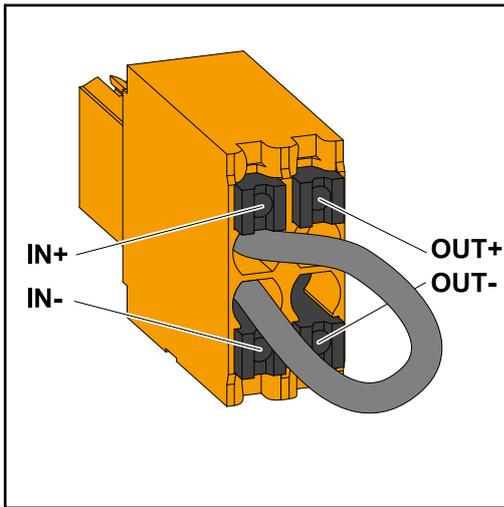


Installing the WSD (wired shut-down)

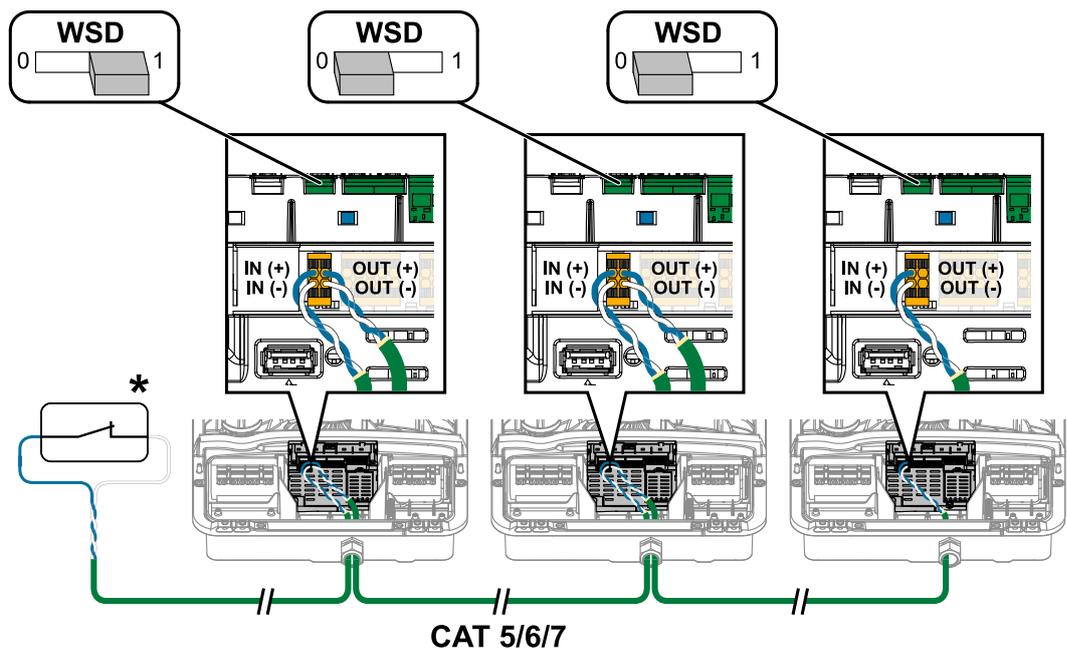


IMPORTANT!

The push-in WSD terminal in the inverter's connection area is delivered with a bypass ex works as standard. The bypass must be removed when installing a trigger device or a WSD chain.

The WSD switch of the first inverter with connected trigger device in the WSD chain must be in position 1 (master). The WSD switch of all other inverters should be in the 0 (slave) position.

Max. distance between two devices: 100 m
 Max. number of devices: 28



* Floating contact of the trigger device (e.g. central grid and system protection). If several floating contacts are used in a WSD chain, they must be connected in series.

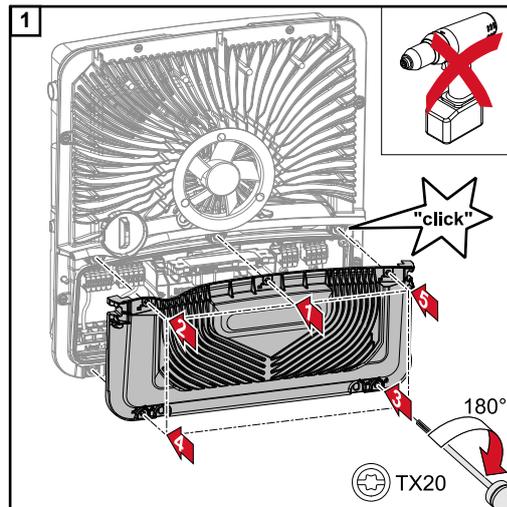
Closing and commissioning the inverter

Closing the inverter's connection area/ housing cover, and commissioning

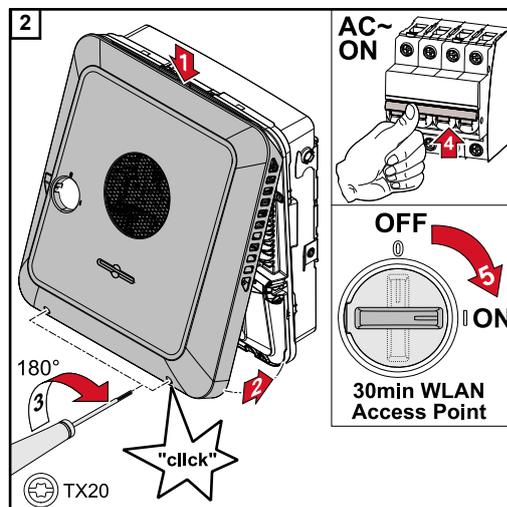
NOTE!

The housing cover is fitted with a lock for safety reasons, which allows the housing cover on the inverter to be pivoted only when the DC disconnecter is switched off.

- ▶ Only clip and pivot the housing cover onto the inverter when the **DC disconnecter is switched off**.
- ▶ Do not use excessive force to clip in and pivot the housing cover.



Place the cover on the connection area. Tighten the five screws by rotating them 180° to the right in the indicated order using a screwdriver (TX20).



Clip the housing cover onto the inverter from above. Press on the lower part of the housing cover and tighten the two screws 180° to the right using a Torx screwdriver (TX20). Turn on the automatic circuit breaker. Turn the DC disconnecter to the "On" switch position. For systems with a battery, observe the switch-on sequence according to chapter [Suitable battery](#) on page 24.

IMPORTANT!

The DC disconnecter in the "On" switch position automatically opens the WLAN access point (AP) when starting for the first time.

Alternatively, the WLAN access point can be opened with the optical sensor, see chapter [Button functions and LED status indicator](#) on page 87

Starting the inverter for the first time

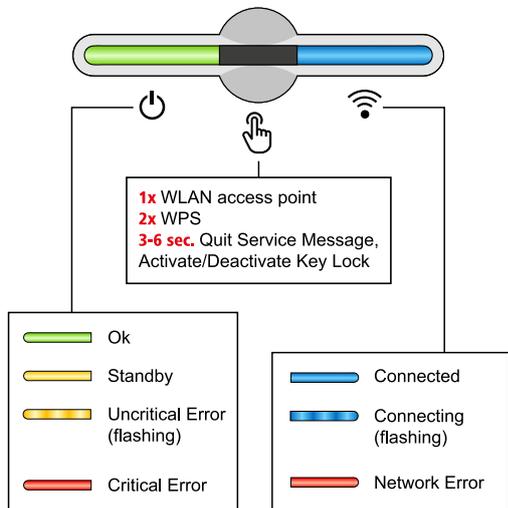
When using the inverter for the first time, various setup settings must be configured.

If the setup process is cancelled before the process is complete, any data that has been input up to this point is lost and the start screen with the installation wizard is shown again. If the process is interrupted, such as in the event of a power outage, the data is saved. Commissioning may be continued from the point at which the process was interrupted once the power supply has been restored. If the setup was interrupted, the

inverter feeds energy into the grid at maximum 500 W and the operating status LED flashes yellow.

The country setup can only be set when using the inverter for the first time. If the country setup needs to be changed at a later date, please contact your installer / Technical Support team.

Button functions and LED status indicator



The status of the inverter is shown via the operating status LED. In the event of faults, carry out the individual steps in the Fronius Solar.web live app.

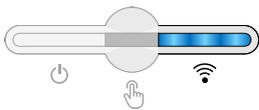


The optical sensor is actuated by touching with a finger.



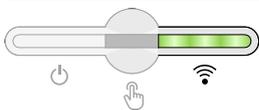
The status of the connection is shown via the communication LED. To establish the connection, carry out the individual steps in the Fronius Solar.web live app.

Sensor functions



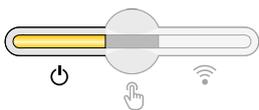
1x = WLAN access point (AP) is opened.

Flashing blue



2x = WLAN Protected Setup (WPS) is activated.

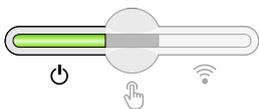
Flashing green



3 seconds (max. 6 seconds) = the service notification is terminated and the key lock is deactivated.

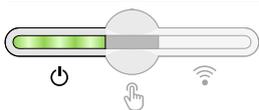
Lights up yellow

LED status indicator



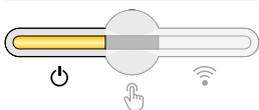
The inverter is operating correctly.

Lights up green



The inverter starts.

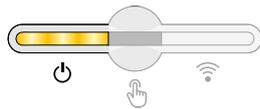
Flashing green



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

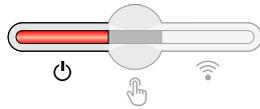
Lights up yellow

LED status indicator



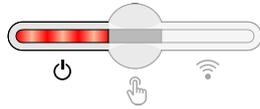
The inverter indicates a non-critical status.

🔌 Flashing yellow



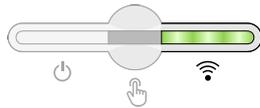
The inverter indicates a critical status and there is no grid power feed process.

🔌 Lights up red



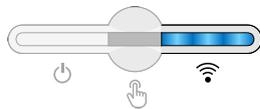
The inverter indicates a back-up power overload.

🔌 Flashing red



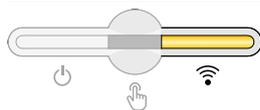
The network connection is being established via WPS.
2x 🖱️ = WPS search mode.

📶 Flashing green



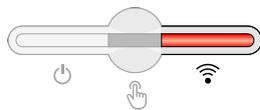
The network connection is being established via WLAN AP.
1x 🖱️ = WLAN AP search mode (active for 30 minutes).

📶 Flashing blue



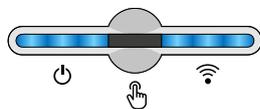
The network connection is not configured.

📶 Lights up yellow



The inverter is operating correctly, a network fault is indicated.

📶 Lights up red



The inverter is performing an update.

🔌 / 📶 Flashing blue

Installation with the app

The "Fronius Solar.start" app is needed for this installation method. Depending on the end device with which the installation will be carried out, download the app for the respective platform.



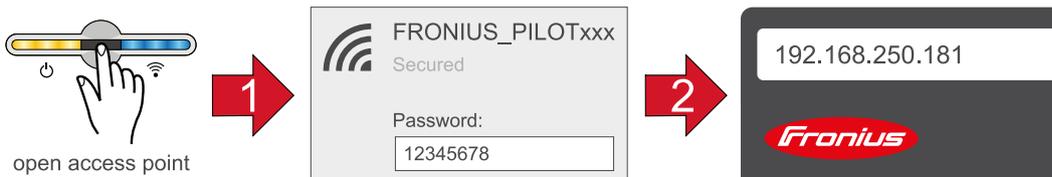
- 1 Start the installation in the app.
- 2 Select the product to which the connection should be established.

- 3 Open the access point by touching the sensor once  → Communication LED: flashes blue.
- 4 Follow and complete the installation wizard in the individual sections.
- 5 Add system components in Solar.web and start up the PV system.

The network wizard and the product setup can be carried out independently of each other. A network connection is required for the Solar.web installation wizard.

Installation using the web browser

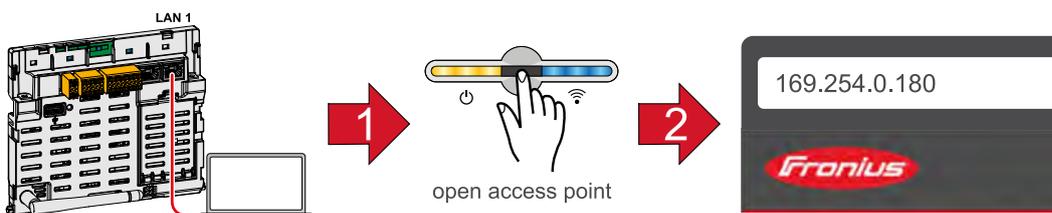
WLAN:



- 1 Open the access point by touching the sensor once  → Communication LED: flashes blue.
- 2 Establish the connection to the inverter in the network settings (the inverter is displayed with the name "FRONIUS_PILOT" and the serial number of the device).
- 3 Password: enter 12345678 and confirm.
IMPORTANT!
To enter the password on a Windows 10 operating system, the link "Connect using a security key instead" must first be activated to establish a connection with the password: 12345678.
- 4 In the browser address bar, enter and confirm the IP address 192.168.250.181. The installation wizard is opened.
- 5 Follow the installation wizard in the individual sections and complete the installation.
- 6 Add system components in Solar.web and start up the PV system.

The network wizard and the product setup can be carried out independently of each other. A network connection is required for the Solar.web installation wizard.

Ethernet:



- 1 Establish a connection to the inverter (LAN1) with a network cable (CAT5 STP or higher).
- 2 Open the access point by touching the sensor once  → Communication LED: flashes blue.
- 3 In the browser address bar, enter and confirm IP address 169.254.0.180. The installation wizard is opened.
- 4 Follow the installation wizard in the individual sections and complete the installation.
- 5 Add system components in Solar.web and start up the PV system.

The network wizard and the product setup can be carried out independently of each other. A network connection is required for the Solar.web installation wizard.

Settings - website of the inverter

User settings

User login

- 1 Open the website of the inverter in your browser.
- 2 In the “Login” menu, log in using your user name and password, or go to the “User” menu and click on the “User login” button and then log in with your user name and password.

IMPORTANT!

Depending on the user's authorization, settings can be executed in the individual menus.

Selecting the language

- 1 In the “User” menu, click on the “Language” button and select the desired language.

Device configuration

Components

Select "Add component+" to add all available components to the system.

PV generator

Activate the MPP tracker and enter the connected PV power in the associated field. For combined solar module strings, "PV 1 + PV 2 connected in parallel" must be activated.

Battery

If the SoC mode is set to "Automatic", the values "Minimum SoC" and "Maximum Soc" are preset according to the battery manufacturer's specifications.

If the SoC mode is set to "Manual", the "Minimum SoC" and "Maximum SoC" may be changed in consultation with the battery manufacturer.

Using the "Allow battery charging from additional producers in home network" setting, charging of the battery from other external producers is enabled/disabled.

Using the "Allow battery charging from public grid" setting, charging of the battery from the public grid is enabled/disabled.

The normative or feed-in tariff rules must be taken into account with this setting. The setting does not affect the charging of the battery by other producers within the home. It merely relates to the process of drawing charging energy from the public grid. Regardless of this setting, any charging from the public grid that is required for service reasons (e.g. necessary re-charging to protect against deep discharge) is still performed.

IMPORTANT!

Fronius accepts no liability for damage to third-party batteries.

Primary meter

To ensure smooth operation in conjunction with other energy producers and in Full Backup backup power mode, it is important to install the Fronius Smart Meter at the feed-in point. The inverter and other producers must be connected to the public grid via the Fronius Smart Meter.

This setting also affects the behaviour of the inverter at night. If the function is deactivated, the inverter switches to Standby mode as soon as there is no more PV power available, provided that no energy management command is sent to the battery (e.g. minimum state of charge reached). The message "Power low" is displayed. The inverter restarts as soon as an energy management command is sent or sufficient PV power is available.

