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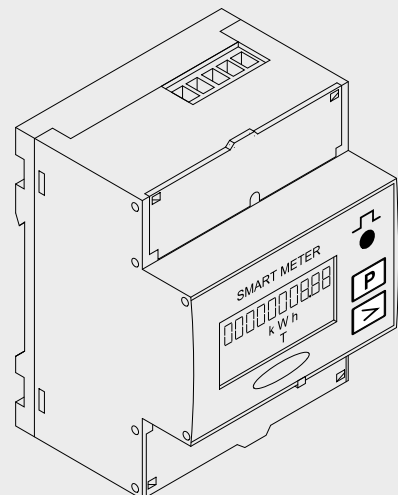
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Fronius Smart Meter 63A-3

EN

Operating instructions

PV system monitoring



42,0426,0293,EN 006-19082020

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Safety rules

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

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**.

Description of the device

The Fronius Smart Meter is a bidirectional electricity meter for optimising your own consumption and recording the load curve of the household. Together with the Fronius Datamanager, the Fronius Smart Meter provides a clear overview of your own electricity consumption.

The meter measures the power flow to the loads or the grid and forwards the information to the Fronius Datamanager via ModBus RTU/RS485 interface.

CAUTION!

Observe and follow the safety instructions!

Non-observance of the safety instructions will result in damage to persons and equipment.

- ▶ Switch off the power supply before making a grid 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

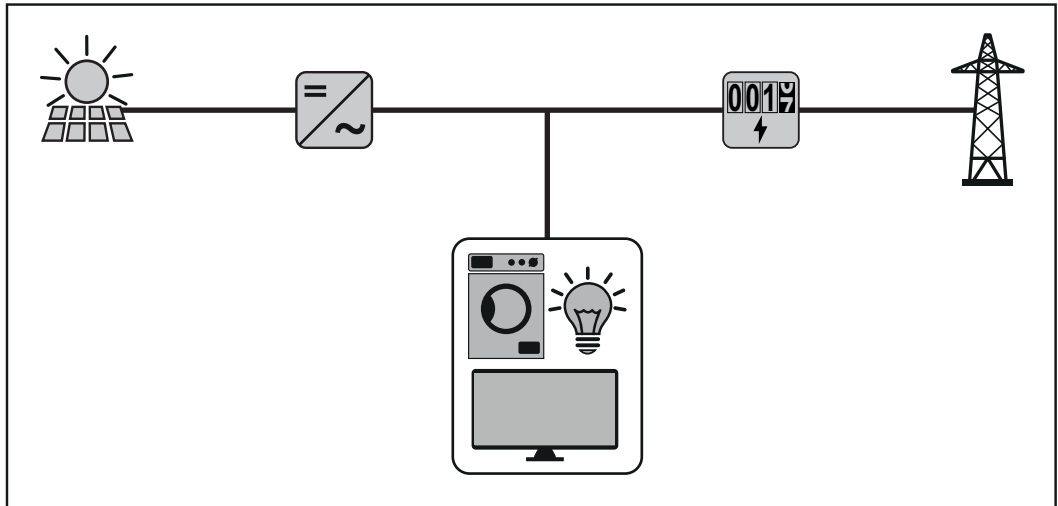
In accordance with European Directive 2012/19/EU on waste electrical and electronic equipment and its implementation in national law, used electrical devices must be collected separately and recycled in an environmentally responsible manner. Ensure that you return your used device to your dealer or obtain 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.

