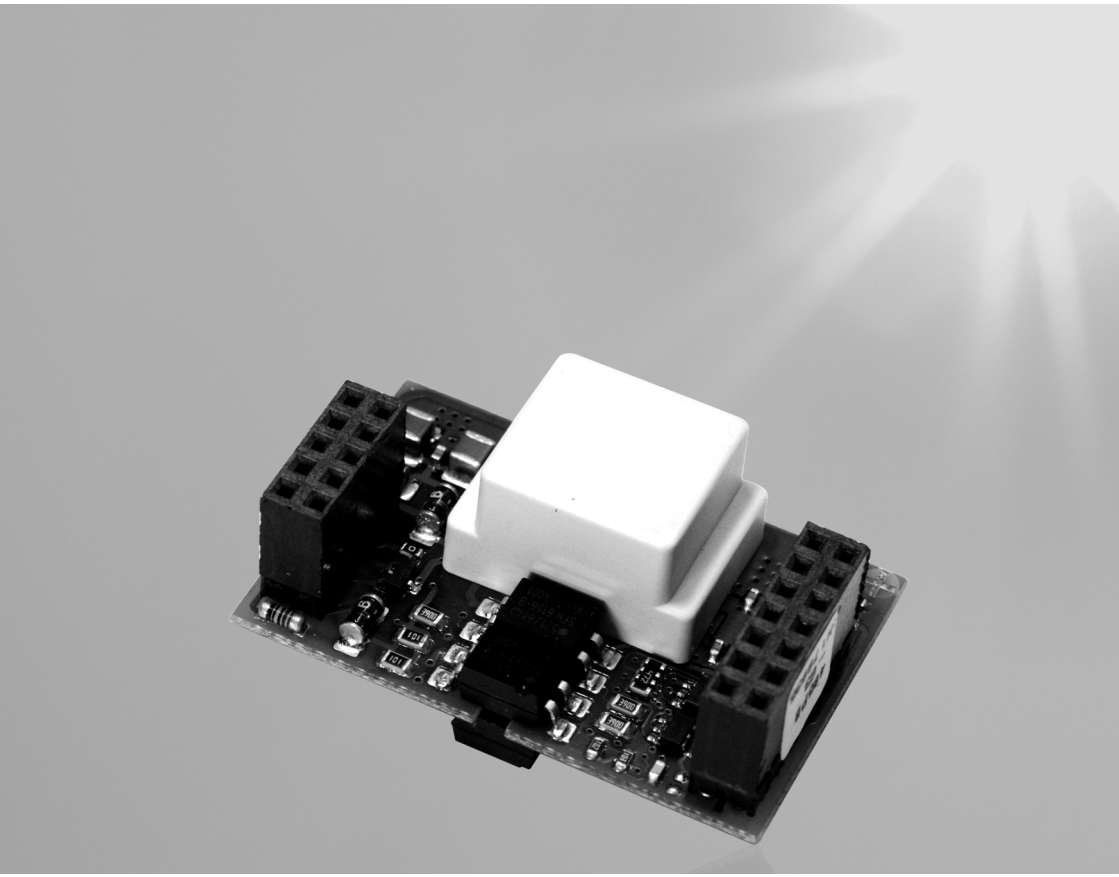
System Monitoring

485PB-NR, 485PB-MS-NR

Installation Guide



485PB-SB-NR-IEN101311 | 98-00012611 | Version 1.1

EN

Table of Contents

1 Notes on this Manual

1.1 Validity

This manual applies to the 485PB-NR and 485PB-MS-NR communication interfaces.

1.2 Target Group

This manual is intended for the installer.

1.3 Symbols Used

The following types of safety instructions and general information appear in this document as described below:

DANGER!

"DANGER" indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!

"WARNING" indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION!

"CAUTION" indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE!

"NOTICE" indicates a situation that can result in property damage if not avoided.

Information

Information provides tips that are valuable for the optimal installation and operation of your product.

2 Safety

2.1 Appropriate Usage

The RS485PB-NR and RS485PB-MS-NR communication interfaces make it possible to establish wired RS485 communication. With these communication interfaces you can configure inverter parameters with a communication product and view momentary values of the inverter. The following inverter models are supported by the communication interfaces:

- **485PB-NR** supports the following inverter models: SB/SWR/WB 700, SB/SWR/WB 1100(E) (LV), SB/SWR/WB 1700 (E), SWR 2000, SB 2100TL, SB/SWR/WB 2500, SB/WB 2800i, SB/SWR/WB 3000, SB/WB 3300, SB/WB 3800.
- **485PB-MS-NR** supports the following inverter models: SB 3300TL (HC), SB 4200TL (HC), SB 5000TL (HC) (W).

