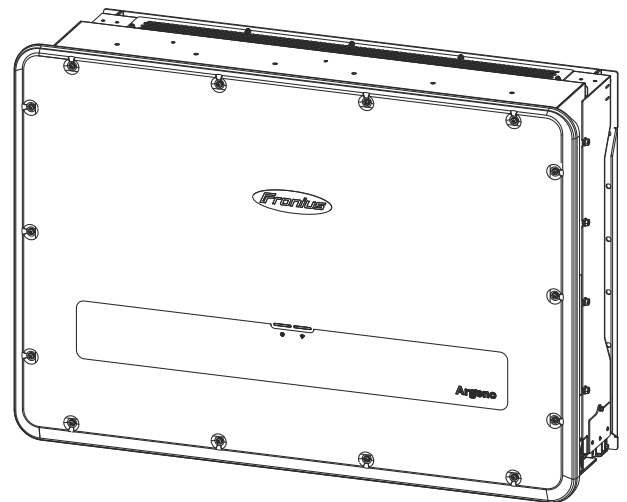


Operating Instructions

Fronius Argeno



EN | Operating Instructions



42,0426,0547,EA

009-31082026

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General information

Safety information

Explanation of warnings and safety instructions

Warnings are intended to warn people of possible injuries and to avoid personal injury and damage to the product. They relate to individual actions with and on the product.



DANGER

Indicates an immediately dangerous situation.

Serious injury or death will result if the danger is not avoided.

- Action step to escape the situation.



WARNING

Indicates a potentially dangerous situation.

Serious injury or death may result if the danger is not avoided.

- Action step to escape the situation.



CAUTION

Indicates a potentially dangerous situation.

Minor or moderate injury may result if the danger is not avoided.

- Action step to escape the situation.

NOTE

Indicates a situation that may result in property damage.

If the situation is not avoided, impaired work results, material damage to the product or other property are the possible consequences.

- Action step to avoid the situation.

Safety instructions are designed to ensure safe product use. They are preventive and help to inform users about the fundamental risks involved when dealing with the product. They do not refer specifically to individual actions with and on the product.

Safety instructions and important information

The device has been manufactured in line with the state of the art and according to recognized safety standards.



WARNING

Incorrect operation or misuse

Serious to fatal injuries to the operator or third parties as well as damage to the device and other property of the operator may result.

- All persons involved in the commissioning, maintenance, and servicing of the device must be appropriately qualified and have knowledge of working with electrical installations.
- Read these operating instructions in full and follow them carefully and precisely.
- The operating instructions must always be kept to hand wherever the device is being used.

IMPORTANT!

In addition to the operating instructions, observe the following general and local rules:

- Accident prevention
- Fire protection
- Environmental protection

IMPORTANT!

Labels, warning notices, and safety symbols are located on the device. A description can be found in these operating instructions.

IMPORTANT!

All safety and danger notices on the device:

- Must be kept in a legible state
- Must not be damaged/marked
- Must not be removed
- Must not be covered, have anything stuck on them, or painted over

**WARNING****Tampered-with and non-functioning protection devices**

Serious to fatal injuries as well as damage to the device and other property of the operator may result.

- ▶ Never bypass or disable protection devices.
- ▶ Any protection devices that are not fully functional must be repaired by an authorized specialist before the device is switched on.

**WARNING****Loose, damaged, or under-dimensioned cables**

An electric shock can be fatal.

- ▶ Use undamaged, insulated, and adequately dimensioned cables.
- ▶ Fasten the cables according to the specifications in the operating instructions.
- ▶ Loose, damaged, or under-dimensioned cables must be repaired or replaced immediately by an authorized specialist.

NOTE**Installations or modifications to the device**

The device may be damaged

- ▶ Do not carry out any alterations, installations, or modifications to the device without first obtaining the manufacturer's permission.
- ▶ Damaged components must be replaced.
- ▶ Only use original spare parts.

**Safety measures
at the installation
site**

When installing devices with ventilation slots, ensure that the ambient air can enter and exit unhindered through the vents. When selecting the installation site, observe the protection class (IP).

**Environmental
conditions**

Operation or storage of the machine outside the stipulated area will be deemed as not in accordance with the intended purpose.

For exact information on permitted environmental conditions, please refer to the technical data.

Electromagnetic fields

During operation, due to the high electrical voltages and currents, local electromagnetic fields (EMF) are generated. These occur in the immediate vicinity of the inverter and the Fronius system components. Electromagnetic fields are also present in the area of the PV modules and their supply lines.

As long as the intended use and a minimum distance of 20 cm are observed, all limit values for human exposure are observed.

If the limit values are complied with, according to current scientific knowledge, no negative health effects from EMF exposure are to be expected. For persons with prostheses¹⁾ or active physical aids²⁾, there is a possible health risk in the vicinity of photovoltaic system components. To avoid possible health risks, consult with the responsible doctor.

¹⁾ e.g., implants or metal parts

²⁾ e.g., pacemaker, insulin pump, hearing aid, etc.

EMC measures

In certain cases, even though a device complies with the standard limit values for emissions, it may affect the application area for which it was designed (e.g., when there is equipment that is susceptible to interference at the same location or if the site where the device is installed is close to either radio or television receivers). If this is the case, the operator is obliged to take action to rectify the situation.

Ground conductor

Connection of a point in the device, system, or installation to ground to protect against electric shock in the event of a fault. When installing an inverter from safety class 1 (see [Technical data](#)), a ground conductor connection is required.

When connecting the ground conductor, ensure that it is secured to prevent unintentional disconnection. All of the points listed in the chapter headed [Connecting the inverter to the public grid \(AC side\)](#) on page 32 must be observed. When using cable glands, ensure that the ground conductor is last to be subjected to a load in the event of a failure of the cable gland. The respective national standards and regulations and requirements for minimum cross-section must be observed when connecting the ground conductor.

Protection of people and equipment

Safety



WARNING

Danger due to incorrect operation and incorrectly performed work.

This can result in serious injury and damage to property.

- ▶ All the work and functions described in this document must only be carried out by trained and qualified personnel.
- ▶ Read and understand this document.
- ▶ Read and understand all the Operating Instructions for the system components, especially the safety rules.



WARNING

Danger from electromagnetic fields. Electromagnetic fields are generated during operation.

Effects on the health of persons (e.g., those wearing a pacemaker) can result.

- ▶ Do not remain closer than 20 cm from the inverter for a prolonged period of time.

INV OFF

The wired shutdown INV OFF interrupts the inverter's grid power feed if the trigger device (INV OFF) has been activated.

For installation, see [Connecting and activating INV OFF](#) on page 48.

Central grid and system protection

The inverter offers the option to use the integrated AC relays as section switches in conjunction with a central grid and system protection unit (in accordance with VDE-AR-N 4105:2018:11 § 6.4.1). For this purpose, integrate the central trigger device (switch) into the WSD chain as described in chapter 12 on page [INV OFF](#).

Grid and system protection for systems with multiple inverters

- Regional standards and guidelines may require the installation of external grid and system protection for systems >30 kVA.
- External grid and system protection can be omitted if the following conditions are met:
 - A Fronius Smart Meter IP performs the external voltage measurement.
 - The Fronius Smart Meter IP communicates with the primary device via the MQTT protocol.
 - The **On at Smart Meter** option is selected in the country setup in the **Long Time Average Limit** menu for each device. This equates to grid and system protection with remote voltage measurement.
 - On the user interface of the secondary device, the **Multiple Inverter Control** function is disabled.

RCMU

The inverter is equipped with an RCMU (RCMU = residual current monitoring unit) according to IEC 62109-2.

It monitors residual currents from the PV module up to the AC output and disconnects the inverter from the grid when an improper residual current is detected.

AFCI – arc detection

There is a device variant with arc detection AFCI (ArcFault Circuit Interrupter). Item number: 4,210,471.

An AFCI protects against arc faults and is a protection device in the event of contact faults. The AFCI continuously evaluates faults that occur in the current and voltage flow and shuts down the circuit if a contact fault is detected. This prevents overheating and possible fires at poor contact points.

IMPORTANT! Active PV module electronics (e.g., power optimizers) can impair the function of the Arc Fault Circuit Interrupter. We cannot guarantee that the Arc Fault Circuit Interrupter will work correctly in combination with active PV module electronics.

**WARNING****Arc faults due to faulty or incorrect DC installation**

Risk of fire as well as serious injuries and damage to the inverter and PV system.

- ▶ Connection work must be carried out in accordance with the technical specifications.
- ▶ Check the plug connections to ensure that they are in proper condition.
- ▶ Professionally repair faulty insulation.

IMPORTANT! Despite the integrated Arc Fault Circuit Interrupter and arc interruption, damage to the device as well as to other system components may occur (e.g., due to a parallel arc).

Safe state

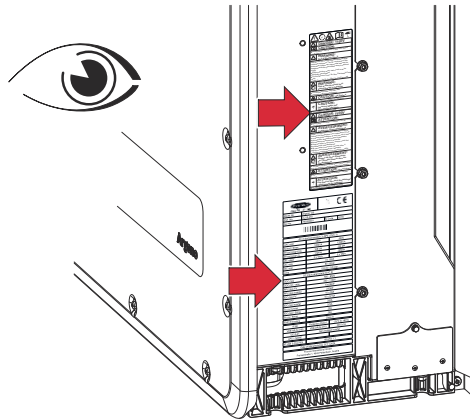
If one of the following safety devices is triggered, the inverter switches to the safe state:

- INV OFF
- Isolation measurement and
- RCMU

In the safe state, the inverter no longer feeds in and is disconnected from the grid by the opening of the AC relay.

General

Information on the device



Warning notices, labels, and safety symbols can be found on and in the inverter. This information must be kept in a legible condition and must not be removed, covered, pasted over, or painted over. The notices and symbols warn against incorrect operation, as this may result in serious injury and damage to property.

Symbols on the rating plate:



CE label – confirms compliance with applicable EU directives and regulations.



WEEE marking – waste electrical and electronic equipment must be collected separately and recycled in an environmentally sound manner in accordance with the European Directive and national law.

Safety symbols and text:



DANGER: 1100V
DANGER: 1100 V

WARNING: Risk of Electric Shock

Both AC and DC voltage sources are terminated inside this equipment. The DC conductors of this photovoltaic system are ungrounded and may be energized when the photovoltaic array is exposed to light.

- Before removing cover, each circuit must be individually disconnected.
- Do not remove cover. No user serviceable parts inside.
- Refer Servicing To Qualified Service Personnel.

Translation:

WARNING: Risk of electric shock

Both AC and DC voltage sources are terminated inside this equipment. The DC conductors of this photovoltaic system are ungrounded and may be energized when the photovoltaic system is exposed to light.

- Before removing cover, each circuit must be individually disconnected.
- Do not remove cover. No user serviceable parts inside.
- Have maintenance performed by qualified service personnel.

Safety symbols and text:



CAUTION: Read IMPORTANT SAFETY INSTRUCTIONS before Use.

Translation:

CAUTION: Read IMPORTANT SAFETY INSTRUCTIONS before use.

Do not use the functions described here until you have read and understood the following documents in full:

- These operating instructions.
- All operating instructions for the system components of the photovoltaic system, especially the safety rules.



CAUTION: Hot Surface

- To reduce the risk of burns - Do not touch.

Translation:

CAUTION: Hot surface

- To reduce the risk of burns - Do not touch.



WARNING: Risk of electric shock from stored energy in capacitor

- Do not remove cover until 5 min after disconnecting all sources of supply.

Translation:

WARNING: Risk of electric shock from stored energy in capacitor

- Do not remove cover until 5 min after disconnecting all sources of supply.



CAUTION: Ingress of water may damage the electronic

- Do not open unit when it rains.

Translation:

CAUTION: Ingress of water may damage the electronics

- Do not open unit when it is raining.

How information is presented in the document

The conventions regarding how information is presented in the document, which are set out below, have been defined in order to increase the readability and comprehensibility of the document.

Application notes

IMPORTANT! Indicates application notes and other useful information. It does not indicate a harmful or dangerous situation.

Software

Software functions and elements of a graphical user interface (e.g., buttons, menu items) are highlighted in the text with this **mark up**.

Example: Click **Save**.

Instructions for action

1 Action steps are displayed with consecutive numbering.

- ✓ *This symbol indicates the result of the action step or the entire instruction.*

Target group

This document provides detailed information and instructions to ensure that people can use the machine safely and efficiently.

The information is intended for the following groups of people:

- **Technical specialists:** People with appropriate qualifications and fundamental knowledge of electronics and mechanics. The activities of a technical specialist include installation, operation, maintenance, and service work.
- **User:** People that use the machine in daily operation and want to understand its basic functions.

Regardless of any qualifications, only perform the activities listed in this document.

The definition of professional qualifications and their applicability are subject to national law.

Data security

With regard to data security, the user is responsible for:

- Backing up any changes made to the factory settings
- Saving and storing personal settings

NOTE

Data security for network and Internet connection

Unsecured networks and a lack of safeguards can result in data loss and unauthorized access. Observe the following points for safe operation:

- ▶ Operate inverters and system components on a private, secure network. A WiFi network is considered secure if security standard WPA 2 is satisfied as a minimum.
- ▶ Keep the network devices (e.g., WiFi routers) up to date with the latest technology.
- ▶ Keep the software and/or firmware updated.
- ▶ Use a wired network to ensure a stable data connection.
- ▶ For security reasons, do not make inverters and system components accessible from the Internet via port forwarding or Port Address Translation (PAT).
- ▶ Use the solutions provided by Fronius for monitoring and remote configuration.
- ▶ The optional communication protocol Modbus TCP/IP¹⁾ is an unsecured interface. Only use Modbus TCP/IP if no other secured data communication protocol (MQTT²⁾) is possible (e.g., compatibility with older Smart Meters).

¹⁾ TCP/IP - Transmission Control Protocol/Internet Protocol

²⁾ MQTT - Message Queuing Telemetry Protocol

Privacy policy

When you connect your device (and any associated devices) to the internet, the following device and operating data (device ID/identifier, device IP address, device time, configuration settings, hardware and software information, device status log files, serial number) is sent automatically to

Fronius International GmbH, Froniusstraße 1, 4643 Pettenbach, Austria, telephone +43(0) 7242241-0, email: contact@fronius.com (controller)

and stored.

The processing of this device and operating data is carried out for the purpose of ensuring the operational safety of the device (time synchronization, provision of updates). This processing is therefore necessary for the functionality of the device and thus for the fulfillment of the contract (Art. 6 (1) (b) GDPR).

If you do not wish to have such data processed, you must manually disable the device's internet connection.

In addition, the device and operating data is also processed for the purpose of providing services as part of a supplementary digital service for your device (such as solar.web or similar) as soon as you have registered your device with such a digital service (identification). This data is processed to provide the requested digital services and is therefore necessary for the fulfillment of the contract (Art. 6 (1) (b) GDPR).

Furthermore, this data processing is also carried out for maintenance and support purposes and for handling customer concerns as well as in warranty and guarantee cases (only in individual cases and given connection between device and internet). In this context, the device and operating data may also be passed on to our cooperation partners (third-party providers and suppliers). The processing of this data is necessary for maintenance and support purposes or for processing warranty and guarantee cases and thus for the fulfillment of the contract (Art. 6 (1) (b) GDPR).

Device and operating data are also processed for analysis and diagnostic purposes in order to gain insights into the functionality of the devices and improve them accordingly. This data processing is based on our legitimate interest (Art. 6 (1) (f) GDPR).

We store this data for as long as it is necessary to fulfill the existing contract with you. Any storage beyond this is carried out for legal reasons or if we have a legitimate interest in doing so. For more information on data processing for the solar.web-digital service, as well as our general privacy policy and your rights as a data subject, please visit <https://www.fronius.com>.

Copyright

Fronius International GmbH retains the copyrights of these operating instructions.

Text, illustrations, and other media correspond to the technical state of the art at the time of publication. Fronius reserves the right to make changes. If you have any suggestions for improvement or have found a mistake in this document, we would be most grateful for your comments.

Product description

Description of the device

The inverter transforms the direct current generated by the PV modules into alternating current. This alternating current is fed into the public grid and synchronized with the mains voltage in use.

The inverter has been designed exclusively for use in grid-connected photovoltaic systems. It cannot generate electric power independently of the grid.

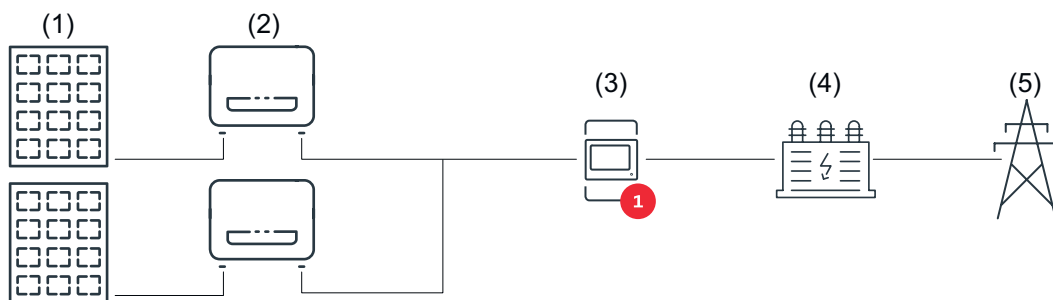
The inverter also has a design and functions that ensure it can offer maximum safety during installation and during operation.

AC Daisy Chain

With the "AC Daisy Chain" inverter variant, the AC lead can be routed directly from the inverter to another inverter. This makes it possible to quickly connect a maximum of two Argeno inverters to each other. The optionally available Daisy Chain input plate and type 2 AC SPDs are required for this variant (4,240,474,CK).

The minimum cable cross-section is defined based on the fuse on the grid connection point. A larger cable cross-section can be selected at any time. The applicable standards in the respective country must be taken into account and followed.

