Operating Instructions

Fronius Smart Meter 50kA-3
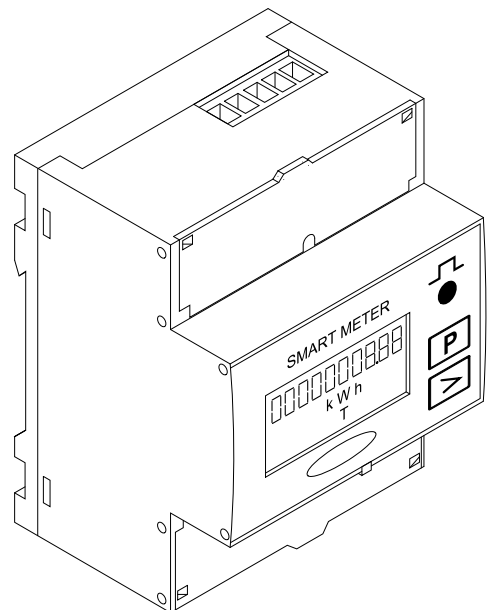
Contents

Safety rules

Explanation of safety notices

⚠ **DANGER!**

Indicates immediate danger.
▶ If not avoided, death or serious injury will result.

⚠ **WARNING!**

Indicates a potentially hazardous situation.
▶ If not avoided, death or serious injury may result.

⚠ **CAUTION!**

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

NOTE!

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

General

The device has been manufactured in line with the state of the art and according to recognized safety standards. If used incorrectly or misused, however, it can cause:
- Injury or death to the operator or a third party
- Damage to the device and other material assets belonging to the operating company.

All personnel involved in commissioning, maintenance, and servicing of the device must:
- Be suitably qualified
- Have knowledge of and experience in dealing with electrical installations and
- Have fully read and precisely followed these Operating Instructions

The Operating Instructions must always be at hand wherever the device is being used. In addition to the Operating Instructions, attention must also be paid to any generally applicable and local regulations regarding accident prevention and environmental protection.

All safety and danger notices on the device:
- Must be kept in a legible state
- Must not be damaged
- Must not be removed
- Must not be covered, pasted or painted over

The terminals can reach high temperatures.

Only operate the device when all protection devices are fully functional. If the protection devices are not fully functional, there is a danger of:
- Injury or death to the operator or a third party
- Damage to the device and other material assets belonging to the operating company

Any safety devices that are not fully functional must be repaired by an authorised specialist before the device is switched on.

Never bypass or disable protection devices.

For the location of the safety and danger notices on the device, refer to the section headed "General remarks" in the Operating Instructions for the device.

Any equipment malfunctions which might impair safety must be remedied before the device is turned on.

This is for your personal safety!

Environmental conditions

Operation or storage of the device outside the stipulated area will be deemed as not in accordance with the intended purpose. The manufacturer accepts no liability for any damage resulting from improper use.

Qualified personnel

The servicing information contained in these operating instructions is intended only for the use of qualified service engineers. An electric shock can be fatal. Do not carry out any actions other than those described in the documentation. This also applies to qualified personnel.

All cables and leads must be secured, undamaged, insulated and adequately dimensioned. Loose connections, scorched, damaged or inadequately dimensioned cables and leads must be immediately repaired by authorised personnel.

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

It is impossible to guarantee that bought-in parts are designed and manufactured to meet the demands made on them, or that they satisfy safety requirements. Use only original spare parts (also applies to standard parts).

Do not carry out any alterations, installations, or modifications to the device without first obtaining the manufacturer's permission.

Components that are not in perfect condition must be changed immediately.

Copyright

Copyright of these operating instructions remains with the manufacturer.

The text and illustrations are all technically correct at the time of printing. We reserve the right to make changes. The contents of the operating instructions shall not provide the basis for any claims whatsoever on the part of the purchaser. If you have any suggestions for improvement, or can point out any mistakes that you have found in the instructions, we will be most grateful for your comments.

Data protection

The user is responsible for the safekeeping of any changes made to the factory settings. The manufacturer accepts no liability for any deleted personal settings.

General

Device descrip-
tion

The Fronius Smart Meter is a bidirectional electricity meter which optimises self-consumption and records the household's load curve. In conjunction with the Fronius inverter, Fronius Datamanager and Fronius data interface, the Fronius Smart Meter provides a clear overview of a user's own power consumption.

The meter measures the power flow to the loads or to the grid and forwards the information via the Modbus RTU/RS485 communication to the Fronius inverter.

> ⚠️ **CAUTION!**
>
> **Observe and follow safety instructions!**
> Failure to observe the safety instructions will result in damage to personnel and equipment.
> ▶ Switch off the power supply before establishing a mains connection.
> ▶ Observe the safety instructions.

Symbols on the
device

Technical data, markings and safety symbols are located on the Fronius Smart Meter. These must not be removed nor painted over. The notices and symbols warn of incorrect operation that could result in serious injury and damage to property.

Symbols on the rating plate:

CE mark
The devices conform to all the requisite and relevant standards and guidelines that form part of the relevant EU directive, and are therefore permitted to display the CE mark.

Regulatory Compliance Mark (RCM)
Complies with all applicable regulatory requirements in Australia and New Zealand regarding safety and electromagnetic compatibility, as well as specific requirements for radio equipment.

WEEE mark
In accordance with European Directive 2012/19/EU on waste electrical and electronic equipment and its implementation in national law, used electrical devices must be collected separately and recycled in an environmentally responsible manner. Ensure that you return your used device to your dealer or obtain information regarding a local, authorised collection and disposal system. Failure to comply with this EU Directive may result in a negative impact on the environment and your health!
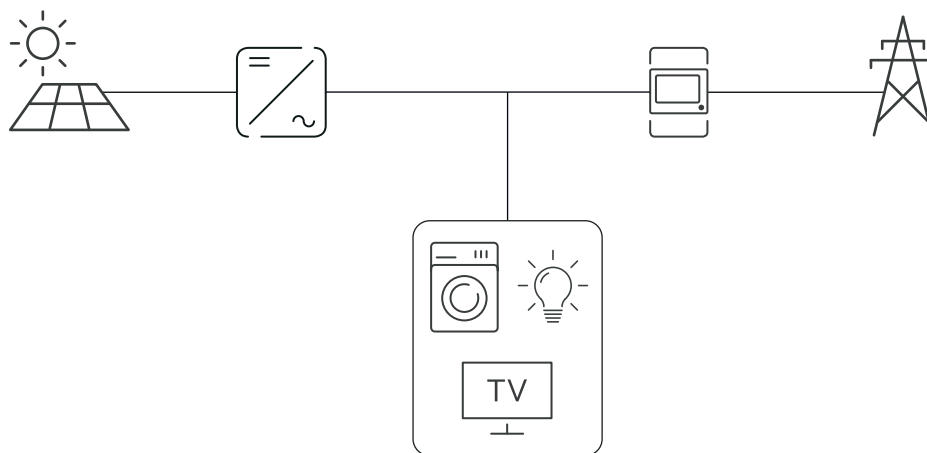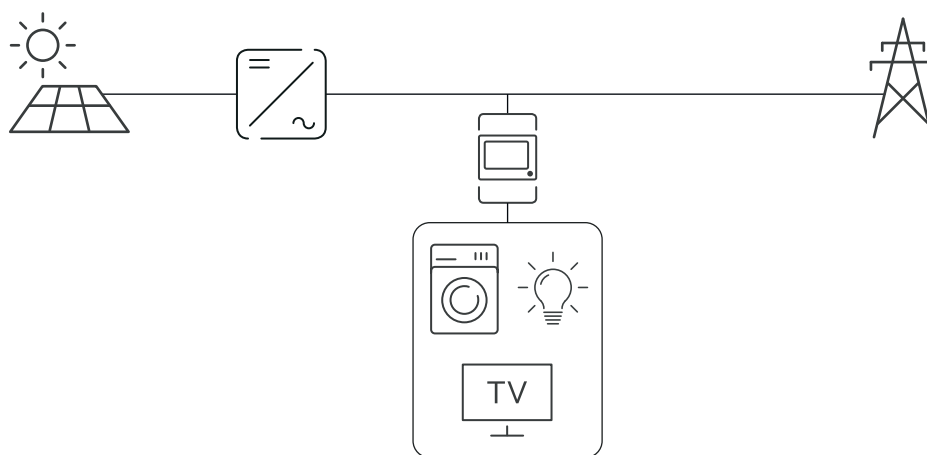
Positioning