The communication interfaces (485PB-NR and 485PB-MS-NR) comply with the following standard:

- TIA/EIA-485-A, 1998

The interfaces are provided as an add-on kit or are pre-installed in the inverter.

2.2 Safety Precautions

DANGER!

Risk of lethal electric shock when opening the inverter.

- All work on the inverter must be carried out exclusively by qualified personnel.
- Disconnect the inverter on the AC and DC sides as described in the inverter manual.

WARNING!

Danger to life through high voltage if the communication cable is not installed properly.

Install the communication cable separately from the grid connection (AC cable) and also separately from the signaling contact, if necessary.

NOTICE!

Electrostatic discharges can damage the communication interface.

- Avoid coming into contact with components' connections and plug contacts.
- Ground yourself before touching the communication interface by touching the protective conductor (PE) or a non-coated part of the inverter housing.

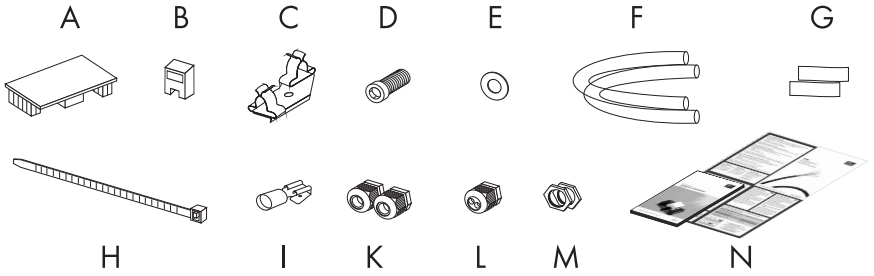
NOTICE!

Metal or cable scraps in the housing can damage the inverter.

- Make sure that no metal scraps of the cable shield or the cable fall into the open inverter when working on the cable.
- Remove any metal or cable scraps, if necessary.

3 Unpacking

3.1 Packing List



Position	Number	Description
A	1	RS485 Piggy-Back: 485PB-G3
B	1	Jumper
C	1	Shield clamp*
D	1	Screw for fastening the shield clamp*
E	1	Contact disk*
F	2	Insulating tubes
G	2	Conductive bonding sheets*
H	1	Cable tie
I	1	Flat cable connector
K	2	Cable glands (with single seal insert)
L	1	Cable gland (with double seal insert)
M	2	Counter nuts for the cable glands
N	1	Installation guide with RS485 cabling plan poster

*Is only required for SB/WB 3300 and SB/WB 3800 inverter models.

3.2 Identification

You can identify the communication interface by the type label. The type label is located on one of the socket connectors of the communication interface.

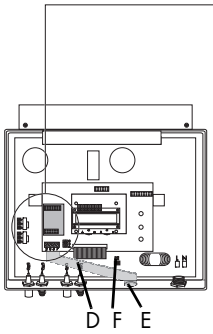
4 Electrical Connection

This section describes the installation and connection of the RS485 Piggy-Back communication interface. It is assumed that the inverter is situated in the middle of the RS485 communication bus. If the inverter is situated at the end of the RS485 communication bus, carry out the following steps for one cable only and connect the termination (see Page 15).

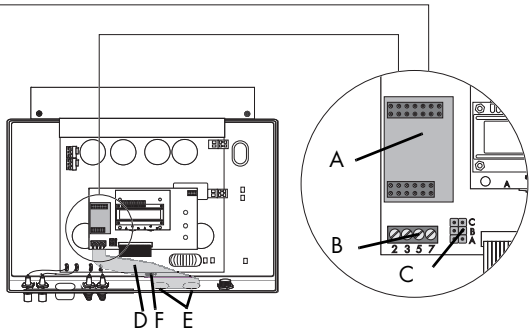
If the communication interface is preinstalled, you can skip Section 4.2 "Installing the Communication Interface" (Page 10).

