near the AC connection terminal).

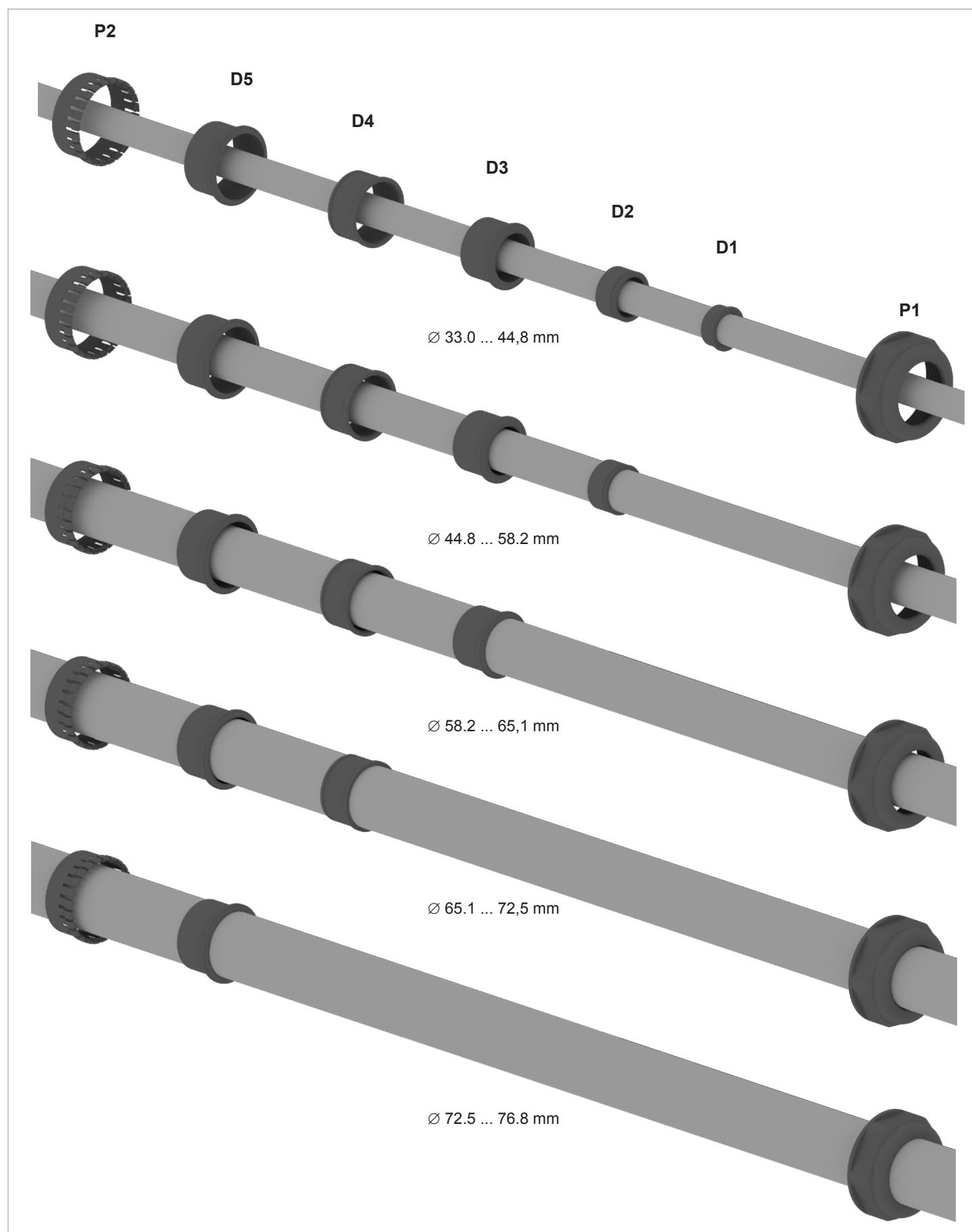
Permissible grounding systems

Grounding system	TN-S	TN-C	TN-C-S	TT	IT
Allowed	Yes	Yes	Yes	No	Yes



Permissible grounding systems

Connecting the mains (AC) – cable gland

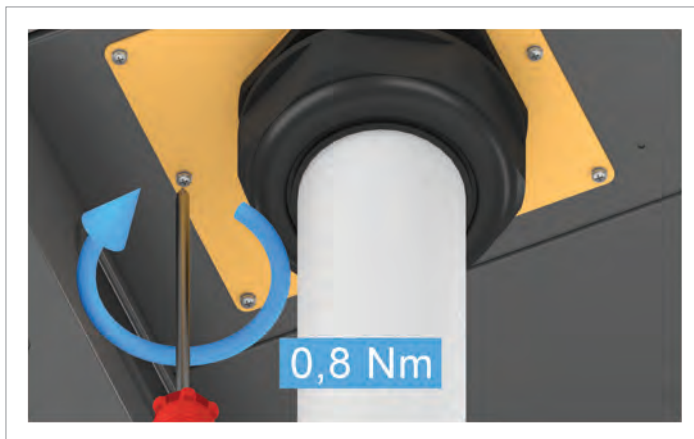


Use of the parts of the AC cable glands depends on the cable diameter

Connecting the mains (AC)– tips



- Tighten the nuts of the AC conductors (torque: 25 Nm).



- Tighten the cover of the AC conductors (torque: 0.8 Nm).