System overview



Fronius Argeno system overview

(1)	PV module generates direct current
(2)	Fronius Argeno inverter converts the direct current into alternating current
(3)	Primary meter records the system's power curve
(4)	Transformer feeds the generated energy into the grid
(5)	Grid supplies the loads in the system if the PV modules do not deliver sufficient power. Surplus energy is fed into the grid when more power is generated than consumed.

Utilization in accordance with "intended purpose"

Intended use The inverter is designed exclusively to convert direct current from PV modules into alternating current and feed this power into the public grid.

Intended use also includes following all information from the operating instructions.

Foreseeable mis-use The following circumstances are considered to be reasonably foreseeable mis-use:

- Any use that is not the intended use or goes beyond the intended use.
- Alterations to the inverter that are not expressly recommended by Fronius.
- Installation of components that are not expressly recommended or sold by Fronius.

Provisions for the photovoltaic system The inverter is designed exclusively to be connected and used with PV modules. Use with other DC generators (e.g., wind generators) is not permitted.

When configuring the photovoltaic system, make sure that all photovoltaic system components are operating exclusively within their permitted operating range.

All measures recommended by the PV module manufacturer for maintaining the PV module properties must be followed.

Functional principle

Operating principle

The inverter is fully automatic. Starting at sunrise, as soon as the PV modules are generating enough energy, the inverter starts checking the PV system (insulation measurement) and the grid (mains voltage and mains frequency). If all values are within the normative framework, the system is automatically connected to the grid and grid power feed operation begins.

The control system of the inverter ensures that the maximum possible power output is drawn from the PV modules at all times. This function is called MPPT (Maximum Power Point Tracking). In the event of shady conditions affecting the PV modules, a large part of the local maximum power point (LMPP) of the PV system can still be obtained via the "Dynamic Peak Manager" function.

As dusk starts and there is no longer sufficient energy available to feed energy into the grid, the inverter shuts down the connection of the power electronics to the grid completely and stops operating. All settings and recorded data are saved.

Overload performance

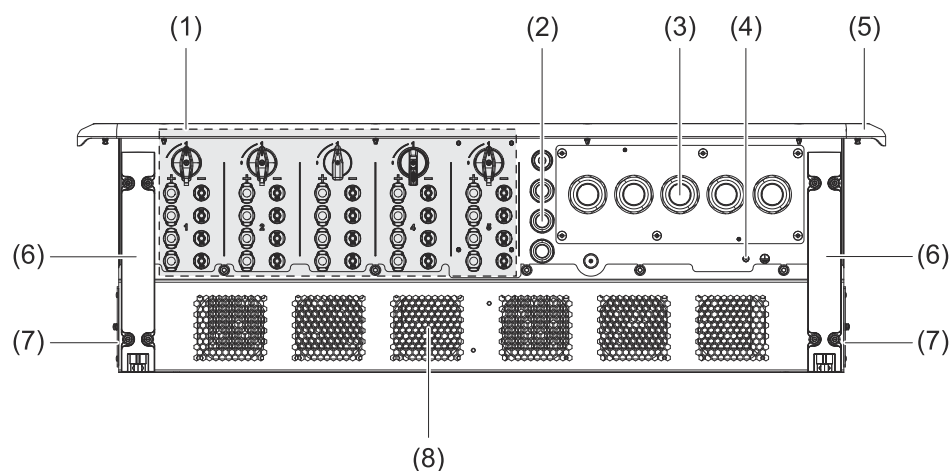
When the device temperature gets too high, the inverter automatically reduces the current output power in order to protect itself. Reasons for an excessively high device temperature can be a high ambient temperature or insufficient heat dissipation (for example, when installed in containers without sufficient heat dissipation).

The output of the inverter is reduced such that the temperature will not exceed the permissible limit.

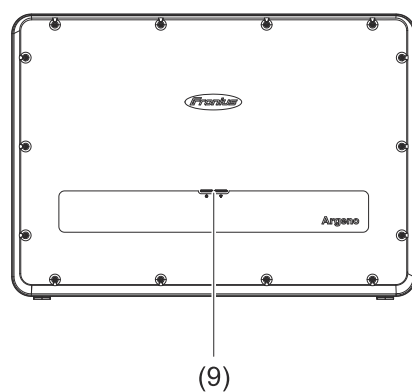
If a maximum temperature is exceeded, the inverter switches off in a safe state and resumes grid power feed operation only after the device has cooled down.

Operating controls and connections

Operating elements and displays

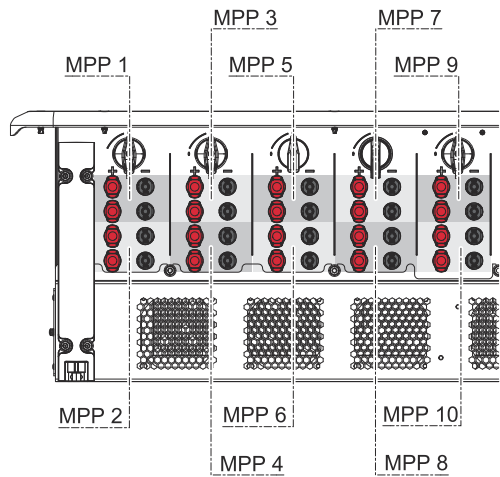


- | | |
|-----|---------------------------------------|
| (1) | DC disconnectors and DC connections |
| (2) | Cable glands for data communication |
| (3) | Cable glands for AC |
| (4) | Connection bolt for grounding |
| (5) | Housing cover |
| (6) | Support foot with handle (left/right) |
| (7) | Fan drawer (left/right) |
| (8) | Fan |

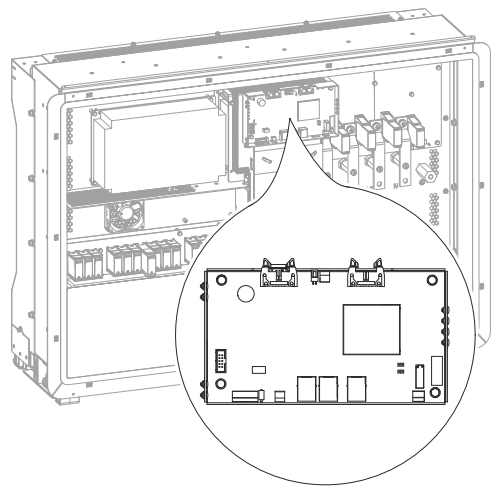


- (9) LED status indicators
For further information on the LED status indicators, see [Button functions and LED status indicators](#)

PV connections

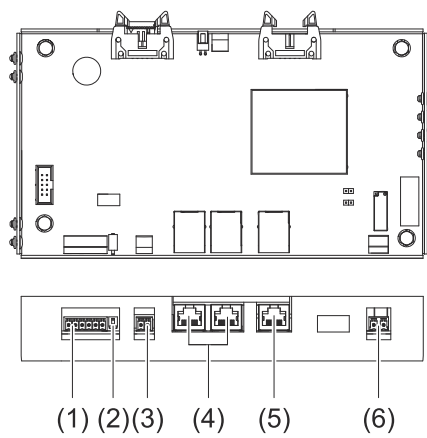


Data communication area in in-verter



The data communication area is located in the middle of the inverter.

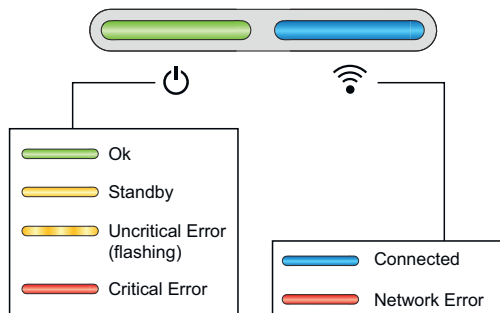
Data communication area



(1)	RS485 interface Reserved for future functions.
(2)	RS485 switch
(3)	INV OFF Connection for external 24 V (+/-20%) / 1 A (min. 15 mA) grid protection component, see Connecting and activating INV OFF on page 48.

(4)	LAN1 and 2 Ethernet connection for data communication (e.g., WLAN router, home network, or for commissioning with a laptop, see chapter Establishing a LAN connection via a network on page 50).
(5)	LAN direct / Service Ethernet connection for commissioning with static IP (direct PC connection), see Establishing a local LAN connection on page 49.
(6)	ERR error message relay The relay contact closes as soon as a malfunction occurs. This function can be used to indicate an error via a visible or audible signal. For installation, see Connecting the ERR alarm relay on page 47.

Button functions and LED status indicators

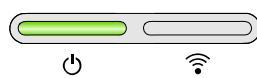


The operating status LED displays the status of the inverter.



The communications LED displays the connection status.

LED status indicators



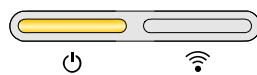
The inverter is operating correctly.

⏻ Lights up green



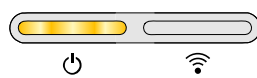
The inverter is starting.

⏻ Flashes green



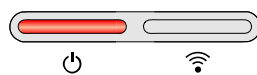
The inverter is on standby, is not operating (e.g., no grid feed-in at night), or is not configured.

⏻ Lights up yellow



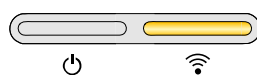
The inverter displays a non-critical status.

⏻ Flashes yellow



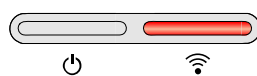
The inverter displays a critical status and no grid feed-in process is taking place.

⏻ Lights up red



The network connection is not configured.

📶 Lights up yellow



A network error is displayed, the inverter is operating correctly.

📶 Lights up red



The inverter is performing an update.

⏻ / 📶 Flash blue

Installation and Startup

General

System component compatibility

All installed components in the PV system must be compatible with each other and have the necessary configuration options. The installed components must not restrict or negatively affect the functioning of the PV system.

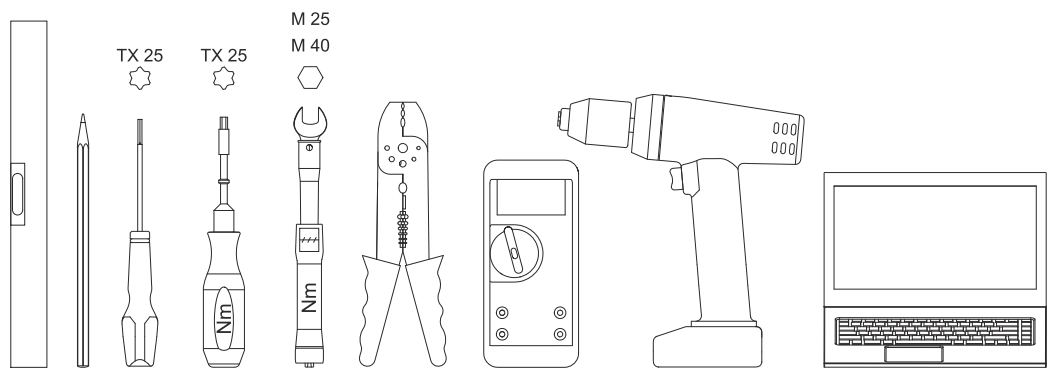
NOTE

Risk due to components in the PV system that are not and/or only partially compatible.

Incompatible components can restrict and/or negatively affect the operation and/or functioning of the PV system.

- ▶ Only install components recommended by the manufacturer in the PV system.
- ▶ Before installation, check the compatibility of components that have not been expressly recommended with the manufacturer.

Required tools



- Spirit level
- Pencil
- Screwdriver TX25
- Torque wrench TX25
- Torque wrench M25, M40
- Stripping tool for wires and cables
- Multimeter for measuring voltage
- Drill driver
- Computer for setting up the inverter

Installation location and position

Choosing the location of the inverter



DANGER

Danger due to flammable or explosive materials in the vicinity of the device.

Fire poses a risk of serious or fatal injury.

- ▶ Do not install the device in potentially explosive atmospheres or in the vicinity of highly flammable materials.



CAUTION

Improper positioning can cause condensate to build up in the device and impair its function (e.g., if the device is positioned in areas outside the specified ambient conditions or moved from a cold to a warm environment on a short-term basis).

Material damage due to build-up of condensate.

- ▶ Check interior for condensate prior to electrical installation and allow adequate drying time if necessary.
- ▶ Position the device in accordance with the technical data.



CAUTION

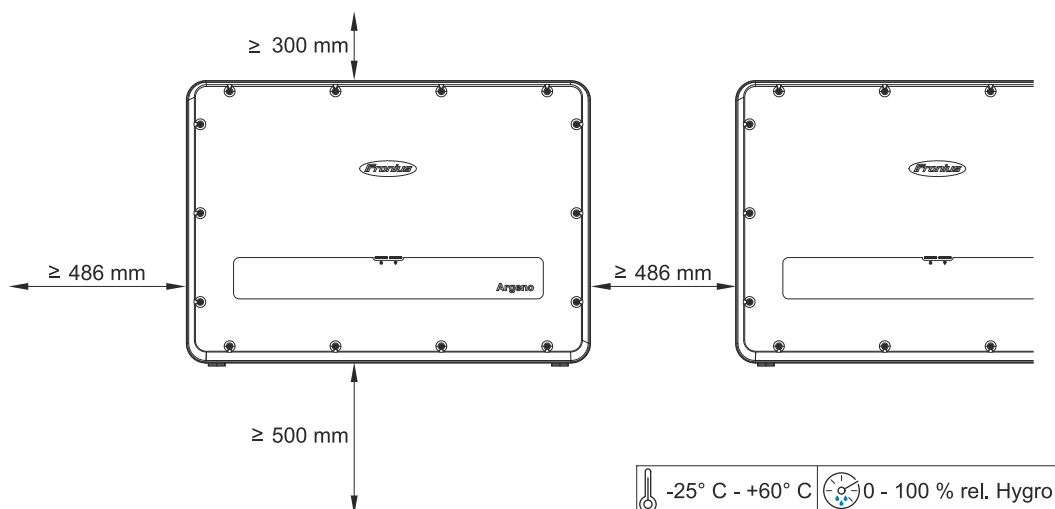
The device housing can be severely damaged due to gases in conjunction with weather-related humidity (e.g., ammonia, sulfur).

Damage to property due to gases that react aggressively on surfaces in conjunction with weather-related humidity.

- ▶ If the device is exposed to gases, it must be set up at a location where it can be checked.
- ▶ Carry out regular visual inspections.
- ▶ Remove moisture on the housing immediately.
- ▶ Ensure adequate ventilation at the setup location.
- ▶ Remove soiling immediately, especially on vents.
- ▶ Damage to the device resulting from failure to observe these instructions is not covered by the warranty.

Please note the following criteria when choosing a location for the inverter:

Only install on a solid, non-flammable surface



When installing the inverter in a switch cabinet or similar closed environment, ensure adequate heat dissipation by forced-air ventilation.

When installing the inverter on the outer walls of cattle sheds, it is important to maintain a minimum clearance of 2 m between all sides of the inverter and the ventilation and building openings.

The following substrates are allowed:

- Wall installation: Corrugated sheet metal (mounting rails), brick, concrete, or other non-flammable surfaces sufficiently capable of bearing loads
- Pole mounted: Mounting rails, behind the PV modules directly on the PV mounting system
- Flat roofs (if a film roof, make sure that the films comply with the fire protection requirements and are not highly flammable. Ensure compliance with the national provisions.)
- Covered parking lot roof (no overhead installation)

The DC disconnectors must always be freely accessible after installation of the inverter.



The inverter is suitable for indoor installation.



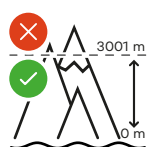
The inverter is suitable for outdoor installation.



Do not expose the inverter to direct sunlight in order to keep inverter heating as low as possible.



The inverter should be installed in a protected location, e.g., near the PV modules or under an overhanging roof.



The inverter must not be installed or operated at more than 3,000 m above sea level.



Do not install the inverter:

- Where it may be exposed to ammonia, corrosive gases, acids, or salts (e.g., fertilizer storage areas, vent openings for livestock stables, chemical plants, tanneries, etc.)



Caution: This device is not intended for use in living environments and may not provide sufficient protection for radio reception in such environments.

This device is intended for use at locations that are at least 30 m away from any sensitive wireless services belonging to third parties.



Do not install the inverter in:

- Areas where there is an increased risk of accidents from farm animals (horses, cattle, sheep, pigs, etc.)
- Stables or adjoining areas
- Storage areas for hay, straw, chaff, animal feed, fertilizers, etc.



The inverter is designed to be dust-proof (IP 66). In areas of high dust accumulation, dust deposits may collect on the cooling surfaces, and thus impair the thermal performance. Regular cleaning is necessary in such situations. We therefore recommend not installing the inverter in areas and environments with high dust accumulation.



Do not install the inverter in:

- Greenhouses
- Storage or processing areas for fruit, vegetables, or viticulture products
- Areas used in the preparation of grain, green fodder, or animal feeds

Installation position of the inverter



The inverter is suitable for vertical installation on a vertical wall or column.

Do not install the inverter:

- In a tilted position
- With the connections pointing upwards
- On feet



The inverter is suitable for a horizontal installation position or installation on a sloping surface.

Do not install the inverter:

- On a sloping surface with the connections pointing upwards
- Overhanging with the connections pointing downwards
- On the ceiling

Installing the inverter

Selecting the mounting material



WARNING

Using unsuitable mounting material can cause the device to fall.

This can result in personal injury.