If the function is activated, the inverter remains permanently connected to the grid so that energy can be drawn from other producers at any time.

After connecting the meter, the position must be configured. A different Modbus address needs to be set for each Smart Meter.

The Watt value on the generator meter is the sum of all generator meters. The Watt value on the consumption meter is the value of all consumption meters.

Ohmpilot

All Ohmpilots available in the system are displayed. Select the desired Ohmpilot and add it to the system via "Add".

Functions and I/Os

Backup power

"Off", "PV Point" or "Full Backup" can be selected for backup power mode.

Full Backup can only be activated once the required I/O assignments have been configured for backup power. In addition, a meter must be mounted and configured at the feed-in point for Full Backup backup power mode.

IMPORTANT!

When configuring "PV Point" backup power mode, the information in chapter [Safety](#) on page [71](#) must be observed.

When configuring "Full Backup" backup power mode, the information in chapter [Safety](#) on page [76](#) must be observed.

Backup power nominal voltage

When backup power mode is activated, the nominal voltage of the public grid must be selected.

State of charge warning limit

A warning is output when the residual capacity of the battery specified here is reached in backup power mode.

Reserve capacity

The set value results in a residual capacity (depending on the capacity of the battery) that is reserved for backup power. The battery is not discharged below the residual capacity in grid-connected operation.

Load management

Up to four pins can be selected for load management here. Additional load management settings are available in the "Load management" menu item.

Default: Pin 1

Australia - Demand Response Mode (DRM)

The pins for control via DRM can be set here:

Mode	Description	Information	DRM pin	I/O pin
DRM0	Inverter disconnects itself from the grid	DRM0 occurs if there is an interruption or short circuit on the REF GEN or COM LOAD leads, or if the combinations DRM1 - DRM8 are invalid. The mains relays open.	REF GEN COM LOAD	IO4 IO5
DRM1	Import $P_{nom} \leq 0\%$ without disconnection from the grid	currently not supported	DRM 1/5	IN6
DRM2	Import $P_{nom} \leq 50\%$	currently not supported	DRM 2/6	IN7
DRM3	Import $P_{nom} \leq 75\%$ & $+Q_{rel}^* \geq 0\%$	currently not supported	DRM 3/7	IN8
DRM4	Import $P_{nom} \leq 100\%$	currently not supported	DRM 4/8	IN9
DRM5	Export $P_{nom} \leq 0\%$ without disconnection from the grid	currently not supported	DRM 1/5	IN6
DRM6	Export $P_{nom} \leq 50\%$	currently not supported	DRM 2/6	IN7
DRM7	Export $P_{nom} \leq 75\%$ & $-Q_{rel}^* \geq 0\%$	currently not supported	DRM 3/7	IN8
DRM8	Export $P_{nom} \leq 100\%$	currently not supported	DRM 4/8	IN9

The percentages always refer to the nominal device output.

IMPORTANT!

If the Demand Response Mode (DRM) function is enabled and no DRM control is connected, the inverter switches to Standby mode.

**Demand
Response Modes
(DRM)**

Here you can enter a value for the apparent power input and the apparent power output for the Australia country setup.

Energy management

Self-consumption optimisation

The inverter always adjusts to the set target value on the Smart Meter. In the "automatic" operating mode (factory setting), an adjustment is made to 0 W at the feed-in point (maximum self-consumption).

The target value also applies if a further source feeds into this Smart Meter. However, in this case:

- The Fronius Smart Meter must be installed at the feed-in point
- Battery charging must be activated by another producer

The self-consumption optimisation has lower priority than the battery control specifications.

Self-consumption optimization

Switch self-consumption optimization to automatic or manual.

Target value on Smart Meter

If a manual selection is made under self-consumption optimisation, the target value on the Smart Meter and the reference/feed-in can be selected here.

External producers (only possible with active battery)

If further decentralised producers are installed in the house, and these are incorporated into the self-consumption regulation of the Fronius Hybrid inverter, this setting must be activated. This means that energy can be drawn from the household network and fed into the battery via the Fronius GEN24 Plus inverter. You can restrict how much power is consumed by the Fronius GEN24 Plus inverter by specifying the maximum AC power (AC max.). A maximum power consumption of the AC nominal capacity of the Fronius GEN24 Plus inverter is possible.

Load management

Priorities

If additional components (e.g. battery, Ohmpilot) are present in the system, the priorities can be set here. Devices having higher priority are actuated first, and subsequently, if there is still excess energy available, the other devices.

Load management

It is possible for up to four different load management rules to be defined. At the same threshold values, the rules are activated in succession. For deactivation, this is done in reverse; the I/O last switched on is the first to be switched off. In the case of different thresholds, the I/O with the lowest threshold is switched on first, followed by the second lowest, and so on.

I/Os controlled by the produced power are always prioritised over a battery and Ohmpilot. That is to say that an I/O can switch on and result in the battery no longer being charged or the Ohmpilot no longer being activated.

An I/O is activated or deactivated only after 60 seconds.

Control

- Control is deactivated.
- Control is effected by the power generated.
- Control is effected by excess power (given feed limits). This option can only be selected if a meter has been connected. Control via Energy Manager is effected using the actual power of feeding in with respect to the grid.

Thresholds

- On: For entering an effective power limit, at which the output is activated.
- Off: For entering an effective power limit, at which the output is deactivated.

Runtimes

- Field for enabling a minimum duration for which the output is to be activated for each switch-on process.
- Field for enabling the maximum runtime per day.
- Field for enabling a target duration for which the output is to be activated in total per day (total of several switch-on processes).

General

General settings

- 1 In the "System name" input field, enter the name of the system (max. 30 characters).
- 2 "Synchronize time automatically" enabled → select "Area time zone" and "Location time zone". The date and time are applied from the time zone entered.
- 2 "Synchronize time automatically" disabled → enter or select "Date", "Time", "Area time zone" and "Location time zone".
- 3 Click on the "Save" button.

Update

All available updates are made available on the product page and in the "Download search" area under www.fronius.com .

Firmware update

- 1 Drag the firmware file into the "Drag&Drop file here" field or select it using "Select file".

The update will start.

Setup wizard

The guided setup wizard can be accessed here.

Restoring the factory settings

All settings

All configuration data is reset with the exception of the country setup. Changes to the country setup may only be carried out by authorized personnel.

All settings with no network

All configuration data is reset with the exception of the country setup and the network settings. Changes to the country setup may only be carried out by authorized personnel.

Event Log

Current events

All current events of the connected system components are shown here.

IMPORTANT!

Depending on the type of event, these must be confirmed via the "tick" button in order to be processed further.

Archived

All events of the connected system components that no longer exist are shown here.

Information

This menu displays all system information and the current settings.

Save as PDF

- 1 Click on the "Save as PDF" button.
- 2 Individually select information with the "tick" next to the information or with the tick "Select all".

- 3 Enter the file name in the input field and click on the "Print" button.

The PDF is created and displayed.

Create support info

- 1 Click on the "Create support info" button.
- 2 The sdp.cry file is downloaded automatically. To download manually, click on the "Download Support-Info" button.

The sdp.cry file is saved in the downloads.

Enable remote maintenance

- 1 Click on the "Enable remote maintenance" button.

Remote maintenance access for the Fronius Support team is enabled.

IMPORTANT!

Remote maintenance access gives Fronius Technical Support exclusive access to the inverter via a secure connection. Diagnostic data is transmitted here that can be used for troubleshooting purposes. Only enable remote maintenance access following a request from the Fronius Support team.

Licence manager

The licence file contains the performance data and the scope of functions of the inverter. When replacing the inverter, power stage set or data communication area, the licence file must also be replaced.

Licensing - online (recommended):

An Internet connection and completed configuration on Solar.web is required.

- 1 Complete the installation work (see chapter [Closing the inverter's connection area/housing cover, and commissioning](#) on page 86).
- 2 Connect to the website of the inverter.
- 3 Enter the serial number and verification code (VCode) of the defective and replacement unit. The serial number and the VCode can be found on the rating plate of the inverter (see chapter [Warning notices on the device](#) on page 47).
- 4 Click on the "Start online licensing" button.
- 5 Skip the Terms of use and Network settings menu items by clicking on "Next".

The licence activation starts.

Licensing - offline:

There must be no Internet connection for this. When licensing offline with an established internet connection, the licence file is automatically uploaded to the inverter. Therefore, when uploading the licence file, the following error occurs: "The licence has already been installed and the wizard can be closed".

- 1 Complete the installation work (see chapter [Closing the inverter's connection area/housing cover, and commissioning](#) on page 86).
- 2 Connect to the website of the inverter.
- 3 Enter the serial number and verification code (VCode) of the defective and replacement unit. The serial number and the VCode can be found on the rating plate of the inverter (see chapter [Warning notices on the device](#) on page 47).
- 4 Click on the "Start offline licensing" button.

- 5 Download the service file onto the end device by clicking on the "Download service file" button.
- 6 Open the website licensemanager.solarweb.com and log in with your user name and password.
- 7 Drag or upload the service file into the "Drop service file here or click to upload" field.
- 8 Download the newly generated licence file onto the end device using the "Download license file" button.
- 9 Go to the inverter website and drag the licence file into the "Drag&Drop licence file here" field, or select it via "Select license file".

The licence activation starts.

Communication

Network

Server addresses for data transfer

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

- Tcp froniussseiot.azure-devices.net:8883
 - Tcp froniussseiot-telemetry.azure-devices.net:8883
 - Tcp froniussseiot-telemetry.azure-devices.net:443
 - Udp sera-gen24.fronius.com:1194 (213.33.117.120:1194)
 - Tcp froniussseiot.blob.core.windows.net:443
-

LAN:



- 1 Enter host name.
- 2 Select connection type "automatic" or "static".
- 3 For connection type "static" - enter IP address, subnet mask, DNS and gateway.
- 4 Click on the "Connect" button.

The connection is established.

WLAN:



Establishing a connection via WPS:

- 1 Click the "Enable" button.
- 2 Activate WPS on the WLAN router (see documentation provided with the WLAN router).

The connection is established automatically.

Select and connect WLAN network:

The networks found are shown in the list. Clicking on the refresh button  will carry out a second search of the available WLAN networks. The "Find network" input field is used to find hidden networks.

- 1 Select network from the list.
- 2 Select connection type "automatic" or "static".
- 3 For connection type "automatic" - enter WLAN password and host name.
- 4 For connection type "static" - enter IP address, subnet mask, DNS and gateway.
- 5 Click on the "Connect" button.

The connection is established.

Access point:

The inverter acts as the access point. A PC or smart device connects directly with the inverter. It is not possible to connect to the internet. The "Network name (SSID)" and "Network key (PSK)" can be assigned in this menu.

Modbus**Modbus RTU interface 0 / 1**

If one of the two Modbus RTU interfaces is set to Slave, the following input fields are available:

"Baud rate"

The baud rate influences the transmission speed between the individual components connected in the system. When selecting the baud rate, ensure that it is the same at both the sending and receiving end.

"Parity"

The parity bit can be used to check the parity. It detects transmission errors. A parity bit can safeguard a specific number of bits. The value (0 or 1) of the parity bit must be calculated by the sender and is checked by the recipient using the same calculation. The parity bit can be calculated for even and odd parity.

"SunSpec Model Type"

Depending on the SunSpec model, there are two different settings.

float: SunSpec Inverter Model 111, 112, 113 or 211, 212, 213.

int + SF: SunSpec Inverter Model 101, 102, 103 or 201, 202, 203.

"Meter address"**"Inverter address"****Slave as Modbus TCP**

If the function "Slave as Modbus TCP" is activated, the following input fields are available:

"Modbus port"

Number of the TCP port that is to be used for Modbus communication.

"SunSpec Model Type"

Depending on the SunSpec model, there are two different settings.

float: SunSpec Inverter Model 111, 112, 113 or 211, 212, 213.

int + SF: SunSpec Inverter Model 101, 102, 103 or 201, 202, 203.

"Meter address"

Inverter control via Modbus

If this option is activated, the inverter is controlled via Modbus.

Inverter control includes the following functions:

- On/Off
- Power reduction
- Specification of a constant power factor ($\cos \phi$)
- Specification of a constant reactive power value
- Battery control specifications with battery

Safety and grid requirements

- Feed-in limitation** DNO or grid operators may stipulate feed-in limitations for an inverter (e.g. max. 70% of kWp or max. 5 kW).
The feed-in limitation takes account of self-consumption by the household before the power of an inverter is reduced:
- A custom limit can be set.
 - A Fronius Smart Meter can be connected to the Modbus push-in terminal of the data communication area at the connections M0/M1- / M0/M1+ for Modbus data.

With the inverter, any PV power that is not allowed to be fed into the grid is used to charge the battery instead and/or used by the Fronius Ohmpilot so that it does not go to waste. The feed-in limitation is only active if the power fed in is higher than the set power reduction. The battery is charged first or the energy is consumed on the Fronius Ohmpilot.

"Limit for entire system"

The entire PV system is limited in accordance with a set power limit. If this setting is disabled, the entire available PV-power is converted and fed into the grid.

"Total DC system power"

Input field for the total DC system power in Wp.
This value is used if the "Maximum permitted feed-in power of the entire system" is specified in %.

"Maximum permitted feed-in power of the entire system"

Input field for the "Maximum permitted feed-in power of the entire system" in W or % (setting range: -10 to 100%).

If there is no meter in the system or if a meter has failed, the inverter limits the feed-in power to the set value.

Example: Feed-in limitation

(without consideration of the efficiency)

PV system on Fronius inverter:	5000 W
Consumption in home:	1000 W
Maximum permitted feed-in power of the entire system:	60% = 3000 W

Case 1: The battery can be charged

Power at grid feed-in point:	0 W
Power at inverter output:	1000 W
Power into the battery:	3000 W

Case 2: The battery cannot be charged

Power at grid feed-in point:	3000 W
Power at inverter output:	4000 W
Power into the battery:	0 W

In this example, no more than 3000 W may be fed into the grid at the grid feed-in point. However, any loads that are located between the inverter and the grid feed-in point can be supplied by additional power from the inverter. These loads are also compensated as required.

Dynamic power regulation with several inverters

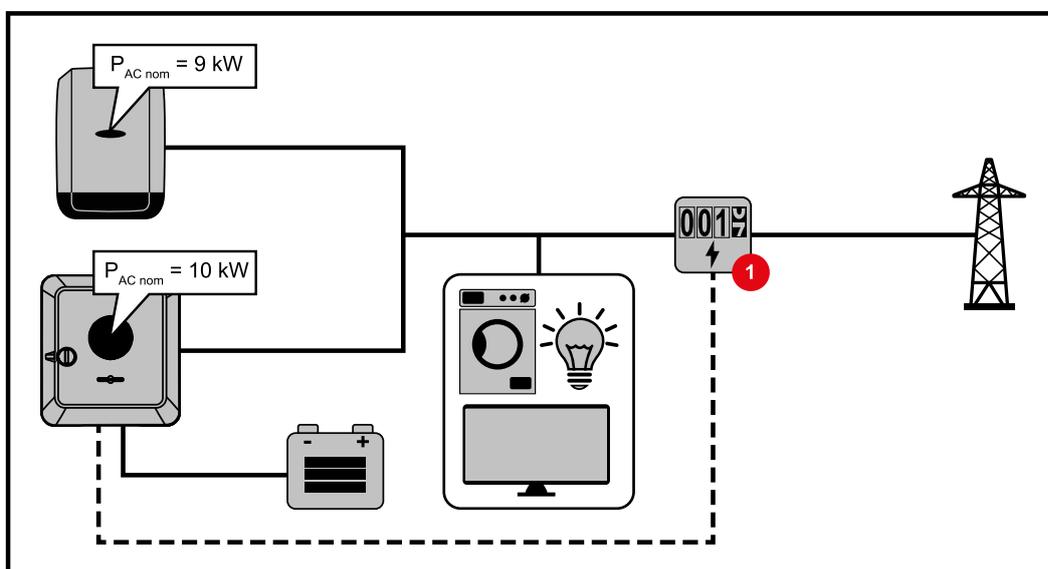
Example 1: Fronius SnapINverter ≤ Fronius Symo GEN24

Only one primary meter is required for the Fronius Symo GEN24 inverter.