The Fronius Smart Meter can be installed at two possible locations in the system: at the feed-in point and at the consumption point.

Placement at the feed-in point
Fronius Smart Meter located at the feed-in point.

Placement at the consumption point
Fronius Smart Meter located at the consumption load.

Installation

Checklist for installation

For installation information, see the following chapters:

1 Switch off the power supply before establishing a mains connection.

2 Mount the Fronius Smart Meter (see **Installation** on page **8**).

3 Connect automatic circuit breakers or automatic circuit breakers and disconnectors (see **Protective circuit** on page **8**).

4 Connect the mains cable to the Fronius Smart Meter (see **Cabling** on page **9**).

5 Mount the current transformers on the conductors. Make sure that the current transformers are pointing in the correct direction. An arrow either points to the load or the source (public grid) (see **Connecting the current transformers** on page **12**).

6 Connect the current transformer and Fronius Smart Meter (see **Connecting the current transformers** on page **12**).

7 Make sure that the current transformer phases match the mains voltage phases (see **Connecting the current transformers** on page **12**).

8 Note down the nominal current of the current transformer for each meter. These values will be required during setup.

9 Connect the output terminals of the Fronius Smart Meter to the Fronius inverter (see **Connecting the data communication cable to the inverter** on page **13**).

10 If necessary, set terminating resistors (see **Terminating resistors** on page **14**).

11 Tug on each wire and plug to make sure that they are securely connected to the terminal blocks.

12 Switch on the power supply to the Fronius Smart Meter.

13 Check the firmware version of the Fronius inverter. To ensure compatibility between the inverter and the Fronius Smart Meter, the software must always be kept up to date. The update can be started via the inverter web page or using Solar.web.

14 Set the transformation ratio of the current and voltage transformers (see **Setting the transformation ratio of the current and voltage transformers on the Fronius Smart Meter** on page **16**).

15 If several Fronius Smart Meters are installed in the system, set the address (see "Setting the address" under **Setting the address of the Fronius Smart Meter** on page **21**).

16 Configure and commission the meter (see **Start-up** on page **25**).

Installation

The Fronius Smart Meter can be mounted on a 35 mm DIN rail. The housing comprises 4 DUs (division units, max. 72 mm).

Protective circuit

The Fronius Smart Meter is a hard-wired device and requires a disconnecting device (circuit breaker, switch or disconnector) and overcurrent protection (automatic circuit breaker).

The Fronius Smart Meter consumes 10 - 30 mA. The nominal capacity of the disconnecting devices and the overcurrent protection is determined by the wire thickness, the mains voltage and the required breaking capacity.

- Disconnecting devices must be mounted within sight and as close as possible to the Fronius Smart Meter; they must also be easy to use.
- The disconnecting devices must satisfy the requirements of IEC 60947-1 and IEC 60947-3, as well as all national and local regulations for electrical systems.
- Use overcurrent protection rated for max. 63 A.
- To monitor more than one mains voltage, use connected automatic circuit breakers.
- The overcurrent protection must protect the mains terminals marked L1, L2 and L3. In rare cases, the neutral conductor has an overcurrent protection which must simultaneously interrupt neutral and unearthed lines.

Cabling

⚠️ **WARNING!**

Danger from mains voltage.
An electric shock can be fatal.
▶ Switch off the power supply before connecting the mains voltage inputs to the Fronius Smart Meter.

IMPORTANT!
Do not install more than one cable per screw terminal. If necessary, use terminal blocks. The measuring inputs of the current transformers must be earthed on one side as shown in the circuit diagram.
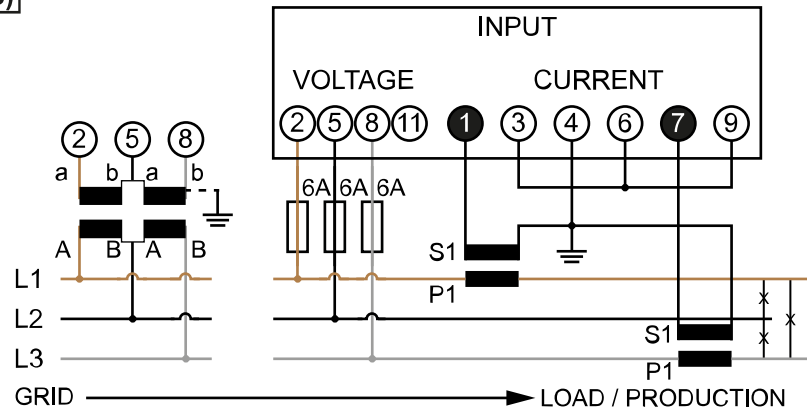
Connection cross-section:
- Wire (rigid): min. 0.05 mm² / max. 4 mm²
- Wire (flexible): min. 0.05 mm² / max. 2.5 mm²
- Recommended torque: 0.5 Nm / max. 0.8 Nm

Connect each voltage cable to the terminal strip as shown in the graphics below.

3-2E (1-3)

INPUT

VOLTAGE   CURRENT

② ⑤ ⑧   ② ⑤ ⑧ ⑪   ❶ ③ ④ ⑥ ❼ ⑨

a b a b   6A 6A 6A

A B A B   S1

L1   P1

L2   S1

L3   P1

GRID ————————————————➤ LOAD / PRODUCTION

3-3E

INPUT

VOLTAGE   CURRENT

② ⑤ ⑧   ② ⑤ ⑧ ⑪   ❶ ③ ④ ⑥ ❼ ⑨

a b a b   6A 6A 6A

A B A B   S1

L1   P1   S1

L2   P1   S1

L3   P1

GRID ————————————————➤ LOAD / PRODUCTION

3-2E (1-2)

INPUT

VOLTAGE   CURRENT

② ⑤ ⑧   ② ⑤ ⑧ ⑪   ❶ ③ ❹ ⑥ ⑦ ⑨

a b a b   6A 6A 6A

A B A B   S1

L1   P1   S1

L2   P1

L3

GRID ————————————————➤ LOAD / PRODUCTION

3-2E (2-3)

INPUT

VOLTAGE — CURRENT

② ⑤ ⑧

a | b | a | b

A | B | A | B

VOLTAGE: ② ⑤ ⑧ ⑪   CURRENT: ① ③ ❹ ⑥ ❼ ⑨

6A 6A 6A

L1
L2
L3

S1
P1
S1
P1

GRID ⟶ LOAD / PRODUCTION

3N3E

INPUT

VOLTAGE — CURRENT

② ⑤ ⑧ ⑪

a   n

A   N

VOLTAGE: ② ⑤ ⑧ ⑪   CURRENT: ❶ ③ ❹ ⑥ ❼ ⑨

6A 6A 6A

L1
L2
L3
N

S1
P1
S1
P1

GRID ⟶ LOAD / PRODUCTION

Selection criteria for current transformers

General

Do not use current transformers with a voltage output.
Current transformers are directional. If they are mounted backwards or with swapped wires, the measured power will be negative.

