



Communication Interface for Battery Inverters

SMA SPEEDWIRE DATA MODULE SUNNY ISLAND

Installation Manual

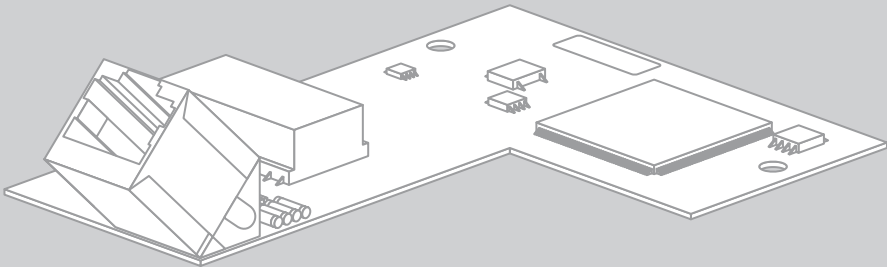


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1 Information on this Document

Validity

This document is valid for device type "SWDMSI-10.BG1" (SMA Speedwire data module Sunny Island) from hardware version A and firmware version 1.0.0.R.

Target Group





This document is intended for qualified persons. Only persons with the appropriate skills are allowed to perform the tasks described in this document (see Section 2.3 "Skills of Qualified Persons", page 7).

Additional Information

Links to additional information can be found at www.SMA-Solar.com:

Document title	Document type
Increased Self-Consumption with SUNNY ISLAND and SUNNY HOME MANAGER	Planning Guidelines

Symbols

Symbol	Explanation
 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
 WARNING	Indicates a hazardous situation which, if not avoided, can result in death or serious injury
 CAUTION	Indicates a hazardous situation which, if not avoided, can result in minor or moderate injury
NOTICE	Indicates a situation which, if not avoided, can result in property damage
	Information that is important for a specific topic or goal, but is not safety-relevant
<input type="checkbox"/>	Indicates a requirement for meeting a specific goal
<input checked="" type="checkbox"/>	Desired result
x	A problem that might occur

Typographies

Typography	Explanation	Example
bold	<ul style="list-style-type: none"> • Display texts • Elements on a user interface • Terminals • Elements to be selected • Elements to be entered 	<ul style="list-style-type: none"> • The value can be found in the Energy field. • Select Settings. • Enter the value 10 in the Minutes field.
>	<ul style="list-style-type: none"> • Connects several elements to be selected 	<ul style="list-style-type: none"> • Select Settings > Date.
[Button/Key]	<ul style="list-style-type: none"> • Button or key to be selected or pressed 	<ul style="list-style-type: none"> • Select [Next].

Nomenclature

Complete designation	Designation in this document
SMA Speedwire	Speedwire
SMA Speedwire data module Sunny Island	Speedwire data module

Abbreviations

Abbreviation	Designation	Explanation
AC	Alternating Current	-
DC	Direct Current	-
DHCP	Dynamic Host Configuration Protocol	Protocol for the dynamic assignment of IP configurations
PV	Photovoltaics	-

2 Safety

2.1 Intended Use

The Speedwire data module is a Speedwire communication interface for the battery inverter Sunny Island.

Speedwire is a cable-based type of communication based on the Ethernet standard and the communication protocol SMA Data2+. This enables inverter-optimized 10/100 Mbit data transmission between Speedwire devices in PV systems.

The Speedwire data module performs the following tasks:

- Set-up of a Speedwire network
- Data exchange with Sunny Explorer and Sunny Home Manager

The Speedwire data module is available as retrofit kit.

Only operate the Speedwire data module with supported products.

For safety reasons, it is not permitted to modify the product or install components that are not explicitly recommended or distributed by SMA Solar Technology AG for this product.

The enclosed documentation is an integral part of this product.

- Read and observe the documentation.
- Keep the documentation in a convenient place for future reference.

Only use the Speedwire data module in accordance with the instructions in the enclosed documentation. Any other use can result in personal injury or property damage.