The power values shown are an example. Inverter configurations with power values other than those shown in the example are possible, taking into account the criteria for this example.

IMPORTANT!

Zero feed-in is not possible when using 2 inverters.



Settings on the Fronius Symo GEN24 inverter website:

- 1 Configure the primary meter at the feed-in point in the "Device configuration" → "Components" menu.
- 2 Activate the limit for the entire system in the "Safety and grid regulations" → "Export limitation" menu. Enter the DC nominal output of the entire PV system in the "Total DC system power" input field. Enter the percentage value (50%, 60% or 70%) in the "Maximum permitted feed-in power of the entire system" input field.

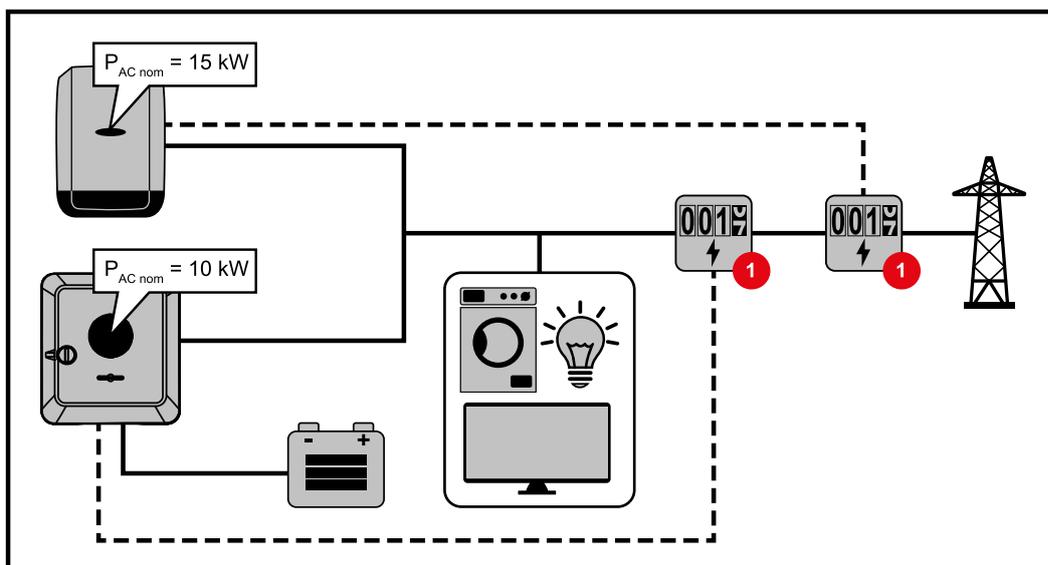
Example 2a: Fronius SnapINverter > Fronius Symo GEN24

Two primary meters are required for the inverters.

The power values shown are an example. Inverter configurations with power values other than those shown in the example are possible, taking into account the criteria for this example.

IMPORTANT!

With two primary meters at the feed-in point without a secondary meter, Fronius SnapINverter and Fronius Symo GEN24 inverters cannot be displayed as a combined PV system in Solar.web. Two individual PV systems must be created in Solar.web.



Settings on the Fronius Symo GEN24 inverter website:

- 1 Configure the primary meter at the feed-in point in the "Device configuration" → "Components" menu.

Settings in the system monitoring of the Fronius SnapInverter:

- 1 Configure the primary meter at the feed-in point in the "Settings" → "Meter" menu.
- 2 Activate the limit for the entire system in the "DNO Editor" → "Dynamic power reduction" menu. Enter the DC nominal output of the entire PV system in the "Total DC system power" input field. Enter the percentage value (50%, 60% or 70%) in the "Max. grid feed-in power" input field.

Example 2b: Fronius SnapInverter > Fronius Symo GEN24

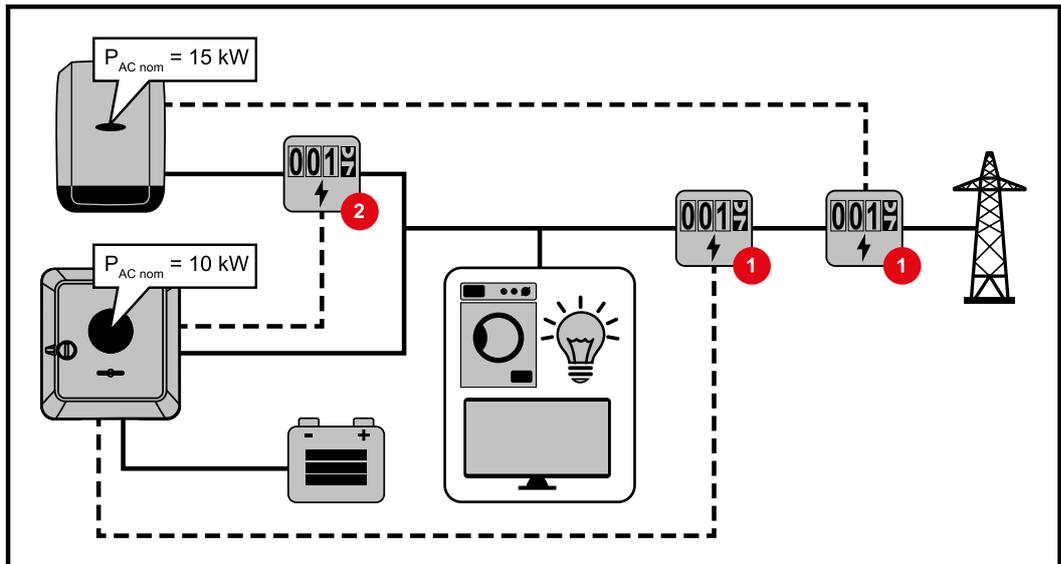
Two primary meters and one secondary meter are required for the inverters.

The power values shown are an example. Inverter configurations with power values other than those shown in the example are possible, taking into account the criteria for this example.

IMPORTANT!

In order to be able to record all PV system data in Solar.web in full, only the Fronius Symo GEN24 inverter may be created in this PV system. The Fronius SnapInverter data is transmitted from the secondary meter to the Fronius Symo GEN24 inverter and thus displayed in the Solar.web.

We recommend that you set up the Fronius SnapInverter as a separate additional PV system in Solar.web for servicing and maintenance work (e.g. status codes, online updates, etc.).



Settings on the Fronius Symo GEN24 inverter website:

- 1 Configure the primary meter at the feed-in point in the "Device configuration" → "Components" menu.
- 2 Configure the secondary meter in the "Device configuration" → "Components" menu.

Settings in the system monitoring of the Fronius SnapInverter:

- 1 Configure the primary meter at the feed-in point in the "Settings" → "Meter" menu.
- 2 Activate the limit for the entire system in the "DNO Editor" → "Dynamic power reduction" menu. Enter the DC nominal output of the entire PV system in the "Total DC system power" input field. Enter the percentage value (50%, 60% or 70%) in the "Max. grid feed-in power" input field.

I/O power management

General

In this menu item, settings relevant for an electricity company (DNO) are made. An effective power limitation in % and/or a power factor limitation can be set.

IMPORTANT!

The service password must be entered in order to adjust settings in this menu item. Settings in this menu area must only be made by trained and qualified personnel.

"Input pattern" (assignment of individual I/Os)

- 1 click = white (contact open)
- 2 clicks = blue (contact closed)
- 3 x clicks = grey (not used)

"Power factor (cos φ)"

- "ind" = inductive
- "cap" = capacitive

"DNO feedback"

when the rule is enabled, output I/O 0 is activated (e.g. for operating a signalling device).

For "Import" or "Export", the data format *.fpc is supported.

Control priorities

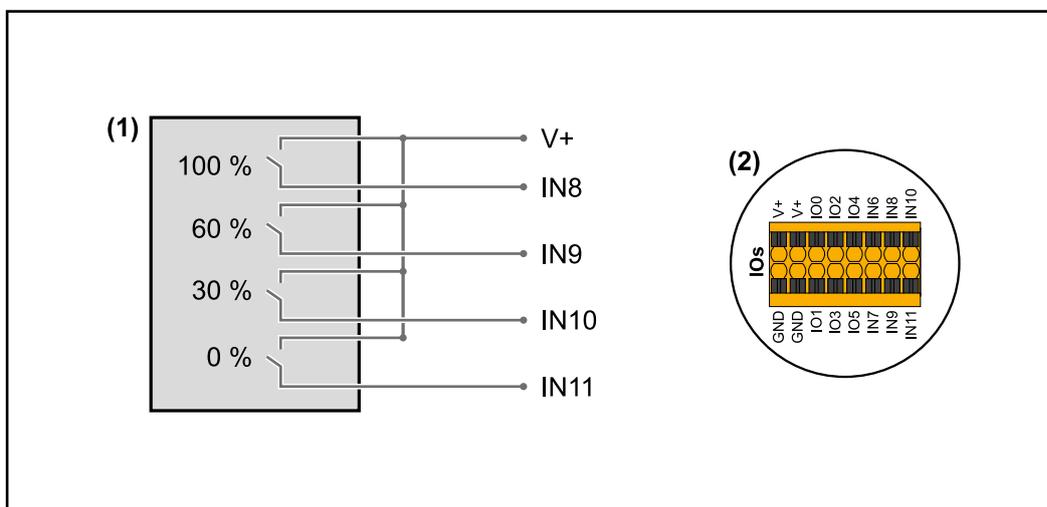
For setting the control priorities for the ripple control signal receiver, the feed-in limitation and control via Modbus.

1 = highest priority, 3 = lowest priority

Connection diagram - 4 relays

The ripple control signal receiver and the I/Os terminal of the inverter can be connected to one another in accordance with the connection diagram.

If the distance between the inverter and the ripple control signal receiver exceeds 10 m, at least a CAT 5 cable is recommended and the shield must be connected at one end to the push-in terminal of the data communication area (SHIELD).



- (1) Ripple control signal receiver with 4 relays, for effective power limitation.
- (2) I/Os of the data communication area.

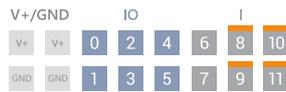
Use the preconfigured file for 4-relay mode:

- 1 Download the file (.fpc) **under 4-relay mode** onto the end device.
- 2 Upload the file (.fpc) in the "I/O Power Management" menu using the "Import" button.
- 3 Click on the "Save" button.

The settings for 4-relay mode are stored.

**I/O power management settings
- 4 relays**

I/O Power Management



DNO Feedback
not used

DNO Rules

Rule 1

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 100

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 2

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 60

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 3

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 30

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 4

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 0

Power Factor (cos φ): 1 cap

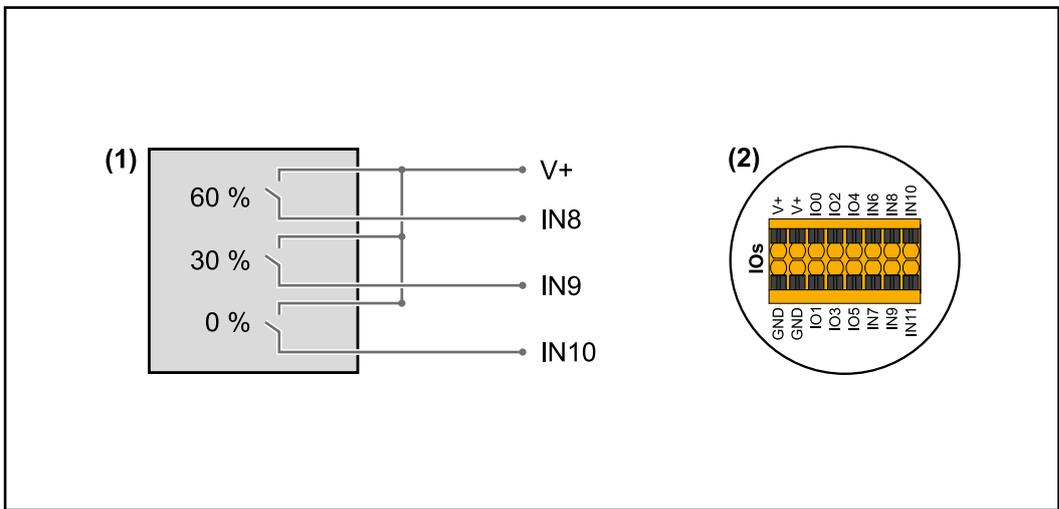
DNO Feedback:

IMPORT EXPORT

- 0 None
- 1 None
- 2 None
- 3 None
- 4 None
- 5 None
- 6 None
- 7 None
- 8 **IO control**
- 9 **IO control**
- 10 **IO control**
- 11 **IO control**

Connection diagram - 3 relays

The ripple control signal receiver and the I/Os terminal of the inverter can be connected to one another in accordance with the connection diagram.
 If the distance between the inverter and the ripple control signal receiver exceeds 10 m, at least a CAT 5 cable is recommended and the shield must be connected at one end to the push-in terminal of the data communication area (SHIELD).



- (1) Ripple control signal receiver with 3 relays, for effective power limiting.
- (2) I/Os of the data communication area.

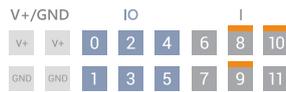
Use the preconfigured file for 3-relay mode:

- 1 Download the file (.fpc) **under 3-relay mode** onto the end device.
- 2 Upload the file (.fpc) in the "I/O Power Management" menu using the "Import" button.
- 3 Click on the "Save" button.

The settings for 3-relay mode are stored.

**I/O power management settings
- 3 relays**

I/O Power Management



DNO Feedback
not used

DNO Rules

Rule 1

0	2	4	6	8	10
1	3	5	7	9	11

Active Power: 100

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 2

0	2	4	6	8	10
1	3	5	7	9	11

Active Power: 60

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 3

0	2	4	6	8	10
1	3	5	7	9	11

Active Power: 30

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 4

0	2	4	6	8	10
1	3	5	7	9	11

Active Power: 0

Power Factor (cos φ): 1 cap

DNO Feedback:

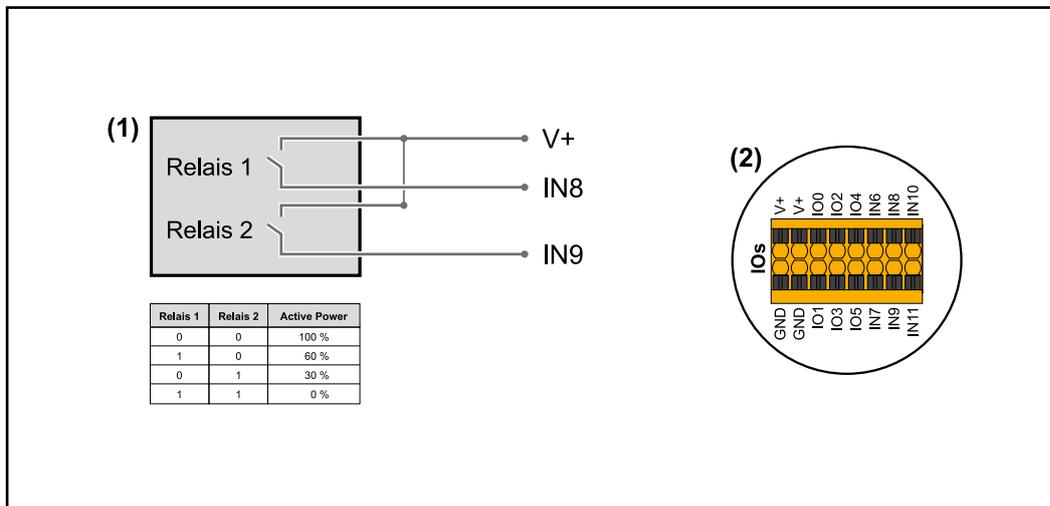
- 0 None
- 1 None
- 2 None
- 3 None
- 4 None
- 5 None
- 6 None
- 7 None
- 8 **IO control**
- 9 **IO control**
- 10 **IO control**
- 11 None

IMPORT EXPORT

Connection diagram - 2 relays

The ripple control signal receiver and the I/Os terminal of the inverter can be connected to one another in accordance with the connection diagram.

