



Fronius Datamanager 2.0 **Fronius Datamanager Box 2.0**

EN-US

Operating Instructions

System monitoring



42,0426,0191,EA 010-11042017

Dear reader,

Introduction

Thank you for the trust you have placed in our company and congratulations on buying this high-quality Fronius product. These instructions will help you familiarize yourself with the product. Reading the instructions carefully will enable you to learn about the many different features your Fronius product has to offer. This will allow you to make full use of its advantages.

Please also note the safety rules to ensure greater safety when using the product. Careful handling of the product will repay you with years of safe and reliable operation. These are essential prerequisites for excellent results.

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General Information

General

General

Fronius Datamanager 2.0 is a network-compatible datalogger which combines the functionality of the Fronius Com Card, the Fronius Datalogger Web, the Fronius Power Control Card, and the Fronius Modbus Card on one plug-in card.

Fronius Datamanager 2.0 website provides a quick overview of the photovoltaic system. The website can be accessed with a web browser via a direct connection or on the internet, if properly configured.

Fronius Datamanager 2.0 is equipped with an easy-to-configure system monitoring feature with an automatic alarm. The alarm can be signaled via SMS or e-mail.

When connected to Fronius Solar.web, the real-time and archived data of a photovoltaic system can be easily accessed via the internet or the Fronius Solar.web App. No difficult configuration is required. Data is sent automatically from Fronius Datamanager 2.0 to Fronius Solar.web.

Available Versions of Fronius Datamanager 2.0

Fronius Datamanager 2.0 is available in the following versions:

- without Fronius Com Card function
(for Fronius Galvo Fronius Symo, and Fronius Primo inverters)
- with Fronius Com Card function
(for Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500 inverters)
- in external housing with Fronius Solar Net IN and Fronius Solar Net OUT connection sockets
(Fronius Datamanager Box 2.0, e.g. for inverters without plug-in card slots or for photovoltaic systems with a separate Fronius Datamanager 2.0)

Provided that the inverter is not fitted as standard with Fronius Datamanager 2.0, existing inverters can be upgraded with the Fronius Datamanager 2.0 plug-in card.

Applicable DAT-COM Components

The Fronius Datamanager 2.0 plug-in card installed in the inverter or the separate Fronius Datamanager Box 2.0 can be operated with the following DATCOM components:

- | | | |
|-------------|---|---|
| - up to 100 | x | Fronius inverters
(incl. the inverter in which Fronius Datamanager 2.0 is installed) |
| - up to 10 | x | Fronius Sensor Card or Fronius Sensor Box |
| - up to 10 | x | Fronius Public Display Card or Fronius Public Display Box |
| - up to 1 | x | Fronius Interface Card or Fronius Interface Box |
| - up to 200 | x | Fronius String Control |

Prerequisites for Operation

In order to ensure flawless data exchange online, it is essential to use an appropriate internet connection:

- For cabled internet solutions, Fronius recommends a download speed of at least 512 kbit/s and an upload speed of at least 256 kbit/s.
- For solutions with mobile internet services, Fronius recommends a minimum transmission standard of 3G with reliable signal strength.

These specifications do not provide an absolute guarantee of flawless operation. High error rates in transmission, fluctuating reception or dropouts can have an adverse effect on the online operation of Fronius Datamanager 2.0. Fronius recommends on-site testing to ensure that the connections meet the minimum requirements.

For operation with an antenna extension. If you want to connect your inverter to the Internet using WLAN, we recommend the following approach:

- Test your signal strength in the exact position where the inverter is to be installed and make sure the Datamanager 2.0 card is activated.
- Connect to the WLAN network using a smartphone, laptop or tablet and test the connection. The free website "www.speedtest.net" can be used to check whether the connection meets our recommended download speed of at least 512 kbit/s and an upload speed of 256 kbit/s.

Since Fronius Datamanager 2.0 acts as a data logger, no other data logger may be present in the Fronius Solar Net ring.

Only have one Fronius Datamanager 2.0 for each Fronius Solar Net ring.

Fronius Datamanager 2.0 must be in slave mode if existing in inverters Fronius Galvo and Fronius Symo.

The following DATCOM components may not be operated together with Fronius Datamanager 2.0 in a Fronius Solar Net ring:

- Fronius Power Control Card/Box
- Fronius Modbus Card
- Fronius Datalogger Web
- Fronius Personal Display DL Box
- Fronius Datalogger easy/pro
- Fronius Datamanager
- Fronius Datamanager 2.0 Box

To use Fronius Datamanager 2.0

- the plug-in card must be installed in an inverter,
or
- there must be a Fronius Datamanager Box 2.0 in the Fronius Solar Net ring.

The Fronius Datamanager 2.0 plug-in card and the Fronius Com Card may not be used together in one inverter.

**Inverter software
required**

Fronius Datamanager 2.0 requires the following inverter software versions for its operation:

Inverter	required software version according to display (MainControl)
Fronius IG 15–60	V2.9.4 or higher
Fronius IG 2000–5100	starting from series no 19153444
Fronius IG 300–500	V3.6.4.0 or higher
Fronius IG Plus 35–150	V4.22.00 or higher
Fronius IG TL *	-
Fronius CL	V4.22.00 or higher
Fronius Agilo *	-
Fronius Agilo Outdoor *	-
Fronius Agilo TL *	-
Fronius Galvo	-
Fronius Symo	-
Fronius Symo Hybrid	-
Fronius Primo	-
Fronius Eco	-

* Only in conjunction with Fronius Datamanager Box 2.0

The relevant inverter software version can be downloaded for free from our homepage (<http://www.fronius.com>).

If you have any questions, please contact pv-support@fronius.com.

Notes regarding radio certification

The Fronius Datamanager 2.0 plug-in card and Fronius Datamanager Box 2.0 are equipped with a wireless module.

Wireless modules in the USA require FCC certification:



FCC

This device conforms to the limit values for a Class B digital device, pursuant to Part 15 of the FCC regulations. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates and uses high frequency energy and, if not used in accordance with the instructions, may interfere with radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the device and the receiver.
- Connect the device to a different circuit than the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

FCC ID: PV7-WIBEAR11N-DF1

Industry Canada RSS

This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions:

- (1) this device is not permitted to cause harmful interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

IC ID: 7738A-WB11NDF1

Unless otherwise expressly permitted by the manufacturer, changes or modifications to the wireless module are not allowed and lead to a loss of the right of use of the device by the user.

Scope of Supply Fronius Datamanager 2.0 plug-in card

- 1 x Fronius Datamanager 2.0 plug-in card
- 1 x Fronius Solar Net termination plug
- 1 x 16-pin plug
- 1 x FCC sticker label, three parts

Additional equipment depending on the inverter:

- 1 x antenna	Fronius Galvo
- 1 x Fronius Solar Net termination plug	Fronius Symo Fronius Primo
- 1 x antenna	Fronius IG
- 1 x 1 m RG58 antenna cable	Fronius IG Plus
- 1 x mounting bracket	Fronius IG Plus V
- 1 x double-sided adhesive tape	

- 1 x antenna	Fronius IG 300 - 500
- 1 x 3 m RG58 antenna cable	Fronius CL
- 1 x mounting bracket	Fronius CL - USA
- 1 x double-sided adhesive tape	
- 1 x antenna	Fronius IG 2000 - 5100 - USA
- 1 x 0.4 m RG58 antenna cable	Fronius IG Plus - USA
- 1 x 3/4 in. screw joint	Fronius IG Plus V - USA
- 1 x 3/4 in. hex nut	
- 1 x 3/4 in. seal	

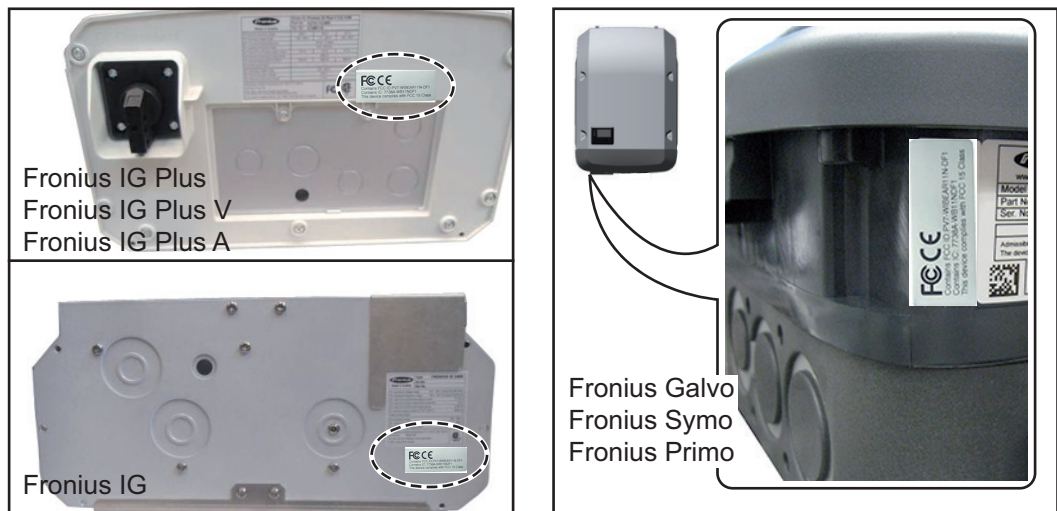
Fronius Datamanager Box 2.0

- 1 x Fronius Datamanager Box 2.0 with wall bracket
- 2 x Fronius Solar Net termination plugs
- 1 x 16-pin plug
- 1 x antenna
- 1 x 3 m RG58 antenna cable
- 1 x mounting bracket
- 1 x double-sided adhesive tape
- 2 x installation anchors + screws
- 1 x "DATCOM Cabling" leaflet

Using the Sticker Labels

IMPORTANT! If the three-part sticker label included in the scope of supply for Datamanager 2.0 has not already been affixed to the inverter at the factory, this must be done now.

Position of the sticker label on the inverter:



For Fronius Galvo, Fronius Symo, and Fronius Primo inverters, the sticker label information is located on the rating plate.

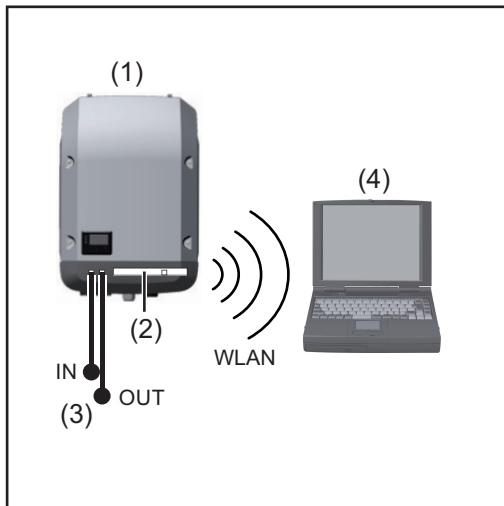
Using the sticker labels:



- (1) On the cardboard packaging of the inverter/Fronius Datamanager 2.0
- (2) On the Fronius Datamanager 2.0 plug-in card
- (3) On the inverter

Configuration Examples

Linking Inverters with a Fronius Datamanager 2.0 Plug-in Card to a PC:

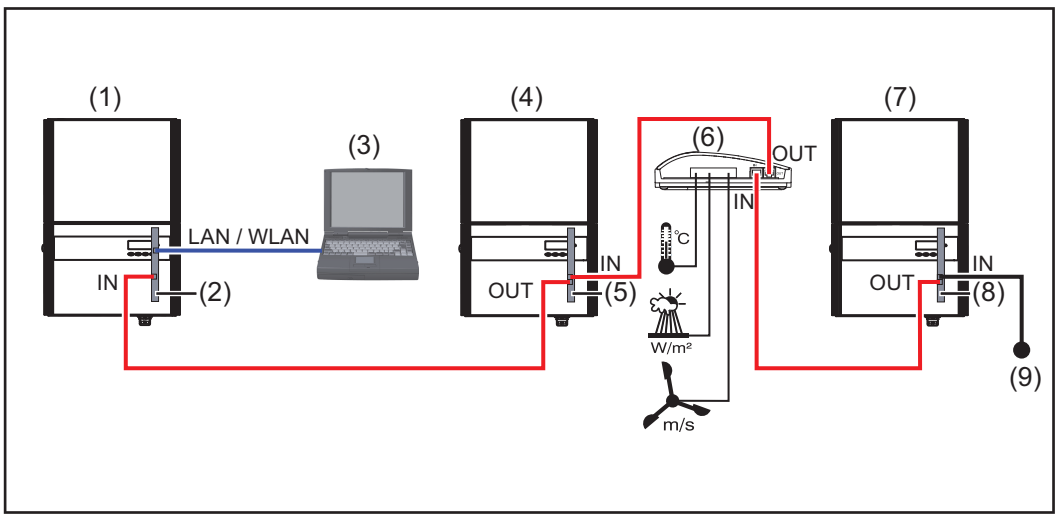


- (1) Inverter
- (2) Fronius Datamanager 2.0
- (3) Fronius Solar Net termination plug
- (4) PC/laptop



NOTE! When linking an inverter with Fronius Datamanager 2.0 to a PC, one Fronius Solar Net termination plug must be connected at each free IN or OUT connection.

Linking Inverters with a Fronius Datamanager 2.0 Plug-in Card to Other Inverters, a Fronius Sensor Box, and a PC:

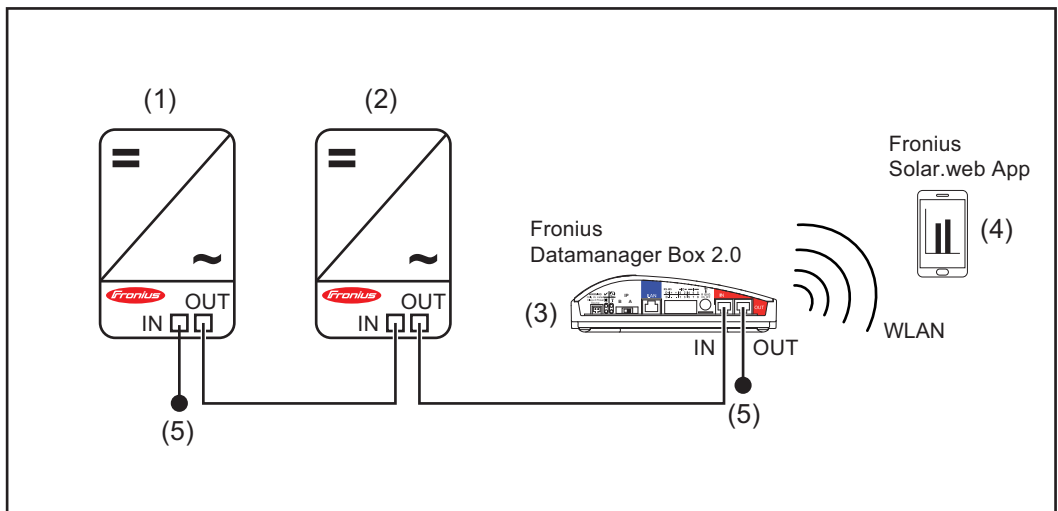


- | | | | |
|-----|-------------------------|-----|------------------------------------|
| (1) | Inverter with | (6) | Fronius Sensor Box |
| (2) | Fronius Datamanager 2.0 | (7) | Inverter |
| (3) | PC/laptop | (8) | Fronius Com Card |
| (4) | Inverter with | (9) | Fronius Solar Net termination plug |
| (5) | Fronius Com Card | | |

NOTE! When linking several DATCOM components to Fronius Datamanager 2.0: Use the data cable to connect the IN connection socket of Fronius Datamanager 2.0 with the OUT connection socket of the next DATCOM component. A Fronius Solar Net termination plug must be inserted into the empty IN connection socket of the last DATCOM component.

With the following inverters, the inverter with Fronius Datamanager 2.0 must always be connected either at the start or end of the data chain:
 Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA and Fronius IG 300–500.

Linking Two Inverters with Fronius Com Card or Com Card Function to a Fronius Datamanager Box 2.0 and a Smartphone:



- | | | | |
|-----|---|-----|---------------------------------------|
| (1) | Inverter with Fronius Com Card or Com Card function | (4) | Smartphone with Fronius Solar.web App |
| (2) | Inverter with Fronius Com Card or Com Card function | (5) | Fronius Solar Net termination plug |
| (3) | Fronius Datamanager Box 2.0 | | |



NOTE! When linking several DATCOM components with a Fronius Datamanager Box 2.0, each of the DATCOM components must be cabled from the IN connection socket to the OUT connection socket of the next DATCOM component. Fronius Solar Net termination plugs must be inserted into empty IN or OUT connection sockets of the last DATCOM components.

Calculating the data volume

General

When operating Fronius Datamanager 2.0, data is generated and needs to be transmitted online.

In order to select a suitable internet connection it is necessary to calculate the data volume.

The following data volume calculation provides an overview of the amount of data generated when operating Fronius Datamanager 2.0.

Firmware Versions for Calculating the Data Volume

The data volume calculation is based on Fronius Datamanager 2.0 firmware versions V 3.3.x-x and lower.

Higher firmware versions can cause a higher data volume due to their increased functional range.

Calculating Data Volumes

The data volume calculation depends on which Fronius Datamanager 2.0 functions are activated.

Function	Data volume	
Make real-time data available in Fronius Solar.web	Once ¹⁾	150 bytes 32 KB/h
View real-time data in Fronius Solar.web	Current Total View per sensor card/sensor box	42 KB/h + 300 KB/h
	Current Comparison View per inverter	13 KB/h + 4 KB/h
	Home	0 KB/h
	System Comparison View	0 KB/h
Send archived data/logging data to Fronius Solar.web	(Memory sectors per day ²⁾ x 4 KB) + 8 KB	
	Transmission time ³⁾	600 bytes/min
Send service messages or errors	For daily sending per service message or error	1 KB/day + 300 bytes
	For immediate sending per service message or error	1 KB

1) Only after a restart or if the internet connection has been disconnected

2) Calculation of memory sectors per day according to Chapter "Calculating Memory Capacity" on page 80

3) Depending on the quality of the internet connection

IMPORTANT: Since the values listed in the table are "rough data" for Fronius Datamanager 2.0 and the provider's bill may show discrepancies as a result of the various ways of calculating the transfer volume, the total values should be increased by 10–20%.

If the functions have been deactivated, no data volume is generated.

A certain data volume is also required to update the Fronius Datamanager 2.0 firmware. This data volume depends on the size of the relevant update package and cannot therefore be taken into account for any advance calculation of the data volume.

IMPORTANT: Fronius recommends a flat rate in order to avoid unforeseeable data volumes.

