FRONIUS IG Personal Display

US Operating Instructions

Data Communication

42,0410,1327 012007

Dear Fronius Customer,

Introduction

Thank you for choosing Fronius - and congratulations on your new, high-quality, high-tech Fronius product. This introduction should provide you with general information about the equipment. Please read it carefully to learn about the many great features of your new Fronius product. This is the best way to get the most out of all the advantages that it has to offer.

Please also note the safety information and the safety precautions for the product installation location. Following all product instructions will ensure long-lasting quality and reliability. And these are the essential ingredients for outstanding results.

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General remarks

Machine concept

The FRONIUS IG personal display enables current performance data to be viewed at any time at any location within a specified distance of the unit.

All that is required to enable data to be sent to the personal display is the relevant display card with a radio antenna for the FRONIUS IG. The power for the personal display is supplied from batteries or from the power supply unit supplied with the equipment. Performance data from up to 15 FRONIUS IGs can be shown on the personal display. The different display modes enable performance data from the whole installation or from each individual inverter to be viewed.

Notes on identification requirements for radio appliances

Changes or modifications of the radio module not expressly approved are not allowed and will void the user's authority to operate the equipment.

In the USA, radio modules are subject to FCC requirements:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC ID: QKWFRF905

System requirements

FRONIUS IG system requirements for running the FRONIUS IG personal display:

- FRONIUS IG with serial number 17xxxxxx or above
- Relevant display card with radio antenna for FRONIUS IG

Functional principle

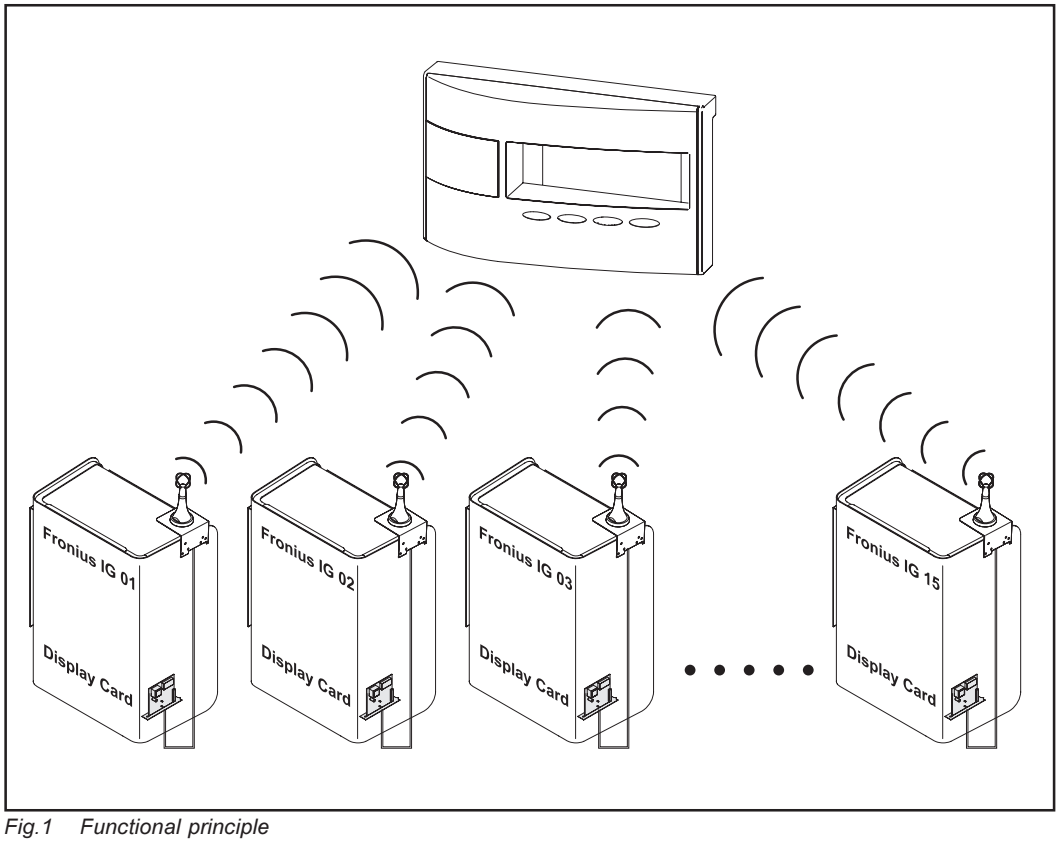


Fig.1 Functional principle

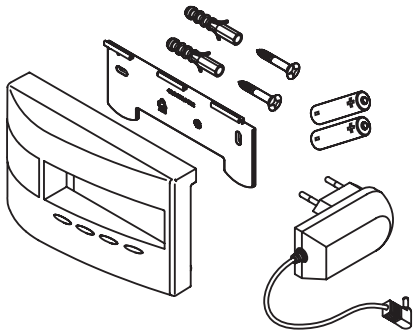
System components

General remarks

The system components listed below are included in the initial scope of supply. To add additional FRONIUS IGs to the system you will also need a display card with radio antenna for each inverter.

System components

Personal display components



Display card components:

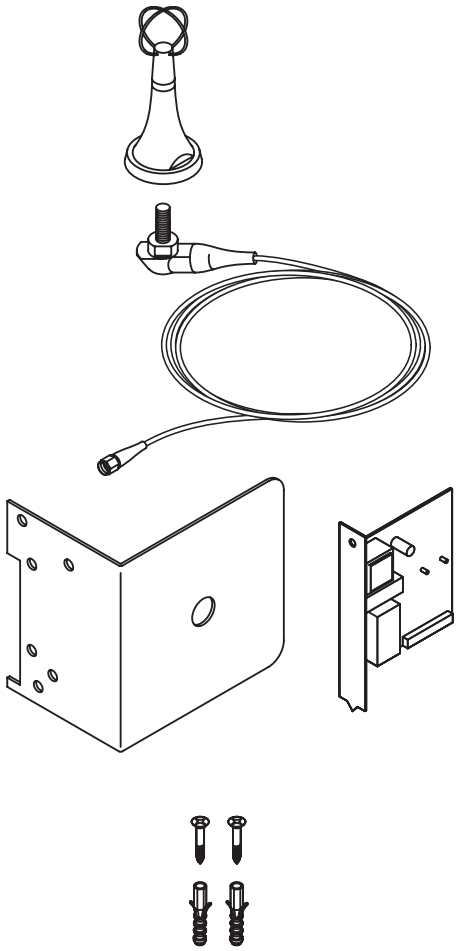


Fig.2 System components

Before commissioning

General remarks

WARNING! Incorrect operation may result in serious injury or damage. You should not use the functions described until you have thoroughly read and understood the following documents:

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

Proper usage

The personal display is only suitable for use in photovoltaic systems that include a FRONIUS IG inverter.
Any other form of usage is deemed improper.

