



SUNNY BEAM REPEATER

Transmission Range Increase for Sunny Beam

User Manual



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1 Notes on this Manual

1.1 Target Group


This manual is for qualified electrical technicians and the user. Some tasks described in this manual may only be performed by qualified electrical technicians. These tasks are identified with a safety warning.


1.2 Validity


This user manual for the repeater applies from Sunny Beam firmware version 2.21EU.

1.3 Symbols Used

The following types of warnings 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!	

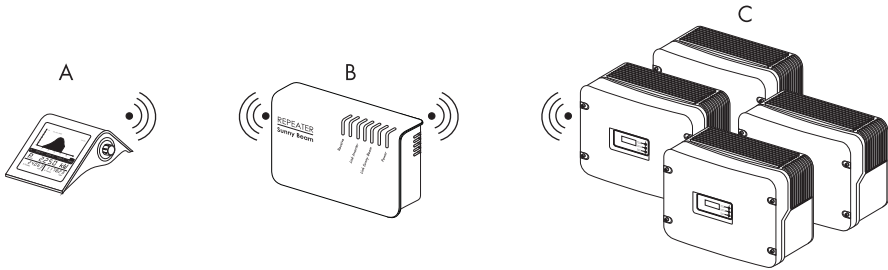
	ATTENTION!
"ATTENTION" indicates a situation that can result in property damage if not avoided!	

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

2 The Sunny Beam Repeater

2.1 Applications

With the Sunny Beam Repeater, you can increase the Sunny Beam's range in order to reach the inverters under problematic ambient conditions. The Sunny Beam Repeater can be simply integrated into the existing transmission path from the Sunny Beam to the inverters. The Sunny Beam Repeater requires a socket (AC 100 V to 240 V) for the power supply.



Position	Description
A	Sunny Beam
B	Sunny Beam Repeater
C	inverters from SMA Solar Technology

2.2 Functions

Connection to the inverters and to the Sunny Beam via:

- Radio (up to 100 m in open air, up to 30 m in buildings, maximum 4 inverters)

Supported inverters:

- The Sunny Beam Repeater supports all inverters that the Sunny Beam supports.

Number of inverters supported:

- up to 4

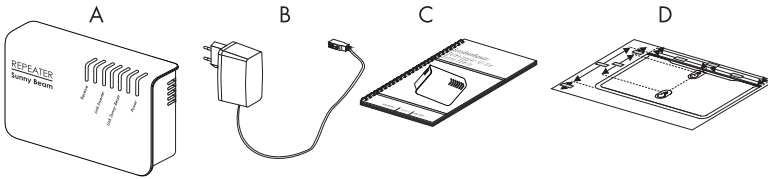
Connection to the power supply via:

- USB plug-in power supply (max. 2 m)

Display of system states:

- via 4 light-emitting diodes

2.3 Scope of Delivery

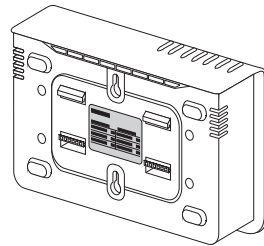


Position	Quantity	Description
A	1	Sunny Beam Repeater
B	1	USB plug-in power supply
C	1	user manual
D	1	drilling Template

2.4 Identification

2.4.1 Type Plate

You can identify the Sunny Beam Repeater using the type plate. The type plate is located on the underside of the Sunny Beam Repeater.



3 Safety Instructions

Please follow all operating and safety instructions in this manual. Failure to follow these instructions could result in damage to the device and cause personal injury.

**DANGER!**

Only use the Sunny Beam Repeater in a dry environment. Otherwise, there is a risk of electric shock.

**CAUTION!**

The Sunny Beam Repeater must not be opened.

**CAUTION!**

Only use the plug-in power supply delivered with the Sunny Beam Repeater.

4 Determining the Installation Location

4.1 Requirements

Observe the following ambient conditions for the installation location of the Sunny Beam Repeater.