Calculation Examples

Example 1 - Home System

1 inverter;	+ 0.15 KB
No Fronius Sensor Card/Box;	
Fronius Datamanager 2.0 has a	+ 32 KB/h x 24 h = 768 KB
24-hour internet connection	
Archived data is sent to Fronius Solar.web;	
30 minutes transfer time;	+ 0.6 KB/min x 30 min = 18 KB
Inverters operate 14 h/day;	
15 minutes storage interval;	+ (1 memory sector/day x 4 KB) + 8 KB = 12 KB
(This results in 1 memory sector per day in accordance with Section "Calculating Memory Capacity")	
Real-time data is viewed over a 15-minute period every day	+ 42 KB/h x 0.25 h = 10.5 KB
1 service message sent each day to confirm average error rate	+ 1 service message x 1 KB = 1 KB
Subtotal without safety	0.15 KB 768.00 KB 18.00 KB 12.00 KB 10.50 KB 1.00 KB
	<hr/> 809.65 KB
A 10% safety factor is added to the calculation	809.65 KB + 10%
Final result	890.615 KB/day

Example 2 - Large System

100 inverters; + 0.15 KB
 10 Fronius Sensor Cards/Boxes;
 Fronius Datamanager 2.0 has a + 32 KB/h x 24 h = 768 KB
 24-hour internet connection

Archived data is sent to Fronius Solar.web;
 120 minutes transfer time; + 0.6 KB/min x 120 min = 72 KB
 Inverters operate 14 h/day;
 5 minutes storage interval; + (173 memory sectors/day x 4 KB)
 (This results in 173 memory sectors per + 8 KB
 day in accordance with Section "Calculat- = 700 KB
 ing Memory Capacity")

The current Total View and the current + 42 KB/h x 2 h
 Comparison View are viewed over a two- + 300 KB/h x 10 x 2 h
 hour period every day + (13 KB/h + 100 x 4 KB/h) x 2 h
= 6910 KB

50 service messages sent each day to + 50 service messages x 1 KB = 50 KB
 confirm average error rate

Subtotal without safety 0.15 KB
768.00 KB
72.00 KB
700.00 KB
6910.00 KB
50.00 KB

8,500.15 KB

A 10% safety factor is added to the calcu- 8,500.15 KB + 10%
 lation

Final result	9,350.165 KB/day (approx. 9.35 MB/day)
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General information for the network administrator

Requirements



NOTE! Configuring a network for Fronius Datamanager 2.0 requires knowledge of network technology.

If Fronius Datamanager 2.0 is being integrated into an existing network, the Fronius Datamanager 2.0 address must be adapted to the network.

Example: network address range = 192.168.1.x, subnet mask = 255.255.255.0

- An IP address between 192.168.1.1 and 192.168.1.254 must be assigned to Fronius Datamanager 2.0.
- The IP address selected may not be already assigned in the network.
- The subnet mask must correspond to the existing network (e.g., 255.255.255.0).

If Fronius Datamanager 2.0 will be sending service messages and/or data to Fronius Solar.web, then a gateway address and a DNS server address must also be entered. Fronius Datamanager 2.0 uses the gateway address to access the internet. The IP address of the DSL router can be used as a gateway address, for example.

IMPORTANT!

- Fronius Datamanager 2.0 may not have the same IP address as the PC/laptop!
- Fronius Datamanager 2.0 cannot connect itself to the internet. A router must be used for a DSL connection to the internet.

General Firewall Settings

The firewall must be configured as follows in order to use the different Fronius Datamanager 2.0 functions:

	49049/UDP output	15015/TCP input	80/TCP input
Sending service messages	x	-	-
Connecting to Fronius Datamanager 2.0 via Fronius Solar.web	x	-	-
Connecting to Fronius Datamanager 2.0 via Fronius Solar.access or Fronius Solar.service	-	x	x
Accessing the Fronius Datamanager 2.0 website	-	-	x

Service messages are sent via Fronius Solar.web.

Configure the firewall so that the IP address of Fronius Datamanager 2.0 can send data to port 49049/UDP from fdmp.solarweb.com.

DSL routers mostly enable you to send data to the internet and, therefore, do not normally have to be configured.

To access the Fronius Datamanager 2.0 web interface outside of the LAN:

- Configure the network router so that requests are forwarded to port 80/TCP on Fronius Datamanager 2.0

Sending Service Messages via a DSL Internet Connection

Normally, no additional router configuration is required for a regular DSL internet connection to access Fronius Solar.web and/or send service messages, because connections from the LAN to the internet are open.

Using Fronius Solar.web and Sending Service Messages

However, an internet connection is required to use Fronius Solar.web and send service messages.

Fronius Datamanager 2.0 cannot connect itself to the internet. A router must be used for a DSL connection to the internet.

Controls, connections and indicators

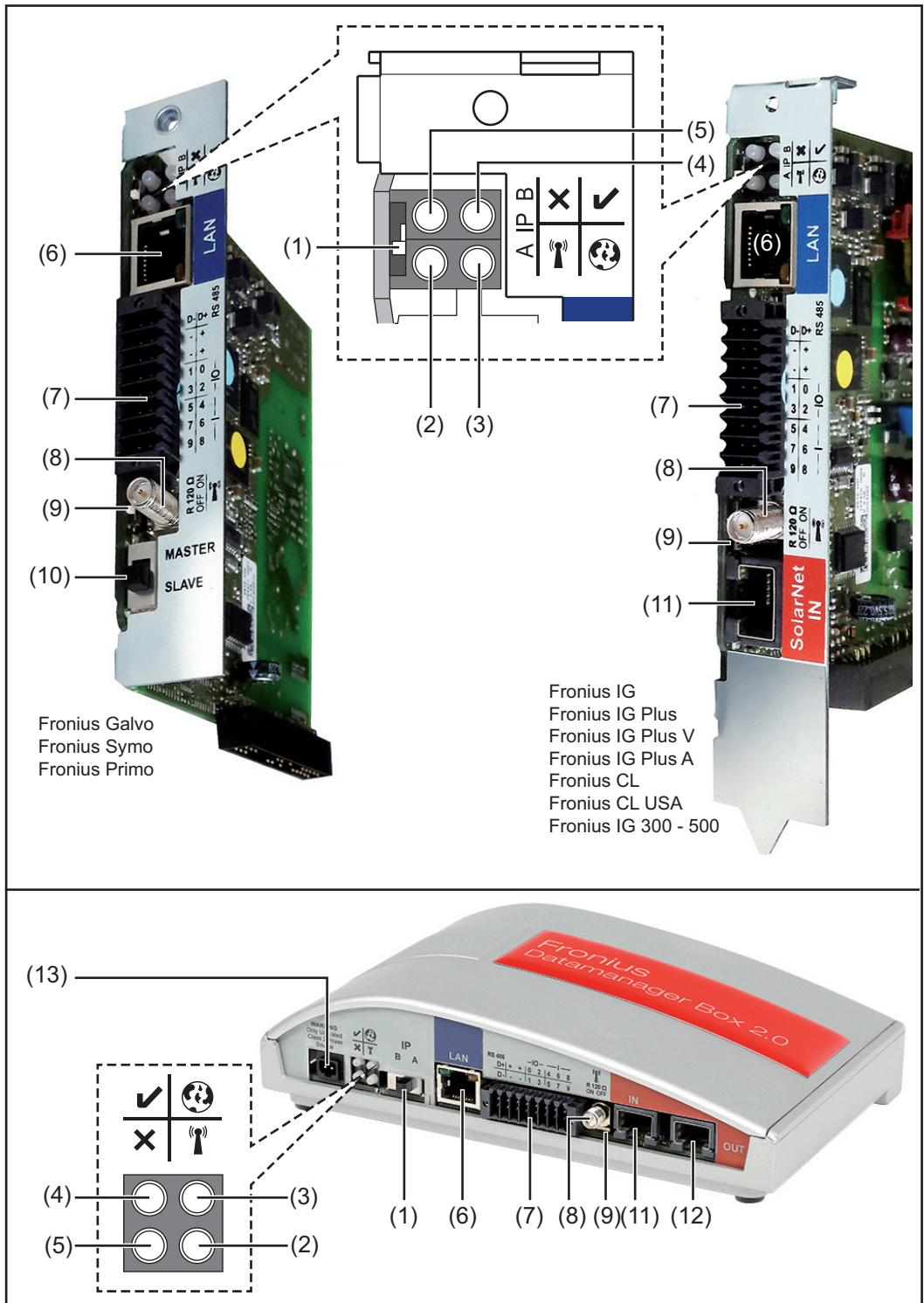
Safety



WARNING! Operating the device incorrectly can cause serious injury and damage. Do not use the functions described until you have thoroughly read and understood the following documents:

- these operating instructions
- all operating instructions for system components, especially the safety rules

Controls, Connections, and Indicators



No. Function

(1) IP switch

For changing the IP address:

A Specified IP address and opening the WLAN Access Point

Fronius Datamanager 2.0 uses fixed IP address 169.254.0.180 for a direct connection to a PC via LAN.

If the IP switch is set to position A, an Access Point for a direct WLAN connection to Fronius Datamanager 2.0 is also opened.

Access data for this Access Point:

Network name: FRONIUS_240.XXXXXX

Key: 12345678

Fronius Datamanager 2.0 can be accessed:

- via DNS name "http://datamanager"
- via IP address 169.254.0.180 for the LAN interface
- via IP address 192.168.250.181 for the WLAN Access Point

B Assigned IP address

Fronius Datamanager 2.0 works with an assigned IP address dynamic host configuration protocol (DHCP)

The IP address can be set on the Fronius Datamanager 2.0 website.

In the case of Fronius Datamanager 2.0 plug-in cards, the IP switch is located underneath the LEDs and is separate in the case of the Fronius Datamanager Box 2.0.

(2) WLAN LED

r

- Flashes green: Fronius Datamanager 2.0 is in service mode (IP switch on the Fronius Datamanager 2.0 plug-in card is set to position A or service mode was activated via the inverter display, the WLAN Access Point is opened)
- Lights up green: There is an existing WLAN connection
- Alternately flashes green/red: The length of time for which the WLAN Access Point is open after activation (1 hour) has been exceeded
- Lights up red: There is no existing WLAN connection
- Flashes red: Faulty WLAN connection
- Does not light up: Fronius Datamanager 2.0 is in slave mode

(3) Fronius Solar.web connection LED


- Lights up green: There is an existing connection to Fronius Solar.web
- Lights up red: There is no existing connection to Fronius Solar.web, but one is required
- Does not light up: No connection to Fronius Solar.web is required

(4) Supply LED

✓

- Lights up green: Sufficient power supply from Fronius Solar Net; Fronius Datamanager 2.0 is operational
- Does not light up: No power or insufficient power supply from Fronius Solar Net – an external power supply is required
or
Fronius Datamanager 2.0 is in slave mode
- Flashes red: During an update process

IMPORTANT! Do not interrupt the power supply during an update process.

- Lights up red: Update process failed
-

No. Function

(5) Connection LED

x

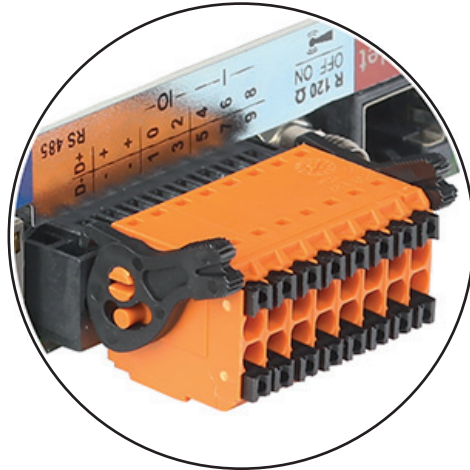
- Lights up green: There is an active connection within Fronius Solar Net
 - Lights up red: There is an interrupted connection within Fronius Solar Net
 - Does not light up: Fronius Datamanager 2.0 is in slave mode
-

(6) LAN connection socket

Ethernet interface colored blue for connecting the Ethernet cable

(7) I/Os

Digital inputs and outputs



D-	D+	RS485
-	+	
-	+	
1	0	— —IO—
3	2	— —IO—
5	4	— —IO—
7	6	— —IO—
9	8	— —IO—

Modbus RTU 2-wire (RS-485):

- D- Modbus data -
D+ Modbus data +

Int./ext. power supply

- GND
+ U_{int}/U_{ext}
Output for internal voltage 10.8 V/12.8 V
or
Input for an external supply voltage
>12.8–24 V DC (+ 20%)

10.8 V:

Fronius IG, Fronius IG Plus, Fronius IG Plus V,
Fronius IG Plus A, Fronius CL, Fronius CL USA,
Fronius IG 300–500

12.8 V:

Fronius Galvo, Fronius Symo

Digital inputs: 0–3, 4–9

Voltage level: low = min. 0 V–max. 1.8 V; high = min. 3 V–max. 24 V DC (+ 20%)

Input currents: dependent on input voltage; input resistance = 46 kOhm

No. Function**Digital outputs: 0–3**

Switching capacity when supplied by the Fronius Datamanager 2.0 plug-in card: 3.2 W, 10.8/12.8 V in total for all 4 digital outputs

10.8 V:

Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500

12.8 V:

Fronius Galvo, Fronius Symo

Switching capacity when supplied by an external power supply with min. 12.8–max. 24 V DC (+ 20%), connected to Uint/Uext and GND: 1 A, 12.8–24 V DC (depending on the external power supply) per digital output

The connection to the I/Os is made via the supplied mating connector.

(8) Antenna plug

For screwing on the WLAN antenna or WLAN antenna extension cable, depending on the inverter

(9) Modbus termination switch (for Modbus RTU)

Internal bus termination with 120-ohm resistance (yes/no)

Switch in position "on": Termination resistance of 120 ohm active

Switch in position "off": No termination resistance active



IMPORTANT! The termination resistance must be active for the first and last device in an RS-485 bus.

(10) Fronius Solar Net master/slave switch

For switching between master and slave mode within a Fronius Solar Net ring

IMPORTANT! All LEDs on the Fronius Datamanager 2.0 plug-in card are off in slave mode.

(11) Fronius Solar Net IN connection socket

Fronius Solar Net input colored red for connecting to other DATCOM components (e.g., inverters, sensor cards)

For Fronius Datamanager 2.0 with Fronius Com Card function only!
(for Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500 inverters)

No. Function

(12) Fronius Solar Net OUT connection socket

Fronius Solar Net output colored red for connecting other DATCOM components (e.g., inverters, sensor cards)

For Fronius Datamanager Box 2.0 only!

(13) External power supply connection

For connecting an external power supply when the power supply within Fronius Solar Net is insufficient (e.g., when too many DATCOM components are installed in Fronius Solar Net).

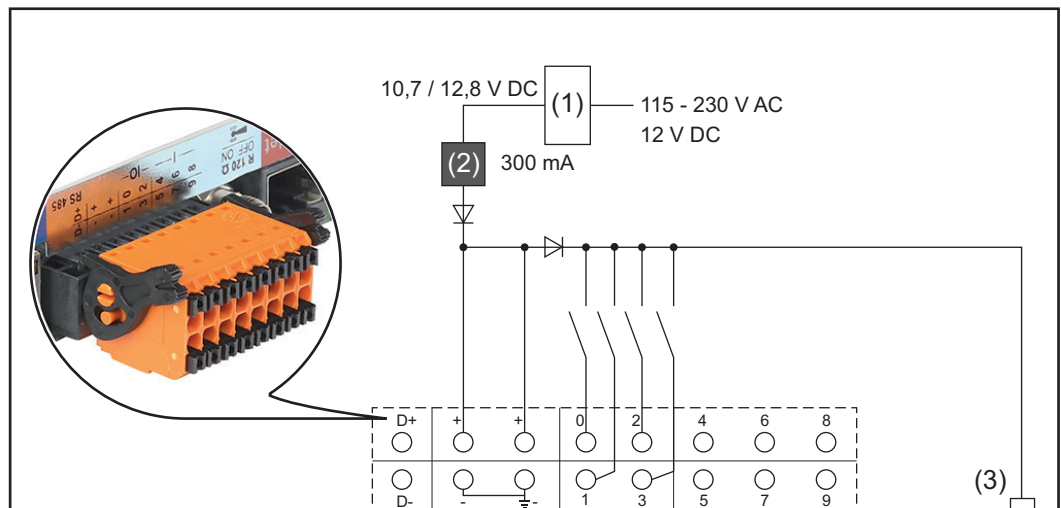
IMPORTANT! The external power supply unit for the Fronius Datamanager Box 2.0 must be securely disconnected from components supplying grid voltage (SELV or Class 2 for USA/Canada).

The output power of the power supply unit may not exceed a max. of 15 VA/ 1.25 A.

If the power supply is sufficient, the Supply LED (4) lights up green.

For an external power supply, use only the Fronius power supply unit!

For Fronius Datamanager Box 2.0 only!

Schematic Connection of I/Os**Supply via the Fronius Datamanager 2.0 plug-in card:**

- (1) Power supply
(for Fronius Datamanager 2.0 with Fronius Com Card function only)
- (2) Current limit
- (3) Fronius Solar Net IN connection socket

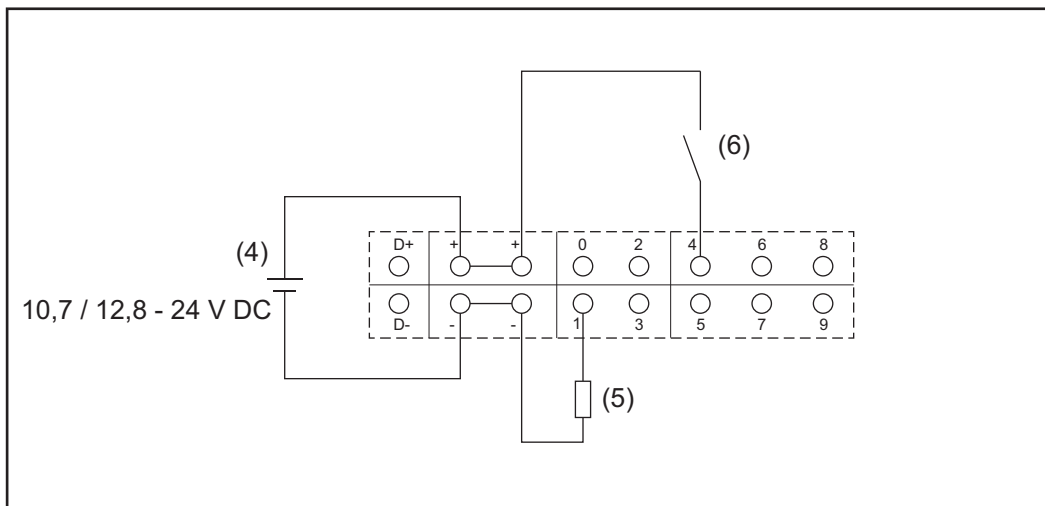
115–230 V AC:

Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500

12.8 V DC:

Fronius Galvo, Fronius Symo, Fronius Primo

Supply via external power supply:



- (4) External power supply
- (5) Load
- (6) Switch



NOTE! When the supply is via an external power supply, the external power supply must be galvanically isolated.

10.7 V DC:

Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500

12.8 V DC:

Fronius Galvo, Fronius Symo, Fronius Primo

Installing Fronius Datamanager 2.0

Inserting Fronius Datamanager 2.0 into an Inverter

General

Please see the operating instructions for the respective inverter for information regarding plug-in card installation. Please note the safety and warning information in your inverter's operating instructions.

IMPORTANT! Before inserting the Fronius Datamanager 2.0 plug-in card, remove any existing Fronius Com Card, Fronius Power Control Card, or Fronius Modbus Card!

Safety



WARNING! An electric shock can be fatal. Danger from grid voltage and DC voltage from solar modules.

- The connection area should only be opened by a licensed electrician.
- The separate power stage set area should only be disconnected from the connection area after first being disconnected from the grid power.
- The separate power stage set area should only be opened by Fronius-trained service personnel.

Before making any connections, make sure that the AC and DC sides are disconnected from the inverter, e.g.:

- Switch off the AC automatic circuit breaker for the inverter
- Cover solar modules

Please observe the 5 safety rules.



WARNING! An electric shock can be fatal. Danger from residual voltage from capacitors.

You must wait until the capacitors have discharged.



NOTE! Follow general ESD precautions when handling plug-in cards.

Fronius Datamanager 2.0 Plug-in Positions

The Fronius Datamanager 2.0 plug-in position is specified for each inverter type:

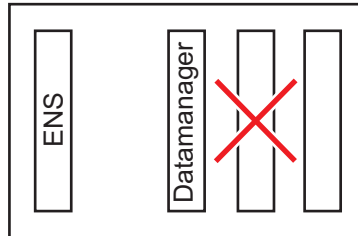
Inverter	Plug-in position
Fronius IG 15 - 60	ENS slot ^{*)}
Fronius IG 300 - 500	ENS slot ^{*)}
Fronius IG Plus, Fronius IG Plus V	on the far right, unless a ML-MON plug-in card is present
Fronius CL	on the far right, unless a ML-MON plug-in card is present
Fronius Galvo	does not matter
Fronius Symo	does not matter
Fronius Primo	does not matter

*) If an ENS plug-in card is inserted in the ENS slot: Insert Fronius Datamanager 2.0 in the next slot to the right of the ENS slot.