2.2 Supported Products

SMA Inverters

- Sunny Island (SI)
 - SI 6.0H-11 from firmware version 2.0
 - SI 8.0H-11 from firmware version 2.1

Additional SMA Products

- Sunny Home Manager from firmware version 1.04
- Sunny Explorer from software version 1.06*
- SMA Connection Assist from software version 1.0*

* available free of charge at www.SMA-Solar.com

2.3 Skills of Qualified Persons

The work described in this document must be performed by skilled persons only. Qualified persons must have the following skills:

- Training in the installation and commissioning of electrical devices and systems
- Knowledge of how to deal with the dangers and risks associated with installing and using electrical devices and systems
- Knowledge of all applicable standards and directives
- Knowledge of how an inverter works and is operated
- Knowledge of and adherence to this document and all safety precautions

2.4 Safety Precautions

Electric Shock

High voltages that can lead to electric shock, are present in the system and on the Sunny Island. The Sunny Island can start on its own from standby. Before opening the Sunny Island, note the following safety rules:

- Switch off or disconnect the devices in the following order:
 - Sunny Island (see operating manual of the Sunny Island)
 - Circuit breaker of the Sunny Island on the distribution board
 - BatFuse load-break switch
- Ensure that the system cannot be reconnected.
- Open the enclosure lid of the Sunny Island and ensure that no voltage is present (see operating manual of the Sunny Island).
- Ground and short-circuit the AC conductors.
- Cover or shield any adjacent live components.

Burn Hazards

Parts of the Sunny Island enclosure can get hot during operation.

- During operation, do not touch any parts other than the enclosure lid of the Sunny Island.

Electrostatic Discharge

By touching electronic components, you can cause damage to or destroy the Sunny Island or the Speedwire data module through electrostatic discharge.

- Ground yourself before touching any components of the Sunny Island or the Speedwire data module.

3 Scope of Delivery

Check the scope of delivery for completeness and any visible damage. Contact your distributor if the delivery is incomplete or damaged.

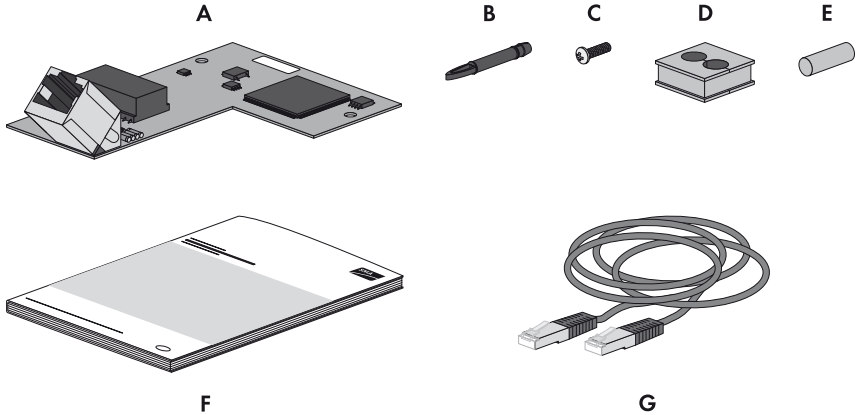


Figure 1: Components included in the scope of delivery

Position	Number	Designation
A	1	Speedwire data module (SWDMSI-10.BG1)
B	3	Spacer*
C	1	Screw
D	1	Cable support sleeve
E	1	Filler plug
F	1	Installation manual
G	1	Network cable, 5 m

* Two spacers are required for the installation of the Speedwire data module. One spacer is a spare part.

4 Product Description

4.1 Speedwire Data Module

The Speedwire data module is a Speedwire communication interface for the Sunny Island.

Speedwire is a cable-based type of communication based on the Ethernet standard and the communication protocol SMA Data2+. This enables inverter-optimized 10/100 Mbit data transmission between Speedwire devices in PV systems.

The Speedwire data module performs the following tasks:

- Set-up of a Speedwire network
- Data exchange with Sunny Explorer and Sunny Home Manager

The Speedwire data module is available as retrofit kit.

Only operate the Speedwire data module with supported products.