If the distance between the inverter and the ripple control signal receiver exceeds 10 m, at least a CAT 5 cable is recommended and the shield must be connected at one end to the push-in terminal of the data communication area (SHIELD).



(1) Ripple control signal receiver with 2 relays, for effective power limitation.

(2) I/Os of the data communication area.

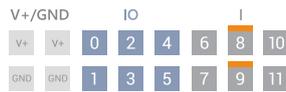
Use the preconfigured file for 2-relay mode:

- 1 Download the file (.fpc) **under 2-relay mode** onto the end device.
- 2 Upload the file (.fpc) in the "I/O Power Management" menu using the "Import" button.
- 3 Click on the "Save" button.

The settings for 2-relay mode are stored.

**I/O power management settings
- 2 relays**

I/O Power Management



DNO Feedback
not used

DNO Rules

Rule 1

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 100

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 2

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 60

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 3

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 30

Power Factor (cos φ): 1 cap

DNO Feedback:

Rule 4

0 2 4 6 8 10
1 3 5 7 9 11

Active Power: 0

Power Factor (cos φ): 1 cap

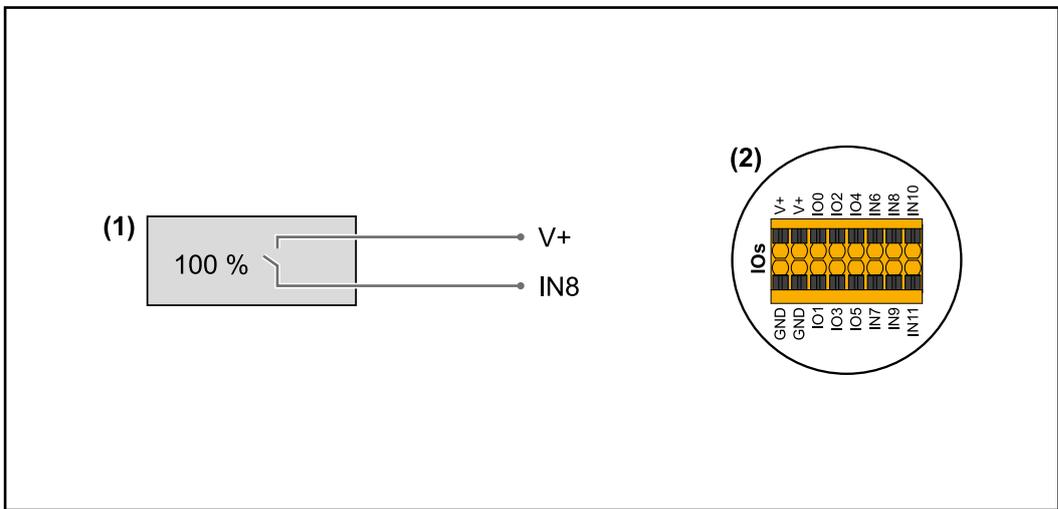
DNO Feedback:

IMPORT EXPORT

- 0 None
- 1 None
- 2 None
- 3 None
- 4 None
- 5 None
- 6 None
- 7 None
- 8 **IO control**
- 9 **IO control**
- 10 None
- 11 None

Connection diagram - 1 relay

The ripple control signal receiver and the I/Os terminal of the inverter can be connected to one another in accordance with the connection diagram.
 If the distance between the inverter and the ripple control signal receiver exceeds 10 m, at least a CAT 5 cable is recommended and the shield must be connected at one end to the push-in terminal of the data communication area (SHIELD).



- (1) Ripple control signal receiver with 1 relay, for effective power limiting.
- (2) I/Os of the data communication area.

Use the preconfigured file for 1-relay mode:

- 1 Download the file (.fpc) **under 1-relay mode** onto the end device.
- 2 Upload the file (.fpc) in the "I/O Power Management" menu using the "Import" button.
- 3 Click on the "Save" button.

The settings for 1-relay mode are stored.

**I/O power management settings
- 1 relay**

I/O Power Management

V+ /GND IO I

V+ V+ 0 2 4 6 8 10

GND GND 1 3 5 7 9 11

DNO Feedback
not used

DNO Rules

Rule 1

0 2 4 6 8 10
1 3 5 7 9 11

Active Power
 100

Power Factor (cos φ)
 1 cap

DNO Feedback

Rule 2

0 2 4 6 8 10
1 3 5 7 9 11

Active Power
 0

Power Factor (cos φ)
 1 cap

DNO Feedback

Legend:

- 0 None
- 1 None
- 2 None
- 3 None
- 4 None
- 5 None
- 6 None
- 7 None
- 8 **IO control**
- 9 None
- 10 None
- 11 None

IMPORT EXPORT

**Autotest
(CEI 0-21)**

Description

The 'Autotest' can be used to check the protective function required by the Italian standard for monitoring the voltage and frequency limits as well as the trip limits of the inverter during commissioning. During normal operation, the inverter constantly checks the current voltage and frequency actual value of the grid.

After the start of the autotest, various individual tests run automatically one after the other. Depending on grid conditions, the duration of the test is approx. 15 minutes.

IMPORTANT!

The inverter may only be commissioned in Italy after a successful autotest (CEI 0-21). If the autotest is not passed, no feed-in operation may take place. If the autotest is started once, it must be completed successfully. The autotest cannot be started during emergency power mode.

VAC inner limit max	Test to check the maximum voltage in the phases
VAC inner limit min	Test to check the minimum voltage in the phases
FAC inner limit max	Test to check the maximum frequency

FAC inner limit min	Test to check the minimum frequency
FAC altern- ativ inner limit max	Test to check the maximum alternative frequency
FAC altern- ativ inner limit min	Test to check the minimum alternative frequency
VAC outer limit min	Test to check the minimum voltage in the phases
VAC long time limit	Test to check the 10 min average voltage in the phases

Save as PDF

- 1 Click the 'Save as PDF' button.
- 2 Enter the file name in the input field and click on the 'Print' button.

The PDF is created and displayed.

Note on autotest

The limit values are set in the menu area 'Grid Code'.

The access code for the 'Grid Code' menu area corresponds to the installer code (PROFI menu) and is only made available to Fronius following a written request. An appropriate application form is available from national technical support.

Options

Surge protective device (SPD)

General

A surge protective device (SPD) protects against temporary overvoltages and dissipates surge currents (e.g. lightning strike). Building on an overall lightning protection concept, the SPD helps to protect your PV system components.

For detailed information on the wiring diagram of the surge protective device, see chapter [Wiring diagram - surge protective device SPD](#) on page 151.

If the surge protective device is triggered, the colour of the indicator changes from green to red (mechanical display) and the operation LED of the inverter lights up red (see chapter [Button functions and LED status indicator](#) on page 87). The error code "1030 WSD Open " is displayed on the inverter's website in the System " → " Event Log " menu or in the user menu under "Notifications as well as in Fronius Solar.web. In this case, the inverter must be repaired by an authorised specialist.

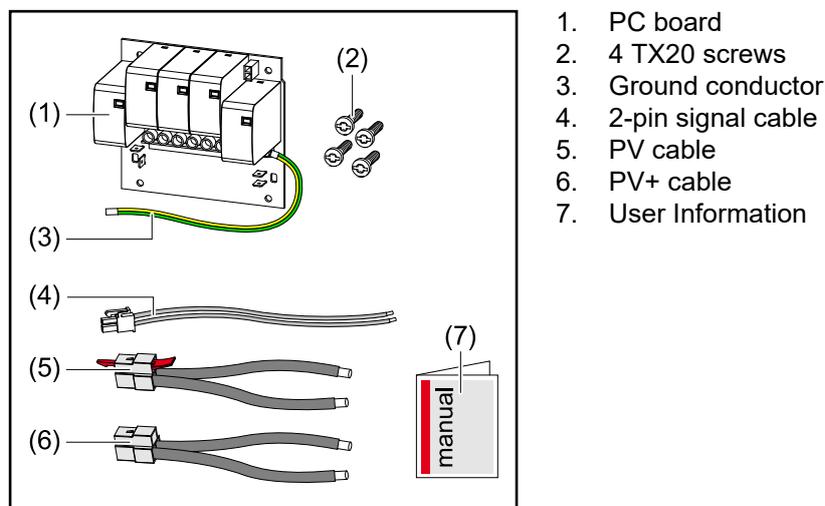
IMPORTANT!

The inverter also switches off if the 2-pin signal cable of the surge protective device is interrupted or damaged.

Scope of supply

The surge protective device (SPD) is an optional extra and can be retrofitted to the inverter.

For technical data, see chapter "[Technical data](#)" on page 137.



De-energising the inverter



WARNING!

Danger due to electrical voltage on live parts of the PV system.

An electric shock can be fatal.

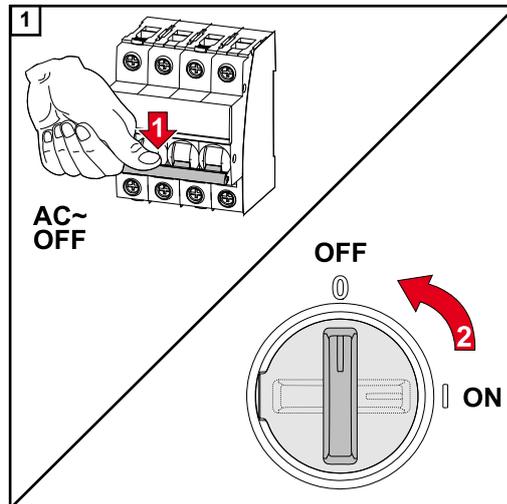
- ▶ Disconnect live parts of the PV system on all pins and on all sides.
- ▶ Secure against re-activation in accordance with national regulations.
- ▶ Allow the capacitors of the inverter to discharge (2 minutes).
- ▶ Check that the inverter is de-energised with a suitable measuring device.

⚠ WARNING!

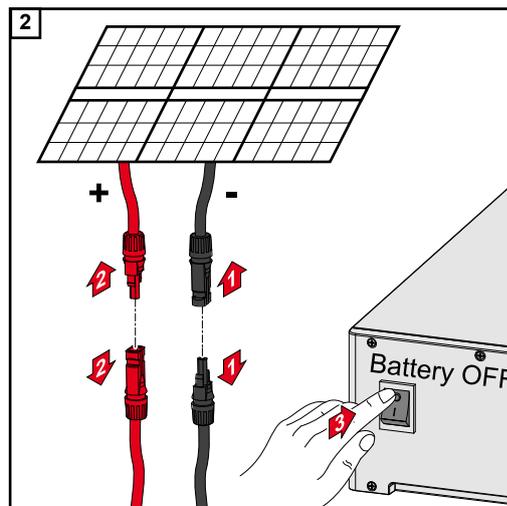
Danger due to work that has been carried out incorrectly.

This can result in serious injury and damage to property.

- ▶ Installing and connecting a surge protective device (SPD) must only be carried out by service personnel trained by Fronius and only within the scope of the respective technical regulations.
- ▶ Follow the safety rules.



Turn off the automatic circuit breaker. Set the DC disconnector to the "Off" switch position.



Disconnect connections from the solar module strings (+/-). Switch off the battery connected to the inverter.

Wait for the capacitors of the inverter to discharge (2 minutes).

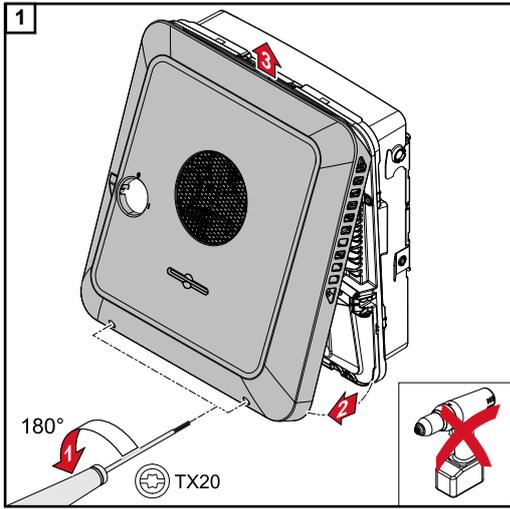
Installation

⚠ CAUTION!

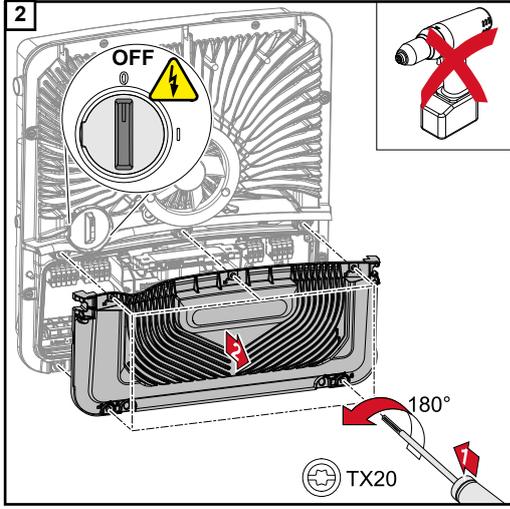
Risk due to insufficiently dimensioned ground conductor.

Damage to the inverter due to thermal overload can result.

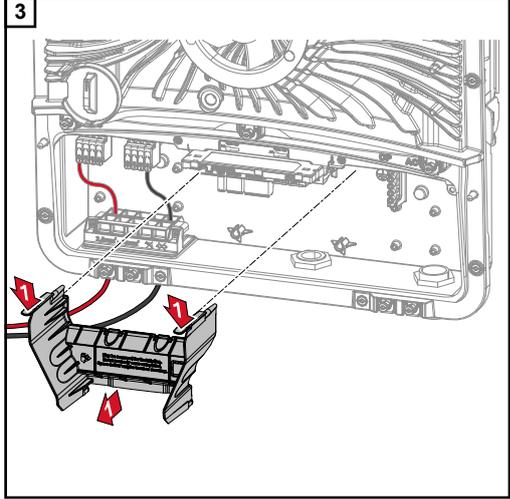
- ▶ The national standards and guidelines must be observed for dimensioning the ground conductor.



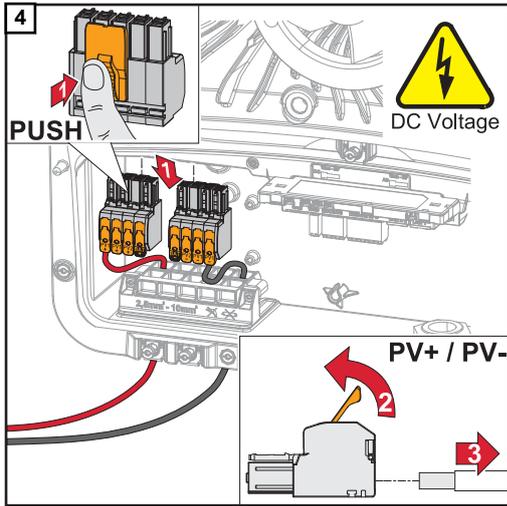
Loosen the two screws on the underside of the housing cover by rotating them 180° to the left using a screwdriver (TX20). Then lift the housing cover away from the inverter at the bottom and detach from above.



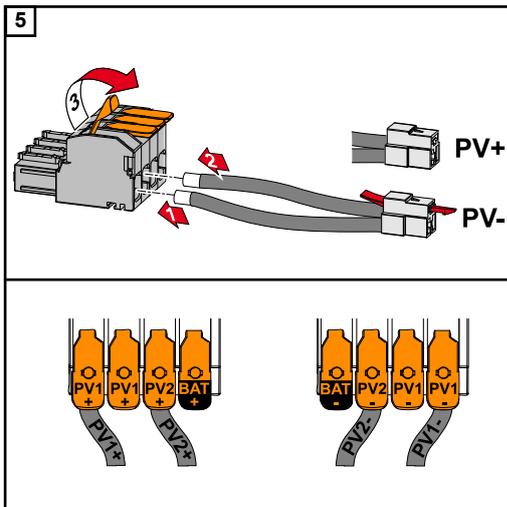
Loosen the five screws of the connection area cover by rotating them 180° to the left using a screwdriver (TX20). Remove the connection area cover from the device.