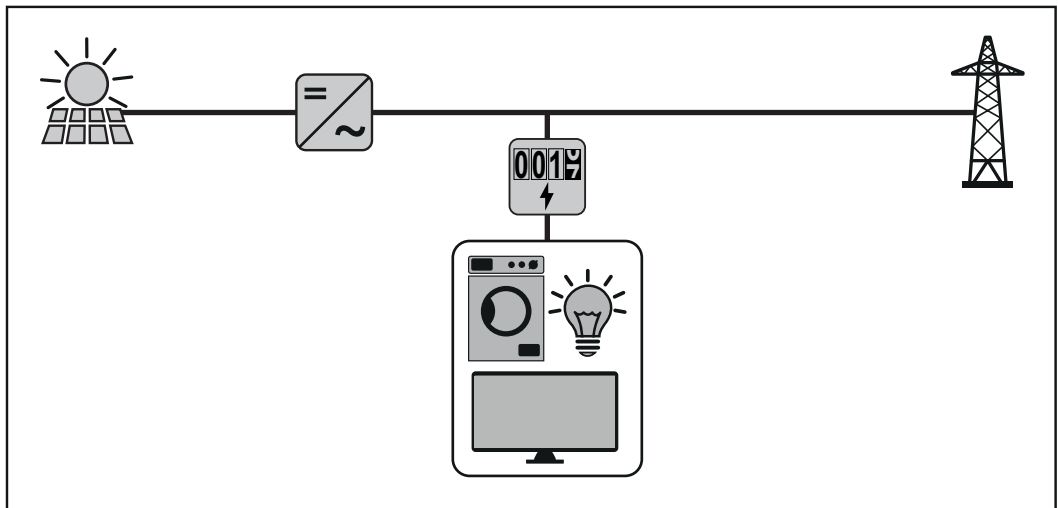
Placement at the feed-in point

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 information about installation, please refer to the sections stated below

- 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 8)
- 5 Connect the output terminals of the Fronius Smart Meter to the Fronius system monitoring using a suitable cable (see "[Connecting the data communication cable to the inverter](#)" on page 9)
- 6 If necessary, set terminating resistors (see "[Terminating resistors](#)" on page 10)
- 7 Tug on each wire and plug to make sure that they are securely connected to the terminal blocks.
- 8 Switch on the power supply to the Fronius Smart Meter
- 9 Check the firmware version of the Fronius system monitoring. To ensure compatibility between the inverter and Fronius Smart Meter, the software must always be kept up-to-date. The update can be started via the inverter website or via Solar.web.
- 10 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 13)
- 11 Set the meter location via the Fronius system monitoring web interface under "Settings - Meter - Settings" (see "[Configuring the web interface](#)" on page 14)

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

IMPORTANT!

Always switch off the power supply before connecting the mains voltage lines to the Fronius Smart Meter.

Current path connection cross-section:

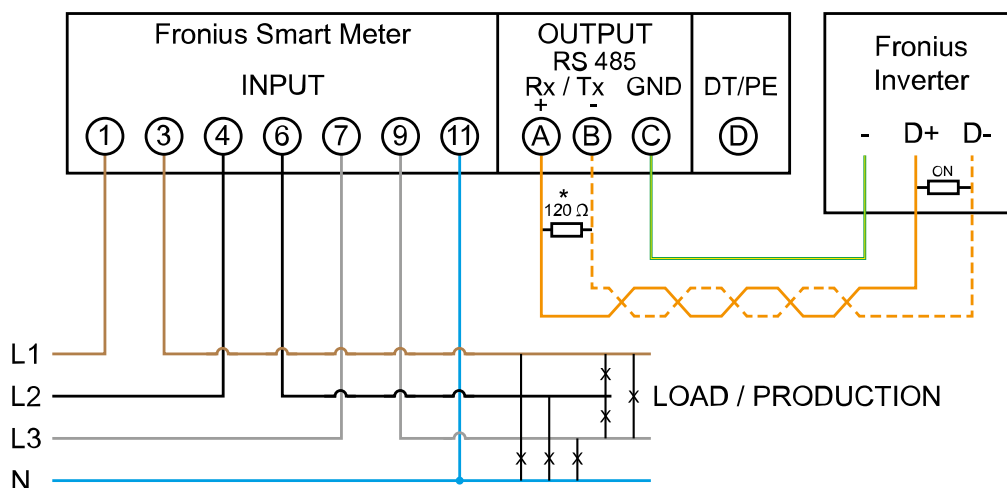
- Wire (rigid): min. 1 mm² / max. 16 mm²
- Wire (flexible): min. 1 mm² / max. 10 mm²
- Recommended torque: max. 1.2 Nm / max. 1.4 Nm

Data communication and neutral conductor 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

Do not lay more than one cable per screw terminal. Use terminal blocks if necessary.

Connect each voltage line to the terminal strip as shown in the diagram below.



* supplied with the device

Rate fuse according to the cross-section of the line.

⚠ WARNING!

Danger from mains voltage.

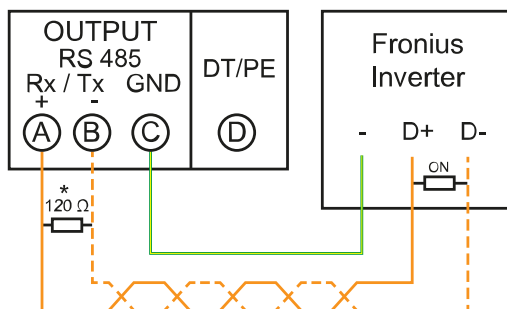
An electric shock can be fatal.