Primary current

Maximum current per phase. A current transformer with a primary current greater than the maximum expected current per phase should be selected. The closer the expected current is to this value, the more precise the measurement will be.

Secondary current

The current transformer must supply alternating current at a nominal current of 1 or 5 A. The nominal values for the current transformer are listed in the current transformer data sheet.

Power

The Fronius Smart Meter needs 0.3 VA to carry out its measurements. Losses also occur on the outgoing and return leads. The power of the current transformer must be greater than the sum total of the power of the Fronius Smart Meter and the leads. The higher the power, the better.

Line resistances at different cross-sections (copper wires)						
Secondary current [A]	Cross-section [mm²]	Line resistances at different lead lengths (outgoing and return lead)				
		0.5 m	1.0 m	2.5 m	5 m	10 m
5	1.5	0.3 VA	0.6 VA	1.5 VA	2.9 VA	5.8 VA
5	2.5	0.2 VA	0.4 VA	0.9 VA	1.8 VA	3.6 VA
5	4	-	-	0.6 VA	1.1 VA	2.2 VA

Example
The length of the outgoing and return lead (0.5 m each) between the Fronius Smart Meter and the current transformer is a total of 1 m and has a copper cable cross-section of 1.5 mm²; the line resistance is therefore 0.6 VA according to the table above. The self-consumption of the Fronius Smart Meter is 0.3 VA.
Line resistance 0.6 VA + self-consumption 0.3 VA = 0.9 VA
→ A current transformer with a rating of 1 VA, 1.5 VA, 5 VA or higher is suitable here.

Accuracy class
Use Class 1 or better (Class 0.5, 0.2, etc.). Class 1 is equivalent to a deviation of ± 1% of the secondary current at maximum power.

Mounting
Rigid or hinged.
"Rigid" is usually cheaper with better power and accuracy values. Hinged current transformers can be opened for attachment to the conductor. To prevent it being opened inadvertently, a plastic cable tie can be secured to the current transformer. Hinged current transformers can be installed in a system without interrupting the voltage.

Connecting the current transformers

- Make sure that the current transformers match the voltage phases.
  Make sure that current transformer L1 measures the current on the same phase that is monitored by voltage input L1. The same applies for phases L2 and L3.
- Make sure that the current transformers are pointing in the correct direction. Observe the data sheet for the current transformer.

Attach the current transformers to the conductor to be measured and connect the current transformer cables to the Fronius Smart Meter. Always switch off the power supply before disconnecting live conductors.

The current transformers are connected to connections 1 and 3; 4 and 6; 7 and 9. If necessary, excessively long cables can be shortened accordingly. Observe the sequence in which the phases are connected. Accurate power measurement is only ensured if the mains voltage phases match the current phases.

Suitable voltage transformers

Suitable voltage transformers: Only voltage transformers with a voltage range from 210 to 440 V (phase - phase) may be used. The voltage transformers must be connected to terminals 2, 5, 8 and 11 at the point of direct voltage measurement.

Connecting the data communication cable to the inverter
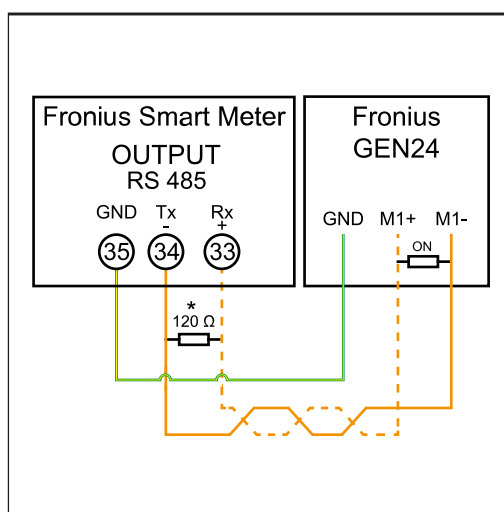
Fronius SnapINverter:

Connect the data communication connections of the Fronius Smart Meter to the Fronius system monitoring in the inverter. Several Smart Meters can be installed in the system, see chapter **Multi-meter system - Fronius SnapINverter** on page **18**.
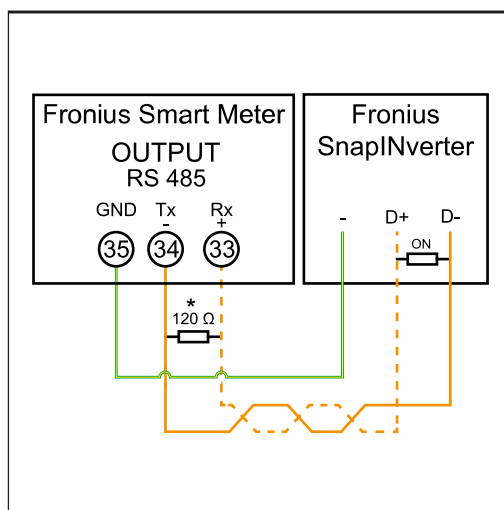
1 Connect **35** to **-**.