The manufacturer shall not be held liable for any damages arising from such usage.
Proper usage also includes complying with all the instructions in the operating instructions

Setup regulations

To comply with IP20 protection requirements, the personal display must only be installed indoors.
The equipment should be protected from dampness.

The antenna can be set up and operated anywhere out of doors.

Preparing your FRONIUS IG for commissioning

USA

General remarks

WARNING! Mains voltage can cause fatal injuries. The connection area should only ever be opened by an authorised electrical engineer, and only when the power is disconnected.

WARNING! Mains voltage and DC voltage from the solar modules can cause fatal injuries. Plug-in cards must not be installed unless the FRONIUS IG
- has been disconnected on the mains (AC) side.
- has been disconnected on the solar module side (DC side)

NOTE! In the case of systems with several inverters, the antennae must be at least 0.5 m (20 in.) apart so that communication with the personal display is not disrupted. For an optimum range, we recommend a distance of 1 m (39 in.)

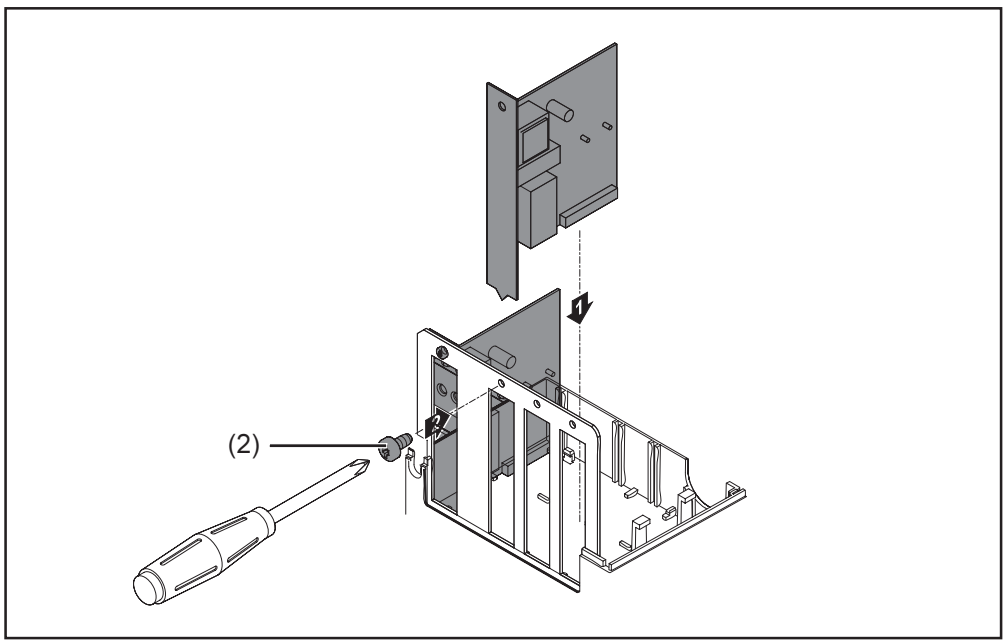
Important! The mounting bracket is part of the antenna. Only fit the antenna to the mounting bracket supplied with the antenna.

Installing the display card in FRONIUS IG

To install a plug-in card:
1. Put FRONIUS IG into "Standby" mode
2. Disconnect FRONIUS IG on both the AC and DC sides
3. Open connection area by removing the LCD foceplate. See chapter entitled "Opening the housing" in your FRONIUS IG operating instructions
4. Unplug the ribbon cable that attaches the LCD faceplate cover to the unit from the control board

NOTE! Risk of damage to the plug-in card. Be sure to follow the general ESD regulations when fitting plug-in cards.

5.



Installing the display card in FRONIUS IG (continued)

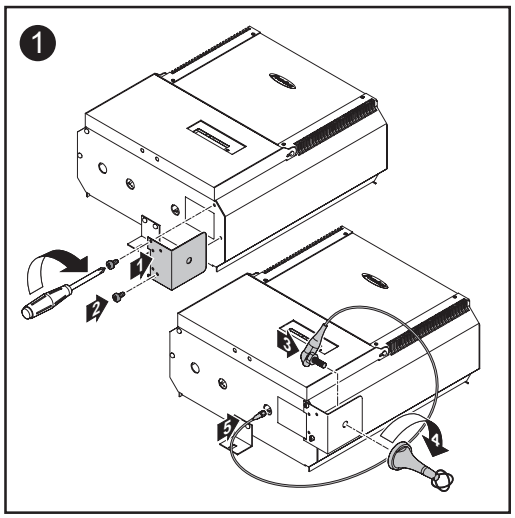
NOTE! The following points should be borne in mind when installing the display card:

- Only install the display card in the "Option 1" or "Option 2" slots
- Under no circumstances should it be installed in the slot on the extreme left, which is labelled ENS

7. Close the housing
8. Connect AC and DC lines to FRONIUS IG

Installing/connecting the antenna

The antenna is supplied with a 2 m (6.74 ft) connecting cable. If the FRONIUS IG is installed in a location that is shielded from radio waves, this cable allows the antenna to be installed where it can receive radio waves.



Important! Use the previously removed original housing screw to screw the antenna mounting bracket onto the housing.