- Switch off the power supply before connecting the mains voltage inputs to the Fronius Smart Meter.

Connecting the data communication cable to the inverter

Connect the data communication connections of the Fronius Smart Meter to the Fronius system monitoring in the inverter.

- Connect A (Fronius Smart Meter) to D+ (Fronius inverter)
- Connect B (Fronius Smart Meter) to D- (Fronius inverter)
- Connect C (Fronius Smart Meter) to - (Fronius inverter)



If several Fronius Smart Meters are being installed, see chapter "**Multi-meter system**" on page "12".

ATTENTION! ?

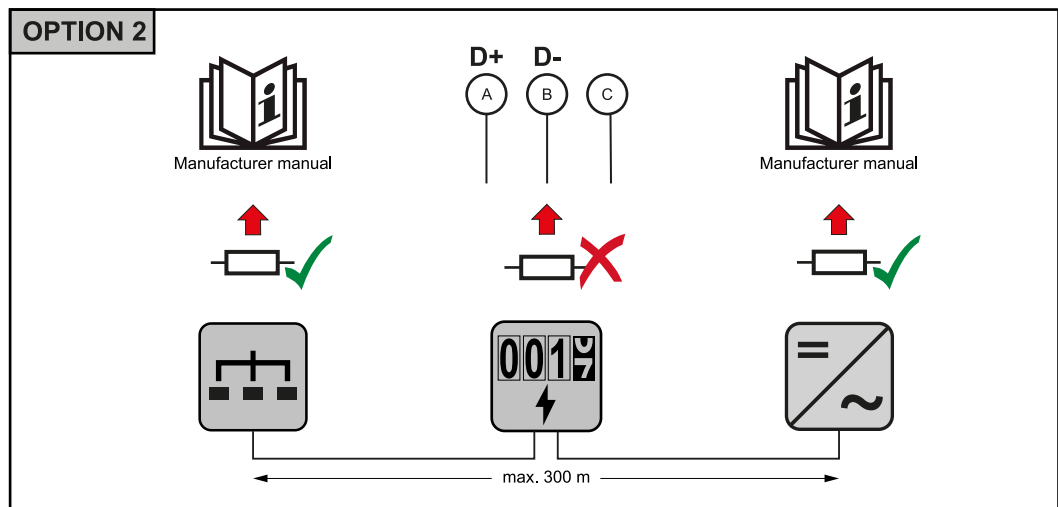
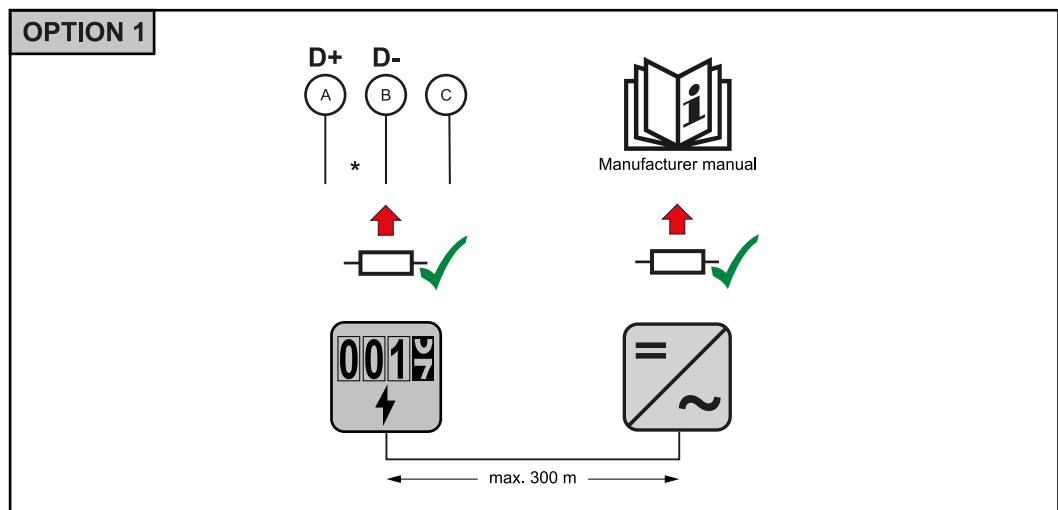
More information on successful commissioning.