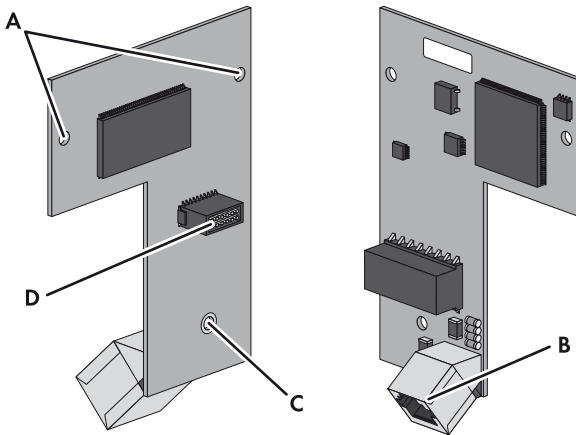


Figure 2: Components of the Speedwire data module

Position	Designation
A	Openings for spacers
B	Network port (Speedwire)
C	Mounting hole
D	Pin header

The Speedwire network can be set up in either line, star or tree topology, depending on the devices used and the number of network connections. The Speedwire data module has one network port.

Depending on the network topology, the Speedwire data module can be connected to the Sunny Explorer software either via the router or network switch or directly to the computer.

For PV systems with Sunny Home Manager, the Speedwire data module must always be connected via the router or network switch. You will find further information on increased self-consumption with the Sunny Home Manager and Sunny Island in the Planning Guidelines "Sunny Island/Sunny Home Manager" at www.SMA-Solar.com.

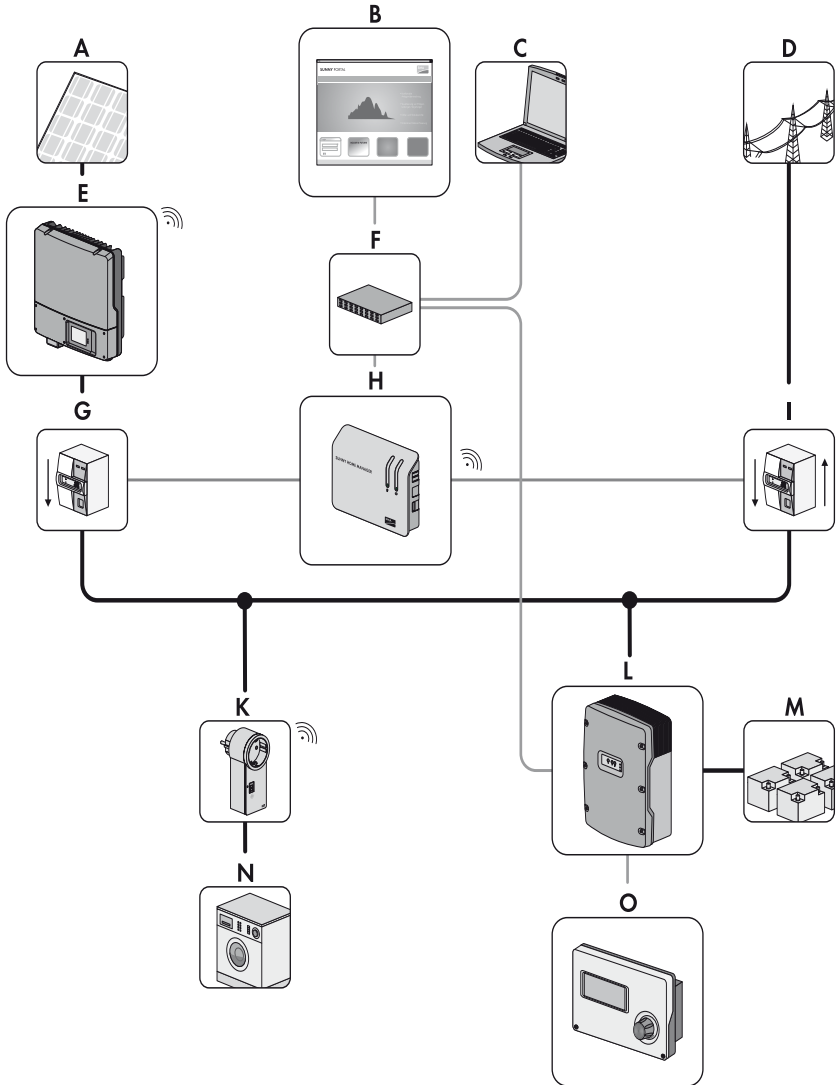


Figure 3: PV system with Sunny Island, Sunny Home Manager and Sunny Explorer in star topology (example)