4.1 Overview of Interface Port and Cable Route

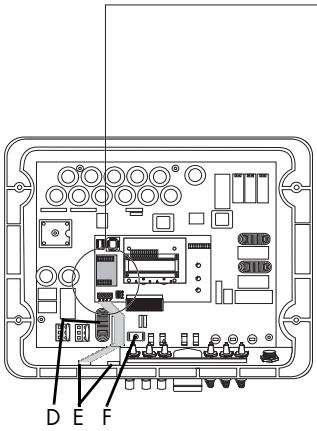
For an inverter of type SB/WB



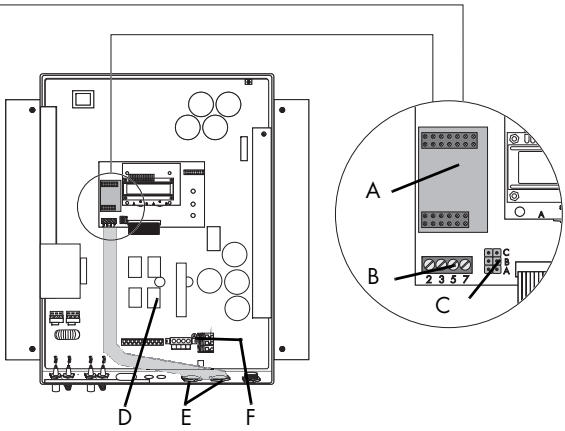
SB/WB 700
SB/WB 1100



SB/WB 1100, SB/WB 1100 (E) (LV), SB/WB 1700 (E), SB 2100TL, SB/WB 2500, SB/WB 2800i, SB/WB 3000

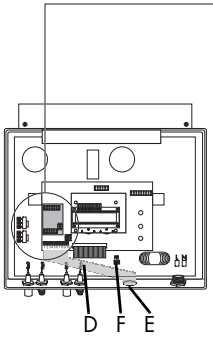


SB/WB 3300, SB/WB 3800

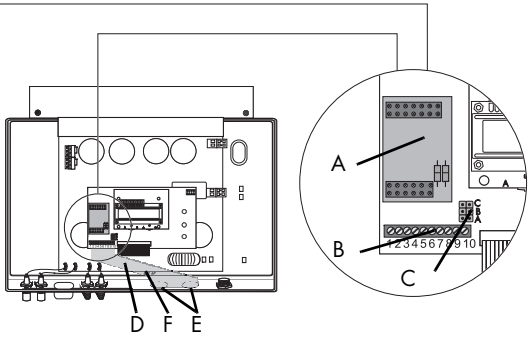


SB 3300TL(HC), SB 4200TL(HC), SB 5000TL(HC)(W)

For an inverter of type SWR



SWR 700



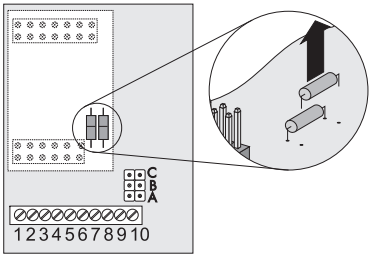
SWR 1100 (E) (LV), SWR 1700 (E), SWR 2000, SWR 2500, SWR 3000

Position	Description
A	Interface port
B	Screw terminals for connection of the communication cabling
C	Jumper slot
D	Cable route (gray surface)
E	Enclosure openings at the bottom of the inverter
F	Connector tab for PE

4.2 Installing the Communication Interface

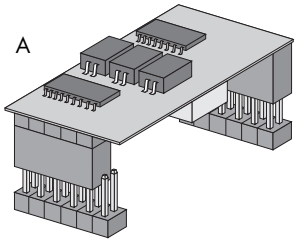
In order to install the communication interface for the SB, WB and SWR inverters mentioned above proceed as follows:

1. Open the inverter as described in the inverter documentation.
2. In inverters of the SWR type, resistors with a black ring must be removed before installation. Carefully cut off the resistors with a black ring using diagonal cutting pliers.



3. Plug the communication interface (A) to the left of the interface port. The 2 pins on the right of the short pin row below stay free.

☑ The communication interface is installed.



4.3 Connecting the Communication Interface

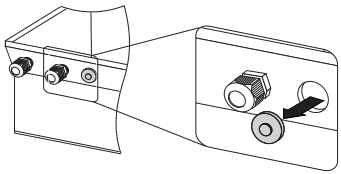
4.3.1 Preparing the Enclosure Opening on the Inverter

Perform the following steps, depending on the inverter model:

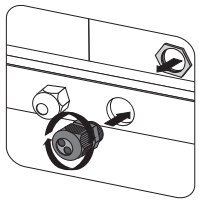
- For inverter models with one enclosure opening see Section "Inverter Models with One Enclosure Opening" (Page 11)
- For inverter models with two enclosure openings see Section "Inverter Models with Two Enclosure Openings" (Page 11)

Inverter Models with One Enclosure Opening

1. Open the inverter as described in the inverter documentation.
2. Push the filler plug out of the enclosure opening which is located at the bottom of the inverter.