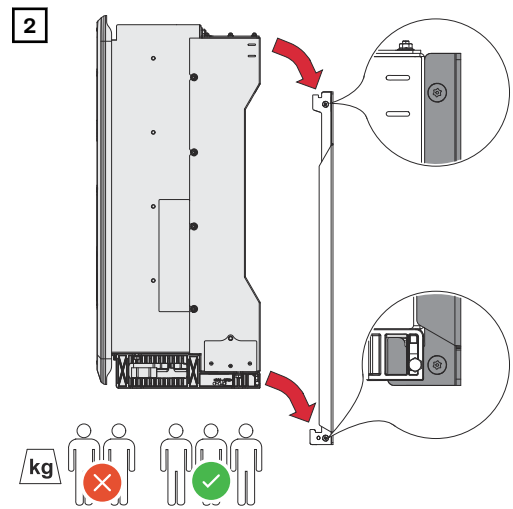
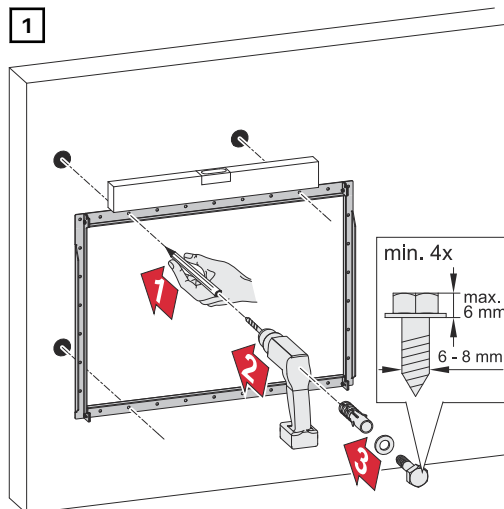
- ▶ Only use mounting material suitable for the mounting surface. Only use the supplied mounting material for masonry and concrete.
- ▶ Only mount the device in a suspended upright position.

Use the corresponding mounting material depending on the subsurface and observe the screw dimension recommendations for the mounting bracket. The installer is responsible for selecting the right type of mounting material.

Dimensions of the mounting bracket

The dimensions of the mounting bracket can be found on page 90 at the end of the document.

Mounting the inverter on the wall



Observe local provisions for lifting heavy loads.

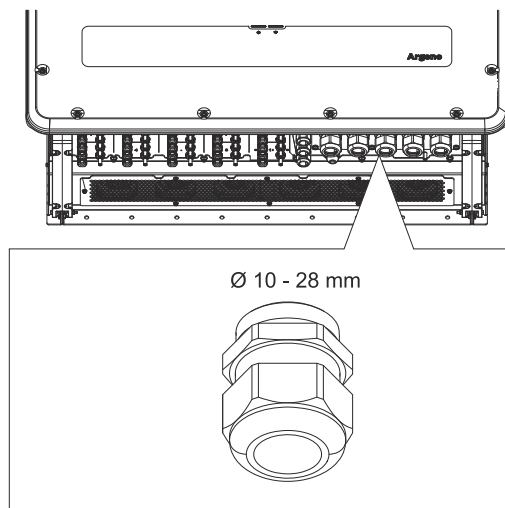
Connecting the inverter to the public grid (AC side)

Monitoring the grid

IMPORTANT! To provide the best possible grid monitoring, the resistance in the leads to the mains connections should be as low as possible.

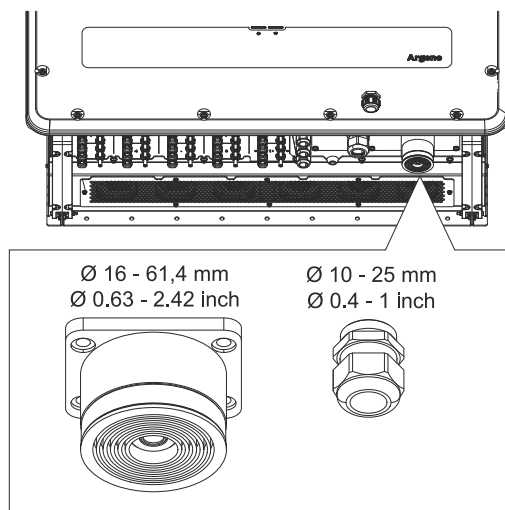
AC connection area

Singlecore cable gland version - Standard



5x M40 cable glands
Diameter: 10 - 28 mm

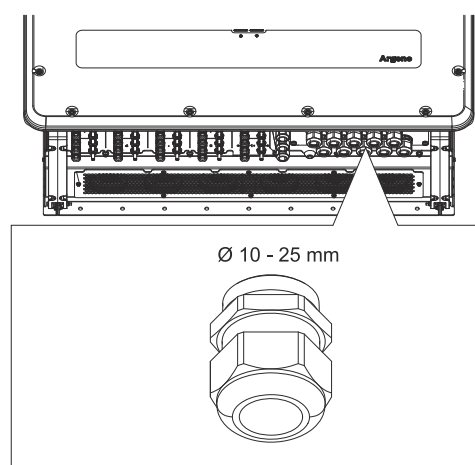
Multicore cable gland version - Optional



The following cable outer diameters can be used with the larger cable gland:
16 - 61.4 mm

Grounding cables measuring 10 - 25 mm can be routed through the small cable gland (M32 cable gland).

AC Daisy Chain cable gland version – Optional



10x M40 cable glands
Diameter: 10 - 28 mm

Connecting aluminum cables

Aluminum cables can be connected to the AC connections.



DANGER

If electrolytes are present (e.g., condensate), the aluminum can be destroyed by the copper busbar.

Fire poses a risk of serious or fatal injury.

- ▶ Cable lugs must be suitable for the conductor material and copper busbars used.
- ▶ When using aluminum cable lugs, select cable lugs with electroplating or AL/CU cable lugs and matching AL/CU washers.

NOTE

When using aluminum cables:

- ▶ Follow all national and international guidelines regarding the connection of aluminum cables.
- ▶ Grease aluminum wires with appropriate grease to protect them from oxidation.
- ▶ Follow the instructions provided by the cable manufacturer.

Permitted cables

Select cross-sections of sufficient size depending on the power category and connection version!

Power category	Connection version	Cable cross-section
Argene 125	Singlecore	50-240 mm ²
	Multicore	50-240 mm ²
	Daisy Chain	50-240 mm ²

Maximum alternating current fuse protection

If an external residual current circuit breaker is required due to installation regulations, a type A residual current circuit breaker must be used.

If a type B residual current circuit breaker is used, the **Compliant with type B**

RCD menu item must be enabled.
If one of these types is used, it must have a protective rating of at least 1250 mA.

NOTE

The inverter may be used with a maximum 500 A automatic circuit breaker.

Safety



WARNING

Danger from mains voltage and DC voltage from PV modules.

An electric shock can be fatal.

- Prior to any connection work, ensure that the inverter is de-energized on the AC side and the DC side.
- Only an authorized electrical engineer is permitted to connect this equipment to the public grid.



CAUTION

Danger of damaging the inverter due to improperly connected wires.

Improperly connected wires can cause thermal damage to the inverter and may cause a fire.

- When connecting AC and DC wires, make sure that all cables are secured to the inverter connections using the correct torque.

IMPORTANT! For the PE connection, the requirements defined under "Safety rules" for safe connection of the PE conductor must also be observed.

Opening the inverter

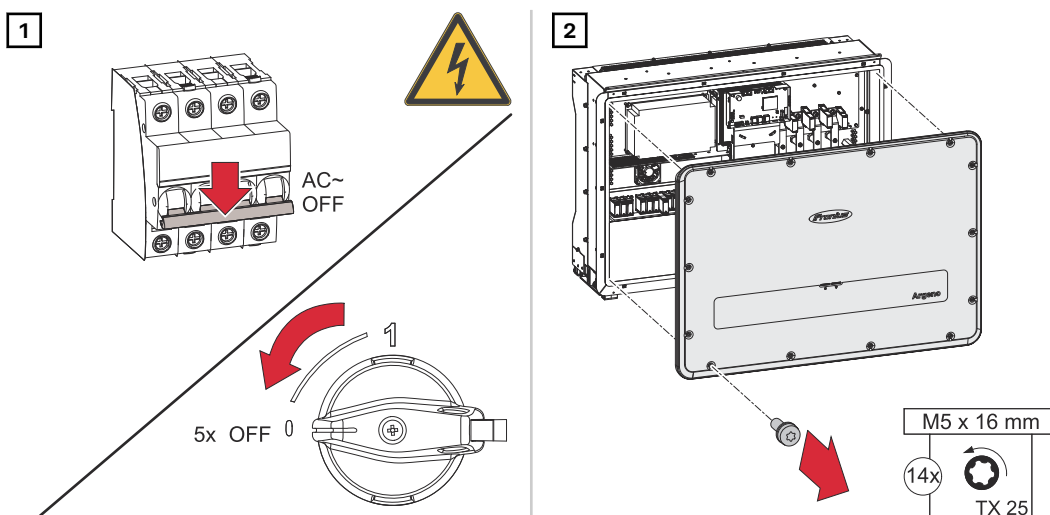


CAUTION

Components inside the device can be irreparably damaged by static discharge.

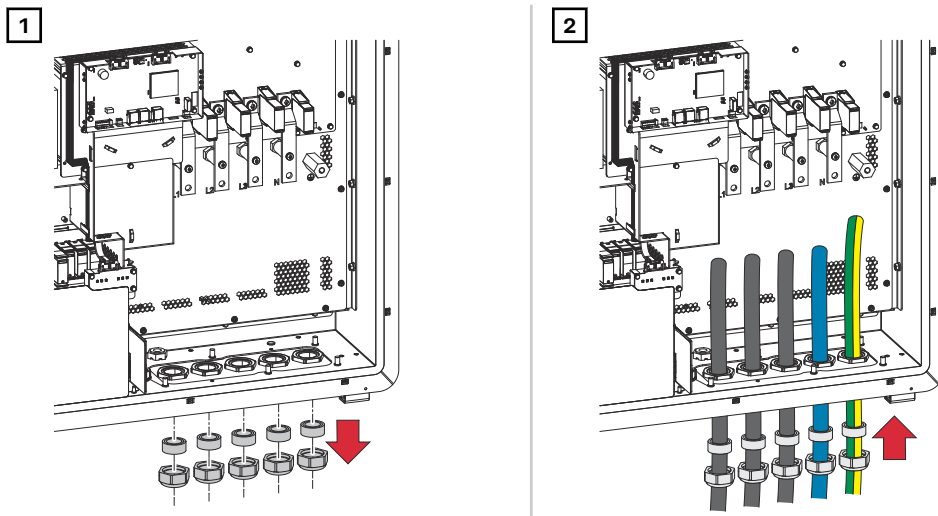
Damage to the device due to electrostatic discharge.

- Observe the ESD protection measures.
- Before touching a component, ground it by touching an earthed object.



Connecting the inverter to the public grid – Singlecore

The phases should be connected in the proper order: L1, L2, L3, N, and PE.

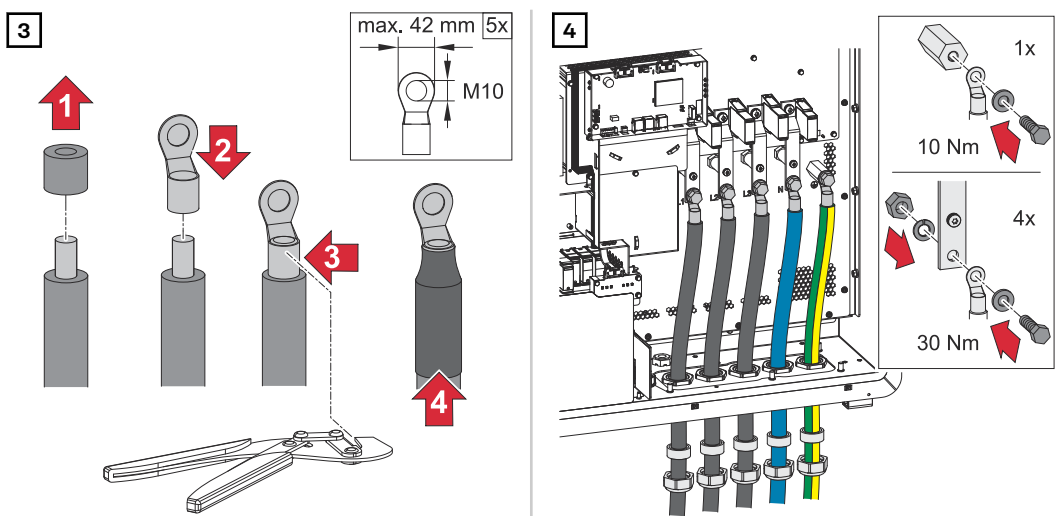


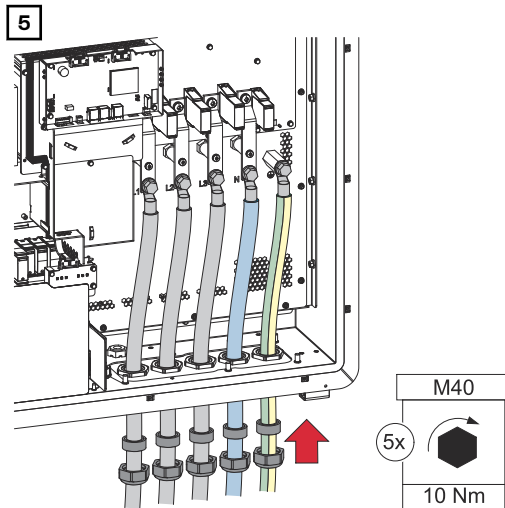
⚠ CAUTION

Short circuits may damage the inverter.

AC leads that are not installed and routed correctly can result in damage to the device.

- Insulate bare parts of the connection cable and cable lug, e.g., using shrink sleeve.
- Connect the AC leads with as much distance between them as possible.





Connecting the inverter to the public grid – PE (without N) or PEN conductor

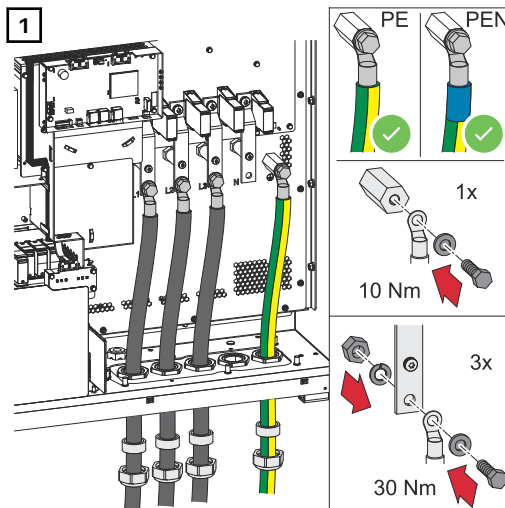
The connection process corresponds to that of the **Singlecore** version, see [Connecting the inverter to the public grid – Singlecore](#) on page 35.

⚠ CAUTION

Short circuits may damage the inverter.

AC leads that are not installed and routed correctly can result in damage to the device.

- ▶ Insulate bare parts of the connection cable and cable lug, e.g., using shrink sleeve.
- ▶ Connect the AC leads with as much distance between them as possible.



The cable gland of the N conductor that is not being used must be closed.

Connecting the inverter to the public grid – Daisy Chain

The connection process corresponds to that of the **Singlecore** version, see [Connecting the inverter to the public grid – Singlecore](#) on page 35.

The optionally available **AC input plate - Daisy Chain** is required to connect the **Daisy Chain** version.

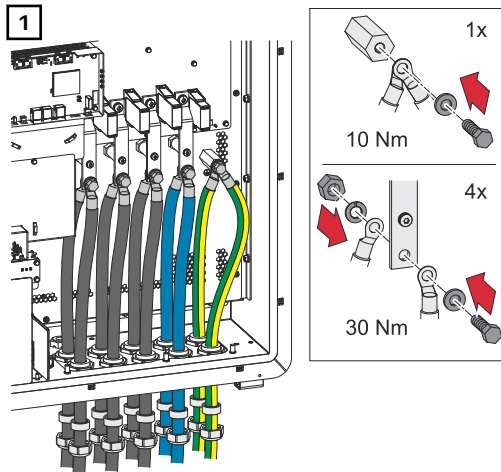


CAUTION

Short circuits may damage the inverter.

AC leads that are not installed and routed correctly can result in damage to the device.

- ▶ Insulate bare parts of the connection cable and cable lug, e.g., using shrink sleeve.
- ▶ Connect the AC leads with as much distance between them as possible.



The L1 / L2 / L3 / N leads are connected to the front and rear of the busbar in each case. The groundings are connected to the PE connection.

Connecting the PV cable to the inverter

Safety



DANGER

DC voltage is present at the exposed ends of the DC leads when there is irradiation on the PV modules.

Touching the live connections can result in severe injury or death.

- ▶ Only touch insulated parts of the PV module leads. Do not touch exposed lead ends.
- ▶ Avoid short circuits.
- ▶ Do not connect shorted strings to the device.
- ▶ The device must not be operated with PV modules with a negative or positive ground.



DANGER

Danger from mains voltage and DC voltage of PV modules that are exposed to light.

An electric shock can be fatal.

- ▶ Prior to any connection work, ensure that the inverter is de-energized on the AC side and the DC side.
- ▶ Only an authorized electrical engineer is permitted to connect this equipment to the public grid.



WARNING

Danger of an electric shock due to improperly connected terminals/PV plug connectors.

An electric shock can be fatal.

- ▶ When connecting, ensure that each pole of a string is routed via the same PV input, e.g.:
+ pole string 1 to the input **PV 1.1+** and - pole string 1 to the input **PV 1.1-**



WARNING

Danger from DC voltage. Even if the DC disconnectors are switched off, the fuse PCB and everything before the DC disconnectors are live.

An electric shock can be fatal.

- ▶ Prior to any connection work, ensure that the inverter is de-energized on the AC side and the DC side.



CAUTION

Danger due to polarity reversal at the terminals.

This may result in severe damage to the inverter.

- ▶ Use a suitable measuring instrument to check the polarity of the DC cabling.
- ▶ Use a suitable measuring instrument to check the voltage.

⚠ CAUTION

Risk of damage to the inverter by exceeding the maximum input current per string.

Exceeding the maximum input current per string can damage the inverter.