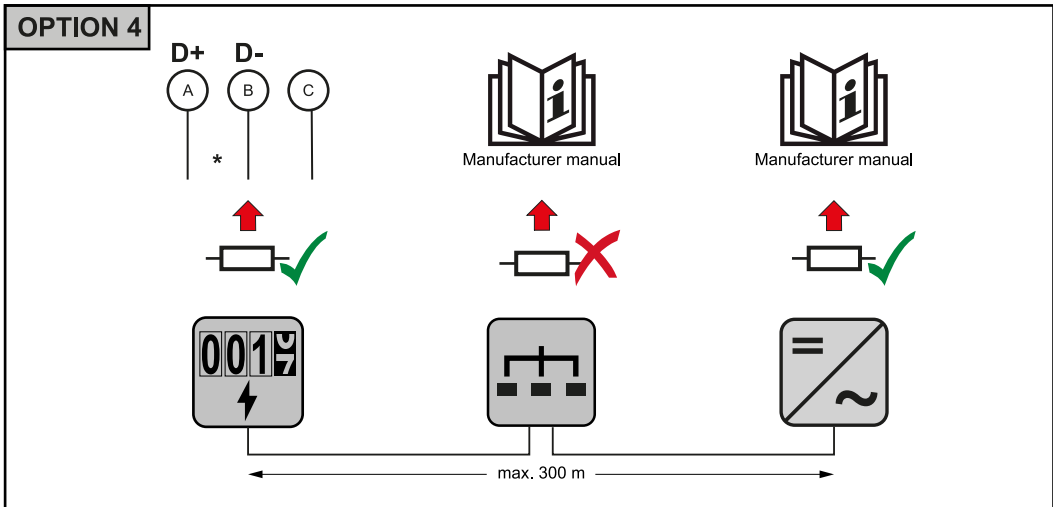
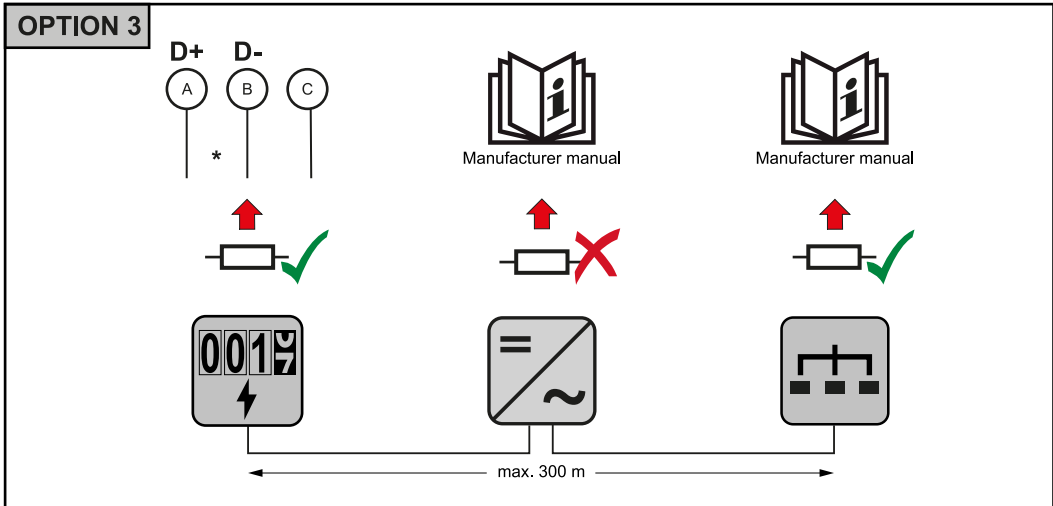
Note the following information about connecting the data communication cable to the inverter.

- ▶ Use cables of type CAT5 or higher.
- ▶ Use a mutual twisted cable pair for data lines that belong together (D+ and D-).
- ▶ If the output cables are close to the mains cabling, use wires or cables that are designed for 300 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

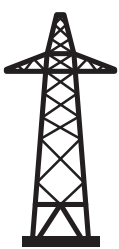
Due to interference, it is recommended that terminating resistors are used as illustrated below to ensure proper functioning.





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

Multi-meter system - Explanation of symbols



Grid
supplies the loads in the system if insufficient power is being generated by the solar 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.



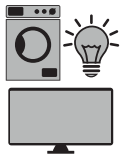
Secondary meter

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.



