SMA
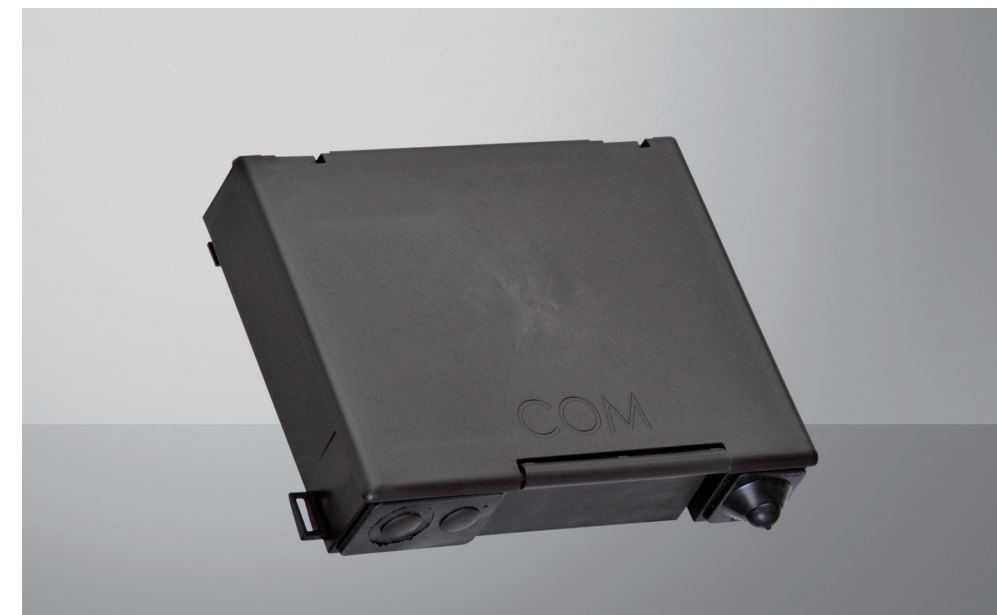
Accessories for SUNNY BOY 2000HF/2500HF/3000HF

RS485-Quick Module

Installation Guide

485Q-Module-IEN111830 | IMEN-485QMODULE | Version 3.0 · (EN)

CONTACT

If you have technical problems concerning our products, contact the SMA Serviceline. We require the following information in order to provide you with the necessary assistance:

- Serial number of the RS485-Quick Module
- Inverter type
- Inverter serial number
- Type and number of PV modules connected
- Event number or display of the inverter
- Type of communication, if applicable

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34266 Niestetal, Germany
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SMA Serviceline
Inverters: +49 561 9522 1499
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E-Mail: Serviceline@SMA.de

SAFETY

Appropriate Usage

The RS485-Quick Module is provided as an upgrade kit or included in the scope of delivery of the inverter.

The RS485-Quick Module is only suitable for use with SMA inverter of type Sunny Boy 2000HF/2500HF/3000HF. Please also observe the installation guide of the respective inverter.

The RS485-Quick Module is equipped with an RS485 interface and a multi-function relay. Via the RS485 interface, you can establish a wired RS485 communication of the above mentioned SMA inverter types.

The multi-function relay serves to connect or disconnect a fault indicator or external load, depending on the power availability of the inverter. For the description of the functions of the multi-function relay (as of firmware version 2.10) please refer to the Technical Description "Multifunction Relay and OptiTrac Global Peak" at the download area www.SMA.de/en.

Safety Precautions

⚠ **DANGER!**
Electric shock caused by high voltages in the inverter.

- All work on the inverter may be carried out by qualified personnel only.
- Disconnect the inverter from both the DC and AC side, as described in the inverter's installation guide.

⚠ **NOTICE!**
Electrostatic discharges can damage the RS485-Quick Module or the inverter.

- Ground yourself before touching the component by touching PE or a grounded object.