Connecting the solar modules (DC)

DANGER



Electric shock

Potentially fatal voltages are present at the inverter DC connections. 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 mains so that the inverter cannot supply energy to the mains.
- ▶ Disconnect the inverter from all AC and DC voltage sources. Ensure that none of the connections can be restored accidentally.
- ▶ Ensure that the DC cables cannot be touched accidentally.

NOTICE



Maximum power at the DC connections.

Exceeding the maximum current can cause overheating of the DC connections.

- ▶ Always take into account the maximum current of the DC connections when planning the installation.

NOTICE



Ingress of moisture.

Moisture can enter via open DC connections.

- ▶ To ensure protection degree IP65, close unused DC connections with the rubber plugs that are attached to the DC connections.

Integrated string fuses and DC surge protection devices

- ▶ Replace damaged string fuses with devices of the same type and from the same manufacturer.
- ▶ Surge protection devices are available from Delta.

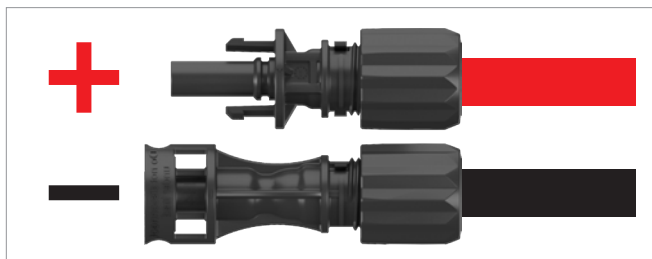
Tools



Mounting tool for disconnecting the DC plug and the protective caps from the DC connections. Included in delivery. Ampenol part number: UTXTWA001.

Polarity of the DC voltage

- ▶ Check the polarity of the DC voltage of the DC strings before connecting the solar modules.

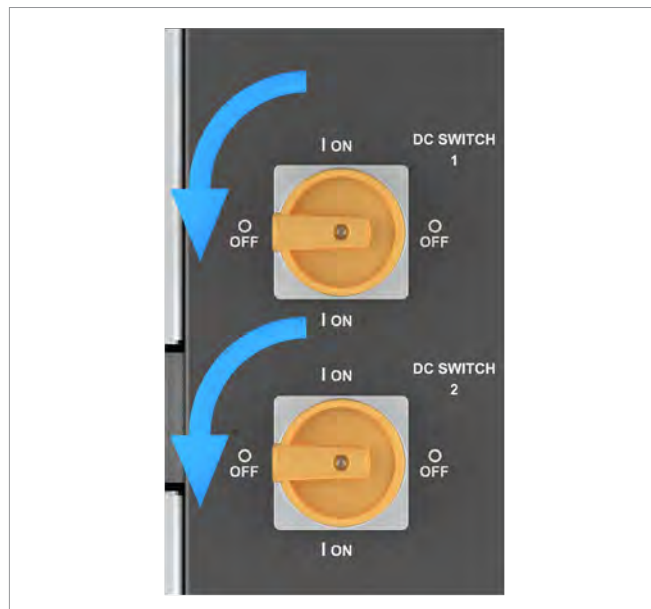


DC Isolating Switch

France: The DC isolating switches meet the regulations of the UTE 15-712-1 (VDE 0100 712).

Safety notice

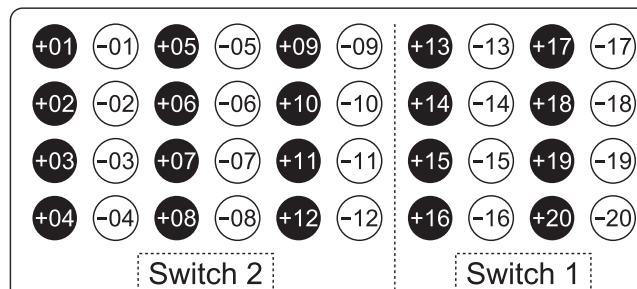
- ▶ Before connecting the solar modules, turn both DC disconnectors to the **OFF** position.



Turn the DC disconnectors 1 and 2 to the **OFF** position

Assignment of the DC connections to the DC isolating switches

The following illustration is also attached to the right side of the inverter.



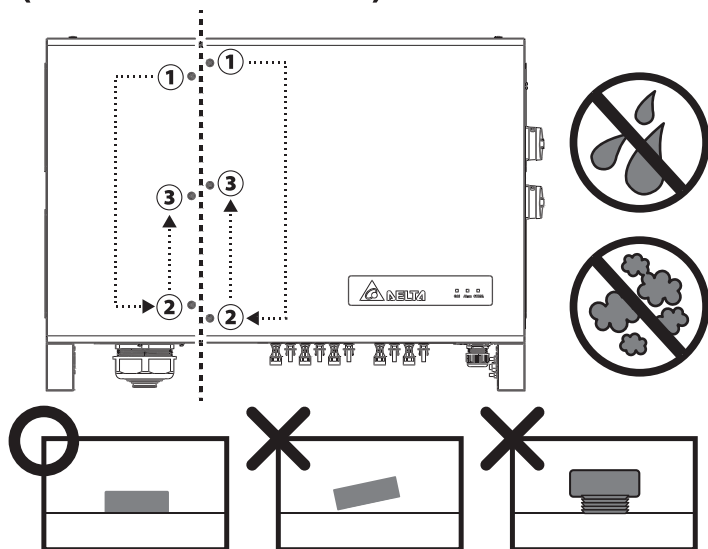
ATTENTION



Impairment of operating response caused by moisture and dirt.

