



Device Installation Manual
Solar-Log 370 & GE Meter

Table of Contents

Connecting devices	3
Switch off the inverters and Solar-Log®	4
Inverters	5
ABB-Power-One/PVI/TRIO/UNO	5
Fronius	7
KACO blueplanet TL1/TL3/XP10 (LAN)	9
KACO blueplanet xi series (RS485)	9
SMA	11
SolarEdge	13
Consumption Meter	15
Solar-Log 10	15
Weather Station	16
Sensor Box Professional	16

Connecting devices

Refer to Solar-Log 370 compatible devices list on www.solar-log-america.com/devices

As each manufacturer uses different wiring connections and connectors, the corresponding data cables must be adapted correctly.

Always read the manufacturer-specific instructions for connecting the data cable. You will find these instructions in the manufacturer's documentation. However, when assigning the inverter wiring on the Solar-Log®, follow the instructions in this manual, otherwise the inverters will not be detected by Solar-Log®.



Danger

Risk of death by electric shock if inverters are opened.

- Never open the inverter housing when the inverter is connected to power.
- Switch inverters off.
- Always read the installation and safety instructions given in the manual for the corresponding inverter.
- Any work on inverters must only be carried out by trained electricians.



Caution

Damage to the electrical components in inverters and on interface cards due to electrostatic discharge.

- Avoid contact with component connections and plug contacts.
- Before picking up the component, ground yourself by holding the PE or the unpainted part of the inverter housing.



Caution

Damage to the wiring and electrical components of the Solar-Log may occur due to electrostatic discharge!

- Avoid contact with component connections and plug contacts.
- Before picking up the component, ground yourself by holding the PE or the unpainted part of the inverter housing.

Switch off all devices

Switching inverters off

Always turn off all of the inverters first before making a cable connection between the Solar-Log® and the connections inside the inverter; and before installing an interface card in the inverter.

To do this, read the manufacturer's documentation for the inverter, and proceed as follows:

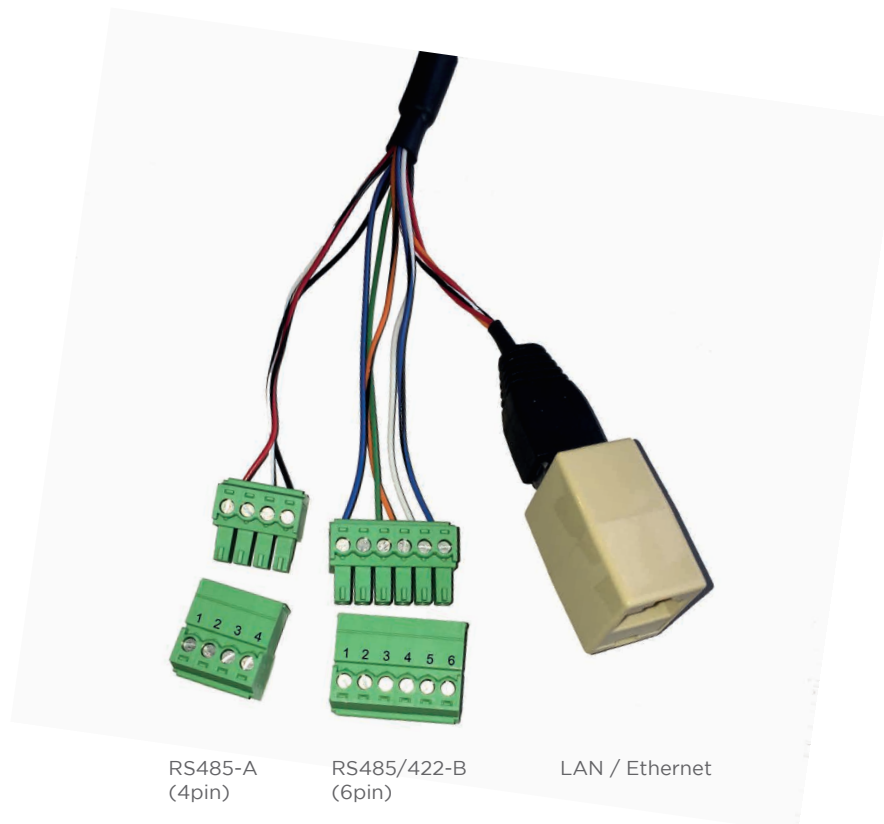
1. Disconnect the AC side
2. Disconnect the DC side
3. Wait at least 5 minutes until the condensers in the inverters have discharged.