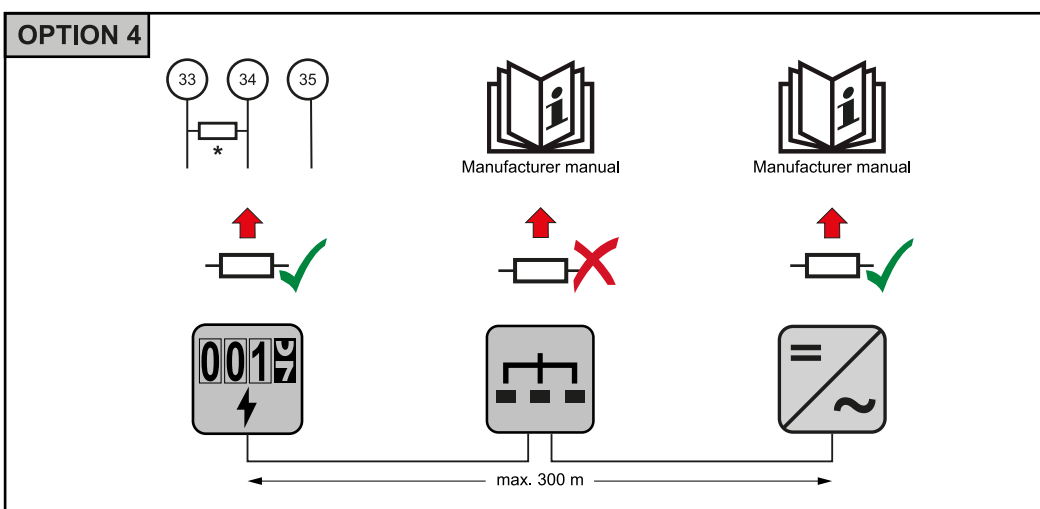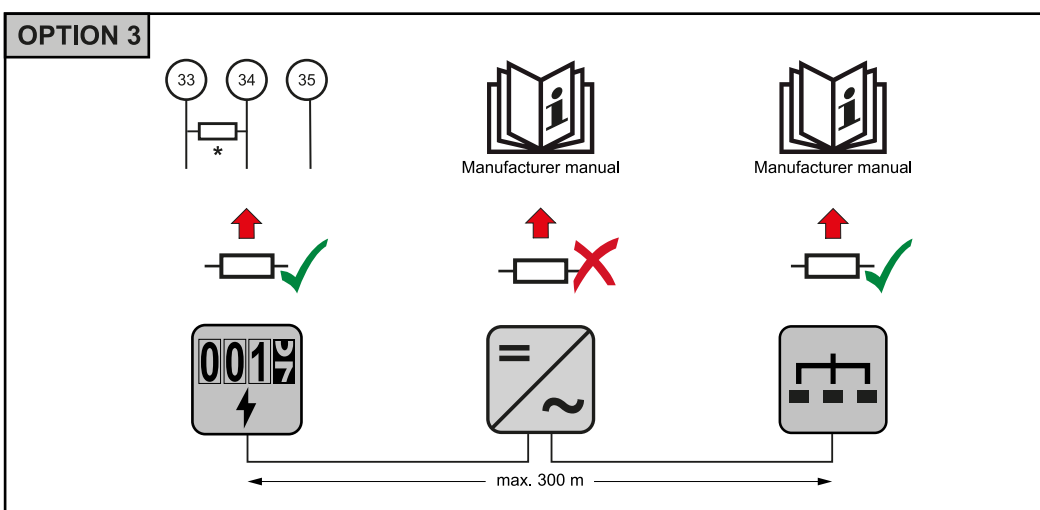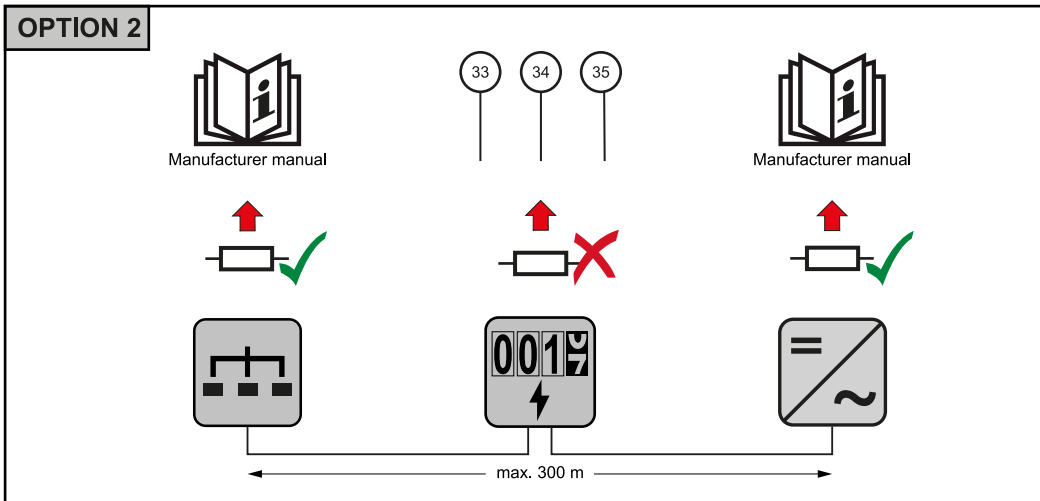2 Connect **34** to **D-**.

3 Connect **33** to **D+**.

Fronius GEN24 inverter:

Connect the data communication connections of the Fronius Smart Meter to the Modbus interface of the Fronius GEN24 inverter. Several Smart Meters can be installed in the system, see chapter **Multi-meter system - Fronius GEN24 inverter** on page **20**.

1 Connect **35** to **GND**.

2 Connect **34** to **M1-**.

3 Connect **33** to **M1+**.

IMPORTANT!

More information on successful commissioning.
Note the following information about connecting the data communication cable to the inverter.

▶ Use cables of type CAT5 or higher.
▶ Use a mutual twisted cable pair for data lines that belong together (D+, D- and M1+, M1-).
▶ If the output cables are close to the mains cabling, use wires or cables that are designed for 300 V to 600 V (never less than the operating voltage).
▶ Use double-insulated or sheathed output cables when they are close to bare conductors.
▶ Use shielded twisted pair cables to avoid faults.
▶ The outputs of the Fronius Smart Meter are electrically isolated from hazardous voltages.

Terminating resistors - Explanation of symbols

Inverter in the system
e. g. Fronius Symo

Meter - Fronius Smart Meter
Terminating resistor R 120 Ohm is included in the scope of supply.

Modbus RTU slave
e. g. Fronius Ohmpilot, Fronius Solar Battery, etc.

Terminating resistor
R 120 Ohm

Terminating resistors

Due to interference, it is recommended that terminating resistors are used as illustrated below to ensure proper functioning.

OPTION 2

OPTION 3

OPTION 4

* The terminating resistor on Fronius Smart Meters is installed between **33** and **34**. The terminating resistor R 120 Ohm is included with the Fronius Smart Meter.

Setting the transformation ratio of the current and voltage transformers on the Fronius Smart Meter

Only the transformation ratio of the current and voltage transformers must be set. All other parameters have already been set in advance.
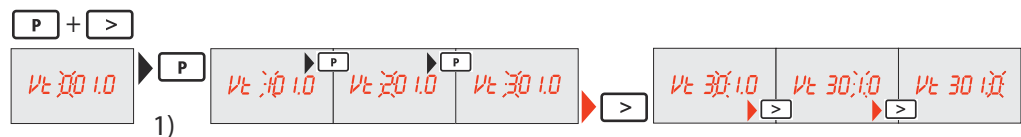
Password (0001):

P + >

| CodE0000 | > | CodE0000 | > | CodE0000 | > | CodE0000 | ▶ P | CodE000.1 |

Transformation ratio of the current transformers[1] (0001 - 9999[2]):

P + >

| Ct 0001 | ▶ P | Ct 1001 | Ct 2001 | Ct 3001 | > | Ct 3001 | Ct 3001 | Ct 300.1 |

1)

Transformation ratio of the voltage transformers[1, 3] (001.0 - 500.0[2]):

P + >

| Vt 001.0 | ▶ P | Vt 101.0 | Vt 201.0 | Vt 301.0 | > | Vt 301.0 | Vt 301.0 | Vt 301.0 |

1)

Change password and write it down[4]:

P + >

| PASS 0000 | ▶ P | PASS 1000 | PASS 2000 | PASS 3000 | > | PASS 3000 | PASS 3000 | PASS 3000 |

[1]**IMPORTANT!** Changing the transformation ratios will reset the meter data in the Fronius Smart Meter to 0.