- The Sunny Beam Repeater is only suitable for the interior.
- Protect the Sunny Beam Repeater from dust, wet conditions, aggressive substances and vapors.
- The Sunny Beam Repeater requires socket (AC 100 V to 240 V) for the power supply.
- The ambient temperature must be between 0 °C and +55 °C.

4.2 Determination Procedure

1. Walk with the Sunny Beam into the range of the inverters and activate the Sunny Beam as described in the Sunny Beam user manual. The inverters must be detected and registered with the Sunny Beam.



Information

Group 15 may not be used in the Sunny Beam and the radio Piggy-Backs in case a Sunny Beam Repeater is used.

Using group 15 can otherwise result in communication failures between the Sunny Beam and the inverters.

2. Check that the inverters are operating.
3. Walk with the Sunny Beam until approximately three meters from the inverters (not closer).
4. Set the data request frequency to the maximum frequency (the minimum selectable interval) via the menu "**VIEW OPTIONS/DATA REQUEST FREQ.**".



Information

It is important to set the data request frequency back to at least 15 seconds once you have successfully determined the installation locations of the Sunny Beam Repeater and the Sunny Beam. Lower values (under 15 seconds) should only be set for commissioning purposes (testing the radio connection) and not long-term.

5. Go to the "**SETUP/SERVICE/DIAGNOSTICS**" menu.

- Here, you can read the communication quality (see figure below) which is calculated on the basis of the ratio between the lost data packets and the sent data packets.

The registered inverters are listed with the last five digits of the serial number. The following values are also specified:

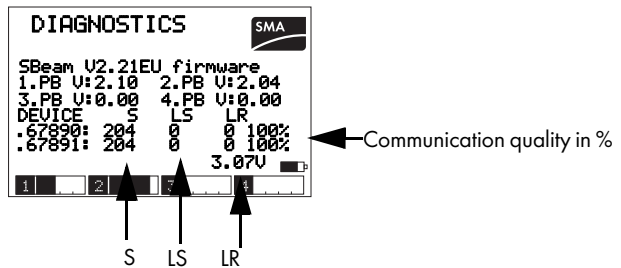
"S"= data packets sent

"LS"= data packets lost on sending

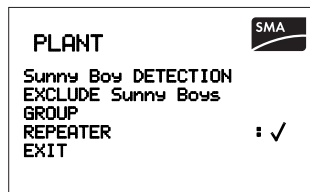
"LR" = data packets lost on receipt

This is followed by the communication quality calculated in %.

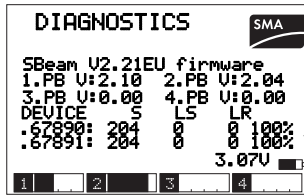
The communication quality specifies the ratio between received and sent data packets of the registered inverters. With a communication quality of 100 %, the signal strength is very good and no data packets are lost.



- Move away with the Sunny Beam towards the desired installation location until the first data packets are shown to be lost under LS or LR. Then move back towards the inverters again until no more data packets are being lost.
- Install the Sunny Beam Repeater at this location. First connect the provided USB power supply to the Sunny Beam Repeater, then plug the power plug into a socket. The Sunny Beam Repeater starts up. All LEDs on the Sunny Beam Repeater briefly shine green. The Sunny Beam Repeater starts up. This procedure takes approximately 1 minute.
- In the Sunny Beam main menu, select "SETUP/PLANT" and set a check mark beside the menu item "REPEATER".
- Select "EXIT" repeatedly until the prompt window opens.
- Select "Yes" in the prompt window. The setting is saved.



- Return to the "SETUP/SERVICE/DIAGNOSTICS" menu.