Controls

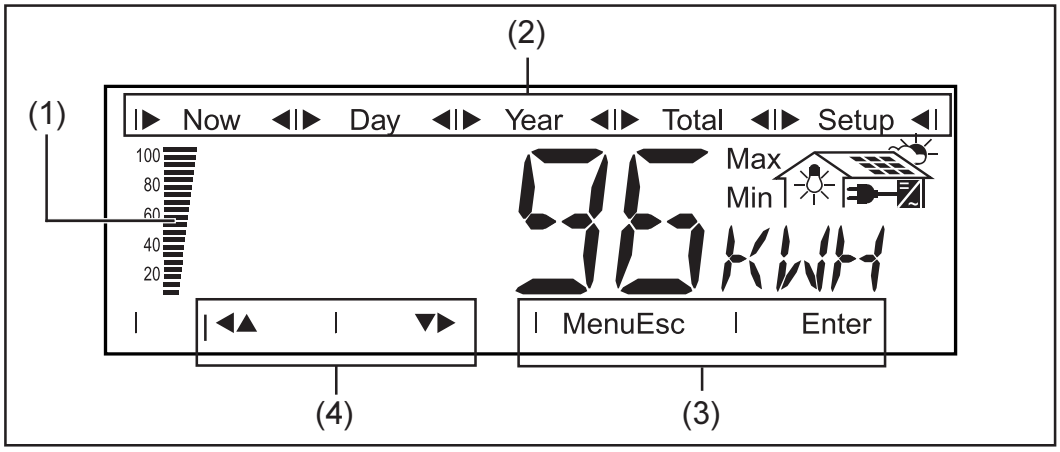
General remarks

NOTE! As a result of firmware updates, you may find that there are functions available on your unit that are not described in these operating instructions or vice versa. Certain illustrations may also differ slightly from the actual controls on your unit. However, the functionality of these controls is identical.

The personal display enables performance data for the entire installation and for each individual inverter to be displayed. The menu structure is largely identical to that of the FRONIUS IG.

Description of keys and symbols

The personal display is modelled on the display of your FRONIUS IG. A detailed description of how the different keys operate and the symbols can be found in the operating instructions for your FRONIUS IG.



(1) The segment column
indicates the current charge state (100 - 20%) of the batteries. If the charge state of the batteries starts to fall towards 0 the column will start flashing.

Important! If the charge in the batteries falls any lower the unit will switch into sleep mode and will suspend radio communication. Nothing appears on the display in sleep mode. If a key is pressed, "LOW batt" will appear on the display. To recharge the batteries, plug in the power supply and press any button.

(2) Display modes bar
indicates the display mode currently selected.

(3) Indicator for selector keys
- Menu ... for switching to a different display mode
- Esc ... to exit from the Setup settings without saving them
- Enter ... to confirm and save a selection

(4) Navigation arrow keys
for navigating in the direction indicated, depending on the option selected

Commissioning

Initial settings on the FRONIUS IG

The personal display allows performance data to be displayed for up to 15 inverters. To enable the personal display to differentiate between the different inverters when more than one FRONIUS IG is connected, each inverter must be assigned an individual numeric address.

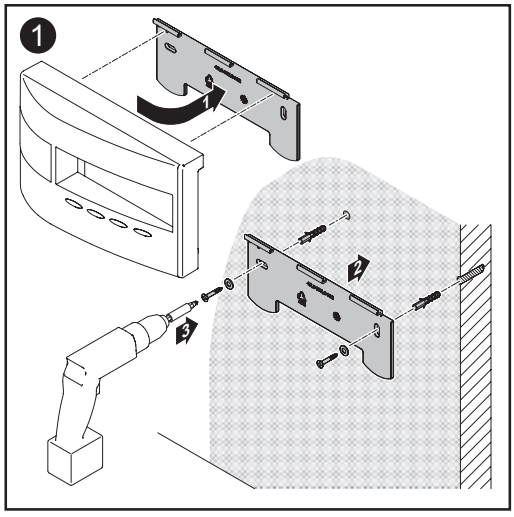
Important! These numbers must be between 01 and 15 so that the personal display can identify the inverter. When several inverters are in use, ensure that each of them is assigned a different number.

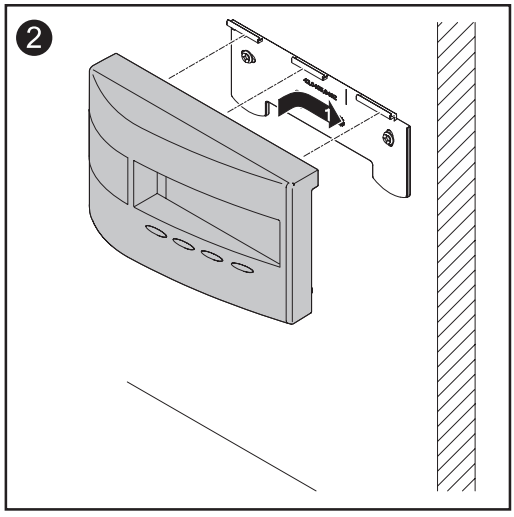
For information on setting the IG number see the chapter entitled "The Setup Menu/IG no." in the FRONIUS IG operating instructions

Installing/setting up the personal display

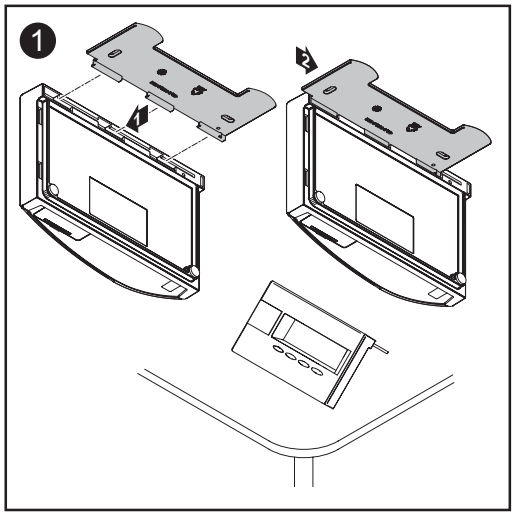
Using the wall bracket included in the scope of supply, the personal display can be
- mounted on the appropriate wall
- used as a desktop unit by turning the wall bracket through 90°

Wall mounting:





Desktop:



Installing and charging batteries

WARNING! Danger of explosion by using not suitable batteries. Only use batteries that match those that were originally supplied (see technical data).

