SHIFTING THE LIMITS

Fronius Symo 3 - 8,2 kW

EN

Installations instructions

Grid-connected inverter

42,0426,0172,EN 010-10082016

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EN

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Installation location and position

Explanation of safety symbols

DANGER! Indicates immediate and real danger. If it is not avoided, death or serious injury will result.

WARNING! Indicates a potentially dangerous situation. Death or serious injury may result if appropriate precautions are not taken.

CAUTION! Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.

NOTE! Indicates a risk of flawed results and possible damage to the equipment.

IMPORTANT! Indicates tips for correct operation and other particularly useful information. It does not indicate a potentially damaging or dangerous situation.

If you see any of the symbols depicted in the "Safety rules" chapter, special care is required.

Reliability

WARNING! Incorrect operation or poorly executed work can cause serious injury or damage. Commissioning of the hybrid system may only be carried out by trained personnel in accordance with the technical regulations. Read the installation and operating instructions before installing and commissioning the equipment.

WARNING! Shoddy workmanship can cause serious injury and material damage. Overvoltage protection must only ever be installed and connected by a qualified electrical engineer.
Follow the safety rules!
Make sure that both the AC side and the DC side of the inverter are de-energised before carrying out any installation or connection work.

Fire prevention

CAUTION! Risk of damage to inverters and other live photovoltaic system components due to poor or unprofessional installation.
Poor or unprofessional installation can cause overheating of cables and terminal connections and result in arcs. These can cause heat damage, which in turn may lead to fires.

Observe the following when connecting AC and DC cables:
- Tighten all terminals to the torque specified in the operating instructions

- Tighten all grounding terminals (PE / GND), including free ones, to the torque specified in the operating instructions
- Do not overload cables
- Check cables for damage and verify that they are laid correctly
- Take note of the safety instructions, operating instructions and any local connection regulations

Using fastening screws, always screw the inverter firmly to the wall bracket to the torque specified in the operating instructions.
Ensure that the fastening screws are tight before starting the inverter!

NOTE! Fronius will not accept any costs associated with production downtimes, installer costs, etc., that may arise as the result of a detected arc and its consequences.
Fronius accepts no liability for fires that can occur despite the presence of the integrated arc detection/extinguishing system (e.g. fires caused by a parallel arc).

NOTE! After an arc has been detected, the entire photovoltaic system must be checked for possible damage before resetting the inverter.

Observe the manufacturer's connection, installation and operating instructions at all times.
To reduce the hazard potential to a minimum, perform all installation and connection work carefully according to the instructions and regulations.
Refer to the device operating instructions / installation instructions for the tightening torques to be used at the relevant terminal connections.

Proper use

The solar inverter is intended exclusively to convert direct current from solar modules into alternating current and to feed this into the public grid.
Utilisation not in accordance with the intended purpose comprises:
- utilisation for any other purpose or in any other manner
- making any modifications to the inverter that have not been expressly approved by Fronius
- the installation of parts that are not distributed or expressly approved by Fronius.

Fronius shall not be liable for any damage resulting from such action.
No warranty claims will be entertained.

Proper use includes:
- carefully reading and obeying all the instructions and all the safety and danger notices in the operating instructions
- performing all stipulated inspection and maintenance work
- installation as specified in the operating instructions

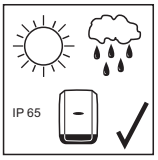
When designing the photovoltaic system, ensure that all of its components are operated within their permitted operating ranges at all times.

Observe all the measures recommended by the solar module manufacturer to ensure the lasting maintenance of the properties of the solar module.

Obey the regulations of the energy supply company regarding feeding energy into the grid.

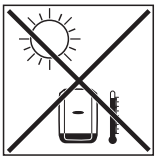
Inverter installation location

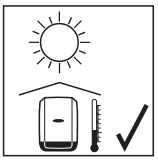
The inverter is suitable for installation indoors.



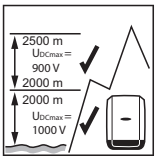
The inverter is suitable for installation outdoors.

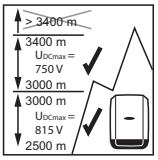
Its IP 65 degree of protection means that the inverter is resistant to water jets from any direction and can also be used in damp environments.





In order to minimise the heating up of the inverter, do not expose it to direct insolation. Install the inverter in a protected location, e.g. in the vicinity of the solar modules or beneath the eaves.





U_{DCmax} at an altitude of:
0 to 2000 m = 1000 V
2000 to 2500 m = 900 V
2500 to 3000 m = 815 V
3000 to 3400 m = 750 V

IMPORTANT! The inverter must not be installed or used at altitudes above 3400 m.

Do not install the inverter in:
- areas where ammonia, corrosive vapours, acids or salts are present (e.g. fertiliser stores, ventilation openings from cattle sheds, chemical plants, tanneries, etc.)

As the inverter generates low levels of noise under certain operating conditions, it should not be installed close to living areas.

Do not install the inverter in:
- places where there is an increased risk of damage from farm animals (horses, cattle, sheep, pigs, etc.)
- stables or adjoining areas
- storage areas for hay, straw, chaff, animal feed, fertilisers, etc.

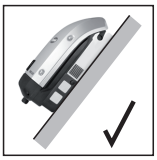
All inverters are design to be dust-tight. However, in areas with a heavy build-up of dust, the thermal efficiency may still be impaired by dust forming on the cooling surfaces. Regular cleaning is necessary in such situations. It is therefore not recommended to mount the device in rooms or areas in which a strong formation of dust is expected.

Do not install the inverter in:
- greenhouses
- storage or processing areas for fruit, vegetables or winegrowing products
- places used to prepare grain, green fodder or animal feeds

Explanation of symbols - installation position

The inverter is designed to be installed vertically on a vertical wall or pillar.

The inverter is suitable for horizontal installation.



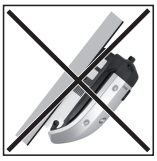
The inverter is suitable for installation on a sloping surface.

Do not install the inverter on a sloping surface with its connection sockets facing upwards.

Do not install the inverter at an angle on a vertical wall or pillar.

Do not install the inverter horizontally on a vertical wall or pillar.

Do not install the inverter on a vertical wall or pillar with its connection sockets facing upwards.



Do not install the inverter such that it overhangs with its connection sockets facing upwards.

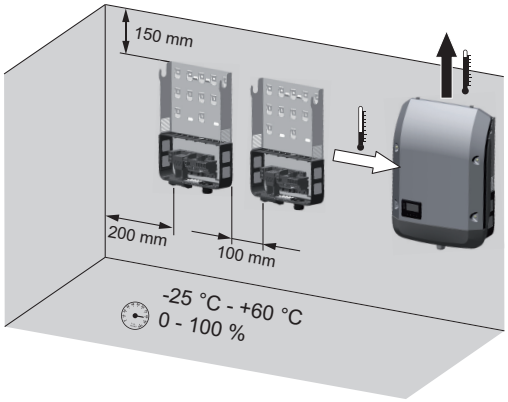
Do not install the inverter such that it overhangs with its connection sockets facing downwards.

Do not install the inverter on the ceiling.

General comments regarding inverter installation location

The following criteria should be taken into account when choosing a location for the inverter:

Install only on a solid surface



Max. ambient temperatures:
-25 °C/+60 °C

Relative humidity:
0 - 100%

The airflow within the inverter is from the left to the top (cold air taken in from the left, hot air dissipated out of the top).

If the inverter is installed in a switch cabinet or a similar sealed area, then forced-air ventilation must be provided to ensure adequate heat dissipation.

If the inverter is to be installed on the outer wall of a cattle shed, maintain a minimum all-round clearance of 2 m between the inverter and all ventilation and other openings in the building.
The installation location must not be exposed to ammonia, corrosive vapours, salts or acids.

Attaching the Wall Bracket

Safety

WARNING! An electric shock can be fatal. Danger due to residual voltage in capacitors. Wait for the capacitors to discharge. The discharge time is five minutes.

CAUTION! Risk of damage to the inverter from dirt or water on the terminals and contacts of the connection area.

- When drilling, ensure that terminals and contacts in the connection area do not become dirty or wet.
- Without a power stage set, the wall bracket does not conform to the protection class of the inverter as a whole and so must not be installed without the power stage set.
  The wall bracket should be protected from dirt and moisture during installation.

NOTE! Degree of protection IP 65 is only applicable if

- the inverter is permanently attached to the wall bracket with screws
- the cover for the data communication area is permanently attached to the inverter with screws.

Degree of protection IP 20 applies to the wall bracket with no inverter.

Selecting wall plugs and screws

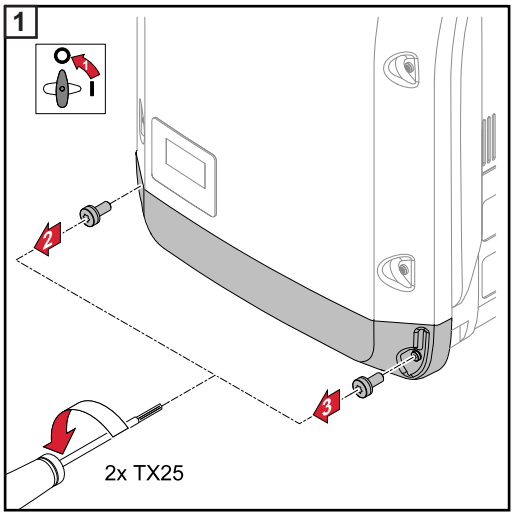
IMPORTANT! Different fixings may be required to fit the wall bracket depending on the type of underlying surface. Fixings are therefore not included in the scope of supply of the inverter. The installer is responsible for selecting the right type of fixing.

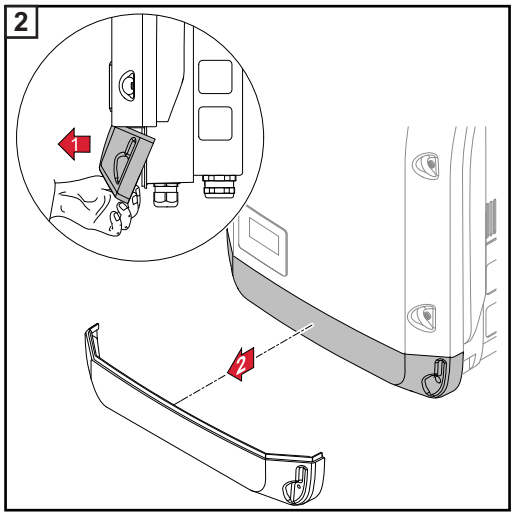
Recommended screws

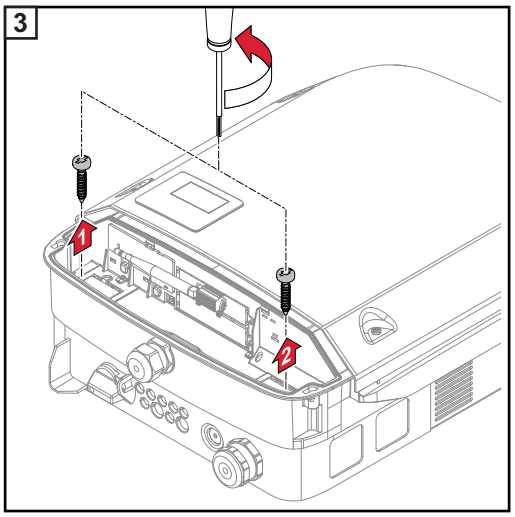
To install the inverter, the manufacturer recommends the use of steel or aluminium screws with a diameter of 6 - 8 mm.