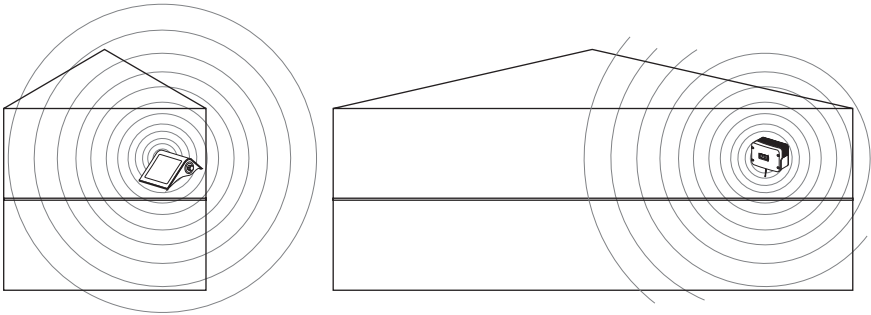


← Communication quality in %

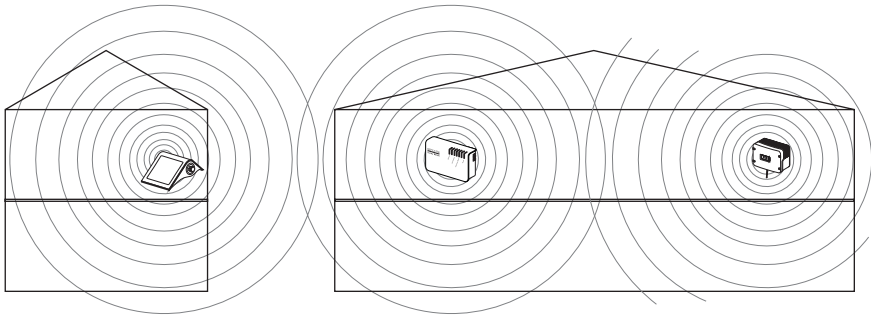
- You can now walk away with the Sunny Beam towards the desired installation location until the communication quality is still at least 50 %.
- If you have reached the desired installation location with sufficient communication quality, commissioning is successfully completed at this point. Set the data request frequency back to a value of at least 15 seconds or higher via the menu "VIEW OPTIONS/DATA REQUEST FREQ. ".
- If you cannot yet reach the desired installation location with sufficient communication quality, change the installation location of the Sunny Beam Repeater. Even altering the position by only a few meters may improve the communication quality.
- After successful commissioning, set the data request frequency back to a value of at least 15 seconds or higher via the menu "VIEW OPTIONS/DATA REQUEST FREQ. ".

From Building to Building

If the radio connection from building to building is insufficient due to the buildings being too far apart, or because of excessive attenuation, you can use the Sunny Beam Repeater to bridge a transmission gap, or to improve a poor radio connection.



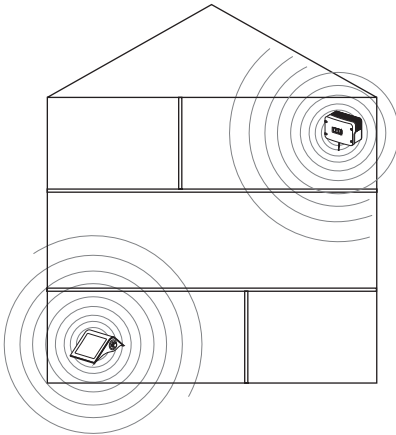
Transmission gap (without Sunny Beam Repeater)



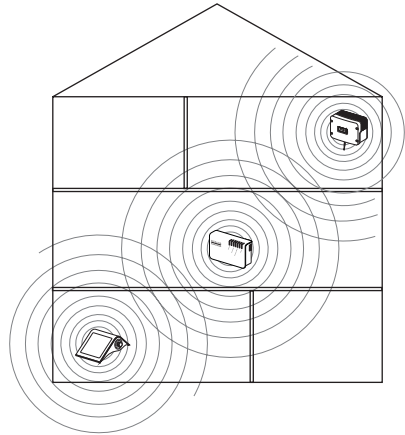
Bridging the transmission gap (with the Sunny Beam Repeater)

From Floor to Floor

If the radio connection within a building is insufficient due to the devices being too far apart, or because of excessive attenuation through ceilings and walls, you can use the Sunny Beam Repeater to bridge a transmission gap, or to improve a poor radio connection.