IMPORTANT!

The next slot must be kept free.

Never remove an existing ENS plug-in card.



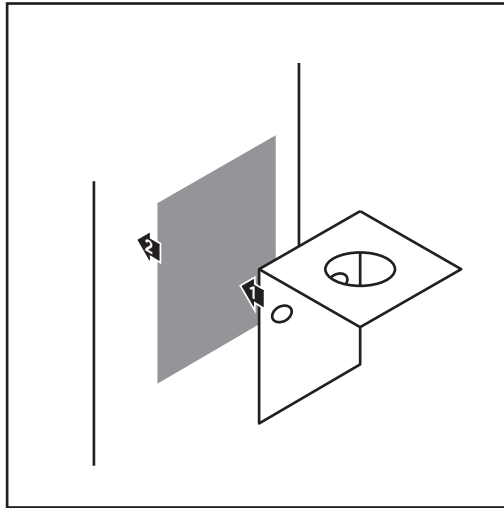
Installing and connecting WLAN antennas

General

Depending on the inverter the WLAN antenna must be either installed in the inverter or mounted to the outside of the inverter.

IMPORTANT! Always follow the relevant operating instructions when opening an inverter. Observe the safety guidelines.

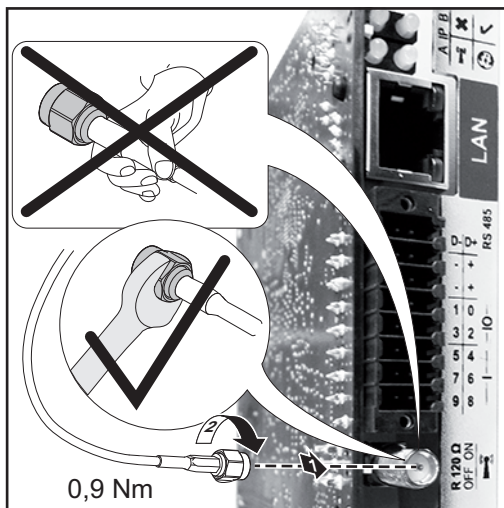
Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius CL: Installing and Connecting Antennas



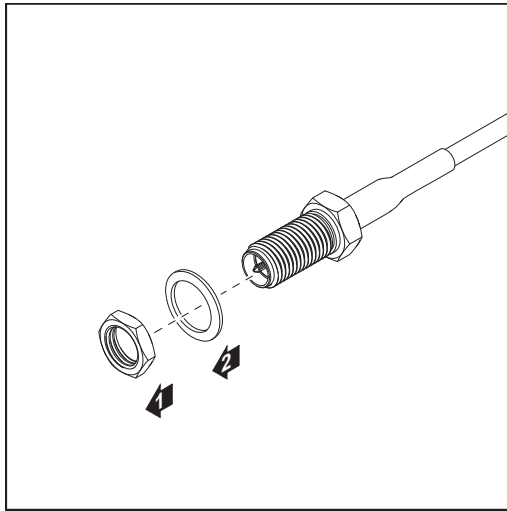
- 1 Use the double-sided adhesive tape to fasten the mounting bracket to the outside of the inverter housing or, if suitable for the antenna cable, secure it in a position near the inverter

IMPORTANT! The double-sided adhesive tape only reaches its maximum bond strength after 24 hours.

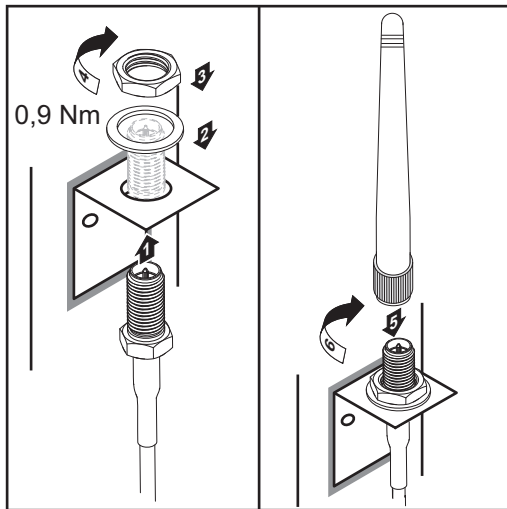
IMPORTANT! The mounting bracket may not be screwed to the inverter housing. It may however be fitted in a nearby position. The relevant screws are not included in the scope of delivery and must be selected by the installer.



- 2 Connect the antenna cable to the antenna socket on the Fronius Datamanager 2.0 plug-in card
- 3 Run the antenna cable out through the DATCOM opening on the inverter
- 4 If possible, secure the cable with a strain relief device
- 5 Close or seal the DATCOM opening in accordance with the inverter operating instructions



6 Remove the hex nut and washer from the outside thread of the antenna cable

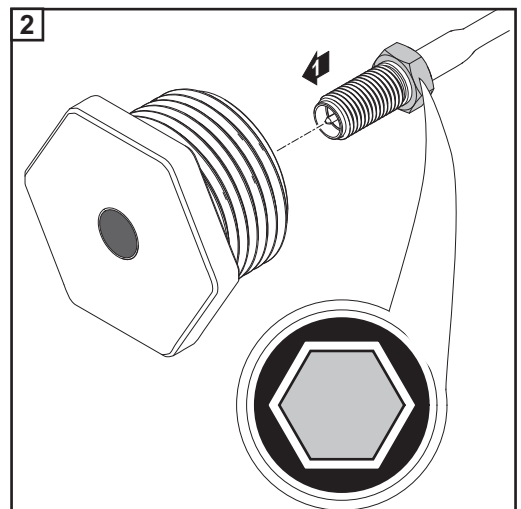
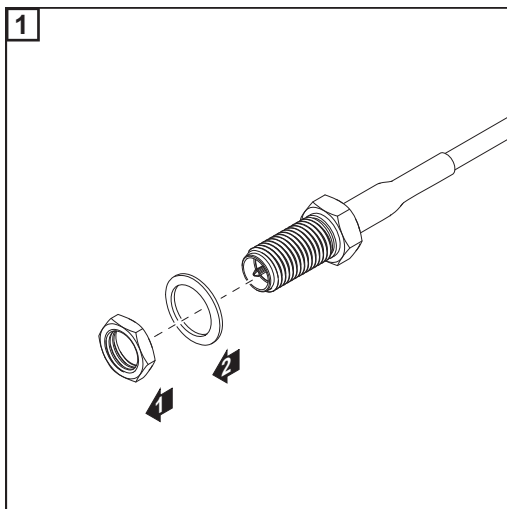


7 Run the antenna cable through the drill hole on the mounting bracket

8 Attach the lock washer and screw on the hex nut

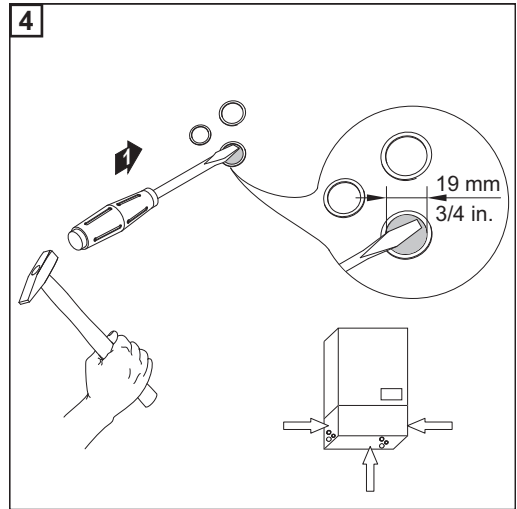
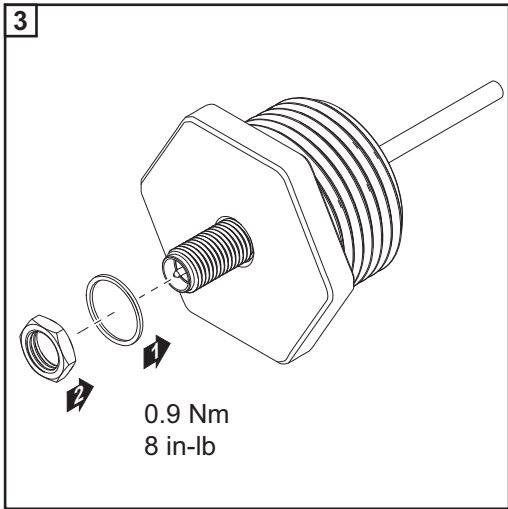
9 Screw on the antenna

**Fronius IG USA,
Fronius IG Plus
USA, Fronius IG
Plus V USA: In-
stalling and Con-
necting Antennas**

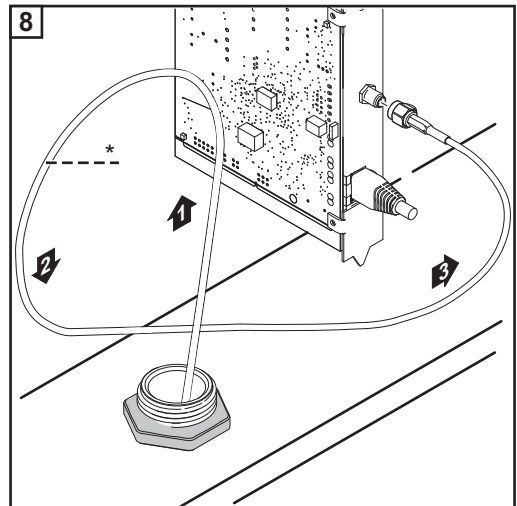
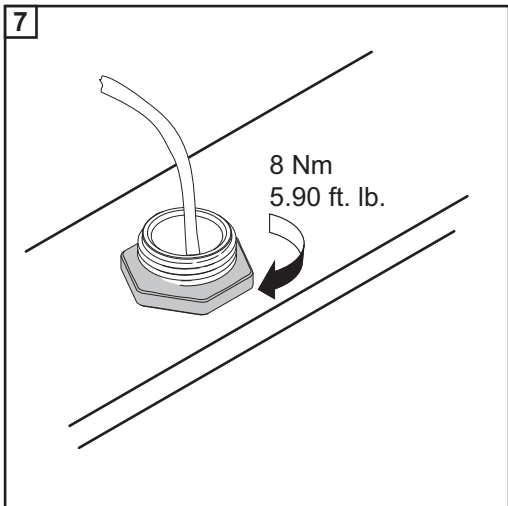
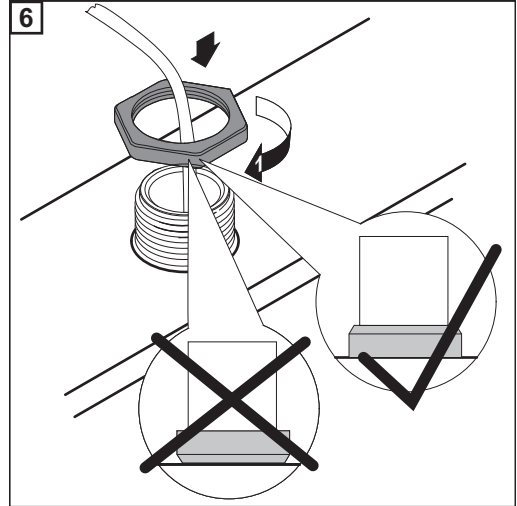
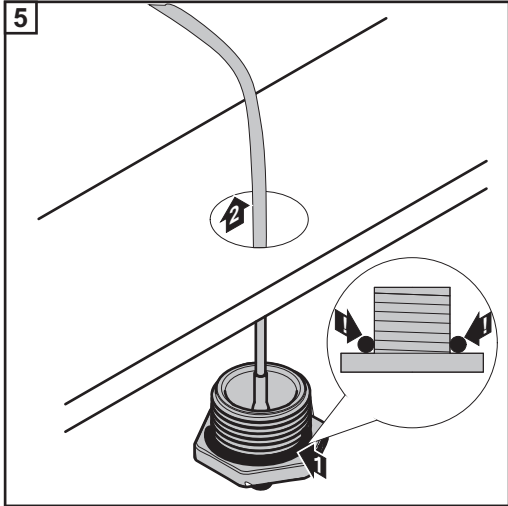


CAUTION! Danger of short circuit caused by loose metal parts from knockouts. Loose metal parts in the inverter may cause short circuits when the inverter is powered up. When removing knockouts, make sure that

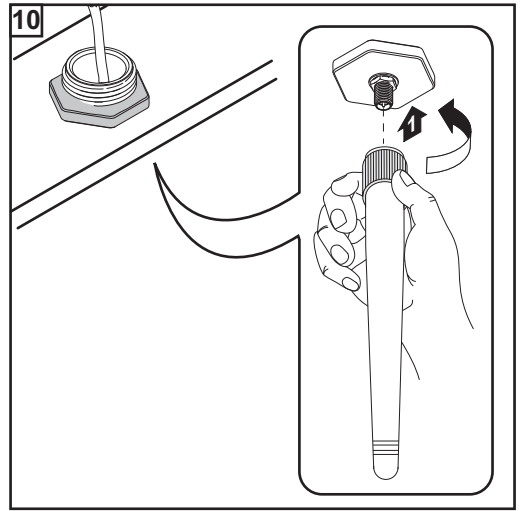
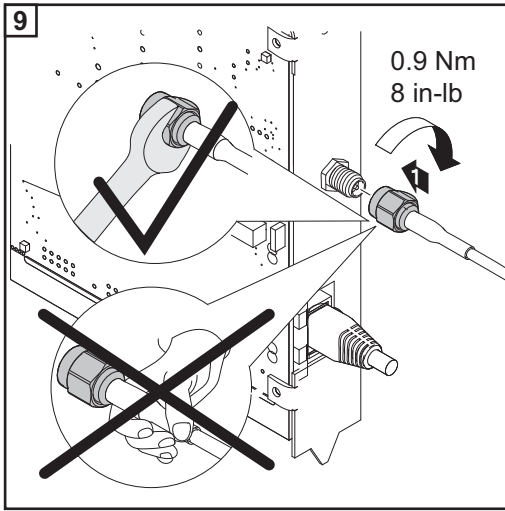
- no loose metal parts fall into the inverter,
- any metal pieces that do fall into the inverter are removed immediately.



NOTE! In order to ensure leak-tightness, the sealing ring must be fitted to the antenna screw joint before inserting the antenna screw joint into the inverter housing.



* Bending radius of the antenna cable: at least 25.4 mm/1 in.



Installing Fronius Datamanager 2.0 in Fronius Solar Net

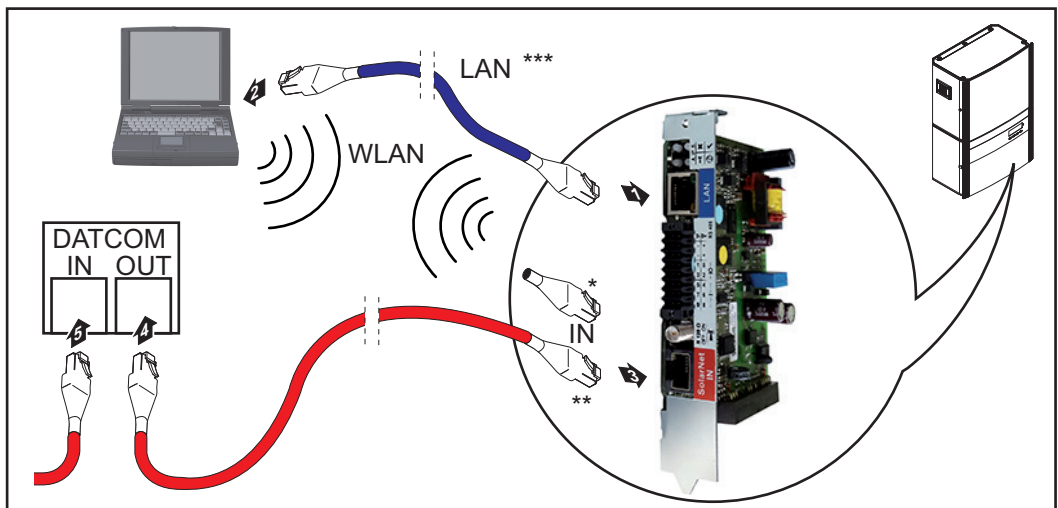
Safety

CAUTION! DATCOM components and/or the PC/laptop may be seriously damaged if the Ethernet or Fronius Solar Net cables are connected incorrectly to the Fronius Datamanager 2.0.

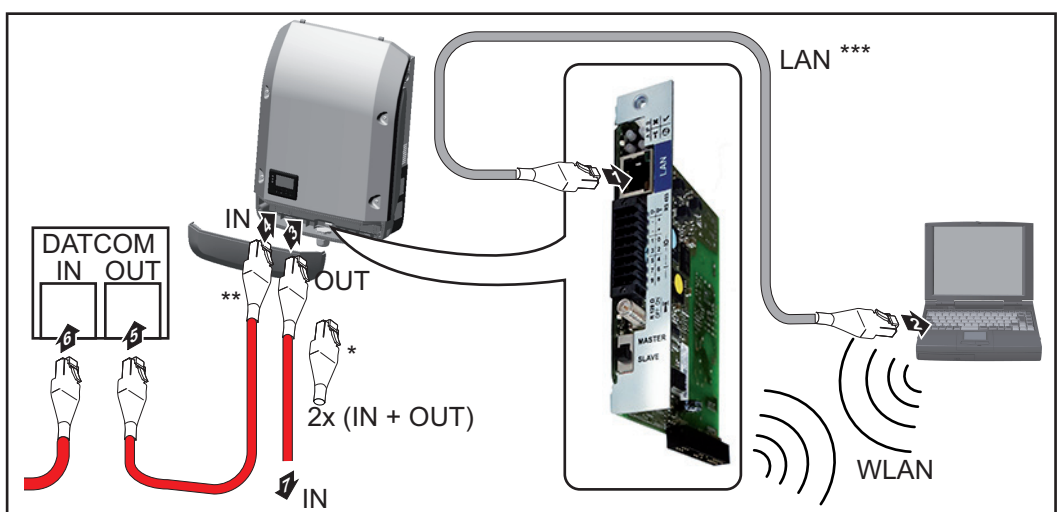
- The Ethernet cable should only be inserted into the LAN connection socket (colored blue).
- The Fronius Solar Net cable should only be inserted into the Fronius Solar Net IN connection socket (colored red).