[2] Transformation ratio in the current transformer x Transformation ratio of the voltage transformers = max. 1,000,000.

[3] Changeover only when using voltage transformers (direct voltage measurement Vt = 1).

[4]**IMPORTANT!** The password cannot be reset.

Multi-meter system - Explanation of symbols
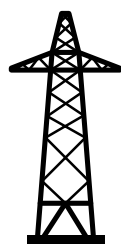
Grid
supplies the loads in the system if insufficient power is being generated by the PV modules or supplied by the battery.

**Inverter in the system**
e. g. Fronius Primo, Fronius Symo, etc.

Utility meter
Measures the measurement data relevant for billing amounts of energy (in particular kilowatt hours of energy sourced from the grid and energy fed into the grid). Based on the relevant billing data, the electricity retailer will invoice the energy sourced from the grid and the purchaser of the surplus energy will reimburse the energy fed into the grid.

Primary meter
Records the system's load curve and provides measurement data for energy profiling in Fronius Solar.web. The primary meter also controls the dynamic feed-in control.
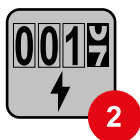
Secondary meter
Records the load curve of individual loads (e.g. washing machine, lamps, TV, heat pump, etc.) in the consumption branch and provides measurement data for energy profiling in Fronius Solar.web.
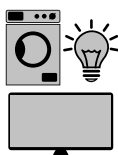
Producer meter
Records the load curve of individual producers (e.g. wind power plant) in the consumption branch and provides measurement data for energy profiling in Fronius Solar.web.
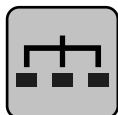
Modbus RTU slave
e. g. Fronius Ohmpilot, Fronius Solar Battery, etc.

Loads in the system
e. g. washing machine, lamps, TV, etc.

Additional loads in the system
e. g. heat pump

Additional producers in the system
e. g. wind power plant

Terminating resistor
R 120 Ohm

Modbus participants - Fronius SnapINverter

A maximum of 4 Modbus participants can be connected to the Modbus terminal.

IMPORTANT!
Only one primary meter, one battery and one Ohmpilot can be connected per inverter. Due to the high data transfer of the battery, the battery occupies 2 participants.
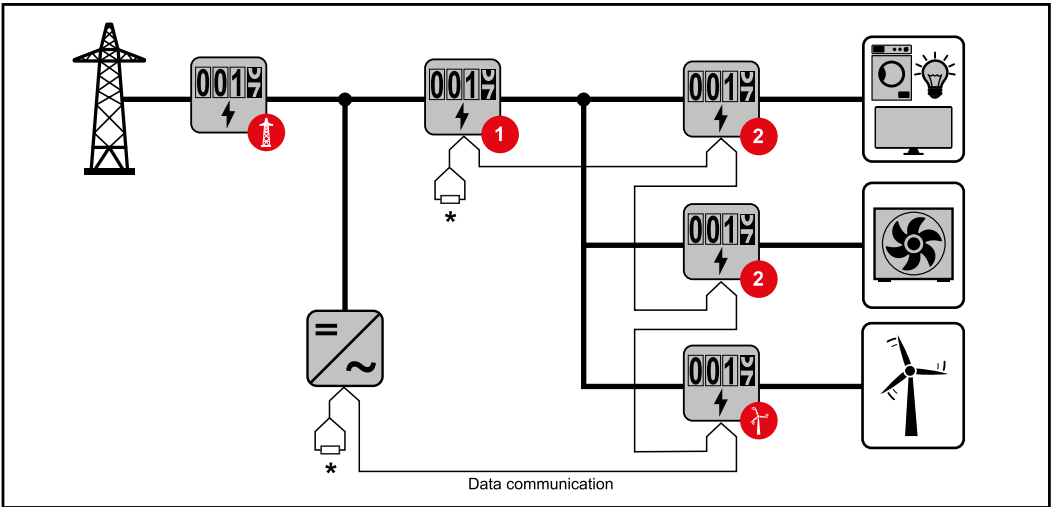
Example:

| Input	Battery	Fronius Ohmpilot	Quantity Primary meter	Quantity Secondary meter
Modbus	✓	✓	1	0
	✓	✗	1	1
	✗	✓	1	2
	✗	✗	1	3

Multi-meter system - Fronius SnapINverter

If several Fronius Smart Meters are installed, a separate address must be set for each one (see **Setting the address of the Fronius Smart Meter** on page **21**). The primary meter is always assigned address 1. All the other meters are numbered consecutively with the address range from 2 to 14. Different Fronius Smart Meter power categories can be used in combination.

IMPORTANT!
Use max. 3 secondary meters in the system. To avoid interference, it is recommended to install the terminating resistors according to chapter **Terminating resistors** on page **14**.

*Location of the primary meter in the consumption branch. *Terminating resistor R 120 Ohm*

18
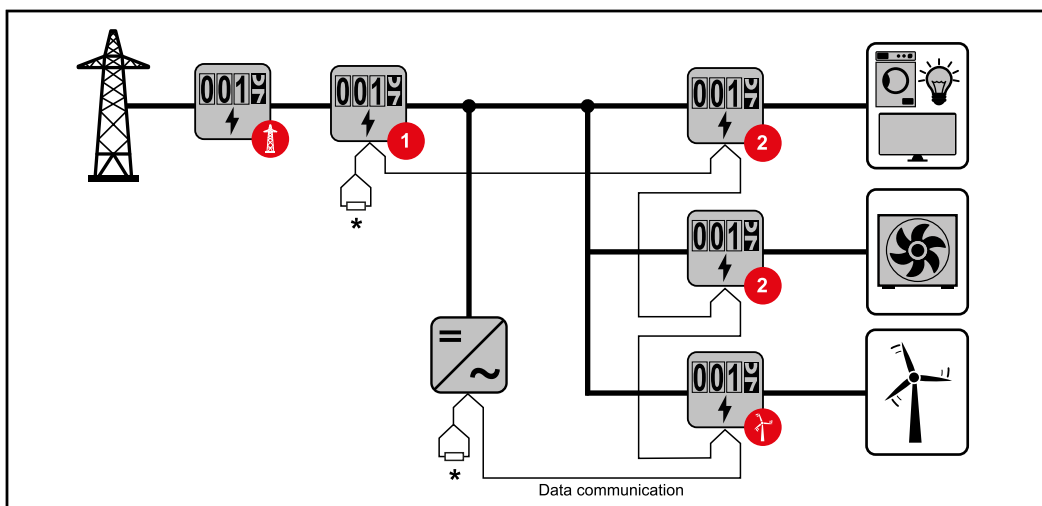
*Location of the primary meter at the feed-in point. *Terminating resistor R 120 Ohm*

The following must be observed in a multi-meter system:
- Only assign each Modbus address once.
- Terminating resistors must be positioned individually for each channel.

Modbus participants - Fronius GEN24

The inputs M0 and M1 can be selected for this purpose. A maximum of 4 Modbus participants can be connected to the Modbus terminal on inputs M0 and M1.

IMPORTANT!
Only one primary meter, one battery and one Ohmpilot can be connected per inverter. Due to the high data transfer of the battery, the battery occupies 2 participants.