Transmission gap
(without Sunny Beam Repeater)

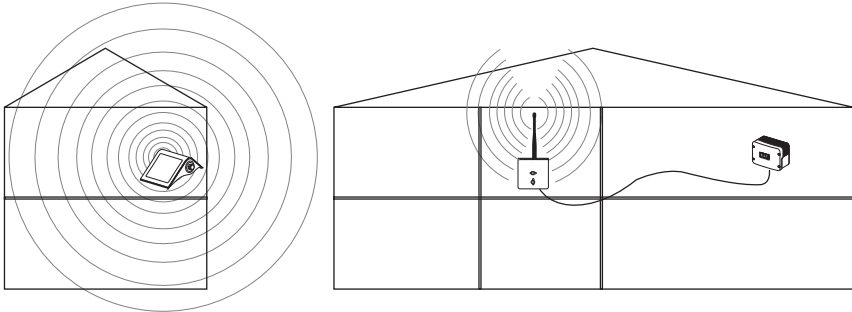


Bridging the transmission gap
(with Sunny Beam Repeater)

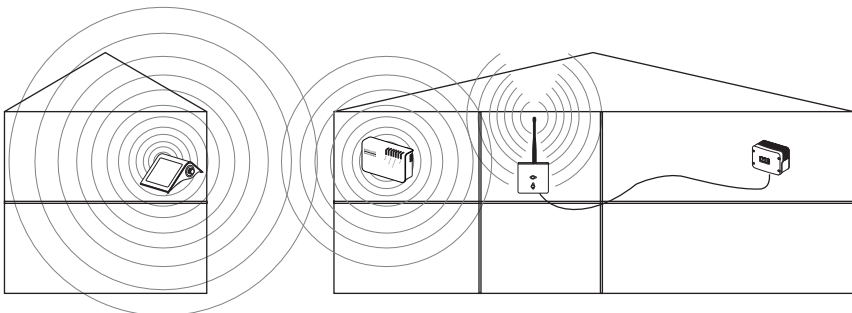
From Building to Building with an External Antenna Kit

You can also use the Sunny Beam Repeater in conjunction with the external antenna kit from SMA Solar Technology. The external antenna kit is intended for the installation on the inverter.

With the external antenna kit, comprising an antenna bracket and extension cable, you can bridge walls or ceilings.



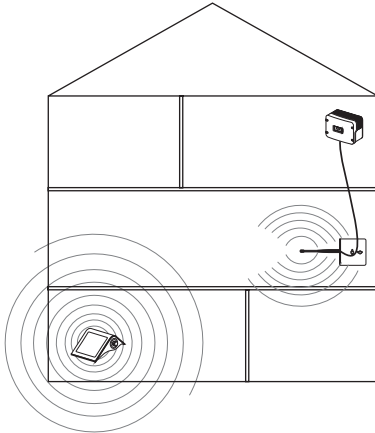
Transmission gap (without Sunny Beam Repeater)



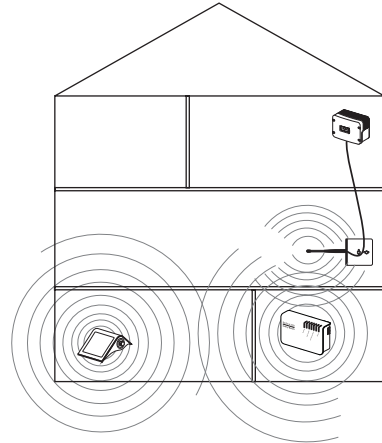
Bridging the transmission gap (with the Sunny Beam Repeater)

From Floor to Floor with an External Antenna Kit

You can also extend the external antenna kit with the Sunny Beam Repeater within a building. You can bridge walls and ceilings with the external antenna kit. With the Sunny Beam Repeater, you can then bridge any transmission gap that may still exist.