3. Insert the cable gland with the double seal insert into the enclosure opening of the inverter and fasten it from inside with a nut.

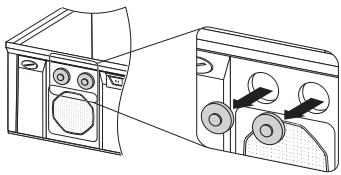


4. Unscrew the nut of the cable gland and push out the seal insert.
5. Push out the filler plug in the seal insert with a screwdriver depending on the number of cables to be led through.

☑ The enclosure opening on the inverter is prepared.

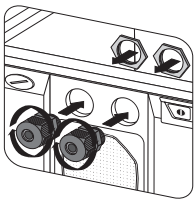
Inverter Models with Two Enclosure Openings

1. Open the inverter as described in the inverter documentation.
2. Push out the filler plug at the bottom of the inverter depending on the number of cables to be led through.



3. Place the cable gland with single seal insert into the prepared enclosure opening of the inverter and fasten it with a nut from inside the enclosure.
4. Loosen the nut of the cable gland so that the cable can be inserted.

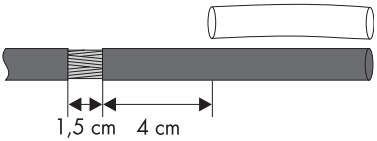
☑ The cable opening on the inverter is prepared.



4.3.2 Installing the Cable in the Inverter

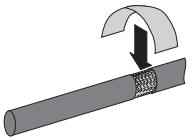
The instructions for preparing and installing the shield clamp only apply for SB/WB 3300 and SB/WB 3800 inverter models.

1. If you are using a shield clamp, proceed as follows:
   - Measure 4 cm plus the length of one insulating tube from the end of the cable and strip approx. 1.5 cm of the cable sleeve down to the shield.

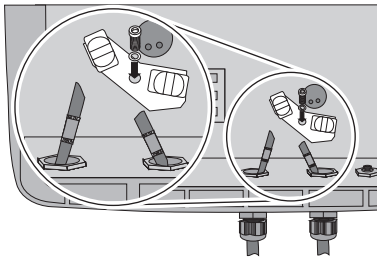


   - Apply a conductive bonding sheet around the stripped area of the cable.

   ☑ The cable is prepared for the shield clamp.

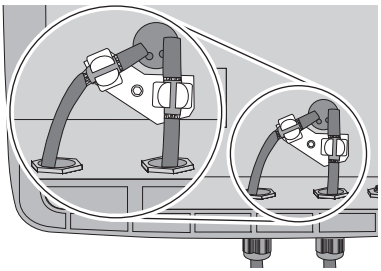


   - Insert the cable into the inverter through the cable gland.
   - Use the screw and the contact disk to fasten the shield clamp to the screwing device for the shield clamp on the inverter.

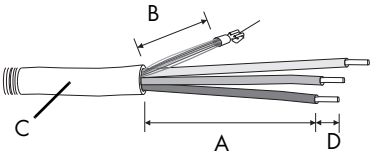


   - Push the stripped part of the cable into the shield clamp.

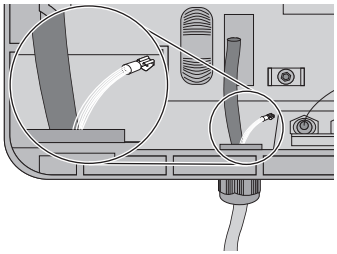
   ☑ The shield clamp is installed.



2. If you are not using a shield clamp, proceed as follows:
   - Insert the cable into the enclosure through the cable gland.
   - Strip the cable sleeve to match the length of the cable route (A). The length of the cable route depends on the inverter model (see images in Section 4.1 "Overview of Interface Port and Cable Route" on Page 8).
   - Shorten the unused insulated conductors down to the cable sleeve (C).



   - Shorten the cable shield to reach the PE connector (connector tab) (B) in the inverter and twist it. The length to the PE connector depends on the inverter model (see images in Section 4.1 "Overview of Interface Port and Cable Route" on Page 8).
   - Connect the flat cable connector to the cable shield.
   - Connect the flat cable connector with the PE connector tab.
   - Strip 6 mm off the insulated conductors (D).

