Fronius
SHIFTING THE LIMITS

Fronius Datamanager Galvo - Symo Installation

EN-US
Operating Instructions
System monitoring

DA
Betjeningsvejledning
Anlægsovervågning

SV
Bruksanvisning
Anläggningsövervakning

EL
Οδηγίες χειρισμού
Εγκατάστασης

42,0410,1987 004-11122014

Brief overview

Detailed information

Detailed information on the Fronius Datamanager can be found in the full version of the Fronius Datamanager (Galvo/Symo) operating instructions under System Monitoring on our home page at http://www.fronius.com.

General

General

Fronius Datamanager is a network-compatible datalogger which combines the functionality of the Fronius Com Card and Fronius Datalogger Web on a plug-in card.
The Fronius Datamanager web interface provides a quick overview of the photovoltaic system.
The web interface can be accessed via a direct connection from the Intranet or, if properly configured, via the Internet.
Fronius Datamanager is equipped with an easy-to-configure system monitoring feature with an automatic alarm. The alarm can be signaled via SMS, e-mail, or fax.

When connected to Fronius Solar.access, real-time photovoltaic system data as well as archived data can be saved to a PC and analyzed. You can also make settings to all devices in Fronius Solar Net.

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 to Fronius Solar.web.

Applicable DATCOM Components

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

- up to 100	x	Fronius inverters (incl. the inverter in which the Fronius Datamanager 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 KB/s and an upload speed of
  at least 256 KB/s.
- For solutions with mobile internet services, Fronius recommends a standard transmission of at least 3 G with reliable signal strength.

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

Since Fronius Datamanager acts as a data logger, no other data logger may be present in the Fronius Solar Net ring.
Only have one Fronius Datamanager for each Fronius Solar Net ring.

The following DATCOM components may not be operated together with the Fronius Datamanager 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

To use "Fronius Datamanager", the plug-in card must be installed in one inverter.
The "Fronius Datamanager" plug-in card and the "Fronius Com Card" must not be used together in one inverter.

Notes regarding Radio Certification

Fronius Datamanager plug-in cards with WLAN are equipped with a wireless module.

Wireless modules in the USA require FCC certification:

FCC

This device conforms to the limits 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

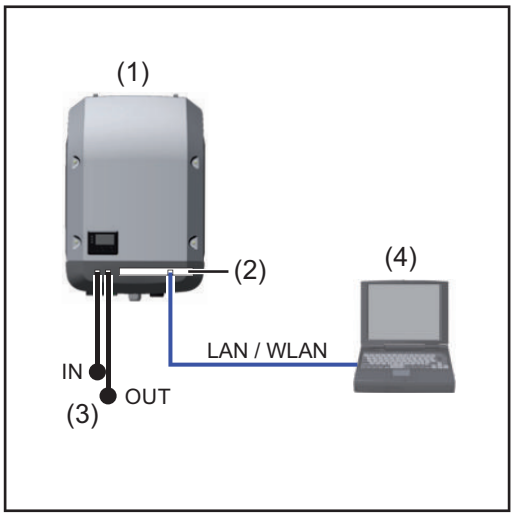
This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions:
(1) this device is not permitted to cause harmful interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of 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.