Installing Inverters with Fronius Datamanager 2.0 in Fronius Solar Net

Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500:



Fronius Galvo, Fronius Symo, Fronius Primo:



- * Fronius Solar Net termination plug, if only one inverter with Fronius Datamanager 2.0 is linked to a PC
- ** Fronius Solar Net cable, if an inverter with Fronius Datamanager 2.0 is linked to a PC and other DATCOM components

*** Ethernet cable is not included in the scope of supply for the Fronius Datamanager 2.0/Fronius Datamanager Box 2.0

Connection between Fronius Datamanager 2.0 and PC via LAN or WLAN

- 1 Insert and lay the Ethernet cable in the inverter like a data communication cable in accordance with the operating instructions for the inverter
- 2 Insert the Ethernet cable into the LAN connection socket
- 3 Insert the Ethernet cable into the PC/laptop or into a suitable network connection socket
- 4 If only one inverter with Fronius Datamanager 2.0 is linked to a PC:

Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300 - 500:

Insert the Fronius Solar Net termination plug into the Fronius Solar Net IN connection socket

Fronius Galvo, Fronius Symo, Fronius Primo:

Insert a Fronius Solar Net termination plug into the Solar Net IN connection socket and the Solar Net OUT connection socket

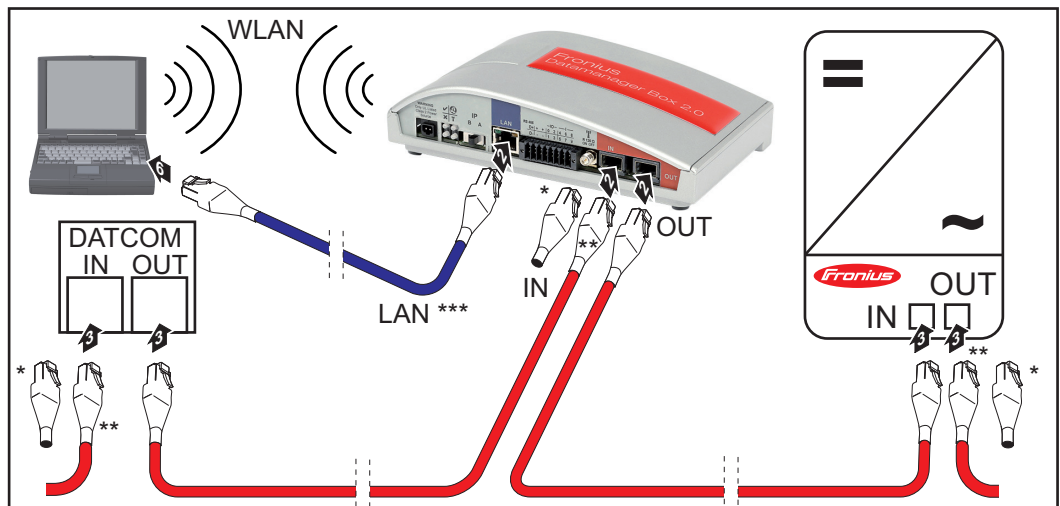
If other DATCOM components are connected to the network, besides the inverter with Fronius Datamanager 2.0:

Insert the Fronius Solar Net cable into the Fronius Solar Net IN connection socket of the Fronius Datamanager 2.0

- 5 Connect the other DATCOM components

IMPORTANT! A Fronius Solar Net termination plug must be inserted into the empty IN connection socket of the last DATCOM component.

Installing Fronius Datamanager Box 2.0 in Fronius Solar Net



- * Fronius Solar Net termination plug for the last DATCOM component
- ** Fronius Solar Net cable, if a Fronius Datamanager Box 2.0 is linked to a PC and other DATCOM components
- *** Ethernet cable is not included in the scope of supply for the Fronius Datamanager 2.0/Fronius Datamanager Box 2.0

Connection between Fronius Datamanager 2.0 and PC via LAN or WLAN

- 1 Insert the Ethernet cable into the LAN connection socket

- 2 Insert the Ethernet cable into the PC/laptop or into a suitable network connection socket
- 3 Insert the Fronius Solar Net cable into the Fronius Solar Net OUT connection socket of the Fronius Datamanager Box 2.0
- 4 Insert the Fronius Solar Net cable into the Fronius Solar Net IN connection socket of the inverter as per the inverter operating instructions
- 5 Connect the other DATCOM components

IMPORTANT! A Fronius Solar Net termination plug must be inserted into each empty IN or OUT connection socket of the last DATCOM components.

Fronius Solar Net Cabling

Fronius Solar Net clients Inverters with Fronius Datamanager, Fronius Hybridmanager or Fronius Com Card, DAT-COM components with external housing or other DATCOM components will hereinafter be referred to as Fronius Solar Net clients.

Fronius Solar Net Client Cabling The data connection for the Fronius Solar Net client is a 1:1 connection using 8-pin data cables and RJ-45 plugs.
The overall line length in a Fronius Solar Net ring must not exceed 1000 m.

Requirements for the Solar Net Data Cables Shielded CAT5 (new) and CAT5e (old) cables compliant with ISO 11801 and EN 50173 must be used for the Fronius Solar Net client cabling. Other cables are not permitted.









IMPORTANT! Do not use ISO/IEC-11801 U/UTP cables!

Permitted cables:

- | | | |
|---------|----------|---------|
| - S/STP | - F/FTP | - F/UTP |
| - F/STP | - SF/FTP | - U/FTP |
| - S/FTP | - S/UTP | - U/STP |

The shield must be crimped onto a CAT5-compatible shielded plug.

Due to the fact that the wires in Ethernet cables are twisted, you must make sure the twisted pairs of wires are assigned correctly for cabling in accordance with TIA/EIA-568B:

Fronius Solar Net contact	Pair no.	Color
1 +12 V	3	 white/orange line
2 GND	3	 orange/white line or orange
3 TX+ IN, RX+ OUT	2	 white/green line
4 RX+ IN, TX+ OUT	1	 blue/white line or blue
5 RX- IN, TX- OUT	1	 white/blue line
6 TX- IN, RX- OUT	2	 green/white line or green
7 GND	4	 white/brown line
8 +12 V	4	 brown/white line or brown

Cabling compliant with TIA/EIA-568B

- Make sure that the wires are assigned correctly.
- When setting up an independent ground connection (e.g., in patch panels), make sure that the shield is grounded on one side of the cable only.

The following structured cabling standards must generally be observed:

- EN 50173-1 for Europe
- ISO/IEC 11801:2002 internationally
- TIA/EIA 568 for North America

Rules for use of copper cables apply.

Preassembled data cables

The following preassembled data cables are available from Fronius:

- CAT5 cable 1 m ... 43,0004,2435
- CAT5 cable 20 m ... 43,0004,2434
- CAT5 cable 60 m ... 43,0004,2436

The cables listed above are 8-pin, 1:1 LAN network cables, shielded and twisted, including RJ 45 plugs.

IMPORTANT! Data cables are not UV resistant. They should be protected from sunlight when laid outdoors.

Installing Fronius Datamanager 2.0 – Overview

Safety



WARNING! Operating the device incorrectly can cause serious injury and damage. Do not use the functions described until you have thoroughly read and understood the following documents:

- these operating instructions
- all operating instructions for system components, especially the safety rules



NOTE! Installing Fronius Datamanager 2.0 requires knowledge of network technology.

Starting for the First Time via the Fronius Solar.web App



NOTE! The Fronius Solar.web App makes starting Fronius Datamanager 2.0 for the first time significantly easier. The Fronius Solar.web App is available in the relevant app store.



To start Fronius Datamanager 2.0 for the first time,

- the Fronius Datamanager 2.0 plug-in card must be installed in the inverter, or
- there must be a Fronius Datamanager Box 2.0 in the Fronius Solar Net ring.

IMPORTANT! To establish a connection to Fronius Datamanager 2.0, the end device in question (e.g., laptop, tablet) must be configured as follows:

- "Obtain an IP address automatically (DHCP)" must be activated



WARNING! An electric shock can be fatal. Danger from grid voltage and DC voltage from solar modules.

Before opening the inverter:

- You must wait until the capacitors have discharged.
- Follow the operating instructions when opening the inverter.
- Observe the safety rules and safety instructions contained in the inverter's operating instructions.

- 1** Connect the inverters with Fronius Datamanager 2.0 or Fronius Datamanager Box 2.0 in Fronius Solar Net

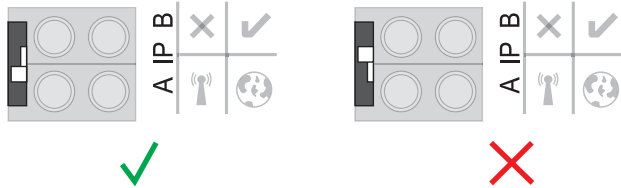
IMPORTANT! Inverters Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, and Fronius IG 300–500 must always be located at the beginning or end of the Fronius Solar Net ring.

- 2** For Fronius Galvo/Fronius Symo/Fronius Primo only and when linking multiple inverters in Fronius Solar Net:
Set the Fronius Solar Net master/slave switch on the Fronius Datamanager 2.0 plug-in card as required
 - One inverter with Fronius Datamanager 2.0 = master
 - All other inverters with Fronius Datamanager 2.0 = slave (the LEDs on the Fronius Datamanager 2.0 plug-in cards are off)

3 Switch the device to service mode

Inverter with Fronius Datamanager 2.0 plug-in card:

- Switch the IP switch on the Fronius Datamanager 2.0 plug-in card to position A



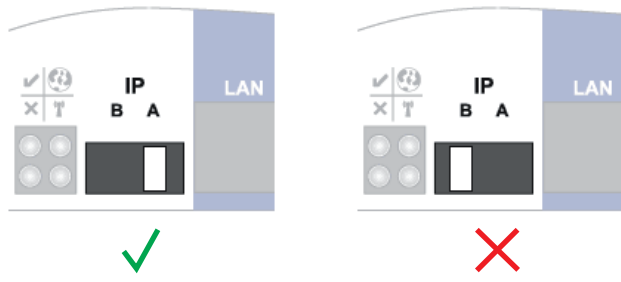
or

- Activate the WIFI Access Point via the Setup menu of the inverter (the performance of this function depends on the inverter software)



Fronius Datamanager Box 2.0:

- Switch the IP switch on the Fronius Datamanager Box 2.0 to position A



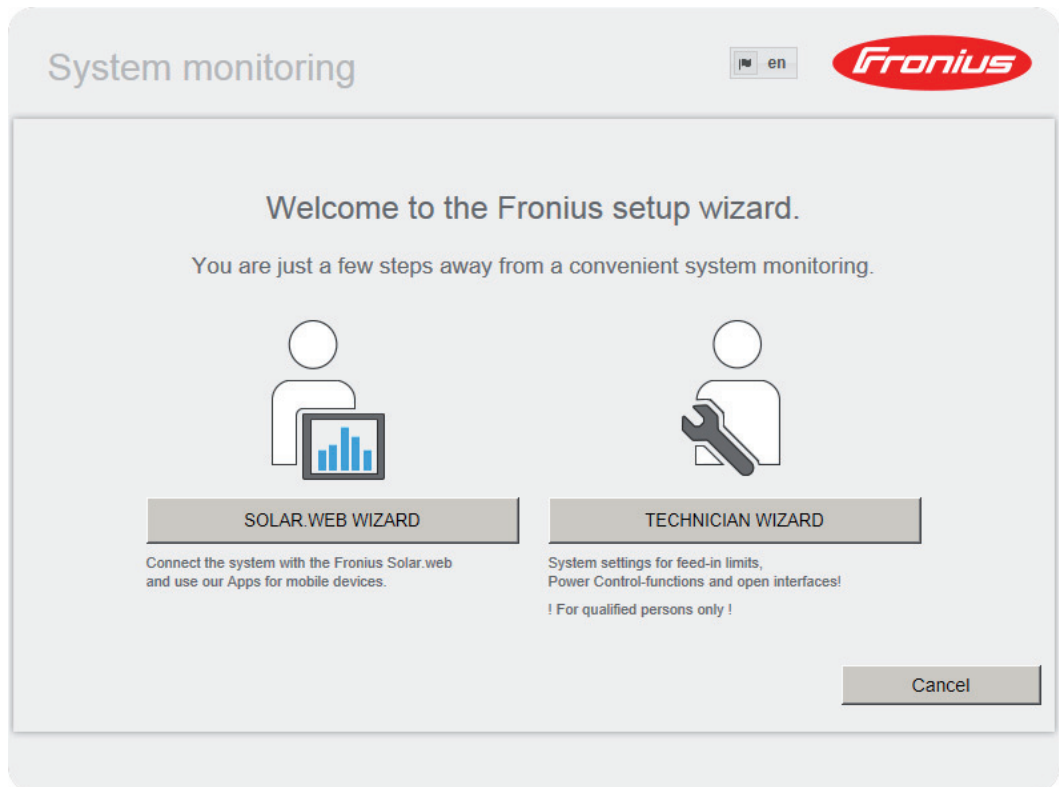
The inverter/Fronius Datamanager Box 2.0 establishes the WLAN Access Point. The WLAN Access Point stays open for one hour.

4 Download Fronius Solar.web App



5 Run Fronius Solar.web App

The start page of the Commissioning Wizard appears.



The Technician Wizard is designed for the installer and includes standard-specific settings. Running the Technician Wizard is optional. If the Technician Wizard is run, it is essential to note down the assigned service password. This service password is required to configure the UC Editor and Counter menu items. If the Technician Wizard is not run, no specifications for power reduction are set.

The Solar Web Wizard must be run.

6 If necessary, run the Technician Wizard and follow the instructions

7 Run the Solar Web Wizard and follow the instructions

The Fronius Solar.web start page appears.

or

The Fronius Datamanager 2.0 website opens.

Starting for the First Time via Web Browser



NOTE! The Fronius Solar.web App makes starting Fronius Datamanager 2.0 for the first time significantly easier.

The Fronius Solar.web App is available in the relevant app store.



To start Fronius Datamanager 2.0 for the first time,

- the Fronius Datamanager 2.0 plug-in card must be installed in the inverter,
- or
- there must be a Fronius Datamanager Box 2.0 in the Fronius Solar Net ring.

IMPORTANT! To establish a connection to Fronius Datamanager 2.0, the end device in question (e.g., laptop, tablet) must be configured as follows:

- "Obtain an IP address automatically (DHCP)" must be activated

⚠ WARNING! An electric shock can be fatal. Danger from grid voltage and DC voltage from solar modules.
 Before opening the inverter:

- You must wait until the capacitors have discharged.
- Follow the operating instructions when opening the inverter.
- Observe the safety rules and safety instructions contained in the inverter's operating instructions.

1 Connect the inverters with Fronius Datamanager 2.0 or Fronius Datamanager Box 2.0 in Fronius Solar Net

IMPORTANT! Inverters Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, and Fronius IG 300–500 must always be located at the beginning or end of the Fronius Solar Net ring.

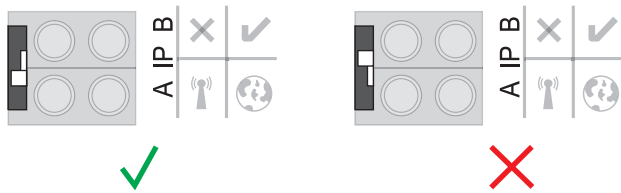
2 For Fronius Galvo/Fronius Symo/Fronius Primo only and when linking multiple inverters in Fronius Solar Net:
 Set the Fronius Solar Net master/slave switch on the Fronius Datamanager 2.0 plug-in card as required

- One inverter with Fronius Datamanager 2.0 = master
- All other inverters with Fronius Datamanager 2.0 = slave (the LEDs on the Fronius Datamanager 2.0 plug-in cards are off)

3 Switch the device to service mode

Inverter with Fronius Datamanager 2.0 plug-in card:

- Switch the IP switch on the Fronius Datamanager 2.0 plug-in card to position A



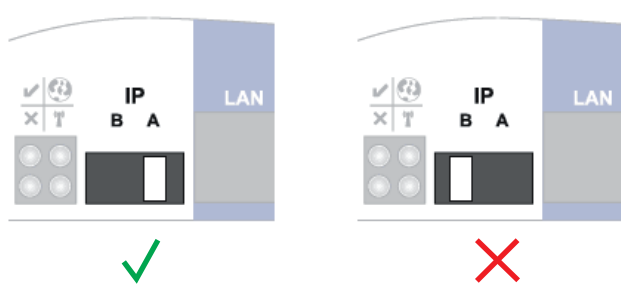
or

- Activate the WIFI Access Point via the Setup menu of the inverter (the performance of this function depends on the inverter software)



Fronius Datamanager Box 2.0:

- Switch the IP switch on the Fronius Datamanager Box 2.0 to position A



The inverter/Fronius Datamanager Box 2.0 establishes the WLAN Access Point. The WLAN Access Point stays open for one hour.

4 Connect the end device to the WLAN Access Point

SSID = FRONIUS_240.xxxxx (5–8 digits)

- Search for a network with the name "FRONIUS_240.xxxxx"
- Establish a connection to this network
- Enter password 12345678

(or connect end device and inverter via Ethernet cable)

5 Enter in the browser:

http://datamanager

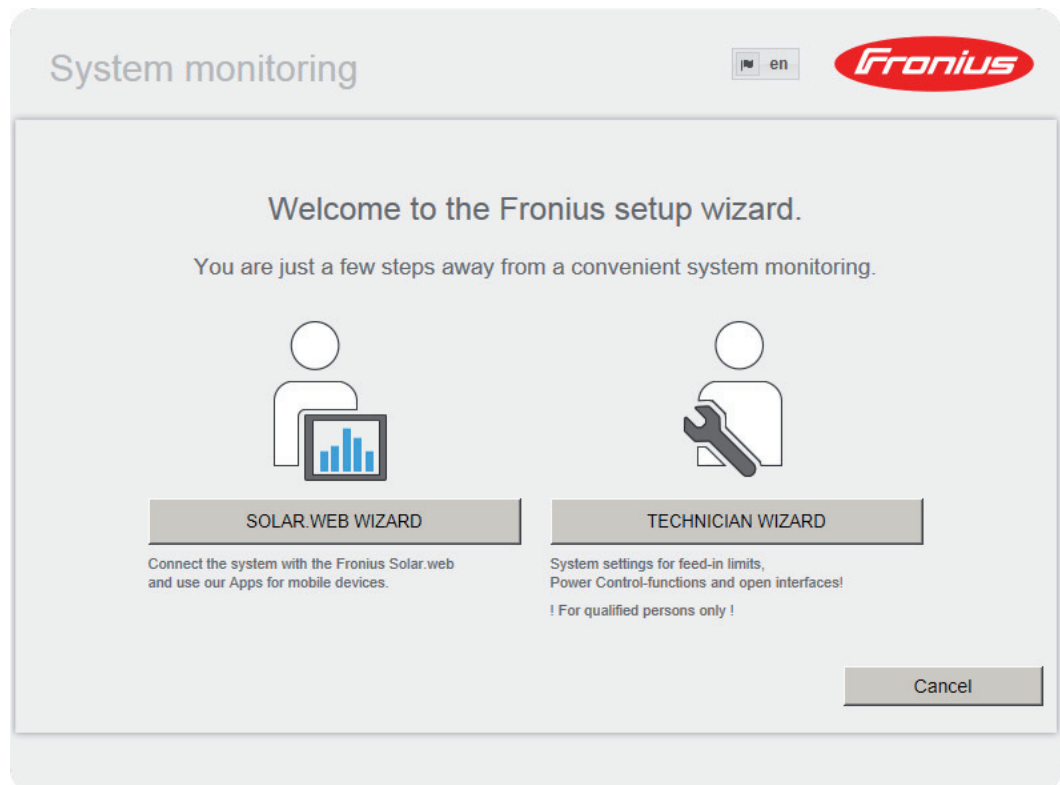
or

192.168.250.181 (IP address for WLAN connection)

or

169.254.0.180 (IP address for LAN connection)

The start page of the Commissioning Wizard appears.



The Technician Wizard is designed for the installer and includes standard-specific settings. If the Technician Wizard is run, it is essential to note down the assigned service password. This service password is required to configure the UC Editor and Counter menu items. If the Technician Wizard is not run, no specifications for power reduction are set.

The Solar Web Wizard must be run.

6 If necessary, run the Technician Wizard and follow the instructions

7 Run the Solar Web Wizard and follow the instructions

The Fronius Solar.web start page appears.
or
The Fronius Datamanager 2.0 website opens.

Establishing a Connection to Fronius Datamanager 2.0

Connecting to Fronius Datamanager 2.0 via a Web Browser

General

The connection to Fronius Datamanager 2.0 via a web browser is suitable for accessing current values with several PC users in a LAN (e.g., company networks, schools).

For example, total and daily yields can be accessed and/or inverter comparisons can be made on the Fronius Datamanager 2.0 website.