Position	Designation
A	PV modules
B	Sunny Portal
C	Computer with Sunny Explorer
D	Utility grid
E	PV inverter
F	Router
G	PV production meter
H	Sunny Home Manager
I	Feed-in meter and purchased electricity meter or bidirectional meter for grid feed-in and purchased electricity
K	SMA radio-controlled socket
L	Sunny Island
M	Battery
N	Load
O	Sunny Remote Control

4.2 Type Label

The type label clearly identifies the Speedwire data module. The type label is located on the front panel of the Speedwire data module.

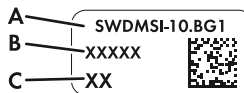


Figure 4: Design of the type label

Position	Explanation
A	Device type
B	Serial number
C	Hardware version

You will require the information on the type label to use the Speedwire data module safely and when seeking customer support from the SMA Service Line. The type label must remain permanently attached to the Speedwire data module.

5 Connection

5.1 Connection Area of the Sunny Island

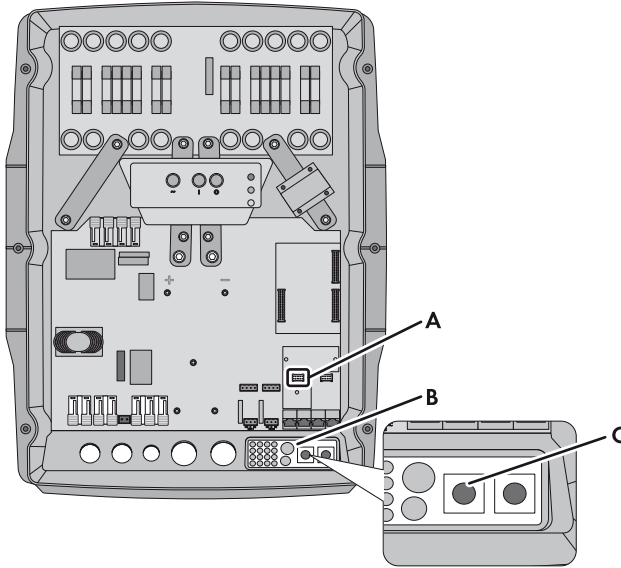


Figure 5: Overview of the connection area

Position	Designation
A	Interface slot SIComSma
B	Cable feed-through plate
C	Left-hand cable support sleeve

5.2 Cable Requirements and Information on Cable Routing

The cable length and quality affect the signal strength in the Speedwire network. Therefore, it is important to note the following information on cable routing.



Interference in data transmission due to AC cables

During operation, AC cables generate an electromagnetic field which may induce interference in the Speedwire communication.

- Lay the network cables for Speedwire communication using suitable fastening material and with a minimum clearance of 50 mm to the AC cables.

Cable Requirements

If you do not wish to use the supplied network cable, observe the following cable requirements:

- For outdoor installation: UV-resistant
- Maximum cable length: 100 m
- Cross-section: at least $2 \times 2 \times 0.22 \text{ mm}^2$ or at least $2 \times 2 \times 24 \text{ AWG}$
- Cable type: 100BaseTx, CAT5 with shielding S-UTP, F-UTP or higher
- Type of plug: RJ45

SMA Solar Technology AG recommends the following cable types:

- For outdoor use: SMA COMCAB-OUTxxx*
- For indoor use: SMA COMCAB-INxxx*

The cables are available in the lengths xxx = 100 m, 200 m, 500 m, 1,000 m

5.3 Installing the Speedwire Data Module

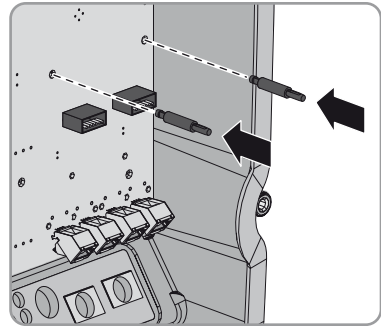
1. **⚠ WARNING**

Danger to life due to high voltages

High voltages that can lead to electric shock, are present in the system and on the Sunny Island. The Sunny Island can start on its own from standby. Before opening the Sunny Island, note the following safety rules:

- Switch off or disconnect the devices in the following order:
 - Sunny Island (see operating manual of the Sunny Island)
 - Circuit breaker of the Sunny Island on the distribution board
 - BatFuse load-break switch
- Ensure that the system cannot be reconnected.
- Open the enclosure lid of the Sunny Island and ensure that no voltage is present (see operating manual of the Sunny Island).
- Ground and short-circuit the AC conductors.
- Cover or shield any adjacent live components.

2. Insert two of the supplied spacers into the two openings on the left-hand and right-hand sides above the interface slot **SIComSma** (for position of interface slot, see Section 5.1).



3. Position the pin header of the Speedwire data module on the interface slot **SIComSma** and press on evenly, applying light pressure. This will prevent any damage to the contact pins in the pin header of the Speedwire data module.
 - The two spacers snap into place in the two spacer openings on the Speedwire data module.
4. Fasten the Speedwire data module on the spacer bolt using the supplied screw (torque: 0.5 Nm).

5.4 Connecting the Speedwire Data Module

Requirements:

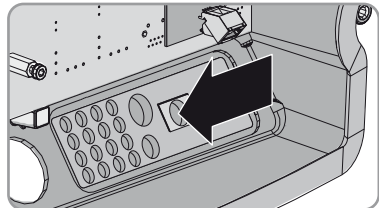
- The Speedwire data module must be installed in the Sunny Island (see Section 5.3).
- If the supplied network cable is not used: the network cable must comply with the specified requirements (see Section 5.2).

1. **⚠ WARNING**

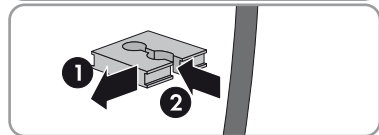
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 - BatFuse load-break switch
 - Ensure that the system cannot be reconnected.
 - Open the enclosure lid of the Sunny Island and ensure that no voltage is present (see operating manual of the Sunny Island).
 - Ground and short-circuit the AC conductors.
 - Cover or shield any adjacent live components.
2. Remove the chosen cable support sleeve from the cable feed-through plate and keep it for later use.

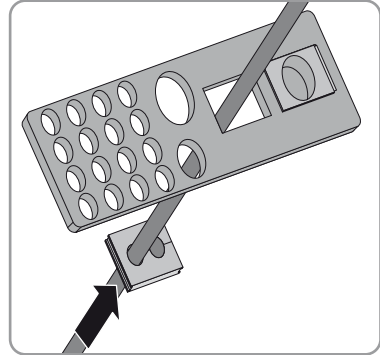


3. Open the supplied cable support sleeve and insert the network cable. Make sure that the cable support sleeve is positioned approximately 15 cm from the end of the network cable. This will provide sufficient length for connection to the network port of the Speedwire data module after routing into the Sunny Island.



4. Close the unused opening of the cable support sleeve with the supplied filler plug.

5. Lead the network cable through the opening of the cable feed-through plate and insert the cable support sleeve in the opening of the cable feed-through plate. Position the flat side of the cable support sleeve on the flat side of the cable feed-through plate.



6. Connect the network cable to the network port of the Speedwire data module.
7. Close the Sunny Island (see installation manual of the Sunny Island).
8. For PV systems with Sunny Home Manager, connect the other end of the network cable to the router or network switch.
9. For PV systems without Sunny Home Manager, connect the other end of the network cable either to the router or network switch or directly to the computer with Sunny Explorer (see relevant manual).

5.5 Commissioning the PV System

Requirements:

- The Speedwire data module must be installed in the Sunny Island (see Section 5.3).
- The Speedwire data module must be connected (see Section 5.4).