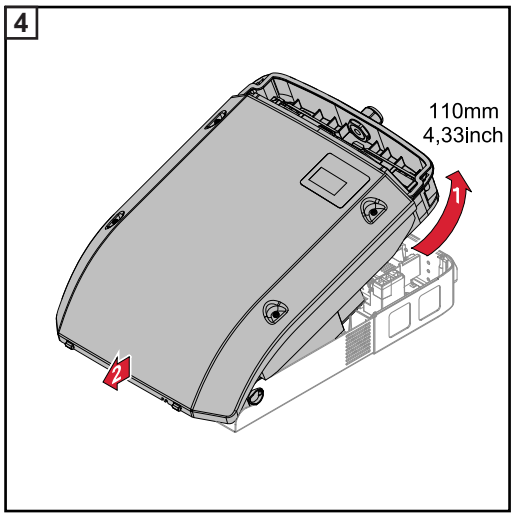
Opening the inverter

WARNING! An inadequate ground conductor connection can cause serious injury or damage. The housing screws provide a suitable ground conductor connection for grounding the housing and must NOT be replaced by any other screws that do not provide a reliable ground conductor connection.

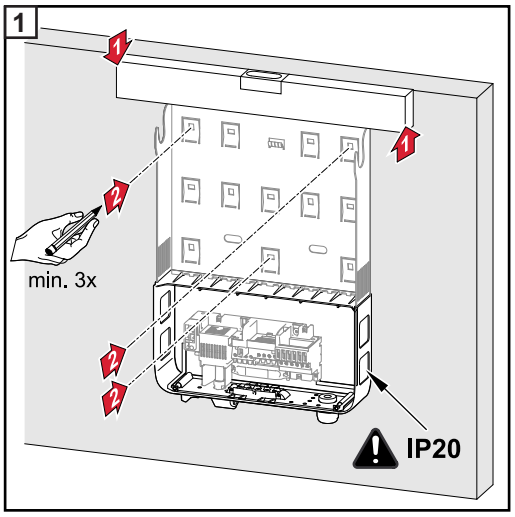


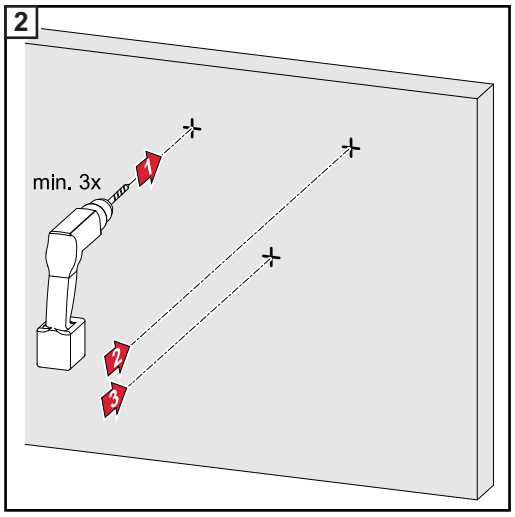




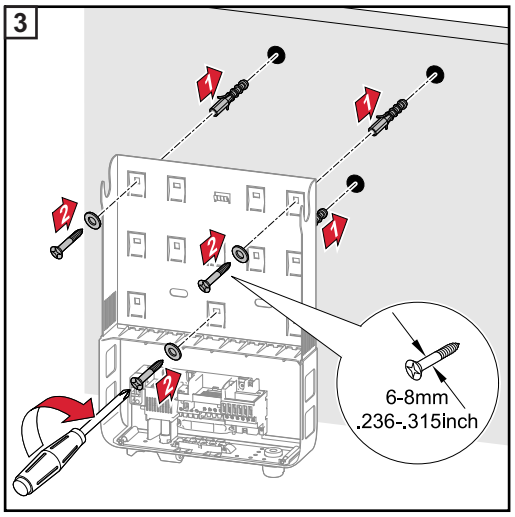


Fixing the wall bracket to a wall



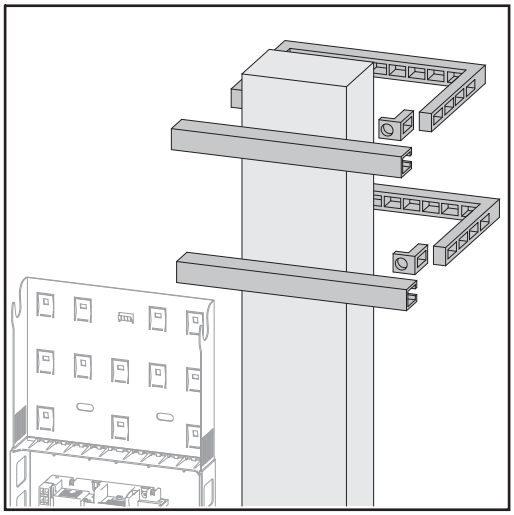


Tip: Install the inverter such that its display is at eye level



NOTE! When mounting the wall bracket on the wall, ensure that the wall bracket is not warped or deformed.

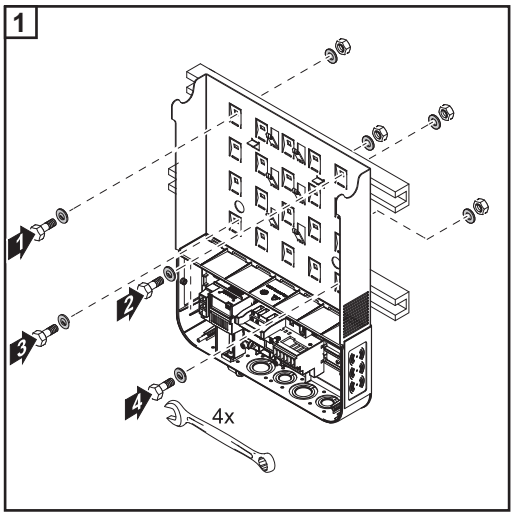
Fitting the wall bracket to a mast or support



When installing the inverter on a mast or support, Fronius recommends the "Pole Clamp" kit from Rittal GmbH (order no. SZ 2584.000).
This kit enables the inverter to be installed on round or rectangular masts with the following diameters: ∅ from 40 to 190 mm (round mast), □ from 50 to 150 mm (rectangular mast)

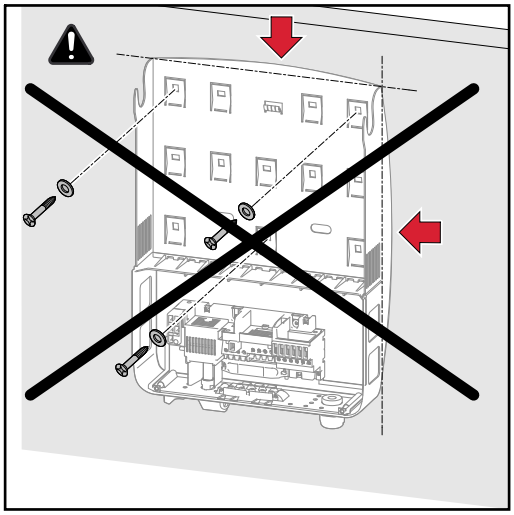
Fitting the wall bracket to metal supports

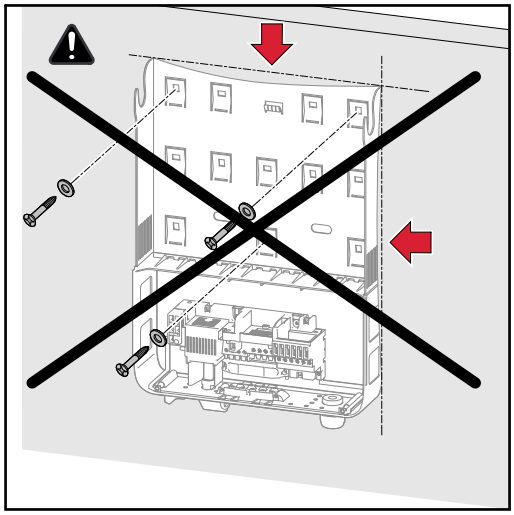
The wall bracket must be fastened at a minimum of four points.



Do not warp or deform the wall bracket

NOTE! When fitting the wall bracket to the wall, ensure that the wall bracket does not become warped or deformed.





Connecting the inverter to the public grid (AC)

Safety

WARNING! Incorrect operation or poorly executed work can cause serious injury or damage. Commissioning of the inverter may only be carried out by trained personnel in accordance with the technical regulations. Read the installation and operating instructions before installing and commissioning the equipment.

WARNING! An electric shock can be fatal. Danger due to grid voltage and DC voltage from solar modules that are exposed to light.
- Ensure that both the AC side and the DC side of the inverter are de-energised before carrying out any connection work.
- Only an authorised electrical engineer is permitted to connect this equipment to the public grid.

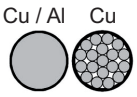
CAUTION! Risk of damage to the inverter as a result of incorrectly tightened terminals. Incorrectly tightened terminals can cause heat damage to the inverter and, in turn, lead to a fire. When connecting AC and DC cables, ensure that all the terminals are tightened to the specified torque.

Monitoring the Grid

IMPORTANT! The resistance in the leads to the AC-side connection terminals must be as low as possible for optimal functioning of grid monitoring.

Type of AC cable

The following types of AC cable can be connected to the AC terminals of the inverter:



- copper or aluminium: round, single wire
- Copper: round, finely stranded up to conductor category 4

Connecting aluminum cables

The AC-side terminals are designed for connecting single-wire, round, aluminum cables. The following points must be taken into account when connecting aluminum cables due to the non-conducting oxide layer of aluminum:
- Reduced rated currents for aluminum cables
- The connection requirements listed below

NOTE! Take into account local specifications when configuring cable cross sections.

Connection Requirements:

1 Carefully clean off the oxide layer of the stripped end of the cable, e.g., using a knife.

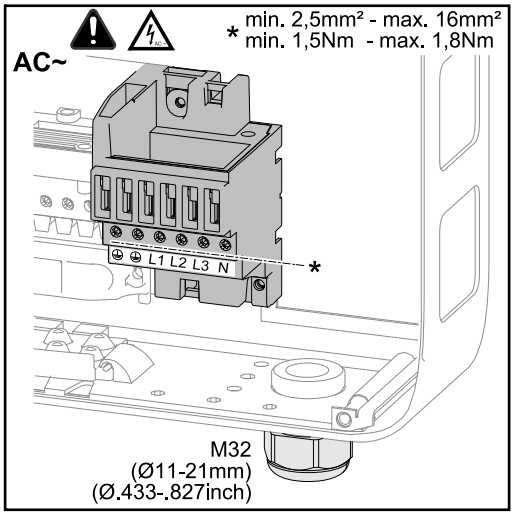
IMPORTANTDo not use brushes, files or sandpaper. Aluminum particles may get stuck and can transfer to other cables.

2 After removing the oxide layer of the cable end, rub in a neutral grease, e.g., acid- and alkali-free Vaseline.

3 Then immediately connect it to the terminal.

Repeat the steps above whenever the cable is disconnected and then reconnected.

