



Quick Installation Guide

RPI M15A

RPI M20A



United Kingdom



Europe general



This manual applies to the following inverter models:

- RPI M15A
- RPI M20A

with model numbers:

RPI153FA0E0200, RPI203FA0E0200

and

with firmware versions:

DSP: 2.24 / RED: 1.60 / COMM: 2.39

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This manual is intended for use by fitters.

The information contained in this manual may not be reproduced without prior written consent from Delta Energy Systems. The information contained in this manual may not be used for any purpose that is not directly connected with the use of the inverter.

All information and specifications are subject to change without prior notice.

The Delta model number is located on the type plate of the inverter. The firmware versions are listed on the display in the **Inverter Information** menu.

If you should detect discrepancies between the descriptions in this manual and the information on the inverter display, please download the version of the manual that corresponds to the firmware version of your inverter from www.solar-inverter.com.

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1 Basic safety instructions

DANGER



Electric shock

During operation there is a potentially lethal voltage present inside the inverter. Even after the inverter has been disconnected from all power sources, this voltage is present in the inverter for up to a further 80 seconds.

Therefore always perform the following work steps before working on the inverter

1. Turn the DC disconnect to the **OFF** position.
2. Disconnect the inverter from all AC and DC sources and make sure that none of the connections can be inadvertently re-established.
3. Wait at least 80 seconds to allow the internal capacitors to discharge.

DANGER



Electric shock

There is a potentially lethal voltage present on the DC terminals of the inverter. The solar modules start to produce current as soon as light falls on them. This occurs even if the light is not falling directly on the solar modules.

- ▶ Never disconnect the inverter from the solar modules when it is under load.
- ▶ Turn the DC disconnect to the **OFF** position.
- ▶ Disconnect the connection to the grid so that the inverter cannot supply any energy to it.
- ▶ Disconnect the inverter from all AC and DC sources. Make sure that none of the connections can be inadvertently re-established.
- ▶ Protect the DC cables from being inadvertently touched.

- In order to meet the safety requirements of IEC 62109-5.3.3 and to avoid personal injury and material damage, the inverter must be installed and operated in accordance with the safety instructions and work instructions in this manual. Delta Energy Systems is not liable for damage arising from non-compliance with the safety instructions and work instructions in this manual.
- The inverter may only be installed and commissioned by fitters who are trained and approved in the installation and commissioning of grid-connected solar inverters.
- All repairs to the inverter must be carried out by Delta Energy Systems. Otherwise the guarantee will be void.
- Warning notices and warning symbols that have been attached to the inverter by Delta Energy Systems must not be removed.
- The inverter has a high leakage current. The grounding cable **must** be connected before putting the inverter into operation.
- Do not disconnect any cables when the inverter is under load, as there is a risk of arcing.
- To prevent damage caused by lightning strikes, observe the regulations that are applicable in your country.
- The surface of the inverter can become very hot in operation. Do not touch any part of the inverter except for the display unless you are wearing safety gloves.
- The inverter is very heavy. The inverter must be lifted and carried by at least two people.
- Only SELV-compliant (EN 60950) devices may be connected to the RS485 ports.
- To ensure protection class IP65, all connections must be adequately sealed. Unused connectors must be sealed with cover caps.

2 Product overview



- 1

Display, buttons, LEDs
- 2

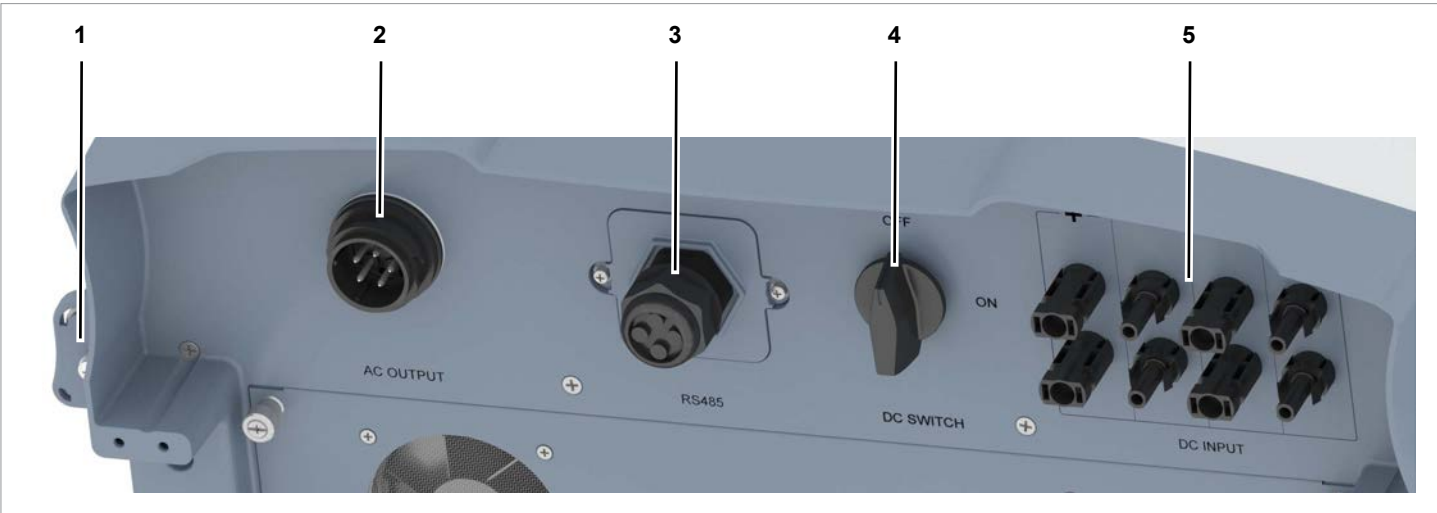
Air outlets
- 3

Electrical connectors
- 4

Type label
- 5

Fans
- 6

Holes for mounting



- 1

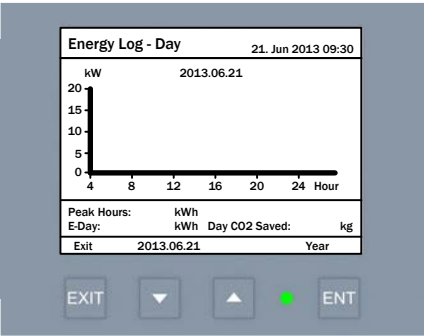
Grounding connector
- 2

AC connector
- 3

Communication port
- 4

DC disconnector
- 5

DC inputs



LED	STATUS	Multi-coloured LED; indicates the current operating status.
Tasten		
	EXIT	Exit the current menu. Cancel the setting of a parameter. Changes are not adopted.
	Down	Move down through the menu. Reduce the value of a settable parameter.
	Up	Move up through the menu. Increase the value of a settable parameter.
	ENTER	Select a menu entry. Open a settable parameter for editing. Finalize the setting of a parameter. Changes are adopted.

3 Information on the type plate



Risk of death by electrocution

Potentially fatal voltage is present when the solar inverter is in operation that remains for 80 seconds after being disconnected from power.

Never open the solar inverter. The solar inverter contains no components that must be maintained or repaired by the operator or installer.



Read the manual delivered with the inverter before working with the solar inverter and follow the instructions contained in the manual.



Risk of injury from hot surfaces.

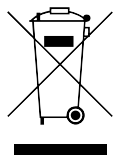
When in operation, the housing of the solar inverter can become very hot.



The housing of the inverter must be grounded if this is required by local regulations.



Regulatory Compliance Mark (RCM mark): The inverter is compliant with the Australian Electrical Safety and EMC standards. Applies only to Australia and New Zealand.



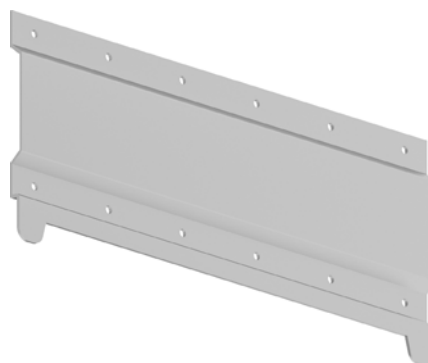
WEEE marking

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.

4 Scope of delivery



Inverter



Mounting plate



4 x MC4 plugs for DC+



4 x MC4 plugs for DC-



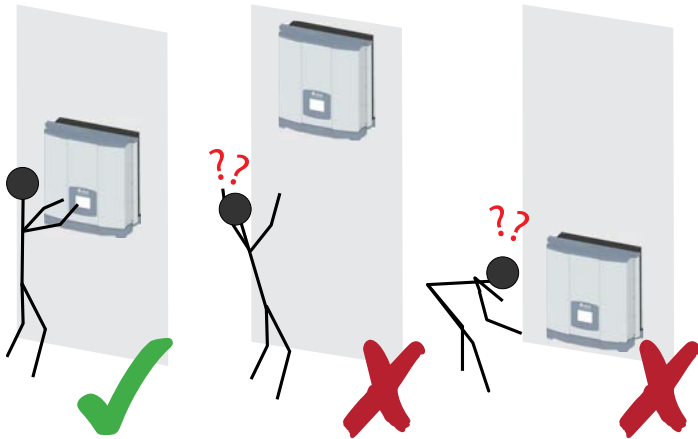
AC plug



Quick installation guide und Basic safety instructions

5 Planning the installation

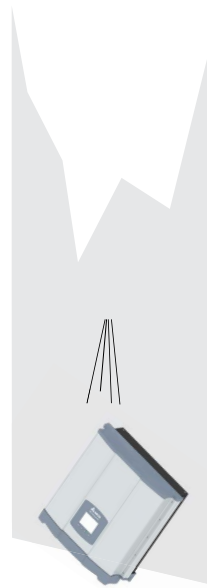
Where to mount the inverter



- ▶ Mount the inverter so that the information on the display can be read without difficulty and the buttons can be operated.



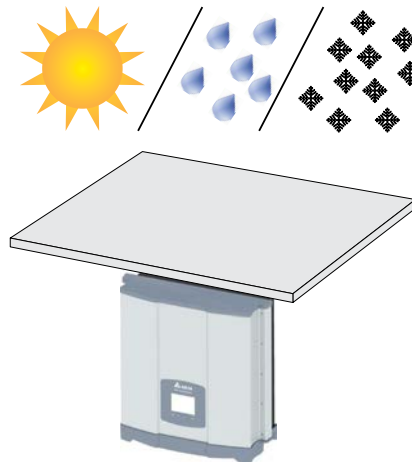
- ▶ The inverter is very heavy. The inverter must be lifted and carried by at least two people.



- ▶ The inverter is very heavy. The wall must be able to bear the heavy weight of the inverter.
- ▶ Always use the mounting plate that is supplied with the inverter.
- ▶ Use mounting materials (wall plugs, screws, etc.) that are suitable for the wall or the mounting system as well as the heavy weight of the inverter.
- ▶ To prevent malfunctions, mount the inverter on a vibration-free wall.
- ▶ When the inverter is used in residential areas or in buildings with animals, possible noise emissions may cause a disturbance. Therefore take care when choosing the mounting location.
- ▶ Mount the inverter on a fire-resistant wall.

Outdoor installations

- ▶ The inverter is classified IP65 and can be installed inside and outside. Nevertheless, the inverter should be protected from direct solar irradiation, rain and snow by means of a roof.