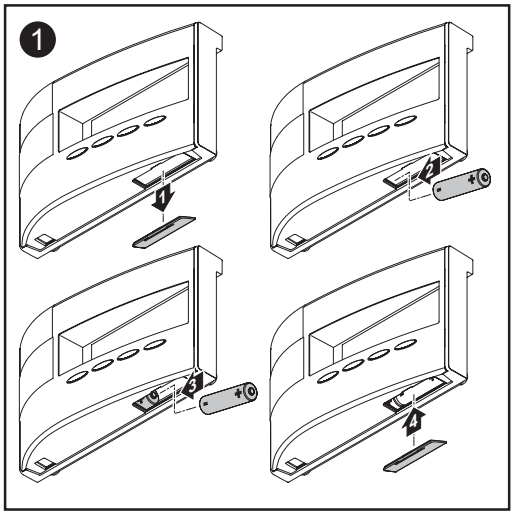
CAUTION! Risk of damage when charging the batteries in not suitable battery charger. Only charge supplied batteries in the FRONIUS IG Personal Display.

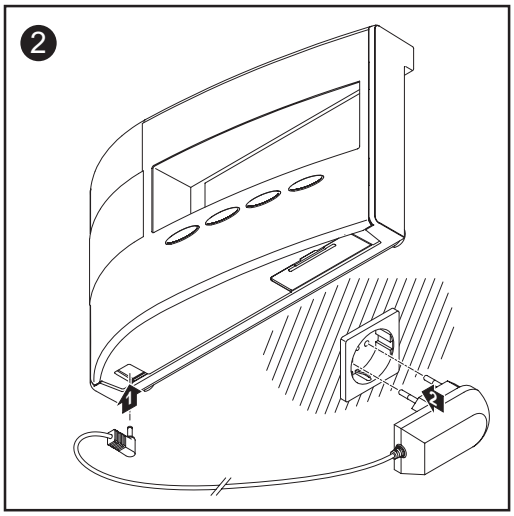
CAUTION! Escaping acid can cause considerable damage, particularly if an old battery is used together with a new one.
- Always replace batteries in a timely manner.
- Always insert two new batteries

NOTE! The batteries may be destroyed if they are allowed to discharge too deeply. Ensure that the batteries are not discharged below 20 % (see display). Always recharge batteries in a timely manner.

Important! Ensure that the terminals are the right way round when installing the batteries.

The batteries supplied with the personal display are delivered ready-charged.





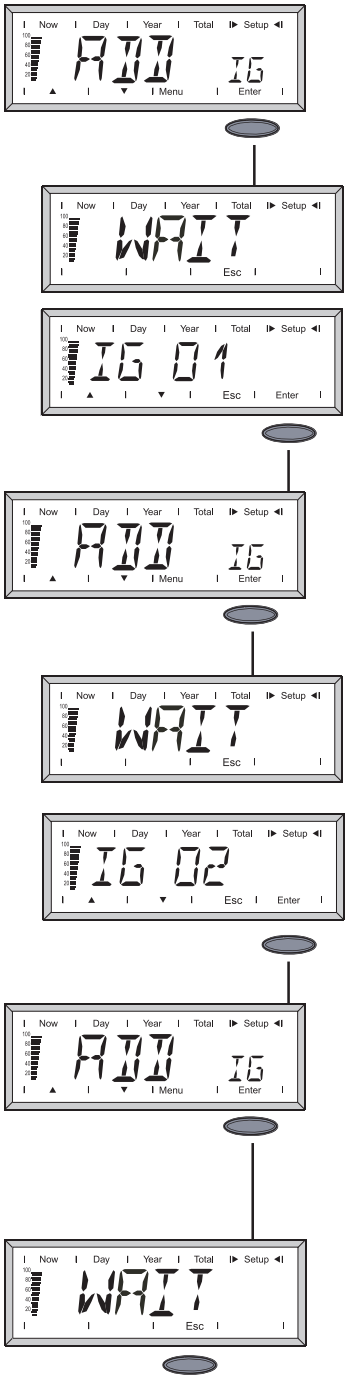
NOTE! To extend the service life of the batteries in the personal display, try to avoid complete discharge. Batteries will recharge during normal operation with the power supply connected.

As well as battery operation there is also an option to supply all the power required by the personal display from the power supply unit. If there are no suitable batteries available, then the battery compartment can be left empty and the power supply unit connected to the personal display.

Disposal batteries

Only carry out disposal of faulty batteries in accordance with the valid national and local regulations.

Establishing a connection to the inverter



After the batteries have been installed, „ADD IG“ will appear on the screen of the personal display.

1. If you press the Enter key the unit will start searching for inverters. „WAIT“ will appear on the screen

2. When an inverter (e.g. IG 01) is detected and appears on the display, it can be added to the system by pressing the Enter key.

Important! If an inverter is detected but not confirmed using the Enter key, it will not be included in the system and will not send any performance data to the personal display.

3. This process should be repeated until all the existing inverters have been stored in the system.

4. Once the personal display can no longer find a new inverter, then „WAIT“ remains displayed on the display screen.

5. Terminate the process by pressing the Esc button.

The personal display is now ready to display all the performance data for your installation.

Important! Proceed as follows to simplify the communication configuration on systems with several inverters:

1. Only connect one inverter to the mains
2. Reset the display card in the inverter (see „Troubleshooting“)
3. Connect to ADD IG (see above)
4. Repeat this process for the other inverters

Operating scheme

General remarks

The personal display has display modes that are similar to those of the FRONIUS IG. A detailed description of the display values can be found in the FRONIUS IG operating instructions.

The personal display's independent power supply enables performance data to be retrieved even after the onset of dusk.