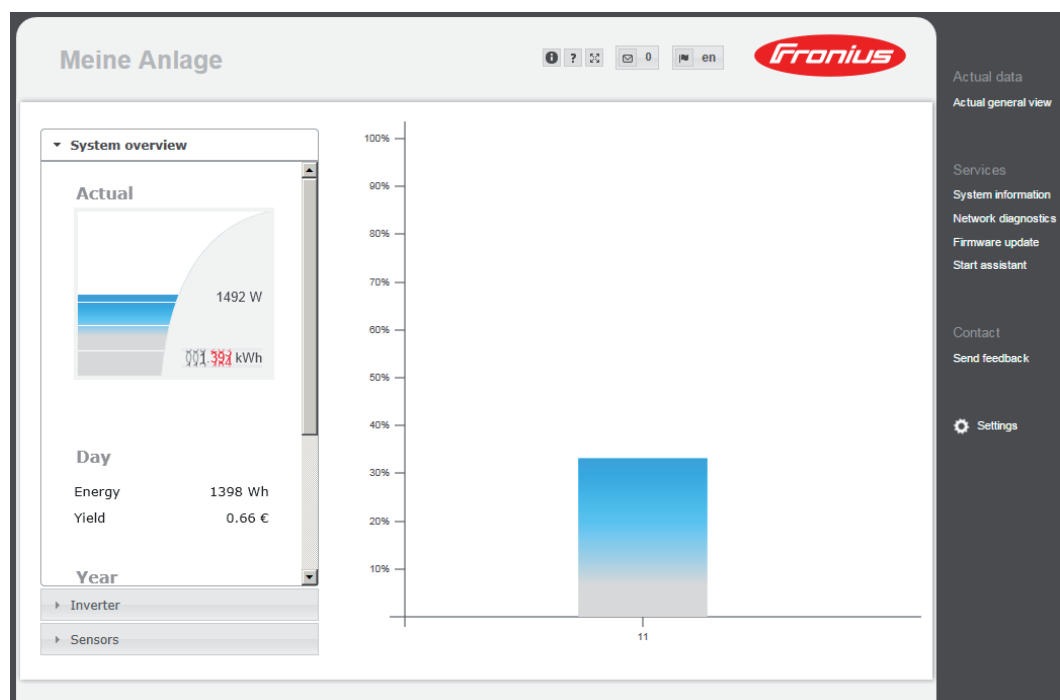
Requirements

- At least a LAN or WLAN connection
- Web browser (e.g., Microsoft Internet Explorer IE \geq 9.0, Firefox 4, Google Chrome 27.0)
- PC/laptop in the same network segment as Fronius Datamanager 2.0

Establishing a Connection to Fronius Datamanager 2.0 via a Web Browser

- 1 Open the web browser
- 2 Enter the IP address or the host name and the domain name for Fronius Datamanager 2.0 in the address field

The Fronius Datamanager 2.0 website opens.



Connecting to Fronius Datamanager 2.0 via the Internet and Fronius Solar.web

General

By connecting to Fronius Datamanager 2.0 via the internet and Fronius Solar.web, you can access archived data and up-to-date photovoltaic system data online from anywhere in the world with internet access.

You can also provide other users with guest access so that they can view your photovoltaic system, or you can make a comparison of several systems.

Function Overview

Fronius Datamanager 2.0 is connected to the internet (e.g., via a DSL router). Fronius Datamanager 2.0 regularly logs on to Fronius Solar.web and sends its saved data every day.

Fronius Solar.web can actively contact Fronius Datamanager 2.0, e.g., to display real-time data.

Requirements

- Internet access
- Web browser

IMPORTANT! Fronius Datamanager 2.0 cannot connect itself to the internet. A router must be used for a DSL connection to the internet.

- Registration of photovoltaic system with Fronius Solar.web.
 - In order to access real-time data in Fronius Solar.web, the "Yes" selection option must be activated under "Send actual data to Fronius Solar.web" in Fronius Datamanager 2.0 in the settings under Solar.web.
 - In order to access archived data in Fronius Solar.web, the "Daily at" or "Hourly" selection option must be activated under "Send archive data to Fronius Solar.web" in Fronius Datamanager 2.0.
-

Accessing Data from Fronius Datamanager 2.0 via the Internet and Fronius Solar.web

To access real-time and archived data from Fronius Datamanager 2.0 using Fronius Solar.web:

- 1 Start Fronius Solar.web: <http://www.solarweb.com>

For more information about Fronius Solar.web, see the online help.

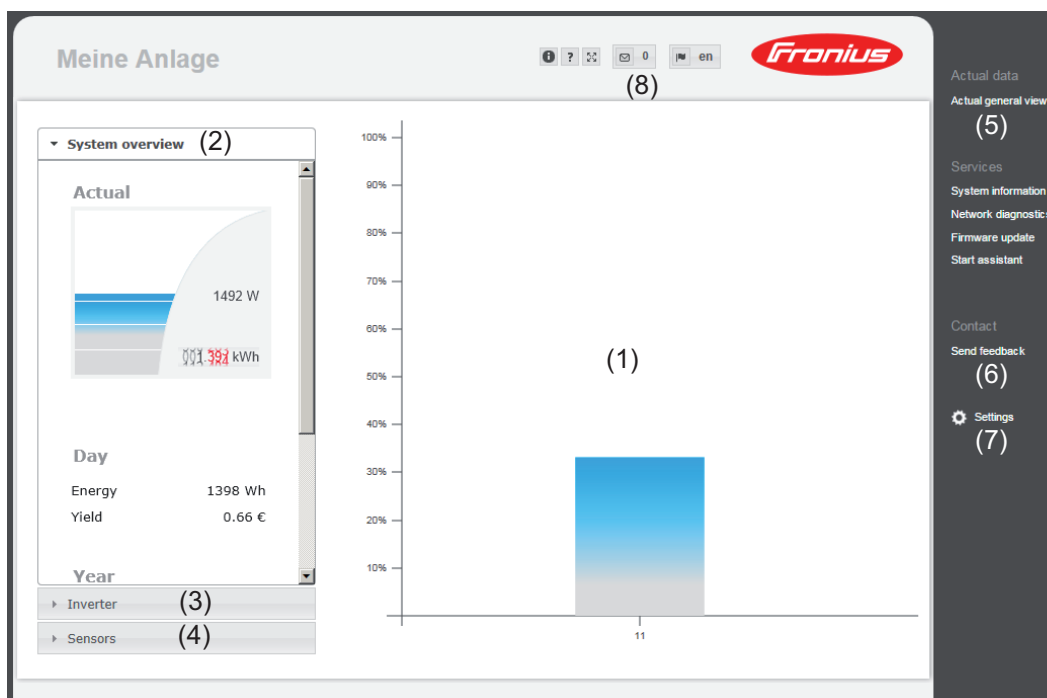
Current Data, Services, and Settings on Fronius Datamanager 2.0

The Fronius Datamanager 2.0 Website

Fronius Dataman- ager 2.0 Website – Overview

The following data is displayed on the Fronius Datamanager 2.0 website:

- (1) Current comparison view of all inverters in the Fronius Solar Net ring
- (2) System overview: Current/Day/Year/Total
- (3) Inverter
- (4) Sensors
- (5) Services
System information, Network diagnostics, Firmware update
- (6) Contact
Send feedback
- (7) Settings menu
- (8) Other setting options



The Settings Menu

After clicking on "Settings," the Settings menu is opened on the Fronius Datamanager 2.0 website.

Fronius Datamanager 2.0 is configured in the Settings menu.



Menu items in Settings menu

General Adjustment and Viewing of Menu Items

- 1 Establish a connection to Fronius Datamanager 2.0
- 2 Click on "Settings"
- 3 Click on the desired menu item
- 4 View menu item or edit accordingly.
- 5 If there is one, click on the relevant button (e.g. Save, Synchronize)

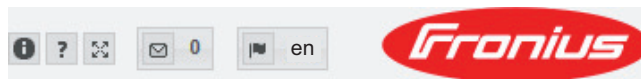
The desired menu item is opened.





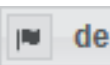
The changed data is accepted

- * Selected menu item
- ** The Counter and UC Editor menu items are protected by the service password.

Other Setting Options

Other setting options are shown in the top right corner of the Fronius Datamanager 2.0 website:

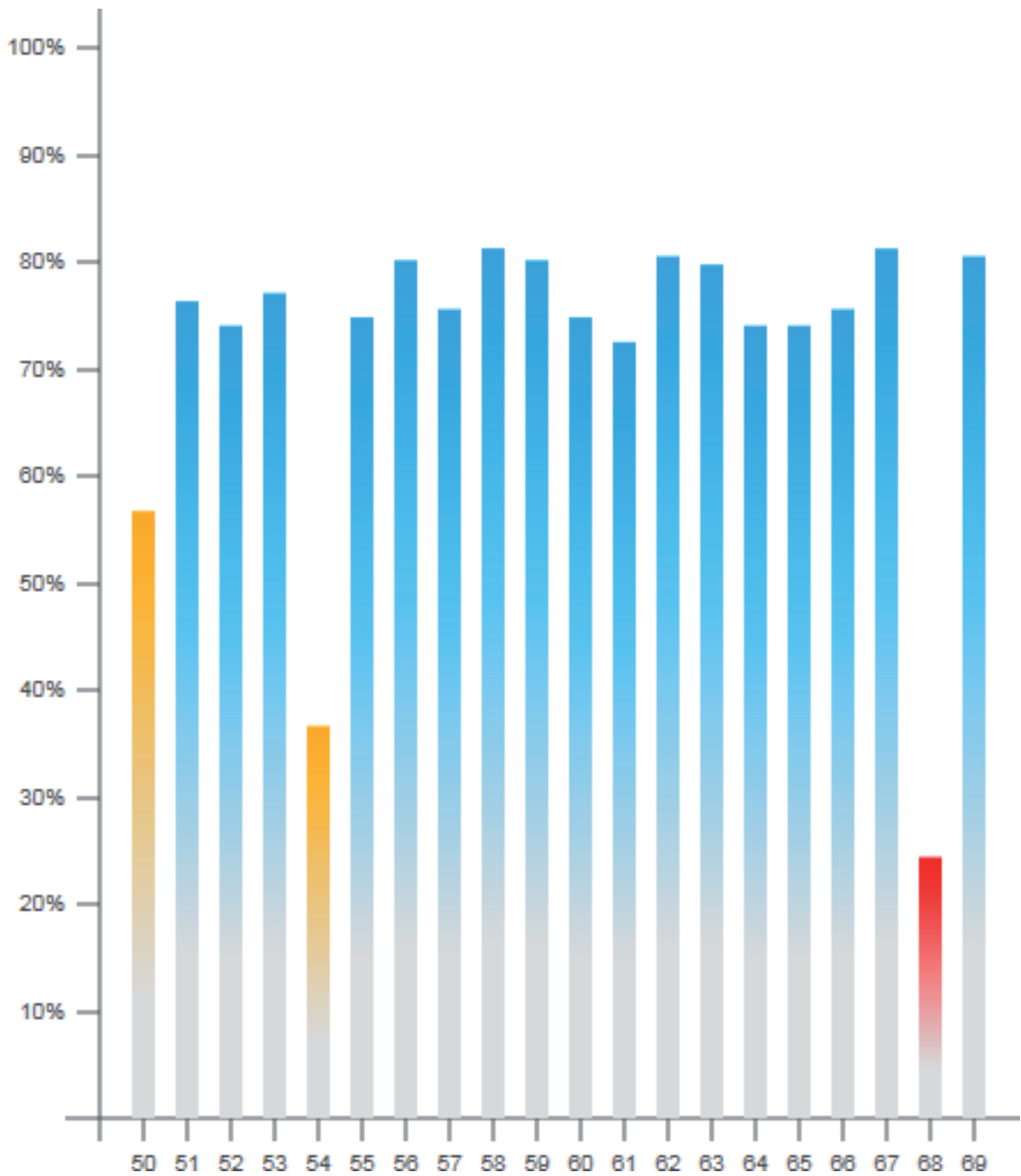


	System information: Data logger ID, software version, hardware version, Solar Net connection, Solar.web connection
	Help: - Software operating instructions - Fronius Solar Channel
	Expand contents: The "Real-time Data/Settings" menu area is hidden
	Display notifications
	Language: Set the language

The Fronius Datamanager 2.0 website will appear in the language set for the browser itself or in the last selected language.

Current Data in Fronius Datamanager 2.0

Current Comparison View

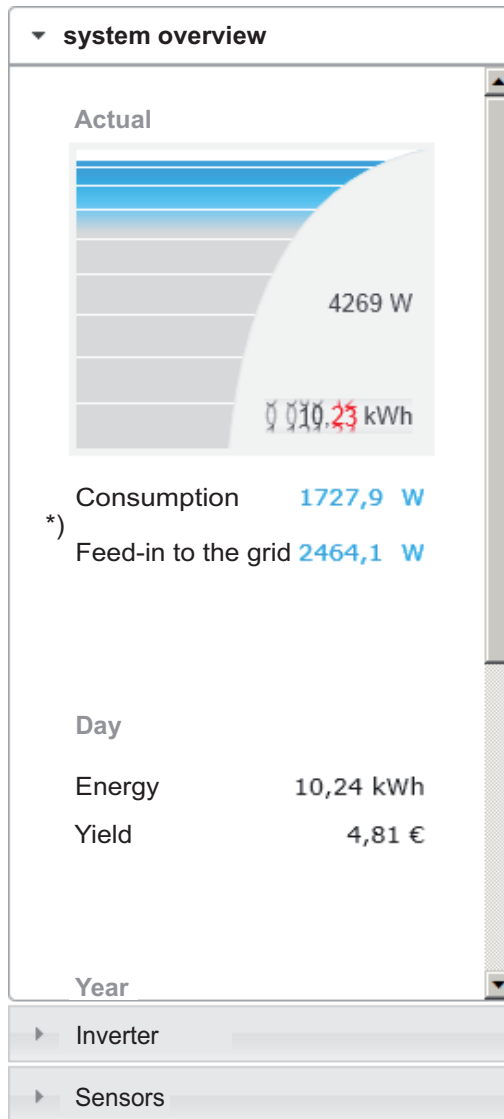


Several inverters in the same photovoltaic system can be compared in the current Comparison View.

The real-time inverter AC power is displayed as a percentage of the power from the solar module connected to the respective inverter (shown in a bar diagram). A bar is displayed for each inverter. The bar color indicates the power range of the inverter:

- Blue: the inverter power corresponds to the average power of all inverters.
- Yellow: the inverter power deviates slightly from the average power of all inverters (50–90% from the average).
- Red: the inverter power deviates significantly from the average power of all inverters or an error has occurred in the inverter (< 50% from the average).

System Overview



The system overview contains:

- the real-time power data of a photovoltaic system
- the active devices
- the energy generated per day, per year, and in total
- the yield per day, per year, and in total

*) The values for consumption and energy fed into the grid are only displayed when a counter is configured on the inverter and the counter sends valid data.

Inverter/Sensors View

Inverter View

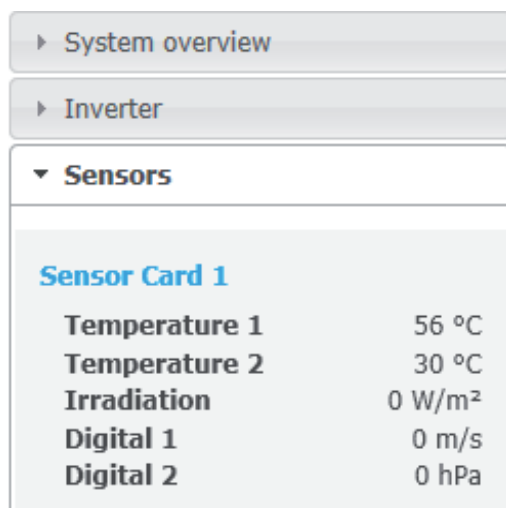


The Inverter View displays all the inverters present in the system.

*) Clicking on an inverter or the corresponding bar in the Comparison View displays the inverter's real-time data:

Inverter 53	
<i>Fronius IG Plus 150 V-3</i>	
Operational status	Running
Power	8413 W
Daily energy	80 kWh
Annual energy	12 MWh
Total energy	36 MWh

Sensor View







The Sensor View displays all the sensor cards/boxes present in the system.

Services – System Information

System Information

System information

Datalogger ID	240.80901
Circuit board version	2.2D
Software version	3.7.2-2
System time	Sep 20 2016, 13:34:26 CEST
Uptime	7 d, 23 h, 19 min, 17 sec.
User agent	Mozilla/5.0 (Windows NT 6.1; WOW64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/53.0.2785.116 Safari/537.36
Gateway	10.4.88.254 (eth0)
DNS server	10.1.1.60, 10.1.1.2
LED states	   

LAN interface

IP address	
Subnet mask	
MAC address	00:03:AC:04:73:F8

WLAN interface

IP address	
Subnet mask	
MAC address	00:06:C6:49:8E:95

GPIO

IO-Name	I/O0	I/O1	I/O2	I/O3	I4	I5	I6	I7	I8	I9
IO-Direction	OUT	OUT	IN	IN	IN	IN	IN	IN	IN	IN
IO-State	off	off	off	off	off	off	off	off	off	off

Components

Inverter

No	Device type	PMC	Serial number
10	Fronius IG 30 Dummy		
11	Fronius IG 30 Dummy		
12	Fronius IG 30 Dummy		
13	Fronius IG 30 Dummy		
14	Fronius IG 30 Dummy		

Meter

No	Device type	Location of the meter	Serial number
1	Smart Meter 63A-1	Feed-in point (Primary meter)	15160009

Note: This device contains open source software.

For detailed information about the software being used and the requirements of the corresponding source code, please contact Fronius Tech Support.

Datalogger restart (1)

Reset to factory settings (2)

All settings except for the network (3)

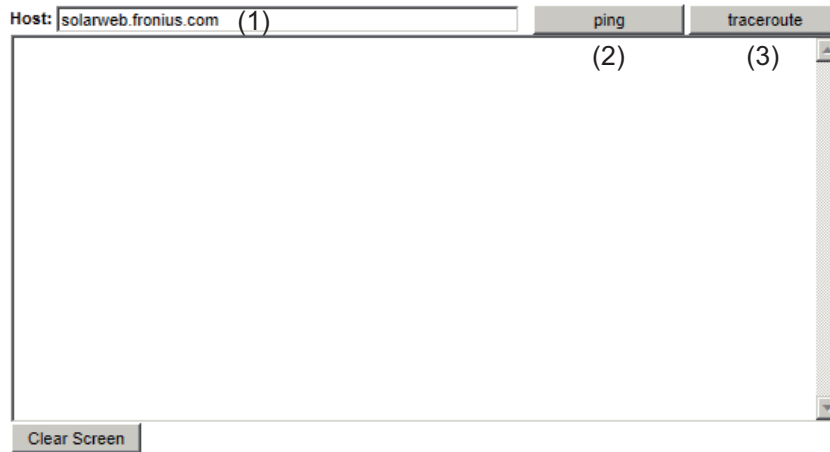
All settings (4)

- (1) "Datalogger restart" button
Used to restart Fronius Datamanager 2.0
- (2) "Reset to factory settings" button
- (3) Option "All settings except for the network"
Used to reset Fronius Datamanager 2.0 to the factory settings.
The network settings and all items protected by the service user (UC Editor, counter settings, and service password) are retained
- (4) Option "All settings"
Used to reset Fronius Datamanager 2.0 and the network settings to the factory settings.
All items protected by the service user (UC Editor, counter settings, and service password) are retained

IMPORTANT! When Fronius Datamanager 2.0 is reset to factory settings, the time and date settings must be checked.

Services – Network Diagnostics

Network Diagnostics The Services / Network diagnostics option contains functions that are useful for diagnosing and correcting network problems. Ping and traceroute commands can be executed.