- Observe the maximum input current per string for the inverter according to the technical data.
- The maximum input current must not be exceeded even when using Y or T plugs.

General information about PV modules

To enable suitable PV 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 PV modules will increase. The open-circuit voltage must not exceed the max. permissible system voltage. An open-circuit voltage above the indicated values will damage the inverter, and all warranty rights will become null and void.
- The temperature coefficients on the data sheet of the PV modules must be observed.
- Exact values for sizing the PV modules can be obtained using suitable calculation tools, such as the [Fronius Solar.creator](#).

IMPORTANT!

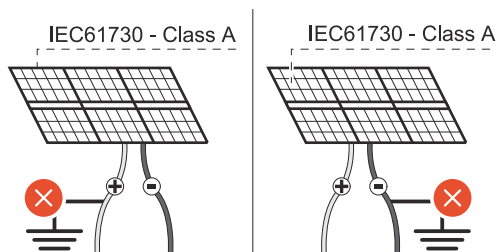
Before connecting up the PV modules, check that the voltage for the PV modules specified by the manufacturer corresponds to the actual measured voltage.



DC Voltage

IMPORTANT!

The PV modules connected to the inverter must comply with the IEC 61730 Class A standard.



IMPORTANT!

Solar module strings must not be grounded.

max. 1100 V_{DC}

Permitted cables Select sufficiently large cable cross-sections.

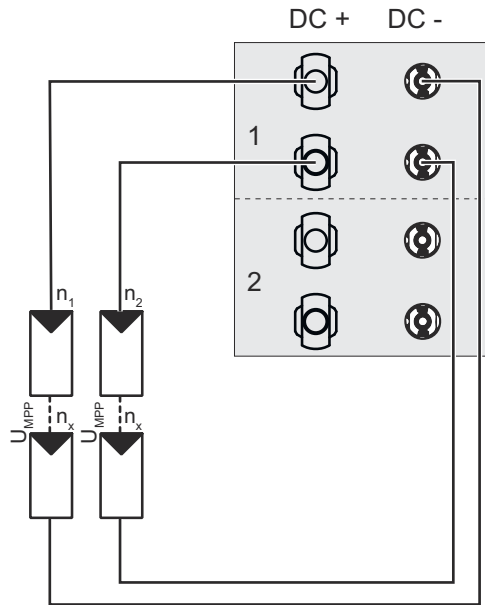
Permitted adapters	Cable cross-section
Phoenix/PV-C3F-S 2.5-6 (+) Phoenix/PV-C3M-S 2.5-6 (-)	2.5-6 mm ² (see data sheet of the plug)
Optional – These plugs are not part of the scope of delivery:	
Phoenix/PV-C4F-S 6-16 (+) Phoenix/PV-C4M-S 6-16 (-)	6-16 mm ² (see data sheet of the plug)
Phoenix/PV-C1F-C-HSG (+) Phoenix/PV-C1M-C-HSG (-)	2.5-6 mm ² (see data sheet of the plug)

**Recommended
default configur-
ation**

All DC inputs disconnected

IMPORTANT! String fuses may be required depending on the selected PV modules. Observe the information provided by the manufacturer of the module.

Two strings on one MPP tracker

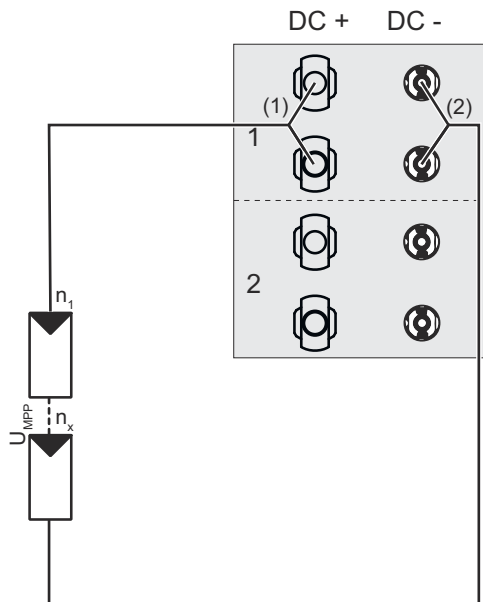


Two strings on an MPP tracker

Restriction:

Max. 20 A per plug /
Max. 30 A per MPP tracker

High-current module string > 20 A with Y cable on an MPP tracker



Two strings on an MPP tracker

Restriction:

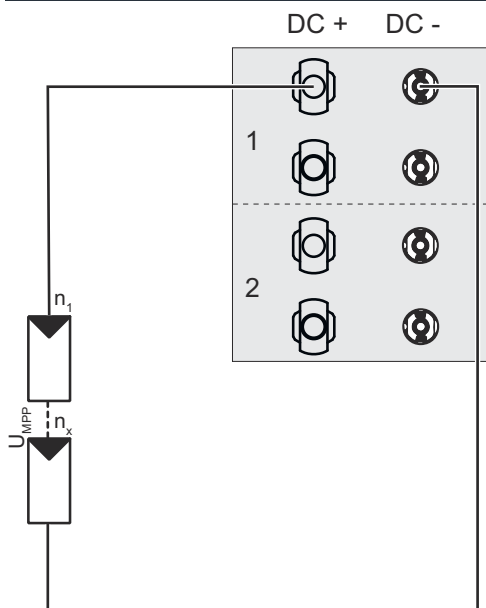
from 20 A per string on the Y cable

Required accessories:

Min. two Y cables (one PV+ / PV-
each) for a high-current module
string

- (1) PD-ED6/Y-120 (2+/1-)
- (2) PD-ED6/Y-120 (1+/2-)

One string on one MPP tracker

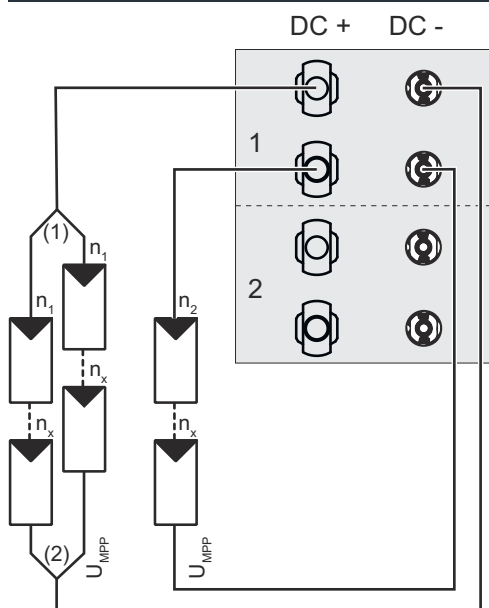


One string on an MPP tracker

Restriction:

Max. 20 A per plug and MPP tracker

Two strings via Y cables and one string directly on one MPP tracker



Two strings via Y cables and one string directly on an MPP tracker

Restriction:

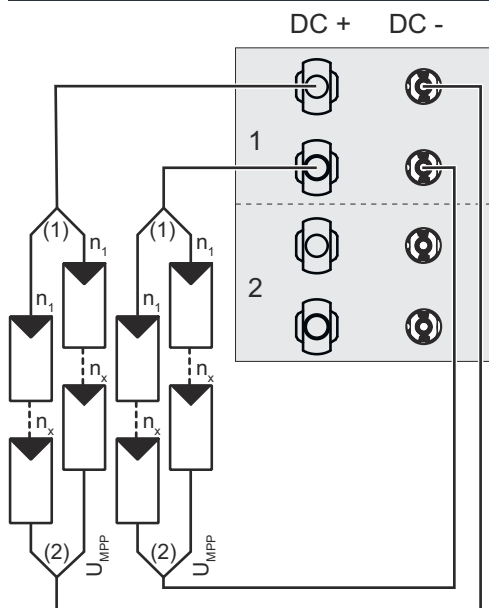
Max. 10 A per string on the Y cable /
Max. 30 A on the MPP tracker

Required accessories:

Min. two Y cables (one PV+ / PV-
each) for a string

- (1) PD-ED6/Y-120 (1+/2-)
- (2) PD-ED6/Y-120 (2+/1-)

Two strings via Y cables on one MPP tracker



Two strings via Y cables directly on an MPP tracker

Restriction:

Max. 7.5 A per string on the Y cable /
Max. 30 A on the MPP tracker

Required accessories:

Min. four Y cables (1 PV+ / PV- each)
for a string

- (1) PD-ED6/Y-120 (1+/2-)
- (2) PD-ED6/Y-120 (2+/1-)

All DC inputs parallel (All inputs parallel)

When the All inputs parallel function is enabled, the current is restricted to 20 A per plug and 60 A per interconnected MPP tracker.



WARNING

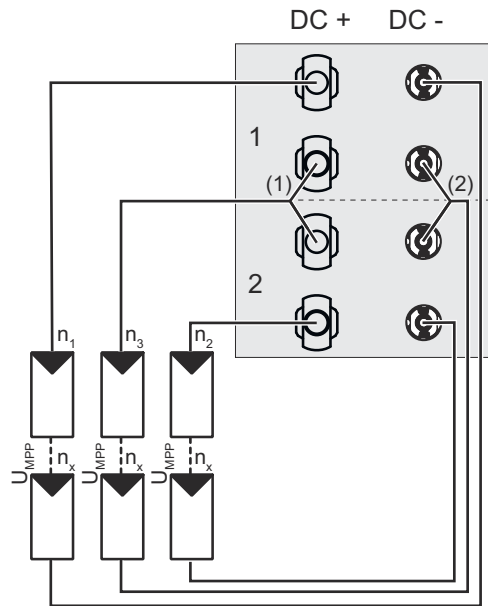
Damage to the device due to overloaded DC plug connections

In parallel DC operation, the device is not designed for a current of more than 20 A per DC plug connection.

- Each DC plug connection must not exceed a current of 20 A.

IMPORTANT! String fuses may be required depending on the selected PV modules. Observe the information provided by the manufacturer of the module.

One parallel string via two MPP trackers and one separated string each per MPP tracker



One string parallel via two MPP trackers and one separated string on each MPP tracker

Restriction:

Max. 20 A on the Y plug (n_3) and 20 A each on the plug (MPP tracker 1/ n_1 and MPP tracker 2/ n_2)

Max. 30 A per MPP tracker

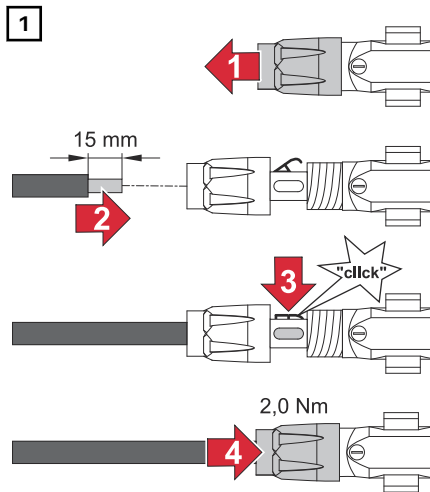
Required accessories:

10x Y cable (1x PV- / PV+)

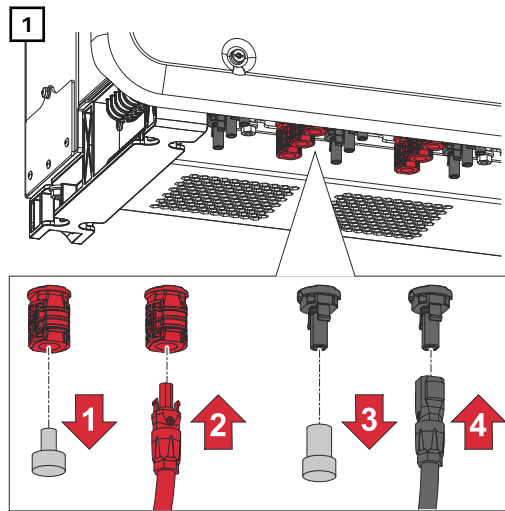
(1) PD-ED6/Y-120 (2+/1-)

(2) PD-ED6/Y-120 (1+/2-)

Installing PV plugs



Connecting PV cables



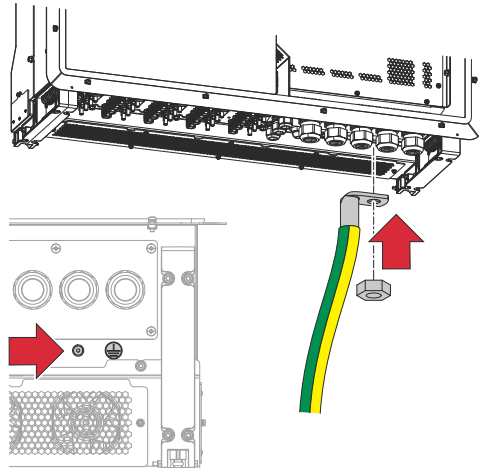
Connect the PV cables of the PV modules as labeled.

Unused plugs on the inverter must be closed using the cover caps supplied with the inverter.

Establishing equipotential bonding

Establishing equipotential bonding

Depending on local installation regulations, it may be necessary to ground the device with a second ground connection. The threaded bolt on the underside of the device can be used for this purpose.



Connecting the data communication cables

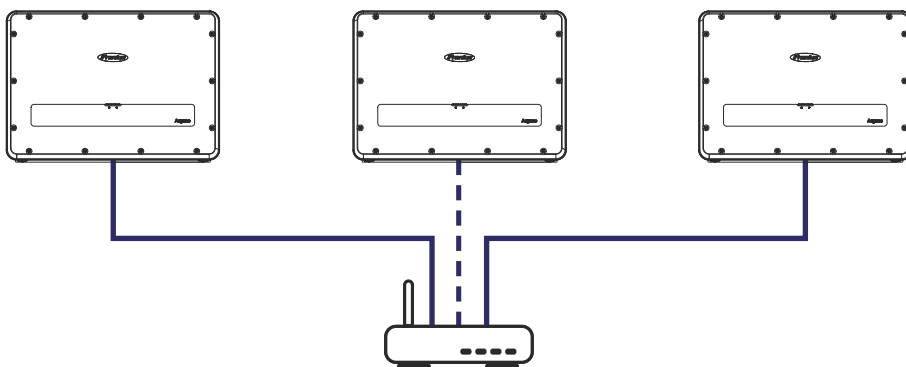
Permitted cables for the data communication area

LAN connections

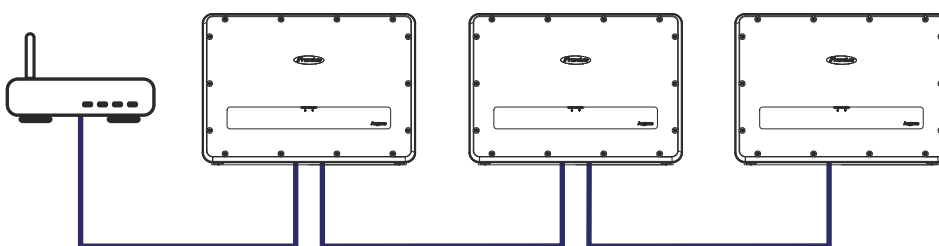
Fronius recommends using at least CAT 5 STP (shielded twisted pair) cables and a maximum distance of 100 m.

Multiple inverters in a network

The network cabling of the inverters can have a star or linear configuration. Ring connection is not permitted. Note the maximum lengths and cable requirements.



Network setup with star configuration



Network setup with linear configuration

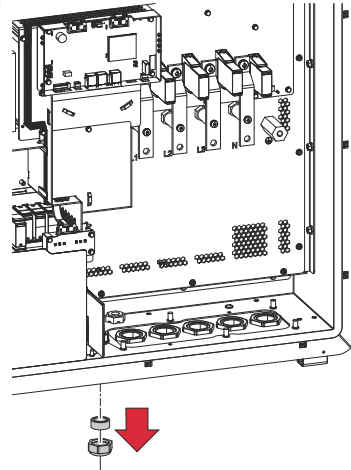
Connecting the LAN cables

IMPORTANT! If data communication cables are wired into the inverter, observe the following points:

- Depending on the number and cross-section of the wired data communication cables, remove the corresponding blanking plugs from the sealing insert and insert the data communication cables.
- Make sure that you insert the corresponding blanking plugs into any free openings on the sealing insert.

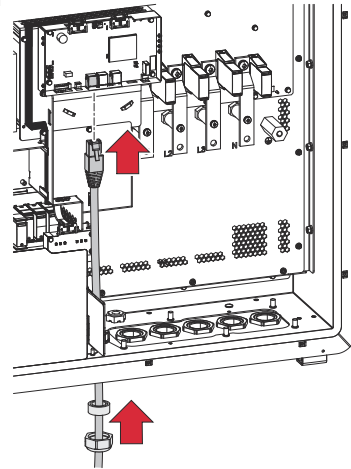
Note! Safety class IP 66 cannot be ensured if blanking plugs are missing or incorrectly inserted.

1



Remove the cap nut on the strain-relief device and press the sealing ring out from the inside of the device using the blanking plugs.

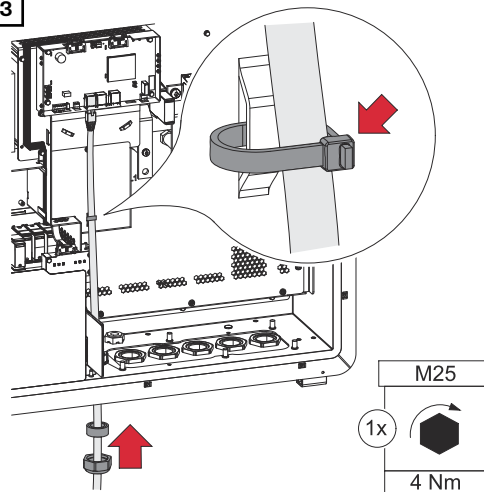
2



First, guide the data cables through the cap nut of the strain-relief device and then through the housing opening.

In the area of the shield support of the EMC cable gland, strip the lead by 10 mm up to the shield. The cable shield must touch the shield support of the EMC cable gland.