Example 1:

Input	Battery	Fronius Ohmpilot	Quantity Primary meter	Quantity Secondary meter
Modbus 0 (M0)	✗	✗	0	4
	✓	✗	0	2
	✓	✓	0	1
Modbus 1 (M1)	✗	✗	1	3

Example 2:

Input	Battery	Fronius Ohmpilot	Quantity Primary meter	Quantity Secondary meter
Modbus 0 (M0)	✗	✗	1	3

Input	Battery	Fronius Ohmpilot	Quantity Primary meter	Quantity Secondary meter
Modbus 1 (M1)	❌	❌	0	4
	✅	❌	0	2
	✅	✅	0	1

Multi-meter system - Fronius GEN24 inverter

If several Fronius Smart Meters are installed, a separate address must be set for each one (see **Setting the address of the Fronius Smart Meter** on page **21**). The primary meter is always assigned address 1. All the other meters are numbered consecutively with the address range from 2 to 14. Different Fronius Smart Meter power categories can be used in combination.

IMPORTANT!
Use max. 7 secondary meters in the system. To avoid interference, it is recommended to install the terminating resistors according to chapter **Terminating resistors** on page **14**.
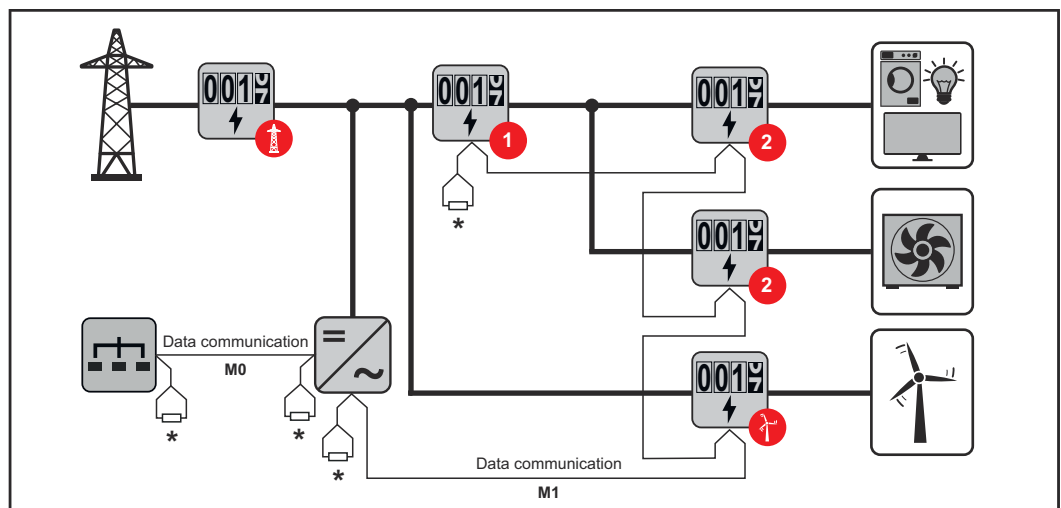
*Location of the primary meter in the consumption branch. *Terminating resistor R 120 Ohm*
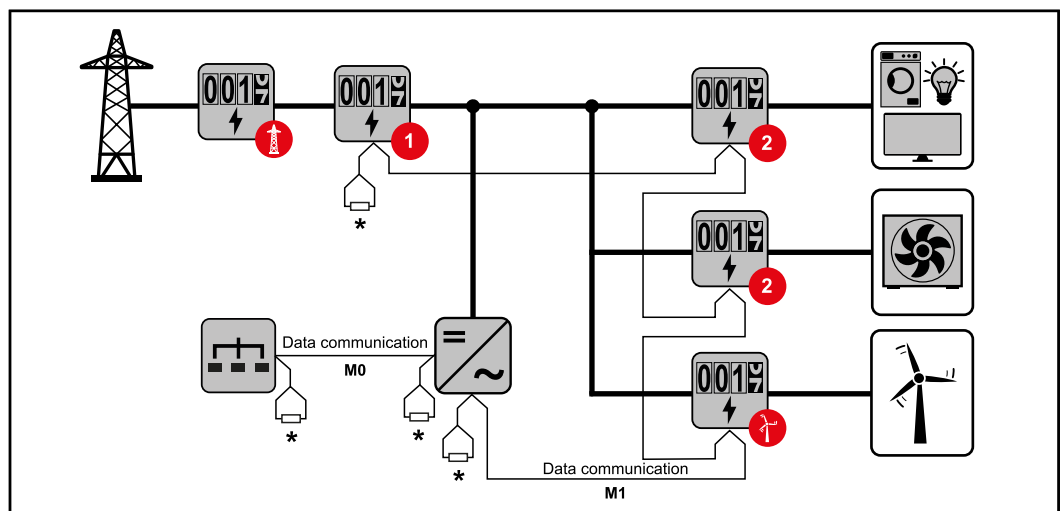
*Location of the primary meter at the feed-in point. *Terminating resistor R 120 Ohm*
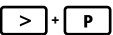
**The following must be observed in a multi-meter system:**
- Connect the primary meter and the battery to different channels (recommended).
- The remaining Modbus participants must be distributed equally.
- Only assign each Modbus address once.
- Terminating resistors must be positioned individually for each channel.

Menu structure   A graphic view of the menu structure can be found in the User Information that is supplied as standard.

Setting the address of the Fronius Smart Meter

Symbol	Name	Event	Function
P	Prog	1 x 👆	Increases the set value
>	Page	1 x 👆	Moves the cursor
> + P	Enter	1 x 👆	Confirms the entry
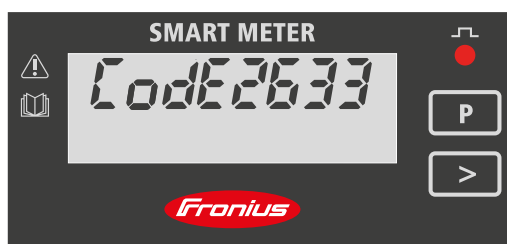
1 Press "Prog" and "Page" at the same time to enter the code.

2 Enter the password "2633". Increase the value with "Prog" and change to the next digit with "Page".
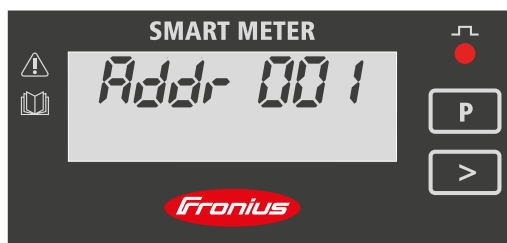
3 Press "Prog" and "Page" at the same time again to switch to the menu item "Addr" (address).

4 Set the relevant address.
   - Permissible values: 1 - 14
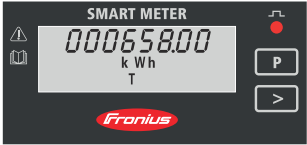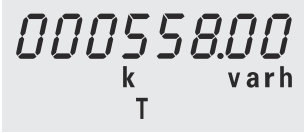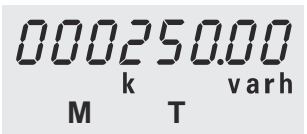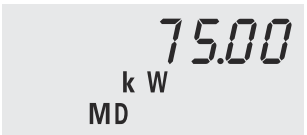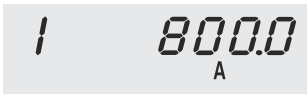
IMPORTANT!
Only configure the menu items "Password" and "Address".
▶ The parameter „**Node A**" is preset and must not be changed.