The **ping** command

is used to determine whether or not a host is available and how much time a data transfer will take.

Sending a ping command:

- 1** Enter a host name or IP address in the "Host:" field (1)
- 2** Click on "ping" (2)
 - Ping command is sent
 - The resulting data is displayed

A **traceroute** command

is used to determine the intermediate stations via which the data reaches the host.

Sending a traceroute command:

- 1** Enter a host name or IP address in the "Host:" field (1)
- 2** Click on "traceroute" (3)
 - Traceroute command is sent
 - The resulting data is displayed

Services – Firmware Update

General You can update the Fronius Datamanager 2.0 firmware under Services / Firmware Update. A firmware update can be performed via LAN or web.

Firmware Update

✓	✗
(9)	(10)

Configuration

- (1) Automatic update search (2)
- (3) allow installing Updates automatically
daily at : (4)
- (5) Use proxy server for Web update

Update

- (6) Update via Web Update via LAN (7)

 (8)

- (1) Automatic update search
- (2) "Check now" button (to search for updates manually)
- (3) allow installing Updates automatically
- (4) daily at (time, HH : MM)
- (5) Use proxy server for Web update

- (5) Use proxy server for Web update
- (5a) Proxy server:
- (5b) Port:
- (5c) User:
- (5d) Password:

- (5a) Field to enter the proxy server
- (5b) Field to enter the port
- (5c) Field to enter the user
- (6d) Field to enter the password

- (6) Carry out update via web
- (7) Carry out update via LAN

- Update via Web Update via LAN (7)

- (7a) IP address of your computer: . . .

- (7a) Field to enter the IP address
- (8) "Run update" button
For starting the update process
- (9) "Apply/Save" button
- (10) "Cancel/Discard entries" button

Automatic Update Search

IMPORTANT! An internet connection is required for the automatic update search.

When the "Automatic update search" option (1) is activated, Fronius Datamanager 2.0 will automatically search for updates once a day. If new updates are available, a message is displayed under the other setting options of the Fronius Datamanager 2.0 website.

Firmware Update



Configuration

(1) Automatic update search

Manual Update Search

When the "Automatic update search" function is deactivated, there will be no automatic search for updates.

1 To search manually for updates, use the "check now" button (2)

Firmware Update



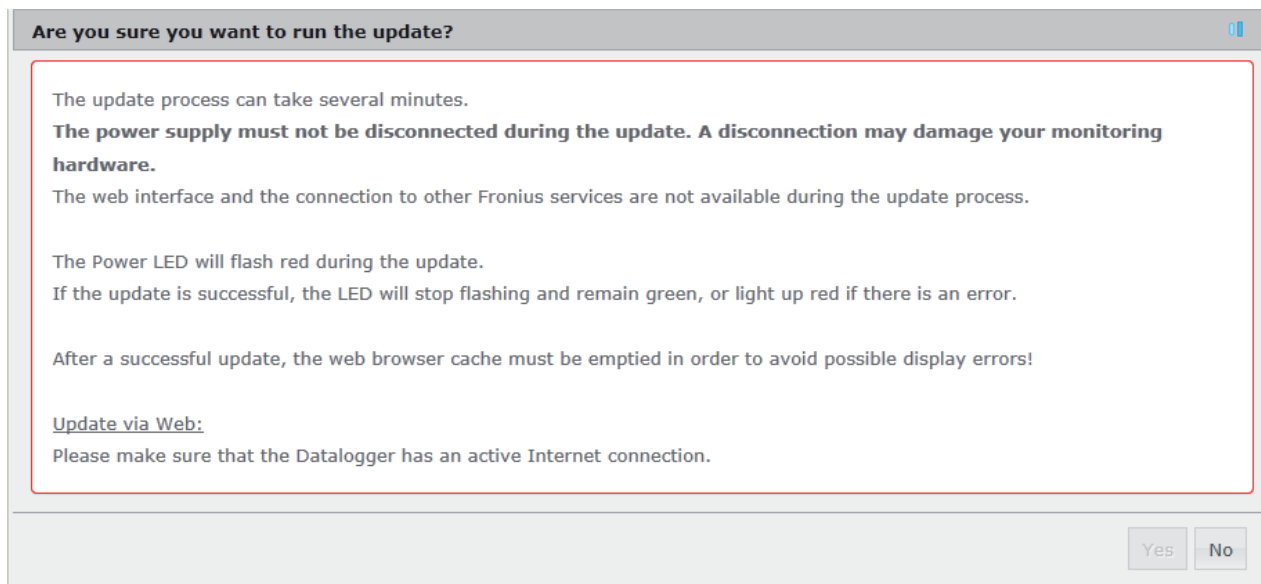
Configuration

Automatic update search (2)

Firmware Update via Web

- 1** Open the Fronius Datamanager 2.0 website via a web browser
- 2** Open "Firmware update" under "Services"
- 3** Select "Update via web"
- 4** Click on the "Run update" button

The confirmation prompt for the update appears:



- 5 Click on the "Yes" button

The update starts. The update progress is displayed as a bar and a percentage.

- 6 Once the update has been carried out successfully, click on the "Apply/Save" button

If the connection to the server fails:

- Deactivate the firewall for the duration of the update
- Retry the update

IMPORTANT! If a proxy server is used to connect to the internet:

- The "Use proxy server for Web update" option must be activated
- The required data must be entered

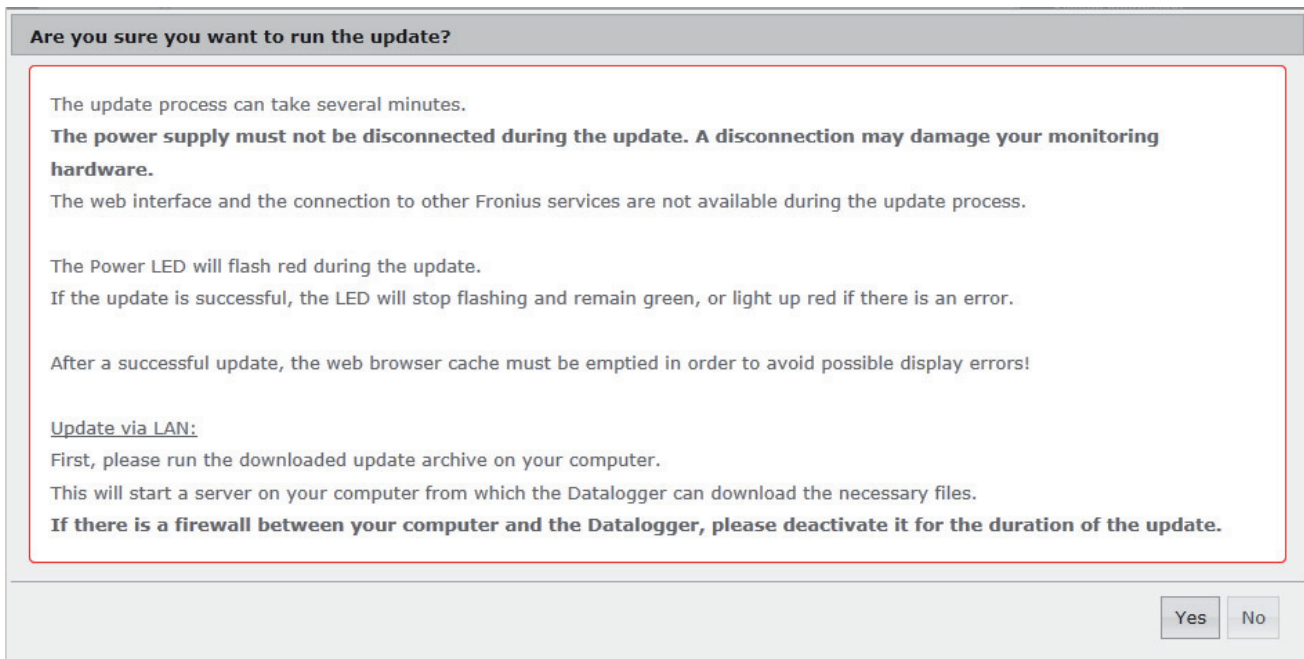
Firmware Update via LAN

- 1 Establish a LAN connection between the PC/laptop and Fronius Datamanager 2.0
- 2 Download the current firmware from the Fronius homepage
- 3 Run the downloaded update file on the PC/laptop

This will start a web server from which Fronius Datamanager 2.0 will download the required files.

- 4 Open the Fronius Datamanager 2.0 website via a web browser
- 5 Open "Firmware update" under "Services"
- 6 Select "Update via LAN"
- 7 Enter the IP address of the PC/laptop
- 8 Click on the "Run update" button

The confirmation prompt for the update appears:



9 Click on the "Yes" button

The update starts. The update progress is displayed as a bar and a percentage.

10 Once the update has been carried out successfully, click on the "Apply/Save" button

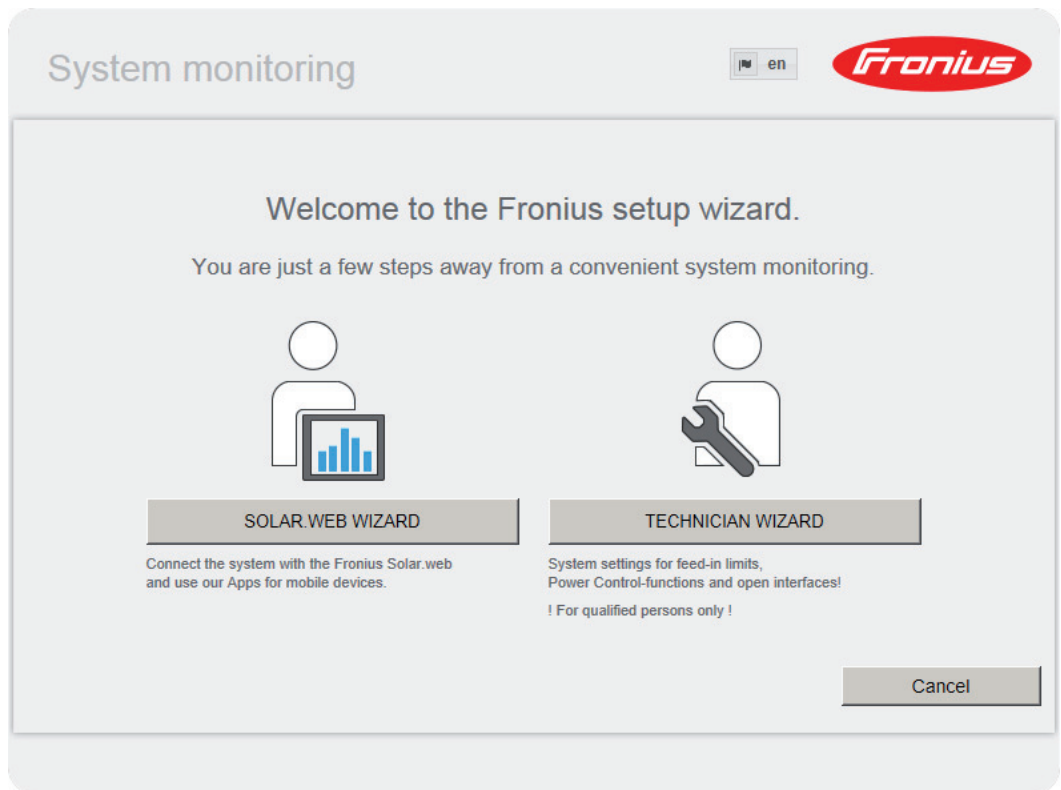
The update is complete when the "Supply LED" lights up green.

If the connection to the server fails:

- Deactivate the firewall for the duration of the update
- Retry the update

Services – Opening Wizards

Opening Wizards The Commissioning Wizard can be opened again and run under "Open Wizards."



Settings – General

General

General

The screenshot shows the 'General' settings page. At the top right, there are two buttons: a checkmark button (11) and a cross button (12). Below them is the 'System name' field (1) containing 'datcom-city1'. The 'Yield' section has 'Feed-in tariff' (2) with '0,12' and a currency dropdown (3) set to '€ (EUR) /kWh', and 'Grid supply tariff' (4) with '0,25 /kWh'. The 'System time' section has a 'Date / time' field (5) with '09/20/2016', an hour dropdown (6) with '02', a minutes dropdown (7) with '05', and a 'PM' dropdown. Below the date is a 'synchronisation' button (8). The 'Time zone settings' section has a 'Time zone' field (9) with 'Europe' and a location dropdown (10) with 'Vienna'.

First of all a system name (1) must be entered.

You can enter the charge rate per kWh (2), the currency (3) and the expenses per kWh (4) to calculate the yield under "Feed-in payment." The yield is shown in the current Total View.

The date (5), hour (6), and minutes (7) can be entered under "System time." Click "Synchronize" (8) to adapt the displayed time in the entry fields of the Fronius Data-manager web page to the time set on the computer operating system. Click the "Apply/Save" button (10) to apply the time.

The region (9) and location (10) for the time zone can be set under "Time zone settings."

(11) "Apply/Save" button

(12) "Cancel/Discard entries" button

* Fields marked with * are mandatory fields.

Settings – Passwords

General

Access to Fronius Datamanager 2.0 is regulated by assigning passwords.

Three different password types are available:

- the administrator password
- the service password
- the user password

Passwords

Passwords

(4)

User name	<input type="text" value="admin"/>	(1)
Old password *	<input type="text"/>	
Password *	<input type="text"/>	
Repeat password *	<input type="text"/>	

(4)

User name	<input type="text" value="service"/>	(2)
Old password *	<input type="text"/>	
Password *	<input type="text"/>	
Repeat password *	<input type="text"/>	

(3) Protect your system monitoring from unauthorized read access.

(1) Administrator password, user name = admin

The administrator password set during commissioning assigns the user read and write (configuration) access to Fronius Datamanager 2.0. The user can then open the "Settings" menu item and define any settings as desired, with the exception of the UC Editor and Counter.

When an administrator password is set, the user must enter the user name and password in Fronius Datamanager 2.0 to open the "Settings" menu item.

(2) Service password, user name = service

The service password is usually assigned in the Commissioning Wizard by the service technician or system installer and provides access to system-specific parameters. The service password is required to define counter settings and settings in the UC Editor. If no service password has been assigned, the Counter and UC Editor menu items cannot be accessed.

(3) After activating the selection field, the user password is displayed, user name = user.

Protect your system monitoring from unauthorized read access.

(3)



(4)

User name

Password *

Repeat password *

An assigned user password only gives the user read access to Fronius Dataman-
ager 2.0. The user cannot open the "Settings" menu item.

When assigning a user password, users must enter their username and password
every time they connect to Fronius Datamanager 2.0.

(4) "Apply/Save" button

Settings – Network

General

The "Network" menu item is used to determine the type of internet connection (LAN or WLAN).

IMPORTANT! If the IP address is obtained statically, a gateway and a DNS server must be entered for the selected connection mode (Internet via WLAN or LAN).

Network interfaces



Connection mode

(1) **Internet via WLAN** (2)

(3) **Local Network via Access-Point**

LAN Settings

(4) (5)

Get address static dynamic

Host name (6)

IP-Address (7)

Subnet-mask (8)

Gateway (9)

DNS-Server (10)

WLAN Settings

Available networks (12)

(11) nDatcom (13)

Protected, WPA2 Channel: 1

Net0 (14)

Protected, WPA2 Channel: 11

Net1 (15)

Protected, WPA2 Channel: 11

Net2

Protected, WPA2 Channel: 11

Add WLAN (16)

(17) (19)

(18)

- (1) Internet connection via LAN
- (2) Internet connection via WLAN

- (3) Locat Network via Access-Point

LAN Settings

- (4) Obtain IP address statically
The user enters a fixed IP address for Fronius Datamanager 2.0 and also manually sets the subnet mask, gateway address, and DNS server address (from the provider).
- (5) Obtain IP address dynamically
Fronius Datamanager 2.0 obtains its IP address from a DHCP server (DHCP = dynamic host configuration protocol).
The DHCP server must be configured so that Fronius Datamanager 2.0 is always assigned the same IP address. You will then always know the IP address at which Fronius Datamanager 2.0 can be found.
If the DHCP server supports the "DNS dynamic updates" function, a name can be entered for Fronius Datamanager 2.0 in the "Host name" field. The connection to Fronius Datamanager 2.0 can then be established using the name instead of the IP address.
For example: Host name = sample_system, domain name = fronius.com.
Fronius Datamanager 2.0 can be reached via the address "sample_system.fronius.com."
- (6) Field for entering a host name for dynamically obtained IP address
- (7) Field for entering the IP address for static IP address
- (8) Field for entering the subnet mask for static IP address
- (9) Field for entering the gateway for static IP address
- (10) Field for entering the DNS server for static IP address

WLAN Settings

- (11) Display of detected WLAN networks
- (12) "Refresh" button
Used to search again for available WLAN networks
- (13) Display of signal quality
One bar = low signal strength
Three bars = high signal strength
- (14) Network status
Open/secured/saved [after pressing the "Setup" button (16)]
- (15) Encryption display
WPA / WPA2 / WEP
- (16) Add WLAN
Used to display hidden networks
Clicking this option opens the "WLAN connection" window

- (16a) Name of hidden WLAN network
- (16b) Selection field for encrypting the hidden WLAN network
- (16c) Field for entering the password for the hidden WLAN network
- (16d) Selection field for whether the password is displayed
- (16e) "Save" button
- (16f) "Cancel" button

- (17) "Setup" button
Used to save a selected WLAN network;
Clicking this option opens the "WLAN connection" window

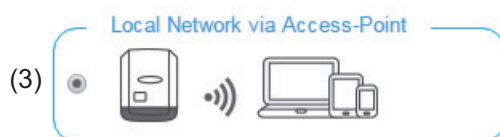
- (17a) Name of selected WLAN network
- (17b) Signal strength of selected WLAN network
- (17c) Encryption of selected WLAN network
- (17d) Field for entering the password for the WLAN network
- (17e) Selection field for whether the password is displayed
- (17f) "Save" button
- (17g) "Cancel" button

- (18) "Remove" button
Used to delete a saved WLAN network

- (19) "Configure IP" button
Clicking this option opens the "Configure IP" window

- (20) "OK" button
- (21) "Cancel" button
- (22) "Apply/Save" button
- (23) "Cancel/Discard entries" button

WLAN Access Point Settings



WLAN Access Point Settings

Network name: * (24)

Security key: * (25)

Show security key: (26)

- (24) Field for entering the network name
 - (25) Field for entering the security key
 - (26) Selection field for whether the security key is displayed
- * Fields marked with * are mandatory fields.

Settings – Fronius Solar.web

Solar.web

The Solar.web menu item can be used to make a direct connection between Fronius Data-manager 2.0 and Fronius Solar.web.

Fronius Solar.web



Datalogging settings

Query cycle inverter (1)

Query cycle Fronius Sensor Cards (2)

logged [delete logged data ...](#)
(3)

Send actual data to Fronius Solar.web

No Yes
(4)

Send archive data to Fronius Solar.web

never daily hourly
(5) (6) (7)

register at [Solar.web ...](#)
(8)

Datalogging settings

- (1) Selection of query cycle for the inverter:
Data queries every 5/10/15/20/30 minutes
- (2) Selection of query cycle for Fronius Sensor Cards:
Data queries every 5/10/15/20/30 minutes
- (3) "Delete log data" link
After clicking the "Delete log data" link, a security prompt appears to confirm the deletion of the log data.

- (4) Selection of whether current data is sent to Fronius Solar.web

Send archived data to Fronius Solar.web

- (5) never
- (6) daily
After the selection field is activated the setting options are displayed:

never daily hourly
(6)

at (6a)

on Monday Tuesday Wednesday Thursday Friday Saturday Sunday

(6b)

- (6a) Field for entering the time (hour)
- (6b) Fields for selecting the weekdays
- (7) hourly
After the selection field is activated the setting options are displayed:

never daily hourly

(7)

00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00
(7a) 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00
 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

(7a) Fields for selecting the time (hour)

(8) "Register Solar.web" link
Clicking this link opens the Fronius Solar.web start page; data relevant for Fronius Solar.web is automatically sent as well.