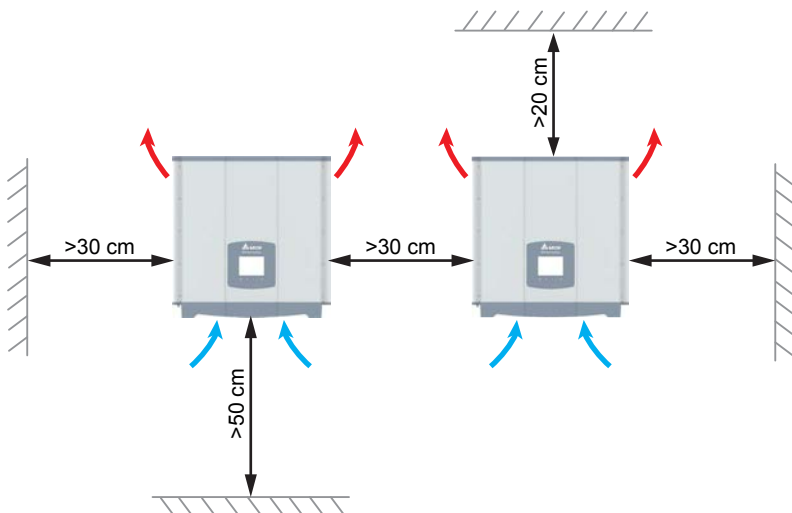


Mounting orientation

- ▶ Mount the inverter vertically.



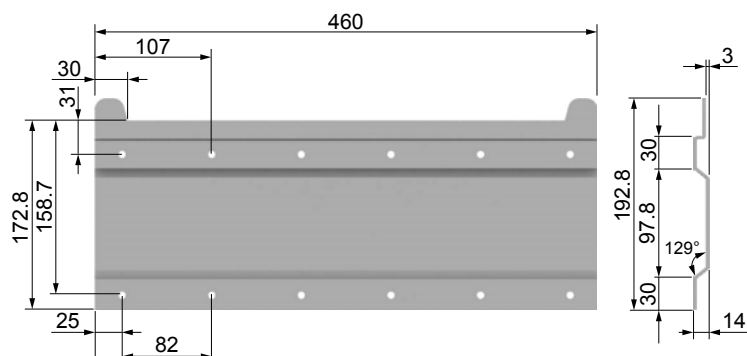
Ambient temperature and air circulation



- ▶ Ensure adequate air circulation. Warm air must be able to escape upwards. Leave sufficient space around each inverter.
- ▶ Do not install inverters directly one above another as this might cause mutual heating.
- ▶ Take note of the **operating temperature range without derating** and the **operating temperature range**. If the **operating temperature range without derating** is exceeded, the inverter limits the AC power that is fed into the grid. If the **operating temperature range** is exceeded, the inverter stops supplying the grid. This is normal operating behaviour for the inverter and is necessary to protect the internal electronics.
- ▶ In areas with many trees or meadows, pollen can block the air inlets and outlets and impede the air flow.

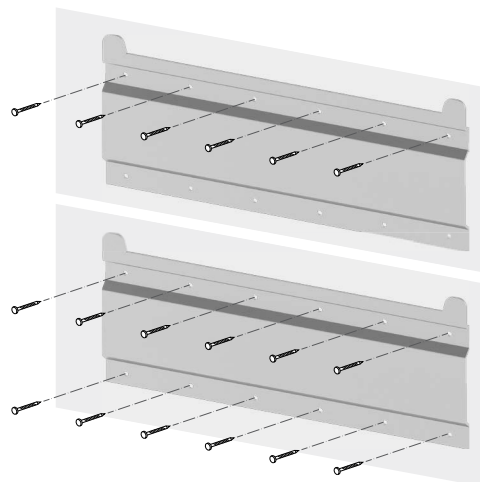
6 Mounting the inverter

1



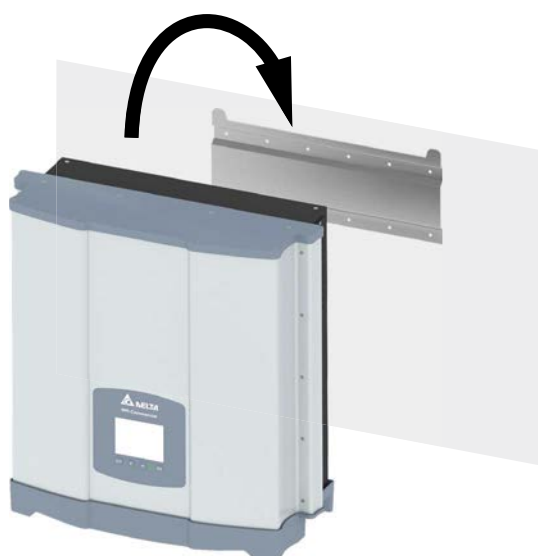
2

► Fasten the mounting plate to the wall or to the mounting system using 6 to 12 M6 screws.

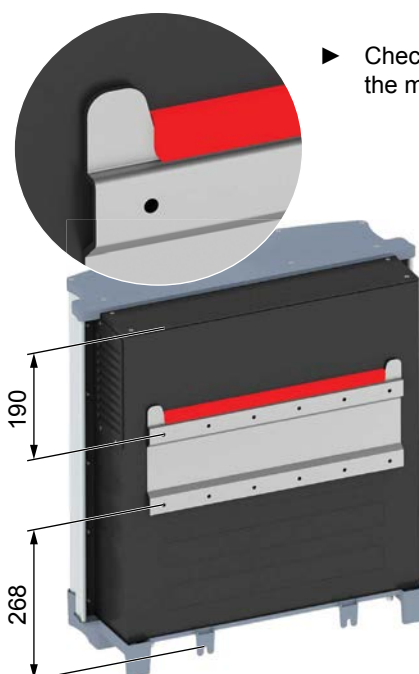


3

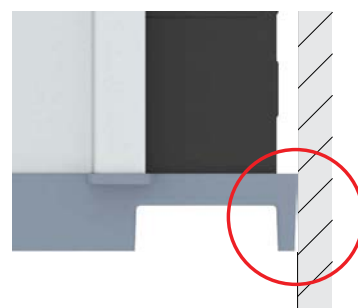
► Fit the inverter into the mounting plate.



► Check that the inverter is hanging correctly in the mounting plate.

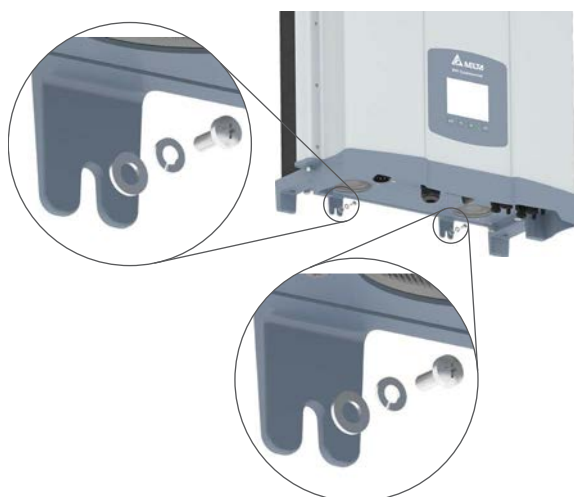


► Prüfen, dass der Wechselrichter am unteren Ende korrekt an der Wand bzw. dem Montagesystem anliegt.



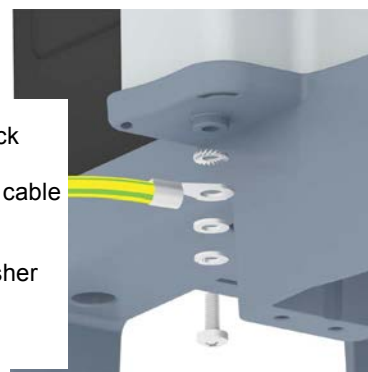
4

► Fasten the inverter to the wall or mounting system.



5

Toothed lock washer
Grounding cable
Washer
Spring washer
M6 screw



► Ground the inverter housing on the left side. M6 screw, spring washer, washer and toothed lock washer are already mounted to the inverter.



► Perform a continuity check of the grounding connection. If there is no sufficient conductive connection, scratch away the paint from the inverter housing under the lock washer to achieve a better electrical contact.

7 Connecting to the grid (AC)

! DANGER



High electrocution

- Turn the DC disconnecter to **OFF** position.
- First connect the AC cable to the inverter than to the grid.

The inverter can be connected to 3-phase grids with no neutral conductor (3P3W, 3 phases + PE) and 3-phase grids with a neutral conductor (3P4W, 3 phases + N + PE).



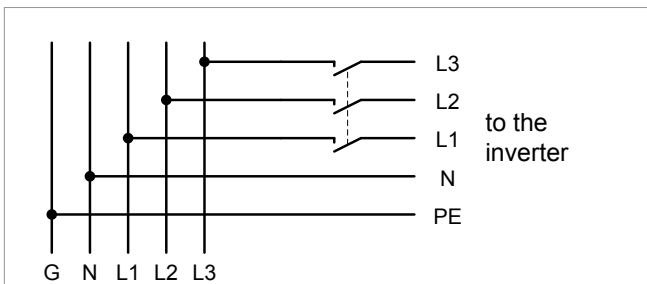
- If the inverter is connected to a grid without neutral conductors, the AC connection type must be changed to 3P3W on the display after commissioning, see "[AC connection type](#)", p. 24.



Important information regarding safety

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

Upstream circuit breaker	25 A
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AC cable requirements

The AC plug provided with the inverter has the following technical characteristics:

AC connector	China Aviation Optical-Electrical Technology Co., Ltd. PVE5T50KP73-01
Current rating	≤ 65 A
Min. / max. cable diameter	10,8 to 41,3 mm
Min. / Max. wire diameter	6 to 25 mm ²

- The AC plug delivered with the inverter can be used with a flexible or rigid multi-wire copper cable.
- When calculating the cable cross-section, take the following influencing factors into account:
 - Cable material
 - Temperature conditions
 - Cable length
 - Installation type
 - Voltage drop
 - Power losses in the cable
- Always comply with the installation regulations that are applicable in your country.