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

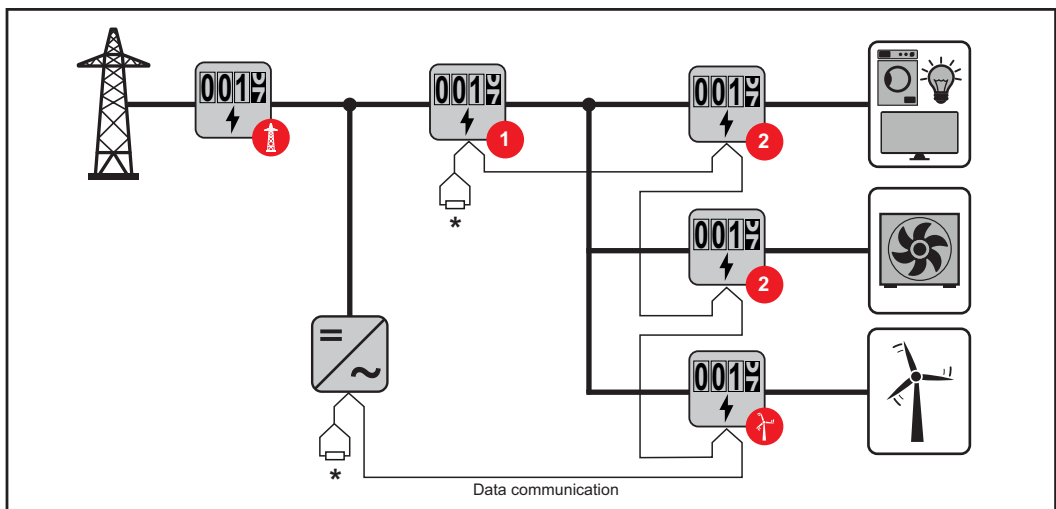


Terminating resistor

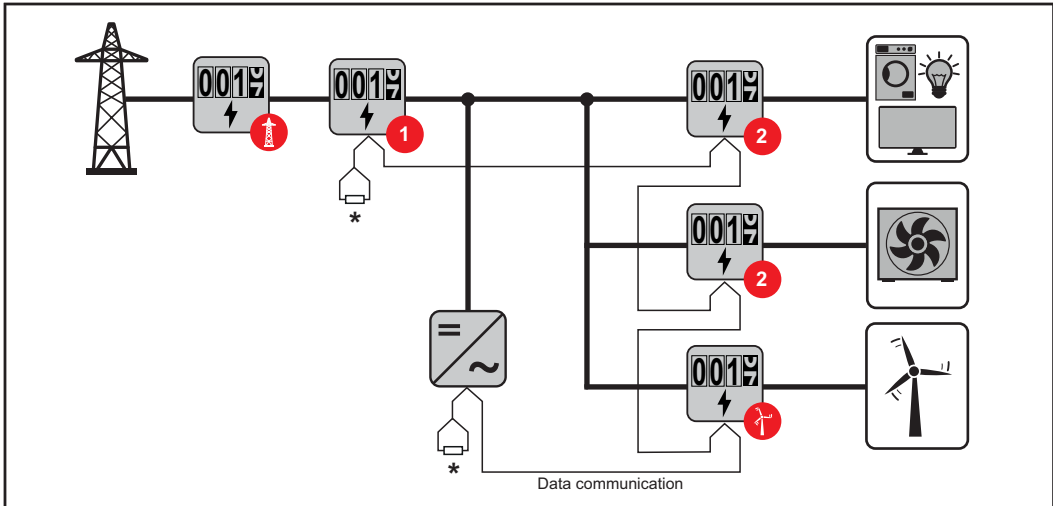
R 120 Ohm

Multi-meter system

If several Fronius Smart Meters are being installed, a separate address (see [Setting the address of the Fronius Smart Meter](#) page 13) must be set for each one. The primary meter always has address 1, all other meters are numbered in the address range from 2 to 14. Different types of Fronius Smart Meter can be used together.