In order to restore the IP65 degree of protection once the installation work is complete, close the doors of the inverter in accordance with the instructions attached to the inverter.

(38.9 lbf-in / 4.4 N·m)



ATTENTION



1. Ensure mating surfaces and gasket are clean and located in its mounting slot.
2. Water/debris dropping in M125HV is prohibited.

1. Beim Verschließen der Tür darauf achten, dass alle Oberflächen sauber sind und die Tür korrekt aufsitzt.

2. Es darf kein Wasser oder Staub in den M125HV eindringen!

1. Contrôlez soigneusement l'état et la position des joints et des surfaces de contact recevant le couvercle, avant sa mise en place.

2. La pénétration de poussière et d'eau à l'intérieur du M125HV doit strictement être évitée.

1. 防水パッキン(シリコンゴム)が正しい位置にあるか、汚れていないかを必ず確認し、正しい位置に取り付けてください。

2. 本体内に水やホコリやゴミが入ると故障の原因となります。入らないようにしてください。

1. 確認門與M125HV的接合面及膠條無髒污且無脫落。

2. 禁止水/髒污進入M125HV內部。

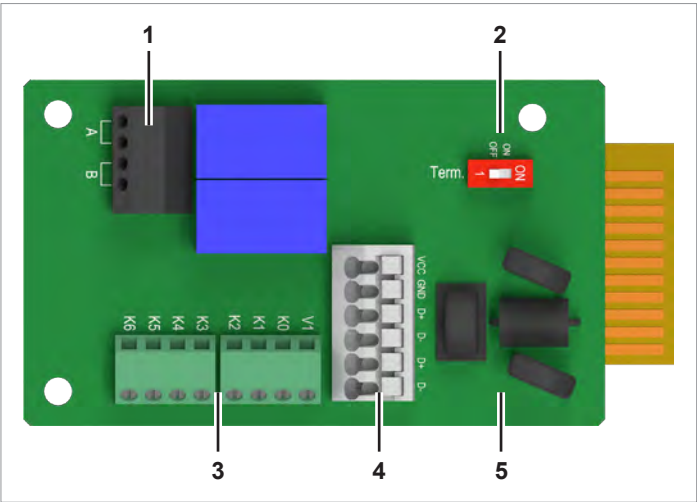
1. 确认门与M125HV的接合面及胶条无脏污且无脱落。

2. 禁止水/脏污进入M125HV内部。

Overview of communications card

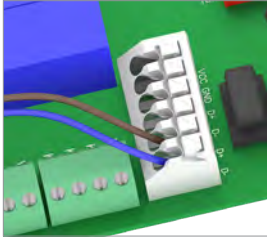


The connections for RS485, the digital inputs, the dry contacts and the external power-off (EPO) are all on the communication card. This means that the installation work can be combined.



Connecting a PC via RS485

To commission an inverter, you need a PC with either the M125HV commissioning software or the Delta Service Software (DSS) installed. Connect the PC to the inverter via a USB/RS485 adapter.

Inverter	USB/RS485 adapter
	
DATA+ Terminal 3 or 5	D+
DATA- Terminal 4 or 6	D-

ATTENTION

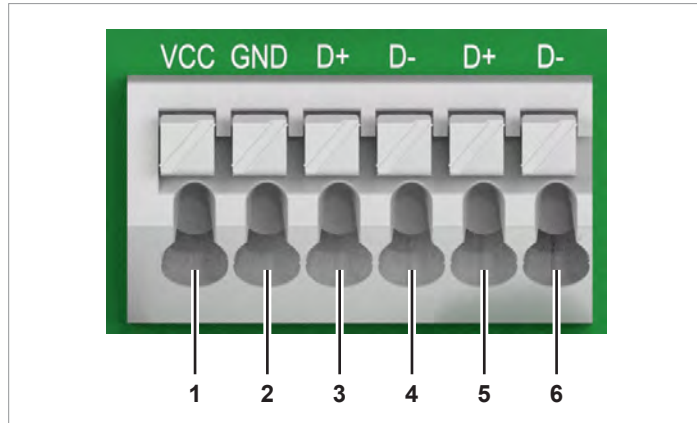


Unwanted currents.
Unwanted currents can flow when multiple inverters are connected via RS485.

- ▶ Do not use GND and VCC.
- ▶ If the cable shield is used for providing lightning protection then the housing of only one inverter in the RS485 chain should be grounded.

Connecting a data logger via RS485

RS485 terminal block



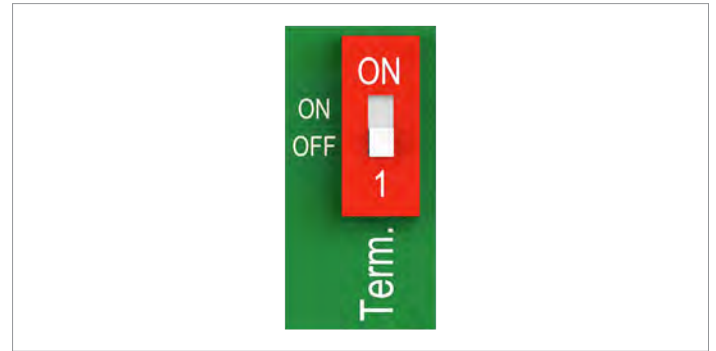
- 1 VCC (+12 V; 0.5 A)
- 2 GND
- 3 DATA+ (RS485)
- 4 DATA- (RS485)
- 5 DATA+ (RS485)
- 6 DATA- (RS485)

Terminal pairs 3/4 or 5/6 can be used. The second terminal pair is only required when connecting several inverters via RS485.