3



Connect the data cables to the data communication area and fasten the cap nut with min. 2.5-max. 4 Nm.

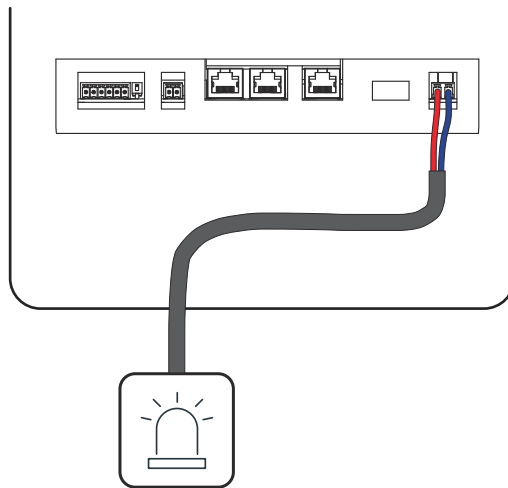
Connecting the ERR alarm relay

In addition to the option of connecting an audible or visible warning signal, external grid protection devices can also be controlled here.

Maximum contact rating

DC	30 V/1 A
AC	250 V/1 A

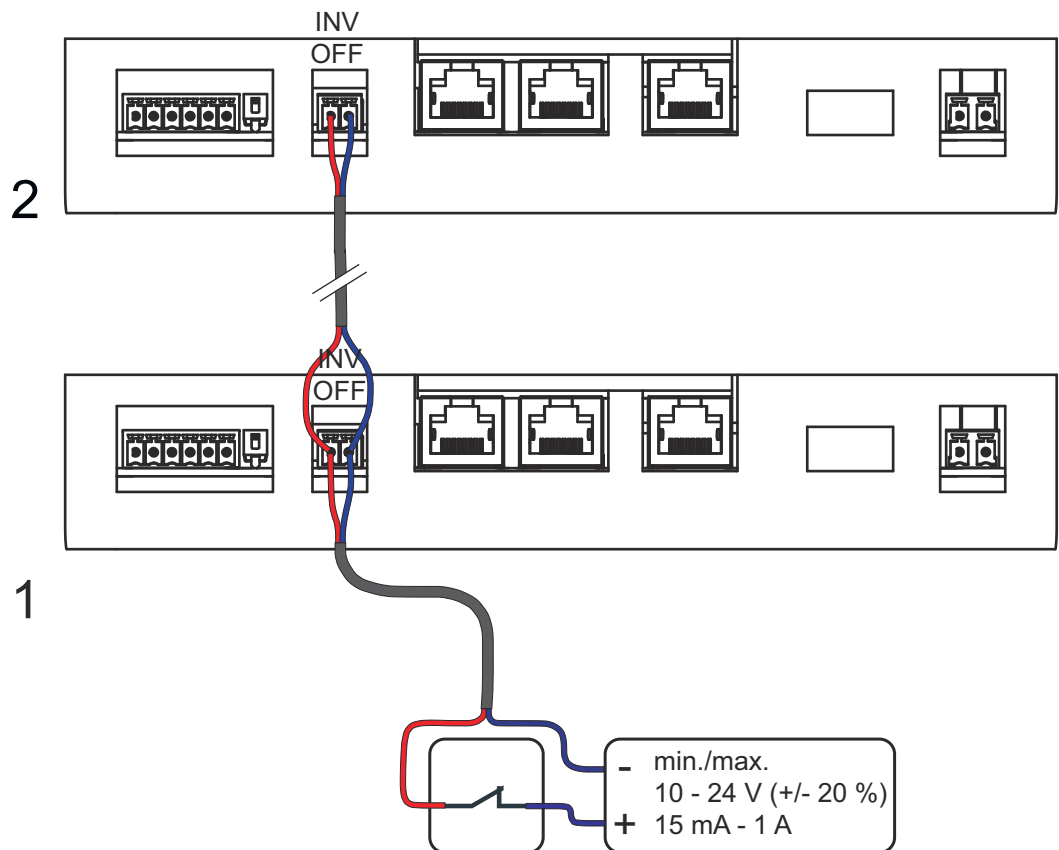
The contact is designed as a normally open contact.



Connecting and activating INV OFF

A separate power supply is needed when using a third-party device. An active-low signal is required to switch off the power supply.

One or more inverters can be connected.

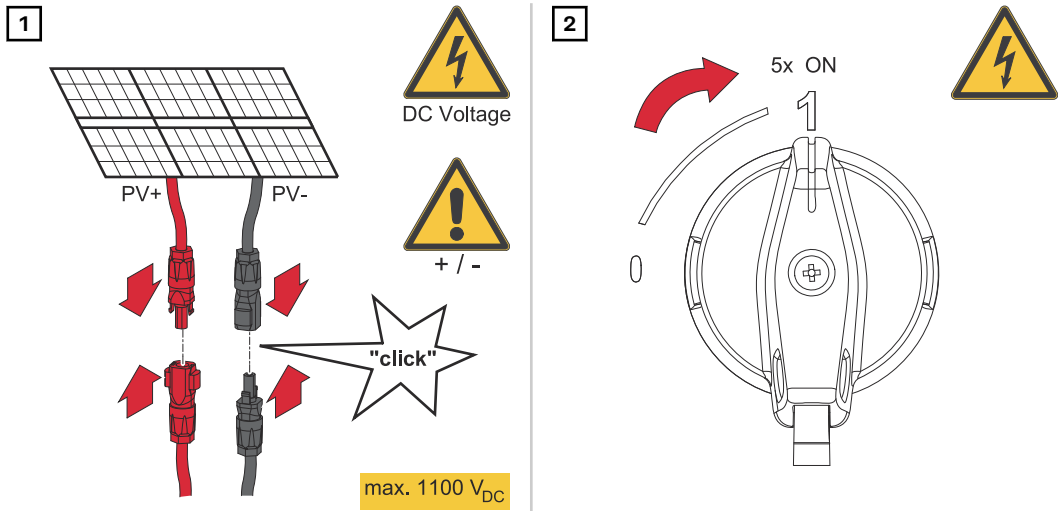


To activate the function:

- 1 Open the user interface of the inverter.
- 2 Log in with the installer or service user credentials.
- 3 Go to **Configuration > AC settings > External grid protection**.
- 4 Set **External grid protection** to **Third-party device**.
- 5 Set the **Third-party device operating mode** to **On**.
- 6 Click on **Apply settings**.

First startup

Switching on DC



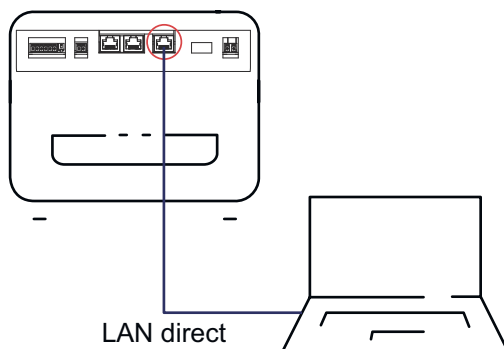
Attaching safety stickers (France)



When connecting to the low-voltage grid in France, a safety sticker must be attached as per directive UTE C15-712-1. This sticker states that both voltage sources must be isolated in all cases before every intervention in the device.

- 1 Affix the supplied safety stickers on the outside of the device in a clearly visible location.

Establishing a local LAN connection

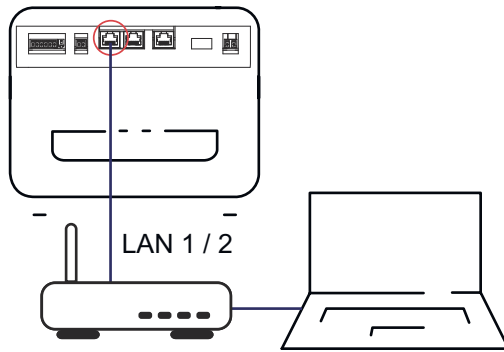


Application: The planned network infrastructure is not available yet. A DC power supply to the inverter is sufficient for commissioning.

You will need a laptop with a LAN interface and a LAN cable.

- 1 Connect the LAN cable to the laptop and inverter (direct LAN connection).
- 2 Enter the IP address **http://169.254.1.1** in the browser's address line and confirm.
✓ The installation wizard is displayed.
- 3 Follow the installation wizard's instructions in the individual sections and connect the installation.

Establishing a LAN connection via a network



Application: The network infrastructure is available and the inverter needs to be integrated in this infrastructure. A DC power supply to the inverter is sufficient for commissioning.

The configuration may require IT work in the external network so a device IP can be assigned to the inverter.

- 1** Use a LAN cable (LAN1 or LAN2 connection) to connect the inverter to the existing network.
 - ✓ A device IP address is automatically assigned to the inverter. This can either be requested from the network administrator or found using an IP scanner tool.
- 2** Open a browser on the PC.
- 3** Enter the device IP address (**http://<device-IP-address>**) or host name (**http://xyz**). The host name is the serial number of the device.
 - ✓ The device configuration page is displayed.

Starting the inverter for the first time

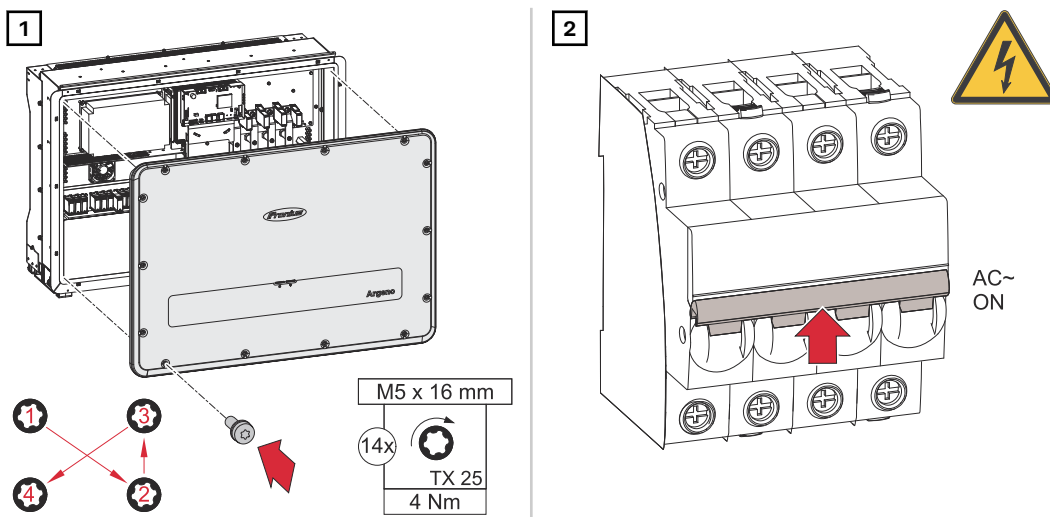
The device must be mounted and all electrical installation work completed when starting for the first time. The PV modules must supply a higher voltage than the start-up input voltage.

Once authorization is complete and the "Configuration" option has been selected in the main menu, you will be taken straight to the installation wizard (provided that the device is still as delivered and has yet to be commissioned). The installation wizard can also be accessed again later on to make subsequent changes to the original configuration.

The installation includes a number of steps as described below:

- Language selection
- Country configuration
- Power limitation (if necessary)
- Network parameters
- Localization
- Modbus
- Optional parameters
- Finalization

Closing the in- verter and switching on AC



WARNING

Housing components may become hot during operation.

Risk of burns due to hot housing components.

► Only touch the housing cover during operation.

Access via Mod- bus

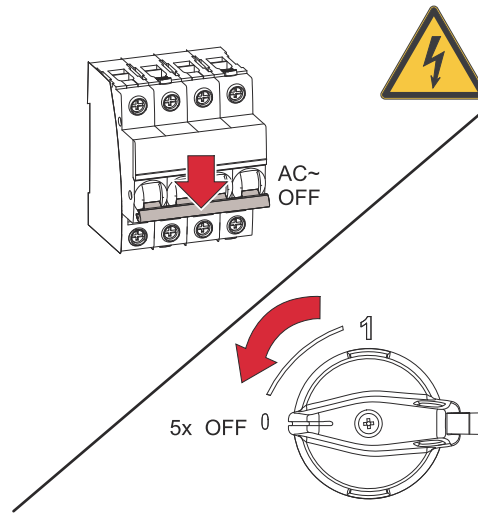
The device supports Modbus/TCP and the standard SunSpec models. Write access can be disabled if security is an issue.

- 1 On the user interface of the inverter, activate the **Modbus TCP/UDP activation** entry under **Configuration – Communication – Ethernet – Modbus TCP/UDP**.
- 2 Enable **Write access** if necessary.
- 3 Set the **Port** for Modbus access [default: **502**].

✓ *Modbus access is enabled.*

De-energizing the inverter and switching it back on

De-energizing
the inverter and
switching it back
on



Disconnecting the inverter from the power supply:

- 1 Turn off the automatic circuit breaker.
- 2 Turn the DC disconnect to the "off" switch setting.

IMPORTANT!

Wait for the capacitors of the inverter to discharge!

Switching on the inverter:

If the inverter has not been in operation for six months or more after installation, it must be tested before commissioning.

- 1 Turn the DC disconnect to the "on" switch setting.
- 2 Turn on the automatic circuit breaker.

User interface of the inverter

General

Overview



Monitor

Displays a current overview of the most important measurement data.



Yield

Displays the system yield as a diagram.



Configuration (only visible when logged in)

The various configuration options of the system are displayed.



Service (only visible to **service** users)

Various system service settings are displayed.



Info

Displays the following information:

- Device information
- Software version
- Network information



Login/user/installer/service

Logging in unlocks additional system functions. When logged in, it is possible to change the password or log out.



Pair with/disconnect from the network (only visible when logged in)

The pair / disconnect function can be enabled or disabled by double-clicking.

Network

The device carries out regular checks for relevant updates at: ...fronius.com. For information on changes and improvements included in the updates (change logs) and information on pending updates, please see: ...fronius.com

Server addresses for data transfer

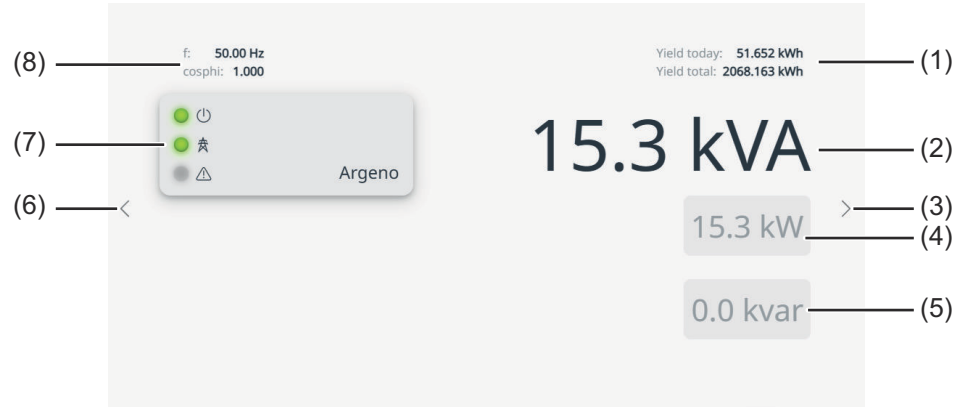
If a firewall is used for outgoing connections, the below protocols, server addresses, and ports must be allowed for successful data transfer, see:

https://www.fronius.com/~/downloads/Solar%20Energy/Firmware/SE_FW_Changelog_Firewall_Rules_EN.pdf

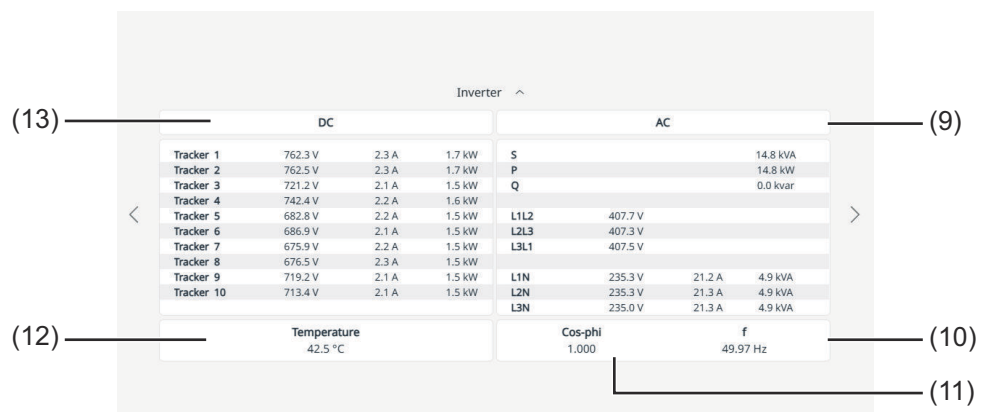
When using FRITZ!Box products, Internet access must be configured without any restrictions or limitations. The DHCP Lease Time (validity) must not be set to 0 (=infinite).