ℹ **Cable length**
You have to make sure that the cables are long enough for connecting the RS485-Quick Module to the inverter. After connecting them, remember that the RS485-Quick Module has to be pushed approx. 10 cm in the inverter (see "Mounting the Device").
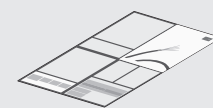
SCOPE OF DELIVERY

Check the delivery for completeness and for any visible external damage. Contact your dealer if anything is damaged or missing.
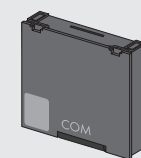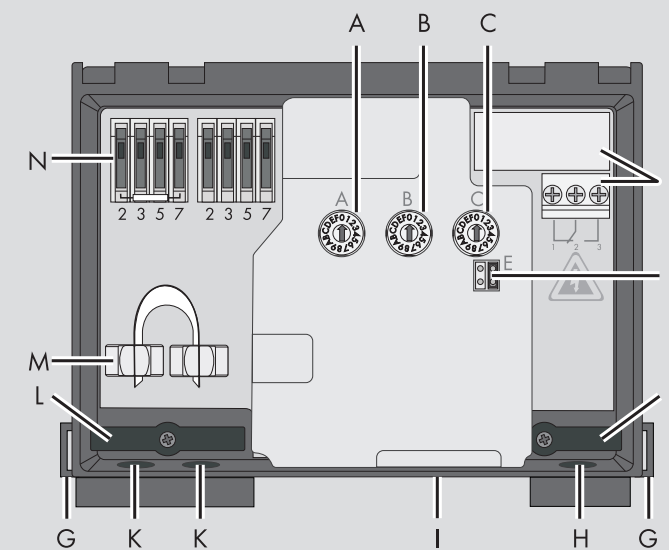
RS485-Quick Module
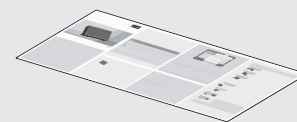
Installation guide
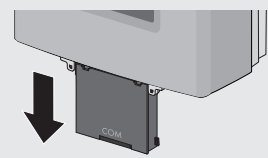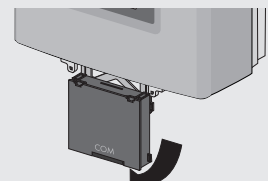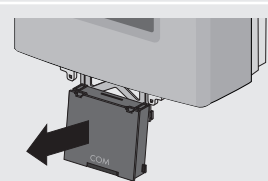
RS485 cabling plan poster

PRODUCT OVERVIEW

	Description
A	Rotary switch for setting the installation country (switch A)
B	Rotary switch for setting the display language (switch B)
C	Rotary switch for the configuration of *Bluetooth* communication (switch C)
D	Multi-function relay and connection terminal
E	Jumper slot for temporarily setting the language to English, e. g. during servicing (E)
F	Strain relief
G	Securing eyelets with cable ties
H	Enclosure opening for connecting the multi-function relay
I	Slot for SD card
K	Cable support sleeve with filler plugs for connecting the RS485 bus
L	Strain relief
M	Shield clamps with 2 self-adhesive cooper foil strips
N	two 4-pole spring-type terminals for connecting the RS485 bus to a termination resistor

TECHNICAL DATA

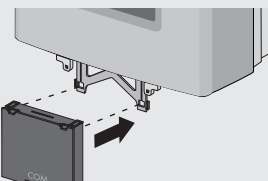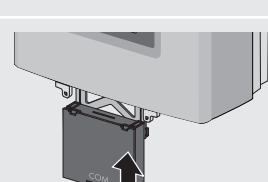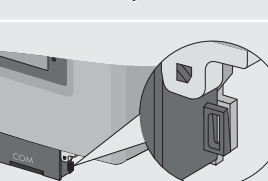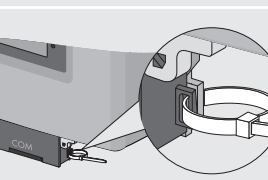| Interfaces	
Field bus	2 x 4 spring-type terminals
Multi-function relay	3-pole screw terminal
Communication	
Communication interfaces	RS485, *Bluetooth*
Maximum communication range	
RS485	1,200 m
Bluetooth in the open air	100 m
Environmental conditions in operation	
Ambient temperature	−25 °C ... +60 °C
Relative humidity (non condensing)	5 % ... 95 %
Ambient conditions during storage	
Ambient temperature	−40 °C ... +85 °C
Relative air humidity	5 % ... 95 %
General data	
Width x height x depth	124 mm x 97.5 mm x 27 mm
Weight	180 g
Installation location	in the inverter
Multi-function relay data	
Voltage	AC: max. 240 V
	DC: max. 30 V
Current	AC: max. 1.0 A
	DC: max. 1.0 A