Configuration Examples

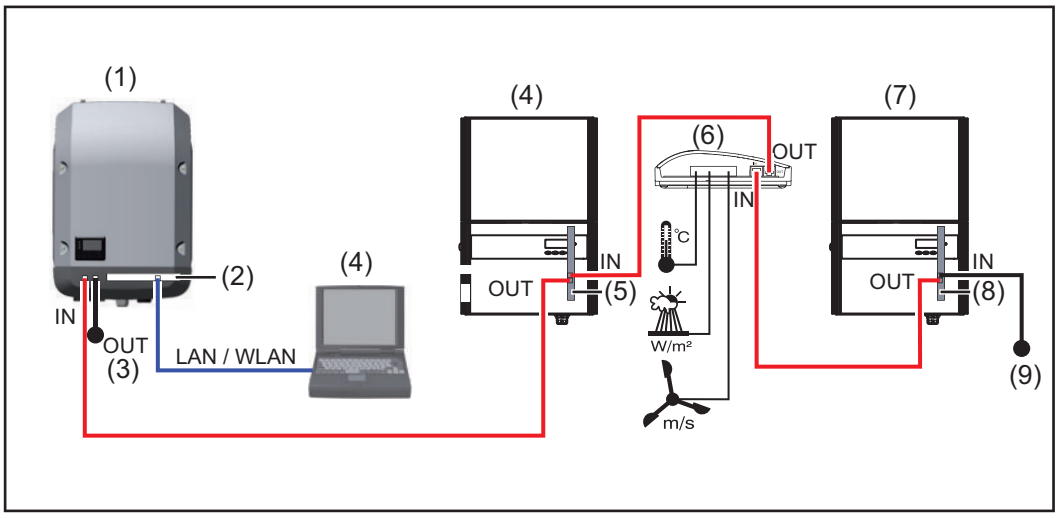
Linking inverters with Fronius Datamanager to a PC:



(1) Inverter
+
(2) Fronius Datamanager
(3) Terminating plug (2x)
(4) PC/Laptop

NOTE! When linking an inverter with Fronius Datamanager to a PC, a terminating plug must be connected to both of the Fronius Solar Net In and Fronius Solar Net OUT connection sockets.

Inverter (Fronius Galvo or Fronius Symo) linked to Fronius Datamanager with additional inverters (Fronius IG Plus V), a Fronius Sensor Box and a PC:



(1) Inverter
(e.g: Fronius Galvo or Fronius Symo)
+
(2) Fronius Datamanager
(3) PC/Laptop
(4) Inverter
(e.g., Fronius IG Plus V)
+
(5) Fronius Com Card
(6) Fronius Sensor Box
(7) Inverter
(e.g., Fronius IG Plus V)
+
(8) Fronius Com Card
(9) Terminating plug

NOTE! When linking several DATCOM components in connection with an inverter with Fronius Datamanager:
Connect the Fronius Solar Net IN connection socket of the inverter, for example, with the OUT connection socket of the next DATACOM component. A terminating plug must be inserted into empty Fronius Solar Net connection sockets of the last DATACOM component.

General information for the network administrator

Requirements

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

If Fronius Datamanager is being integrated into an existing network, the Fronius Datamanager 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.
- 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 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 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 may not have the same IP address as the PC/laptop!
- Fronius Datamanager cannot connect to the Internet spontaneously. A router must be used for a DSL connection to the Internet.

If you are using the WLAN network connection, the Fronius Datamanager must be equipped with a WLAN function and a WLAN antenna suitable for the inverter.

General Firewall Settings

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

	49049/UDP output	15015/TCP input	80/TCP input
Sending service messages	x	-	-
Connecting to datalogger via 'Fronius Solar.web'	x	-	-
Connecting to datalogger via 'Fronius Solar.access' or 'Fronius Solar.service'	-	x	x
Access to the Fronius Datamanager web interface	-	-	x

Service messages are sent via Fronius Solar.web.

Configure the firewall so that the IP address of Fronius Datamanager 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 web interface outside of the LAN:
- Configure the network router so that requests are forwarded to port 80/TCP on Fronius Datamanager

Sending service messages via a DSL Internet connection

Normally, no additional router configuration is required for a regular DSL Internet connection for accessing 'Fronius Solar.web' and/or sending 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 cannot connect to the Internet spontaneously. A router must be used for a DSL connection to the Internet.

Calculating Data Volumes

When operating the Fronius Datamanager, 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.