Monitoring

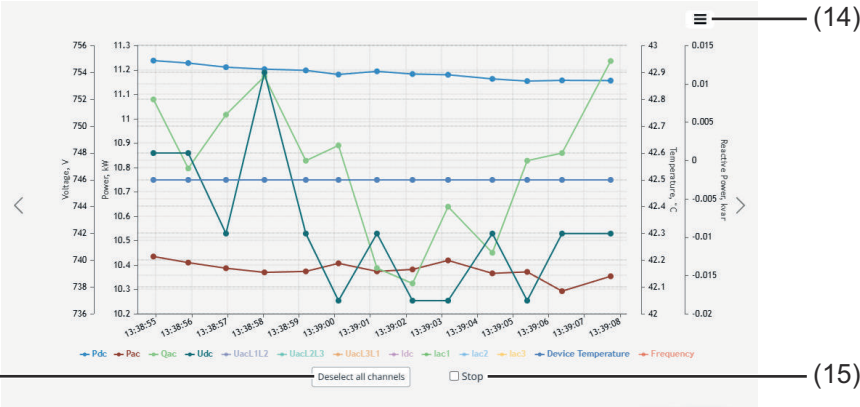
Monitoring



- (1) Yield today and Yield total
- (2) Current power in kVA
- (3) Button for scrolling to the next page
- (4) Current power in kW
- (5) Current reactive power in kvar
- (6) Button for scrolling to the previous page
- (7) Inverter status indicators
- (8) Reactive power factor



- (9) AC values
- (10) Frequency
- (11) Cos-phi
- (12) Temperature
- (13) DC values



(14) **Export function**

(15) **Stop**

(16) **Deselect all channels**

Yield

Configuring via a web interface

Display	Setting	Description
Day view		Displays recorded operating data as a diagram. 1 Select a day. ✓ <i>The web interface displays the selected data.</i>
Week view		Displays recorded operating data as a diagram. 1 Select a week. ✓ <i>The web interface displays the selected data.</i>
Month view		Displays recorded operating data as a diagram. 1 Select a month. ✓ <i>The web interface displays the selected data.</i>
Year display		Displays recorded operating data as a diagram. 1 Select a year. ✓ <i>The web interface displays the selected data.</i>
All view		Shows total yield so far.
Export / Print	Print PNG PDF JPEG SVG GIF	Option to print or save the diagram. 1 Select output format. 2 Specify the save location.

Configuration

Localization Input screens for basic settings

Display	Setting	Description
Language	Castellano Dansk Deutsch English Français Italiano Magyar	1 Select the desired user interface language.
Date		The current date is selected automatically.
Time		The current time is selected automatically.
Timezone		1 Select the time zone.
Temperature unit	Celsius Fahrenheit	1 Specify the temperature unit.
Device name		1 Enter the device name.

AC settings Input screens for network parameters.

For detailed explanations of the menu items, see

<https://manuals.fronius.com/html/4204260586/>

Display	Setting	Description
Country / Grid This option influences the country-specific operating settings of the device.		
Country		1 Select the country.
Nominal grid voltage	[V]	1 Optional: Specify the nominal grid voltage.
Nominal grid frequency	[Hz]	If the grid frequency deviates from the nominal grid frequency by more than 9.5 Hz, the device switches off. 1 Optional: Specify the nominal grid frequency. 2 Click on Apply settings .
Trip settings Enable shutdown according to generic parameters, frequency, or voltage.		
- Generic parameters Option to activate standard protective shutdown		
Trip with intentional delay	Check to enable	1 Enable delayed trip if necessary. 2 Click on Apply settings .
- Frequency Option to monitor frequency tripping		
Trip underfrequency monitoring	Status	1 Enable if necessary.
Number of trip under-frequency levels	1-5	1 Specify the number of protection levels.

Display	Setting	Description
Trip underfrequency level 1	45–65 [Hz]	If the grid frequency is in the deactivation range for the duration of the deactivation time, the function is disabled. 1 Define the range and trip time.
Trip underfrequency time level 1	0–100,000 [ms]	
Trip underfrequency level 2–5	42.5–65 [Hz]	
Trip underfrequency time level 2–5	0–100,000 [ms]	
Trip overfrequency monitoring	Status	1 Enable if necessary.
Number of trip overfrequency levels	1–5	1 Specify the number of protection levels.
Trip overfrequency level 1	45.0–66 [Hz]	If the grid frequency is in the deactivation range for the duration of the deactivation time, the function is disabled. 1 Define the range and trip time. 2 Click on Apply settings .
Trip overfrequency time level 1	0–1,000,000 [ms]	
Trip overfrequency level 2–5	45.0–66 [Hz]	
Trip overfrequency time level 2–5	0–1,000,000 [ms]	
- Voltage Option to monitor voltage tripping		
Under-voltage shut-down monitoring	Status	1 Enable if necessary.
Number of trip under-voltage levels	1–5	1 Specify the number of protection levels.
Under-voltage shut-down level 1	10–100 [% U _{nom}]	1 Define the range and trip time.
Trip undervoltage time level 1	0–180,000 [ms]	
Under-voltage shut-down level 2–5	10–100 [% U _{nom}]	
Under-voltage shut-down time level 2–5	0–180,000 [ms]	
Trip overvoltage monitoring	Status	1 Enable if necessary.
Number of trip over-voltage levels	1–5	1 Specify the number of protection levels.
Trip overvoltage level 1	100–125 [% U _{nom}]	1 Define the range and trip time. 2 Click on Apply settings .
Trip overvoltage time level 1	0–180,000 [ms]	
Trip overvoltage level 2–5	100–125 [% U _{nom}]	
Trip overvoltage time level 2–5	0–180,000 [ms]	

Display	Setting	Description
- 10 minutes average Monitor a deviation in the average voltage over 10 minutes.		
10 minutes average	100-125 [% Unom]	1 Enable if necessary.
Island detection If islanding is detected, utilities require that the device be shut down, see https://manuals.fronius.com/html/4204260586/#0_t_0000008322 .		
Mode	Off ROCOF RO-COF enhanced Frequency shift	Function is set to active at the factory and may only be disabled in the case of autonomous stand-alone operation (without grid). 1 Select the mode and note the menu items. 2 Enable optional password protection. 3 Click on Apply settings .
Ramp rate limitation Option to limit power when rated/maximum power increases and decreases.		
Operation mode	On Off	1 Select the mode and note the menu items.
Increasing & decreasing gradient	1-65,534 [%/min]	This percentage value refers to the rated/maximum power. 1 Select the mode and note the menu items. 2 Click on Apply settings .
Connection conditions Set the connection conditions precisely according to your network conditions.		
Min. conn. voltage after grid mon.	10-110 [% Unom]	1 Set connection voltage range after grid monitoring.
Max. conn. voltage after grid mon.	90-125 [% Unom]	
Min. conn. frequency after grid mon.	45-65 [Hz]	1 Set connection frequency range after grid monitoring.
Max. conn. frequency after grid mon.	45-65 [Hz]	
Min. conn. voltage after grid failure	10-110 [% Unom]	1 Set connection voltage range after grid failure.
Max. conn. voltage after grid failure	90-125 [% Unom]	
Min. conn. frequency after grid failure	45-65 [Hz]	1 Set connection frequency range after grid failure.
Max. conn. frequency after grid failure	45-65 [Hz]	
Monitoring time PV voltage	1,000-1,800,000 [ms]	1 Set time for monitoring the grid voltage and PV voltage.
Waiting time after grid failure	1,000-1,800,000 [ms]	1 Set waiting time after grid failure. 2 Enable optional password protection. 3 Click on Apply settings .

Display	Setting	Description
Active power control Active power control can be used to permanently set the output power of the device to a smaller value than the maximum output power; see https://manuals.fronius.com/html/4204260586/#0_t_0000008316 .		
- Internal Option to set an internal power limit in accordance with the requirements of the utility to limit the maximum connected load of the system at the grid connection point.		
Power limitation	Check to enable	1 Specify the activation status.
Maximum apparent power Slim	10,000–125,000 [VA]	Maximum apparent power limits the internal power of the device. 1 Enter value or set using the slider.
Maximum active power Plim	1.0–100.0 [% Slim]	Maximum active power (effective power) limits the internal power of the device. 1 Enter value or set using the slider.
- External Parameters configured here are used as defaults if they are not sent via the communication interface or if communication for the configured fallback time fails.		
Power limitation	Check to enable	1 Specify the activation status.
AC fallback active power	0–100 [% Plim]	Specifies the standard power in the event of a communication failure. If no effective power command is received within the fallback time configured below, the inverter sets the power to the configured fallback power. 1 Set the fallback power.
Fallback time	0–43,200 [s]	IMPORTANT! After the configured fallback time, external (RS485 or Modbus) defaults for cos phi, Q, and P are reset to the respective fallback value configured (Cos-phi constant, Q constant, or fallback power). If the fallback time is set to 0s, external defaults for cos phi, Q, and P are not reset (inverter continues operating with the last set value received). 1 Enter value or set using the slider.
Output gradient limitation increase & decrease	1–65,534 [% Slim / min]	1 Set maximum change in the effective power if power increases. 2 Set maximum change in the effective power if power decreases.
Settling time	200–60,000 [ms] / 1,000 [ms]	1 Set the settling time. 2 Click on Apply settings .
- Feed-in limit Energy companies or grid operators can prescribe import limitations for inverters. The effective power at the grid connection point (installation location of the Fronius Smart Meter IP or primary meter) is limited to the set value. The feed-in limit only works in conjunction with a Fronius Smart Meter IP.		
Operation mode	Check to enable	1 Enable if necessary.

Display	Setting	Description
Reference power	Total power Each phase	Total power: The entire photovoltaic system is limited to a fixed feed-in limit. A value must be set for the permissible total power of feeding in. Each phase: Each individual phase is measured. If the permissible feed-in limit is exceeded on one phase, the inverter symmetrically reduces the total power for all phases until the limit is reached. 1 Select reference power.
Maximum power of feeding in	0 - 125,000 [W]	If this value is exceeded, the inverter readjusts down to the set value. 1 Set maximum power of feeding in.
Trip feed-in monitoring	Check to enable	1 Enable if necessary.
Feed-in monitoring trip value	0 - 125,000 [W]	If this value is exceeded, the inverter switches off within max. 5 seconds. This value must be higher than the value set for Maximum power of feeding in. 1 Set the feed-in monitoring trip value.
Trip communication timeout	Check to enable	Reduce inverter power to 0% if the connection to the Smart Meter has been lost. 1 Enable if necessary. 2 Click on Apply settings.
- P(f) Enable frequency-dependent power reduction in the P(f) menu.		
Operation mode	Off Mode 1 Mode 2 Mode 3	1 Specify the operating mode. Mode 1 = Hysteresis active - Limit ; Mode 2 = Hysteresis inactive - Limit; Mode 3 = Hysteresis inactive - Set
Power reference at underfrequency	Actual power Rated power	1 Specify control method for underfrequency. 2 Specify control method for overfrequency.
Power reference at overfrequency	Actual power Rated power	
Dynamic gradient mode	On Off	"Gradient at under/overfrequency (feed-in)" is not displayed. 1 Enable dynamic gradient.
Gradient at underfrequency (feed-in)	0-200 (%/Hz)	1 Specify gradient for feed-in at overfrequency. 2 Specify gradient for feed-in at underfrequency.
Gradient at overfrequency (feed-in)	0-200 (%/Hz)	
Activation threshold at underfrequency	40-50 [Hz]	1 Set frequency thresholds for the activation of the power limitation in case of undervoltage.
Activation threshold at overfrequency	50-60 [Hz]	2 Set frequency thresholds for the activation of the power limitation in case of overvoltage.
Activation delay	0-5,000 [ms]	1 Set the regulation delay.
Output gradient limitation increase & decrease	1-65,534 [% Slim / min]	1 Specify the output gradient limitation increase and decrease.

Display	Setting	Description
Settling time	200–2,000 [ms]	1 Set the settling time mode. 2 Click on Apply settings.
Deact. lim. time after fault	0–1,000 [s]	The change in the effective power is limited to the configured gradient for the specified time after a fault. Only evaluated in modes 2 and 3.
Deact. grad. incr. & de-cr. after fault	0–65,534 [% / min]	Limits the change in effective power after a fault. Only evaluated in modes 2 and 3.
- P(U) Enable voltage-dependent power reduction in the P(U) menu.		
Operation mode	Off On	1 Enable the control process. Off: Deactivates dynamic grid support using dynamic reactive current. Dynamic grid support remains active on account of interference immunity.
Reference power	Actual power Rated power	1 Select the power-dependent control method.
Evaluated voltage	Maximum phase voltage Positive phase sequence voltage	Specifies which voltage is evaluated in a three-phase system. 1 Select the power-dependent control method.
Hysteresis mode	Off On	Hysteresis mode affects the shutdown response of P(U). 1 Enable the mode.
Deactivation gradient	0–65,534 [% / min]	1 Set gradients for the voltage limitation.
Deactivation time	0–60,000,000 [ms]	1 Specify the time for voltage reduction.
Output gradient limitation increase & decrease	1–65,534 [% Slim / min]	1 Specify the output gradient limitation increase and decrease.
Settling time	500–120,000 [ms]	1 Set the settling time.
Active curve	Curve 1–5	Up to five characteristics can be configured independently and one of them can be enabled for regulation each time. 1 Select active curve.
Number of nodes	2–5	1 Specify the number of nodes.
Power	0.0–100.0 [% Pref]	1 Specify power for 1st, 5th ... node as a percentage of the maximum power.
Voltage	80.0–125.0 [% Unom]	2 Specify voltage for 1st, 5th ... node as a percentage of the maximum voltage. 3 Click on Apply settings.
- Power rampup Power rampup is used to ramp up the power gradually; see https://manuals.fronius.com/html/4204260586/#0_m_0000041356 .		
Power rampup gradient	1–3,000 [% / min]	1 Set increase.

Display	Setting	Description
Rampup on every connection	Check to enable	1 Enable option.
Rampup on first connection		2 Click on Apply settings .
Rampup after grid failure		
Reactive power control Enable the reactive power process in the mode menu; see https://manuals.fronius.com/html/4204260586/#0_t_0000008311 .		
- Mode		
Mode	Cos-phi constant Q constant Cos-phi(P/Plim) Q(U) Q(P)	1 Select a control process. 2 Click on Apply settings .
- Cos-phi constant		
Cos-phi constant	0.3-1	1 Determine the specified power factor.
Power gradient increase & decrease	1-65,534 [% Slim / min]	1 Set the maximum change in the reactive power %Slim/min in the event of a change to overexcited mode. 2 Set the maximum change in the reactive power %Slim/min in the event of a change to underexcited mode.
Settling time	1,000-120,000 [ms]	1 Set the settling time in the event of an abrupt change in the reactive power set value (e.g., caused by a voltage jump). 2 Click on Apply settings .
- Q constant		
Priority mode	Q-Priority P-Priority	1 Set priority.
Q constant	0-100 [% Slim] underexcited overexcited	1 Set reactive power Q to a fixed value. 2 Select the type of phase shift. Underexcited corresponds to an inductive load, overexcited to a capacitive load.
Output gradient limitation increase & decrease	1-65,534 [% Slim / min]	1 Set the maximum change in the reactive power in the event of a change to overexcited mode. 2 Set the maximum change in the reactive power in the event of a change to underexcited mode.
Settling time	1,000-120,000 [ms]	1 Set the settling time in the event of an abrupt change in the reactive power set value (e.g., caused by a voltage jump). 2 Click on Apply settings .
- Cos-phi(P)		
Lock-In voltage	10-126.6 [% Un-om]	1 Set the voltage (above this voltage, the control is activated).
Lock-Out voltage	10-126.6 [% Un-om]	1 Set the voltage (below this voltage, the control is activated).

Display	Setting	Description
Power gradient increase & decrease	1-65,534 [% S _{lim} /min]	1 Set the maximum change in the reactive power %S_{lim}/min in the event of a change to overexcited mode. 2 Set the maximum change in the reactive power %S_{lim}/min in the event of a change to underexcited mode.
Settling time	1,000-120,000 [ms]	1 Set the settling time in the event of an abrupt change in the reactive power set value.
Number of nodes	2-10	The maximum number of configurable nodes depends on the selected grid type. 1 Specify the number of nodes.
Node 1-node 10 Power Curve	0-100% [% S _{lim}]	For the first node, the power must be 0%, for the last node the power must be 100%. The power values of the nodes must increase continuously. 1 Specify the power factor for 1st, 10th ... node as a percentage of the maximum power.
Cos phi Curve	0.3-1 [ind./cap.]	1 Specify cos j of the node.
Excitation Curve	overexcited underexcited	Overexcited corresponds to a capacitive load, underexcited to an inductive load. 1 If a reactive power not equal to 1 is selected: Select the type of phase shift. 2 Click on Apply settings.
- Q(P)		
Power gradient increase & decrease	1-65,534 [% S _{lim} /min]	1 Specify the power gradient increase and decrease.
Settling time	200-60,000 [ms]	1 Set the settling time in the event of an abrupt change in the rated power set value.
Number of nodes	2-10	The maximum number of configurable nodes depends on the selected grid type. 1 Specify the number of nodes.
Node 1-node 10 Power Curve	0-100% [% S _{lim}]	For the first node, the power must be 0%, for the last node the power must be 100%. The power values of the nodes must increase continuously. 1 Specify the power factor for 1st, 10th ... node as a percentage of the maximum power.
Q Curve	0.3-1 [ind./cap.]	1 Specify cos φ of the node.
Excitation Curve	overexcited underexcited	1 If a reactive power not equal to 1 is selected: Select the type of phase shift.
- Q(U)		
Evaluated voltage	Maximum phase voltage Positive phase sequence voltage	1 Select the rated voltage.
Lock-In power	0-100 [% S _{lim}]	1 Set the effective power as a % of the rated power above which control is activated.