Reading the Fronius Smart Meter operating parameters

Symbol	Name	Event	Function
>	Page	1 x 👆	Continue to the next screen
>	Page	5 seconds 👆	Reset value / change menu

The following illustrations are symbolic representations. The values displayed vary for each individual unit.

Display	Description
SMART METER 00065800 k Wh T	**Total active energy consumed**
00055800 k varh T	Total reactive energy
00035000 k Wh M T	**Total active energy produced** Press arrow key for 5 seconds to reset the value
00025000 k varh M T	**Partial reactive energy** Press arrow key for 5 seconds to reset the value
95.00 k W PMD	**Maximum effective power average value** Press arrow key for 5 seconds to reset the value
75.00 k W MD	**Effective power average value**
1-U-P	**Voltage and current menu** Press the arrow key and wait 2 seconds until the next display (current phase L1) appears.
1 800.0 A	**Current phase L1**
2 450.0 A	**Current phase L2**
3 600.0 A	**Current phase L3**
12 400.0 V	**Chained voltage phase L1-L2**

Display	Description
23 *400.0* V	**Chained voltage phase L2-L3**
31 *400.0* V	**Chained voltage phase L1-L3**
95.00 k W	**Effective power**
599.7 k var	**Reactive power**
425.4 k V A	**Apparent power**

Start-up

Fronius SnapINverter

General

IMPORTANT! Settings under the "Meter" menu item are only to be made by trained and qualified personnel!

The service password must be entered in order to access the "Meter" menu item.

Three-phase or single-phase Fronius Smart Meters can be used. In both cases, the selection is made under the "Fronius Smart Meter" item. The Fronius Datamanager automatically identifies the meter type.

A primary meter and several secondary meters can be selected. The primary meter needs to be configured first before a secondary meter can be selected.

Connecting to the Fronius Datamanager

Access point:

1 Select the **"Setup"** menu on the inverter display and enable the **"Wi-Fi Access Point"**.

2 Establish the connection to the inverter in the network settings (the inverter is displayed with the name "Fronius_240.XXXXXX").

3 Password: Enter 12345678 and confirm.

4 In the browser address bar, enter and confirm the IP address **http:// 192.168.250.181** and confirm.

The Fronius Datamanager start page is displayed.

LAN:

1 Connect the Fronius Datamanager and computer to a LAN cable.

2 Place the Fronius Datamanager IP switch in the 'A' position.

3 In the browser address bar, enter and confirm the IP address **http:// 169.254.0.180** and confirm.

Configuring the Fronius Smart Meter as the primary meter

1 Go to the Fronius Datamanager website.
   - Open the web browser.
   - In the address bar of the browser, enter the IP address (IP address for WLAN: 192.168.250.181, IP address for LAN: 169.254.0.180) or the host and domain name of the Fronius Datamanager and confirm.
   - The Fronius Datamanager website will be displayed.

2 Click the **"Settings"** button.

3 Log in to the login area with the **"service"** user and the service password.

4 Call up the **"Meter"** menu area.

5 Select the primary meter from the drop-down list.

6 Click the **"Settings"** button.

7 In the pop-up window, set the position of the meter (feed-in point or consumption point). For more information on the position of the Fronius Smart Meter, see **Positioning** on page **6**.

8 Click the **"Ok"** button when the OK status is displayed. If the *Timeout* status is displayed, try again.

|9| Click the ✓ button to save the settings.

The Fronius Smart Meter is configured as a primary meter.

The **"Current general view"** menu area displays the power of the PV modules, self-consumption, the energy fed into the grid and the battery charge (if available).

Configuring the Fronius Smart Meter as a secondary meter

|1| Go to the Fronius Datamanager website.
- Open the web browser.
- In the address bar of the browser, enter the IP address (IP address for WLAN: 192.168.250.181, IP address for LAN: 169.254.0.180) or the host and domain name of the Fronius Datamanager and confirm.
- The Fronius Datamanager website will be displayed.

|2| Click the **"Settings"** button.

|3| Log in to the login area with the **"service"** user and the service password.

|4| Call up the **"Meter"** menu area.

|5| Select the secondary meter from the drop-down list.

|6| Click the **"Add"** button.

|7| Enter the name of the secondary meter in the **"Name"** input field.

|8| Enter the previously assigned address in the **"Modbus address"** input field.

|9| Add meter description.

|10| Click the ✓ button to save the settings.

The Fronius Smart Meter is configured as a secondary meter.

Fronius GEN24 inverter

General

IMPORTANT! Settings under the "Device configuration" menu item are only to be made by trained and qualified personnel!
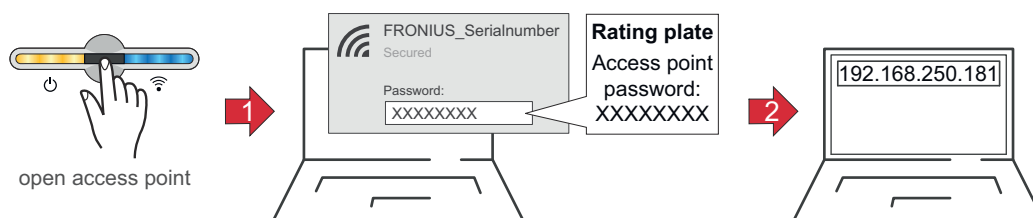
The technician password must be entered in order to access the "Device configuration" menu item.

Three-phase or single-phase Fronius Smart Meters can be used. In both cases, the selection is made under the "Components" menu area. The meter type is determined automatically.

A primary meter and several secondary meters can be selected. The primary meter needs to be configured first before a secondary meter can be selected.

Installation using the web browser

WLAN:

open access point

FRONIUS_Serialnumber
Secured
Password:
XXXXXXXX

Rating plate
Access point password:
XXXXXXXX

192.168.250.181

1. Open the access point by touching the sensor 👆 → Communication LED flashes blue.

2. Establish the connection to the inverter in the network settings (the inverter is displayed with the name "FRONIUS_" and the serial number of the device).

3. Enter the password from the rating plate 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.

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:
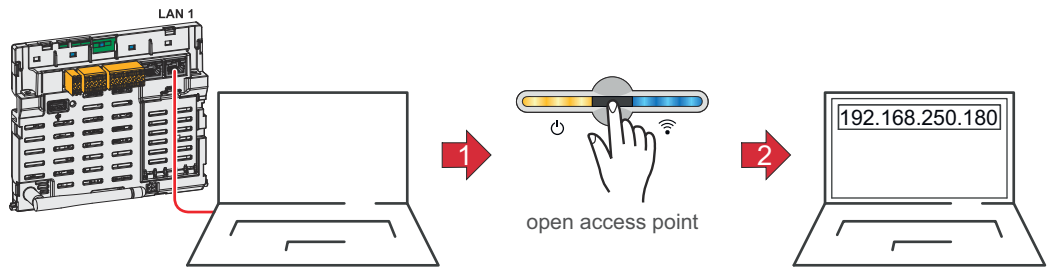
open access point

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.