REPLACEMENT OF THE RS485-QUICK MODULE

Disassembly

| 1.	Disconnect the inverter from both the DC and AC side, as described in the inverter's installation guide. If a multi-function relay is connected, switch off the multi-function relay power supply.
2.	Pull the integrated Quick Module out to the first stopper.
3.	Press the Quick Module lightly forwards until the keys pass through the openings of the bracket.
4.	Carefully take the Quick Module out of the bracket.

Mounting

Install the RS485-Quick Module **carefully** in the inverter.

1.	Put the RS485-Quick Module into the designated holes on the bracket.
2.	Push the RS485-Quick Module upwards in the guide slot until it clicks into place.
3.	Check that the RS485-Quick Module is securely in place. The loops of the RS485-Quick Module and the bracket must be positioned flush on top of each other.
4.	Mechanical fuse: You can fix the RS485-Quick Module with cable ties to prevent someone that someone accidentally takes it out. There are two loops on top of each other. Guide the cable ties through these loops and tighten them.

☑ The RS485-Quick Module is mounted.

CONNECTION TO THE RS485 BUS

Preparing the cable

6-7 mm | 15 mm | 40 mm | 6 mm
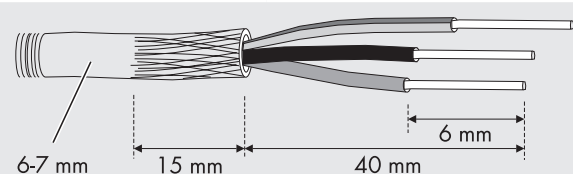
1. Use a cable with a cross-section of 6 to 7 mm.
2. Remove 40 mm of cable sheath.
3. Shorten the cable shield to 15 mm and fold it back.
4. Cut off unused insulated conductors at the cable sheath to prevent a short-circuit. You need 3 insulated conductors, 2 of them have to be twisted (see "Connecting the RS485 bus cable" step 9).
5. Strip 6 mm off the insulated conductors.
6. Cover the shield with the delivered conductive adhesive foil.
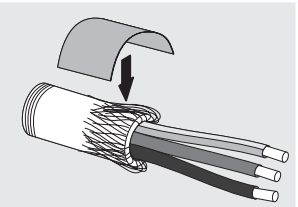
Preparing the RS485-Quick Module

1. Open the lid of the RS485-Quick Module.
2. Loosen the screw of the strain-relief and remove the jumper.
3. Remove the filler plugs from the right cable entry (if you want to connect 2 cables, remove both filler plugs).
4. Remove the cable support sleeve.

Connecting the RS485 bus cable

5. Insert the cable and guide it through the cable entry into the RS485-Quick Module.
6. Reattach the cable support sleeve.
7. Push the cable into the shielding clamp.
8. If one cable is connected (inverter at the end of the RS485 bus) leave the resistor connected. If the resistance is not correctly connected, see RS485 cabling plan poster.
   If 2 cables are connected (inverter in the middle of the RS485 bus), remove the left resistor of the termination plug.
9. Connect the insulated conductors to the string-type terminals and make a note of the color of the insulated conductors.

Signal	RS485-Quick Module	Insulated conductor color	RS485 bus
GND	5		5
Data+	2		2
Data-	7		7

10. Reattach the jumper and fasten the screw of the strain-relief.
11. Close the lid and flip the flap down again until it locks into place.
12. Connect the other end of the cable to the RS485 bus node. See the supplied RS485 cabling plan poster for the connection layout and system wiring.

☑ The RS485-Quick Module is connected to the RS485 bus.