Display	Setting	Description
Lock-Out power	0-100 [% S _{lim}]	1 Set the effective power as a % of the rated power below which control is deactivated.
Lock-In time	0-60,000 [ms]	1 Set the length of time that the effective power must remain above the lock-in/lock-out power before control is activated.
Lock-Out time	0-60,000 [ms]	
Dead time	0-10,000 [ms]	1 Set the intentional delay for the start of the Q(U) function.
Output gradient limitation increase & decrease	1-65,534 [% S _{lim} /min]	1 Set the maximum change in the reactive power in the event of a change to overexcited mode.
		2 Set the maximum change in the reactive power in the event of a change to underexcited mode.
Settling time	1,000-120,000 [ms]	1 Set the response speed of the control.
Min. cos-phi Q1 - min. cos-phi Q4	0-1	1 Enter the minimum cos φ factor for quadrants 1 and 4.
Voltage dead band	0-5 [% Uref]	1 Set voltage dead band in %.
Q(U) offset (temporary) U offset Q offset	-100-100 [% Slim] -100-100 [% Slim]	1 Set intended Q or U Offset for the function.
Q minimum	0-100 [% Slim] underexcited overexcited	1 Set reactive power Q to a min. value.
		2 Select the type of phase shift. Underexcited corresponds to an inductive load, overexcited to a capacitive load.
Q maximum	0-100 [% Slim] underexcited overexcited	1 Set reactive power Q to a max. value.
		2 Select the type of phase shift. Underexcited corresponds to an inductive load, overexcited to a capacitive load.
US, US: Autonomous adjustment Vref		1 When activating autonomous adjustment, the reference voltage of the reactive power function is adjusted to the measured voltage with the help of a PT-1 filter. This causes dynamic shifting of the Q(U) characteristic.
US, UD: Time constant Vref adjustment	300-5,000 [s]	1 Set the time constant for adjusting the dynamic reference voltage.
Priority mode	Q-Priority P-Priority	With P priority, the reactive power adjustment range is limited subject to the effective power that is currently available and being fed in. 1 Set priority for reactive power – Q or effective power – P.
Active curve	1-4 / Curve 1 TMP / Curve 2 / Curve 3 / Curve 4	
Number of nodes	2-10	The maximum number of configurable nodes depends on the selected grid type.
		1 Specify the number of nodes.

Display	Setting	Description
1st node ... 10th node	Power Voltage Excitation 0-100 [% S _{lim}]	1 Set the reactive power of the node as a percentage of the maximum power
	Power Voltage Excitation 0-125 [% S _{lim}]	The voltage values of the nodes must increase continuously. At voltages below the first node and voltages above the last node, the reactive power value of the first or last node is used. 1 Enter the voltage of the node in volts.
	Power Voltage Excitation overexcited underexcited	Overexcited corresponds to a capacitive load, underexcited to an inductive load. 1 Select the type of phase shift.
Dynamic grid support The device supports dynamic grid stabilization (fault ride through); see https://manuals.fronius.com/html/4204260586/#0_t_0000008334 .		
Operation mode	On Off	1 Select a control process. On: Activates dynamic grid support using dynamic reactive current. Off: Deactivates dynamic grid support using dynamic reactive current. Dynamic grid support remains active on account of interference immunity.
Settings	Manual Pre-defined zero current	1 Select a control process.
Reference voltage	[% Unom]	1 Set reference voltage for active control process.
Zero current under-voltage threshold	0-100 [% Unom]	If one or more phase-phase or phase-neutral conductor voltages fall below or exceed the configured threshold, the inverter switches to zero current mode. The total current is regulated to virtually zero. 1 Set the voltage source for zero current mode.
Zero current under-voltage threshold deactivation	0-100 [% Unom]	
Zero current over-voltage threshold deactivation	100-125 [% Unom]	
Zero current over-voltage threshold	100-125 [% Unom]	
Overvoltage protection Shutdown is carried out within a grid cycle.		
Transient surge protection	115-135 [% Unom]	1 Set the transient surge protection. 2 Click on Apply settings .
Enable External grid protection External inverter shutdown (INV OFF).		
External grid protection	No device INV OFF	1 Select device.
Third-party device name		1 Enter name.

Display	Setting	Description
Third-party device operating mode	On Off	In the "On" operating mode only, the inverter responds to the active-low signal (10-24 V_{DC}) at the 2-pole signal input INV OFF. 1 Select on / off. 2 Click on Apply settings.

Dynamic feed-in limit with multiple inverters

To be able to manage the feed-in limits of energy companies or utilities centrally, a Fronius inverter (master) can control the dynamic feed-in limit for other Fronius inverters in the system (secondary devices). To do so, the following requirements must be met:

- Power limitation and the **Limit multiple inverters (Soft Limit and I/O Power Management only)** function are activated and configured on the user interface of the master (primary device).
- Master and secondary device(s) are physically connected to the same network router via LAN.
- Inverter control via Modbus TCP is activated and configured for all secondary devices.
- The Fronius Smart Meter is configured as a primary meter and connected to the master.

Dynamic feed-in limitation is available for the following device combinations:

Master	Secondary devices
Fronius GEN24	Fronius GEN24, Fronius Verto, Fronius Tauro, Fronius Argeno, Fronius SnapINverter with Fronius Datamanager 2.0*
Fronius Verto	Fronius GEN24, Fronius Verto, Fronius Tauro, Fronius Argeno, Fronius SnapINverter with Fronius Datamanager 2.0*
Fronius Tauro	Fronius GEN24, Fronius Verto, Fronius Tauro, Fronius Argeno, Fronius SnapINverter with Fronius Datamanager 2.0*

** Up to 4 additional Fronius SnapINverters can be connected to each Fronius SnapINverter with Fronius Datamanager 2.0.*

System limits

- Systems with a maximum of 20 inverters (1 master + 19 secondary devices) are supported.
- The control system is designed for photovoltaic systems with a total output of up to 300 kW.
- The greater the system power, the greater the switching time between inverters.
- The use of a plant controller is recommended for systems >300 kW.

Secondary device

A secondary device adopts the feed-in limit from the master. No data for the feed-in limit is sent to the master. The following configurations must be set for power limitation:

Fronius Argeno user interface for secondary device

- 1** On the user interface, select the menu area **Communication > Ethernet > Modbus TCP /UDP**.

- 2 Check the box for **Modbus TCP/UDP Activation** and **Modbus TCP/UDP Write access**.
 - 3 Enter the value 502 for the **Modbus TCP/UDP Port**.
 - 4 Click on **Apply settings**.
 - 5 Select the menu area **AC settings > Active power control > External**
 - 6 Enter a fallback time of 10 seconds for a fail-safe scenario. The remaining preset parameters remain unchanged.
 - 7 Click on **Apply settings**.
- ✓ *The dynamic feed-in limit has been configured.*

IMPORTANT!

The secondary device automatically stops feeding into the grid in the event of a communication failure, where the Modbus controller is not sending signals to the inverter.

DC Settings

Input screens for DC source (module array/battery).

Display	Setting	Description
DC starting voltage The device starts feeding in as soon as this voltage is present.		
DC starting voltage		1 Set the start-up input voltage. 2 Click on Apply settings.
Insulation resistance		
Insulation resistance	36-1,000 [kOhm]	1 Set the threshold value from which the insulation monitoring reports an error. 2 Click on Apply settings.
DC Configuration The correct DC configuration must be set prior to connecting the individual DC strings. The inputs used may be connected either separately or in parallel. Mixed operation can damage the device.		
DC configuration	All inputs separate All inputs parallel	Observe the recommended default configuration! 1 Select All inputs separate if strings are connected individually. 2 Optional: Select All inputs parallel if strings are connected in parallel. 3 Click on Apply settings.
Global MPPT To determine the global MPP, first MPP trackers (1/3/5/7/9) and then MPP trackers (2/4/6/8/10) are considered. During this time, which lasts approx. 30 minutes in each case, the system deviates from the MPP and causes a reduction in yield. A reduction in the interval time therefore further reduces the yield. If a parallel connection (all inputs parallel) is made to two DC inputs of the device in each case, only one cycle is performed to determine the global MPP. If a global MPP is found, the MPP search algorithm is active again and tracks the changes to make the maximum possible power of the PV modules available.		
Global MPPT enable	On Off	1 Enable mode for active management to all MPPT trackers.
Time interval	5-120 min	1 Set the time interval.

Communication Input screens for configuring the interfaces.

Display	Setting	Description
Ethernet Option to parameterize the Ethernet interface.		
Secure network operation The devices must only be operated within a secure network (e.g., company network segment or private network). Direct connection to the public Internet is prohibited, as this poses potential security risks. Ensure that appropriate security measures such as firewalls and access controls are implemented to prevent unauthorized access.		
- IP settings Option to parameterize network access.		
DHCP	Check to enable	On: If a DHCP server is available, the IP address, subnet mask, gateway, and DNS server are automatically obtained from this server and the mentioned menu entries filled out. Off: Settings are made manually. 1 Enable or disable DHCP.
IP address		1 Assign an IPv4 address that is unique in the network.
Subnet mask		1 Assign subnet mask.
Default gateway		1 Enter the IPv4 address of the gateway.
Primary & Secondary DNS (optional)		1 Enter the IPv4 address of the DNS server. 2 Confirm the action field.
- Modbus TCP/UDP Option to set the Modbus port.		
Modbus TCP/UDP Activation	Check to enable	1 Allow Modbus TCP/UDP write access.
Modbus TCP/UDP Write access	Check to enable	Enabling write access makes it possible to set system-critical parameters via Modbus TCP. Are you sure you want to allow write access? 1 Allow Modbus TCP write access. 2 Confirm the action field.
Modbus TCP/UDP Port		1 Set network port.
- MQTT The MQTT protocol is used to implement the advanced functions between the segment controller and the inverter (in particular, firmware updates, distribution of device configurations, etc.)		
Broker auto discovery	Check to enable	
Broker IP		The default setting ensures successful communication with the segment controller. 1 Displays the IP address transmitted by the segment controller. 2 Confirm the action field.
Broker port		

Display	Setting	Description
Solar.web		
In this menu, the user can agree to the technically necessary data processing or reject it. If consent is refused, the inverter in Solar.web remains offline and does not transmit any data. Without consent, no data communication will take place with Solar.web.		

Features / Functions Input screens for extended device functions.

Display	Setting	Description
AFPE (arc-fault protection equipment)		
AFPE monitoring	Check to enable	1 Enable AFPE monitoring if necessary. 2 Click on Apply settings.
ARC Manual Restart		
Constant voltage control Option to disable MPP seek mode so the device operates with a constant DC voltage. Energy recovery to the PV generator can occur if constant voltage control is enabled and the system is running in "Q on Demand" mode. Please note the instructions and approval of the module manufacturer.		
Constant voltage mode	Off On	1 Enable or disable constant voltage regulator.
Constant voltage		1 Set value for constant voltage regulator. 2 Click on Apply settings.
SPD monitoring Option to check the available surge protection device with corresponding status codes		
SPD monitoring AC SPD monitoring DC	Check to enable	1 Activate surge protection monitoring. 2 Click on Apply settings.
Q on Demand Only enable this function if this is expressly permitted by the utility. Further conditions: - No PID solution connected to the device. - Constant voltage regulator in the device is disabled.		
Night Shutdown	Check to enable	The reactive power settings currently specified are used. Power-dependent functions are not used. If an AC disconnect occurs overnight, the function will only be available the following day. 1 "Q on Demand" function is enabled by disabling the night shutdown. 2 Transfer the function to the memory. 3 Note information in the notification window and use OK button to enable the function.
Compliant with type B RCD Enable this function when using a type B RCD		
Compliant with type B RCD	Check to enable	1 Activate "Compliant with type B RCD". 2 Click on Apply settings.
Relay		

Display	Setting	Description
Relay	Positive logic Negative logic Inactive Active	1 Select the type of logic. 2 Select the form of activity. 3 Click on Apply settings.
Smart Meter Smart Meters installed in the system can be found and connected in this menu.		
Overview of Smart Meters		The IP address, device serial number, and connection status of the Smart Meter are displayed.

Service / Maintenance

Option to perform updates, access service and parameter data, and grant remote access.

Display	Setting	Description
Firmware Update Option to update the device. Parameter data is not overwritten during firmware updates.		
Instant Update		1 Select the firmware update file using the Browse... button and confirm 2 Start the firmware update using the Upload button. 3 The AC and DC supply to the inverter must be ensured throughout the entire update process. A loss of supply may damage the device. Continue with the update?
Rollback Update		This function can be used to reset the inverter to the last firmware version installed. 1 Perform firmware rollback by clicking on the Rollback button.
Export Service Package Option to export a service package. The service package contains status messages, weblogs, production data, and various measured values.		
Export Service Package		1 Press the export button and send the file to Fronius.
Service Log Shows all logged installations. All maintenance activities should be added manually via the Add service log entry button.		
Service Log		1 Enter additional service tasks. 2 Export service logs if necessary.
Logging Management Input screens for log and service data and defaults.		
- Settings Set the interface for data logging and the basic counter.		
User logging interval	1 5 10 15 [minutes]	Setting and time until memory is overwritten: 1 min-5 days; 5 min-4.5 years; 10 min-9 years; 15 min-14 years. 1 Specify time span between two log data captures.

Display	Setting	Description
Service logging interval	1-120 [sec]	Setting and time until memory is overwritten: 1 sec-9 days; 10 sec-92.5 days; 120 sec-1,110 days 1 Specify time span between two log data captures.
DC-DSP logging interval	1-120 [sec]	Setting and time until memory is overwritten: 1 sec-9 days; 10 sec-92.5 days; 120 sec-1,110 days 1 Specify time span between two log data captures.
ARC-DSP logging interval	1-120 [sec]	Setting and time until memory is overwritten: 1 sec-9 days; 10 sec-92.5 days; 120 sec-1,110 days 1 Specify time span between two log data captures.
- Analyze Log Data All measurement data can be transferred to a USB thumb drive by making individual or multiple selections.		
User logs	cosPhi fac (Hz) lac1 (A) lac2 (A) lac3 (A) idc (A) Qac (var)	1 Select a date in the calendar. 2 Select measurement data from the drop-down field. 3 Update the measurement data. 4 Transfer the selected measurement data to the storage device or transfer the data selectively.
Parameter Management Option to reset set values as well as to import and export specific parameters.		
Factory Settings		1 Compare all parameters / country-specific parameters / network-specific parameters with basic setting value. 2 If necessary, reset parameters using the Restore button.
Export configuration (*.kcfp)		1 Parameters to export for device independent settings / Export all settings. 2 Confirm the following window with OK .
Import configuration (*.kcfp)		1 Select the parameter file using the Browse... button. 2 Import the parameters using the Upload button.
Installation Wizard		
Installation Wizard		After the installation is complete, the following text appears: Installation wizard was completed In addition, a report with the complete device configuration can be created and downloaded. This report is requested by some grid operators during commissioning.
Network Statistics Displays the data packages that have been transmitted and received.		
Network Statistics		
History		

Display	Setting	Description
Shows all actions carried out in the system and on the web interface.		
Reboot Device		
Reboot Device		1 Restart the device if necessary.

Appendix

Care and maintenance

Safety



DANGER

Lethal voltages are still present in the connections and leads of the device even after the device has been switched off and disconnected.

Touching the leads or terminals/busbars in the device can result in severe injuries or death.

- ▶ The device must be permanently installed prior to electrical connection.
- ▶ Comply with all safety rules and current technical connection specifications of the responsible utility.
- ▶ The device must only be opened and serviced by a qualified electrician.
- ▶ Switch off the mains voltage by switching off the external circuit breakers.
- ▶ Check that all AC and DC cables are completely free of current using a clamp ammeter.
- ▶ Do not touch the leads or terminals/busbars when switching the device on and off.
- ▶ Keep the device closed when in operation.



DANGER

Dangerous voltage due to two operating voltages

Touching the leads or terminals/busbars in the device can result in severe injuries or death. The discharge time of the capacitors is up to 5 minutes.

- ▶ The device must only be opened and serviced by a qualified electrician who has been authorized by the utility.
- ▶ Observe the information provided on the warning sticker of the device housing.
- ▶ Before opening the device: Disconnect the AC and DC sides and wait at least 5 minutes.



WARNING

If the device is not completely disconnected from the voltage source, the fan may start unexpectedly.

The fan can sever or injure limbs.

- ▶ Before working on the device, make sure that the device is disconnected from all voltage sources.
- ▶ After disconnecting from all voltage sources, wait for at least another 5 minutes before starting maintenance work.



CAUTION

Cleaning with compressed air or other unsuitable means can result in damage.

This can cause damage to the device.

- ▶ Do not use compressed air or high-pressure cleaners.
- ▶ Use a vacuum cleaner or a soft brush to remove dust from the fan covers and from the top of the device on a regular basis.
- ▶ Remove soiling from ventilation inlets if necessary.