Remove the connection area divider by pressing the snap tabs.

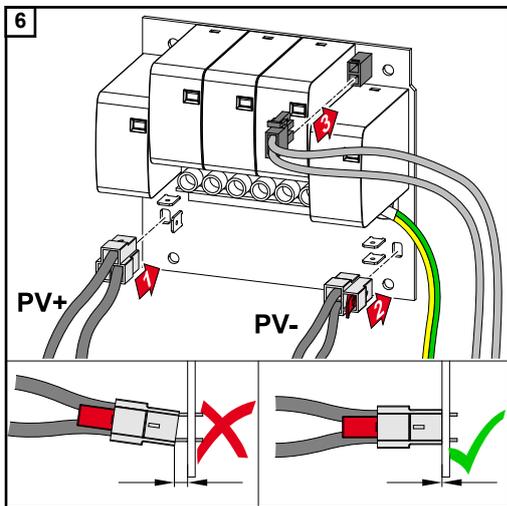


Remove the DC push-in terminals from the slots and disconnect them from the cables (only necessary if the installation already exists).



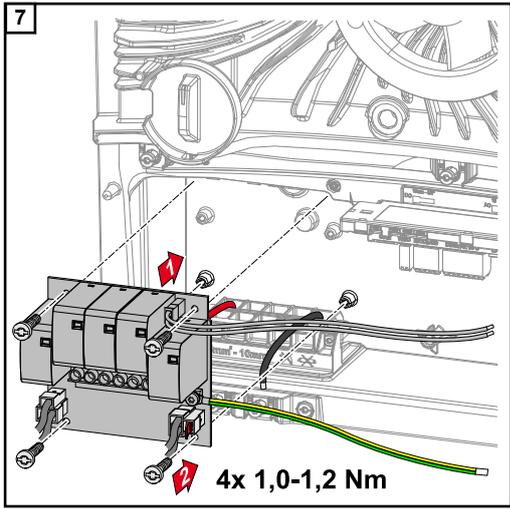
Connect the supplied PV+/PV- cables to the respective connections.

IMPORTANT!
Note the labelling of the cables when connecting.

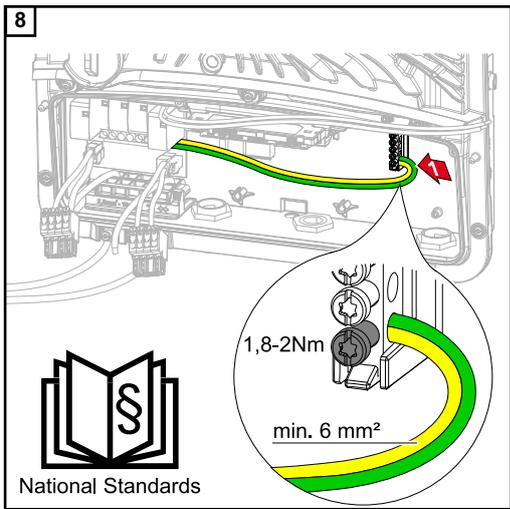


Connect the supplied cables to the respective connectors on the PC board.

IMPORTANT!
The plugs must be connected onto the PC board as far as they will go.

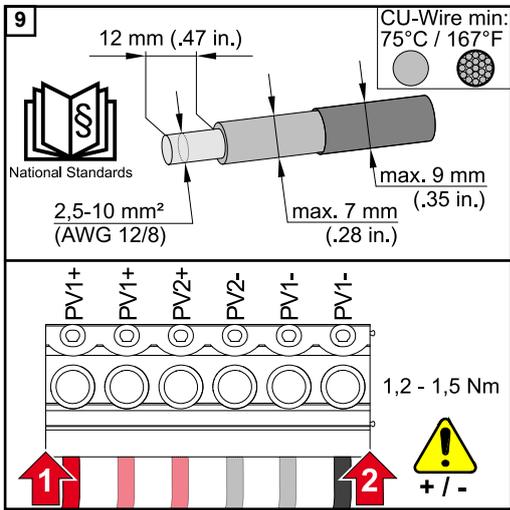


Insert the PC board into the inverter and secure with the four screws (TX20) supplied at a torque of 1.0 - 1.2 Nm.



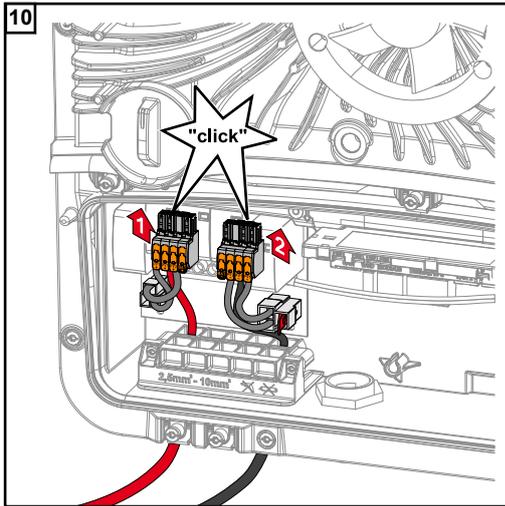
Fasten the ground conductor with a cross section of at least 6 mm² to the ground electrode terminal using a screwdriver (TX20) and a torque of 1.8 - 2 Nm.

IMPORTANT!
Depending on national standards and guidelines, a larger cross-section of the ground conductor may be required. The use of other inputs can make it difficult to insert the connection area divider or damage the ground conductor.

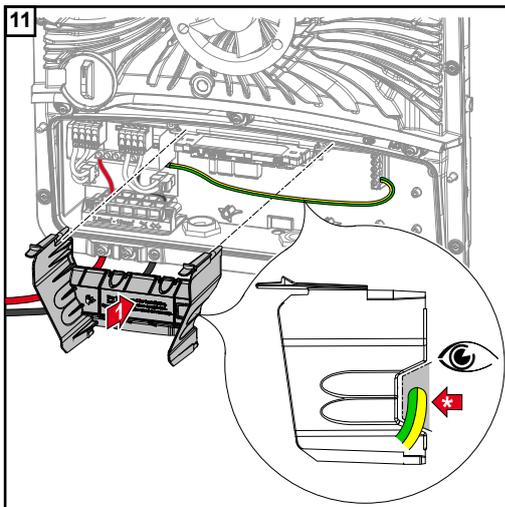


Strip the insulation on the single conductors by 12 mm and secure to the corresponding slot of the terminal on the PC board with a torque of 1.2 - 1.5 Nm.

IMPORTANT!
The cable cross-section must be selected according to the specifications for the respective inverter power category (see chapter [Permitted cables](#) on page 55).



Push the DC push-in terminals into the corresponding slot until there is an audible click.

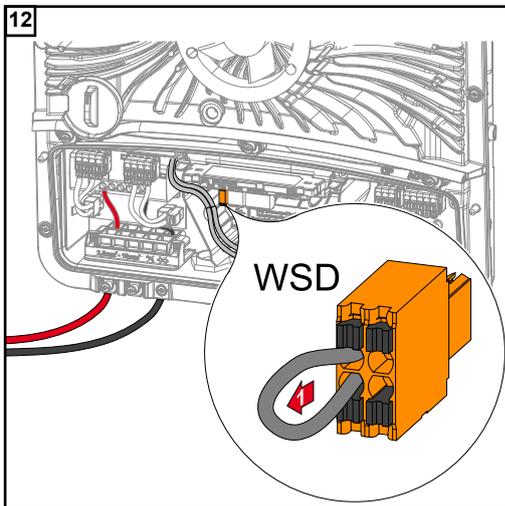


Re-insert the connection area divider.

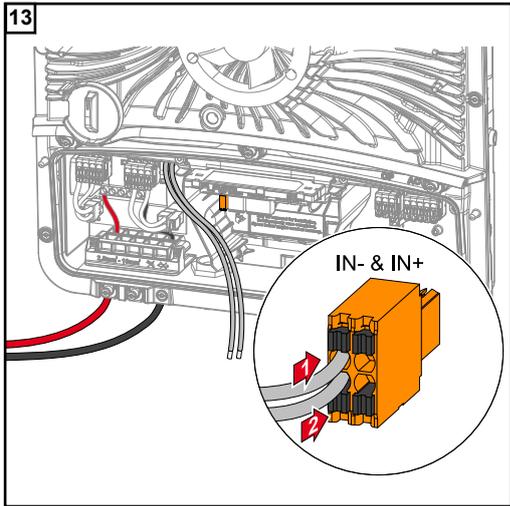
* lay the ground conductor in the integrated cable duct.

IMPORTANT!

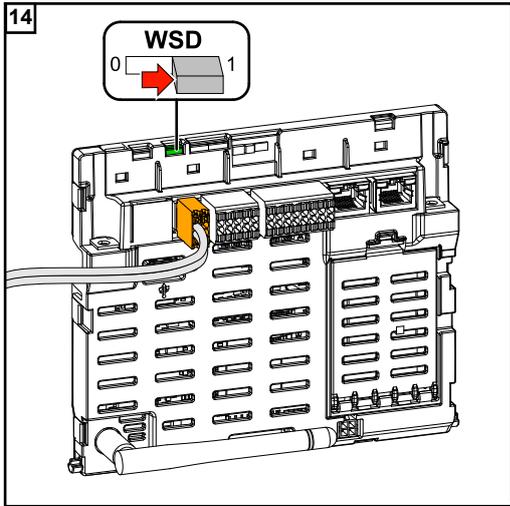
When inserting the connection area divider(s), be careful not to kink, pinch, crush or otherwise damage the ground conductor.



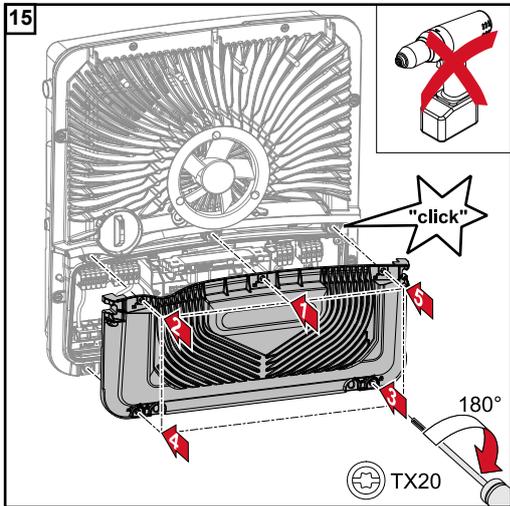
Remove the factory installed bypass on the push-in WSD terminal.



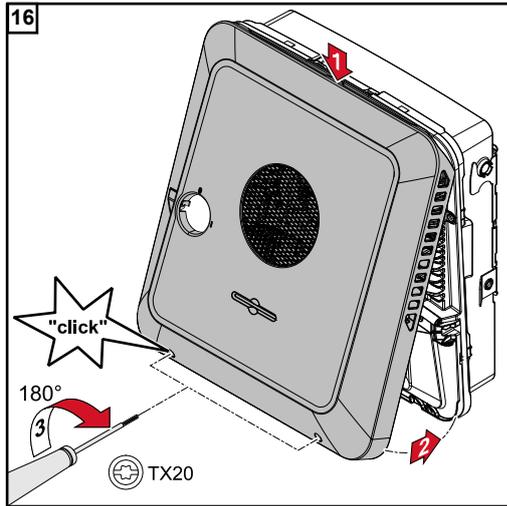
Connect the signal cable to the WSD push-in terminal on the IN- and IN+ slots, observing the labelling.



Check whether the WSD switch is in position 1, adjust if necessary (factory setting: position 1).

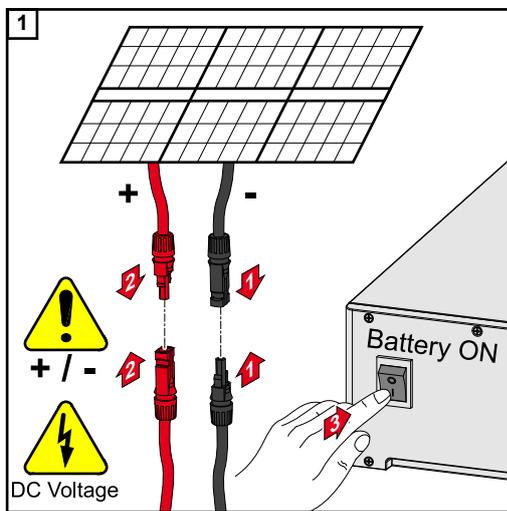


Place the cover on the connection area. Tighten the five screws by rotating them 180° to the right in the indicated order using a screwdriver (TX20).

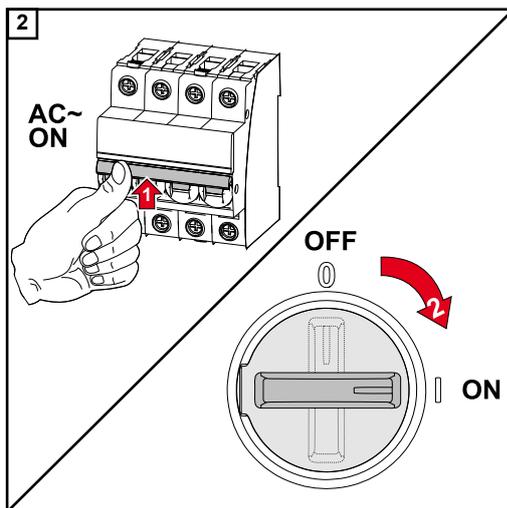


Clip the housing cover onto the inverter from above.
Press on the lower part of the housing cover and tighten the two screws by rotating them 180° to the right using a screwdriver (TX20).

Commissioning the inverter



Connect the solar module strings (+/-).
Switch on the battery connected to the inverter.



Switch on the automatic circuit breaker.
Set the DC disconnect to the "On" switch position.

Appendix

Care and maintenance

General The inverter is designed in such a way that no additional maintenance work builds up. Nevertheless, a few points must be considered during operation to ensure that the inverter works perfectly.

Maintenance Maintenance and servicing may only be carried out by Fronius-trained service technicians.

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

Safety The DC disconnect is used only to switch off power to the power stage set. When the DC disconnect is turned off, the connection area is still energized.

 **WARNING!**

Danger from grid voltage and DC voltage from solar modules.

An electric shock can be fatal.

- ▶ The connection area must only be opened by an authorised electrician.
 - ▶ The separate power stage set area must only be opened by Fronius-trained service technicians.
 - ▶ Prior to any connection work, disconnect the inverter on the AC side and the DC side.
-

 **WARNING!**

Danger of residual voltage from capacitors.

An electric shock can be fatal.

- ▶ Allow the capacitors of the inverter to discharge (2 minutes).
-

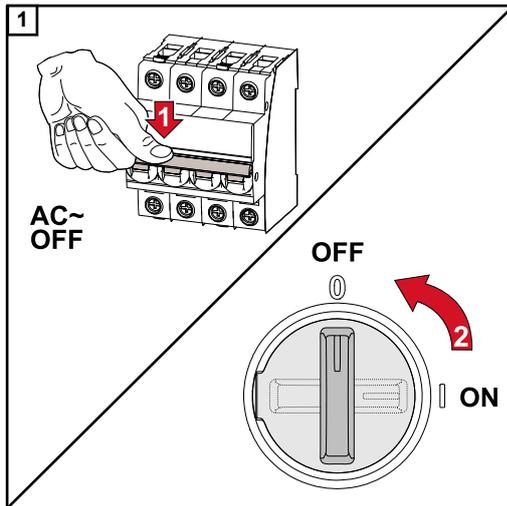
Operation in dusty environments

NOTE!

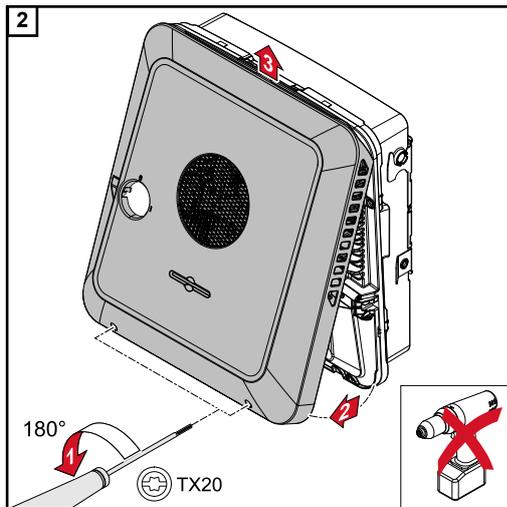
If the inverter is operated in dusty environments, dirt may build up on the heat sink and fan.