Switching the Solar-Log® off

- Switch off the main breaker that connects the SL370 with the grid.

Solar-Log 370 external connectors

The SL370 has three different external connectors. Refer to the inverter or device description to determine which connector must be used. Make sure that only one type of device is daisy chained to the same connector. Note that there are two connectors each, use one for the customized cable.



Inverters

ABB-Power-One/PVI/TRIO/UNO

Termination	Addressing	Interface
Switch	Yes	RS485

Select “ABB” during the inverter detection

Overview

- Integrated interface
- Sometimes different interfaces are used for indoor and outdoor models.
- Where to connect: RS485 terminal strips inside the inverter
- 3-pin wiring
- Communication address must be allocated.
- Installation steps
 - Switch off the inverters and Solar-Log®
 - Connect inverters to the Solar-Log®
 - Connect the inverters to each other
 - Allocate communication address

Connect inverters to the Solar-Log®

The wiring is done using a

- ready-made Power One data cable (optional extra; not supplied) or
- self-made, shielded 3 wire data cable and terminal block connector.

Procedure

1. Open the inverter as shown in the inverter’s instructions.
2. Pull the free wires through the wire opening in the inverter.
3. If you are making the cable yourself, connect the wires as shown in the following diagram:

Solar-Log® terminal strip connector

Terminal
▶ 1
▶ 3
▶ 4

Inverter terminal strip (Outdoor)

Terminal
▶ +T/R (PC)
▶ GND
▶ -T/R (PC)

4. Close the inverter if no other inverters are to be connected.
5. Insert the terminal block connector into the Solar-Log® RS485 socket.

Connect the inverters to each other

- Connect using a 3 pin, shielded data cable.
- Where to connect: RS485 terminal strips inside the inverter

Procedure

1. Open the inverter as shown in the inverter's instructions.
2. Connect terminals +T/R, -T/R and RTN of inverter 1 to the corresponding terminals on inverter 2.
3. Connect the other inverters to each other in the same way.
4. Terminate in the last inverter.
Set the DIP switch for the terminal resistor to ON.
5. Close inverters.

Allocate communication address

- Recommendation: Continuous numbering from Solar-Log®, starting from 2 (not 1!).
- Setting: Using the inverter operating display
- Procedure: Start according to the inverter's instructions

Fronius

Prepare inverter for LAN based data communication

- A laptop with WiFi is necessary
- If inverter needs a firmware update then an internet router is also necessary

Notes

- SYMO inverter: SYMO firmware 3.3.6-13 and newer support multiple MPP trackers view. If Solar-Log® does not show trackers then update the firmware on the inverter.
A device-detection must be triggered on the Solar-Log® afterwards.

Setup on inverter via display

1. On the inverter keypad press exit to enter main menu on display
2. Press left-arrow to select “setup”, press enter
3. Select “WiFi Access Point”, press enter
4. Activate WiFi by pressing enter. After some seconds the display shows the Access Point name and the password (default: 12345678)

Setup on laptop

5. From the laptop go to WiFi setup and choose the Fronius access point
6. Open a WEB browser and enter IP address 192.168.250.181
7. Choose “Solar.WEB Wizard”
 - a. Skip “General”-tab by pressing forward-button
 - b. “Inverter”-Tab
 - i. enter a system name like “PV”
 - ii. enter the size of the PV installation in Watts
 - iii. Press forward-button
 - c. “Solar.Web Connection”-tab
 - i. Setup internet connection, choose “dynamic” if DHCP is possible
 - ii. Choose wired or wireless connection
 - iii. Press forward-button - now the network connection is configured. Press the link that is displayed on the screen. You are now re-directed to the correct local IP-address of the inverter.
 - d. “Network status”-tab
 - i. Check network status - press forward
 - e. “Password”-tab
 - i. Now enter secure password with characters, numbers like “solar-log370”
 - ii. Press finish
 - f. A “Congratulations” message appears, the Wizard is now finished.
Press “to homepage”

8. On the right screen press “Settings”
9. In the Settings press “Modbus” on the left side and set “Data export via Modbus” to TCP, then press the “OK” button to save.

Plug network cable into LAN port on inverter and connect to switch / internet router.

(Don't connect the Solar-Log® directly to the inverter)

Inverter and Solar-Log 370 must be in same local network (Class C).

KACO blueplanet TL1/TL3/XP10 (LAN)

Prepare inverter for LAN based data communication

- No laptop necessary.