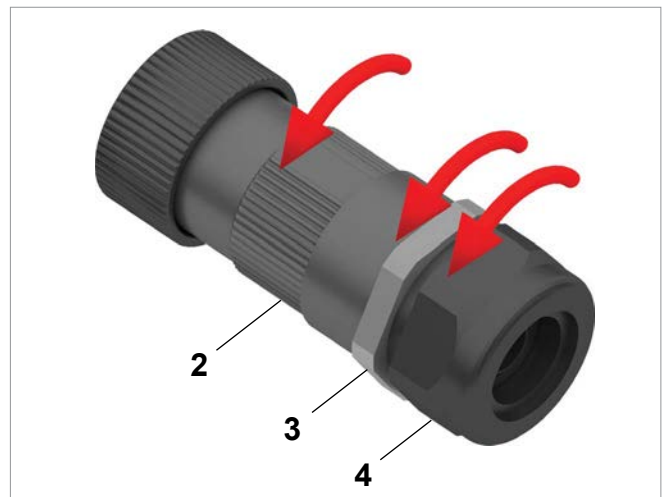
Mounting the AC cable

NOTICE

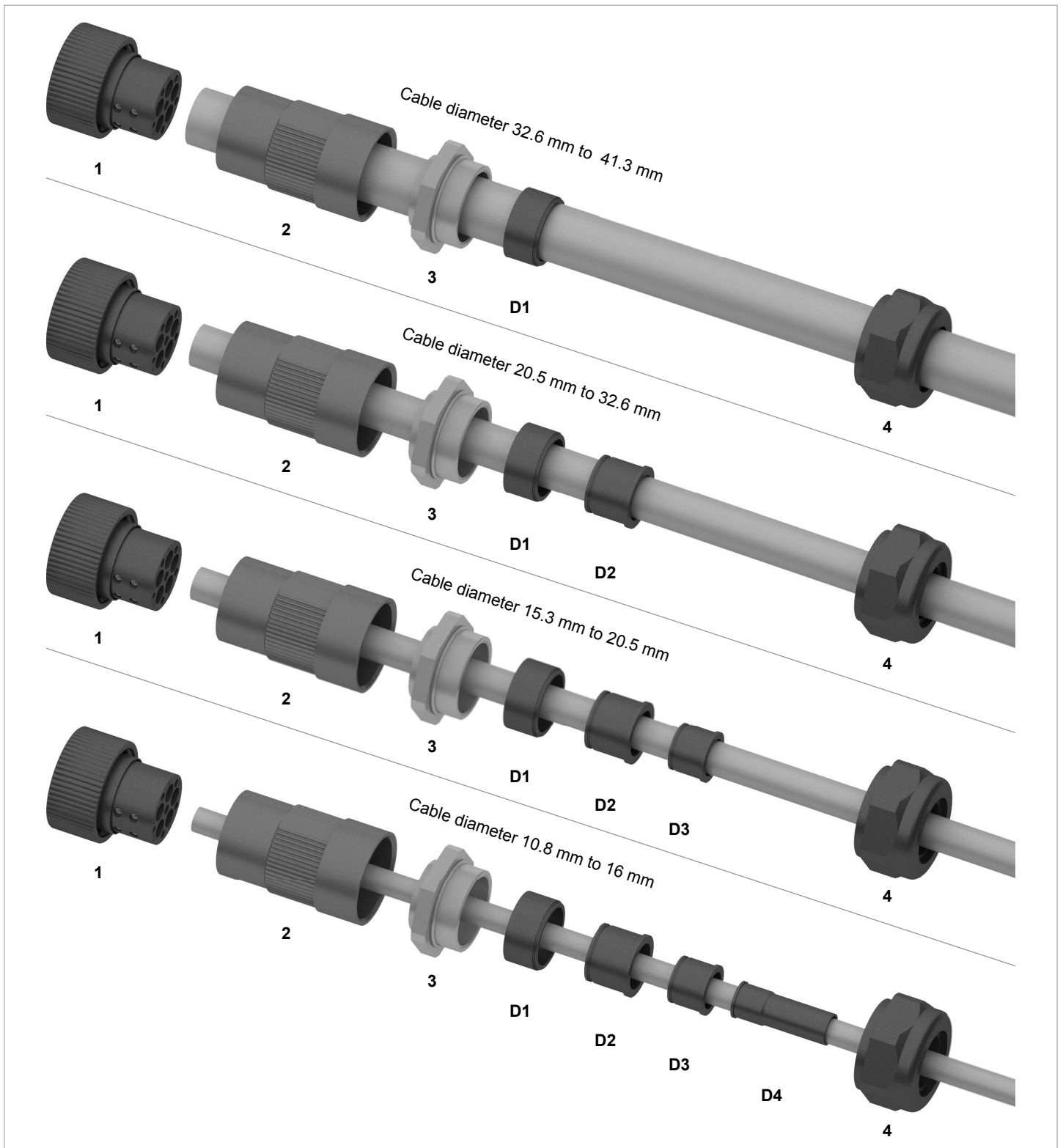
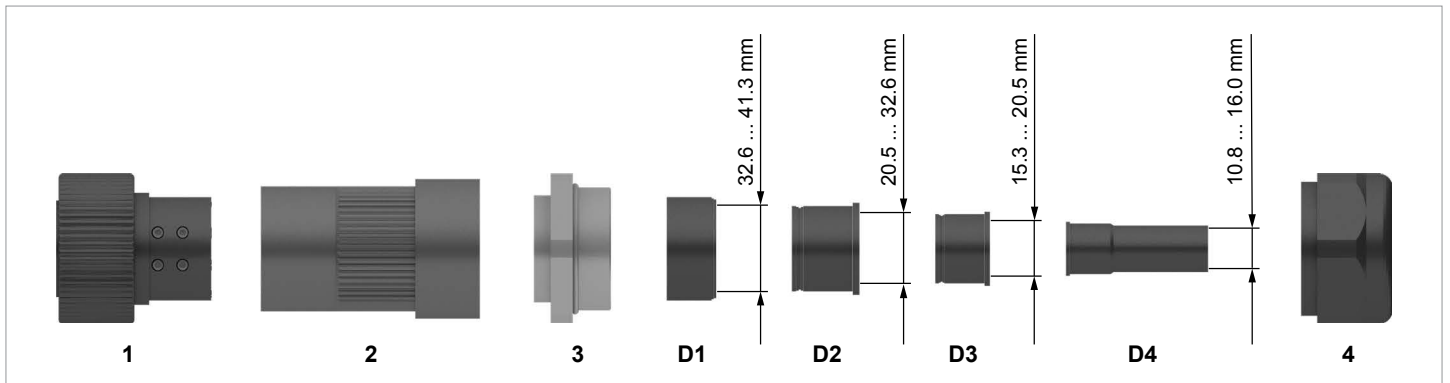


Observe the correct phase sequence when wiring the AC plug. An incorrect wiring can damage the inverter.

1. Unscrew nut (2), ring (3) and housing (4) of the AC plug.

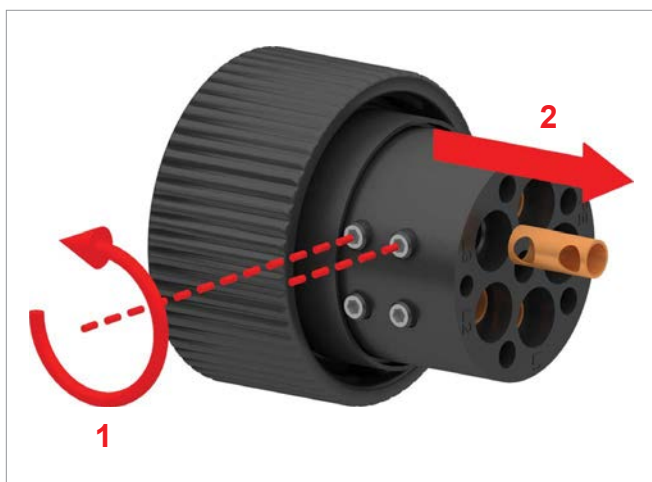


2. Pull all required parts of the AC connector over the cable. The parts needed depend on the cable diameter, refer to the figure on the next page.

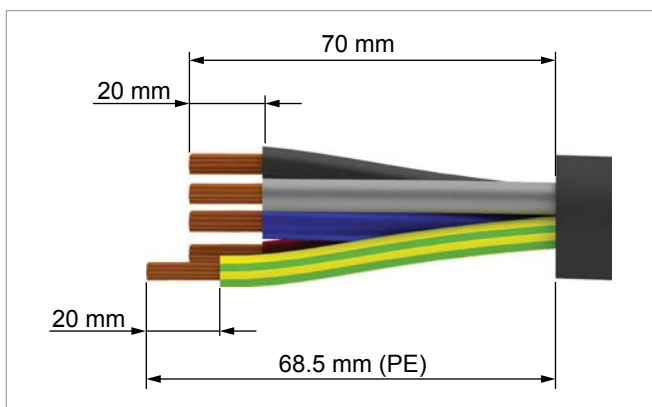


7 Connecting to the grid (continued)

3. In the case of cable cross-sections of 14 to 25 mm², remove the sleeves from the connecting terminals.

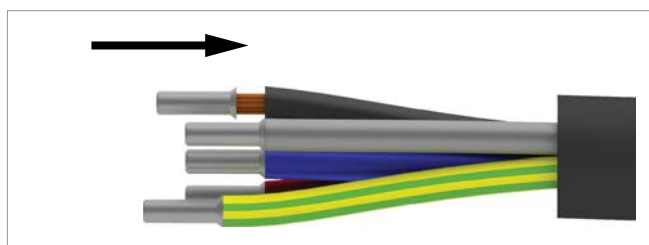


4. Remove the insulation from the cable and the wires. Do not twist the wire ends as the contact area with the ferrules will be reduced as a result.

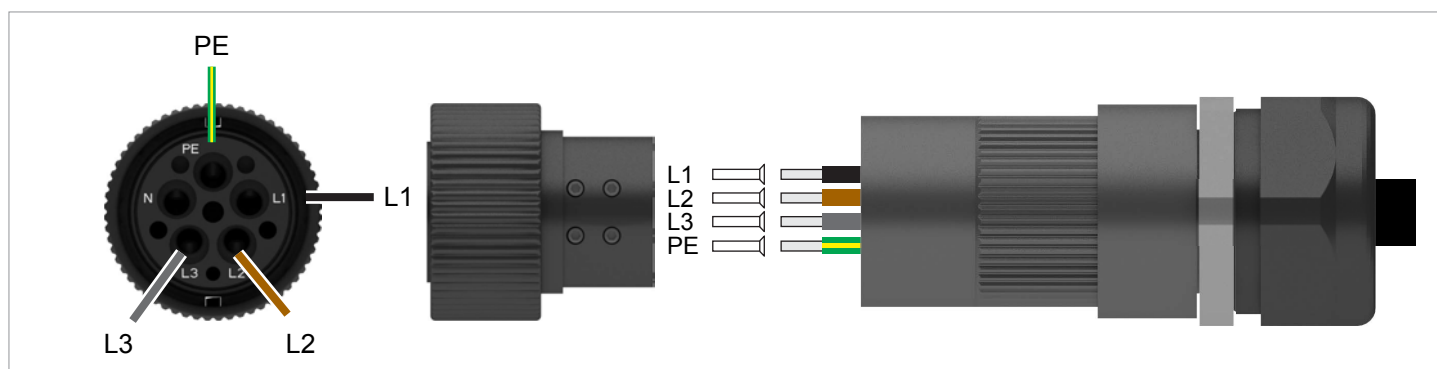
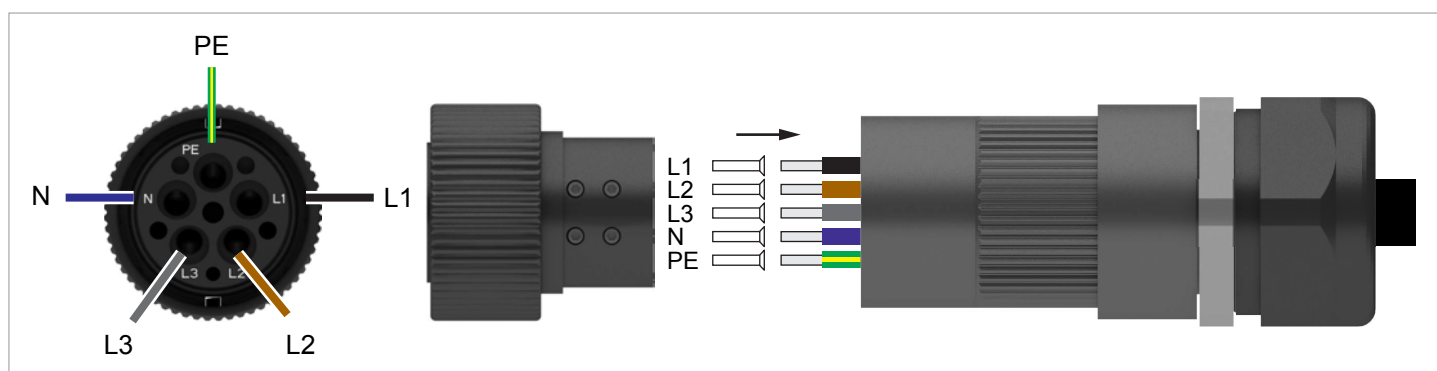
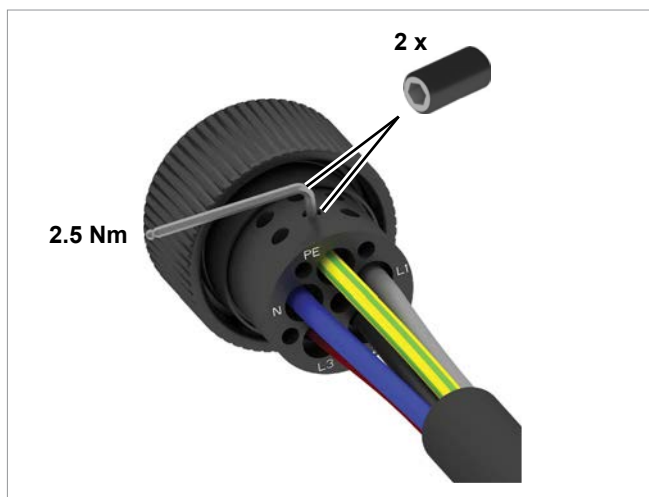