AC terminals



PE Ground conductor / grounding
L1-L3 Phase conductor
N Neutral conductor

Max. cross-section of each conductor cable:
16 mm²

Min. cross-section of each conductor cable: in accordance with the fuse rating on the AC side, but at least 2.5 mm²

The AC cables can be connected to the AC terminals without ferrules.

IMPORTANT! When using ferrules for AC cables with a cross-section of 16 mm², the ferrules must be crimped with a right-angled cross-section.
The use of ferrules with insulating collars is only permitted up to a max. cable cross-section of 10 mm².

Cross-section of the AC cable

When using a standard M32 metric screw joint with reducer:
cable diameter 7 - 15 mm

When using an M32 metric screw joint (reducer removed):
cable diameter 11 - 21 mm
(with a cable diameter of 11 mm the strain-relief force is reduced from 100 N to a maximum of 80 N)

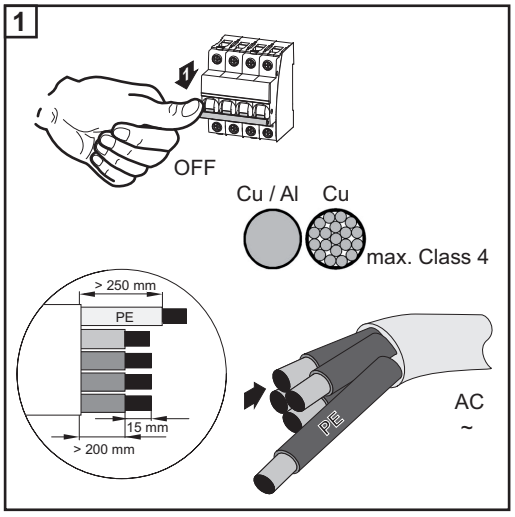
With cable diameters greater than 21 mm, the M32 screw joint must be replaced by an M32 screw joint with a larger clamping area - item number: 42,0407,0780 - strain-relief M32x15 KB 18-25.

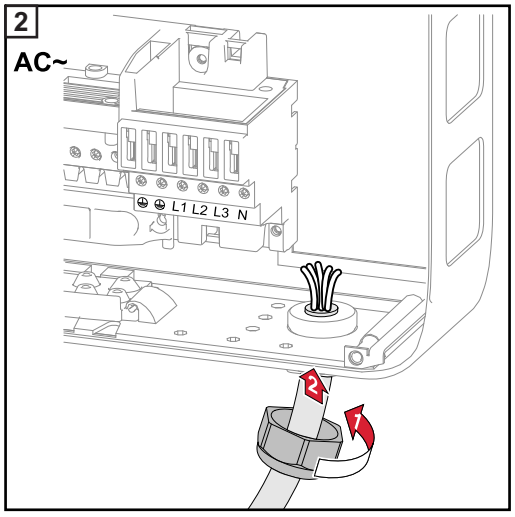
Connecting the inverter to the public grid (AC)

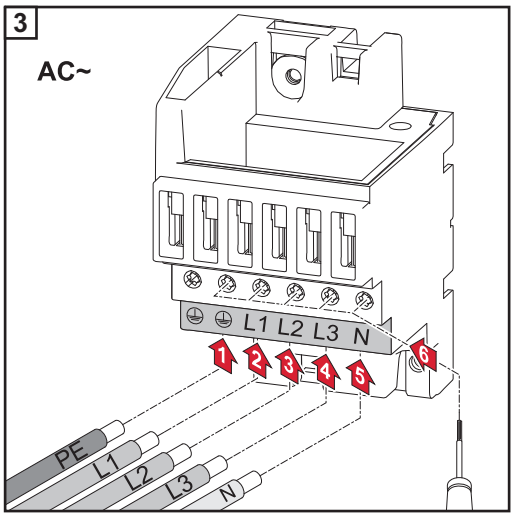
NOTE! Form loops with the AC cables when connecting them to the AC terminals.
When securing the AC cables using a metric screw joint, ensure that the loops do not protrude beyond the connection area. Otherwise, under certain circumstances it may no longer be possible to close the inverter.

NOTE!
- Ensure that the grid neutral conductor is grounded. This may not be the case for IT networks (insulated networks with no grounding); it will then not be possible to use the inverter.
- In order to use the inverter, the neutral conductor must be connected.
  A neutral conductor that is too small may adversely affect the grid power feed operation of the inverter. The neutral conductor must therefore be the same size as the other live conductors.

IMPORTANT! The PE ground conductor of the AC cable must be laid in such a way that it is the last to be disconnected in the event that the strain-relief device should fail.
This can be ensured, for example, by making it somewhat longer and by laying it in a loop.

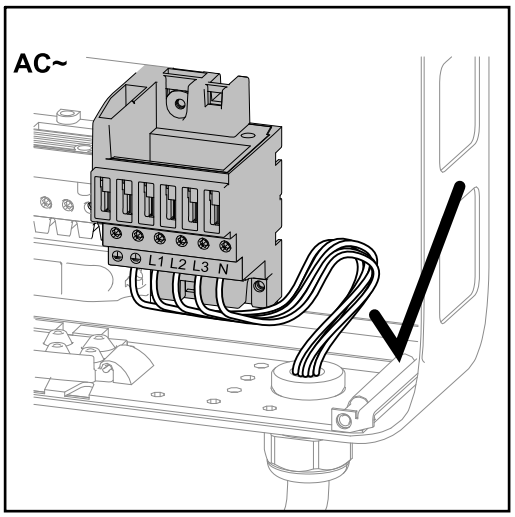


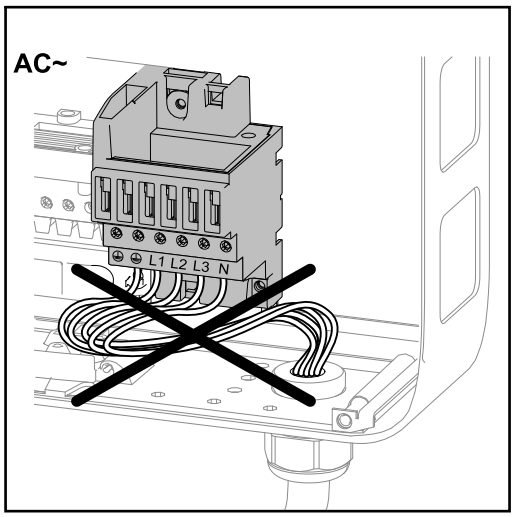


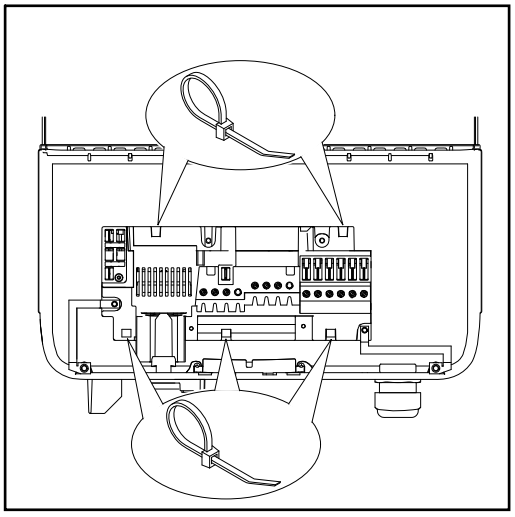


If AC cables are laid over the shaft of the DC main switch or across the connection block of the DC main switch, they may be damaged when the inverter is swung in, or they may even prevent the inverter from being swung in.

IMPORTANT! Do not lay AC cables over the shaft of the DC main switch or across the connection block of the DC main switch.

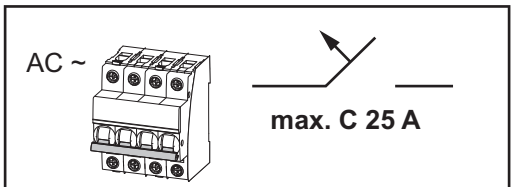




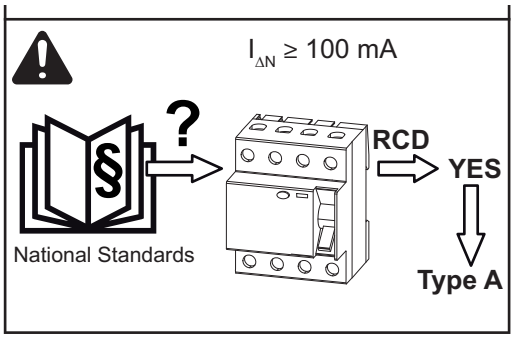


If overlength AC or DC cables are to be laid in loops in the connection area, attach the cables with cable ties to the eyelets provided on the top and bottom of the connection block.

Maximum fuse rating on alternating current side



Inverter	Phases	AC power	Maximum fuse rating	Recommended fuse rating
Fronius Symo 3.0-3-S / -M	3	3000 W	C 25 A	C 10 A
Fronius Symo 3.7-3-S / -M	3	3700 W	C 25 A	C 13 A
Fronius Symo 4.5-3-S / -M	3	4500 W	C 25 A	C 16 A
Fronius Symo 5.0-3-M	3	5000 W	C 25 A	C 16 A
Fronius Symo 6.0-3-M	3	6000 W	C 25 A	C 16 A
Fronius Symo 7.0-3-M	3	7000 W	C 25 A	C 20 A
Fronius Symo 8.2-3-M	3	8200 W	C 25 A	C 25 A

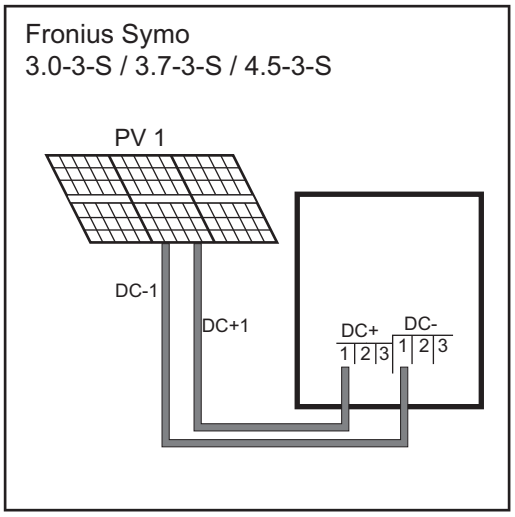


NOTE! Local regulations, the energy supply company or other factors may require an earth-leakage circuit breaker in the AC connection lead. For this situation, a type A earth-leakage circuit breaker with a tripping current of at least 100 mA is generally adequate. In particular cases, and depending on local factors, however, the type A earth-leakage circuit breaker may trip at the wrong time. For this reason, Fronius recommends that an earth-leakage circuit breaker that is suitable for frequency converters should be used.