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



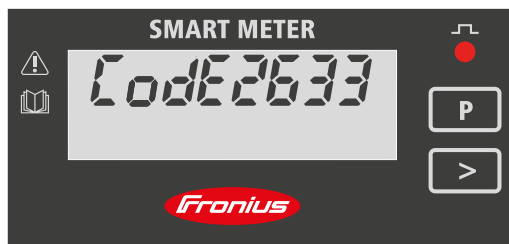
Position of the primary meter at the feed-in point. *Terminating resistor R 120 Ohm

The following must be observed in a multi-meter system:

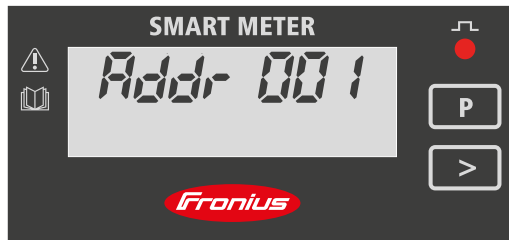
- Each Modbus address must only be assigned once.
- Terminating resistors must be positioned individually for each channel.
- The primary meter and the battery must be on different channels.
- The remaining Modbus nodes must be distributed equally.

Setting the address of the Fronius Smart Meter

Symbol	Name	Event	Function
	Prog	1 x	Increases the set value
	Page	1 x	Moves the cursor
	Enter	1 x	confirms the entry



- 1 Press "Prog" and "Page" at the same time to enter the code.
- 2 Enter 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

How to configure the address of the Fronius Smart Meter in the Fronius Dataman-ager:

- 1 Go to the Fronius Datamanager website.
 - Open the web browser.
 - In the address field, 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.
 - The Fronius Datamanager website will be displayed.
 - 2 Click on "Settings".
 - 3 Select the secondary meter from the drop-down list.

Click "Add".
 - 4 Enter the name of the secondary meter under "Name".

Enter the previously assigned address under "Modbus address".
 - 5 Add meter description.
 - 6 Repeat the process for additional meters, if necessary.
-

Configuring the web interface

Connect to the Fronius Datamanager via access point

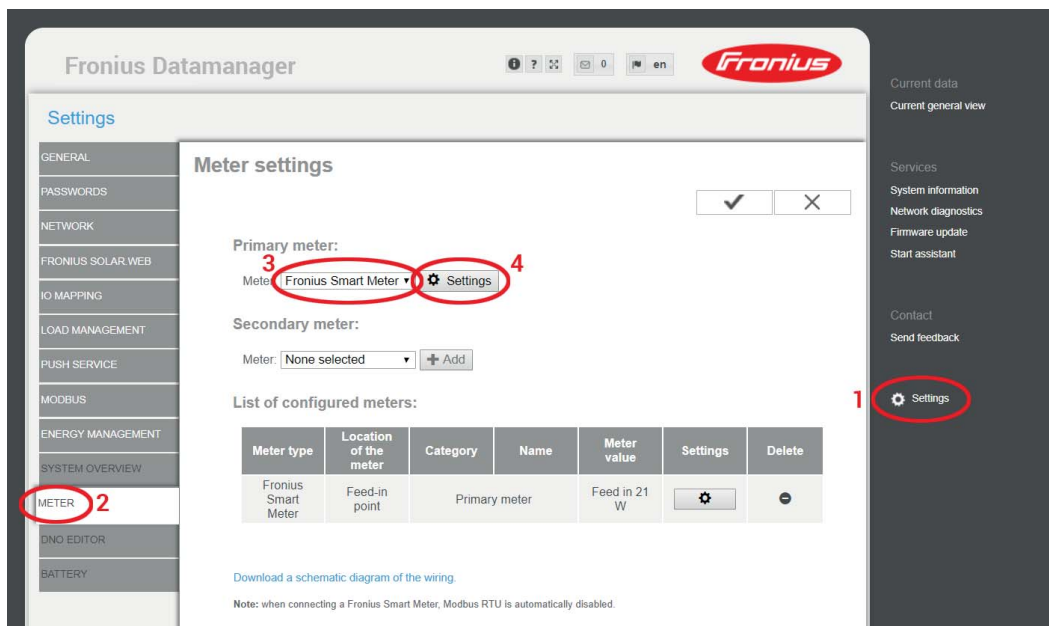
- 1 Activate the access point on the Datamanager.
- 2 Connect to the **Fronius_240.XXXXXXX** network.
- 3 Go to the Fronius Datamanager website.
 - Open IP address <http://192.168.250.181>.