5. For some wire cross-sections, you need to use wire end sleeves; please refer to the table below.

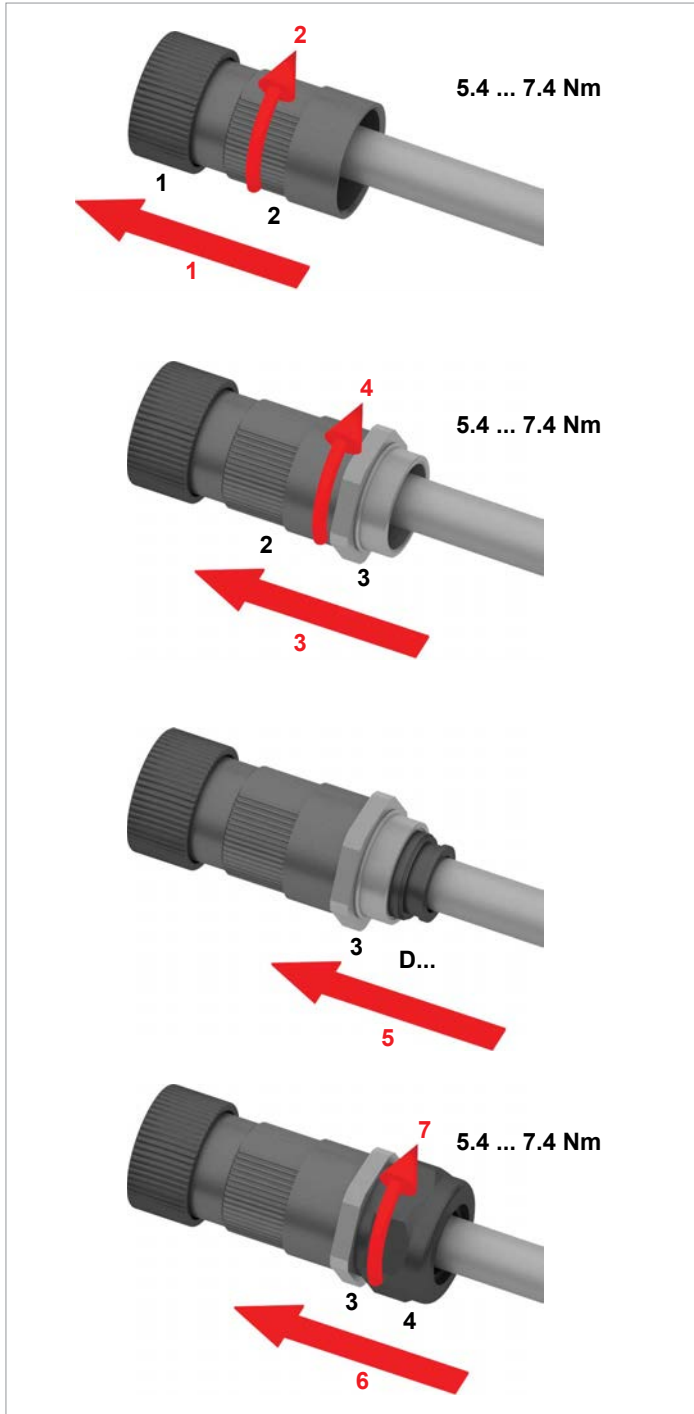
Wire cross-section	Do wire end sleeves need to be used?
6 mm ² ; 16 mm ²	yes
10 mm ² ; 25 mm ²	no



6. There are two connecting screws per wire. Always attach all wires with **both** connecting screws.



7. Assemble the AC plug.



Residual current circuit breaker

Due to its design, the inverter cannot supply the grid 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 RCD Type A	100 mA
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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 residual current monitoring unit (RCMU) is certified in accordance with VDE 0126 1-1/A1:2012-02 §6.6.2.

Grounding the inverter

The inverter must be grounded via the AC connector's PE conductor. To do this, connect the PE conductor to the designated terminal of the AC plug.

Attaching warning notices to the inverter

- Attach all necessary warning notices to the inverter. Always follow the local regulations.

Some examples of warnings are listed below.

 WARNING Dual supply	 Do not work on this equipment until it is located from both mains and on site generation supplies.
Isolate on-site Generation Unit(s) at _____ Isolate mains supply at _____	
Warning - Only persons authorized by DNO may remove the main cut out fuse	



Warning
Two sources of voltage present
- distribution network
- photovoltaic panels



Isolate both sources before carrying out any work

8 Connecting to the solar modules (DC)

DANGER

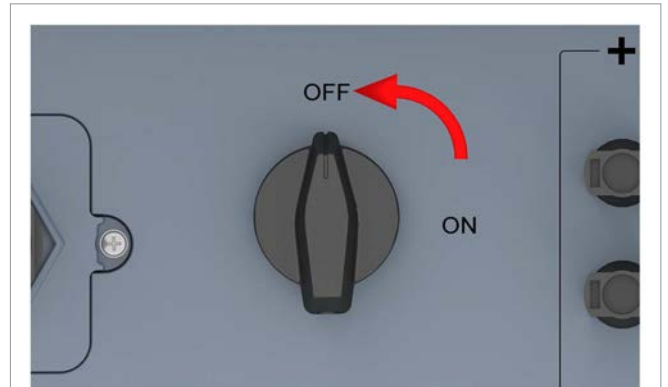


Electrical shock

Potentially fatal voltage is applied to the inverter's DC connections during operation. When light falls on the solar modules, they immediately start to generate electricity. This also happens when light does not shine directly on the solar modules.

- ▶ Never disconnect the inverter from the solar modules when it is under load.
- ▶ Place the AC/DC disconnecter in the **OFF** position.
- ▶ Uncouple the connection to the grid so that the inverter cannot supply energy to the grid.
- ▶ 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.

- ▶ Before connecting the solar modules turn the DC connection switch to the **OFF** position.



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

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



Incorrectly dimensioned solar plant.

An solar system of the wrong size may cause damage to the inverter.

- ▶ When calculating the module string, always pay attention to technical specifications (**DC input voltage range**, **Maximum DC input current** and **Maximum DC input power**, see ["Technical data", p. 22](#)).

Tools



The protective caps lock the DC plug so that it can only be disconnected from DC connections using the mounting tool.

- ▶ Observe the local regulations with regards to the protective caps.



Mounting tool for disconnecting the DC plug and the protective caps from the DC connections. Available from multi-contact.

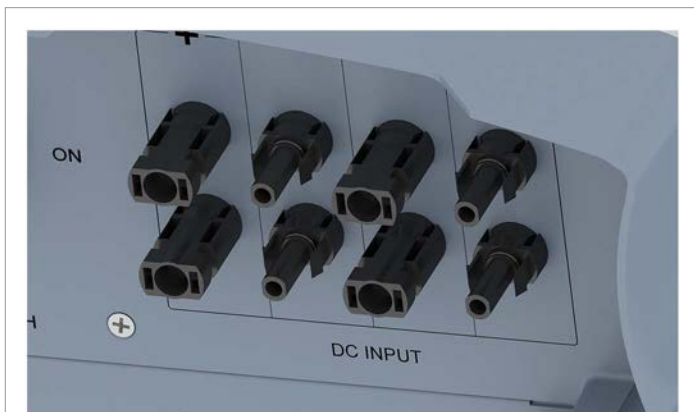
NOTICE



Ingress of moisture.

Moisture can enter via open DC connections.

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







DC plugs and DC cables

The DC plugs for all DC connections are provided along with the inverter.

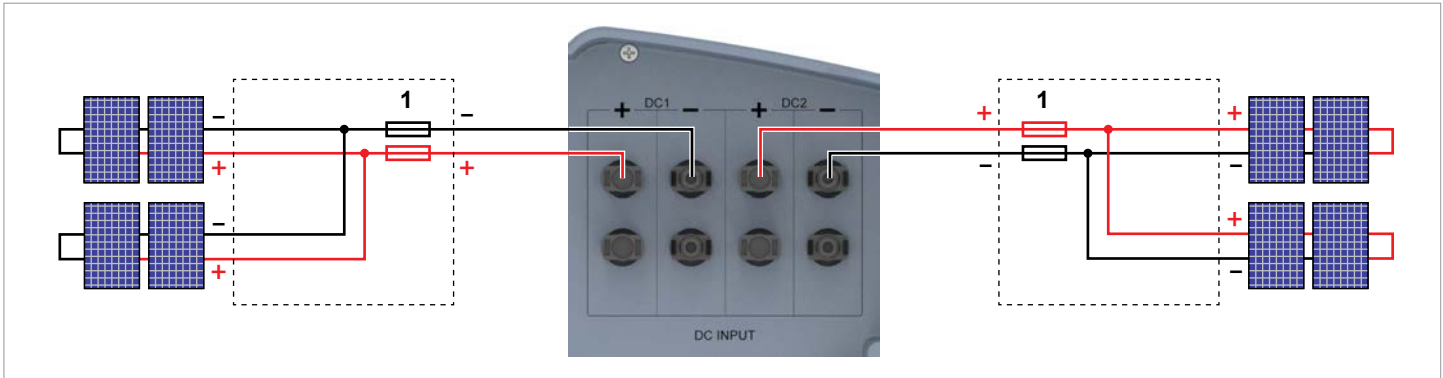
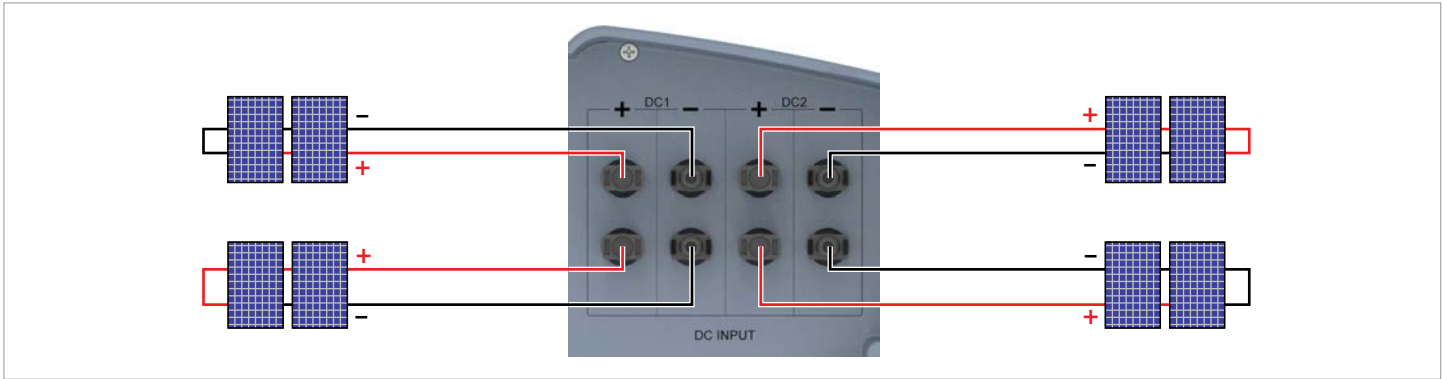
If you want to order more or need a different size, see the information in the following table.