Setup on inverter via display

1. Press the right-arrow on the keypad of the inverter to enter the main menu on the display
2. Go down to menu “settings”, press enter
3. Go up to menu “network”, press enter
4. Check DHCP, set it either to ON (preferred) or to OFF
If OFF, then setup a static IP address, subnet mask, gateway and DNS server according to the locally used addresses of the internet router
5. Go down to menu “Modbus TCP” and set it to ON

Important: Power cycle the inverter by turning AC power off!

Plug network cable into LAN port on inverter and connect to switch / internet router.

(Don't connect the Solar-Log® directly to the inverter)

Inverter and Solar-Log 370 must be in same local network (Class C).

KACO blueplanet xi series (RS485)

Termination

Yes

Addressing

Yes

Interface

RS485

Overview

- Integrated interface
- Where to connect: Terminal strip inside the inverter
- 2-pin wiring
- Communication address must be allocated.
- Installation steps
 - Switch off the inverters and Solar-Log®
 - Connect inverters to the Solar-Log®
 - Connect the inverters to each other
 - Allocate communication address

Connect inverters to the Solar-Log®

The wiring is done using a

- partly made data cable (optional extra; not supplied)

or

- self-made, shielded 2 wire data cable and terminal block connector.

Procedure

1. Open the inverter as shown in the inverter's instructions.
2. Pull the free wires through the wire opening in the inverter.
3. If you are making the cable yourself, connect the wires as shown in the following diagram:

Solar-Log® terminal strip connector

Inverter terminal strip



4. If only one inverter is to be connected this must be terminated.

Series 2 Powador: Set the DIP switch inside the inverter to ON and all other inverters to OFF.

5. Close the inverter if no other inverters are to be connected.
6. Insert the terminal block connector into the Solar-Log® RS485 socket.

SMA

Prepare inverter for LAN based data communication

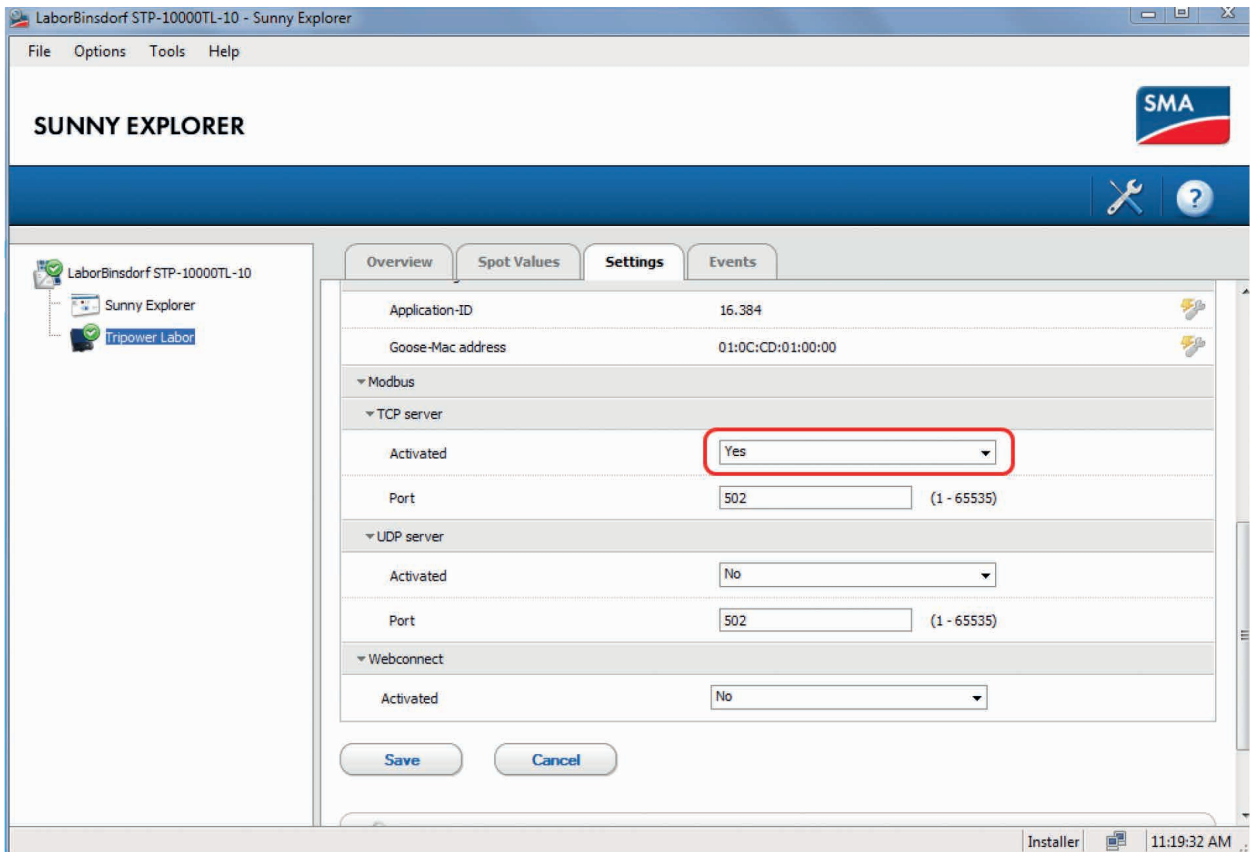
- Laptop necessary.
- Internet connection for downloading latest SMA firmware and SMA software from SMA website.

