SMA

Installation Manual SMA SPEEDWIRE DATA MODULE FOR SUNNY ISLAND



ENGLISH

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1 Information on this Document

Validity

This document is valid for device type "SWDMSI-10.BG1" (SMA Speedwire data module for Sunny Island) from hardware version A and firmware version 1.02.00.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 2.2 "Skills of Qualified Persons", page 6).

Additional Information

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

Document title	Document type
SMA Smart Home	Planning Guidelines
SMA Speedwire Fieldbus	Technical Information
SMA Modbus [®] Interface	Technical Description
SunSpec [®] Modbus [®] Interface	Technical Description

Symbols

Symbol	Explanation
A DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
	Indicates a hazardous situation which, if not avoided, can result in death or serious injury
A 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
i	Information that is important for a specific topic or goal, but is not safety-relevant
	Indicates a requirement for meeting a specific goal
V	Desired result
×	A problem that might occur

Typographies

Typography	Explanation	Example
bold	 Display texts Elements on a user interface Terminals Elements to be selected Elements to be entered 	 The value can be found in the field Energy. Select Settings. Enter the value 10 in the field Minutes.
>	 Connects several elements to be selected 	 Select Settings > Date.
[Button/Key]	 Button or key to be selected or pressed 	• Select [Next].

Nomenclature

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

2 Safety

2.1 Intended Use

The SMA Speedwire data module for Sunny Island is a communication interface for the battery inverter Sunny Island and enables communication via Speedwire.

The product may only be installed in supported inverters (see Section 2.4, page 8). The inverter still complies with the standard after the product has been installed.

Use this product only in accordance with the information provided in the enclosed documentation and with the locally applicable standards and directives. Any other application may cause personal injury or property damage.

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 the product. Unauthorized modifications and installations will void all warranty claims and the operating permission.

The type label must remain permanently attached to the product.

Any use of the product other than described in the Intended Use section does not qualify as appropriate.

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient place for future reference and observe all instructions contained therein.

2.2 Skills of Qualified Persons

The tasks described in this document must be performed by qualified 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 compliance with this document and all safety precautions

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2.3 Safety Precautions

This section contains safety precautions that must be observed at all times when working on or with the product.

To prevent personal injury and property damage and to ensure long-term operation of the product, read this section carefully and follow all safety precautions at all times.

A DANGER

Danger to life due to electric shock when opening the Sunny Island

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, observe the following security regulations:

- 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 isolate any adjacent live components.

A CAUTION

Risk of burns due to hot components

Some components of the Sunny Island can get very hot during operation. Touching these components can cause burns.

- During operation, do not touch any parts other than the enclosure lid of the Sunny Island.
- When the Sunny Island is open, do not touch hot surfaces.

NOTICE

Damage to the inverter or the Speedwire data module due to electrostatic discharge

The electronic components inside the inverter or in the Speedwire data module can be irreparably damaged by electrostatic discharge.

• Ground yourself before touching any electronic component.

2.4 Supported Products

SMA Inverters

The Speedwire data module must only be installed in the following SMA inverters from the indicated inverter firmware version:

Sunny Island	From inverter firmware version
SI6.0H-11	3.0
SI8.0H-11	3.0

If the firmware version of the inverter is lower than specified in the table above, you must perform a firmware update for this inverter (see operating manual of the Sunny Island).

Additional SMA Products

- Sunny Home Manager from firmware version 1.04
- Sunny Explorer from software version 1.08*
- SMA Energy Meter from firmware version 1.00.00.R
- SMA Connection Assist from software version 1.0*

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

3 Scope of Delivery

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



Figure 1: Components included in the scope of delivery

Position	Quantity	Designation	
A	1	Speedwire data module	
В	3	Spacer*	
С	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 installation of the Speedwire data module. One spacer is a spare part.

4 Product Description

4.1 Speedwire Data Module

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

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
- In Sunny Home Manager systems: data exchange with Sunny Portal via a router with Internet connection
- The Modbus interface of the Speedwire data module is designed for industrial use and offers the following functions:
 - Remote query of measured values
 - Remote setting of parameters
 - Setpoint specifications for plant control

The Speedwire data module is available as a retrofit kit.