Data format

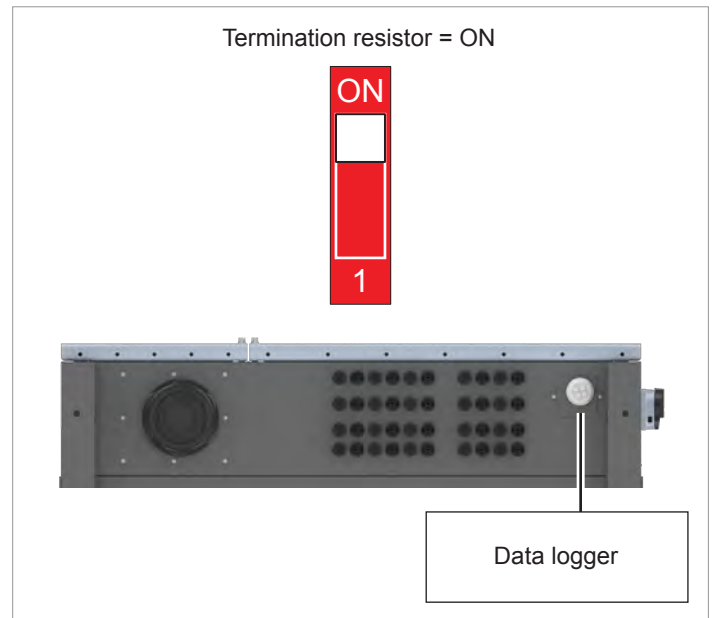
Baud rate	9600, 19200, 38400; standard: 19200
Data bits	8
Stop bit	1
Parity	Not applicable

DIP switch for RS485 termination resistor and VCC



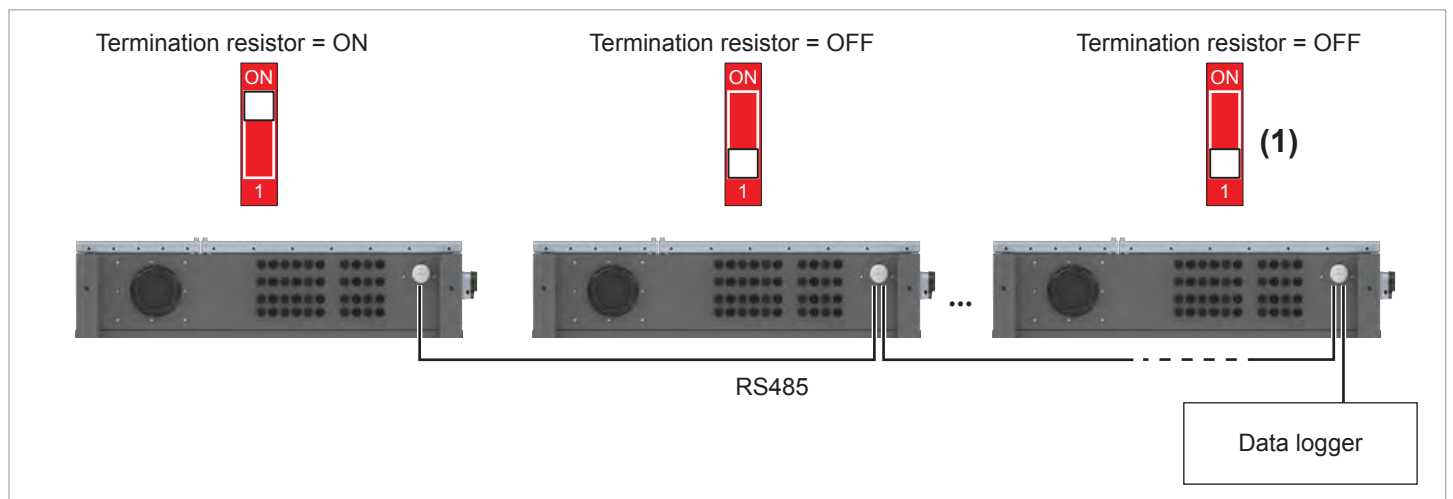
- 1 VCC (+12 V; 0.5 A)
- 2 RS485 termination resistor

Connecting a single inverter to a data logger



Connecting multiple inverters to a data logger

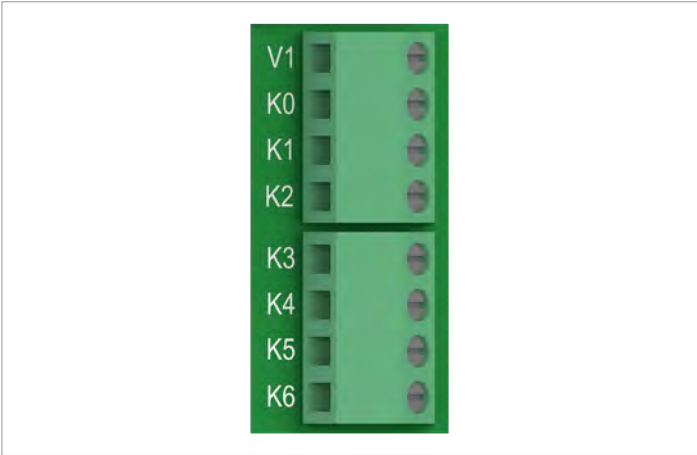
- If the data logger does not have an integrated RS485 termination resistor, switch the DIP switch for the RS485 termination resistor on the first inverter to **1 (ON) (1)**.
- Set a different inverter ID at each inverter during commissioning, see [“Commissioning via the commissioning software”](#), page 29.