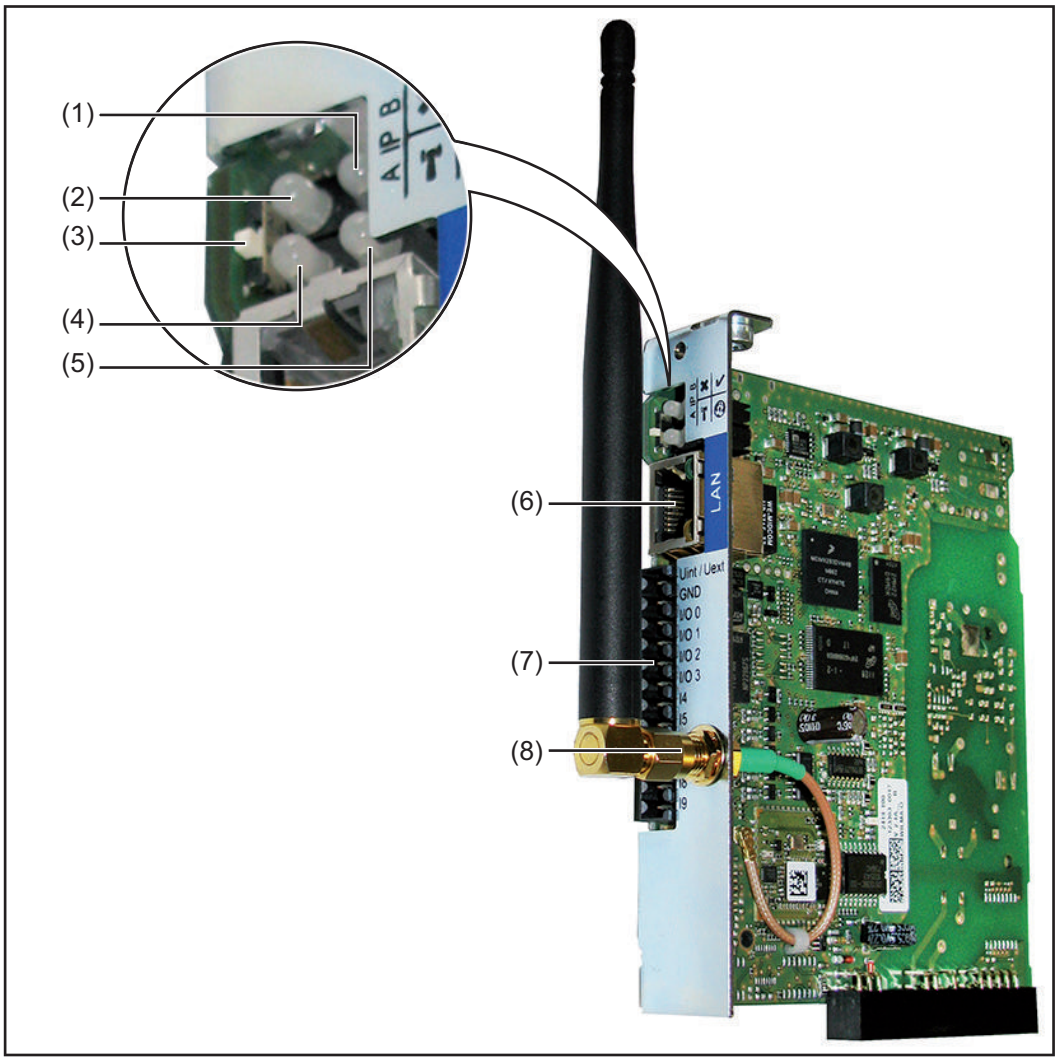
Detailed information on the calculation of data volumes can be found on our home page at *http://www.fronius.com* in the operating instructions for the Fronius Datamanager (Galvo/Symo).