Notes regarding inverters with single and multiple MPP trackers

Inverter with single MPP tracker

Fronius Symo 3.0-3-S / 3.7-3-S / 4.5-3-S



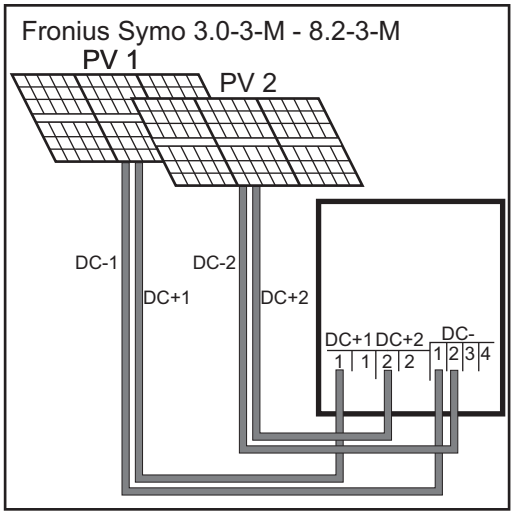
Connecting one solar module field to an inverter with a single MPP tracker

In the case of these inverters, there are three terminals available for each DC+ and DC-. The terminals are internally connected and are not fused. This means that a maximum of three strings can be connected directly to the inverter in parallel.
In this case, the solar modules must be able to carry at least the single reverse current (for two strings) or twice the reverse current (for three strings) (see data safety sheet for solar module).

Where there are more than three strings, an external combiner box with string fuses must be used. In this case, the strings must contain the same number of solar modules.

Inverter with multiple MPP trackers

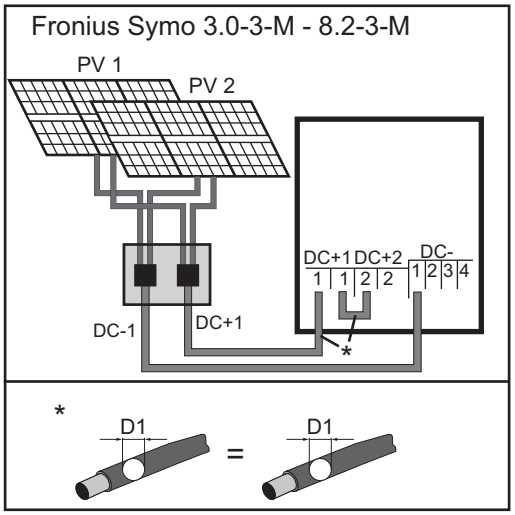
Fronius Symo 3.0-3-M - 8.2-3-M



Connecting two solar module fields to an inverter with multiple MPP trackers

In the case of inverters with multiple MPP trackers, there are two independent DC inputs (MPP trackers) available. These can be connected to an unequal number of solar modules.
There are two terminals for DC+ available per MPP tracker. In total there are four terminals for DC-.

Connecting two to four strings in multiple MPP tracker mode:
divide the strings between the two MPP tracker inputs (DC+1/DC+2). The DC- terminals can be used however you wish, as they are internally connected.
When starting for the first time, set MPP TRACKER 2 to "ON" (this can also be done later in the Basic menu)



Connecting multiple interconnected solar module fields to an inverter with multiple MPP trackers using one lead

Single MPP tracker mode on an inverter with multiple MPP trackers:

If the strings are connected using a string combiner box and only one bus is used for connection to the inverter, the connection DC+1 (pin 2) and DC+2 (pin 1) must be jumpered.
The wire diameter of the DC connection lead and the jumpering must be the same.
Jumpering of the DC terminal is not necessary, as these terminals are jumpered internally.

When starting for the first time, set MPP TRACKER 2 to "OFF" (this can also be done later in the Basic menu)

If the inverter with multiple MPP trackers is operated in single MPP tracker mode, the currents from the DC leads connected are divided evenly across both inputs.

Connecting solar module strings to the inverter (DC)

Safety

WARNING! Incorrect operation or poorly executed work can cause serious injury or damage. Commissioning of the inverter may only be carried out by trained personnel in accordance with the technical regulations. Read the installation and operating instructions before installing and commissioning the equipment.

WARNING! An electric shock can be fatal. Danger due to grid voltage and DC voltage from solar modules that are exposed to light.
- Ensure that both the AC side and the DC side of the inverter are de-energised before carrying out any connection work.
- Only an authorised electrical engineer is permitted to connect this equipment to the public grid.

WARNING! An electric shock can be fatal. Danger due to grid voltage and DC voltage from solar modules.
- The DC main switch is only to be used to de-energise the power stage set. The connection area is still live when the DC main switch is switched off.
- Ensure that the power stage set and connection area are disconnected from one another before carrying out any maintenance or service tasks.
- The power stage set, which is enclosed in a separate housing, must only be disconnected from the connection area when in a de-energized state.
- Maintenance and servicing in the power stage set of the inverter must only be carried out by Fronius-trained service technicians.

CAUTION! Risk of damage to the inverter as a result of incorrectly tightened terminals. Incorrectly tightened terminals can cause heat damage to the inverter and, in turn, lead to a fire. When connecting AC and DC cables, ensure that all the terminals are tightened to the specified torque.

CAUTION! Risk of damage to inverter from overload.
- The maximum amperage when connecting to a single DC terminal is 33 A.
- Connect the DC+ and DC- cables to the DC+ and DC- terminals on the inverter, taking care to ensure that the polarity is correct.
- Observe the maximum DC input voltage.

NOTE! The solar modules connected to the inverter must conform to the Class A requirements of the IEC 61730 standard.

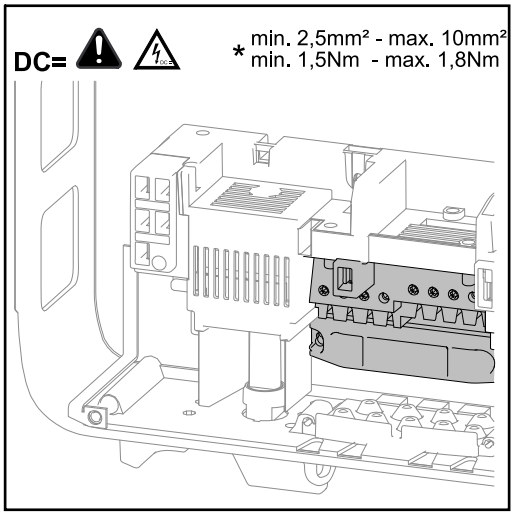
NOTE! When photovoltaic modules are exposed to light they supply current to the inverter.

General comments regarding solar modules

To enable suitable solar modules to be chosen and to use the inverter as efficiently as possible, it is important to bear the following points in mind:
- If insolation is constant and the temperature is falling, the open circuit voltage of the solar modules will increase. The open circuit voltage must not exceed 1000 V. If the open circuit voltage exceeds the specified values, the inverter will be destroyed and no warranty claims will be entertained.
- The temperature coefficients on the solar modules data sheet must be observed
- More exact values for dimensioning the solar modules can be provided by suitable calculation programs, like the Fronius Solar.configurator (which can be downloaded from www.fronius.com).

NOTE! Before you connect up the solar modules you should check that the voltage specified by the manufacturer corresponds to the actual measured voltage.

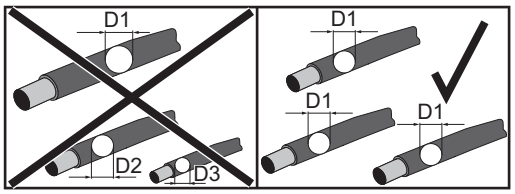
DC terminals



Max. cross-section of each DC cable:
16 mm²

Min. cross-section of each DC cable:
2.5 mm²

The DC cables can be connected to the DC terminals without ferrules.



NOTE! To ensure effective strain relief of the solar module strings, only use cables with identical cross-sections.

IMPORTANT! When using ferrules for DC cables with a cross-section of 16 mm², the ferrules must be crimped with a right-angled cross-section.
The use of ferrules with insulating collars is only permitted up to a max. cable cross-section of 10 mm².

Connecting aluminum cables

The DC-side terminals are designed for connecting single-wire, round aluminum cables. The following points must be taken into account when connecting aluminum cables due to the non-conducting oxide layer of aluminum:

- Reduced rated currents for aluminum cables
- The connection requirements listed below

NOTE! Take into account local specifications when configuring cable cross sections.

Connection Requirements:

1 Carefully clean off the oxide layer of the stripped end of the cable, e.g., using a knife.

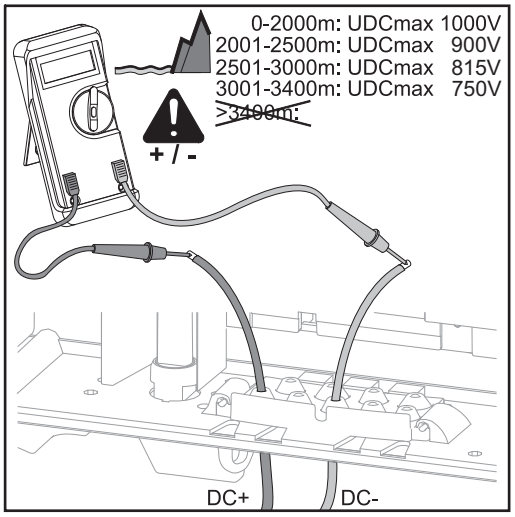
IMPORTANT Do not use brushes, files or sandpaper. Aluminum particles may get stuck and can transfer to other cables.

2 After removing the oxide layer of the cable end, rub in a neutral grease, e.g., acid- and alkali-free Vaseline.

3 Then immediately connect it to the terminal.

Repeat the steps above whenever the cable is disconnected and then reconnected.

Connecting solar module strings to the inverter (DC)

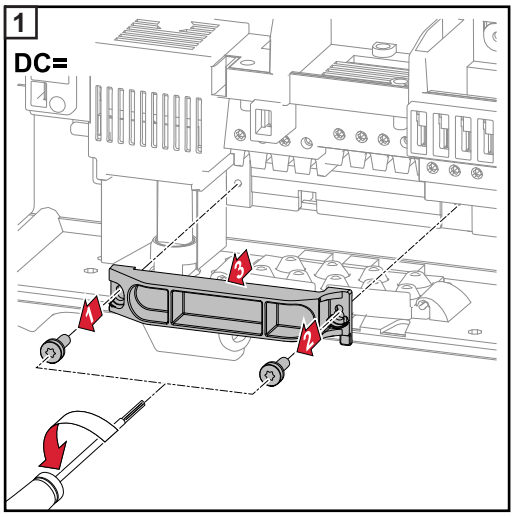


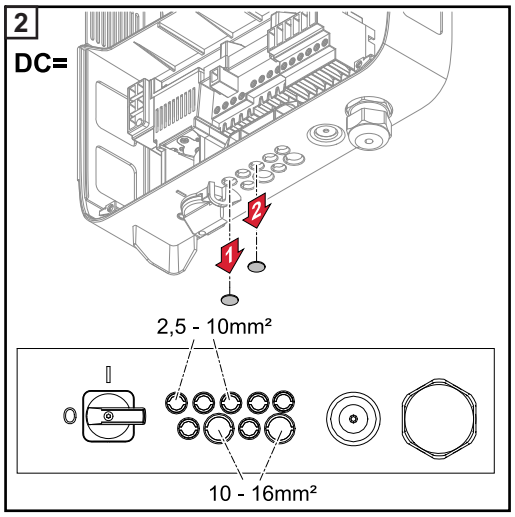
CAUTION! Risk of possible damage to the inverter! Check the polarity and voltage of the solar module strings before making the connection. The voltage must not exceed the following values:

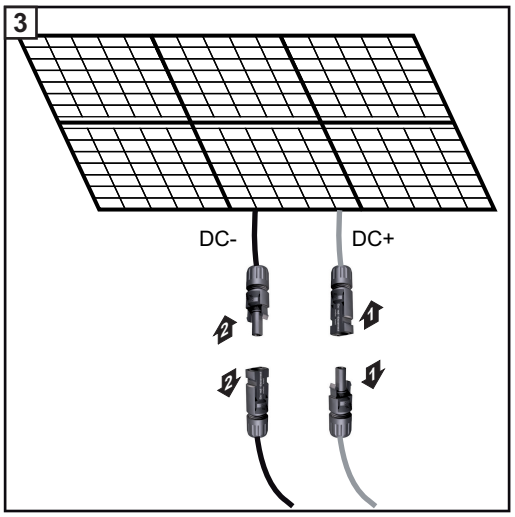
- when installed between 0 and 2000 m above sea level: 1000 V
- when installed between 2001 and 2500 m above sea level: 900 V
- when installed between 2501 and 3000 m above sea level: 815 V
- when installed between 3001 and 3400 m above sea level: 750 V

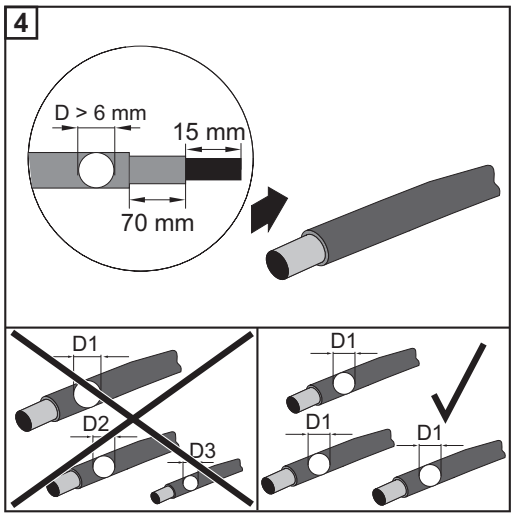
NOTE! Only break out as many break points as there are cables.

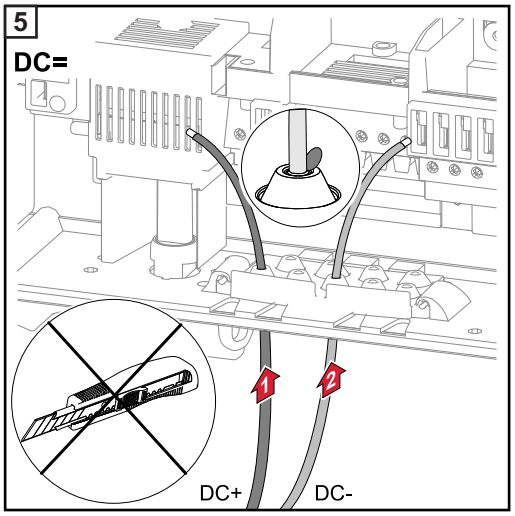
The difference between the individual solar module strings must not exceed 10 V.

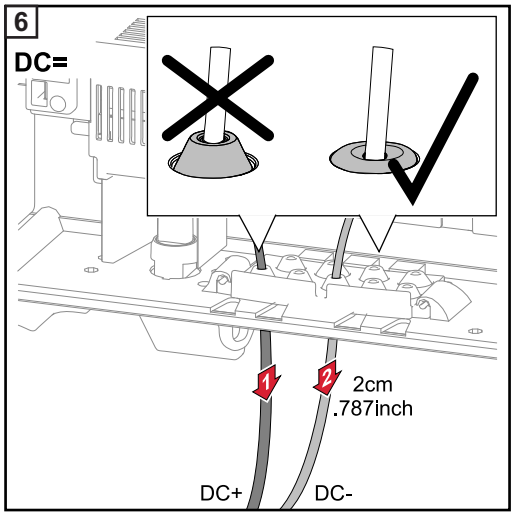


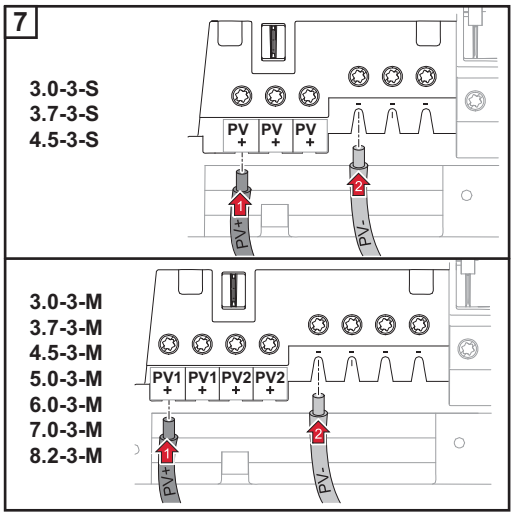


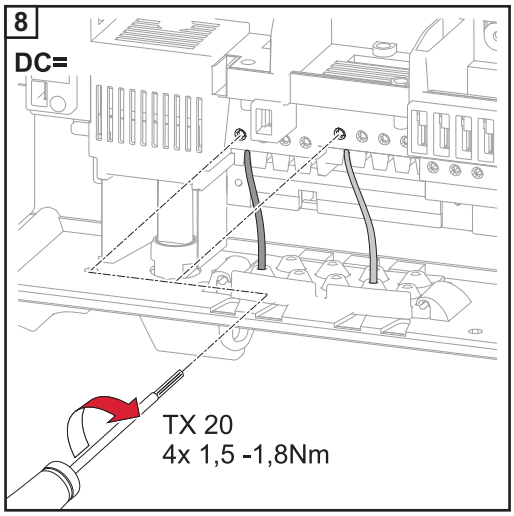


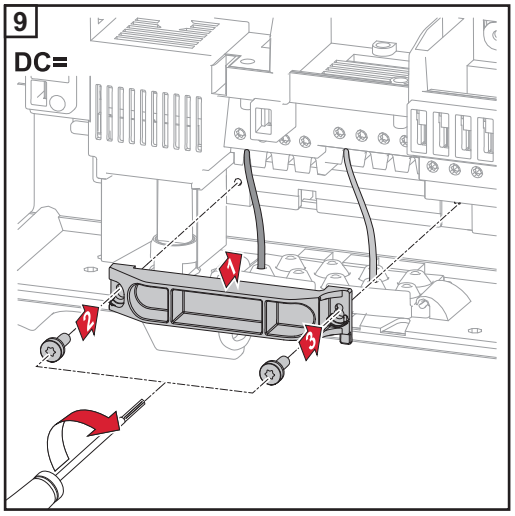


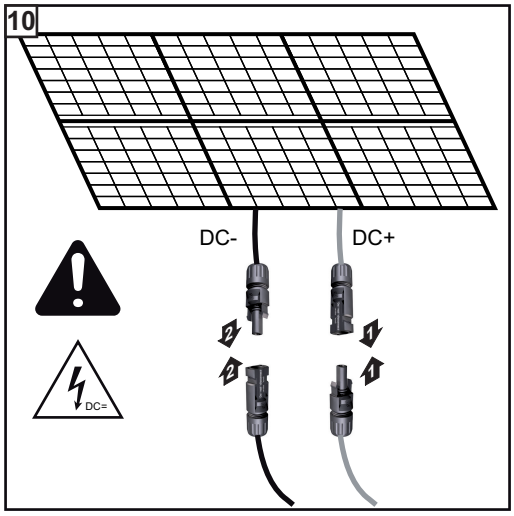

5
DC=
DC+
DC-

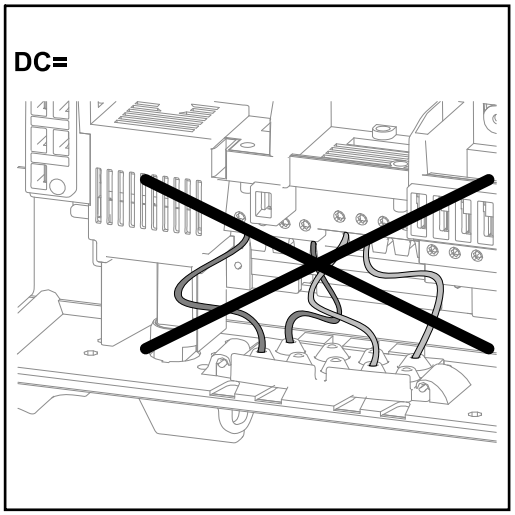

6
DC=
2cm
.787inch
DC+
DC-


7
3.0-3-S
3.7-3-S
4.5-3-S
PV +
PV +
PV +
PV+
PV-
3.0-3-M
3.7-3-M
4.5-3-M
5.0-3-M
6.0-3-M
7.0-3-M
8.2-3-M
PV1 +
PV1 +
PV2 +
PV2 +
PV+
PV-


8
DC=
TX 20
4x 1,5 -1,8Nm

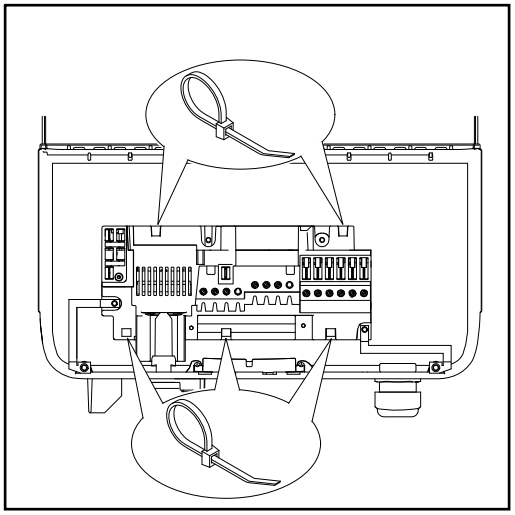

9
DC=


10
DC-
DC+
DC=



If DC cables are laid over the shaft of the DC main switch or across the connection block of the DC main switch, they may be damaged when the inverter is swung in or they may even prevent the inverter from being swung in.

IMPORTANT! Do not lay DC cables over the shaft of the DC main switch or across the connection block of the DC main switch.



If overlength AC or DC cables are to be laid in loops in the connection area, attach the cables with cable ties to the eyelets provided on the top and bottom of the connection block.