(9) "Apply/Save" button

(10) "Cancel/Discard entries" button

Calculating memory capacity

Memory capacity The Fronius Datamanager has a memory capacity of up to 5 years and 7 months for a PV system with one inverter and a save interval of 15 minutes. However, the memory capacity is reduced accordingly depending on the number of inverters and/or Fronius sensor cards/boxes that are integrated into the system.

Calculating memory capacity

- 1** Determine logging points for inverters and Fronius sensor cards/boxes

$$\text{Logging points per day} = \frac{\text{Logging duration [min]}}{\text{Save interval [min]}}$$

Logging duration [min]

- For inverter: e.g., 14 hours = 840 minutes
- For Fronius Sensor Card/Fronius Sensor Box: 24 hours = 1440 minutes

- 2** Calculate the total logging points

$$\begin{aligned} \text{Total logging points} &= \\ &= (\text{number of inverters} \times \text{logging points per day}) + (\text{number of Fronius Sensor Cards/Boxes} \times \text{logging points per day}) \end{aligned}$$

- 3** Determine memory sectors per day

$$\text{Memory sectors per day} = \frac{\text{Total logging points}}{114}$$

- 4** Round to whole numbers

- 5** Determine memory capacity

$$\text{Memory capacity [days]} = \frac{2048}{\text{Memory sectors per day}}$$

Calculation example

2 inverters, logging duration = 14 hours (840 minutes)
 1 Fronius Sensor Card, logging duration = 24 hours (1440 minutes)

Save interval = 15 minutes

1. Logging points per day:

$$\text{Inverter logging points} = \frac{840 \text{ min}}{15 \text{ min}} = 56$$

$$\text{Sensor Card logging points} = \frac{1440 \text{ min}}{15 \text{ min}} = 96$$

2. Total logging points:

$$\text{Total logging points} = (2 \times 56) + (1 \times 96) = 208$$

(2 x 56) ... 2 inverters, (1 x 96) ... 1 Sensor Card

3. Memory sectors per day:

$$\text{Memory sectors} = \frac{208}{114} = 1,825$$

4. Rounded:

$$1,825 \quad \Rightarrow \quad 2$$

5. Memory capacity [days]:

$$\text{Memory capacity} = \frac{2048}{2} = 1024 \text{ days (= 2 years, 9 months, 18 days)}$$

$$\text{Memory capacity [days]} = \frac{2048}{\text{Memory sectors per day}}$$

Settings – Service Messages

General

Service messages, inverter errors, Fronius String Control, etc., are sent to Fronius Data-manager 2.0 and saved. The "Service messages" selection option is used to define how service messages are communicated. They can be communicated via:

- E-mail
- SMS

Service messages can be analyzed further using Fronius Solar.web.

Service Messages

Service messages

- (1) Message to e-mail recipient
Activate to send service messages to one or more e-mail addresses
- (2) Field for up to a max. of 10 e-mail addresses
Separate e-mail addresses with ";"
- (3) Selection field to determine whether the service message will be sent immediately via e-mail or at a specific time
If "daily" is selected, the selection options for the time (hour) are also displayed.
- (4) "Send test e-mail" button
Sending a test e-mail may take several minutes.
- (5) Message to SMS recipient
Activate to send service messages as an SMS to a telephone number
- (6) Field to enter the country code
e.g.: +43 = country code for Austria
- (7) Field to enter area code
- (8) Field to enter the telephone number
- (9) Field for sending daily
- (10) Selection field for the time (hour) at which a service message is to be sent via SMS

- (11) "Send test SMS" button
Sending a test SMS may take several minutes.
- (12) Selection field for the language in which the service message will be sent
- (13) "Apply/Save" button
- (14) "Cancel/Discard entries" button

Settings - IO Mapping

General

IO mapping



RS485							
D+	+	+	0	2	4	6	8
D-	-	-	1	3	5	7	9
RS485							

PIN ASSIGNMENTS

- 0. IO control feedback
- 1. Load management
- 2. REF GEN/0
- 3. COM LOAD/0
- 4. IO control 3
- 5. IO control 4
- 6. DRM 1/5
- 7. DRM 2/6
- 8. DRM 3/7
- 9. DRM 4/8

AUS - Demand Response Modes (DRM)

DRM 1/5	Pin 6 (default) ▼
DRM 2/6	Pin 7 (default) ▼
DRM 3/7	Pin 8 (default) ▼
DRM 4/8	Pin 9 (default) ▼
REF GEN/0	Pin 2 (default) ▼
COM LOAD/0	Pin 3 (default) ▼

IO control

Load management

can be used as an input or output can be used as an input pin already in use

This menu item allows you to configure the properties of the inverter's individual inputs and outputs (I/O). You can only select those settings that are supported by the system concerned (which are determined by the functionality of the system and how it has been configured).

An active output that has not been assigned (is "free") remains active until the inverter is restarted. The status of an output only changes in the event of new specifications for assigned services.

AUS - Demand Response Modes (DRM)

Demand Response Modes for Australia

The pins for control via DRM can be set here:

IMPORTANT! To control the inverter via DRM, a Fronius DRM interface (item number 4,240,005) is required in the inverter. Installation is described in the installation instructions for the Fronius DRM interface. The installation instructions for the Fronius DRM interface are available at the following link on the Fronius homepage:



<http://www.fronius.com/QR-link/4204102292>

Mode	Description	Information	Default pin
DRM0	Inverter disconnects itself from the grid	Open grid relay	
	REF GEN	closed	FDI
	COM LOAD	closed	FDI
		or	
		combinations of invalid DRM1 - DRM8	
DRM1	$-P_{nom} \leq 0\%$ without disconnection from the grid	limits effective power input	6
DRM2	$-P_{nom} \leq 50\%$	limits effective power input	7
DRM3	$-P_{nom} \leq 75\% \ \& \ +Q_{rel}^* \geq 0\%$	limits effective power input	8
		and	
		sets the reactive power	
DRM4	$-P_{nom} \leq 100\%$	limits effective power output	9
DRM5	$+P_{nom} \leq 0\%$ without disconnection from the grid	begrenzt die Wirkleistungs-Abgabe	6
DRM6	$+P_{nom} \leq 50\%$	limits effective power output	7
DRM7	$+P_{nom} \leq 75\% \ \& \ -Q_{rel}^* \geq 0\%$	limits effective power output	8
		and	
		sets the reactive power	
DRM8	$+P_{nom} \leq 100\%$	Normal operation without limitation	9

FDI on the Fronius DRM interface

* The values for Q_{rel} can be set in the PSC Editor menu item.

The remote control capability of the inverter always relates to the nominal device output.



NOTE! If there is no DRM control (DRED) connected to the Datamanager and the "AUS - Demand Response Mode (DRM)" function is activated, the inverter changes into the standby mode.

IO control

The pins for the IO control can be set here. Additional settings can be adjusted in the "PSC editor - IO control" menu.

IO control	Default pin	IO control	Default pin
IO control 1 (optional)	2	IO control 6 (optional)	7
IO control 2 (optional)	3	IO control 7 (optional)	8
IO control 3 (optional)	4	IO control 8 (optional)	9
IO control 4 (optional)	5	IO control feedback (optional)	0
IO control 5 (optional)	6		

Load management

The pin for load management can be selected here. Additional load management settings are available in the "Load management" menu item.
Default pin: 1

Settings - load management

General

The output I/O 1 can be used to control an actuator (e.g., relay, contactor) via the "Load Management" function.
 A load connected to I/O 1 can thus be controlled by assigning a power feed-dependent switch-on or switch-off point.

Load Management

Energy Manager

(14) (15)

Output: IO-1
State: off (16)

Controlling

(1) deactivated

(2) by power production

(3) by power surplus (in case of feed-in limits)

Thresholds

on: (4) W

off: (5) W

Duration

(6) Minimum duration per on-signal: Minutes (7)

(8) Maximum duration per day: Minutes (9)

Desired duration

(10) per day: (11) Minutes

is to finish by: (12) : (13)

Controlling

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

Thresholds

- (4) On:
For entering an effective power limit, at which the I/O 1 output is activated.
- (5) Off:
For entering an effective power limit, at which the I/O 1 output is deactivated.

Duration

- (6) Field for activating the minimum runtime for each switch-on process

- (7) Field for entering a minimum time for which the output I/O 1 is to be activated for each switch-on process
- (8) Field for activating the maximum runtime per day
- (9) Field for entering a maximum time for which the output I/O 1 is to be activated in total per day (several switch-on processes are included).

Deired duration

- (10) Field for activating a target runtime
- (11) Field for entering a minimum time for which the output I/O 1 is to be activated in total per day (several switch-on processes are included)
- (12) Field for selecting the hour, if the target runtime is to be achieved by a certain time
- (13) Field for selecting the minute, if the target runtime is to be achieved by a certain time
- (14) "Apply/Save" button
- (15) "Cancel/Discard entries" button
- (16) Status display
If the mouse pointer is moved over the status, the reason for the current status is displayed.

If "by excess power" is selected under "Control", additional selection fields for Feed (3a) and Reference (3b) are displayed under "Thresholds":

(3) by power surplus (in case of feed-in limits)

Thresholds

on: (3a) w (4)

off: (3b) w (5)

Settings – Push Service

Push Service

This function can be used to export current and log data in different formats or with different protocols to an external server.

Push Service

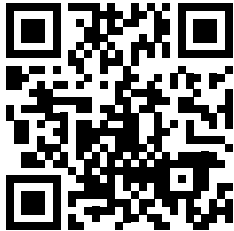
- (1) "Apply/Save" button
- (2) "Cancel/Discard entries" button
- (3) "Add" button
Clicking this button adds a new push service job. The new job is saved by clicking the "Apply/Save" button (1).
- (4) State
Displays the current status of the push service job in question
- (5) Displayed name of push service job
- (6) Area for entering general data:
Name (name of push service job)
Data format
Protocol type (FTP upload/HTTP POST)
Interval
Activation status
- (7) Area for entering the target data:
Server port
Upload file name
Login (user/password)
- (8)
- (9)

- (8) Area for entering the proxy data:
 - Server port
 - User
 - Password

 - (9) "Delete" button
 - Clicking this button deletes the selected push service job
-

Further Information about the Push Service Function

Further information about the push service function can be found in the following operating instructions:



<http://www.fronius.com/QR-link/4204102152>

42.0410.2152
Fronius Push Service

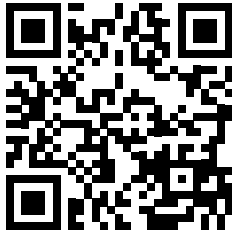
Modbus Settings

General

From your web browser, you can use the Fronius Datamanager 2.0 website to apply the Modbus connection settings which cannot be accessed via the Modbus protocol.

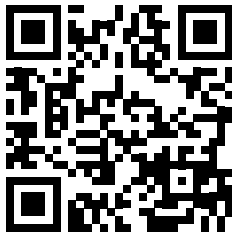
Additional Information on the Modbus Function

For additional information on the Modbus function, please see the following operating instructions:



<http://www.fronius.com/QR-link/4204102049>

42,0410,2049
Fronius Datamanager Modbus connection



<http://www.fronius.com/QR-link/4204102108>

42,0410,2108
Fronius Datamanager 2.0 Modbus RTU Quickstart Guide

Data Output via Modbus

Modbus

(1) (2) (3)

Data export via Modbus off tcp rtu

Modbus port

String control address offset

Sunspec Model Type float int + SF

Demo mode

Inverter control via Modbus

Restrict the control

(5) (6)

Controlling priority

1 2 3

IO control

Dynamic power reduction

Controlling via Modbus

Notification: a change of control priorities is possible only in the dno editor with the service password.

Legend:
1 ... highest priority
2 ... medium priority
3 ... lowest priority (4)

Data Output via Modbus

Activation of the Modbus service and selection of the transmission protocol. If the Modbus service is activated, additional entry fields are available.

The Modbus RTU transmission protocol is only available for Fronius Datamanager 2.0.



NOTE! If there is a Modbus energy meter (e.g., Fronius Smart Meter) configured under Settings/Meter on the system, it will not be possible to use the “RTU” setting.

In this case, data output via Modbus will be deactivated automatically upon selection of “RTU.” This change will only be visible once the Datamanager web page has been reloaded.

Any energy meter connected to the Datamanager via RS-485 can also be read by Modbus TCP via the corresponding SunSpec models. The Modbus ID for the meter is 240.

- (1) **off**
No data output via Modbus.

If the data output via Modbus is deactivated, control commands sent to the inverter via Modbus are reset, e.g., no power reduction or no reactive power specification.

- (2) **tcp**
Data output via Modbus TCP.

Data export via Modbus off tcp rtu

Modbus port (2a)

String control address offset (2b)

Sunspec Model Type (2c) float int + SF

Demo mode (2e)

Inverter control via Modbus (2f)

- (2a) **Modbus port**
Number of the TCP port which must be used for Modbus communication.

Presetting: 502
Port 80 cannot be used for this purpose.

- (2b) **Fronius String Control address offset**
Offset value used to assign addresses to Fronius String Controls via Modbus. For further details, see the section entitled “Modbus Device ID for Fronius String Controls.”

SunSpec model type

Used to select the data type of data models for inverters and energy meters.

- (2c) **float**
Display as floating-point numbers.
SunSpec inverter model I111, I112, or I113.
SunSpec meter model M211, M212, or M213.
- (2d) **int+SF**
Display as integers with scaling factors.
SunSpec inverter model I101, I102, or I103.
SunSpec meter model M201, M202, or M203.

IMPORTANT! Since the different models have different numbers of registers, the register addresses of all the subsequent models also change when the data type is changed.

- (2e) **Demo mode**
The demo mode is used to implement or validate a Modbus master. It enables you to read inverter, energy meter, and Fronius String Control data without actually having to connect or activate a device. The same data is always sent back for all the registers.
- (2f) **Inverter control via Modbus**
If this option is activated, the inverter can be controlled via Modbus. The “Limit Control” selection field is displayed. Inverter control includes the following functions:
 - On/off
 - Power reduction
 - Setting a constant power factor (cos phi)
 - Setting a constant reactive power
- (3) **RTU**
Data output via Modbus RTU.

Data export via Modbus	<input type="radio"/> off <input type="radio"/> tcp <input checked="" type="radio"/> rtu	(3)
Baud rate	9600	(3a)
Parity	no	(3b)
String control address offset	101	(3c)
Sunspec Model Type	<input checked="" type="radio"/> float <input type="radio"/> int + SF	(3d)
Demo mode	<input type="checkbox"/>	(3f)
Inverter control via Modbus	<input checked="" type="checkbox"/>	(3g)

Notification: when connecting a Fronius Smart Meter, Modbus RTU is automatically disabled.

- (3a) **Baud rate**
Used to enter the baud rate.
- (3b) **Parity**
Selection field for entering the parity.
- (3c) **Fronius String Control address offset**
Offset value used to assign addresses to Fronius String Controls via Modbus. For further details, see the section entitled “Modbus Device ID for Fronius String Controls.”

SunSpec model type

Used to select the data type of data models for inverters.

- (3d) **float**
Display as floating-point numbers.
SunSpec inverter model I111, I112, or I113.
- (3e) **int+SF**
Display as integers with scaling factors.
SunSpec inverter model I101, I102, or I103.

IMPORTANT! Since the different models have different numbers of registers, the register addresses of all the subsequent models also change when the data type is changed.

- (3f) **Demo mode**
The demo mode is used to implement and validate a Modbus master. It enables you to read inverter, energy meter, and Fronius String Control data without actually having to connect or activate a device. The same data is always sent back for all the registers.
- (3g) **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
 - Setting a constant power factor (cos phi)
 - Setting a constant reactive power
- (4) **Control priorities**
Used to specify which service is given priority by the inverter control unit.
- 1 = highest priority, 3 = lowest priority.
- The control priorities can only be changed in the **UC EDITOR** menu item.
- (5) **“Apply/Save” button**
- (6) **“Cancel/Discard entries” button**

Limit Control

The "Limit Control" option is only available for the TCP transmission protocols. It is used to block inverter control commands from unauthorized users by only permitting control for specific devices.

Inverter control via Modbus	<input checked="" type="checkbox"/>	
Restrict the control	<input checked="" type="checkbox"/>	(1)
IP adress	<input type="text" value="10.5.34.1"/>	(2)

- (1) **Limit Control**
If this option is activated, only certain devices will be able to send control commands.
- (2) **IP address**
To limit inverter control to one or more devices, enter the IP addresses of the devices which are permitted to send commands to Fronius Datamanager in this field. Multiple entries are separated by commas.
- Examples:
- one IP address: **98.7.65.4**
 - Control only permitted by IP address 98.7.65.4
 - several IP addresses: **98.7.65.4, 222.44.33.1**
 - Control only permitted by IP addresses 98.7.65.4 and 222.44.33.1
 - IP address range, e.g., from 98.7.65.1 to 98.7.65.254 (CIDR notation): **98.7.65.0/24**
 - Control only permitted through IP addresses 98.7.65.1 to 98.7.65.254

Save or Reject Changes



Saves the changes and displays a message confirming this. If you exit the "Modbus" section without saving your changes, all the changes you have made will be rejected.



Prompts you to confirm whether or not you wish to reject the changes you have made and then reinstates the most recently saved values.

Settings – Inverter

Views – Inverter

Inverters

System name * (1)

(8) (9)

(7)

No	visible	Device type	Device name	PV[Wp]
10 (2)	<input checked="" type="checkbox"/> (3)	IG 30 Dummy (4)	* <input type="text" value="IG 30 Dummy (10)"/> (5)	* <input type="text" value="2800"/> (6)

The data for the Comparison View is defined in "Inverter."

- (1) Field for assigning a system name *
 - (2) Number of the inverter in Fronius Solar Net
 - (3) If the selection field is chosen, the inverter is displayed in the Comparison View
 - (4) Display of device type
 - (5) Field for assigning a device name *
 - (6) Field for entering the solar module power in W *
 - (7) "Set all" button
 - (8) "Apply/Save" button
 - (9) "Cancel/Discard entries" button
- * Fields marked with * are mandatory fields.

Settings – Fronius Sensor Cards

Sensor Cards

Fronius Sensor Cards

✓
(4)

✕
(5)

Fronius Sensor Card 1 (1)
(2)

Measurement channel (2)	Channel name (3)
Temperature 1	<input type="text" value="Temperature 1"/>
Temperature 2	<input type="text" value="Temperature 2"/>
Irradiation	<input type="text" value="Irradiation"/>
Digital 1	<input type="text" value="Digital 1"/>
Digital 2	<input type="text" value="Digital 2"/>
Current	<input type="text" value="Current"/>

A specific channel name can be assigned to each sensor value of a Fronius Sensor Card/Box in "Sensor Cards" (e.g., wind speed).

- (1) Sensor Card selection
- (2) Displayed measuring channel
- (3) Fields for assigning the channel name
- (4) "Apply/Save" button
- (5) "Cancel/Discard entries" button

Settings – Counter

General

IMPORTANT! Settings in the "Counter" menu item may only be entered by staff trained to do so!

The service password must be entered for the "Counter" menu item.

Three-phase or one-phase Fronius Smart Meters may be used. In both cases, selection is made via the "Fronius Smart Meter" item. Fronius Datamanager automatically detects the counter type.