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

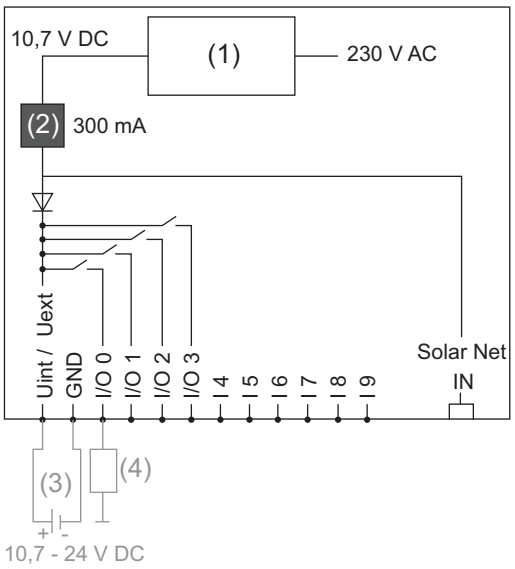
Controls, Connections and Indicators



No.	Function	
(1)	**Supply LED** - Lights up green: When sufficient power is coming from Fronius Solar Net; Fronius Datamanager is operational - Does not light up: When no power or not enough power is coming from Fronius Solar Net; an external power supply is required - Flashes red: During an update process **IMPORTANT!** Do not interrupt the power supply during an update process. - Lights up red: the update process failed	✔

No.	Function
(2)	**Connection LED** - lights up green: When there is an active connection within Fronius Solar Net - Lights up red: When there is an interrupted connection within Fronius Solar Net
(3)	**IP switch** for changing the IP address: A Default IP address "169.254.0.180" Fronius Datamanager uses the fixed IP address 169.254.0.180; the fixed IP address is used for a direct connection to a PC via LAN without first having to pre-configure the PC B Assigned IP address Fronius Datamanager operates using an assigned IP address (factory setting 192.168.1.180); The IP address can be set on the Fronius Datamanager web interface.
(4)	**WLAN LED** - Flashes green: Fronius Datamanager is in service mode (IP switch on the Fronius Datamanager plug-in card is in position A) - Lights up green: When there is an existing network connection - Lights up red: When there is no existing network connection - Does not light up: Plug-in card without WLAN
(5)	**Solar Web LED connection** - Lights up green: When there is an existing connection to Fronius Solar.web - Lights up red: When there is no connection to Fronius Solar.web, but one is required - Does not light up: When no connection to Fronius Solar.web is required
(6)	**LAN connection socket** Ethernet interface colored blue for connecting the Ethernet cable
(7)	**I/Os** digital inputs and outputs **Digital inputs:** I/O 0 – I/O 3, I 4 – I 9 voltage level: low = min. 0 V – max. 1.8 V; high = min. 3 V – max. 30 V input currents: dependent on input voltage; input resistance = 46 kOhm **Digital outputs:** I/O 0 – I/O 3 Switching capacity when supplied by the Datamanager plug-in card: 3.2 W, 10.7 V in total for all 4 digital outputs Switching capacity when supplied by an external power supply with min. 10.7 – max. 24 V DC, connected to Uint / Uext and GND: 1 A, 10.7 – 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)	**WLAN Antenna Socket with WLAN antenna** (only for versions with WLAN) for connecting the WLAN antenna

Schematic Connection of I/Os



Supply via Datamanager plug-in card:

(1) Power supply
(2) Current limit

Supply via external power supply:

(3) External power supply
(4) Load

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

Cabling

Fronius Solar Net clients

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

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

Inserting Fronius Datamanager into an inverter

General

Provided the Fronius Datamanager plug-in card is not fitted as standard in the inverter, the plug-in card must be inserted into the inverter in accordance with the operating or installation instructions of the inverter in question. Please note the safety and warning information in your inverter's operating instructions.

IMPORTANT! Before inserting the Fronius Datamanager plug-in card, remove any existing 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.