Connect to the Fronius Datamanager via LAN

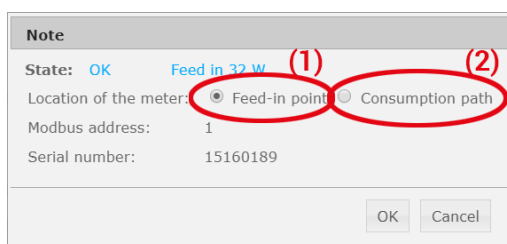
- 1 Connect the Datamanager and computer to a LAN cable.
- 2 Place the Datamanager IP switch in the 'A' position.
- 3 Go to the Fronius Datamanager website.
 - Open IP address <http://169.254.0.180>.

Configure the address of the Fronius Smart Meter in the Fronius Datamanager

- 1 Go to the Fronius Datamanager website.
- 2 Click on "Settings" (1).
- 3 Set a service password under "Password".
- 4 Click on "Meter" (2) in the menu (username: service, password see step 3).
- 5 Select the meter from the drop-down list (3).
- 6 Click on "Settings" (4) under primary meter.



7 Set the position of the meter – feed-in point (1) or consumption point (2) – in the pop-up window. For more information on the position of the Fronius Smart Meter, see [Positioning](#) on page 7.



8 Click "OK" when the status *OK* is displayed. If the *Timeout* status is displayed, repeat the procedure.

9 Click on the checkmark in the upper right corner to save the settings.

10 The Fronius Smart Meter is fully configured and ready for use.

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

Operation

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

Technical data

Technical data

Modbus transmission speed: 9600 baud

Parity bit: none

Software version: Datamanager 3.7.2 / Energypackage 1.3.3

Input	
Nominal voltage (4-conductor) Operating range	230 - 400 V ±15%
Power consumption in the voltage path (max. voltage)	2.2 VA (1.5 W) three-phase
Nominal frequency Tolerance	50 - 60 Hz 49 to 61 Hz
Nominal current, I _b	10 A
Maximum current, I _{max}	63 A
Starting current	40 mA
Short-time overload (EN/IEC 62053-21, EN/IEC 62053-23)	20 I _{max} / 0.5 s
Self-consumption - current path (max. current)	1.5 W for phase
Power factor Operating range (EN/IEC 62053-21, EN/IEC 62053-23)	Active cosφ 0.5 ind to 0.8 cap, Reactive senφ 0.5 ind to 0.5 cap
Current distortion factor	in acc. with EN 50470

Output	
Energy pulse Optical relay with NO contact SPST-NO, floating	
Contact load	27 V DC/AC - 50 mA
Assignable energy	Active or reactive energy
Pulse value (programmable)	1 imp/Wh - 10 Wh - 100 Wh - 1 kWh - 10 kWh or 1 imp/varh - 10 varh - 100 varh - 1 kvarh - 10 kvarh
Pulse duration (programmable)	50 - 100 - 150 - 200 - 300 - 400 - 500 ms
RS485 communication Electrically isolated from measuring input	
Standard	RS485 - 3 conductors
Transmission	Serial, asynchronous
Protocol	Compatible with Modbus RTU
Addresses	1 to 255
Number of bits	8
Stop bit	1
Parity bit	None - odd - even
Baud rate	4800 - 9600 - 19200 bit/s

Output	
Response time	≤ 200 ms

Insulation (EN/IEC 62052-11, 62053-21)	
Installation category	III
Degree of pollution	2
Insulation voltage	300 V phase-neutral

Electromagnetic compatibility	
Emission test	In acc. with EN/IEC 62052-11, EN 50470
Immunity test	In acc. with EN/IEC 62052-11, EN 50470

Operating conditions	
Reference temperature	23°C (±2°C)
Operating range	-25 to 55°C
Temperature limit for storage and transport	-40 to 70°C
Tropical model	
Max. power loss (for thermal dimensioning of the switch cabinet)	≤ 6 W
Mechanical environment Electromechanical environment	M1 E2

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)	IP51 front, IP20 connections
Weight	260 grams

Screw terminals	
Measuring input	
Wire (rigid)	min. 1 mm ² / max. 16 mm ²
Wire (flexible)	min. 1 mm ² / max. 10 mm ²
Recommended torque	1.2 Nm / max. 1.4 Nm
Output	
Wire (rigid)	min. 0.05 mm ² / max. 4 mm ²
Wire (flexible)	min. 0.05 mm ² / max. 2.5 mm ²
Recommended torque	0.5 Nm / max. 0.8 Nm

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.

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Under **www.fronius.com/contact** you will find the addresses
of all Fronius Sales & Service Partners and locations.



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spareparts.fronius.com