This may result in a loss of power due to insufficient cooling of the inverter.

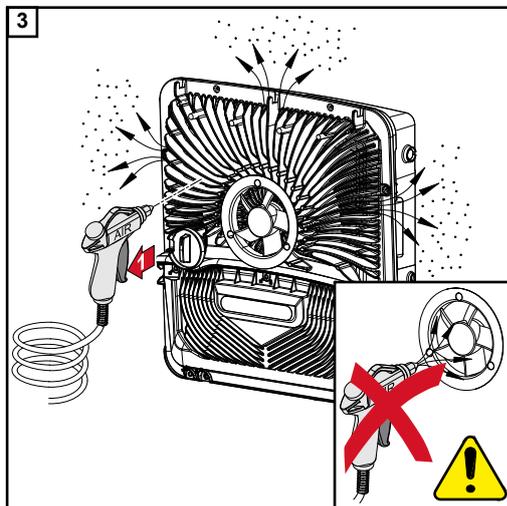
- ▶ Make sure that the ambient air can always flow through the inverter's ventilation slots unimpeded.
 - ▶ Remove any build-ups of dirt from the heat sink and the fan.
-



Switch off power to the inverter and wait for the specified time (2 minutes) until the capacitors have discharged and the fan has shut down.
Turn the DC disconnector to the "Off" switch position.



Loosen the screws on the underside of the housing cover by rotating them 180° to the left using a screwdriver (TX20). Then lift the housing cover away from the inverter at the bottom and detach from above.



Remove any build-up of dirt on the heat sink and fan using compressed air, a cloth, or a brush.

NOTE!

Risk due to damage to the fan bearing from improper cleaning.

Excessive speed and pressure on the fan bearing can cause damage.

- ▶ Block the fan and clean it with compressed air.
- ▶ When using a cloth or brush, clean the fan without applying pressure to the fan.

To start up the inverter again, follow the steps listed above in reverse order.

Guarantee provisions

Fronius manufacturer's warranty

Detailed, country-specific warranty terms are available on the internet:
www.fronius.com/solar/warranty

To obtain the full warranty period for your newly installed Fronius inverter or storage system, please register at: www.solarweb.com.

Components for automatic Full Backup backup power changeover

Components for automatic Full Backup backup power changeover

Device name	Current converter	Application area (examples)	Item number
Fronius Smart Meter 63A-3	✗	Germany Austria Australia France Spain	43,0001,1473
Fronius Smart Meter 50kA-3	✓	Australia	43,0001,1478
Fronius Smart Meter TS 65A-3	✗	Germany Austria Australia France Spain	43,0001,0044
Fronius Smart Meter TS 5kA-3	✓	Australia	43,0001,0046
Fronius Smart Meter 480 V-3 UL	✗	ITALY	43,0001,3530

Grid and system protection unit (fuse protection: 3-pin, 6 A)

Other manufacturers and types are permissible if they are technically and functionally identical to the examples below:

- VMD460-NA-D-2 (Bender GmbH & Co. KG)
- RE-NA003-M64 (Tele Haase Steuergeräte Ges.m.b.H.)

K1 and K2 - installation contactor with auxiliary contact	
Number of pins	3-pin or 4-pin (depending on the cabling variant)
Rated current	depending on house connection
Coil voltage	230 V AC
Nominal frequency	50/60 Hz
Coil fuse	6 A
Min. short circuit current	3 kA (make contacts)
Test standard	IEC 60947-4-1
Auxiliary contact	
Number of NC contacts	1
Switching voltage	12-230 V @ 50/60 Hz
Min. nominal current	1 A
Min. short circuit current	1 kA
Examples for contactors and relays	ISKRA IK63-40 / Schrack BZ326461

K3 - modular relay	
Number of changeover contacts	2
Coil voltage	12 V DC
Test standard	IEC 60947-4-1
Examples for contactors and relays	Finder 22.23.9.012.4000 / Schrack relay RT424012 (bracket RT17017, relay base RT78725)

K4 and K5 - installation contactor	
Number of NC contacts	2 (25 A)
Coil voltage	230 V AC (2P)
Nominal frequency	50/60 Hz
Coil fuse	6 A
Min. short circuit current	3 kA (make contacts)
Test standard	IEC 60947-4-1
Examples for contactors and relays	ISKRA IKA225-02

Status codes and remedy

Status Codes

1030 - WSD Open (operation LED: lights up red)

- Cause: A device connected in the WSD chain has interrupted the signal line (e.g. a surge protective device) or the bypass ex works has been removed and no trigger device has been installed.
- Display: On the inverter website in the "System" → "Event Log" menu or in the user menu under "Notifications" or in Fronius Solar.web.
- Remedy: If the SPD surge protective device is triggered, the inverter must be repaired by an authorised specialist.
- OR: Install the bypass ex works or a trigger device.
- OR: Set the WSD (Wired Shut Down) switch to position 1 (WSD master).



WARNING!

Danger due to work that has been carried out incorrectly.

This can result in serious injury and damage to property.

- ▶ Installing and connecting a surge protective device (SPD) must only be carried out by service personnel trained by Fronius and only within the scope of the respective technical regulations.
 - ▶ Follow the safety rules.
-
-

Technical data

Fronius Symo GEN24	6.0 Plus	8.0 Plus	10.0 Plus
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DC input data

MPP voltage range (at nominal output)	174 - 800 V	224 - 800 V	278 - 800 V
Max. voltage range (PPV _{max})			
Total	9000 Wp	12,000 Wp	15,000 Wp
PV 1	7500 Wp	10,000 Wp	12,500 Wp
PV 2	4500 Wp	6000 Wp	7500 Wp
Max. input voltage at 1000 W/m ² /-10 °C in an open circuit	1000 V		
Min. input voltage	80 V		
Feed-in start voltage in grid operation ⁵⁾	80 V		
Max. input current (PV1 / PV2)	25.0 / 12.5 A		
Max. short circuit current of solar modules (I _{SC PV})	37.5 / 18.75 A		
Max. backfeed current ³⁾	37.5 A		
Number of inputs - PV1	2		
Number of inputs - PV2	1		

DC input data battery

Max. voltage	500 V		
Min. voltage	160 V		
Max. current	22 A		
Max. output	6000 W	8000 W	10,000 W
DC inputs	1		
DC overvoltage category (in accordance with IEC 62109-1)	2		

AC input/output data

Nominal output power (P _{nom})	6000 W	8000 W	10,000 W
Max. output power	6000 W	8000 W	10,000 W
Nominal grid voltage	3 ~ NPE 220 V / 380 V		
	3 ~ NPE 230 V / 400 V		
Min. grid voltage	154 V ¹⁾		
Max. grid voltage	280 V ¹⁾		
Max. output current	16.4 A		
Nominal output current (at 230 V)	8.7 A	11.6 A	14.5 A
Starting current ⁶⁾	9.9 A / 4 ms		

Fronius Symo GEN24	6.0 Plus	8.0 Plus	10.0 Plus
Nominal frequency	50 / 60 Hz ¹⁾		
Nominal frequency for Full Backup	53 / 63 Hz ¹⁾		
Total harmonic distortion	< 3%		
Power factor cos phi ²⁾	0-1 (adjustable)		
	0.7 - 1 (recommended)		
Max. permitted mains impedance Z _{max} on PCC ⁴⁾	None		
Max. output residual current per duration	80.7 A / 10 ms		

AC output data PV Point

Max. output power	4133 W (for 5 s)		
Nominal output power	3000 W		
Nominal output current	13 A		
Nominal grid voltage	1 ~ NPE 220 V / 230 V / 240 V		
Nominal frequency	53 / 63 Hz ¹⁾		
Switchover time	< 90 s		
Power factor cos phi ²⁾	0 - 1		

AC output data Full Backup

Max. output power	12,400 W (for 5 s)		
Max. output power (per phase)	4133 W (for 5 s)		
Nominal output power	6000 W	8000 W	10,000 W
Nominal output power (per phase) ⁷⁾	3680 W		
Nominal output current (per phase)	16 A		
Nominal grid voltage	3 ~ NPE 220 V / 380 V		
	3 ~ NPE 230 V / 400 V		
Nominal frequency for Full Backup	53 / 63 Hz ¹⁾		
Switchover time	< 90 s		
Power factor cos phi ²⁾	0 - 1		

General data

Maximum efficiency	98.2%	98.2%	98.2%
European efficiency (U _{mpp nom})	97.7%	97.8%	97.9%
European efficiency (U _{mpp max})	97.3%	97.5%	97.7%
European efficiency (U _{mpp min})	96.5%	96.9%	97.1%
Self-consumption at night	≤ 10 W		
Cooling	Controlled forced-air ventilation		
Degree of protection	IP 66		
Dimensions H x W x D	595 × 529 × 180 mm		
Weight	24 kg		

Fronius Symo GEN24	6.0 Plus	8.0 Plus	10.0 Plus
Permissible ambient temperature	-25 °C – +60 °C		
Permissible humidity	0–100% (incl. condensation)		
EMC device class	B		
DC / AC overvoltage category	2/3		
Pollution degree	2		
Sound pressure	47 dB(A)		
Safety class (according to IEC62103)	1		

Protection devices

DC insulation measurement	Warning / shutdown at $R_{ISO} < 100 \text{ k}\Omega$
Manifestation of DC overload	Operating point shift, power limiter
DC disconnecter	Integrated
RCMU	Integrated

Data communication

WLAN SMA-RP connection (FCC ID: QKWPILOT01 / IC ID: 12270A-PILOT01)	802.11b/g/n (WPA, WPA2)
Ethernet (LAN)	RJ 45, 10/100 MBit
USB (type A socket)	max. 1 A at 5 V (IO connection not connected)
Wired shutdown (WSD)	max. 28 devices/WSD chain
	Max. distance Master → Slave = 100 m Slave → Slave = 100 m
Modbus RTU SunSpec (2x)	RS485 2-wire
Voltage level of digital inputs	low: min. 0 V–max. 1.8 V
	high: min. 4.5 V–max. 28.8 V
Input currents of digital inputs	depending on the input voltage; input resistance = 70 k Ω
Total power for digital output (for internal supply)	6 W at 12 V (USB not connected)
Power per digital output (for external supply)	1 A at >12.5 V–24 V (max. 3 A in total)
Datalogger/web server	Integrated

Optional surge protective device (SPD)	DC SPD Type 1+2 GEN24
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General data

Continuous operating current (I_{cpv})	< 0.1 mA
Rated discharge current (I_n) - 15 x 8/20 μ s pulses	20 kA

Optional surge protective device (SPD)	DC SPD Type 1+2 GEN24
Lightning surge current (I_{imp}) Max. discharge capacity @ 10/350 μ s	6.25 kA
Protection level (U_p) (star-shaped mounting)	4 kV
Short-circuit strength PV (I_{scpv})	15 kA

Disconnecter

Thermal disconnector	Integrated
External fuse	None

Mechanical properties

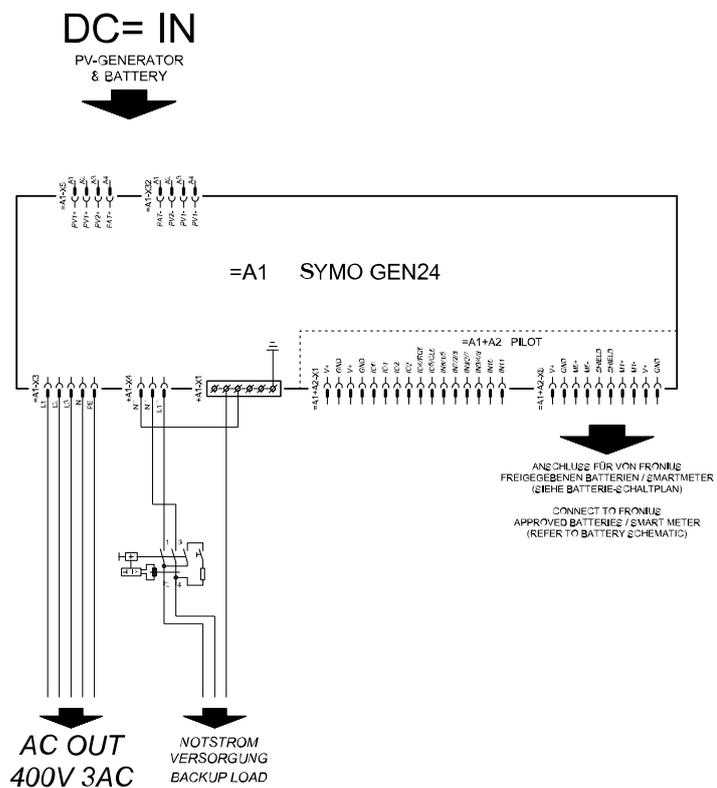
Disconnection indicator	Mechanical indicator (red)
Remote communication of the connection interruption	Output on the changeover contact
Housing material	Thermoplastic UL-94-V0
Test standards	IEC 61643-31 / DIN EN 50539-11 UL1449 ed.4 / VDE 0185-305-3 Bbl. 5

Explanation of footnotes

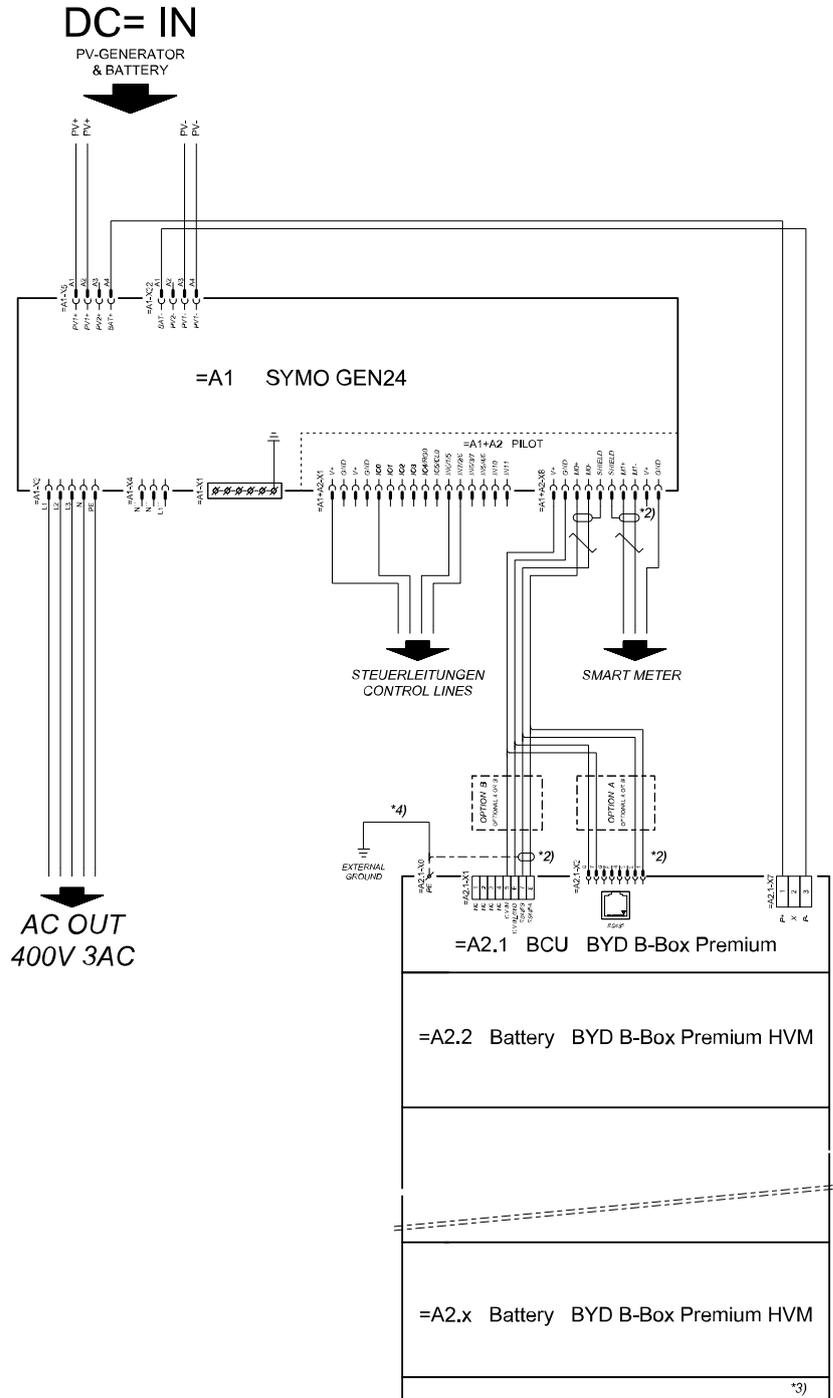
- 1) The values stated are defaults; the inverter is configured specifically to suit the requirements of the relevant country.
- 2) Depending on the country setup or device-specific settings (ind. = inductive; cap. = capacitive).
- 3) Maximum current from a defective solar module to all other solar modules.
- 4) Guaranteed by the electrical configuration of the inverter.
- 5) For backup power mode (PV Point) without battery, a minimum voltage of 150 V is required.
- 6) Current peak when switching on the inverter.
- 7) The sum of the nominal output power per phase must not exceed the nominal output power of the inverter.