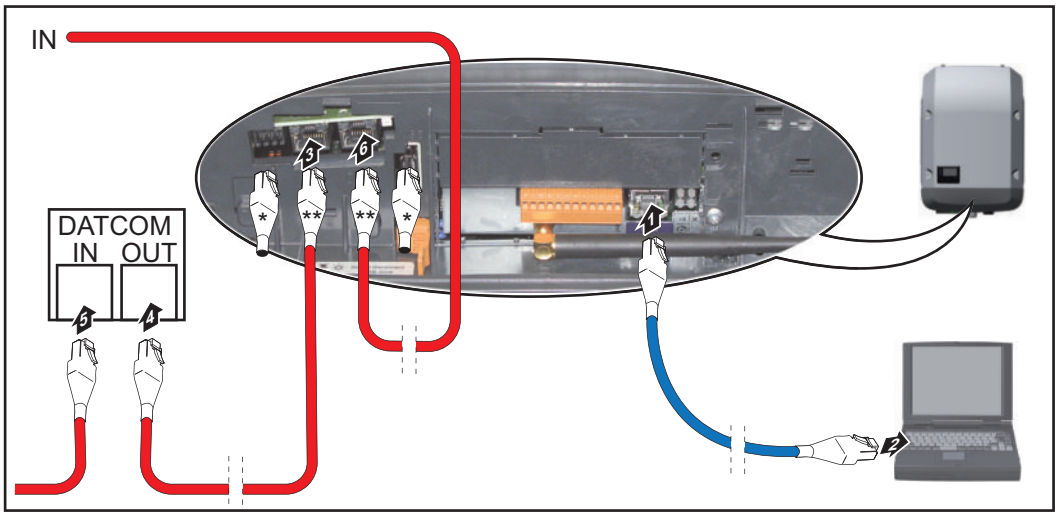
NOTE! Follow general ESD precautions when handling plug-in cards.

Installing Fronius Datamanager in Fronius Solar Net

Installing Inverters with Fronius Datamanager in Fronius Solar Net

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

- The Ethernet cable should only be inserted into the LAN connection socket (colored blue).
- The Solar Net cable should only be inserted into the inverter Solar Net IN or Solar Net OUT connection sockets.



* Terminating plug, if only one inverter with Fronius Datamanager is linked to a PC or if there is no further Solar Net subscriber on the Solar Net connection socket.

** Solar Net Cable, if an inverter with Fronius Datamanager is linked to a PC and other DATCOM components

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 is being linked to a PC:
Insert a terminating 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:
Insert the Solar Net cable into the Solar Net IN connection socket and the Solar Net OUT connection socket.

5 Connect the other DATCOM components.

IMPORTANT! A terminating plug must be inserted into every empty Solar Net connection socket of the last DATACOM component.

Installing Fronius Datamanager – 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 requires knowledge of network technology.

Starting Up for the First Time

1 Insert Fronius Datamanager into the inverter

⇨ See section "Inserting Fronius Datamanager into an inverter"

2 Insert blue Ethernet cable into Fronius Datamanager (LAN connection socket)

3 Insert terminating plug into Fronius Datamanager (Solar Net IN connection socket)

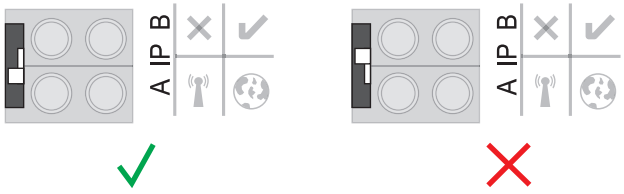
4 Insert blue Ethernet cable into the PC/laptop

⇨ See section "Installing Fronius Datamanager in Fronius Solar Net"

5 Turn off WLAN on PC/laptop (to avoid network conflicts)

6 Adjust network settings for Fronius Datamanager on PC/laptop:
"Obtain an IP address automatically (DHCP)" must be activated