Connecting the digital inputs, dry contacts and external power-off (optional)

Digital inputs and external power-off (EPO)

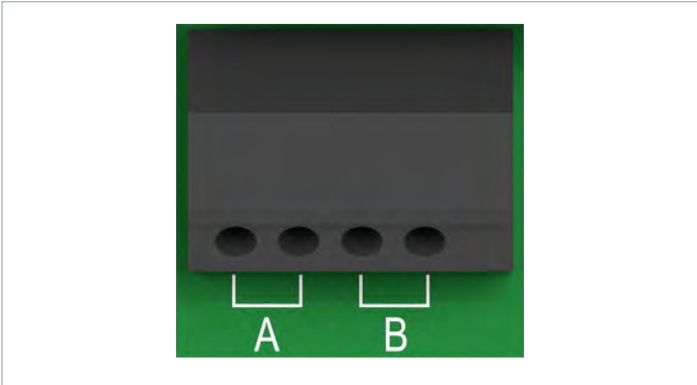
To control the active power, an external ripple control receiver can be connected to the digital inputs.



Pin	Short circuit	Assigned action
V1	-	-
K0	V1 + K0	External power-off (EPO)
K1	V1 + K1	Max. active power 0%
K2	V1 + K2	Max. active power 30 %
K3	V1 + K3	Max. active power 60 %
K4	V1 + K4	Max. active power 100 %
K5	V1 + K5	Reserved
K6	V1 + K6	Reserved

Dry contacts

The inverter has two dry contacts. The contacts are closed when the relays energize.



Commissioning via the commissioning software

Prerequisites for commissioning

- All inverters in the system as connected with one another via RS485.
- All inverters are supplied with AC or DC voltage.
- The PC is connected to the inverter's RS485 network.
- Ideally, the commissioning software is already installed on your PC. If not, you require an Internet connection at the installation location.

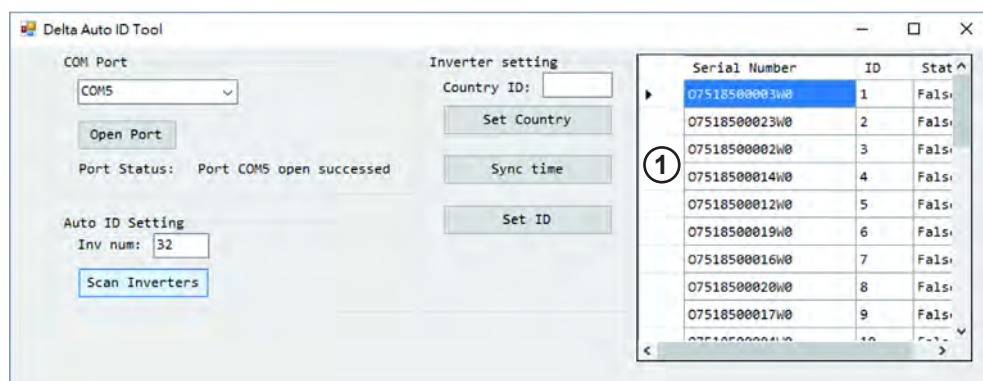
1. If you have not yet done so, download the commissioning software from www.solar-inverter.com.
2. Open the commissioning software.



3. Select a COM port (1) and click on the **Open Port** button (2).



4. Enter the number of inverters connected with one another via RS485 (1) and click on the **Scan Inverters** button (2).

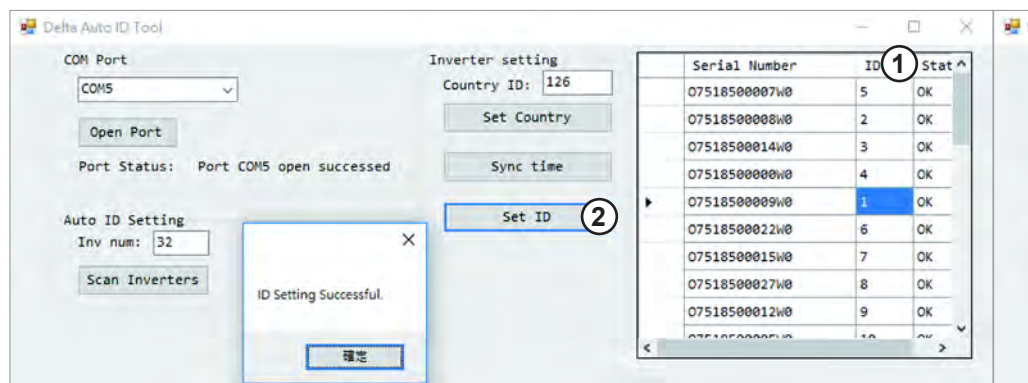


- A list of the inverters found is shown. Each inverter is automatically assigned an inverter ID (1).
- See [“Troubleshooting for the commissioning software”](#), [page 32](#) if an error message appears.