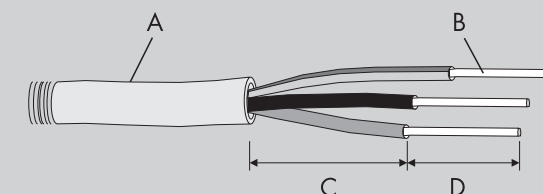## MULTI-FUNCTION RELAY CONNECTION

Connection requirements

You have the option of connecting separate loads both in the event of failure and for trouble-free operation.

The following table contains the maximum permissible voltages and currents:

	Voltage	Current
AC	Max. 240 V	Max. 1.0 A
DC	Max. 30 V	Max. 1.0 A

Cable Requirements

- The cable type and cable-laying method must be appropriate to the application and location.
- The cable must be double-insulated.

Position	Description	Value
A	External diameter	11.7 mm ... 12.5 mm
B	Cross-section of insulated conductor	0.5 mm² ... 2.5 mm²
C	Length of the insulated conductor	max. 15 mm
D	Strip insulation	max. 8 mm

Line circuit breaker

If you connect the multi-function relay to the power distribution grid, the relay must be fused with an individual line circuit breaker.

Connection plan
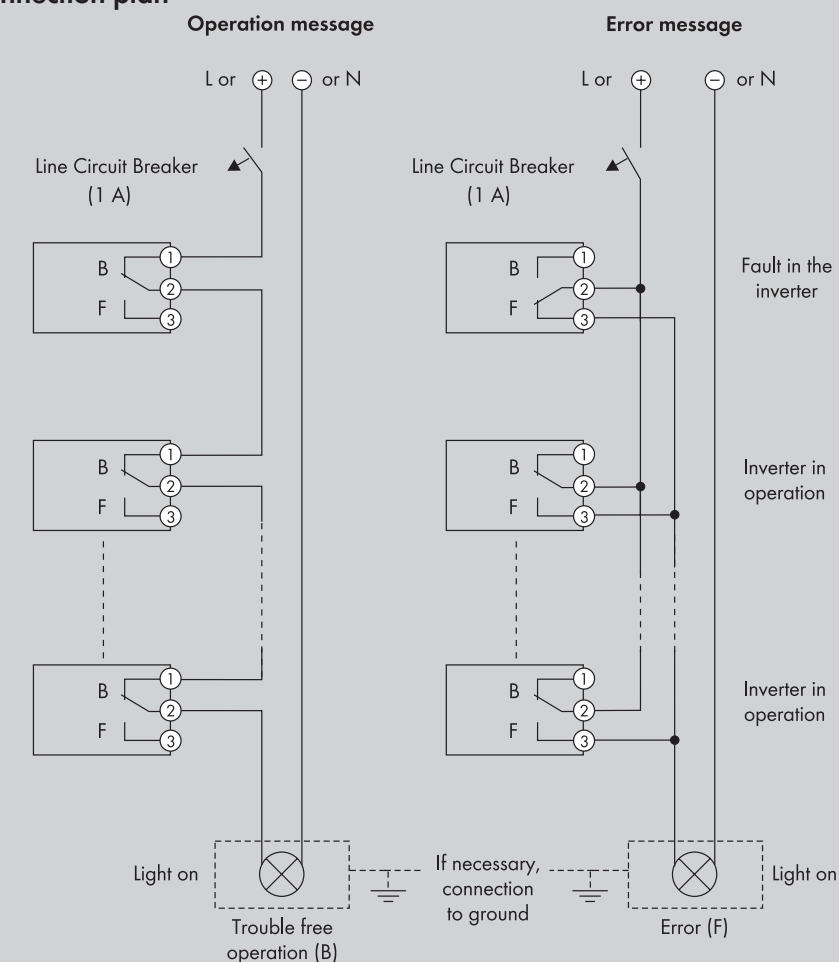
Preparing the RS485-Quick Module

1. Open the lid of the RS485-Quick Module.
2. Loosen the screw of strain-relief on the right side and remove the jumper.

Connecting the cable to the multi-function relay

3. Pierce the seal with a screwdriver or a pointed object and lead the cable inside.
4. Connect the insulated conductors to the multi-function relay as shown in the connection plan, depending on whether you require an operating or an error message. Reattach the jumper and fasten the screw of the strain-relief.
5. Close the lid and flip the flap down again until it locks into place.

☑ The multi-function relay is connected.