Transmission gap
(without Sunny Beam Repeater)



Bridging the transmission gap
(with Sunny Beam Repeater)

5 Installation



Information

Only install the Sunny Beam Repeater once you have determined the appropriate installation location as described in section 4 "Determining the Installation Location" (page 9).

The Sunny Beam Repeater can be used as a tabletop or wall-mounted device. If you choose to mount the device on a wall, you can either mount it directly on the wall or on top hat rails.

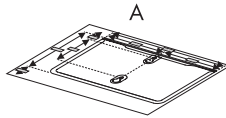
5.1 Tabletop Device

If you use the Sunny Beam Repeater as a tabletop device, follow the points below:

- Do not cover the Sunny Beam Repeater. This can cause heat to accumulate in the device.
- Lay the USB power supply cable in such a manner that its weight does not cause it to disconnect.
- Lay the cable properly so that there is no risk of persons tripping over it.

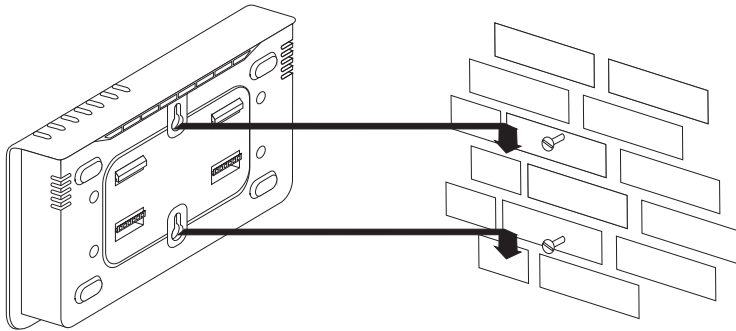
5.2 Wall Mounting

Mounting accessories provided

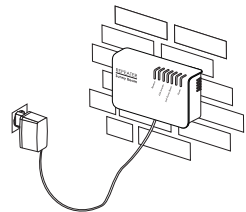


Position	Quantity	Description
A	1	drilling template

1. Pull the USB power supply plug out of the socket.
2. Pull the USB plug out of the Sunny Beam Repeater.
3. Use the provided drilling template to determine the position of the Sunny Beam Repeater on the wall. Observe the USB power supply's cable length.
4. Mark the position of the drill holes.
5. Drill the holes and install the screws. Use screws with a shank diameter of 3.5 mm to 4.5 mm (e. g. 4.5 mm x 60 mm).
6. Leave about 6 mm clearance between the screw head and the wall.
7. Hang the Sunny Beam Repeater on the screws (see figure).



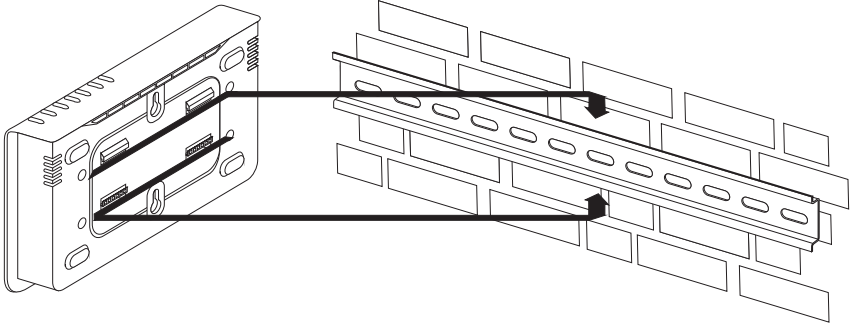
8. Plug the USB power supply's USB plug into the socket on the lower edge of the housing of the Sunny Beam Repeater.
9. Then plug the USB power supply's plug into the socket. All LEDs on the Sunny Beam Repeater briefly shine green. The Sunny Beam Repeater starts up. This procedure takes approximately 1 minute.