Circuit diagrams

Circuit Diagram - PV Point (OP)



Fronius Symo GEN24 and BYD Battery-Box Premium HV

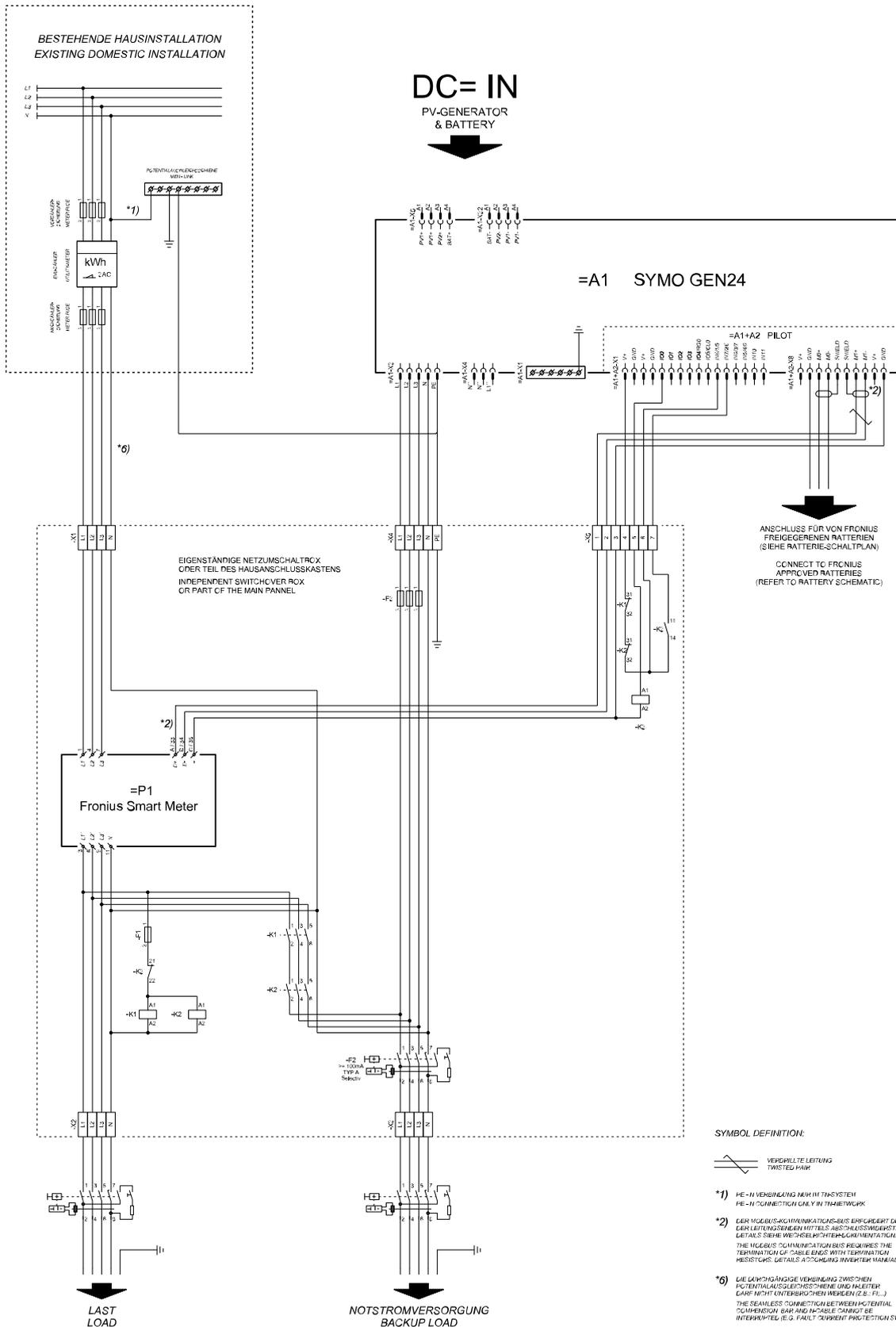


***2)** DEN MCGLEBSKOMMUNIKATIONSBUS ERFOLGRIEHT DEN ABSCHLUSS GEGENLEITUNGSENDE MITTELN ABSCHLUSSWIDERSTÄNDE. DETAILS SIEHE WECHSELRICHTERDOKUMENTATION.
THE MCGLEBS COMMUNICATION BUS REQUIRES THE TERMINATION OF CABLE ENDS WITH TERMINATION RESISTORS. DETAILS ACCORDING INVERTER MANUAL.

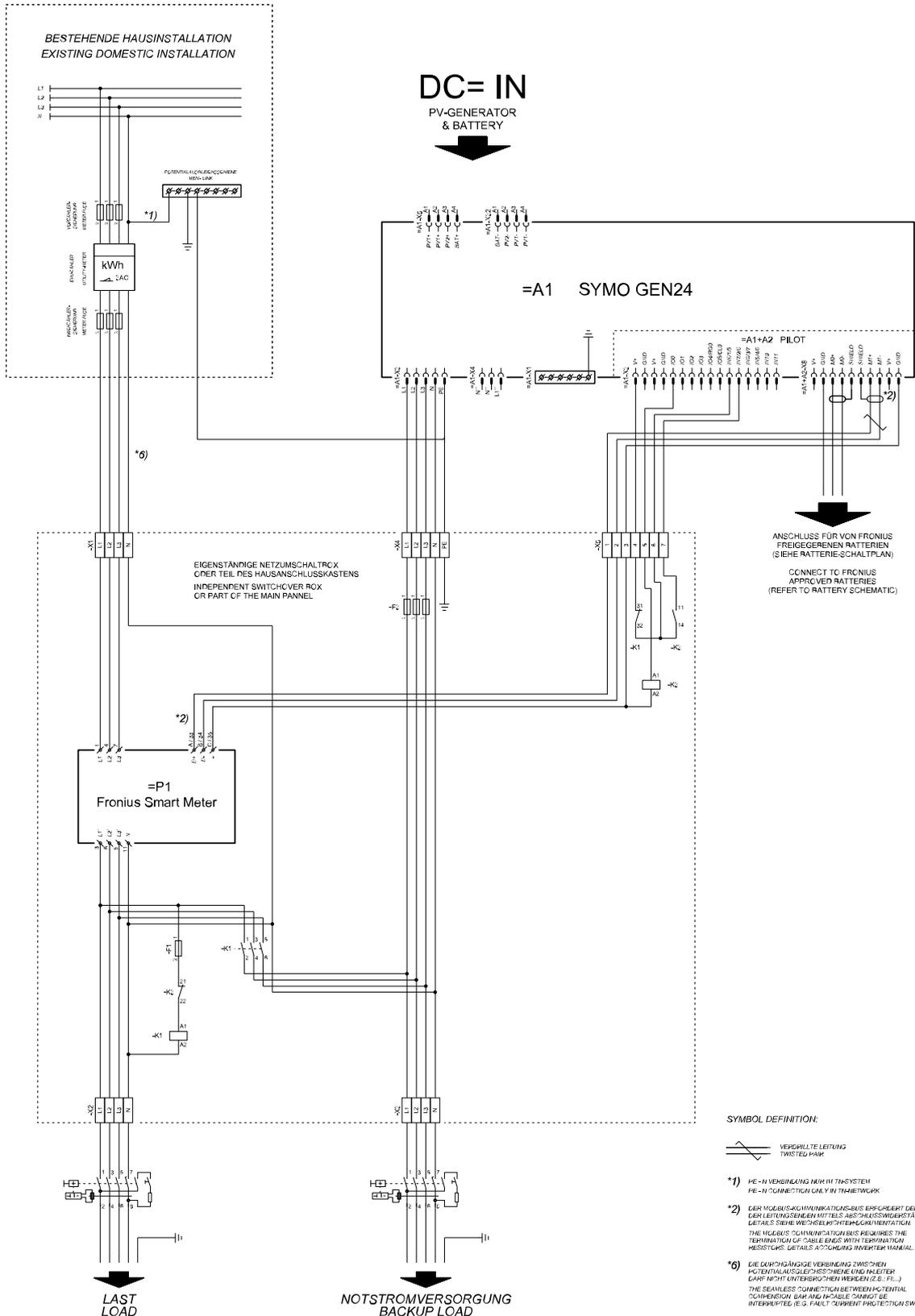
***3)** MINIMALE ZULÄSSIGE MCGLEBSANZAHL.
MINIMUM POSSIBLE NUMBER OF MCGLES.
ACCORDING INVERTER MANUAL.

***4)** DEN ÜBERSCHNITT DER ERGÄNZENDE LEITUNG ALS DER DOKUMENTATION DER BYD BATTERY-BOX PREMIUM ENTNEHMEN (> 10MM²)
REFER TO TABLE CROSSSECTION ACCORDING TO BYD BATTERY-BOX PREMIUM MANUAL (> 10MM²)

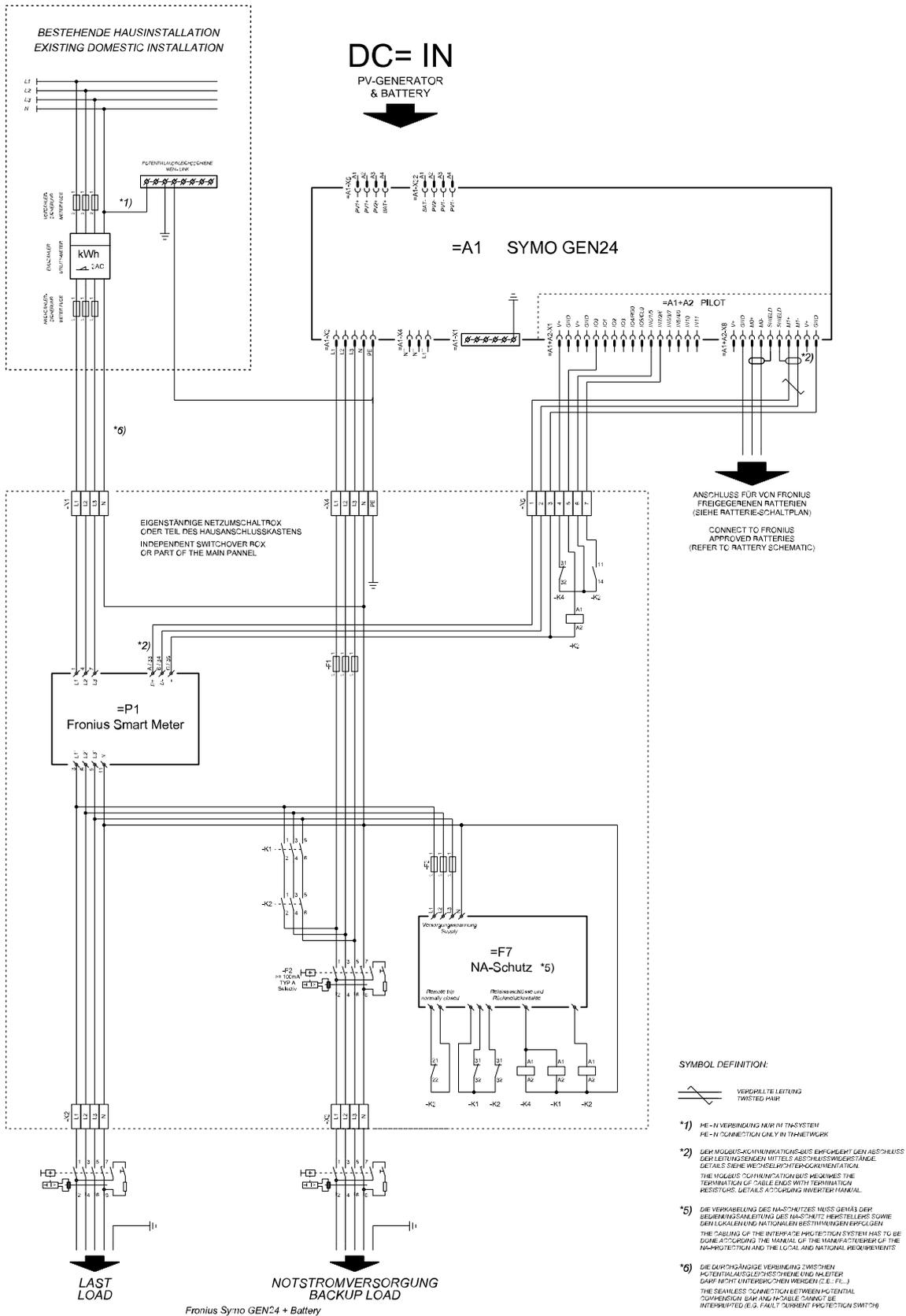
Automatic switch to backup power 3-pin double separation - e.g. Austria



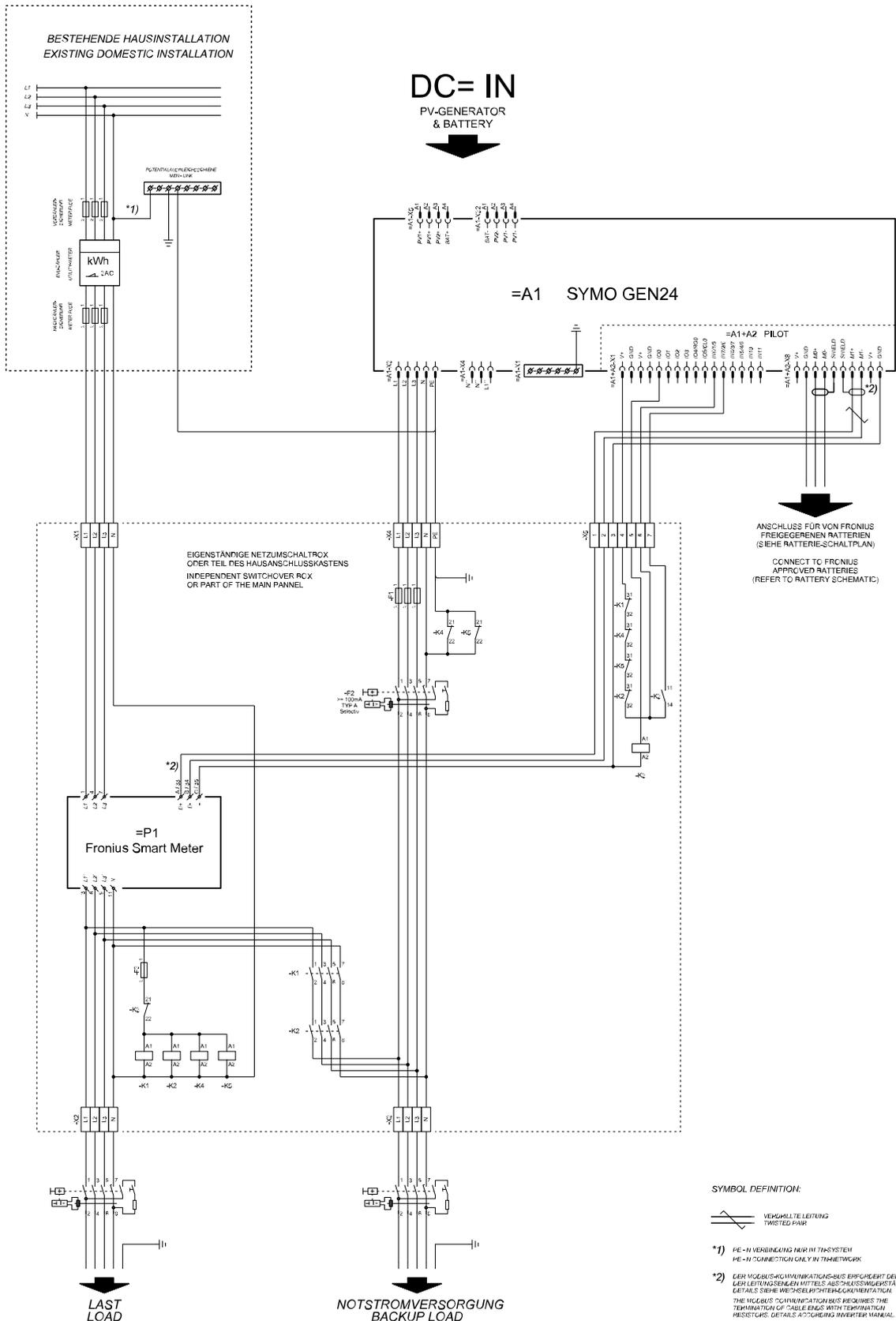
Automatic switch to backup power 3-pin single separation- e.g. Australia