DC connectors on the inverter		DC plugs for DC cable			
			a	b	Multi-Contact
			mm²	mm	
DC–			1,5/2,5	3–6	32.0010P0001-UR
				5,5–9	32.0012P0001-UR
			4/6	3–6	32.0014P0001-UR
				5,5–9	32.0016P0001-UR ¹⁾
DC+			1,5/2,5	3–6	32.0011P0001-UR
				5,5–9	32.0013P0001-UR
			4/6	3–6	32.0015P0001-UR
				5,5–9	32.0017P0001-UR ¹⁾

1) delivered with the inverter

Connecting the DC-Strings



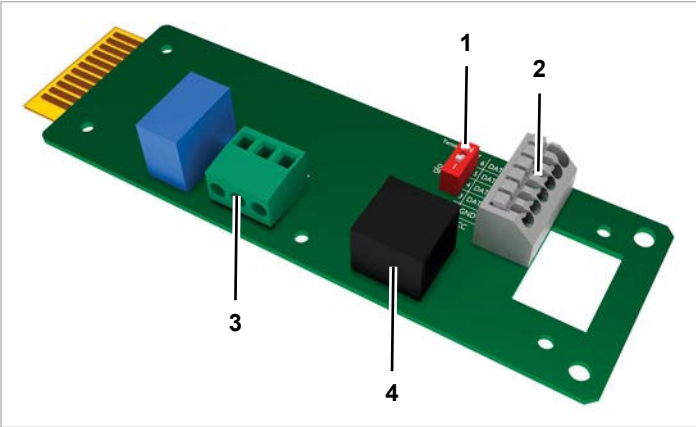
Always take account of the **Maximum reverse current loading capability** of the solar modules when selecting protective devices (for example fuses).

1 Always take account of the local safety regulations when selecting protective devices.

9 Connecting to a datalogger via RS485

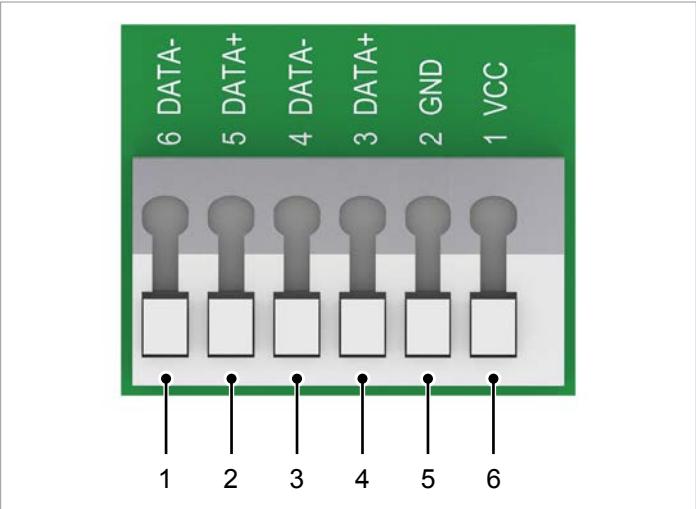


The connections for RS485, the dry contacts and the external power off (EPO) are all located on the communications card. These installation tasks can therefore be combined.



- 1 DIP switch for RS485 termination resistor
- 2 RS485 (terminal block)
- 3 Dry contacts (terminal block)
- 4 External Power Off (RJ45)

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. It doesn't matter which terminal pair is used. The second terminal pair is only required when connecting several inverters via RS485.

If you want to use SOLIVIA Monitor, Delta's Internet-based monitoring system, you also need a SOLIVIA Gateway M1 G2.

Data format

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

The baud rate can be set on the inverter display after startup, see "Baud rate for RS485", p. 21..

Connection to a Delta SOLIVIA Gateway M1 G2

Requirements include a CAT5 cable with RJ45 plugs on one side and an open end on the other side.

Inverter	SOLIVIA Gateway M1 G2
DATA+	Terminal 3 or 5
DATA-	Terminal 4 or 6

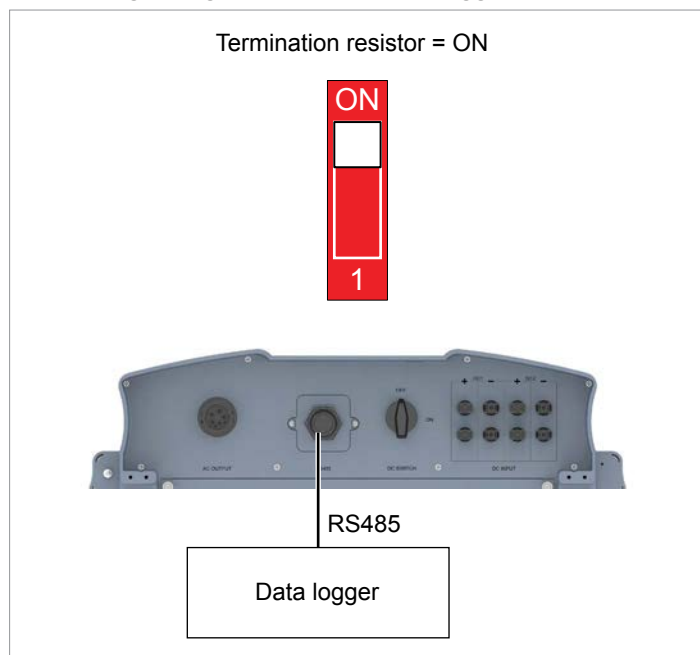
Connecting a PC via RS485

If you want to use a PC with the Delta Service Software to set up the inverter, you need a USB/RS485 adapter to connect the PC to the RS485 terminal block of the inverter.

The USB/RS485 adapter is available from Delta.

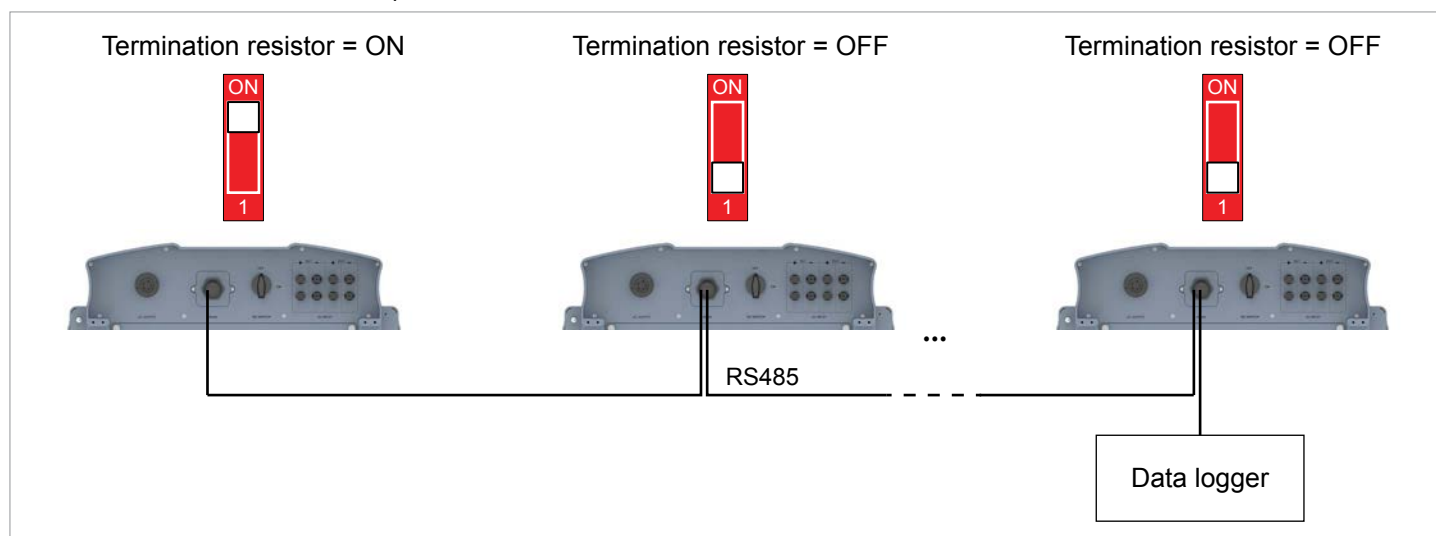
Inverter	USB/RS485-Adapter
DATA+	Terminal 3 or 5
DATA-	Terminal 4 or 6

Connecting a single inverter to a datalogger



Connecting multiple inverters to a datalogger

- If the datalogger does not have an integrated RS485 termination resistor, switch on the RS485 termination resistor on the first inverter.
- During commissioning, configure a different inverter ID on each inverter, see ["Inverter ID", p. 22](#).



10 Connecting External Power Off (EPO) and dry contacts (optional)



When your grid operator wants you to set a power limitation, e.g. for the 70% regulation in Germany, you need the Delta Service Software, which is available from Delta.



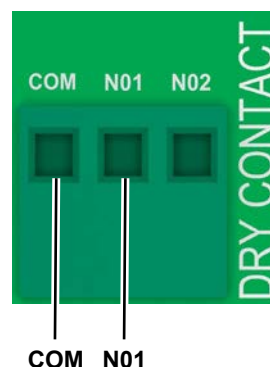
The connections for RS485, the dry contacts and the external power off (EPO) are all located on the communications card. These installation tasks can therefore be combined.

External Power Off (EPO)

Pin	Designation	Short-circuit	Assigned action
1	V1	–	–
2	K0	V1 + K0	External Power Off (EPO)
3	K1	V1 + K1	–
4	K2	V1 + K2	–
5	K3	V1 + K3	–
6	K4	V1 + K4	–
7	K5	V1 + K5	Reserved
8	K6	V1 + K6	Reserved

After commissioning, the relay for the External Power Off can be set to “normally open” or “normally closed” on the display of the inverter.

Dry contacts

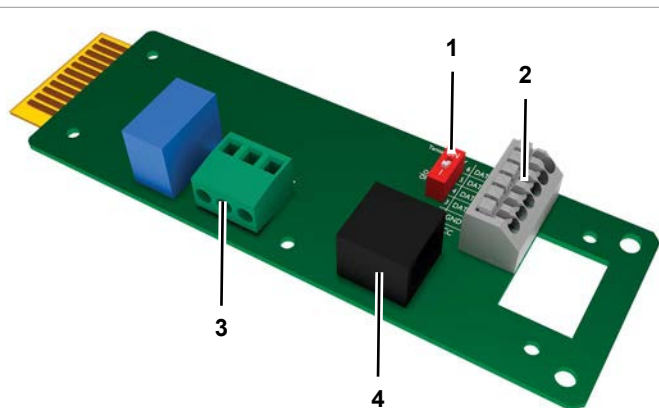


When the relay is triggered **COM** and **N01** are closed.

After commissioning, an outcome can be assigned to the dry contacts on the display of the inverter.

Event	Description
On grid	The inverter has connected to the grid.
Fan fail	The fans are defective.
Insulation	The insulation test failed.
Error	An error message occurred.
Fault	A fault message occurred.
Warning	A warning message occurred.

Default setting is “Insulation”.



- 1 DIP switch for RS485 termination resistor
- 2 RS485 (terminal block)
- 3 Dry contacts (terminal block)
- 4 External Power Off (RJ45)

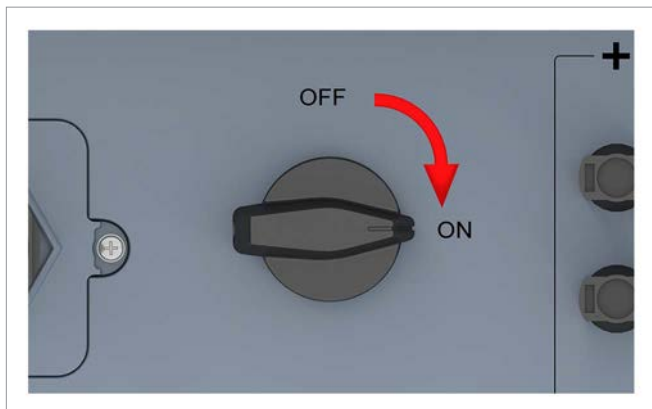
11 Commissioning - basic settings






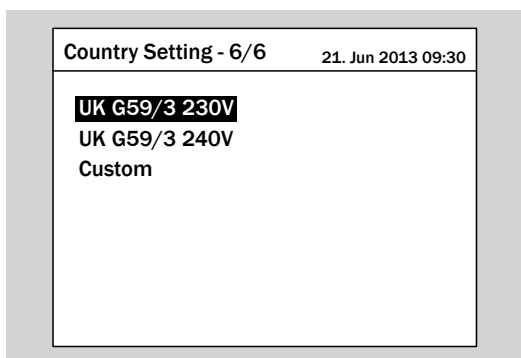
To execute commissioning as described in this chapter, the inverter needs to be powered either by AC (the grid) or DC (the solar modules).