Configuring the Fronius Smart Meter as the primary meter

1	Access the inverter website.
	- Open the web browser.
	- In the address bar of the browser, enter the IP address (IP address for WLAN: 192.168.250.181, IP address for LAN: 169.254.0.180) or the host and domain name of the inverter and confirm.
	- The inverter website is displayed.
2	Click the **"Device configuration"** button.
3	Log in to the login area with the **"Technician"** user and the technician password.
4	Access the **"Components"** menu area.
5	Click the **"Add component"** button.
6	In the "Position" drop-down list, set the position of the meter (feed-in point or consumption point). For more information on the position of the Fronius Smart Meter, see **Positioning** on page **6**.
7	Click the **"Add"** button.
8	Click the **"Save"** button to save the settings.

The Fronius Smart Meter is configured as a primary meter.

Configuring the Fronius Smart Meter as a secondary meter

1	Access the inverter website.
	- Open the web browser.
	- In the address bar of the browser, enter the IP address (IP address for WLAN: 192.168.250.181, IP address for LAN: 169.254.0.180) or the host and domain name of the inverter and confirm.
	- The inverter website is displayed.
2	Click the **"Device configuration"** button.

3 Log in to the login area with the **"Technician"** user and the technician password.

4 Access the **"Components"** menu area.

5 Click the **"Add component"** button.

6 In the **"Position"** drop-down list, select the meter type (producer/load meter).

7 Enter the previously assigned address in the **"Modbus address"** input field.

8 Enter the name of the meter in the **"Name"** input field.

9 In the "Category" drop-down list, select the category (producer or load).

10 Click the **"Add"** button.

11 Click the **"Save"** button to save the settings.

The Fronius Smart Meter is configured as a secondary meter.

Technical data

Modbus transmission speed: 9600 baud
Parity bit: None
Software version: Datamanager 3.7.2 / Energypackage 1.3.3

Input	
Three-phase nominal voltage Operating range	400 - 415 V 363 to 457 V
Single-phase nominal voltage Operating range	230 - 240 V 210 to 264 V
Voltage transformer ratio (kVT)	1...1500.0 e.g. VT 20000/400V kVT = 50 For direct connection: kVT = 1
Self-consumption - voltage path (max. voltage)	4.5 VA (1.85 W) for 440 V
Nominal frequency Tolerance	50 - 60 Hz 47 to 63 Hz
Nominal current, lb	1 A + 5 A
Maximum current, Imax	6 A
Starting current	20 mA
Current transformer ratio (kCT)	1...9,999 e.g. TC 800/5A kCT = 160
Short-time overload (EN/IEC 62053-21, EN/IEC 62053-23)	20 lmax / 0.5 s
Self-consumption - current path (max. current)	0.3 W for phase
Maximum value kVT x kCT	5,000,000 (CT/1A) or 1,000,000 (CT/5A)
Current distortion factor	In acc. with EN/IEC 62053-21
Power factor Operating range (EN/IEC 62053-21, EN/IEC 62053-23)	Active cosφ 0.5 ind to 0.8 cap, Reactive sinφ 0.5 ind to 0.5 cap

Energy	
Max. display	As per table
Resolution	As per table
LED indicator	1 pulse / 0.1 Wh
Active energy accuracy (EN/IEC 62053-21)	Class 1
Reactive energy accuracy (EN/IEC 62053-23)	Class 2
Response time after switch-on (EN/IEC 62053-21, EN/IEC 62053-23)	< 5 s

kCT x kVT	Maximum display		Resolution
1 to 9.9	9 9 9 9 9 9 . 9 9	kWh / kvarh	10 Wh / varh
10 to 99.9	9 9 9 9 9 9 9 . 9	kWh / kvarh	100 Wh / varh
100 to 999.9	9 9 9 9 9 9 9 9	kWh / kvarh	1 kWh / varh
1000 to 9999.9	9 9 9 9 9 9 . 9 9	MWh / kvarh	10 kWh / varh
≥ 10000	9 9 9 9 9 9 9 . 9	MWh / kvarh	100 kWh / varh

Average power	
Measured variable	Effective power
Calculation	Average value over set period of time
Integration time	5 / 8 / 10 / 15 / 20 / 30 / 60 minutes

Operating hours counter	
Operating hours counter	Hours and minutes
Resolution	7-digit (5 hours + 2 minutes)
Max. display	99,999 h 59 min
Counting start	3-phase effective power
Programmable values	0.10 to 50% Pn
3-phase effective power	In acc. with 400 V 5 A - 3464 W
Operating hours counter reset	Accessible via keypad or locked

Output	
Energy pulse Pulse output compatible with S0 EN/IEC 62053-31 Optical relay with NO contact SPST-NO, floating	
Contact load	110 V DC/AC - 50 mA
Assignable energy	Active or reactive energy
Pulse value	10 Wh (Varh) - 100 Wh (Varh) - 1 kWh (kVarh) - 10 kWh (kVarh) - 100 kWh (kVarh) - 1000 kWh (kVarh)
Pulse duration	50 - 100 - 150 - 200 - 300 - 400 - 500 ms
RS485 communication Electrically isolated from input and auxiliary voltage	
Standard	RS485 - 3 conductors
Transmission	Serial, asynchronous
Protocol	Modbus RTU
Addresses	1 to 255
Number of bits	8
Stop bit	1
Parity bit	None - even - odd
Baud rate	4800 - 9600 - 19200 bit/s
Response time	≤ 200 ms

Insulation (EN/IEC 62052-11, 62053-21)	
Installation category	III
Pollution level	2
Insulation voltage	300 V phase-neutral
Impulse withstand voltage Test circuit	5 kV 1.2/60 µs Voltage input, current input, pulse output, communication
Test voltage Test circuit	2.75 kV r.m.s. 50 Hz / 1 min Voltage input, current input, pulse output, communication
Test voltage Test circuit	4 kV r.m.s. 50 Hz / 1 min All circuits and earth

Electromagnetic compatibility	
Test in acc. with EN/IEC 62052-11	

Operating conditions	
Reference temperature	23 °C (±2 °C)
Operating range	-5 to 55 °C
Temperature limit for storage and transport	-25 to 70 °C
Tropical model	
Max. power loss (for thermal dimensioning of the switch cabinet)	≤ 2.8 W

Housing	
Housing	4 modules according to DIN 43880
Sealable front and terminal cover	
Connection	Screw connection
Mounting	Can be snapped onto 35 mm DIN rail
Housing material	Polycarbonate, self-extinguishing
Degree of protection (EN 60529)	IP54 front, IP20 connections
Weight	260 grams

Screw terminals	
Measuring input	
Wire (rigid)	Min. 0.05 mm² / max. 4 mm²
Wire (flexible)	Min. 0.05 mm² / max. 2.5 mm²
Recommended torque	0.5 Nm / max. 0.8 Nm
Output	
Wire (rigid)	Min. 0.05 mm² / max. 4 mm²
Wire (flexible)	Min. 0.05 mm² / max. 2.5 mm²
Recommended torque	0.5 Nm / max. 0.8 Nm

**Fronius manu-
facturer's war-
ranty**

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.

fronius.com/en/solar-en-
ergy/installers-partners/
products-solutions/moni-
toring-digital-tools

**MONITORING &
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