Inverter firmware update (to support Sunspec protocol)

1. Go to SMA website and download the latest firmware available for the inverter. Extract all files and copy them to a SD card including the “update” directory. (Always follow the SMA instructions on how to do a firmware update!)
2. Shutdown inverter, unscrew LCD display, insert SD card, screw on LCD, startup inverter
3. Wait 10-15 min
4. Shutdown inverter, remove SD card,
5. Install LAN cable to speedwire card startup inverter

Setup on inverter via SMA “Sunny Explorer” software

1. Install “Sunny explorer” software
2. a. create new plant, whatever name
b. login as installer, pw is “1111” (or previously changed)
c. choose “speedwire”
d. search for inverters, if not found: check wiring
e. click on found inverter
3. In the tree, click on the inverter
 - a. go to tab “settings” – “external communication”
 - b. click “edit” button below “Modbus / TCP server” and change “Activated” to “Yes”



c. click on “save”

Finished – SMA Sunspec communication is now setup.

Plug network cable into LAN port on inverter and connect to switch / internet router. (Don't connect the Solar-Log® directly to the inverter)

Inverter and Solar-Log 370 must be in same local network (Class C).

Termination	Addressing	Interface
Switch	Yes	RS485

Overview

- Integrated interface
- Where to connect: Terminal strip inside the inverter
- Communication address must be allocated.
- 3-pin wiring
- Installation steps
 - Switch off the inverters and Solar-Log®
 - Connect inverters to the Solar-Log®
 - Address inverter and set protocol
 - Connect the inverters to each other

Connect inverters to the Solar-Log®

The wiring is done using a

- self-made cable connection with terminal block connector.

Procedure

1. Open the inverter as shown in the inverter’s instructions.
2. Pull the free wires through the wire opening in the inverter.
3. If you are making the cable yourself, connect the wires as shown in the following diagram:
4. If only one inverter is to be connected, it must be terminated with DIP switch SW7 according to the manufacturer’s instructions.

Solar-Log® terminal strip connector	X4 socket RS485-1 inverter
Terminal	PIN
▶ 1	A - Data+
▶ 3	G - GND
▶ 4	B - Data-

5. Screw the inverter cover on again.
6. Insert the terminal block connector into the Solar-Log® RS485 socket.

Connect the inverters to each other

- Where to connect: Terminal strip inside the inverter

Procedure

1. Open the inverter as shown in the inverter's instructions.
2. Pull the free wires through the wire opening in the inverter.
3. If you are making the cable yourself, connect the wires as shown in the following diagram:

X4 socket RS485-2 inverter n

PIN

A - Data+

G - GND

B - Data-

X4 socket RS485-1 inverter n+1

PIN

A - Data+

G - GND

B - Data-

4. Connect the other inverters to each other in the same way.
5. Terminate the last inverter with DIP switch SW7 according to the manufacturer's instructions.
6. Screw the inverter cover on again.
7. Insert the terminal block connector into the Solar-Log® RS485 socket.

Allocate communication address

- Recommendation: Continuous numbering starting with 1; highest possible address: 247.
- Setting: Using the inverter operating display
- Procedure: Start according to the inverter's instructions

Inverter settings

Two settings need to be checked on the inverter's control panel and changed if needed before performing the inverter detection.

1. **Non-SE Logger** has to be set in the **Communication // RS485-1 Conf // Device Type** menu.
2. **SunSpec** has to be activated in the **Communication // RS485-1 Conf // Protocol** menu.