Procedure:

- Commission all inverters, devices and nodes in the PV system (see relevant manuals).
- If you wish to assign static IP addresses to the devices in your local network, use the SMA Connection Assist to configure the network (see Section 2.2 "Supported Products", page 6).

5.6 PV System Management with Sunny Explorer

5.6.1 Functions in Sunny Explorer

The following functions for PV system management are available in Sunny Explorer:

- Overview of the PV system status
- Display of key PV system and device data
- Parameterization of individual devices or entire device classes
- Simple diagnostics thanks to display of faults and events
- Device updates

5.6.2 Connection to Sunny Explorer

Requirements:

- The PV system must be in operation (see Section 5.5).
- The computer with Sunny Explorer must be located in the same local network as the Sunny Island with Speedwire data module.

Procedure:

- Start Sunny Explorer and create a PV system (see Sunny Explorer help).

5.6.3 Reading Off the Firmware Version

Using Sunny Explorer you can read off the current firmware version of the Speedwire data module.

Requirements:

- The PV system must be configured as a Speedwire system in Sunny Explorer (see Sunny Explorer help).
1. Start Sunny Explorer, open the Speedwire system and log in as **Installer** (see Sunny Explorer help). The user group **Installer** must only be used by qualified personnel who are familiar with setting safety-relevant PV system parameters.
 2. In the system tree select the Sunny Island, and in the device menu select the **Settings** tab.
 3. Select the parameter group **Device Components > Type Label > Protocol Converter** and read off the current firmware version in the field **Software version**.

5.6.4 Updating the Firmware

You can update the firmware of the Speedwire data module via Sunny Explorer. During the firmware update, you can leave the Speedwire data module installed in the Sunny Island.

1. Update the firmware using Sunny Explorer (see Sunny Explorer help).
2. Restart Sunny Explorer.

6 Troubleshooting

Problem	Cause and corrective measures
<p>The Sunny Island with Speedwire data module cannot be accessed via Sunny Explorer.</p>	<p>There is no Speedwire connection.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Ensure that all network cables are connected correctly. • Ensure that the Speedwire data module is correctly connected (see Section 5.4). • Ensure that the Sunny Island is operational. • If the Sunny Island is connected to a router, make sure the router is switched on.
	<p>The firmware version of the Sunny Island is not supported (see Section 2.2).</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Update the firmware on the Sunny Island (see Sunny Island manual).
	<p>The software version of Sunny Explorer is older than version 1.06.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Download Sunny Explorer with minimum software version 1.06 from www.SMA-Solar.com and install.
	<p>Firewall or IP filter settings are not correct.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Adjust firewall or IP filter settings (see manual of computer operating system, firewall or router).
	<p>The Speedwire data module does not have a valid IP address.</p> <p>Corrective measures:</p> <ul style="list-style-type: none"> • Make sure DHCP is enabled for the router. <p>or</p> <p>Assign an appropriate static IP address to the Speedwire data module via the SMA Connection Assist (see Section 2.2 "Supported Products", page 6).</p>

7 Decommissioning

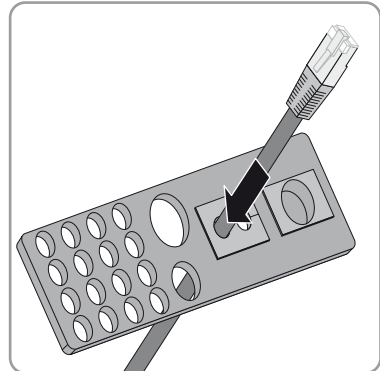
7.1 Disassembling the Speedwire Data Module

1. **⚠ WARNING**

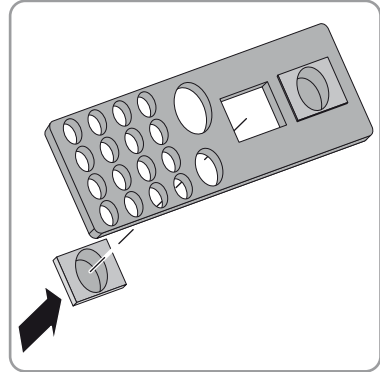
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 - BatFuse load-break switch
 - Ensure that the system cannot be reconnected.
 - Open the enclosure lid of the Sunny Island and ensure that no voltage is present (see operating manual of the Sunny Island).
 - Ground and short-circuit the AC conductors.
 - Cover or shield any adjacent live components.
2. Pull the network cable out of the network port in the Speedwire data module and remove the Speedwire data module. The two spacers can be left in the Sunny Island.
 3. Remove the cable support sleeve with the network cable.