For full commissioning by the utility, both voltages must be present at the inverter.


1. Turn the DC disconnecter to **ON** position.




2. To select a country or grid, use the  and  buttons and press the  button.




Country	Available grids	Description
United Kingdom	UK G59/3 230V	Engineering Recommendation G59/3 230 V
	UK G59/3 230V	Engineering Recommendation G59/3 240 V




3. To confirm the selection, press the  button.



4. In order to check or change the country or grid, press the  button.

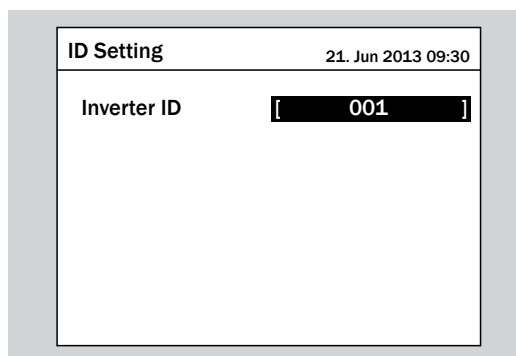
To continue, press the  button.



5. Use the  and  buttons to set the Inverter-ID and press the  Button.



If your PV plant contains multiple inverters, for each of the inverters a different inverter ID has to be set.
The inverter ID is needed to identify each inverter via RS485.



→ The inverter runs through an internal check that can take up to 2 minutes. The remaining time is shown on the display.

- ☒ The basic setup is finished. The main menu is shown.

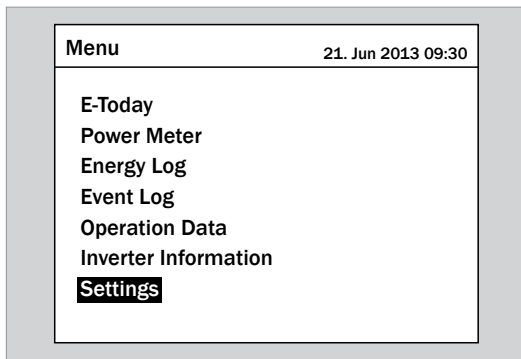
12 Commissioning - Further settings (optional)

Display language

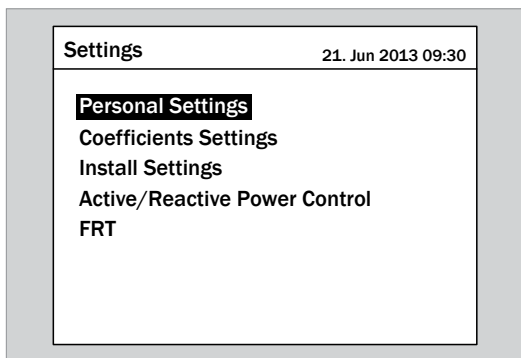
1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

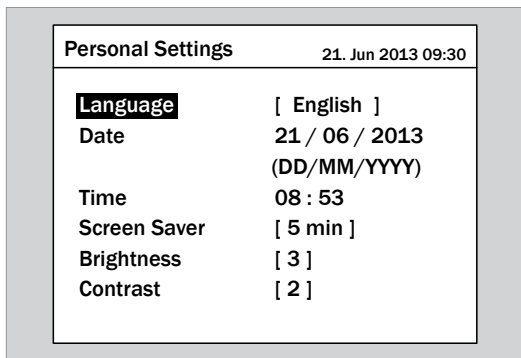
2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.



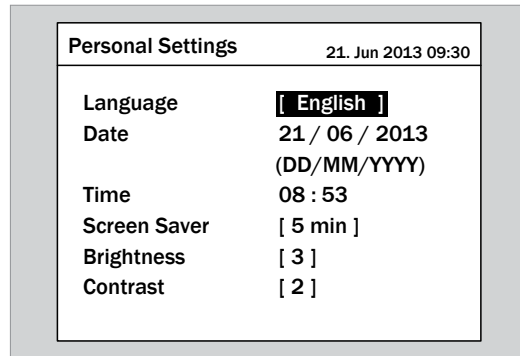
3. Using the **▼** and **▲** buttons, select the **Personal Settings** entry and press the **ENT** button.



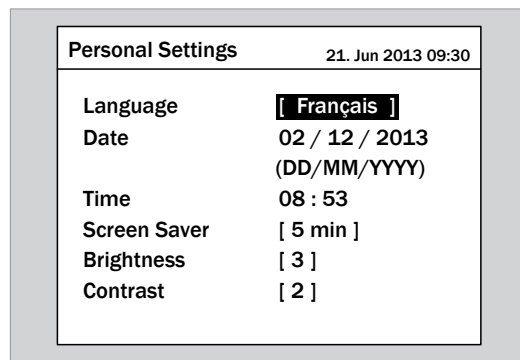
4. Using the **▼** and **▲** buttons, select the **Language** entry and press the **ENT** button.



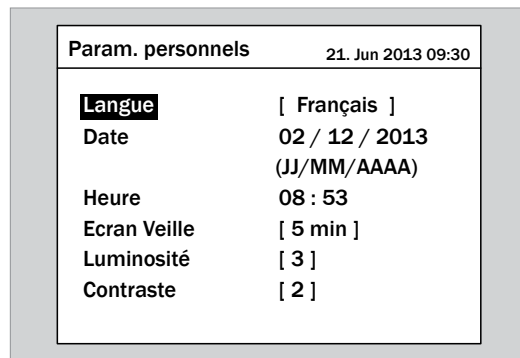
→ The language is highlighted.



5. Use the **▼** and **▲** buttons to select a language and press the **ENT** button.



- ☒ The language is set.

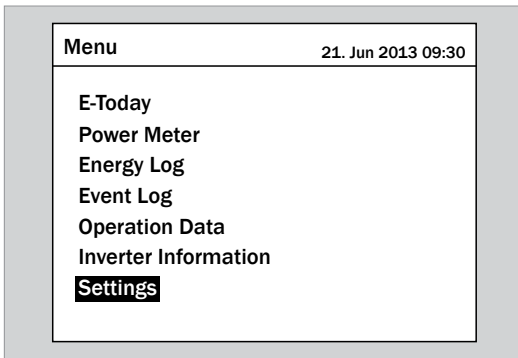


Date

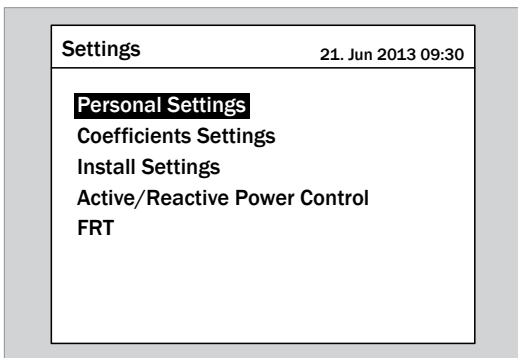
1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

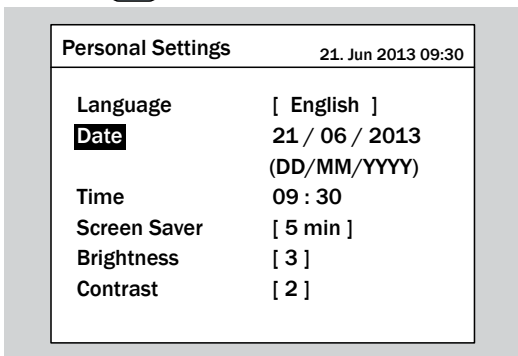
2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.



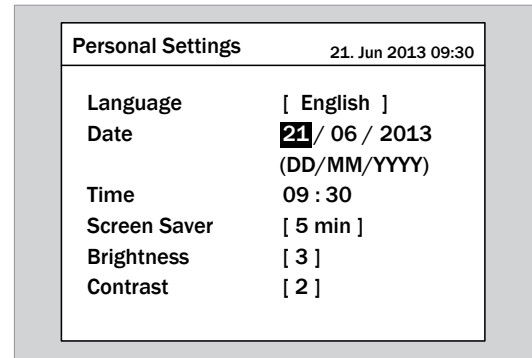
3. Using the **▼** and **▲** buttons, select the **Personal Settings** entry and press the **ENT** button.



4. Using the **▼** and **▲** buttons, select the **Date** entry and press the **ENT** button.



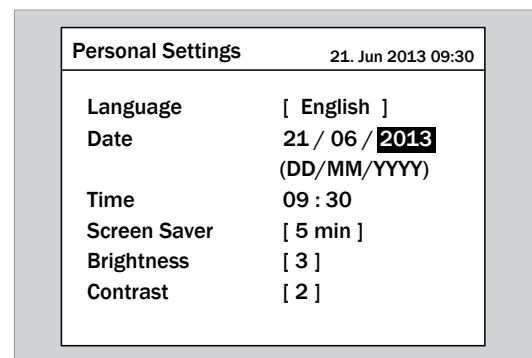
→ The day is highlighted.



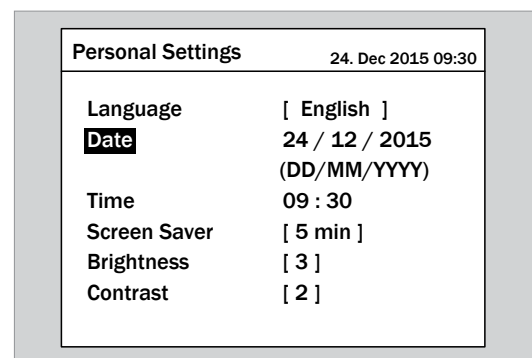
5. Using the **▼** and **▲** buttons, set the value and press the **ENT** button.

→ The month is highlighted.

6. To set month and year repeat step 5.



- ✓ The date is set.



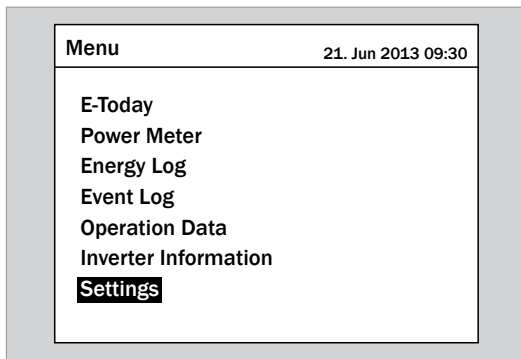
12 Commissioning - Further settings (optional)

Time

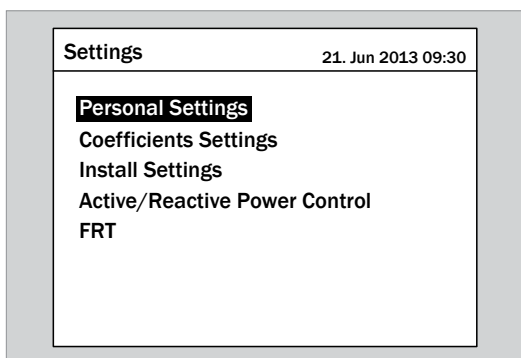
1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

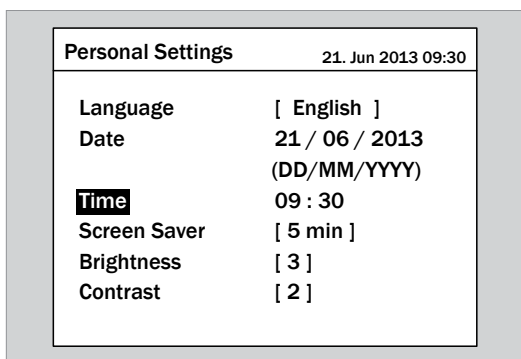
2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.