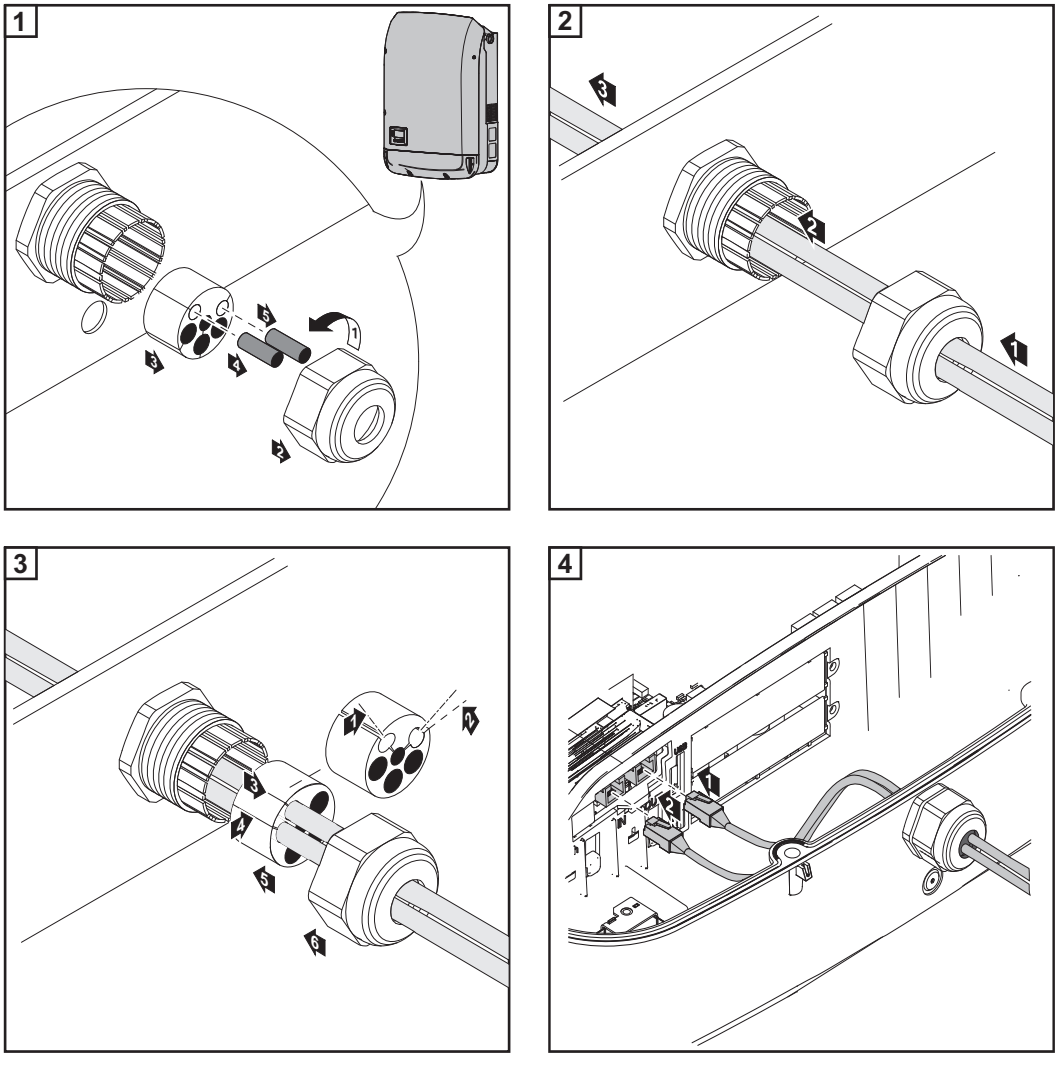
Data communication

Routing data communication cables

IMPORTANT! Operating the inverter with one option card and two broken-out option card slots is not permitted.
To cater for this eventuality, a suitable blanking cover (42,0405,2020) is available from Fronius as an option.

IMPORTANT! Note the following if data communication cables are being introduced into the inverter:

- depending on the number and cross-section of the data communication cables that are being introduced, take the relevant blanking plugs out of the sealing insert and insert the data communication cables.
- the relevant blanking plugs must be inserted into the free openings on the sealing insert.



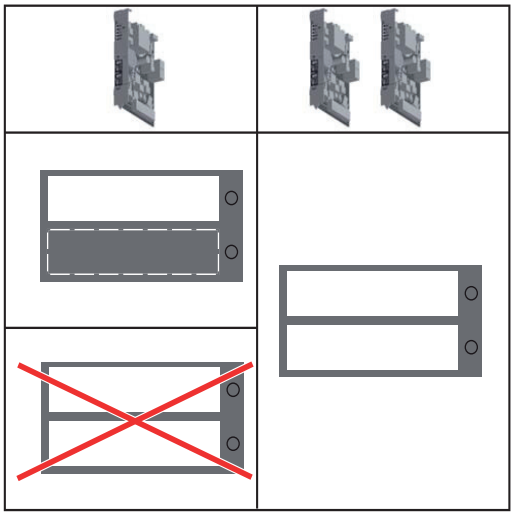
Installing the Datamanager in the inverter

WARNING! An electric shock can be fatal. Danger from residual voltage in capacitors.
Wait for the capacitors to discharge. The discharge time is five minutes.

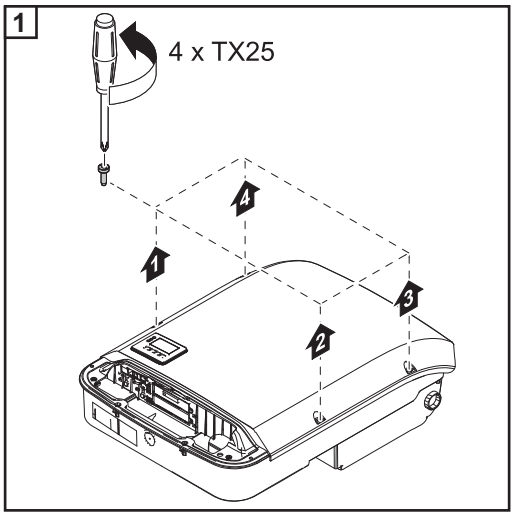
WARNING! An inadequate ground conductor connection can cause serious injury or damage. The housing screws provide a suitable ground conductor connection for grounding the housing and must NOT be replaced by any other screws that do not provide a reliable ground conductor connection.

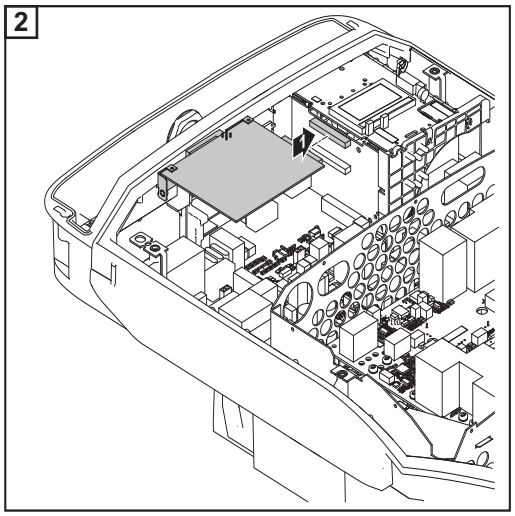
IMPORTANT! Observe the ESD guidelines when handling option cards.

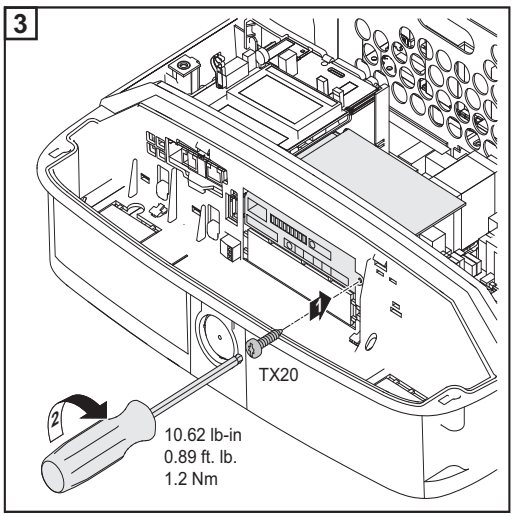
IMPORTANT! Only one Fronius Datamanager in master mode is permitted per Fronius Solar Net ring. Switch any other Fronius Datamanagers to slave mode or remove them. Seal off the unoccupied option card slot by replacing the cover (item no. 42,0405,2094); alternatively, use an inverter without a Fronius Datamanager (light version).

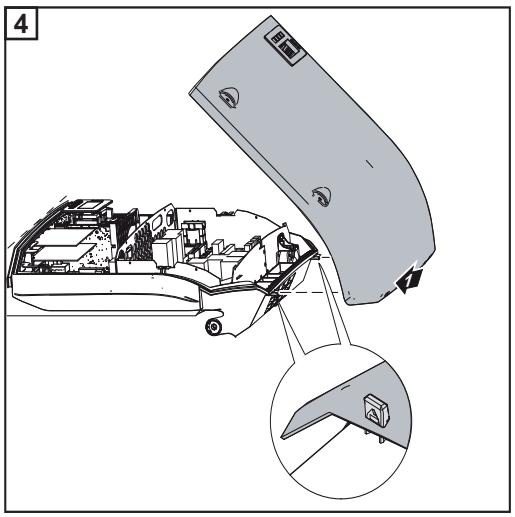


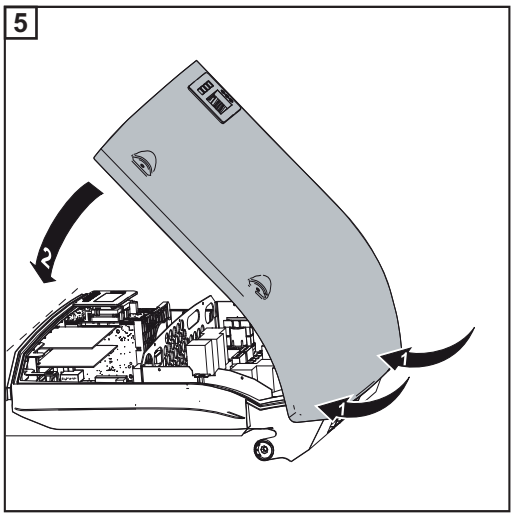
IMPORTANT! Only break out one opening for the PC board when installing a Datamanager in the inverter.

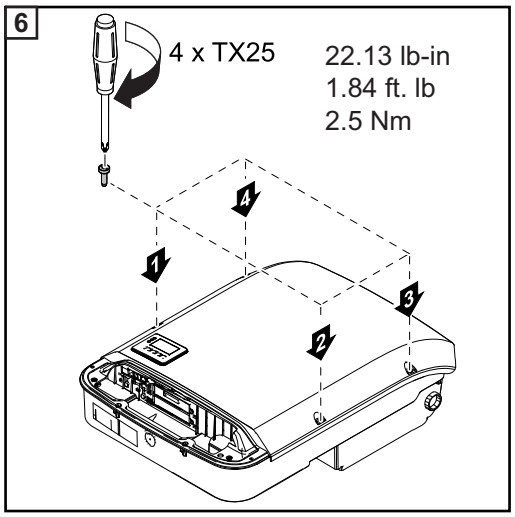









5
2
1
1


6
4 x TX25
22.13 lb-in
1.84 ft. lb
2.5 Nm
4
1
3
2

Clipping the Inverter onto the Wall Bracket

Attaching the inverter to the wall bracket

WARNING! An inadequate ground conductor connection can cause serious injury or damage. The housing screws provide a suitable ground conductor connection for grounding the housing and must NOT be replaced by any other screws that do not provide a reliable ground conductor connection.

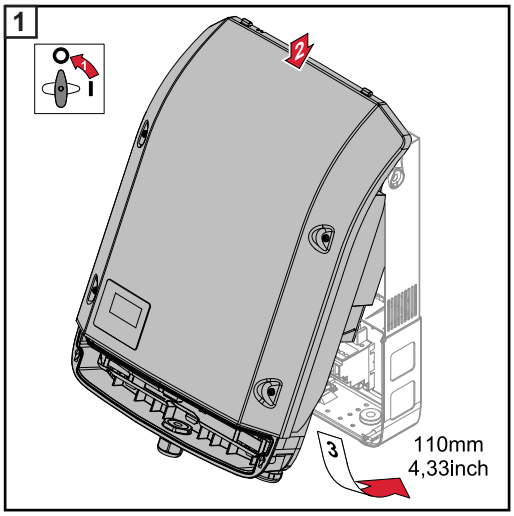
The side sections of the housing lid are designed to function as holding and carrying handles.