General

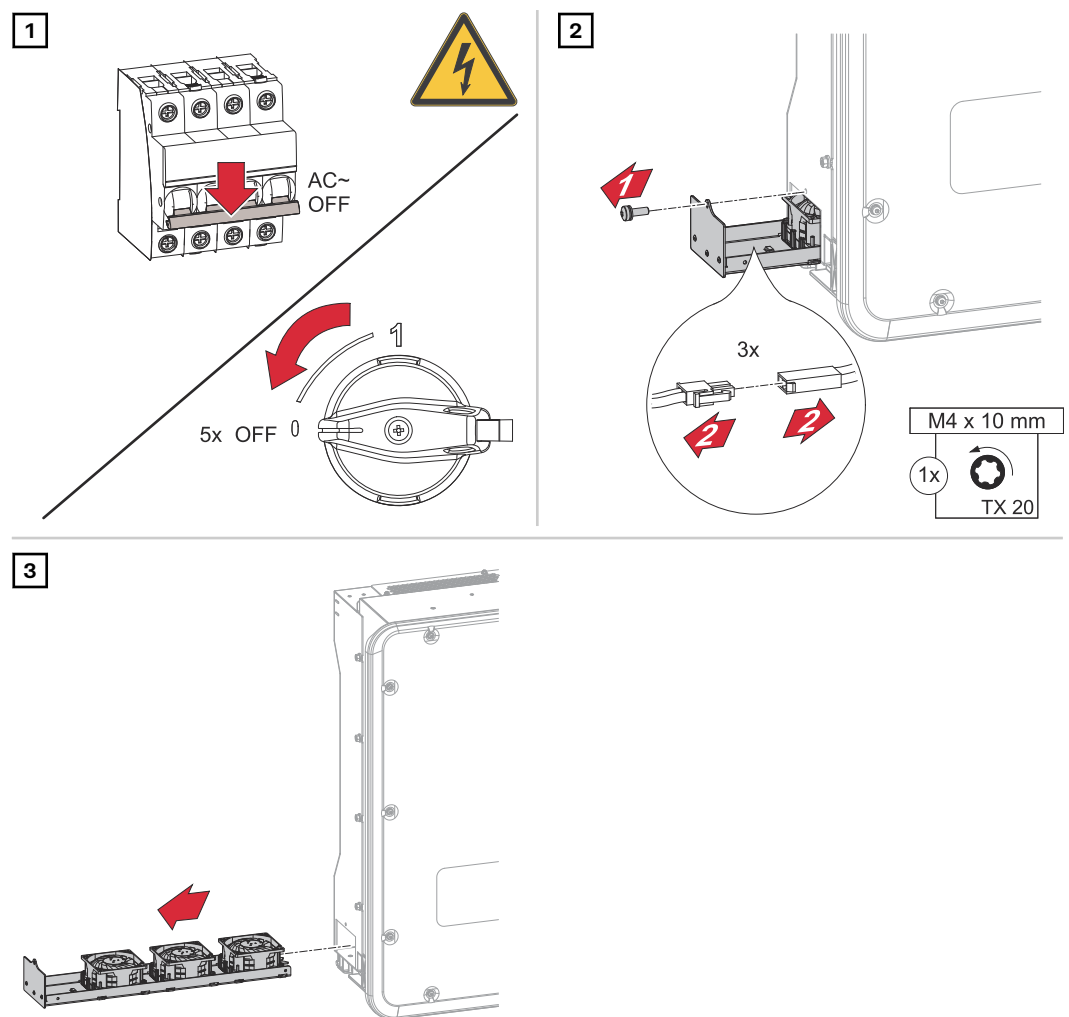
The inverter is designed so that it does not require additional maintenance work. Nevertheless, a few points must be considered during operation to ensure that the inverter works perfectly.

Maintenance

Maintenance and service work may only be carried out by a technical specialist.

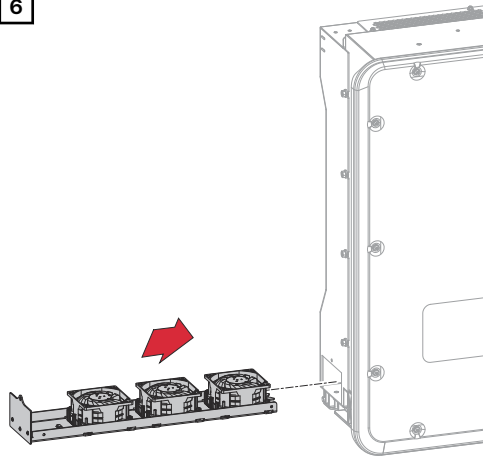
Cleaning

Wipe the inverter, if necessary, with a damp cloth.
Do not use cleaning agents, scouring agents, solvents, or similar products to clean the inverter.

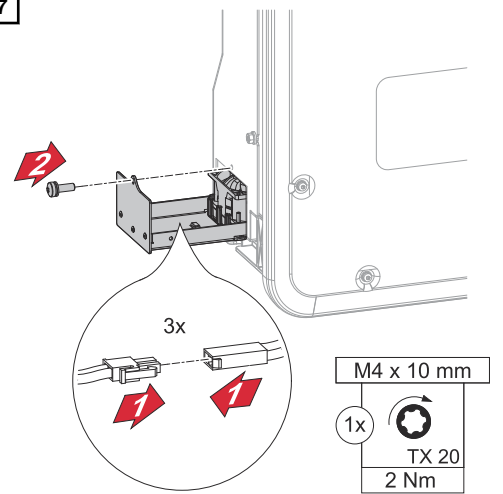
Cleaning the fan drawer

- 4** Use a suitable brush to remove dirt and dust particles from all fans.
- 5** Remove any dust inside by tapping gently on the side of the fan grille.

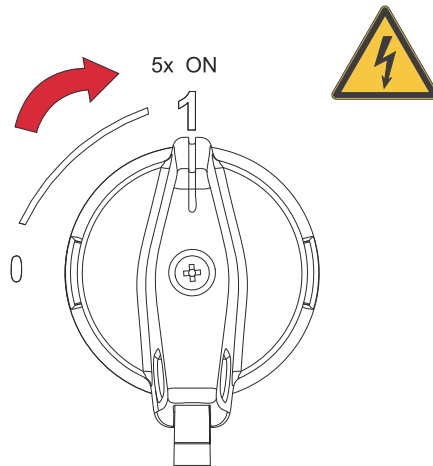
6



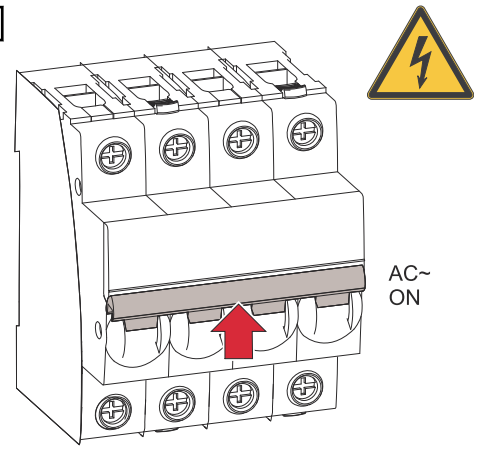
7



8



9



Status codes and remedy

Status codes

LEDs do not light up

Cause: No mains voltage

Remedy: Contact a Fronius-trained service technician

The device stops grid power feed operation shortly after switching on even though there is irradiation present

Cause: Defective section switches in the device

Remedy: If the section switches are defective, the device will recognize this fault during the self-test.

Remedy: Contact a Fronius-trained service technician

Device is active but not connected to the grid. The operating LED indicates a grid fault.

Cause: Due to a grid fault (over/undervoltage, over/underfrequency), the device stops the feed-in process and disconnects from the grid for safety reasons.

Remedy: Contact a Fronius-trained service technician

The mains fuse trips.

Cause: The inverter exceeds its nominal current for a short time in case of a high level of irradiation. The mains fuse capacity is too low.

Remedy: Contact a Fronius-trained service technician

Cause: If the mains fuse trips immediately when the device goes into grid power feed operation, the device's hardware is likely damaged.

Remedy: Contact a Fronius-trained service technician

The device displays an impossible daily peak value

Cause: Faults in the grid

Remedy: The device continues to operate as normal without losses in the yield, despite displaying an incorrect daily peak value. The value is reset overnight.

Remedy: To reset the value immediately, see [De-energizing the inverter and switching it back on](#)

Daily yields do not match the yields on the electricity meter

Cause: The measuring elements in the device have been selected to ensure maximum yields. Due to tolerances, the daily yields displayed may deviate from the values on the electricity meter by up to 15%.

Remedy: No action necessary.

Device is active but not connected to the grid

Cause: The PV module voltage or power is not sufficient for feed-in (solar irradiation is too low). The inverter checks the grid parameters before the feed-in process begins. The length of time it takes to switch on differs from country to country depending on the applicable standards and regulations and can last several minutes. The start-up input voltage setting may be incorrect.

Remedy: No action necessary.

Remedy: If status code persists, contact a Fronius-trained service technician.

In spite of high irradiation levels, the inverter does not feed the maximum power into the grid.

Cause: The device reduces the power because the temperatures inside the device are too high.

Remedy: Ensure sufficient cooling of the device.

Remedy: Remove any foreign matter from the device

Remedy: If the first two steps do not help, contact a Fronius-trained service technician

Cause: A module string is disconnected from the device due to a defective DC fuse.

Remedy: Contact a Fronius-trained service technician

Technical data

Argeno 125

Input data	
Max. input voltage (at 1,000 W/m ² /-10 °C in an open circuit)	1,100 V _{DC}
Nominal input voltage	620 V _{DC}
DC starting voltage	250 V _{DC}
MPP voltage range	550-850 V _{DC}
Number MPP-controller	10
Maximum input current (I _{DC max}) PV1-PV10 per string	30 A 20 A
Max. short circuit current ⁸⁾ PV1-PV10 per string	37.5 A 25 A
Max. power / MPP tracker	15.5 kW
Max. array power (P _{PV max}) in total	250 kWp
DC overvoltage category	2
Max. inverter backfeed current to the array ³⁾	0 A ⁴⁾

Output data	
Grid voltage range during permanent operation (phase/phase)	305-560 V _{AC}
Max. grid voltage range (up to 100 s)	612 V _{AC}
Rated grid voltage	380/400 V _{AC} (3P+(N)+PE) ¹⁾
France (4,210,472 / 4,210,472A)	400 V _{AC} (3P+N+PE) ¹⁾
Rated power (at 400 VAC)	125 kVA
Rated apparent power	125 kVA
Rated frequency	50/60 Hz ¹⁾
Maximum output current/phase	182 A
Initial symmetrical short-circuit current/phase I _{K"}	190.2 A
Power factor (cos phi)	0.8 ind ... 0.8 cap. ²⁾
Grid connection	3~ (N)PE 380 / 220 V _{AC} 3~ (N)PE 400 / 230 V _{AC}
Earthing systems	TN-C (not with 4,210,472) / TN-C-S / TN-S / TT, solid grounded wye
Maximum output power	125 kW
Nominal output power	125 kW
Rated output current / phase	3x 180.4 A
Total harmonic distortion	< 3%

Output data	
AC overvoltage category	3
Current (inrush) ⁵⁾	< 20 A [RMS (20 ms)] ⁴⁾
Duration of short circuit alternating current (max. output fault current)	3 x 182.66 A

General data	
Night-time power loss = standby consumption	4.8 W 400 V AC no LAN
European efficiency	98.7%
Maximum efficiency	99.1%
Protective class	1
EMC emission class	A ¹⁰⁾
Pollution degree inside housing	2
Outside housing	3
Permitted ambient temperature	- 25 °C-+60 °C
Permitted storage temperature	- 40 °C-+80 °C
Relative humidity	0-100%
Noise emission	< 60 dB(A) (ref. 20 µPA)
Ingress protection (IP) rating	IP 66
Dimensions (height x width x depth)	740 x 1,023 x 330 mm
Weight	85 kg
Inverter topology	Non-insulated, no transformer

Protection devices	
DC disconnecter	Integrated
Cooling principle	Controlled forced-air ventilation
RCMU	Integrated
DC isolation measurement	integrated ²⁾
Overload performance	Operating point shift Power limitation
Active anti-islanding method	Phase shift process, cyclical phase jump
AFCI	Integrated
AFPE (AFCI) classification (according to IEC63027)	F-I-AFPE-2-4-5

Explanation of footnotes

- 1) The values provided are standard values. If required, the inverter is customized for a specific country.
- 2) Depending on the country setup or device-specific settings (ind. = inductive; cap. = capacitive)
- 3) Maximum current from a defective PV module to all other PV modules. From the inverter itself to the PV side of the inverter, this is 0 A.
- 4) Assured by the electrical design of the inverter
- 5) Peak current when turning on the inverter
- 6) The values provided are standard values. These values must be adjusted according to requirements and PV output.
- 7) The value provided is a max. value. If this value is exceeded, this may impair the function.
- 8) $I_{SC\ PV} = I_{CP\ PV} \geq I_{SC\ max} = I_{SC\ (STC)} \times 1.25$ acc. to e.g.,: IEC 60364-7-712
- 9) Software class B (single-channel with periodic self-test) according to IEC 60730-1 Appendix H.
- 10) Standards:
 - Interference immunity
 - EN IEC 61000-6-1:2019
 - EN 61000-6-1:2007
 - EN IEC 61000-6-2:2019
 - EN 61000-6-2:2005/AC:2005
 - EN 62920:2017/A11:2020 Class A
 - Emitted interference
 - EN 62920:2017/A11:2020 Class A*
 - EN 55011:2016/A11:2020+ A2:2021 Group 1, Class A*
 - EN IEC 61000-6-4:2019
 - EN 61000-6-4:2007 +A1:2011
 - Grid interferences
 - EN 61000-3-11:2000
 - EN IEC 61000-3-11:2019
 - EN 61000-3-12:2011

Relevant Standards and Directives

CE Conformity Marking

The equipment complies with all the requisite and relevant standards and directives that form part of the relevant EU directive, and therefore is permitted to display the CE mark.

Mains failure

The standard measurement and safety procedures integrated into the inverter ensure that the power feed is immediately interrupted in the event of a grid failure (for example shut-off by the grid operator or damage to lines).

Service, warranty terms and conditions, and disposal

Fronius SOS

Under sos.fronius.com you can retrieve warranty and device information at any time, start troubleshooting independently, and request replacement components.

For more information on spare parts, contact your installer or point of contact for the PV system.

Warranty

Detailed warranty conditions specific to your country can be found at <https://www.fronius.com/en/download-center?searchword=Warranty+conditions>.

If there is a warranty for the relevant product, register the product at <https://warranty.fronius.com/> and activate or extend the warranty.

Disposal

In accordance with the EU Directive and national law, the following products must be disposed of separately and recycled:

- Waste electrical and electronic equipment
- Used batteries (portable batteries, industrial batteries)

Used equipment and batteries must be returned to the distributor or an authorized local collection system. Do not dispose of batteries with domestic waste. Protect batteries from high temperatures, direct sunlight, moisture and corrosive environments.

Arrange for the safe collection and proper disposal of damaged, leaking or used batteries by a battery recycling company or the Fronius Service Partner.

In addition, it should be noted that batteries contain substances that, if disposed of improperly, can have a significant negative impact on the environment as well as on human health and the safety of persons, in particular due to the leakage of hazardous substances such as heavy metals or electrolytes, which can contaminate soil, water and air.

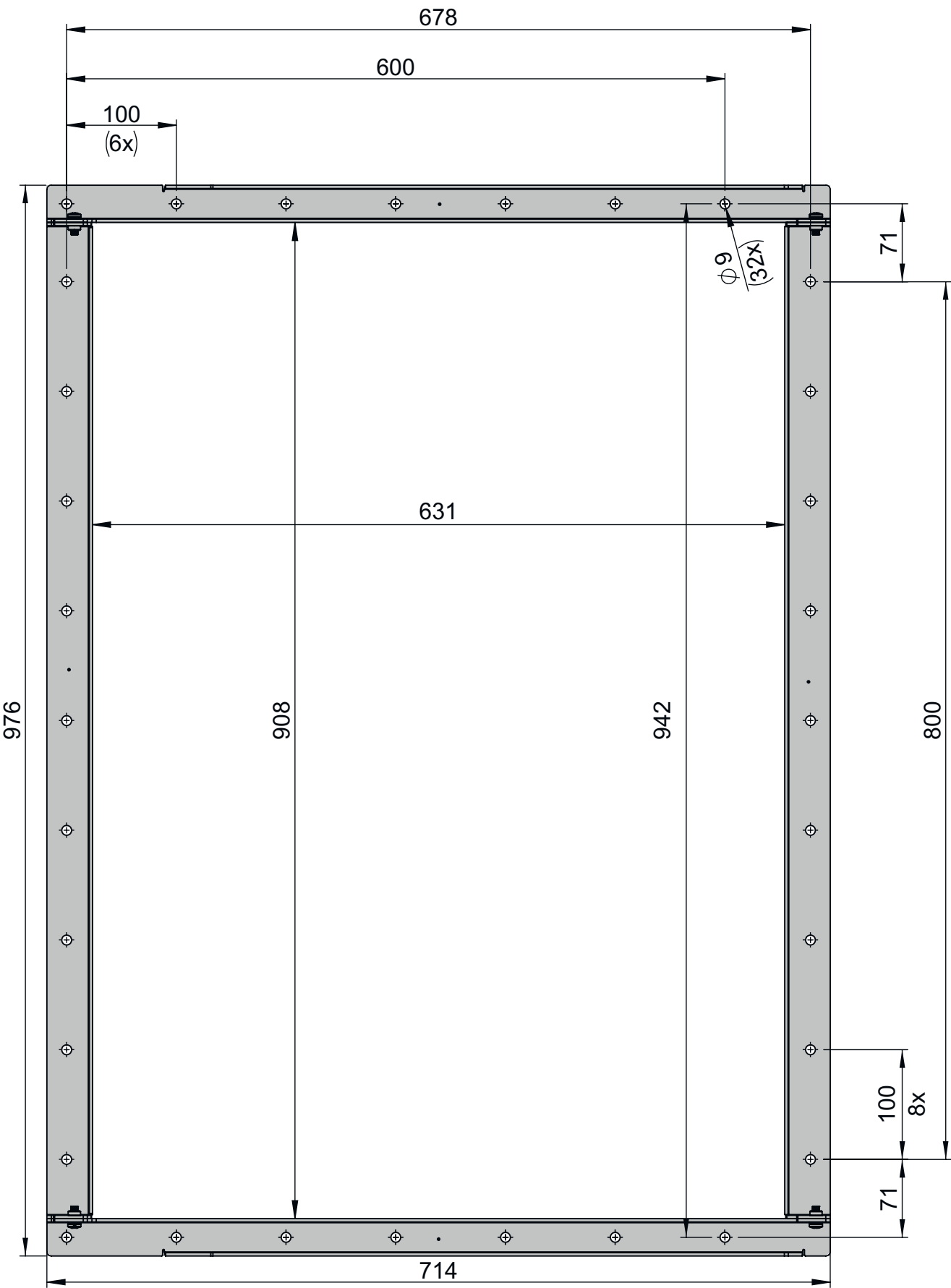
This ensures environmental protection and the sustainable use of natural resources.

Packaging materials

- Collect separately
- Observe local regulations
- Compress the cardboard box to reduce volume

Dimensions

Dimensions of the mounting bracket





fronius.com/en/solar-energy/installers-partners/products-solutions/monitoring-digital-tools

MONITORING &
DIGITAL TOOLS

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At www.fronius.com/contact you will find the contact details of all Fronius subsidiaries and Sales & Service Partners.