During the day, the default display mode for the personal display is „Now". After the onset of dusk the FRONIUS IG will disconnect from the mains and the personal display will switch to „Day" display mode.

Display

Press any key to activate the display. If no key is pressed for 10 seconds or more, the display illumination will go off again.

To save battery power, the display will switch to sleep mode after a specified delay. The display then goes off, but can be reactivated by pressing any key. The specified delay until energy saving mode begins can be modified in the setup menu. Sleep mode can also be switched off entirely.

For information on general display settings see the chapter entitled „The Set-up menu"

Display modes

By default, all the performance data for all the FRONIUS IGs in the system is shown in „Now" display mode. If there is more than one inverter in the system (up to 15 are possible), then the performance data for each individual inverter can be retrieved.

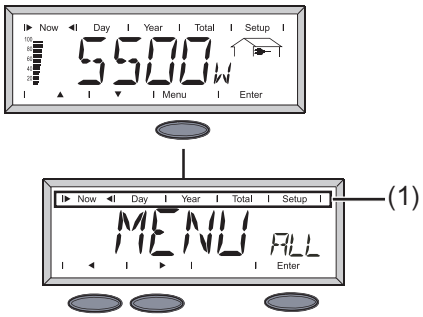
The following display modes are available for performance data for:
- the complete installation
- each separate FRONIUS IG in the system

„Now" display mode Displays real-time values
„Day" display mode Displays values for power fed into the mains during that day
„Year" display mode (only in conjunction with a datalogger) Displays values for power fed into the mains during that calendar year
„Total" display mode Displays values for power fed into the mains since the system was first commissioned

Important! If no key is pressed for 2 minutes, the unit will switch back automatically into „Now" display mode and will display performance data for the entire installation.

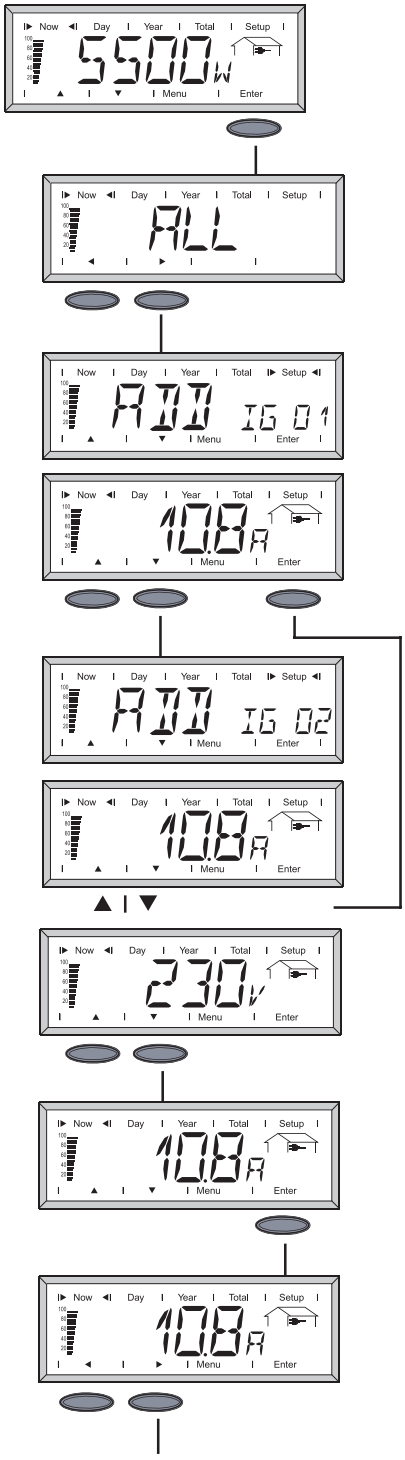
Navigating around the display

Selecting display mode



1. Press Menu key
2. Use navigation arrow keys to select the desired display mode on the display bar (1)
3. Confirm selected display mode by pressing the Enter key.

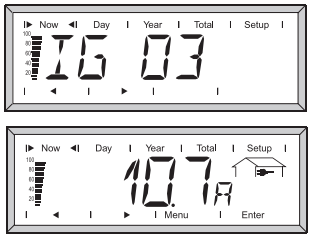
Toggle between complete installation ("ALL") and individual inverters ("IG XX") (several FRONIUS IG in the system)



1. Press "Enter" key
2. The word "ALL" will appear on the display. Navigation arrows change into a horizontal position.
3. Using the navigation arrows, switch to the next inverter in the system.
4. When the navigation arrow key is released, the display automatically switches over to show the performance of the currently-selected inverter.
5. To switch to the next inverter in the system, press the navigation arrow key to the right.

   To retrieve further data from the selected inverter, press the Enter key:
   - Navigation arrows change into a vertical position.
   - When the navigation arrow keys are now pressed, all the data for the selected inverter can be viewed.
6. To retrieve the current display value from other inverters:
   - Press Enter key.
   - Navigation arrows change into a horizontal position.
   - Press the navigation arrow keys to move to the next inverter.

Navigating around the display (continued)



7. To retrieve further data from the inverter that is now selected, press the Enter key again.

USA

Overview of display navigation

The tables below provide an overview of how to navigate through the display.

The navigation direction changes each time a navigation key, followed by the Enter key, is pressed.