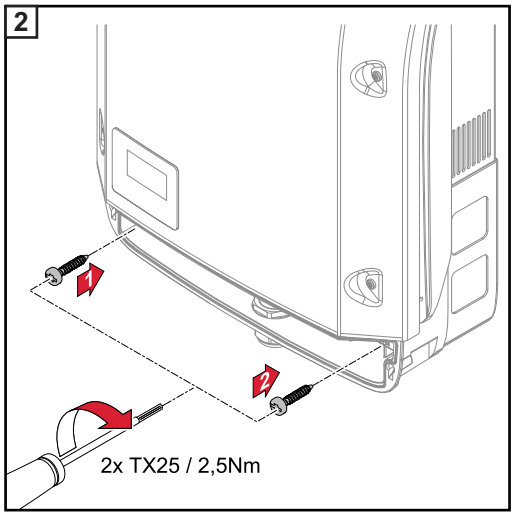
NOTE! For safety reasons, the inverter is fitted with a latch that prevents the inverter from being swung into the wall bracket unless the DC main switch is switched off.

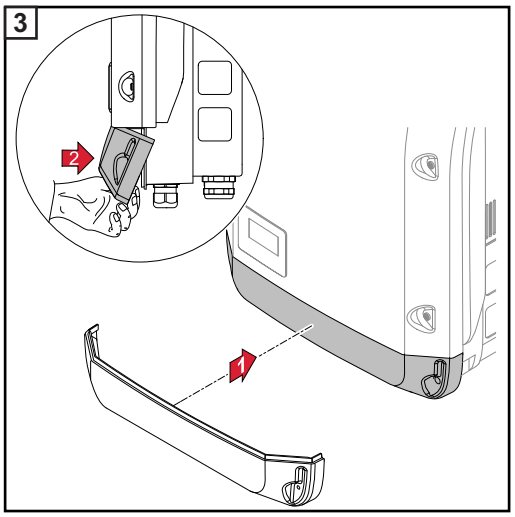
- Never attach the inverter to the wall bracket or swing it in unless the DC main switch is switched off,
- Never use force to attach the inverter or swing it in.

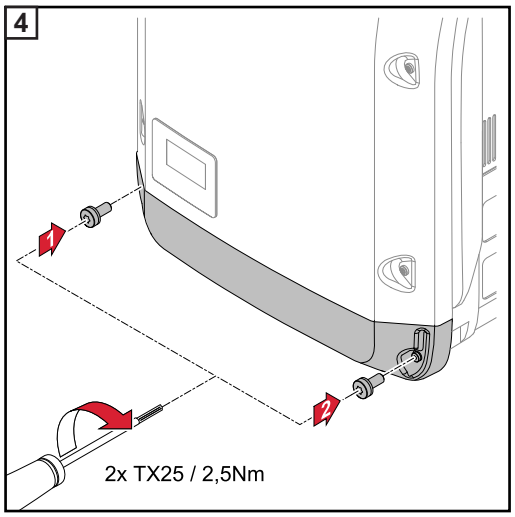
The fastening screws in the data communication area of the inverter are used for securing the inverter to the wall bracket. Correctly tightened fastening screws are a prerequisite if proper contact is to be established between inverter and wall bracket.

CAUTION! If the fastening screws are not tightened correctly, then the inverter is at risk of being damaged.
Fastening screws that are not correctly tightened can result in arcs occurring when the inverter is in operation, which in turn can cause fires. Always use the specified torque when tightening the fastening screws.






3
2
1


4
1
2
2x TX25 / 2,5Nm

Starting for the first time

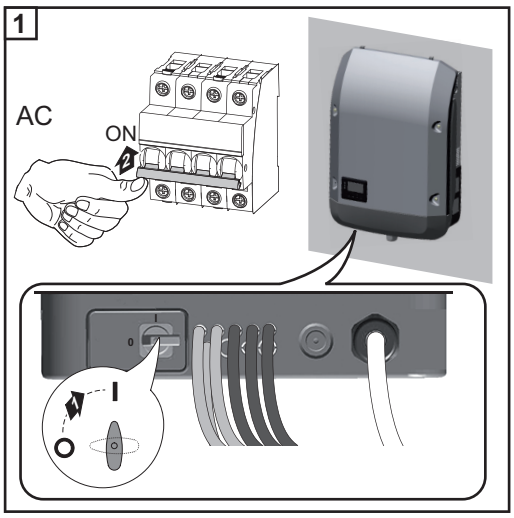
Starting the inverter for the first time

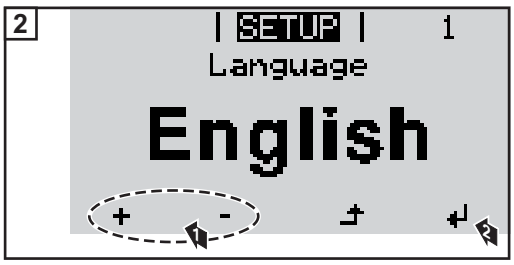
WARNING! Incorrect operation or poorly executed work can cause serious injury or damage. Commissioning of the inverter may only be carried out by trained personnel in accordance with the technical regulations. Read the installation and operating instructions before installing and commissioning the equipment.

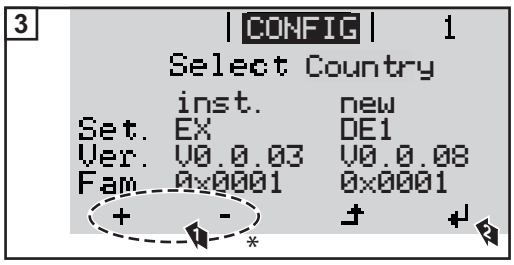
When starting the inverter for the first time, it is necessary to select various setup settings.

If setup is interrupted before it is complete, it can be restarted by means of an AC reset. An AC reset is performed by switching the automatic circuit breaker off and then on again.

The country setup can only be set when starting the inverter for the first time. If it becomes necessary to modify the country setup at a later date, please contact your Technical Support team.



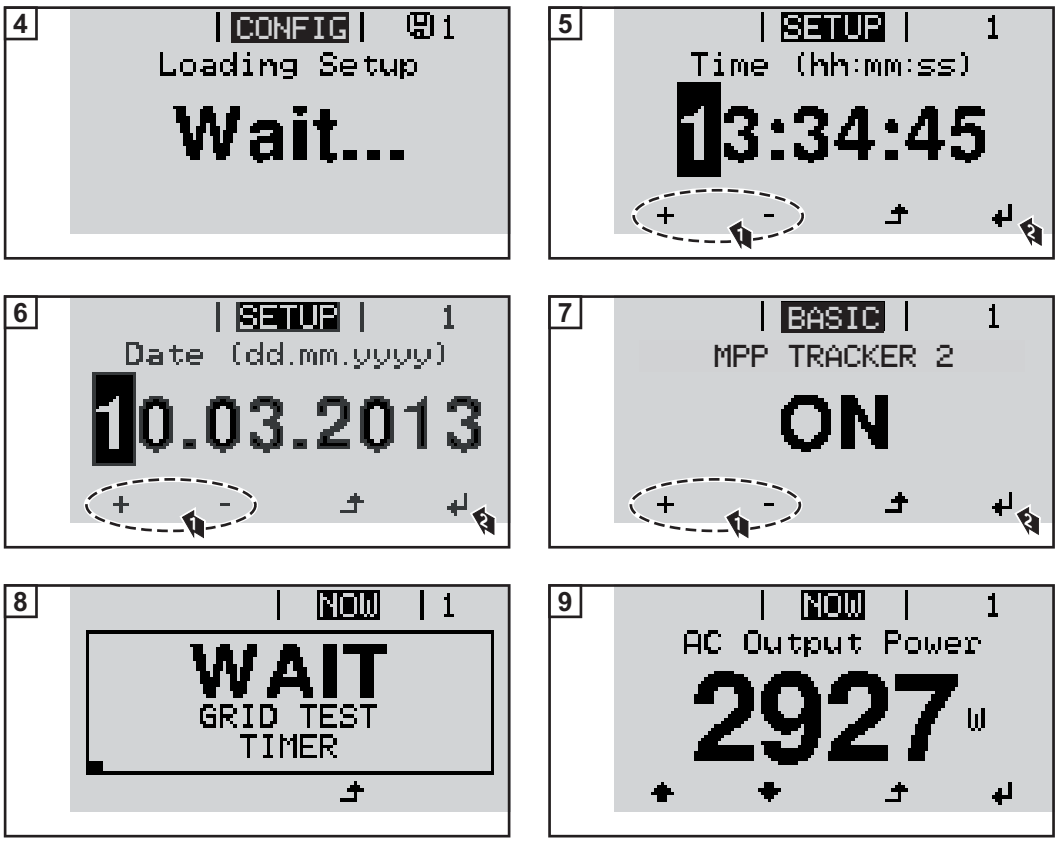




* Country setups

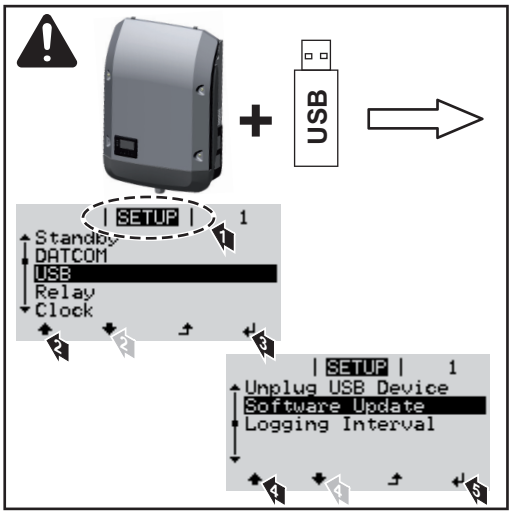
50 Hz	International 50 Hz	GB	Great Britain
60 Hz	International 60 Hz	GR	Ελλάδα
AT1	Österreich: Anlagengröße < 3,68 kVA	HU	Magyarország
AT2	Österreich: Anlagengröße < 13,8 kVA	IE	Éire / Ireland; Malta
AT3	Österreich: Anlagengröße > 13,8 kVA	IL	لسرائيل / ישראל / Israel
AU	Australia	IT2	Italia: Dimensioni impianto < 6 kVA (Multistring)
BE	Belgique / België	IT3	Italia: Dimensioni impianto > 6 kVA (Multistring)
BR2	Brasil: > 3,6 kVA	MG50	Microgrid 50 Hz
BR3	Brasil: > 6 kVA (Multistring)	MG60	Microgrid 60 Hz
CH	Schweiz / Suisse / Svizzera / Svizra	NL	Nederland

CY	Cyprus	PF1	Polynésie française
CZ	Česko	PT	Portugal
DE1	Deutschland: Anlagengröße < 3,68 kVA	RO	România
DE2	Deutschland: Anlagengröße < 13,8 kVA	SE	Sverige
DE3	Deutschland: Anlagengröße > 13,8 kVA	SI	Slovenija
DK	Danmark	SK	Slovensko
ES	España	TR	Türkiye
ESOS	Territorios españoles en el extranjero (Spanish Overseas Islands)	ZA	South Africa
FR	France		
FROS	Territoire d'Outre-Mer (French Overseas Islands)		



Notes regarding software updates

Notes regarding software updates



If the inverter is supplied with a USB stick, the inverter software must be updated as soon as the inverter has been commissioned:

1. Plug the USB stick into the data communication area of the inverter
2. Open the Setup menu
3. Select the "USB" menu item
4. Select "Software Update"
5. Update the software

USB Stick as a Data Logger and for Updating Inverter Software

USB stick as a data logger

A USB stick connected to the USB A socket can act as a data logger for an inverter.