3. Using the **▼** and **▲** buttons, select the **Personal Settings** entry and press the **ENT** button.

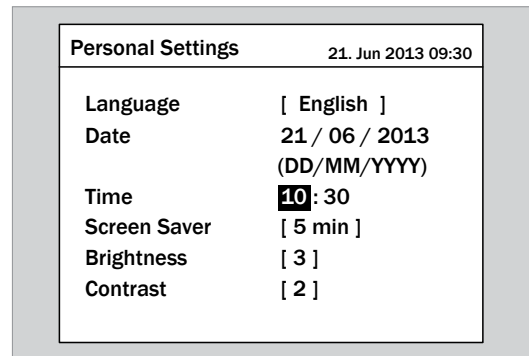


4. Using the **▼** and **▲** buttons, select the **Time** entry and press the **ENT** button.



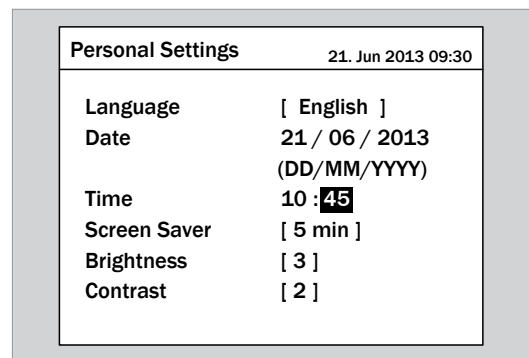
→ The hours are highlighted.

5. Using the **▼** and **▲** buttons, set the value and press the **ENT** button.

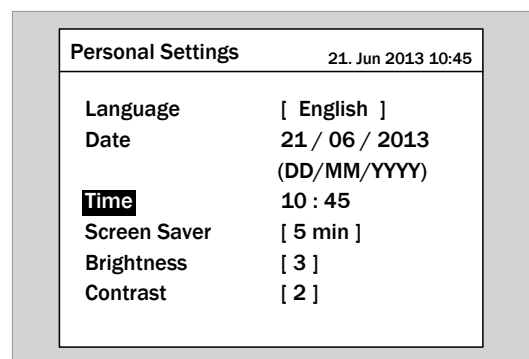


→ The minutes are highlighted.

6. Using the **▼** and **▲** buttons, set the value and press the **ENT** button.



- ☒ The time is set.

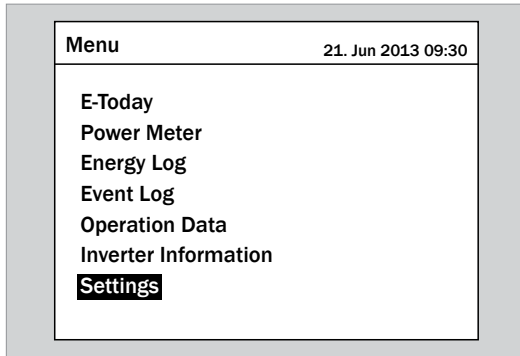


Baud rate for RS485

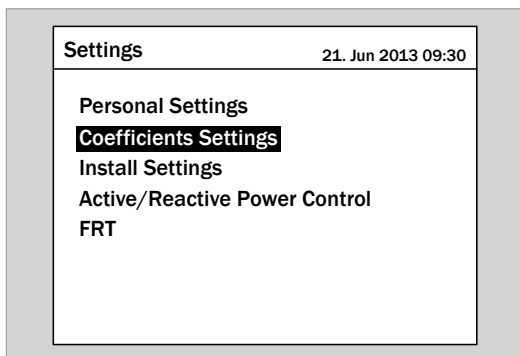
1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

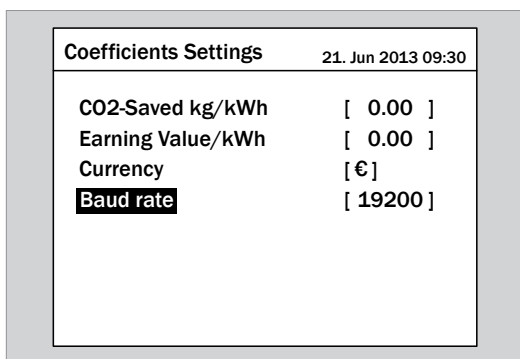
2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.



3. Using the **▼** and **▲** buttons, select the **Coefficients Settings** entry and press the **ENT** button.

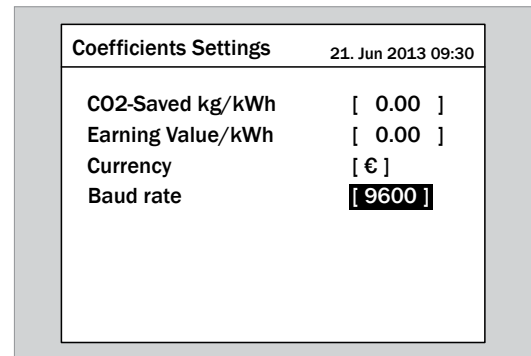


4. Using the **▼** and **▲** buttons, select the **Baud rate** entry and press the **ENT** button.

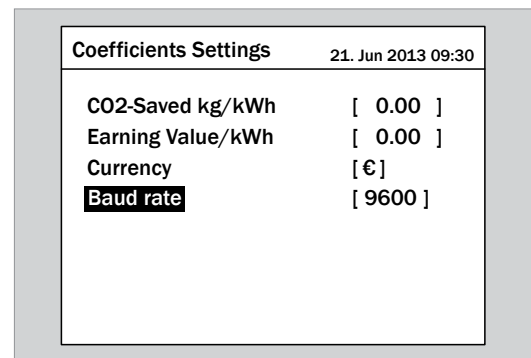


→ The value is highlighted.

5. Use the **▼** and **▲** buttons to select the value and press the **ENT** button.



- ☒ The baud rate is set.



12 Commissioning - Further settings (optional)

Inverter ID



If there are several inverters interconnected in the PV installation, a different inverter ID must be defined for each inverter. The inverter ID is used in the monitoring system, for example, in order to be able to identify the inverter uniquely.

1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.

Menu	
21. Jun 2013 09:30	
E-Today	
Power Meter	
Energy Log	
Event Log	
Operation Data	
Inverter Information	
Settings	

3. Using the **▼** and **▲** buttons, select the **Install Settings** entry and press the **ENT** button.

Settings	
21. Jun 2013 09:30	
Personal Settings	
Coefficients Settings	
Install Settings	
Active/Reactive Power Control	
FRT	

4. The function is protected with the password 5555.
Use the **▼** and **▲** buttons to set the individual digits.
Press the **ENT** button to confirm a digit.

Password	
21. Jun 2013 09:30	
3	3
3	3
ENT	

5. Using the **▼** and **▲** buttons, select the **Inverter ID** entry and press the **ENT** button.

Install Settings	
21. Jun 2013 09:30	
Inverter ID	[001]
Insulation	
RCMU	[ON]
Country	UK G59/3 230V
Grid Settings	
Reconnection Time	[20] S
Ramp-up Power	[6000] %/m

6. The value is highlighted. Using the **▼** and **▲** buttons, set the value and press the **ENT** button.

Install Settings	
21. Jun 2013 09:30	
Inverter ID	[002]
Insulation	
RCMU	[ON]
Country	UK G59/3 230V
Grid Settings	
Reconnection Time	[20] S
Ramp-up Power	[6000] %/m

- ☒ The inverter ID is set.

Install Settings	
21. Jun 2013 09:30	
Inverter ID	[002]
Insulation	
RCMU	[ON]
Country	UK G59/3 230V
Grid Settings	
Reconnection Time	[20] S
Ramp-up Power	[6000] %/m

Constant cos phi (cos ϕ)

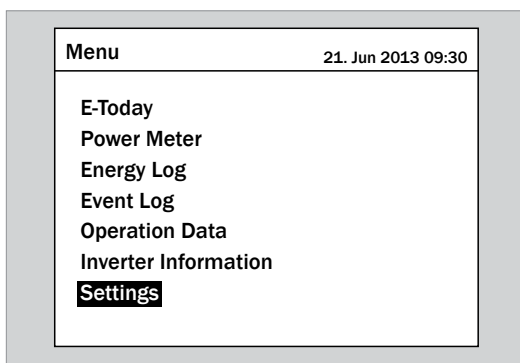


This setting should only be changed after consultation with Delta customer service.

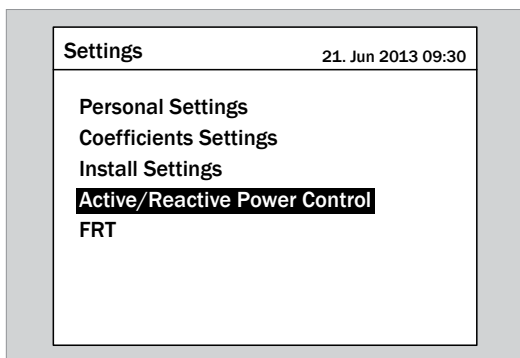
1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.



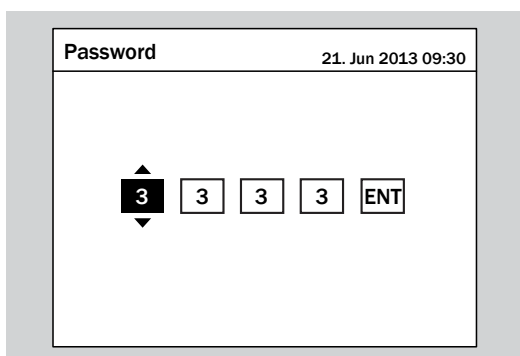
3. Using the **▼** and **▲** buttons, select the **Active/Reactive Power Control** entry and press the **ENT** button.



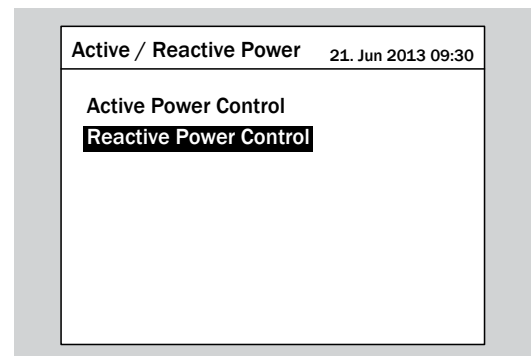
4. The function is protected with the password 5555.

Use the **▼** and **▲** buttons to set the individual digits.

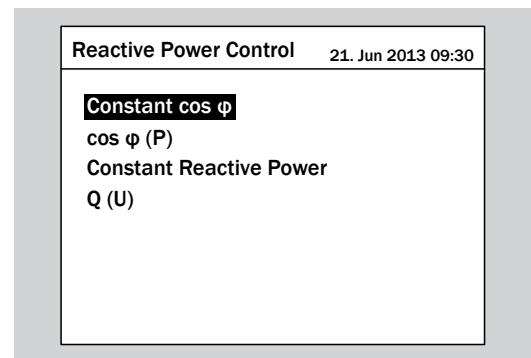
Press the **ENT** button to confirm a digit.



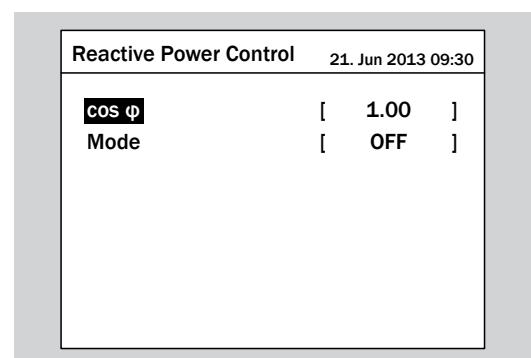
5. Using the **▼** and **▲** buttons, select the **Reactive Power Control** entry and press the **ENT** button.