"Now" display mode

ALL	IG01	IG02	IGXX		IG15
P_{AC} ▶ Enter	P_{AC} ▶ Enter ▼	P_{AC} ▶ Enter ▼	P_{AC} ▶ Enter ▼	— — — — — ▶	P_{AC} Enter ▼
Enter ▶	U_{AC} ▶ ▼	U_{AC} ▶ ▼	U_{AC} ▶ ▼	— — — — — ▶	U_{AC} ▼
Enter ▶	I_{AC} ▶ ▼	I_{AC} ▶ ▼	I_{AC} ▶ ▼	— — — — — ▶	I_{AC} ▼
Enter ▶	f_{AC} ▶ ▼	f_{AC} ▶ ▼	f_{AC} ▶ ▼	— — — — — ▶	f_{AC} ▼
Enter ▶	U_{DC} ▶ ▼	U_{DC} ▶ ▼	U_{DC} ▶ ▼	— — — — — ▶	U_{DC} ▼
Enter ▶	I_{DC} ▶ ▼	I_{DC} ▶ ▼	I_{DC} ▶ ▼	— — — — — ▶	I_{DC} ▼

Overview of display navigation
(continued)

Display modes DAY, YEAR, TOTAL

	ALL	IG01	IG02	IGXX		IG15
	Energy ▶ Enter ⬭ ▼	Energy ▶ Enter ⬭ ▼	Energy ▶ Enter ⬭ ▼	Energy ▶ Enter ⬭ ▼	— — ▶	Energy Enter ⬭ ▼
Enter ⬭ ▶	Cash ▼	Cash ▶ ▼	Cash ▶ ▼	Cash ▶ ▼	— — ▶	Cash ▼
Enter ⬭ ▶	CO_2	CO_2 ▶ ▼	CO_2 ▶ ▼	CO_2 ▶ ▼	— — ▶	CO_2 ▼
Enter ⬭ ▶		$P_{AC\ max}$ ▶ ▼	$P_{AC\ max}$ ▶ ▼	$P_{AC\ max}$ ▶ ▼	— — ▶	$P_{AC\ max}$ ▼
Enter ⬭ ▶		$U_{AC\ max}$ ▶ ▼	$U_{AC\ max}$ ▶ ▼	$U_{AC\ max}$ ▶ ▼	— — ▶	$U_{AC\ max}$ ▼
Enter ⬭ ▶		$U_{AC\ max}$ ▶ ▼	$U_{AC\ max}$ ▶ ▼	$U_{AC\ min}$ ▶ ▼	— — ▶	$U_{AC\ min}$ ▼
Enter ⬭ ▶		$U_{DC\ max}$ ▶ ▼	$U_{DC\ max}$ ▶ ▼	$U_{DC\ max}$ ▶ ▼	— — — ▶	$U_{DC\ max}$ ▼
Enter ⬭ ▶		Service hrs. ▶	Service hrs. ▶	Service hrs. ▶	— — ▶	Service hrs.

Important! To get back to the "Now" mode displaying the power of the total system, you only have to push both navigation arrow keys at a time.

If no key is pressed for 60 s, the unit will switch back automatically into "Now" display mode and will display performance data for the entire installation.

Status LED

The status LED on the personal display always shows the current status of the selected inverter. During normal operation in the ALL menu, the status LED is off.
If one of the inverters in the system outputs a service message, then the status LED will start to flash.

Menu	LED red	LED red flashing	LED green	LED OFF
ALL	-	Service mess. IG XX	-	Normal operation
IG XX	Service mess.	-	Normal operation	IG not active (night)

More detailed information on states and meanings of the status LEDs on the inverter can be found in your FRONIUS IG operating instructions.

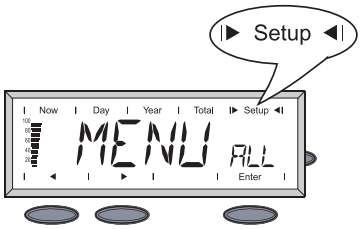
The Setup menu

General remarks

The setup menu allows initial settings to be made for operating the personal display. The inverter's setup parameters cannot be accessed.

Accessing the setup menu

1. Press Menu key

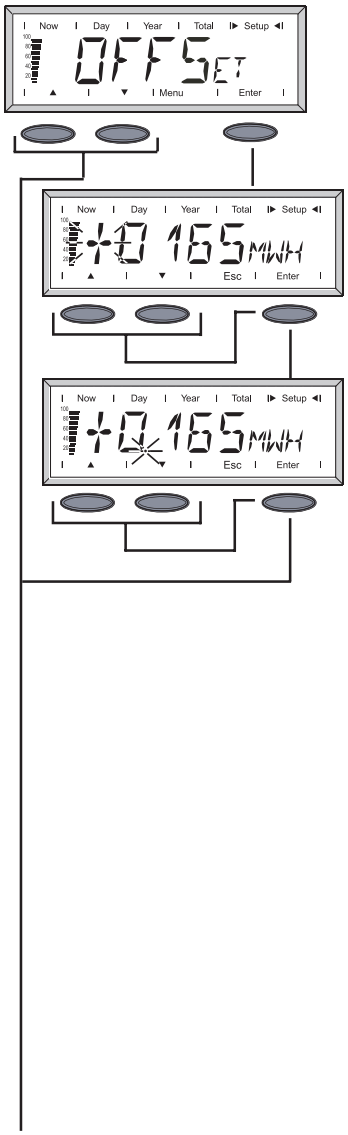


2. Use the navigation keys to switch to "Setup" display mode

Important! The setup menu can only be accessed in "MENU ALL".

3. Press Enter key

The Setup menu



OFFSET

Facility for correcting energy values if any discrepancies occur between your meter and the values shown on the personal display.

The offset value is added to the performance data sent by the FRONIUS IG in display mode "ALL TOTAL".

1. Flashing numbers on the display can be changed by pressing the navigation arrows.
2. Confirm setting by pressing the Enter key and move to the next digit.