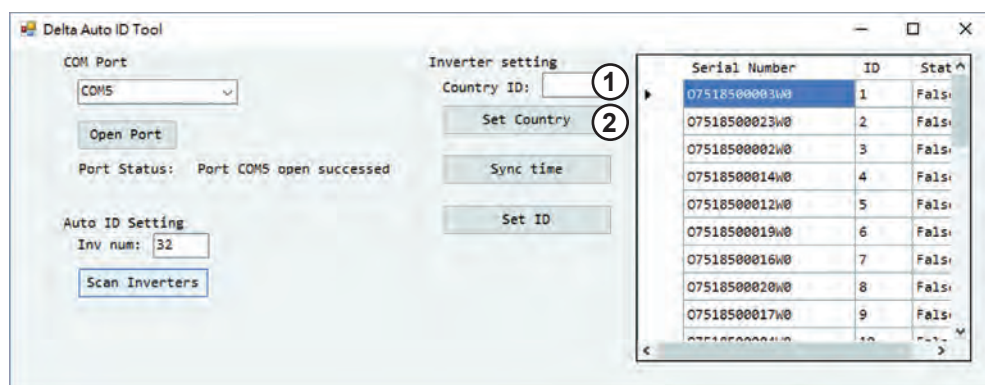


If multiple inverters are connected to the PV system then a different inverter ID must be set for each inverter. For example, the inverter ID is used by monitoring systems to uniquely identify each inverter.

Commissioning via the commissioning software

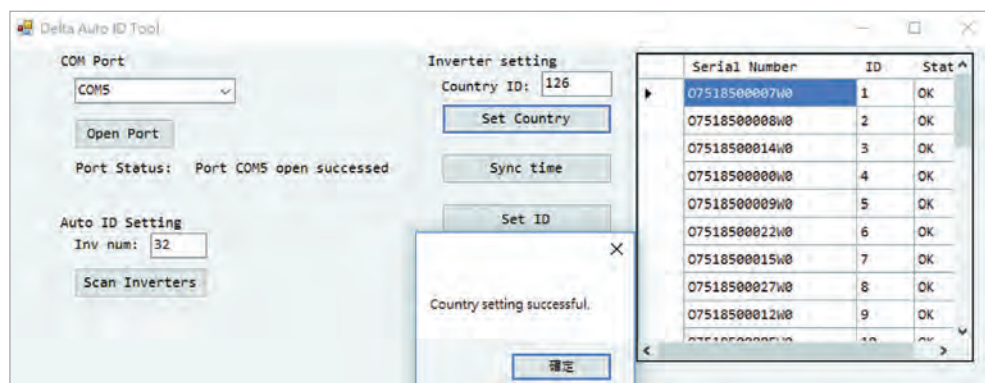


5. To change an inverter ID, click in the corresponding **ID** text box (1) and enter the new inverter ID.
6. To save the new inverter IDs, click on the **Set ID** button (2).
→ The message “ID Setting Successful” appears if the setting was successful.

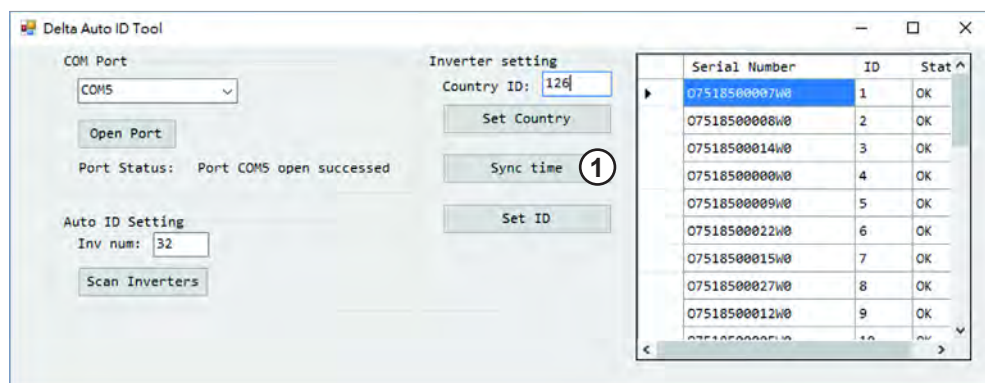


7. Enter the number of your country in the **Country ID** text box (1) and click on the **Set Country** button (2).

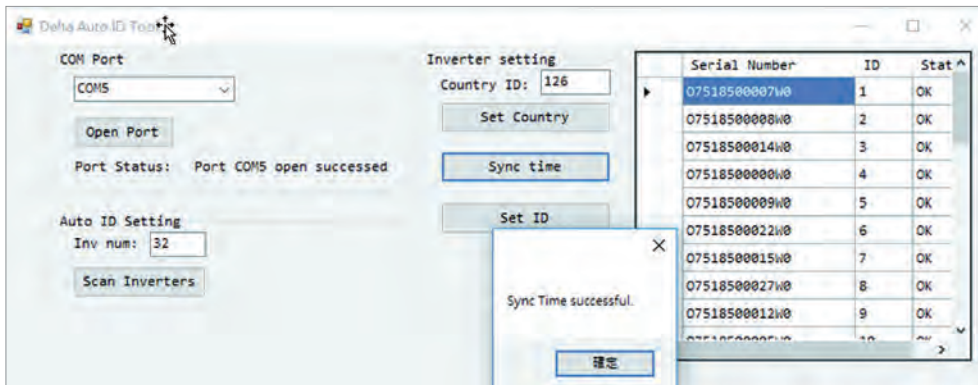
→ The message “Country Setting Successful” appears if the setting was successful.
→ max.31



8. To set the date and time for all inverters, click on the **Sync time** button (1).



Commissioning via the commissioning software



→ The message “Sync Time successful” appears if the setting was successful.