Figure 2: Components of the Speedwire data module

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

4.2 Possible Network Topologies

The setup of the Speedwire network depends on the devices used and on the number of network ports. The Speedwire data module is equipped with one network port. Thus, the Speedwire network can be set up in star or tree topology with the Speedwire data module (for further information on network topologies, see the Technical Information "SMA Speedwire Fieldbus").

4.3 Type Label

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.

Α	- swdms	I-10.BG1
B —	-xxxxx	
c—	לxx_	

Figure 3: Design of the type label

Position	Explanation
A	Device type
В	Serial number
С	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.

Symbols on the Type Label

Symbol	Designation	Explanation
	Data matrix code	2D code for device-specific characteristics

Supplementary Label

The supplementary label is located on the front panel of the Speedwire data module.

Figure 4: Supplementary label

Symbols on the Supplementary Label

Symbol	Designation	Explanation
	RCM label	The product complies with the applicable requirements of the AS/NZS 4417.2.
CE	CE marking	The product complies with the requirements of the applicable EU directives.

5 Connection

5.1 Connection Area of the Sunny Island



Figure 5: Overview of the connection area

Position	Designation
A	Interface slot SIComSma
В	Cable entry plate
С	Left-hand cable support sleeve

5.2 Cable Requirements and Information on Cable Routing

The cable length and cable quality affect the signal strength in the Speedwire network. Observe the cable requirements and the information on cable routing.

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Interference in data transmission due to unshielded energy cables

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

- When laying network cables, observe the following minimum clearances to unshielded energy cables:
 - For installation without separating strip: at least 200 mm
 - For installation with aluminum separating strip: at least 100 mm
 - For installation with steel separating strip: at least 50 mm

Cable Requirements

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

- □ Cable length between two nodes: max. 50 m with patch cable, max. 100 m with installation cable
- □ Number of insulated conductor pairs and insulated conductor cross-section: at least 2 x 2 x 0.22 mm² or at least 2 x 2 x 24 AWG
- □ Cable type: 100BaseTx, from CAT5 with shielding S-UTP, F-UTP or higher
- □ Plug type: RJ45 for Cat5, Cat5e, Cat6 or Cat6a (Cat7 plugs cannot be used)

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. A 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, observe the following security regulations:

- 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 isolate 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).



 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.

 Fasten the Speedwire data module on the spacer bolt using the supplied screw (torque: 0.5 Nm).

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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).

Procedure:

1. A 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, observe the following security regulations:

- 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 isolate any adjacent live components.
- Remove the respective 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.
- 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).

6 Commissioning

6.1 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:

- 1. 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 2.4 "Supported Products", page 8).
- If there are two or more Energy Meters in your local network, enter the individual serial number of the Energy Meter in the Sunny Island via Sunny Explorer. Thus, the Speedwire data module can uniquely identify the Energy Meters.

6.2 Configuring the Modbus Function

If you wish to access SMA inverters with Modbus interface, make sure that the Modbus connection of the devices has been configured correctly. In devices with Modbus, the same port must be set up for the Modbus communication. The Modbus function in the Speedwire data module is deactivated by default, and for the Modbus servers TCP and UDP, port **502** has been set Information on using the Modbus interface can be found in the Technical Description "SMA Modbus[®] Interface" or in the Technical Description "SunSpec[®]Modbus[®] Interface" at www.SMA-Solar.com.

Procedure:

 If necessary, activate the Modbus function and configure the preset ports in the Speedwire data module for the Modbus communication (see the Technical Description "SMA Modbus[®] Interface" or Technical Description "SunSpec[®]Modbus[®] Interface" at www.SMA-Solar.com). Sunny Explorer.

7 Troubleshooting

7.1 Corrective Measures under Fault Conditions

i Corrective measures regarding Modbus errors

Corrective measures regarding Modbus errors can be found in the Technical Description "SMA Modbus[®] Interface" or Technical Description "SunSpec[®]Modbus[®] Interface".

Problem	Cause and corrective measures
The Sunny Island with	Possibly, there is no Speedwire connection.
Speedwire data module cannot be accessed via	Corrective measures:

- Ensure that all network cables are correctly connected.
- 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.