3. Once the last digit in the display has been confirmed, the display moves on to setting the decimal point.

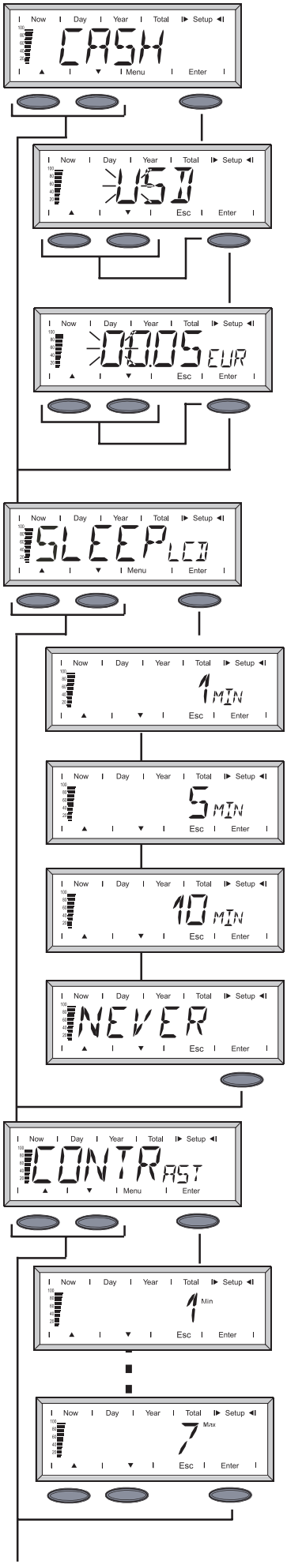
4. Move the decimal point by pressing the navigation arrows.

   Important! Display is always in MWh.

   Range: 0.001 - 9999 MWh
   E.g.: 735 kWh = 0.735 MWh

5. Press Enter key twice to save the setting.

The Setup menu
(continued)



CASH
Sets the currency and charge rate for the energy fed into the mains.

USD (factory setting)
Flashing letters on the display can be changed by pressing the navigation arrows. Confirm setting by pressing the Enter key and move to the next letter.

After entering the last letter, confirm entry twice. The display changes to setting the fee for energy fed into the mains.

Setting the fee for energy fed in works in exactly the same way as setting the currency.

SLEEP LCD
Initial time setting for the display (energy saving mode).

1, 5, 10 MIN
If no key is pressed for the specified length of time, the display illumination will go off. The display can be reactivated by pressing any key.

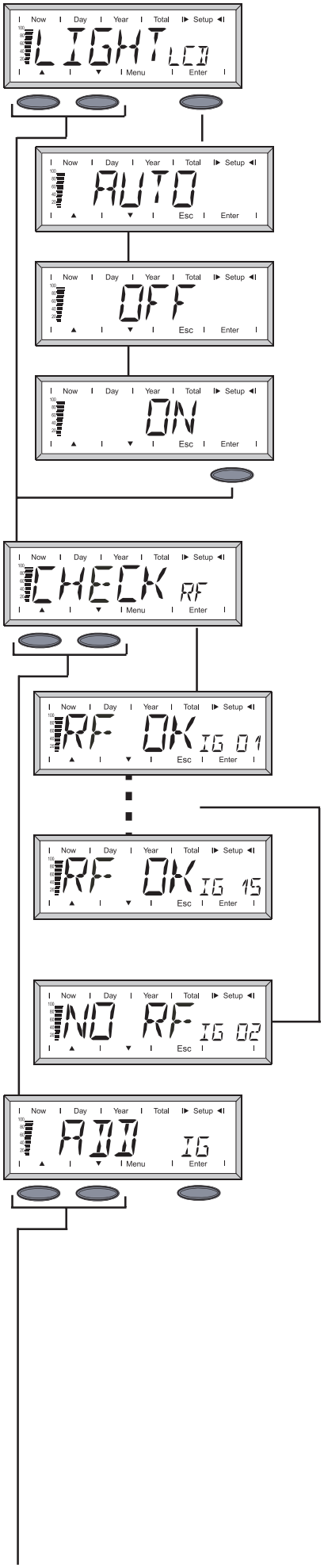
NEVER
The display never goes off.

CONTRAST
Adjust contrast on the LCD display.

As the contrast is temperature-dependent, it may need adjusting when the ambient conditions change.

1MIN - 7MAX
Press the Enter key to confirm the chosen setting.
Press the Esc key to revert to the previous setting.

The Setup menu
(continued)



LIGHT LCD
Initial setting for display illumination.

AUTO
The display illumination is switched off if no key press is detected for 10 seconds.

OFF
The display illumination is permanently switched off.

ON
The display illumination is permanently switched on.

Important! To prevent the batteries from becoming discharged prematurely, in battery mode the "ON" setting is identical to the "AUTO" setting.

CHECK RF
Check radio link with the inverters.

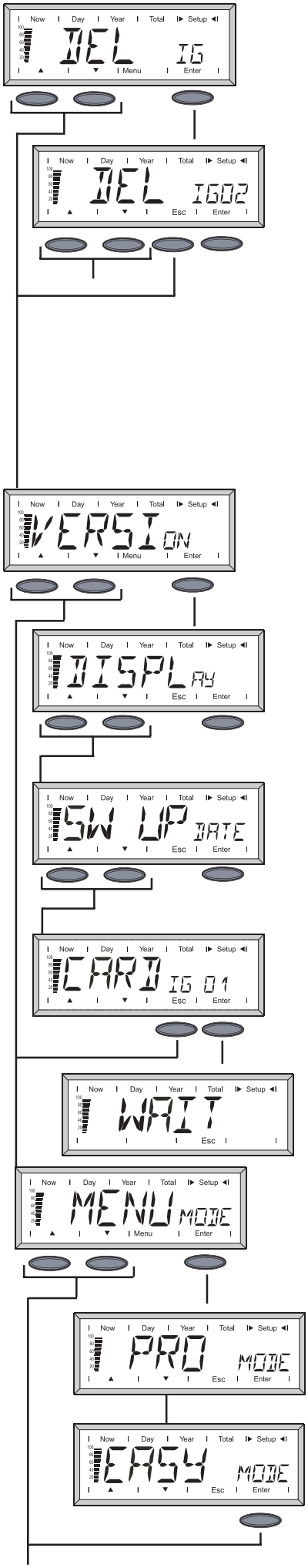
Press the navigation arrows to check out each of the inverters in the system.

RF OK IG XX
Radio connection with the displayed inverter is established.

NO RF IG XX
Radio connection with the selected inverter is disrupted or is out of range. See Troubleshooting chapter.

ADD IG
Add a new FRONIUS IG into the system (see chapter entitled "Commissioning", section "Establishing a connection to the inverter").

The Setup menu
(continued)



DEL IG
Exclude FRONIUS IG

If the system includes a FRONIUS IG whose performance data are not supposed to be logged on the personal display, then this FRONIUS IG can be excluded from the system.