☒ Commissioning is now finished.

Troubleshooting for the commissioning software

Error message and cause of error

Fault correction

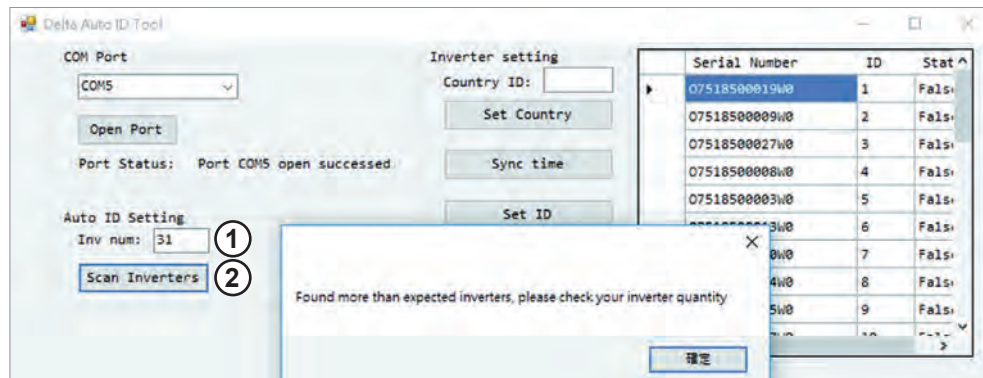
Error event

"Found more than expected inverters, please check your inverter quantity."

(German: "Mehr Wechselrichter gefunden als erwartet. Bitte Anzahl der Wechselrichter prüfen.")

Cause of error

More inverters were found when scanning the RS485 ring than specified in the **Inv num** text box.



- ▶ Check whether the entry in the **Inv num** text box is correct. Change the value if necessary.
- ▶ Check whether all inverters are connected in the right RS485 ring.
- ▶ To finish, click on the **Scan Inverters** button (2).

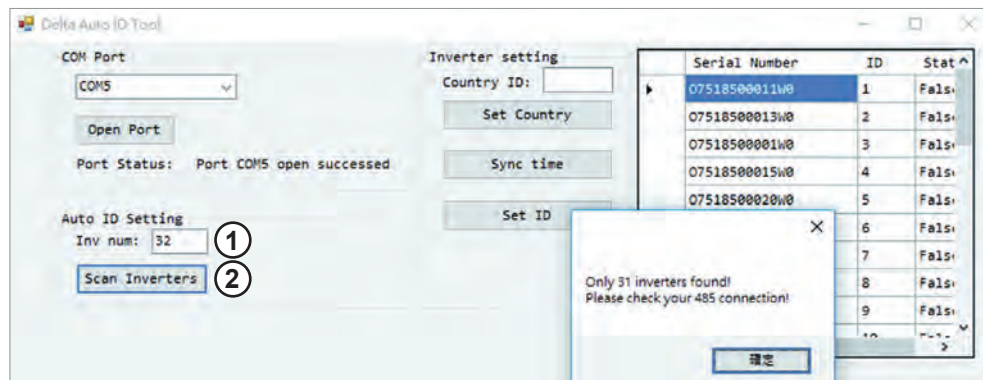
Error event

"Only xx inverters found! Please check your 485 connection."

(German: "Nur xx Wechselrichter gefunden. Bitte die RS485-Verbindung prüfen.")

Cause of error

Fewer inverters were found when scanning the RS485 ring than specified in the **Inv num** text box.



- ▶ Check whether the entry in the **Inv num** text box is correct (1). Change the value if necessary.
- ▶ Check whether all inverters are connected to the RS485 ring.
- ▶ To finish, click on the **Scan Inverters** button (2).

Error event

"Wrong country ID setting! Please check your country ID!"

(German: "Ungültige Länder-ID. Bitte die RS485-Verbindung prüfen.")

Cause of error

Fewer inverters were found when scanning the RS485 ring than specified in the **Inv num** text box.



- ▶ Check whether the entry in the **Country ID** text box is correct (1). Change the value if necessary.
- ▶ To finish, click on the **Set Country** button (2).

Troubleshooting for the commissioning software

Error message and cause of error

Error event

"Time Sync failed."

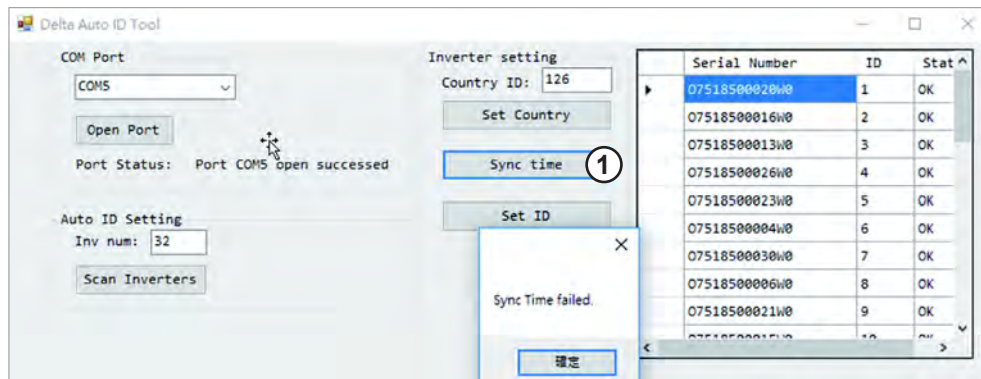
(German: "Synchronisierung der Uhrzeit fehlgeschlagen.")