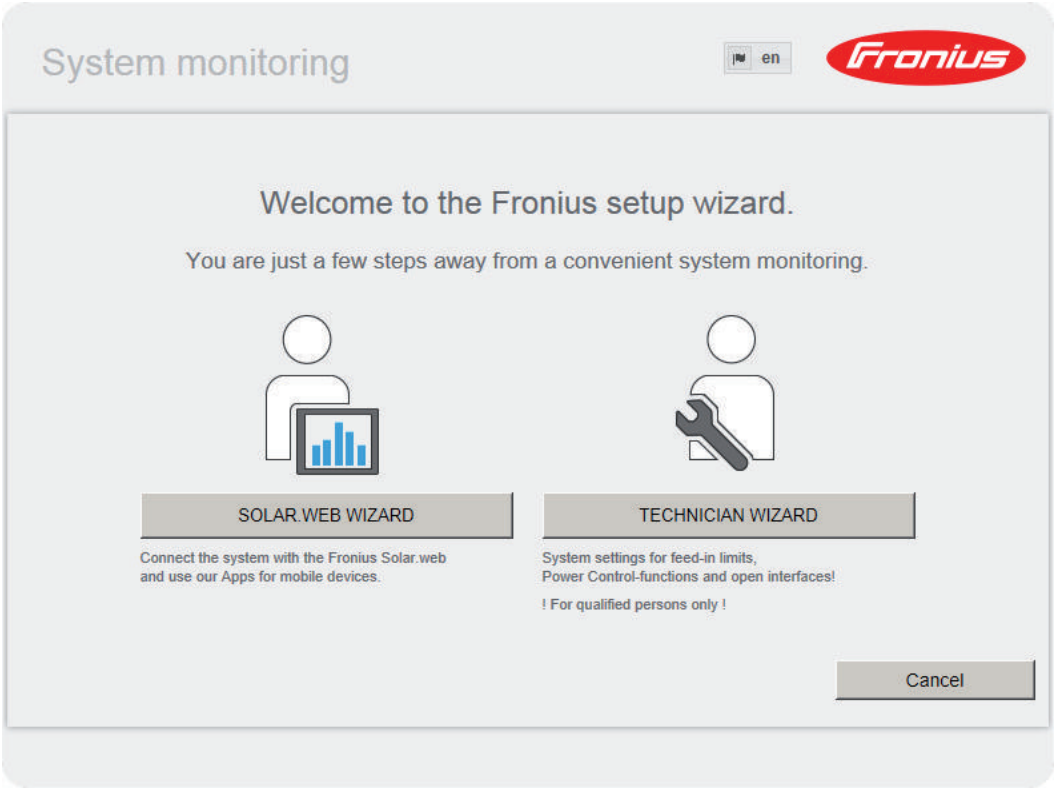
7 Switch IP switch on Fronius Datamanager to position - A -



8 Close the inverter and switch it on

9 After about 1 minute, open the browser on the PC/laptop and enter the following address (web server works with Internet Explorer 9 or higher, Chrome or Firefox):
http://169.254.0.180

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 website opens.

IMPORTANT: To establish a connection to Fronius Datamanager, the end device in question (e.g., laptop, tablet) must be configured as follows:
- "Obtain an IP address automatically (DHCP)" must be activated

Technical Data

Technical Data

Memory capacity	16 MB
Supply voltage	230 V AC
Energy consumption	typ. 1.4 W (without WiFi) typ. 2.2 W (with WiFi)
Dimensions	132 x 103 x 22 mm 5.2 x 4.1 x 0.9 in.
Ethernet (LAN)	RJ 45, 100 MB
WiFi	IEEE 802.11b/g Client
RS 485 (Fronius Solar Net)	RJ 45
Ambient temperature	-20 – +65°C -4 – +149°F
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. 30 V
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, 10.7 V in total for all 4 digital outputs (minus other 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 energy of digital outputs	76 mJ (per output)

* When sufficient power is coming from Fronius Solar Net, the green LED lights up on every DATCOM component.
If the green LED does not light up, the power pack available from Fronius should be inserted into the 12 V power pack connection socket of the DATCOM component.
Check the cable and plug connections if necessary.