6. Using the **▼** and **▲** buttons, select the **Constant cos ϕ** entry and press the **ENT** button.



7. Using the **▼** and **▲** buttons, select the **cos ϕ** entry and press the **ENT** button.



8. Using the **▼** and **▲** buttons, set the value and press the **ENT** button.

9. To activate the function, set the **Mode** entry to **ON**.

12 Commissioning - Further settings (optional)

AC connection type

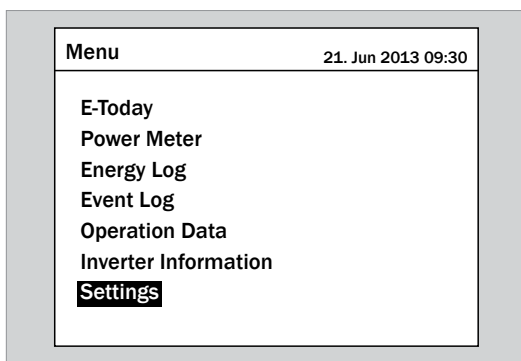


By default, the inverter is set for an AC connection with 3 phases and a neutral conductor (3P4W). If you are connecting the inverter without a neutral conductor, you must change the AC connection type after commissioning.

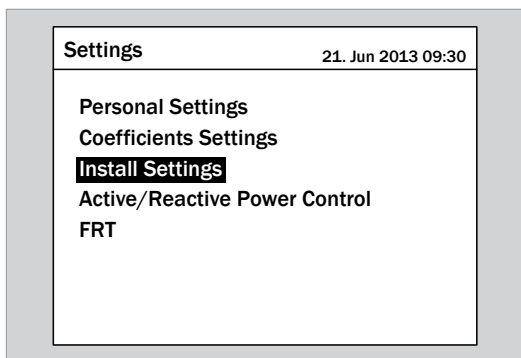
1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

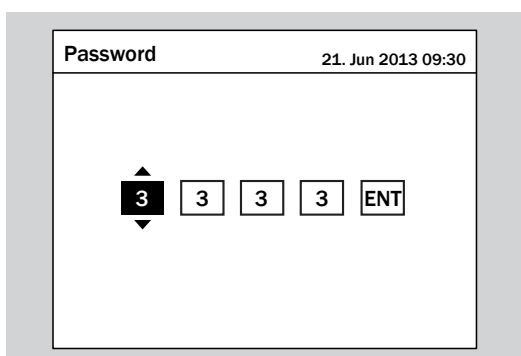
2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.



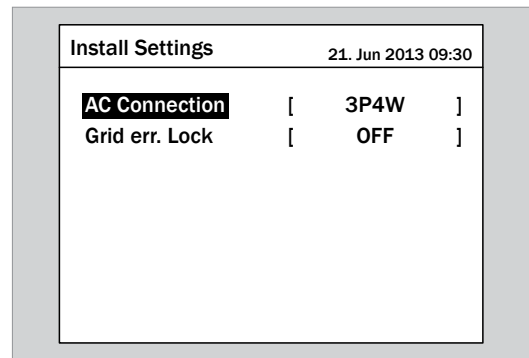
3. Using the **▼** and **▲** buttons, select the **Install Settings** entry and press the **ENT** button.



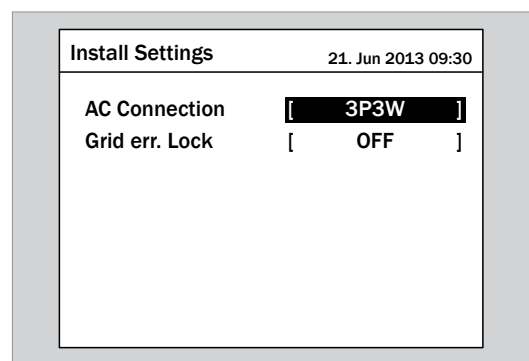
4. The function is protected with the password 5555.
Use the **▼** and **▲** buttons to set the individual digits.
Press the **ENT** button to confirm a digit.



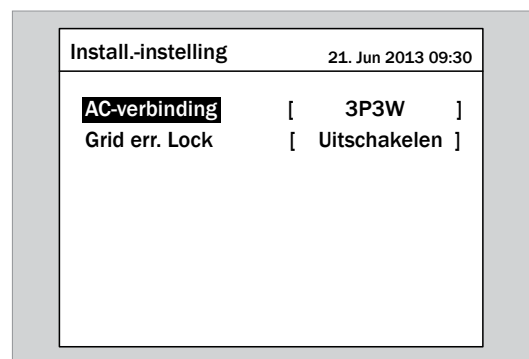
5. Using the **▼** and **▲** buttons, select the **AC Connection** entry and press the **ENT** button.



6. Using the **▼** and **▲** buttons, select the **3P3W** option and press the **ENT** button.



- ☒ The AC connection type is set.



Active power limiting



This setting should only be changed after consultation with Delta customer service.

1. If the default information is displayed, press the **EXIT** button to open the main menu.

Alternatively, press the **EXIT** button repeatedly until the main menu is displayed.

2. Using the **▼** and **▲** buttons, select the **Settings** entry and press the **ENT** button.

Menu	
21. Jun 2013 09:30	
E-Today	
Power Meter	
Energy Log	
Event Log	
Operation Data	
Inverter Information	
Settings	

3. Using the **▼** and **▲** buttons, select the **Active/Reactive Power Control** entry and press the **ENT** button.

Settings	
21. Jun 2013 09:30	
Personal Settings	
Coefficients Settings	
Install Settings	
Active/Reactive Power Control	
FRT	

4. The function is protected with the password 5555.

Use the **▼** and **▲** buttons to set the individual digits.

Press the **ENT** button to confirm a digit.

Password	
21. Jun 2013 09:30	
3	3
3	3
3	3
3	ENT

5. Using the **▼** and **▲** buttons, select the **Active Power Control** entry and press the **ENT** button.

Active / Reactive Power	
21. Jun 2013 09:30	
Active Power Control	
Reactive Power Control	

6. Using the **▼** and **▲** buttons, select the **Power Limit** entry and press the **ENT** button.

Active Power Control	
21. Jun 2013 09:30	
Power Limit	
Power vs. Frequency	
P(V)	

7. Using the **▼** and **▲** buttons, select an entry and press the **ENT** button.

Active Power Control	
21. Jun 2013 09:30	
Set Point	[90] %
Actual / Rated Power	[Rated]
Mode	[OFF]

8. Using the **▼** and **▲** buttons, set the value and press the **ENT** button.

9. To activate the function, set the **Mode** entry to **ON**.

13 Technical data

Input (DC)	RPI M15A	RPI M20A
Maximum recommended PV power ¹⁾	19 kW _P	25 kW _P
Maximum DC input power total (per input)	16.5 kW (11.1 kW)	22 kW (14.8 kW)
Nominal DC power	15.6 kW	20.6 kW
DC voltage range	200 ... 1000 V _{DC}	
Maximum DC input voltage	1000 V _{DC}	
Nominal DC voltage	635 V _{DC}	
DC startup voltage	250 V _{DC}	
DC startup power	40 W	
MPP operating voltage range	200 ... 1000 V _{DC}	
MPP operating voltage range with full power		
Symmetric configuration	355 ... 820 V _{DC}	470 ... 820 V _{DC}
Asymmetric configuration (67%)	475 ... 820 V _{DC}	635 ... 820 V _{DC}
Asymmetric configuration (33%)	235 ... 820 V _{DC}	310 ... 820 V _{DC}
Maximum ratio of asymmetric configuration	67/33% ; 33/67%	
Maximum DC short circuit current in case of a failure	24 A (12 A per string)	
Maximum DC input current; total (DC1 / DC2)	44 A (22 A / 22 A)	44 A (22 A / 22 A)
Number of MPP trackers	Parallel inputs: 1 MPP tracker; Separate inputs: 2 MPP trackers	
Number of DC inputs; total (DC1 / DC 2)	4 (2 / 2)	
Galvanic isolation	No	
Overvoltage category ²⁾	II	

Output (AC)	RPI M15A	RPI M20A
Maximum apparent power	15.75 kVA	21 kVA
Nominal apparent power	15 kVA ³⁾	20 kVA ³⁾
Nominal AC voltage ⁴⁾	230 ± 20 % / 400 V _{AC} ± 20%; 3 phase + PE or 3 phase + N + PE	
Nominal AC current	22 A	29 A
Maximum AC current	24 A	32 A
Maximum inrush current	150 A / 100 µs	
Nominal AC frequency	50 / 60 Hz	
AC frequency range ⁴⁾	45 ... 65 Hz	
Power factor adjustment range	0.8 cap ... 0.8 ind	
Total harmonic distortion	<3%	
DC current injection	<0.5% rated current	
Night-time consumption	<2 W	
Overvoltage category ²⁾	III	

¹⁾ When operated with symmetric load (50/50%)

²⁾ IEC 60664-1, IEC 62109-1

³⁾ For cos phi = 1 (VA = W)

⁴⁾ AC voltage and frequency range will be programmed according to the individual country requirements.

Mechanical Design	RPI M15A	RPI M20A
Dimensions (W x H x D)	612 x 625 x 278 mm	
Weight	43 kg	
Cooling	Fans	
AC connection type	China Aviation Optical-Electrical Technology Co., Ltd.; PVE5T50KP73-01	
DC terminal type	Multi-Contact MC4	
Communication interfaces	2 x RS485, 1 x Dry contact, 1 x EPO (External Power Off)	

General Specification	RPI M15A	RPI M20A
Delta model name	RPI M15A	RPI M20A
Delta part number	RPI153FA0E0200	RPI203FA0E0200
Maximum efficiency	98.3%	98.4%
EU efficiency	97.9%	98.1%
Operating temperature range	-25 ... +60 °C	
Operating temperature range without derating	-25 ... +40 °C	-25 ... +47 °C ⁵⁾
Storage temperature range	-25 ... +60 °C	
Relative humidity	0 ... 100 %, non-condensing	
Maximum operating altitude	2000 m above sea level	

Standards and Directives	RPI M15A	RPI M20A
Ingress protection degree as per IEC 60529	IP65	
Protection class as per IEC 61140	I	
Pollution degree as per IEC 60664-1	2	
Overload behavior	Current limitation; power limitation	
Safety	IEC 62109-1 / -2, CE compliance	
EMC	EN 61000-6-2, EN 61000-6-3	
Immunity	IEC 61000-4-2 / -3 / -4 / -5 / -6 / -8	
Harmonics	EN 61000-3-2	
Variations and flicker	EN 61000-3-3	
Grid interfaces	See www.solar-inverter.com	

⁵⁾ Derating starting at 47 °C with **Nominal DC voltage** and AC output power of 21 kVA, otherwise 40 °C.

Service Europe

Austria	service.oesterreich@solar-inverter.com	0800 291 512 (free call)
Belgium	support.belgium@solar-inverter.com	0800 711 35 (free call)
Bulgaria	support.bulgaria@solar-inverter.com	+421 42 4661 333
Czech Republic	podpora.czechia@solar-inverter.com	800 143 047 (free call)
Denmark	support.danmark@solar-inverter.com	8025 0986 (free call)
France	support.france@solar-inverter.com	0800 919 816 (free call)
Germany	service.deutschland@solar-inverter.com	0800 800 9323 (free call)
Greece	support.greece@solar-inverter.com	+49 7641 455 549
Israel	supporto.israel@solar-inverter.com	800 787 920 (free call)
Italy	supporto.italia@solar-inverter.com	800 787 920 (free call)
Netherlands	ondersteuning.nederland@solar-inverter.com	0800 022 1104 (free call)
Poland	serwis.polska@solar-inverter.com	+48 22 335 26 00
Portugal	suporte.portugal@solar-inverter.com	+49 7641 455 549
Slovakia	podpora.slovensko@solar-inverter.com	0800 005 193 (free call)
Slovenia	podpora.slovenija@solar-inverter.com	+421 42 4661 333
Spain	soparto.espana@solar-inverter.com	900 958 300 (free call)
Switzerland	support.switzerland@solar-inverter.com	0800 838 173 (free call)
Turkey	support.turkey@solar-inverter.com	+421 42 4661 333
United Kingdom	support.uk@solar-inverter.com	0800 051 4281 (free call)
Other European countries	support.europe@solar-inverter.com	+49 7641 455 549



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