Cause of error

Time synchronization failed.

Fault correction

- Check the time on your PC.
- To finish, click on the **Sync time** button (1).



Technical data

Input (DC)	M125HV
Maximum recommended PV power	250 kW _p
Maximum input power	128 kW
Rated power	125 kW
Maximum input voltage	1500 V _{DC} Feed-in stops at > 1500 V _{DC}
Operating input voltage range	860 ... 1500 V _{DC}
Nominal voltage	1050 V _{DC}
Cut-in voltage	1050 V _{DC}
Cut-in power	150 W
MPP input voltage range	860 ... 1450 V _{DC}
MPP input voltage range with full power	Ambient temperature <0°C: 860 ... 1450 V _{DC} Ambient temperature <25°C: 860 ... 1350 V _{DC} Ambient temperature <40°C: 860 ... 1250 V _{DC}
MPP input voltage range at rated power	860 ... 1450 V _{DC}
Asymmetrical design	Not possible
Maximum input current	150 A
Maximum DC short-circuit current I _{SC}	320 A
Maximum breaking current	350 A (DC1: 200 A, DC1:150 A)
Open-circuit voltage VOC	1500 V
Number of MPP trackers	1
Number of DC connectors	20 pairs (12 + 8)
Electrical isolation	No
Overvoltage category ¹⁾	II
Surge protection devices ²⁾	Type 2, replaceable (type 1 upgradeable)
Output (AC)	M125HV
Maximum apparent power	140 kVA
Max. active power	125 kW
Rated apparent power ³⁾	125 kVA
Nominal voltage ⁴⁾	600 V -36% / +15%, 3 phases+ PE, delta connection (Δ)
Nominal current	120 A
Maximum current	135 A
Maximum current under fault conditions	160 A _{rms}
Switch-on current	300 A / 100 μs
Nominal frequency	50 / 60 Hz
Frequency range ⁴⁾	45 ... 65 Hz
Configurable power factor	0.8 cap ... 0.8 ind (0.9 cap ... 0.9 ind at max. active power)
Total harmonic distortion	<3% at rated apparent power
DC injection	<0.5% at nominal current
Power loss in night mode	<3.5 W
Overvoltage category ¹⁾	III
Surge protection devices ⁵⁾	Type 2, replaceable (type 1 upgradeable)

Mechanical details	M125HV
Dimensions (W x H x D)	900 × 663 × 334 mm
Weight	80 kg
Cooling	8 fans
AC connection type	L1, L2, L3: M10 threaded bolts with PE nuts: M12 hexagon bolt
DC connection type	Amphenol UTXC
Communication interfaces	2x RS485, 2x dry contacts, 1x external power-off, 6x digital inputs
General specifications	M125HV
Delta model name	M125HV_110
Delta part number	RPI124M110000
Maximum efficiency	99.2%
EU efficiency	99.0%
Operating temperature range	-25 ... +60 °C
Operating temperature range without derating	-25 ... +50 °C
Storage temperature range	-25 ... +60 °C
Relative humidity	0 ... 100%, non-condensing
Max. operating height	3000 m above sea level
Noise level (at a distance of 1 m)	<78 dB(A)
Standards and guidelines	M125HV
Protection degree	IP65
Safety class	I
Pollution degree	II
Overload behavior	Current limit, power limit
Safety	IEC 62109-1 / -2, CE-compliance
EMC	EN 61000-6-2 / -6-3 / -3-11 / -3-12
Fault-free operation	IEC 61000-4-2 / -3 / -4 / -5 / -6 / -8
Harmonic distortion	EN 61000-3-2
Fluctuations and fibrillations	EN 61000-3-3
Mains connection guidelines	You will find the current list at www.solar-inverter.com .

¹⁾ IEC 60664-1, IEC 62109-1

²⁾ EN 50539-11

³⁾ For cos phi = 1 (VA = W)

⁴⁾ AC voltage and frequency range are programmed using the corresponding country specifications.

⁵⁾ EN 61463-11

Customer Service - Europe

Austria	service.oesterreich@solar-inverter.com	0800 291 512 (toll free)
Belgium	support.belgium@solar-inverter.com	0800 711 35 (toll free)
Bulgaria	support.bulgaria@solar-inverter.com	+421 42 4661 333
Czech Republic	podpora.czechia@solar-inverter.com	800 143 047 (toll free)
Denmark	support.danmark@solar-inverter.com	8025 0986 (toll free)
France	support.france@solar-inverter.com	0800 919 816 (toll free)
Germany	service.deutschland@solar-inverter.com	0800 800 9323 (toll free)
Greece	support.greece@solar-inverter.com	+49 7641 455 549
Great Britain	support.uk@solar-inverter.com	0800 051 4281 (toll free)
Israel	supporto.israel@solar-inverter.com	800 787 920 (toll free)
Italy	supporto.italia@solar-inverter.com	800 787 920 (toll free)
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Portugal	suporte.portugal@solar-inverter.com	+49 7641 455 549
Slovakia	podpora.slovensko@solar-inverter.com	0800 005 193 (toll free)
Slovenia	podpora.slovenija@solar-inverter.com	+421 42 4661 333
Spain	soporto.espana@solar-inverter.com	900 958 300 (toll free)
Switzerland	support.switzerland@solar-inverter.com	0800 838 173 (toll free)
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Other European countries	support.europe@solar-inverter.com	+49 7641 455 549



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