Consumption Meter

Solar-Log 10

The Solar-Log 10 is used to measure the energy consumption of a residence. It is a bi-directional energy meter and should be installed near the energy distribution panel. Please follow the instruction manual that comes with the Solar-Log 10.

Wiring data communication

Note: It is strongly recommended to not extend the CT cables but to use a long communication cable instead.

- 4-wire data cable
- The sensors are connected to the Solar-Log® via the RS485 interface. An M&T Weather Station may be wired in parallel but do not wire the Solar-Log 10 parallel to an inverter bus.

Solar-Log 10	Solar-Log 370
PIN	PIN
+ Plus	1
- Minus	4
GND	3

Weather Sensor

Sensor Box Professional

The Sensor Box Professional is used to record the irradiation from the sun. This accessory allows the Solar-Log® to calculate the deviations in the current output compared to the potential output. Also integrated is a cell temperature sensor that gives additional information on the solar module efficiency. The solar radiation sensor must be fitted in such a way that the sensor's solar cell and the plant's modules are aligned as similarly as possible to the sun, i.e. the sensor must have the same alignment and inclination.

The sensors should be positioned in a way to best ensure that

- as little overshadowing as possible occurs
- and snow cover does not interfere disproportionately with the sensor functions.

To achieve this, it is best to fit the sensor on the side or above the solar module. Fitting bars can normally be used as a fitting surface with modules that are parallel to the roof protrusion. In other cases, a suitable fitting support may have to be added.

This environmental data includes

- Solar irradiation (integrated)
- Module temperature

Module temperature is recorded by an integrated cell sensor, thus avoiding the costly process of mounting a sensor on the back of the module.

The Solar-Log® can record and save additional environmental data with the Sensor Box Professional Plus (with optional accessories).

- Ambient temperature (optional, Article Number: 220062)
- Wind speed (optional, Article Number: 220061)

The above data form important parameters in further evaluations and analyses to measure yield.

The wiring is done using a

- 4-wire data cable
- The sensors are connected to the Solar-Log® via the RS485 interface. Do not wire parallel to an inverter bus. They may be wired in parallel to the Solar-Log 10.

- The cable shielding must be connected with an equipotential bonding system.
- A separate 12 V power supply is required (not included with the Sensor Box).

Procedure

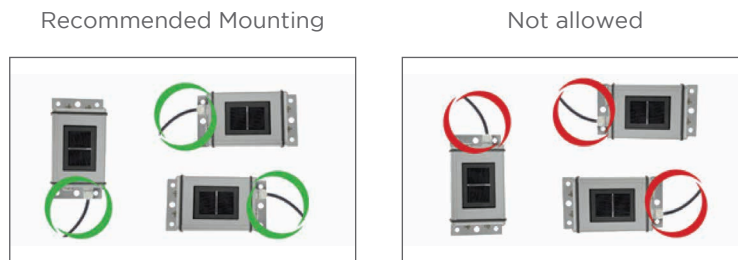
- The four wires in the connection cable must be connected to the 4-pin terminal block connector on the Solar-Log®.
- The connection assignments are printed on the back of the sensor.

Connect the wires according to the following diagram

Solar-Log 370	Sensor Box Professional	12 V Power Supply
PIN	Assignment	
1 Data +	Brown: Data +	
2 +12 V	Red: 12 VDC (VCC)	12 VDC (VCC)
3 Ground	Black: 0 V (GND)	GND
4 Data -	Orange: Data -	

Notes on roof mounting

The irradiation sensor is specially designed for continuous use in outside areas (IP65). The cables supplied with the Sensor Box Professional are UV and weather resistant.



Mounting information for the Sensor Box Professional

Please note when fitting the sensor that the connection cable must be arranged as shown in the drawing.

Fitting optional sensors

The ambient temperature sensor must be fitted in a shady place with a wall bracket. The connection plug is screwed firmly into the 3 pin input on the Sensor Box Professional.

It is best to install the wind sensor in a high, exposed position using the mounting bracket. The connection plug is screwed firmly into the 2 pin input on the Sensor Box Professional.



Caution

Risk of damage to the unit!

Penetrating moisture can cause short circuiting and can destroy the Sensor Box Professional Plus and Solar-Log®.



WARNING

It is not necessary to open the sensor to fit it. All components are simply screwed on. If the housing is opened, water resistance and proper operation cannot be guaranteed and warranty is lost.



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