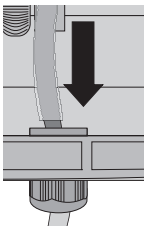


3. Tighten the nut of the cable gland to secure the cable.
4. Installing the insulating tube:

DANGER!

Danger to life through high voltage if there is a fault with the communication cable.

- Pull an insulating tube over the wires of the used cables that reaches up to the inverter enclosure opening. The insulating tube must completely cover the wires inside the enclosure.
- If necessary, cut the insulating tube back to the required length.



5. For simplification the two cables can be bound together with a cable tie.
6. Install the cable with an insulating tube along the cable route to the screw terminals.

☑ The cable is installed in the inverter.

4.3.3 Connecting the Cable to the Communication Interface

Cabling plan for an RS485 communication bus

See the RS485 cabling plan poster for the cabling, wiring, and termination of an RS485 communication bus.

Cabling plan for SB/WB and SWR inverter models

The cabling plan for SB/WB and SWR inverter models is identical.

NOTICE!

Damage to the terminal block if wire sleeves are used.

Wire sleeves deform when tightening the screw terminals and can no longer be removed from the terminal block afterwards.

- Do not use wire sleeves when connecting the communication cable.

1. Connect the wires to the screw terminals (2, 5, 7) below the interface port (torque: 0.23 Nm).

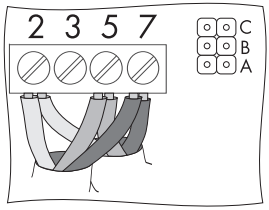
   Write down the colors of each wire:

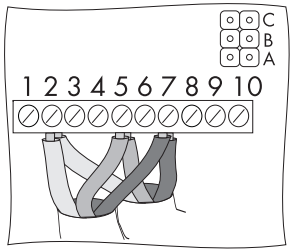
   2 _____

   5 _____

   7 _____

2. Set the termination where necessary (see Page 15).





3. Close the inverter as described in the inverter documentation.

☑ The communication interface is connected.

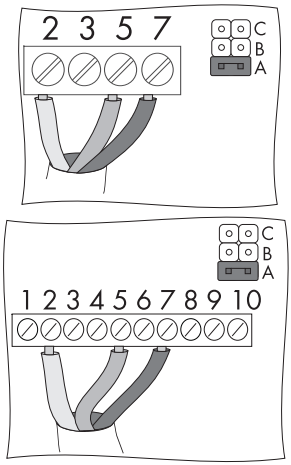
4.4 Termination

Connect the termination only if the inverter is positioned at the end of the RS485 communication bus. Termination is done through a jumper on the jumper slot. Refer to the RS485 cabling plan poster for the termination of an RS485 communication bus.

Carry out the following steps to terminate the RS485 communication bus.

1. Open the inverter as described in the inverter documentation.
2. Plug the jumper onto the jumper slot A in the inverter.
3. Close the inverter as described in the inverter documentation.

☑ The RS485 communication bus is terminated.



5 Decommissioning

5.1 Disassembly

1. Remove the RS485 Piggy-Back communication interface.
2. Disconnect the wires from the screw terminals.
3. Remove the jumper, if applicable.
4. Remove the cable tie, if applicable.
5. If you are using a shield clamp:
   - Pull the cable out of the shield clamp.
   - Unscrew the shield clamp.
6. If you are not using a shield clamp:
   - Remove the cable shield from the PE connector.
7. Remove the insulating tube.
8. Loosen the nut of the cable gland.
9. Pull the cable out of the device.
10. Remove the cable gland from the enclosure.
11. Plug the enclosure opening at the bottom of the inverter with a filler plug.
12. Close the inverter as described in the inverter documentation.

☑ The communication interface has been decommissioned.

5.2 Disposal

At the end of its service life, dispose of the communication interface in accordance with the currently applicable disposal regulations for electronic waste at the installation site, or send it back at your expense to SMA Solar Technology AG labeled "ZUR ENTSORGUNG" ("for disposal").

6 Technical Data

Mechanical Data

Width x Height x Depth	28 mm x 42 mm x 16 mm
Weight	14 g
Mounting location	in the inverter

Interfaces

Communication bus	in the inverter

Communication

Communication interface	RS485
Max. communication range of RS485	1,200 m

Ambient Conditions

Ambient temperature (operation)	–25 °C ... +85 °C
Relative humidity	5 % ... 95 %, non condensing

7 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:

- Type and serial number of the inverter
- Serial number of the communication interface
- Communication type
- Blink code or display of the inverter

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- Ignoring safety warnings and instructions contained in all documents relevant to the product
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