Counter

Meter settings



Meter: (1)

Click [here](#) for circuit diagrams of the meter installation (2)

- (1) Field for selecting a counter:
 - none selected
 - Fronius Smart Meter
 - S0 inverter (for Fronius Galvo, Fronius Symo, and Fronius Primo inverters only)
 - (2) Link to counter circuit diagrams
 - (3) "Apply/Save" button
 - (4) "Cancel/Discard entries" button
-

Fronius Smart Meter

Recording self-consumption using Fronius Smart Meter

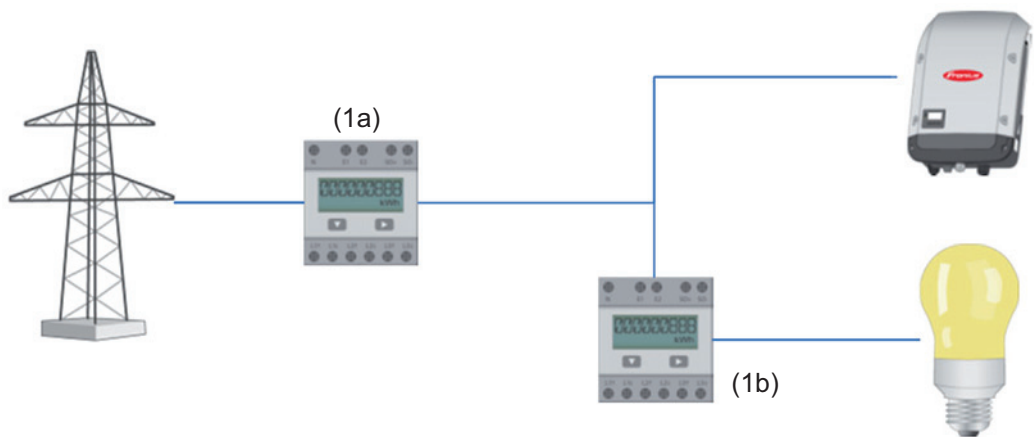
Meter: (1)

Location of the meter: Feed-in point (1a) Consumption path (1b)

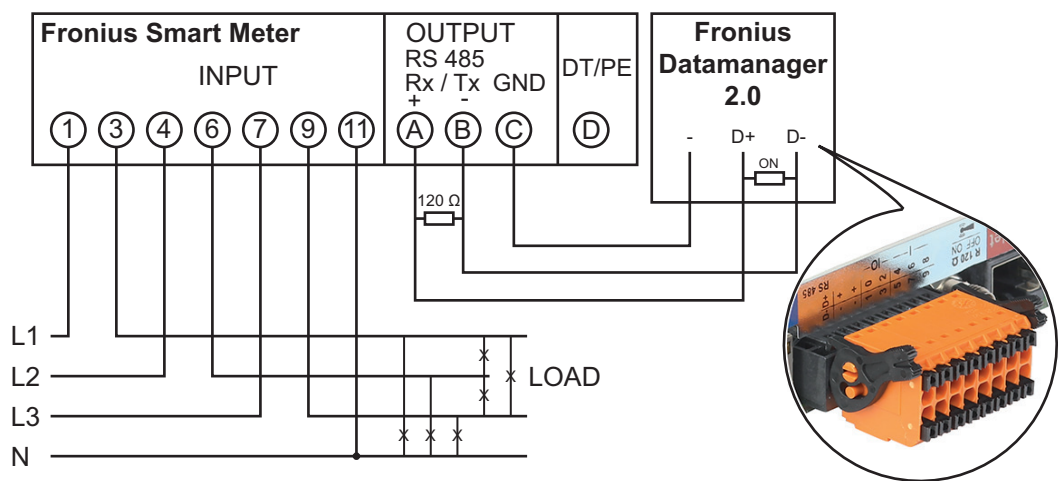
Click [here](#) for circuit diagrams of the meter installation (2)

Notification: When using the Fronius Smart Meter, the query of system data via Modbus RTU is not possible anymore.

- (1a) Counter position at feed-in point
The power of feeding in and energy are measured. The consumption is determined using these values and the system data.
- (1b) Counter position in consumption branch
The power consumed and energy are measured directly. The power of feeding in and energy are determined using these values and the system data.



Connecting the Fronius Smart Meter to Fronius Datamanager 2.0:



S0 Inverter

(1)

Meter: **S0 inverter 1** Impulses/kWh: **10000** (1c)

Location of the meter: Feed-in point Consumption path
 (1a) (1b)

Click [here](#) for circuit diagrams of the meter installation
 (2)

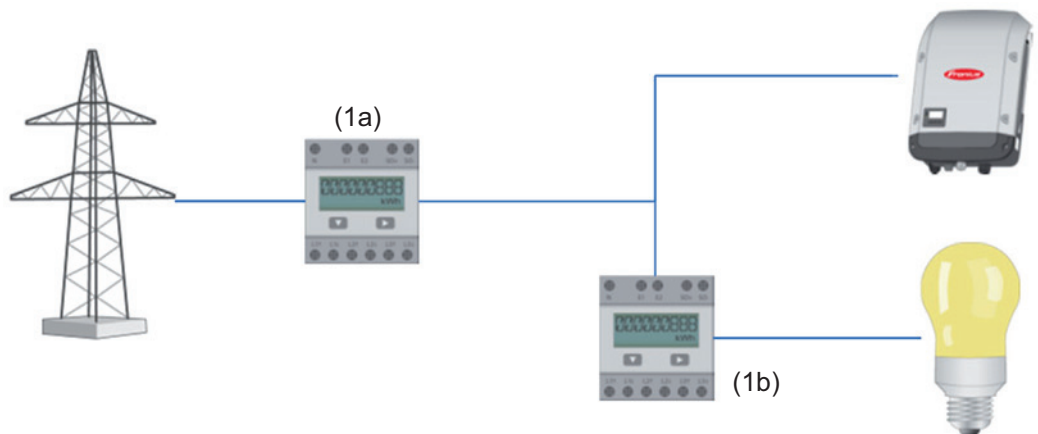
- (1a) Counter position at feed-in point
 The power of feeding in and energy are measured. The consumption is determined using these values and the system data.
 An S0 counter must be configured at this position in order to count the fed-in energy.

IMPORTANT! If you are using an S0 counter at the feed-in point, the counter data will not be displayed on Fronius Solar.web. This option is only provided for dynamic power reduction.

The consumption values can be detected to a limited extent when feeding into the grid.

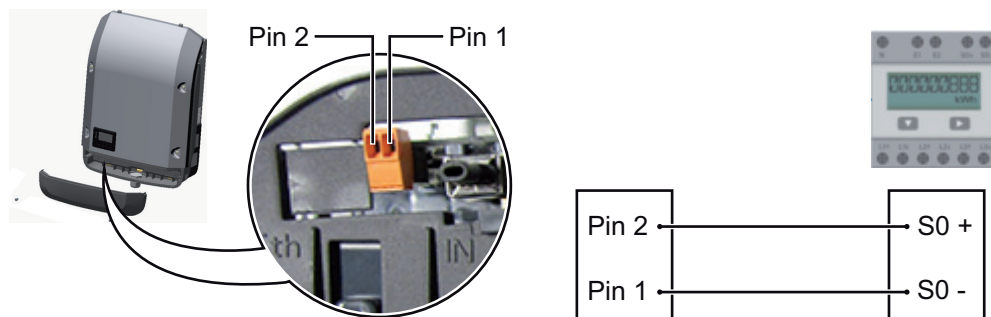
- (1b) Counter position in consumption branch
 The power consumed and energy are measured directly. The power of feeding in and energy are determined using these values and the system data.
 An S0 counter must be configured at this position in order to count the energy consumed.

- (1c) Field for entering the impulses per kWh



A counter for recording self-consumption per S0 can be connected directly to the inverter (for Fronius Galvo, Fronius Symo, Fronius Primo, and Fronius Eco only).

IMPORTANT! An S0 counter is connected to the switchable multifunctional current interface of the inverter. Connecting an S0 counter to the inverter may require an inverter firmware update.



Requirements for the S0 counter:

- Must meet standard IEC 62053-31 Class B
- Max. voltage: 15 V DC
- Max. current when ON: 15 mA
- Min. current when ON: 2 mA
- Max. current when OFF: 0.15 mA

Recommended max. impulse rate of S0 counter:

PV power kWp [kW]	Max. impulse rate per kWp
30	1000
20	2000
10	5000
≤ 5.5	10,000

Settings – UC Editor

General

In the "UC Editor" menu item, settings relevant to a utility company are made. An effective power limit in % and/or a power factor limit can be set.

IMPORTANT! Settings in the "UC Editor" menu item may only be made by staff trained to do so!

The service password must be entered for the "UC Editor" menu item.

UC Editor – IO control

UC editor

My System, at Mittwoch, 26. März 2014, 08:47:45

(11) (12)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
IO control	Input pattern	Active power	Power factor $\cos\phi$	UC output	excluded inverter(s)	
	1 2 3 4 5 6 7 8			I/O 0		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> 100 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="button" value="−"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> 60 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="button" value="−"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> 30 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="button" value="−"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> 0 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="button" value="−"/>
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> %	<input type="checkbox"/> <input type="radio"/> ind <input checked="" type="radio"/> cap	<input type="checkbox"/>	<input type="text"/>	<input type="button" value="+"/>


... not applicable
 ... not considered
 ... pin open
 ... pin closed

UC Editor – Factory setting with 100%, 60%, 30%, and 0% effective power. The settings can be changed at any time.

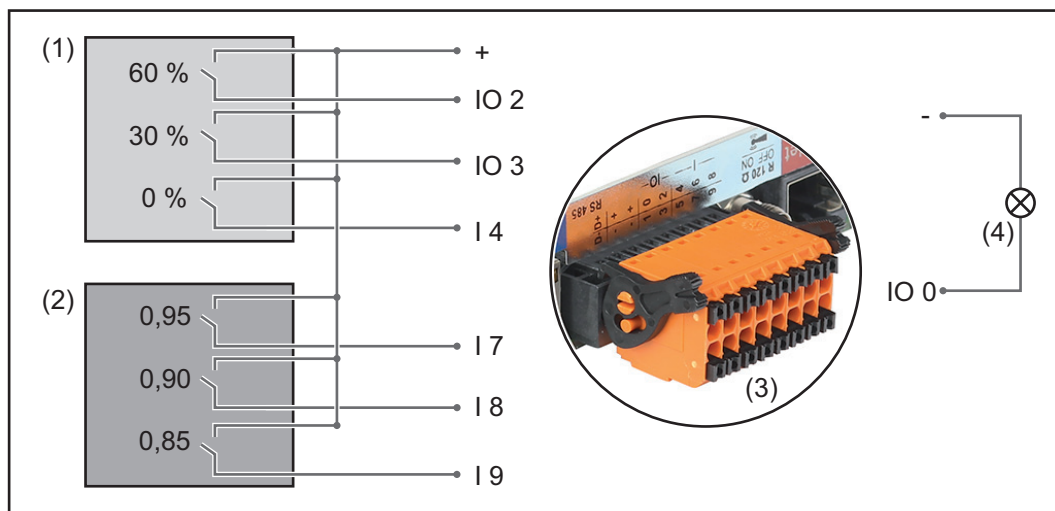
- (1) Activating the rule
- (2) Input pattern (assignment of individual I/Os)
 - 1 click = white
 - 2 clicks = blue
 - 3 clicks = gray
- (3) First activate effective power, then enter the desired effective power as a %
- (4) First activate power factor $\cos\phi$, then enter the desired power factor and select "ind" or "cap"
 - ind = inductive
 - cap = capacitive

- (5) UC Output (feedback output)
When the rule is activated, the I/O 0 output will be activated (e.g., for operating a signal device)
- (6) Excluded inverters
Enter the numbers of inverters here that are to be excluded from control. Separate multiple inverters with commas.
- (7) Delete/Add a Rule
+ = add a new rule
- = delete selected rule
- (8) Legend for use of colors
- (9) Click "Import" button
to import rules in *.fpc format

The function of the "Import" button depends on the browser used, e.g., Firefox and Google Chrome support the function.
- (10) Click "Export" button
to save the rules separately in *.fpc format
- (11) "Apply/Save" button
- (12) "Cancel/Discard entries" button

 **NOTE!** The print function of the web browser can be used to save the UC Editor settings as a PDF or print them out (e.g., as a commissioning report).

Connection Example



2 Ripple control signal receivers, connected to the Fronius Datamanager 2.0 I/Os

- (1) Ripple control signal receiver with 3 relays for effective power limitation
- (2) Ripple control signal receiver with 3 relays for power factor limitation
- (3) I/Os on Fronius Datamanager 2.0
- (4) Loads (e.g., signal light, signal relay)

The ripple control signal receiver and the Fronius Datamanager 2.0 plug are connected to one another using a 4-pin cable in accordance with the connection diagram. For distances of greater than 10 m between Fronius Datamanager 2.0 and the ripple control signal receiver, a shielded cable is recommended.

For this case 6 pins have to be defined under IO control in the menu item IO Mapping, e.g.:

IO mapping



RS485							
D+	+	+	0	2	4	6	8
D-	-	-	1	3	5	7	9
RS485							

AUS - Demand Response Modes (DRM)

IO control

Load management

PIN ASSIGNMENTS

- 0. IO control feedback
- 1. none
- 2. IO control 1
- 3. IO control 2
- 4. IO control 3
- 5. IO control 4
- 6. IO control 5
- 7. IO control 6
- 8. none
- 9. none

IO control 1 (optional)	Pin 2 (default) ▼
IO control 2 (optional)	Pin 3 (default) ▼
IO control 3 (optional)	Pin 4 (default) ▼
IO control 4 (optional)	Pin 5 (default) ▼
IO control 5 (optional)	Pin 6 (default) ▼
IO control 6 (optional)	Pin 7 (default) ▼
IO control 7 (optional)	not used ▼
IO control 8 (optional)	not used ▼
IO control feedback (optional)	Pin 0 (default) ▼

can be used as an input or output
 can be used as an input
 pin already in use

IO mapping, 6 Pins defined (defaults selected)

Settings on the UC Editor:

unlocked	Input pattern								Active power	Power factor cosp	UC output	excluded inverter(s)
	1*	2	3	4	5	6	7	8				
↑	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 60 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>
(1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 30 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>
↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> 0 %	<input type="checkbox"/> 1 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>
↑	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 100 %	<input checked="" type="checkbox"/> 0,95 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>
(2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 100 %	<input checked="" type="checkbox"/> 0,90 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>
↓	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 100 %	<input checked="" type="checkbox"/> 0,85 <input type="radio"/> ind <input checked="" type="radio"/> cap	<input checked="" type="checkbox"/>	<input type="text"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> %	<input type="checkbox"/> <input type="radio"/> ind <input type="radio"/> cap	<input type="checkbox"/>	<input type="text"/>

... not applicable
 ... not considered
 ... pin open
 ... pin closed

Example settings on the UC editor for 2 Ripple control signal receivers:

(1) effective power limitation

(2) Power factor limitation

* ... virtual IO mapping according to section "Settings - IO Mapping" (see page External Link: "Page").

EVU Editor - AUS - Demand Response Modes (DRM)

IMPORTANT! To control the inverter via DRM, a Fronius DRM interface (item number 4,240,005) is required in the inverter. Installation is described in the installation instructions for the Fronius DRM interface. The installation instructions for the Fronius DRM interface are available at the following link on the Fronius homepage:



<http://www.fronius.com/QR-link/4204102292>



AUS - Demand Response Modes (DRM)

Reactive power output (Q_{rel}) for DRM 3 % (1)

Reactive power consumption (Q_{rel}) for DRM 7 % (2)

- (1) Field for entering the reactive power output (= +Q_{rel}) for DRM 3 in %
- (2) Field for entering the reactive power consumption (= -Q_{rel}) for DRM 7 in %
- (3) "Apply/Save" button
- (4) "Cancel/Discard entries" button

UC Editor – Dynamic Power Reduction

UCs or utility companies can prescribe feed-in limits for an inverter (e.g., max. 70% of the kWp or max. 5 kW).

Dynamic power reduction takes into account self-consumption in the household before the power of an inverter is reduced:

- An individual limit can be set.
- A counter for determining self-consumption per S0 can be connected directly to the inverter (Fronius Galvo and Fronius Symo only).
- A Fronius Smart Meter can be connected to Fronius Datamanager 2.0 at the D-/D+ connections for Modbus data.



Dynamic power reduction

(1) (2)
Power limit: No limit limit for entire system
total DC power of the system: Wp (3)
max. production power of entire system: (4) (5)

Power limit

Option to define the maximum output power of the photovoltaic system.

- (1) No limit
The photovoltaic system converts all available PV energy and feeds it into the grid.
- (2) Dynamic power reduction limit for the entire system
The entire photovoltaic system is limited to a fixed power limit.
- (3) Field for entering the total DC system power in Wp
This value is used as a control reference and also in case of errors (e.g., counter failure).
- (4) Field for entering the max. power in W or %

If no counter has been selected in the "Counter" menu item:
Max. power generated for the entire system

If Fronius Smart Meter or S0 inverter has been selected in "Counter" menu item:
Max. energy fed into the grid
- (5) Selection field % or W
- (6) "Apply/Save" button
- (7) "Cancel/Discard entries" button

UC Editor – Control Priorities

✓	✕
(4)	(5)

Controlling priority

	1	2	3	
Ripple control signal receiver	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	(1)
Dynamic power reduction	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	(2)
Controlling via Modbus	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	(3)

1 = highest priority, 3 = lowest priority

- (1) Used to set control priorities for the ripple control signal receiver
- (2) Used to set control priorities for dynamic power reduction
- (3) Used to set control priorities for control via Modbus
- (4) "Apply/Save" button
- (5) "Cancel/Discard entries" button

Appendix

Technical Data

Technical Data

Memory capacity	up to 4096 days
Supply voltage	
with Fronius Com Card function	115–230 V AC
without Fronius Com Card function	12 V DC
Energy consumption	< 2 W
Dimensions	
Plug-in card	132 x 103 x 22 mm 5.2 x 4.1 x 0.9 in.
Box	190 x 114 x 53 mm 4.69 x 4.49 x 2.09 in.
Degree of protection (box)	IP 20
External power supply connection (box)	12 V DC, max. 1 A, Class 2
Cable cross section for external power supply connection (box)	0.13–1.5 mm ² AWG 16–24 (USA/Canada)
Ethernet (LAN)	RJ 45, 100 Mbit
WLAN	IEEE 802.11b/g/n client
RS 422 (Fronius Solar Net)	RJ 45
Ambient temperature	
Plug-in card	-20–+65°C -4–+149°F
Box	0–50°C 32–122°F
Fronius Solar Net power	approx. 3 W max. 3 DATCOM components *
I/O connection specifications	
Voltage level of digital inputs	low = min. 0 V–max. 1.8 V high = min. 3 V–max. 24 V (+ 20%)
Input currents of digital inputs	depending on the input voltage; input resistance = 46 kOhm
Switching capacity of digital outputs when supplied by the Datamanager plug-in card	3.2 W
Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius IG Plus A, Fronius CL, Fronius CL USA, Fronius IG 300–500	10.8 V
Fronius Galvo, Fronius Symo, Fronius Primo	12.8 V in total for all four digital outputs (minus other Fronius Solar Net participants)

Switching capacity of digital outputs when supplied by an external power supply with min. 10.7–max. 24 V DC	1 A, 10.7–24 V DC (depending on the external power supply) per digital output
Max. switchable inductive loads on the digital outputs	76 mJ (per output)
Modbus RTU	RS-485 2-wire
Factory setting of RS-485 interface:	
Speed	9600 baud
Data frame	1 start bit 8 data bits no parity 1 stop bit

- * Given sufficient power supply from Fronius Solar Net, the green LED lights up on every DATCOM component.
If the green LED does not light up, the power supply unit available from Fronius should be inserted into the 12 V power supply connection socket of an external DATCOM component.
Check the cable and plug connections if necessary.

Examples of external DATCOM components: Fronius String Control, Fronius Sensor Box etc.

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