Logging data saved to the USB stick can at any time
- be imported into the Fronius Solar.access software via the included FLD file,
- be viewed directly in third-party applications (e.g., Microsoft® Excel) via the included CSV file.

Older Excel versions (up to Excel 2007) have a row limit of 65536.

Data on the USB stick

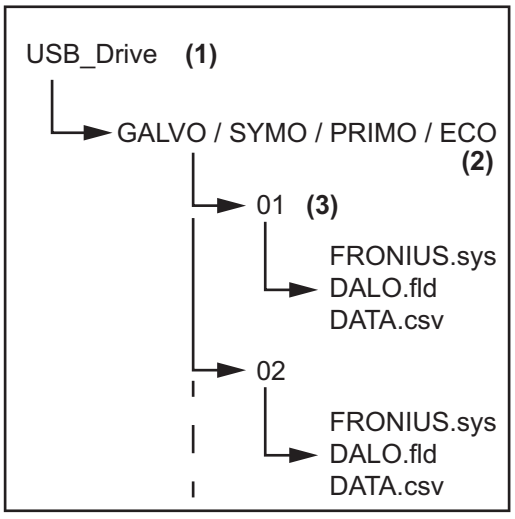
If the USB stick is being used as a data logger, three files will be created automatically:

- FRONIUS.sys system file:
  This file stores information from the inverter that is irrelevant to the customer. The file must not be deleted separately. Only delete all of the files (sys, fld, csv) at one time.

- DALO.fld log file:
  A log file for reading the data in the Fronius Solar.access software.

  Further details on the Fronius Solar.access software can be found in the "DATCOM Details" operating instructions at http://www.fronius.com

- DATA.csv log file:
  A log file for reading the data in a spreadsheet program (e.g.: Microsoft® Excel)



Data structure on the USB stick

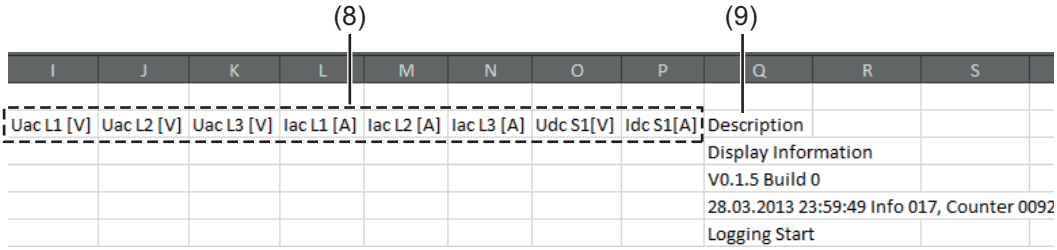
(1) USB root directory
(2) Fronius inverters (Fronius Galvo, Fronius Symo, Fronius Primo or Fronius Eco)
(3) Inverter number - can be set in the Setup menu under DATCOM

If there are several inverters with the same inverter number, the three files will be saved in the same folder. A digit is added to the file name as a suffix (e.g.: DALO_02.fld)

Structure of the CSV file:

(1) (2) (3) (4) (5) (6) (7)

	A	B	C	D	E	F	G	H
1	SerialNr.:1234567899874563 21'							
2	Date	Time	Inverter No.	Device Type	Periode [s]	Energy [Ws]	Energy L[Var]	Energy C[Var]
3	30.03.2013	17:15:19	1	247				
4	30.03.2013	17:15:19	1	247				
5	30.03.2013	17:15:19	1	247				
6	30.03.2013	17:15:20	1	247				



(1) ID
(2) Inverter no.
(3) Inverter type (DATCOM code)
(4) Logging interval in seconds
(5) Energy in watts per second, relative to the logging interval
(6) Inductive reactive power
(7) Capacitive reactive power
(8) Average values during the logging interval (AC voltage, AC current, DC voltage, DC current)
(9) Additional information

Data volume and storage capacity

A USB stick with a storage capacity of 1 GB can record logging data for roughly seven years at a logging interval of five minutes.

CSV file
CSV files can only store 65,535 lines (data records) (up to Microsoft® Excel 2007; there is no restriction from this version onwards).
At a five-minute logging interval, the 65,535 lines will be written within approximately seven months (CSV data size of approx. 8 MB).
In order to avoid data loss, the CSV file should be backed up to a PC and deleted from the USB stick within this seven-month period. If the logging interval is set to a longer period, this time frame will be increased accordingly.

FLD file
The FLD file should not be larger than 16 MB. This will provide enough storage capacity for approximately six years at a logging interval of five minutes.
If the file exceeds the 16 MB limit, it should be backed up to a PC and all of the data on the USB stick should be deleted.

After backing up and removing the data, the USB stick can be reconnected immediately to resume recording the logging data without any further steps being required.

NOTE! Using a full USB stick can lead to data loss or data being overwritten. When using USB sticks, always ensure that there is sufficient storage capacity on the stick.

Buffer memory

If the USB stick is unplugged (e.g. for data backup purposes), the logging data is written to a buffer memory in the inverter.
As soon as the USB stick is plugged in again, the data is copied automatically from the buffer memory to the stick.

The buffer memory can store a maximum of six logging points. Data is only logged while the inverter is running (output greater than 0 W). The logging interval is permanently set at 30 minutes. Data can be recorded on the buffer memory for a three-hour time period as a result.

When the buffer memory is full, the oldest data in the memory will be overwritten by the next batch of data.

IMPORTANT! The buffer memory requires a permanent power supply.
If there is a power failure while the inverter is in operation, all the data in the buffer memory will be lost. To avoid losing data during the night, the automatic night switch-off facility must be deactivated (switch the "Night Mode" setup parameter to ON - see the section "Setting and displaying the menu items", "Viewing and adjusting parameters in the DATCOM menu item").
On the Fronius Eco, the buffer memory also functions with just a DC supply

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Suitable USB flash drives

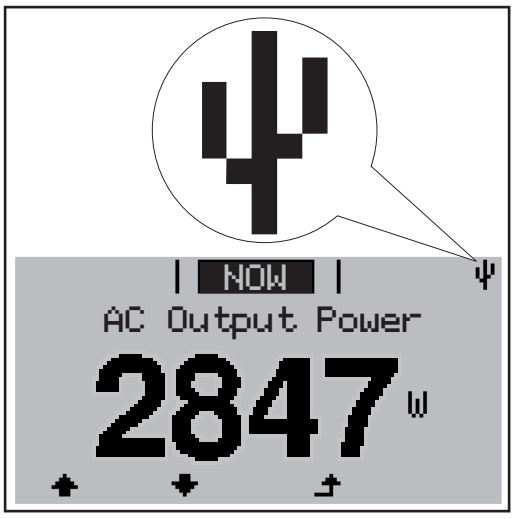
Due to the variety of USB flash drives available on the market, it cannot be guaranteed that every USB flash drive will be detected by the inverter.

Fronius recommends that only certified USB flash drives suitable for building sites are used (look out for the USB-IF logo).

The inverter supports USB flash drives with the following file systems:
- FAT12
- FAT16
- FAT32

Fronius recommends that the USB flash drives employed should only be used for recording logging data or updating the inverter software. The USB flash drives should not contain any other data.

USB symbol on the inverter display, e.g. in display mode 'NOW':



If the inverter detects a USB flash drive, the USB symbol will appear in the top right corner of the display.

When inserting a USB flash drive, check whether the USB symbol is displayed (it may also flash).

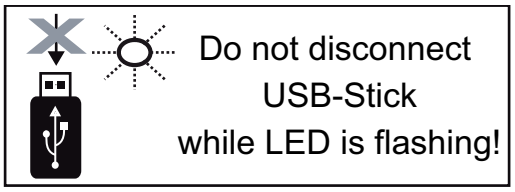
NOTE! Please note for outdoor applications that conventional USB flash drives are often only guaranteed to work within a restricted temperature range. For outdoor applications ensure that the USB flash drive also functions, for example, at low temperatures.

USB stick for updating the inverter software

With the help of the USB stick, end customers can also update the inverter software via the USB item on the SETUP menu: the update file is first saved to the USB stick, from where it is then transferred to the inverter. The update file must be saved in the root directory on the USB stick.

Remove USB stick

Security note concerning the removal of a USB stick:



IMPORTANT! To avoid any loss of data, a USB stick may only be removed if the following conditions are met:

- only remove a USB stick via the 'Safely remove USB / HW' item on the SETUP menu
- the 'Data transmission' LED has stopped flashing or comes on steady.

Notes regarding maintenance

Maintenance

NOTE! When installed outdoors in a horizontal position:
once a year, check that all screw joints are tight!

Maintenance and repair work must only be carried out by authorised personnel.

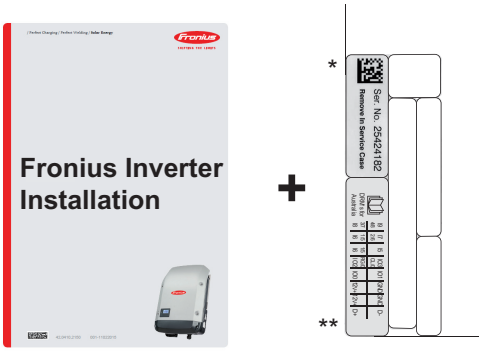
Cleaning

Clean the inverter and the display as required with a damp cloth.
Do not use cleaning agents, abrasives or solvents to clean the inverter.

Serial Number Sticker for Customer Use

Serial number sticker for customer use

The serial number of the inverter is located on the rating plate on the bottom of the inverter.
Depending on the installation position of the inverter, the serial number can be difficult to access or read, e.g. if the inverter has been installed in a dark or shaded area.

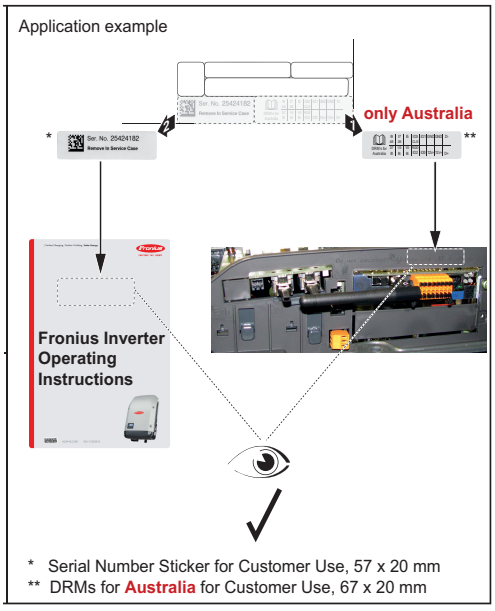


Two serial number stickers are enclosed with the inverter's installation instructions:

* 57 x 20 mm

** 67 x 20 mm

These can be affixed by the customer in a visible location of his choosing, e.g. on the front of the inverter or on the operating instructions.



Application example:
Serial number sticker on the operating instructions or on the front of the inverter

For Australia only:
Affix the DRM Australia sticker in the Datamanager area.

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Under http://www.fronius.com/addresses you will find all addresses of our sales branches and partner firms!