4. Close the opening in the cable feed-through plate with the corresponding cable support sleeve or a suitable filler plug. This ensures that the opening complies with degree of protection IP54.



5. Close the Sunny Island (see installation manual of the Sunny Island).

7.2 Disposing of the Speedwire Data Module

- Dispose of the Speedwire data module in accordance with the regulations for the disposal of electronic waste applicable at the installation site.

8 Technical Data

General Data

Mounting location	in the Sunny Island
Voltage supply	via the Sunny Island

Mechanical Data

Width x height x depth	68 mm x 95 mm x 35 mm
------------------------	-----------------------

Communication

Communication interface	Speedwire
Maximum cable length	100 m

Ambient Conditions for Storage/Transport

Ambient temperature	- 25°C to +70°C
Relative humidity, non-condensing	5% to 95%

9 Contact

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

- Type, serial number and firmware version of the Sunny Island
- Type, serial number and firmware version of the Speedwire data module
- If Sunny Home Manager is used: serial number and firmware version of the Sunny Home Manager

Country	Company name	SMA Service Line
Australia	SMA Australia Pty Ltd. Sydney	Toll free for 1800 SMA AUS Australia: (1800 762 287) International: +61 2 9491 4200
Austria	See Germany	
Belgium	SMA Benelux bvba/sprl Mechelen	+32 15 286 730
Bulgaria	See Greece	
China	SMA Beijing Commercial Company Ltd. Beijing	+86 10 51501685-602
Czech Republic	SMA Central & Eastern Europe s.r.o. Prague	+420 235 010 417
Denmark	See Germany	
France	SMA France S.A.S. Lyon	Medium Power Solutions Inverters: +33 472 09 04 40 Communication: +33 472 09 04 41
		Hybrid Energy Solutions Sunny Island: +33 472 09 04 42
		Power Plant Solutions Sunny Central and Systemtechnik: +33 472 09 04 43

Country	Company name	SMA Service Line
Germany	SMA Solar Technology AG Niestetal	Medium Power Solutions Inverters: +49 561 9522-1499 Communication: +49 561 9522-2499 SMS with "Rückruf": +49 176 888 222 44
		Hybrid Energy Solutions Sunny Island: +49 561 9522-399
		Power Plant Solutions Sunny Central und Systemtechnik: +49 561 9522-299
Greece	SMA Hellas AE Athens	+30 210 9856-666
Hungary	See Czech Republic	
India	SMA Solar India Pvt. Ltd. Mumbai	+91 22 61713844
Italy	SMA Italia S.r.l. Milan	+39 02 89347-299
Japan	SMA Japan K.K. Tokyo	+81 3 3451 9530
Korea	SMA Technology Korea Co., Ltd. Seoul	+82 2 508-8599
Luxembourg	See Belgium	
Netherlands	See Belgium	
Poland	See Czech Republic	
Portugal	SMA Solar Technology Portugal, Unipessoal Lda Lisbon	+351 2 12 37 78 60
Romania	See Czech Republic	
Slovakia	See Czech Republic	
Spain	SMA Ibérica Tecnología Solar, S.L.U. Barcelona	+34 900 14 22 22
Switzerland	See Germany	

Country	Company name	SMA Service Line
Thailand	SMA Solar (Thailand) Co., Ltd. Bangkok	+662 670 6999
United Arab Emirates	SMA Middle East LLC Abu Dhabi	+971 2 698-5080
United Kingdom	SMA Solar UK Ltd. Milton Keynes	+44 1908 304899
Other countries	International SMA Service Line Niestetal	00800 SMA SERVICE (+800 762 7378423)

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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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www.SMA-France.com

SMA Hellas AE

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SMA Solar UK Ltd.

www.SMA-UK.com