1. Press the navigation keys to select the desired FRONIUS IG.
2. Press the Enter key to confirm the FRONIUS IG.
3. Display flashes.
   - Esc: Terminate process
   - Enter: Remove FRONIUS IG from the system.

VERSION
Retrieve and update information about the personal display and associated plug-in card in the FRONIUS IG.

DISPLAY
Retrieve software version of personal display.

SW UPDATE
The software on the personal display can be updated if required.

Card IG XX
Retrieve the software version of the display card installed in the FRONIUS IG.

When the Enter key is pressed, the personal display establishes a connection with the selected FRONIUS IG. Press the Esc key if you want to abandon the process.

MENU MODE
Setting of user defined data in the modes Now, Day, Year, Total.

PRO MODE
Displays all available data

EASY MODE
Displays only the following data:
- Pac
- Cash
- CO_2
- Service hours

Troubleshooting

General remarks

The display shows error messages if a fault or error occurs
- on a FRONIUS IG in the system
- on the personal display

If a FRONIUS IG in the system sends a service message, the personal display will indicate it through its status LED, which will flash red.

To find out which inverter is affected:
- Press Enter key
- Use the left/right navigation arrows to scroll through the inverters in the system. The status LED of any inverter displaying a service message will be steady red. The display will also show the service code, which is also output on the FRONIUS IG itself. Information on the service codes can be found in your FRONIUS IG operating instructions.

The displayed service code can be confirmed and removed from the display by pressing the Esc key.

Important The display can save up to 8 inverter errors. Confirming the service code by pressing the Esc key will display the next service code, if any.

Troubleshooting

IG XX MISS / NO RF IG XX (Check RF following prompt)

Cause:	Connection to inverter has been lost or is out of range.
Remedy:	Check antenna connection.
Cause:	No power supply to display card in the inverter
Remedy:	Check AC connection of FRONIUS IG. Check fuse on display card and change if necessary.

IG XX MISS / RF OK (Check RF following prompt)

Cause:	Connection to inverter is OK. Power supply to inverter has been lost on the DC side. After sunset the inverter disconnects itself from the mains.
Remedy:	Wait for sunrise.
Cause:	Connection between FRONIUS IG and solar modules has been lost
Remedy:	Check connection between FRONIUS IG and solar modules.

Personal display does not find all FRONIUS IGs in „ADD IG“ search mode

Cause:	The FRONIUS IGs have not been assigned unique numbers.
Remedy:	Check numbers on the inverters and correct them if necessary.
Cause:	FRONIUS IG is out of radio range.
Remedy:	Check radio range

ERROR IG XX
in "ADD IG" search mode

Cause: FRONIUS IG address number is greater than 15
Remedy: Check number on the inverter and correct it if necessary.

ADD IG -- (at search mode „ADD IG“)

Cause: Power supply to inverter has been lost on the DC side
Remedy: Check power supply of FRONIUS IG on the DC side

ERROR BATT
Power supply connected, battery charging

Cause: Wrong or faulty batteries installed.
Remedy: Check batteries

FULL LIST
in „ADD IG“ search mode

Cause: There are already 15 FRONIUS IGs in the system.

No communication is possible between the personal display and the FRONIUS IG

Cause: Only one personal display can ever communicate with the FRONIUS IGs in the system.
Remedy: If the personal display is replaced with a new one, then all the FRONIUS IGs in the system should be deleted from the personal display’s configuration (see "The Setup menu", section "DEL IG").

NOTE! If the inverters in the system have not been deleted from the configuration of the personal display and if the personal display used previously is no longer available (because of damage, for instance), then the display card in the FRONIUS IG must be reset.

Resetting the display card on the FRONIUS IG:
1. Open the setup menu and choose "DatCom"
2. Use arrow keys to move to the "PDCD RST" menu item
3. Press the Enter key to reset the display card

Technical data

Personal display

Power supply	
Battery	2 x 1.5 V RAM batteries (1800 mAh)
Power supply unit	9 V_{DC}; 0,5 A −⊙+
Protection	NEMA1; IP 20
Operating temperature	0 - 40° C 32 - 104° F
Frequency range	915 MHz
Radio range	up to 300 m in the open
Dimensions	190 x 114 x 53 mm 7.48 x 4.49 x 2.09 in.

Plug-in card

Power supply	240 $V_{AC/}$ / 208 $V_{AC/}$
Protection class of plug-in card (installed in the FRONIUS IG)	see FRONIUS IG operating instructions
Plug-in card operating temperature	-20 to +50° C -4 to 122° F
Frequency range	915 MHz
Dimensions	140 x 100 x 26 mm 5.51 x 3.94 x 1.02 in.

Warranty and Liability

Warranty Provisions and Liability

The warranty in the general terms of business applies to the FRONIUS IG DatCom components. During this period, FRONIUS guarantees that your DatCom components will work correctly. If there is a defect for which FRONIUS is responsible, then FRONIUS will repair the defect at the factory free of charge within the warranty period.

If you need to claim under the warranty, please contact your FRONIUS dealer.

Warranty claims will not be accepted as a result of:
- using your DatCom components for other than the intended purpose
- incorrect installation or installation not in compliance with the applicable standards, particularly by unlicensed electrical fitters
- incorrect operation
- unauthorised changes to the DatCom components
- damage by foreign objects or acts of God (force majeure)

Warranty claims will be repaired either by Fronius directly or locally by Fronius trained service partners. For return transportation, devices must be packed in their original or equivalent packaging.

These services will be charged to the dealer or his fitter, as will the reinstallation of the repaired device.

Scope of Warranty

The warranty only covers the DatCom components. The other components of your photovoltaic system and the supplied rechargeable batteries are not covered by the warranty.

Warranty Period

24 months from the date of installation.

Proof of warranty

Purchase date on the invoice, date on which the device was handed over / commissioned and report from the electricity supply company.

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Under http://www.fronius.com/addresses you will find all addresses of our sales branches and partner firms!