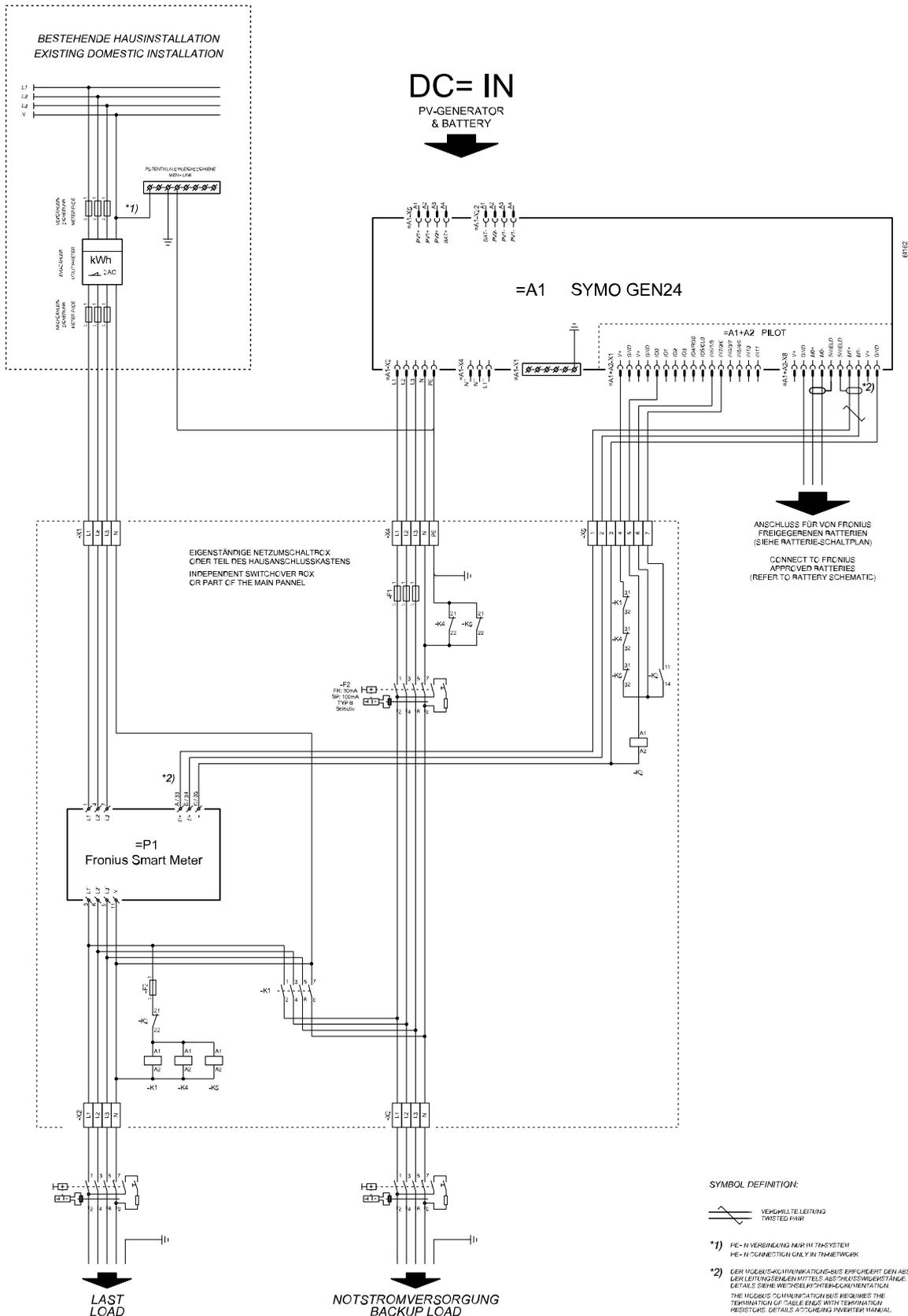
Automatic switch to backup power 3-pin double separation with ext. Grid and system protection



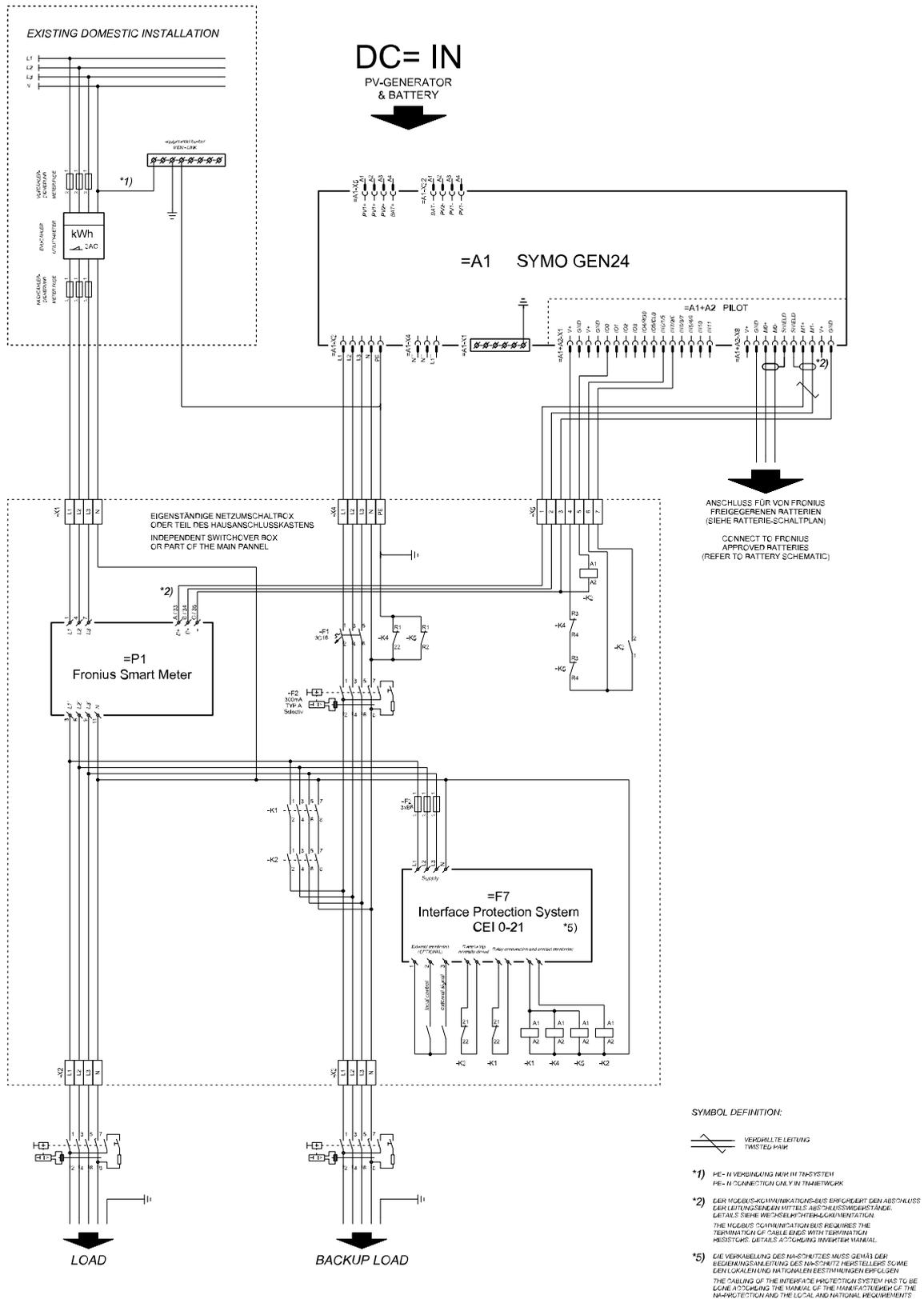
Automatic switch to backup power 4-pin double separation - e.g. Germany



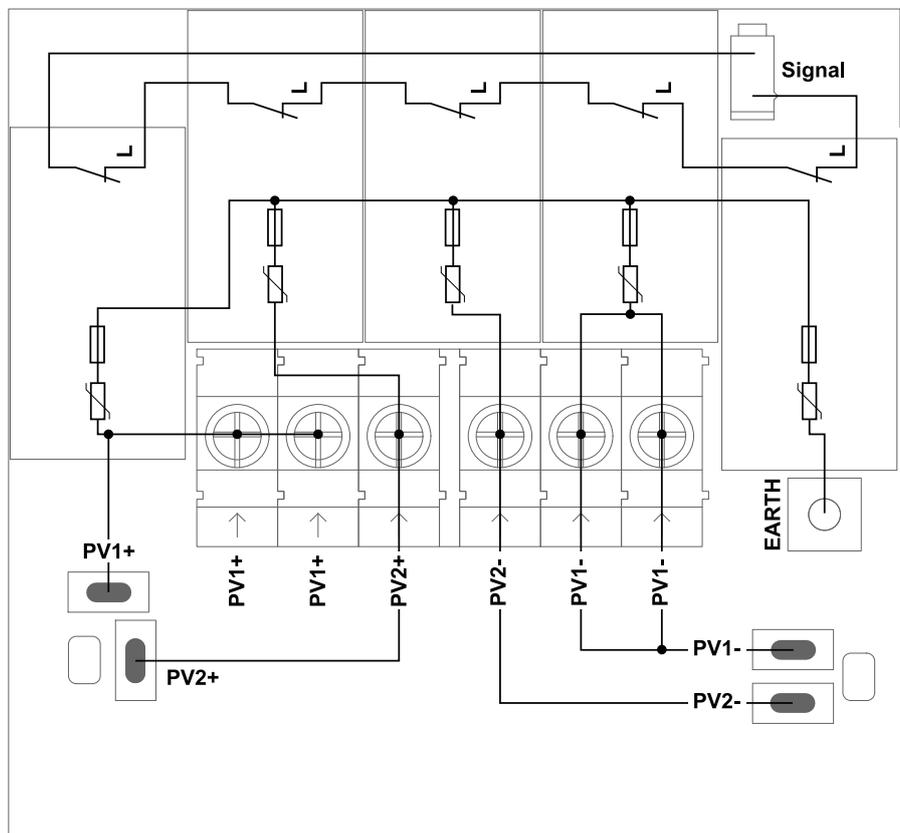
Automatic switch to backup power 4-pin single separation- e.g. France, Spain



Automatic switch to backup power 4-pin double separation with ext. grid and system protection - e.g. Italy

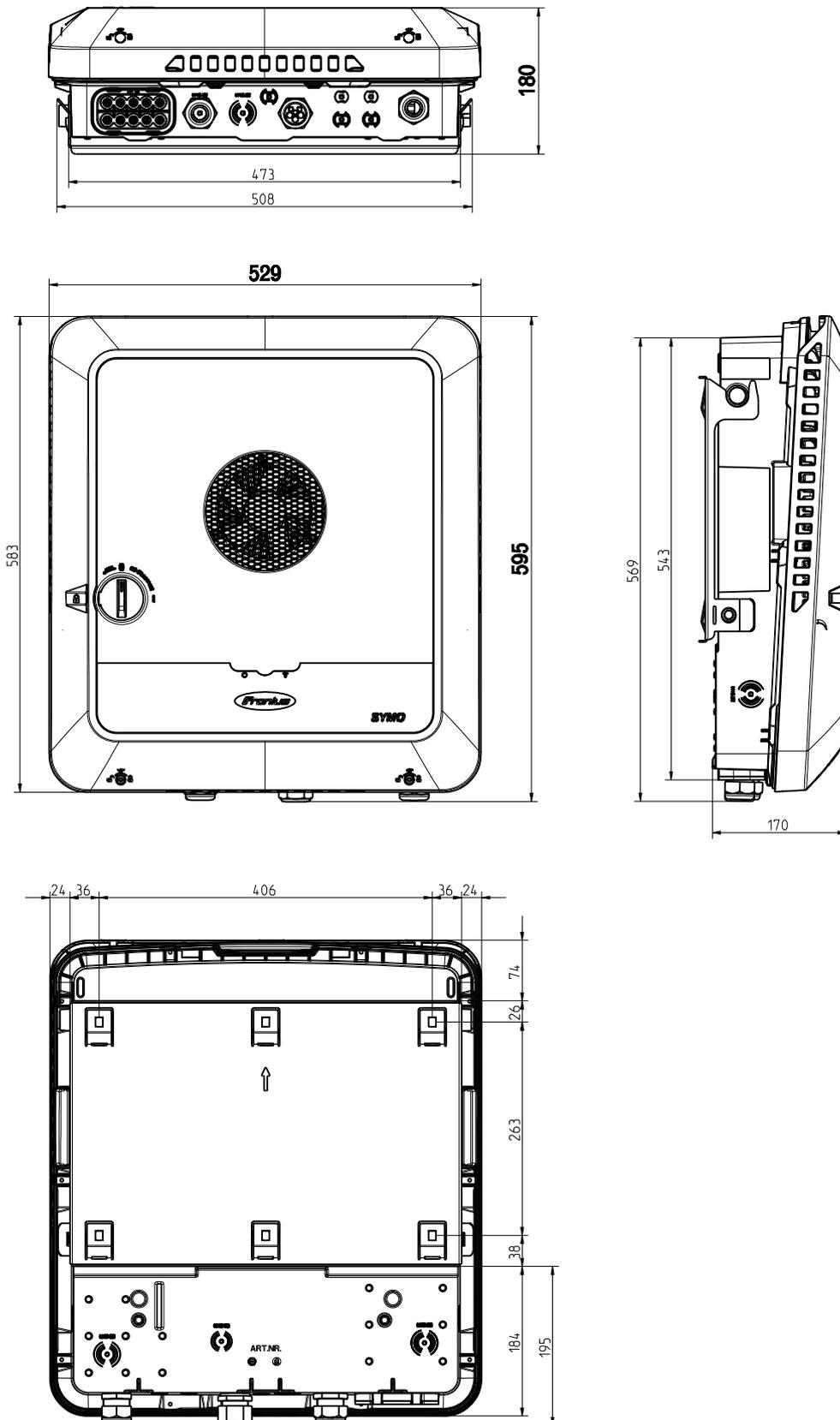


Wiring diagram - surge protective device SPD



Dimensions of the inverter

Fronius Symo GEN24 6 -10 kW



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