5.3 Top Hat Rail Installation

1. Pull the USB power supply plug out of the socket.

2. Pull the USB plug out of the Sunny Beam Repeater.
3. Fasten a top hat rail onto the wall. Observe the USB power supply's cable length.
4. Hook both lower retainers of the repeater under the lower edge of the top hat rail.
5. Push the repeater upwards.
6. Hook the repeater's two upper catches over the upper edge of the top hat rail.

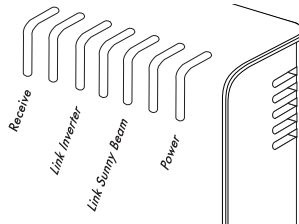


6 Explanation of the LEDs

The repeater has 4 LEDs, with which the status of the device can be ascertained. The repeater is equipped with the following LEDs:

- Receive
- Link Inverter (connection to the inverter)
- Link Sunny Beam (connection to the Sunny Beam)
- Power (power supply)

This section explains the repeater's various light signals and flash signals.



LED	Status/Color	Display
Receive	flashes orange	Data are being received.
	off	No data are being received.
Link Inverter	shines orange	The repeater has received data from the inverter.
	off	The repeater is not receiving any data from the inverter.
Link Sunny Beam	shines orange	The repeater has received data from the Sunny Beam.
	off	The repeater is not receiving any data from the Sunny Beam.
Power	shines green	The power supply is ok.
	off	(All LEDs are off), no power supply is present.

7 Maintenance and Cleaning

7.1 Maintenance

The repeater does not require maintenance.

7.2 Cleaning



ATTENTION!

Damage to the device due to penetration of liquids.

The repeater is not waterproof, liquids should not be allowed to penetrate.

- To clean the device, use only a lightly dampened cloth so as to prevent the penetration of liquids. If there is a considerable amount of dirt, you can also use a mild, non-abrasive and non-corrosive cleaning agent.

8 Decommissioning

8.1 Disassembly

Pull the USB plug-in power supply's plug out of the socket. Then pull the USB plug out of the repeater.

8.2 Packaging for Shipment

When returning the device to us, be sure to use packaging which adequately protects the device from damage during transport (if possible, the original packaging).

8.3 Disposal

Dispose of the repeater at an authorized disposal company.

9 Technical Data

Dimensions	
Size	225 mm x 130 mm x 57 mm (width x height x depth) Vertically, the repeater requires an additional space of approximately 15 cm for the cable.
Weight	750 g
Power supply	
USB plug-in power supply	input voltage 100 V to 240 V 47 Hz to 63 Hz output voltage 5 V
Environmental conditions for operation	
Ambient temperature	0 °C to +55 °C
Relative humidity	5 % to 95 %, non-condensing
Protection rating	IP20
Warranty, Certificates and Permits	
www.SMA.de	

10 Contact

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

- Type of inverters and serial numbers
- Serial number of the repeater
- Serial number and firmware version of the Sunny Beam

SMA Solar Technology AG

Sonnenallee 1

34266 Niestetal, Germany

www.SMA.de

Service Line

Inverters: +49 561 9522 1499

Communication: +49 561 9522 2499

Fax: +49 561 9522 4699

E-Mail: serviceline@SMA.de

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- Operating the product whilst ignoring relevant, statutory safety regulations in the deployment location
- Ignoring safety warnings and instructions contained in all documents relevant to the product
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SMA Solar Technology AG

Sonnenallee 1

34266 Niestetal

Germany

Tel. +49 561 9522-0

Fax +49 561 9522-100

www.SMA.de

E-Mail: info@SMA.de

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SMA Solar Technology AG

www.SMA.de