The firmware version of the Sunny Island might not be supported (see Section 2.4).

Corrective measures:

• Update the firmware on the Sunny Island (see operating manual of the Sunny Island).

The software version of the Sunny Explorer might not be supported (see Section 2.4).

Corrective measures:

• Download Sunny Explorer with the software version indicated in Section 2.4 from www.SMA-Solar.com and install it.

The firewall or IP filter might not have been set up correctly.

Corrective measures:

 Adjust firewall or IP filter settings (see manual of computer operating system, firewall or router).

Problem	Cause and corrective measures	
The Sunny Island with	The Speedwire data module might not have a valid IP address.	
Speedwire data module cannot be accessed via	Corrective measures:	
Sunny Explorer.	 Make sure DHCP is enabled for the router 	
	or	
	Assign an appropriate static IP address to the Speedwire data module via the SMA Connection Assist or Sunny Explorer. You can obtain the Sunny Explorer and SMA Connection Assist software free of charge from the download area at	

www.SMA-Solar.com

7.2 Reading Off the Firmware Version

There are two ways to read off the firmware version of the Speedwire data module.

- Reading off the firmware version via Sunny Explorer
- Reading off the firmware version via Sunny Home Manager in Sunny Portal

Reading Off the Firmware Version via Sunny Explorer

Requirement:

- The PV system must be in operation (see Section 6.1).
- □ The computer with Sunny Explorer must be located in the same local network as the Sunny Island with Speedwire data module.
- □ The PV system must be configured as a Speedwire system in Sunny Explorer (see Sunny Explorer help).

Procedure:

- 1. If you have used the SMA Connection Assist for the static network configuration, ensure that the SMA Connection Assist has ended.
- 2. Start Sunny Explorer, open the Speedwire system and log in as **Installer** (see Sunny Explorer help).
- 3. Select the Sunny Island with installed Speedwire data module in the system tree.
- 4. Select the tab Settings in the device menu.
- Select the parameter group Device Components > Type Label > Protocol converter and read off the firmware version of the Speedwire data module in the row Software version.

Reading Off the Firmware Version via Sunny Home Manager in Sunny Portal

Requirements:

- □ The Sunny Home Manager is registered in Sunny Portal (see installation manual of the Sunny Home Manager).
- □ You are a **Installer** or **PV system administrator** (for information on the user groups, see the user manual of the Sunny Home Manager in Sunny Portal).

Procedure:

- 1. Go to www.SunnyPortal.com and log in with your user data.
- 2. Select Configuration > Device Overview in the page and menu selection.
- 3. Select [Update parameters].

☑ The current parameters are being loaded.

4. In the device line and the column **Parameters**, select 📈

☑ The tap **Parameters** opens.

5. Read off the firmware version of the Speedwire data module in the row **Firmware version of protocol converter**.

7.3 Updating the Firmware of the Speedwire Data Module

There are two ways to update the firmware of the Speedwire data module. During the firmware update, you can leave the Speedwire data module installed in the Sunny Island.

- Automatically updating the firmware
- Manually updating the firmware

Automatically Updating the Firmware

The automatic firmware update can only be performed via the Sunny Home Manager (see user manual of the Sunny Home Manager).

Manually Updating the Firmware

The manual firmware update can only be performed via Sunny Explorer.

Procedure:

1. Check whether the current firmware version is installed on the Sunny Island.

If the current firmware version is not installed, update the firmware of the Sunny Island via the SD memory card (see operating manual of the Sunny Island).

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

8 Decommissioning

8.1 Removing the Speedwire Data Module

1. A 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, observe the following security regulations:

- 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 isolate 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).

8.2 Packaging the Speedwire Data Module for Shipping

 Pack the Speedwire data module for shipping. Use the original packaging or packaging that is suitable for the weight and size of the Speedwire data module (see Section 9 "Technical Data", page 21).

8.3 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.

9 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%		

10 Contact

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

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

Australia	SMA Australia Pty Ltd. Sydney	Toll free for Australia:	1800 SMA AUS (1800 762 287)	
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		Hybrid Energy Solutions		
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