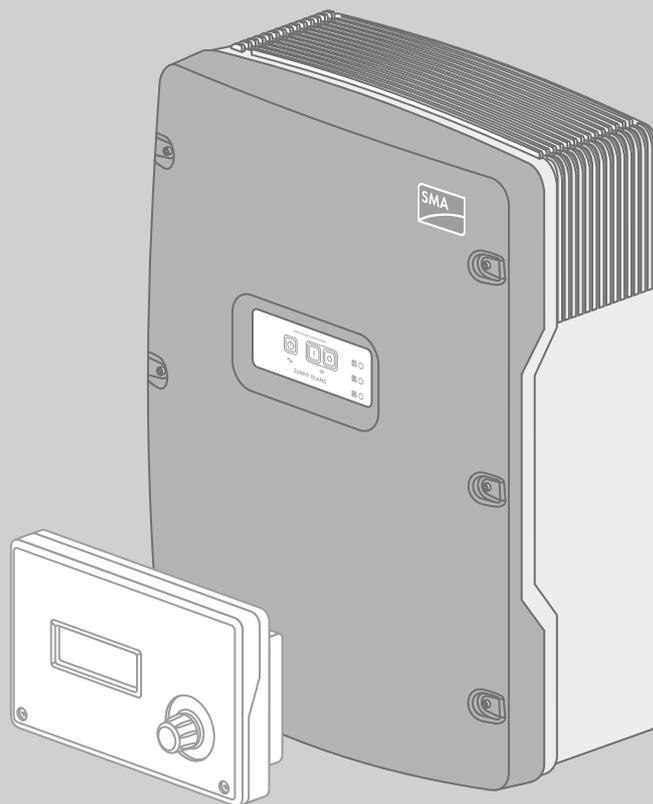**SMA**

Operating Manual

SUNNY ISLAND 3.0M / 4.4M / 6.0H / 8.0H SUNNY REMOTE CONTROL

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Table of Contents

1   Information on this Document

1.1   Validity

This document is valid for the following device types:

- SI3.0M-11 (Sunny Island 3.0M) from firmware version 3.2
- SI4.4M-11 (Sunny Island 4.4M) from firmware version 3.2
- SI6.0H-11 (Sunny Island 6.0H) from firmware version 3.1
- SI8.0H-11 (Sunny Island 8.0H) from firmware version 3.1
- SRC-20 (Sunny Remote Control)

1.2   Target Group

This document is intended for qualified persons and operators. Only qualified persons are allowed to perform the activities marked in this document with a warning symbol and the caption "Qualified person". Activities that may also be performed by operators are not marked and may be performed by operators.

Operators

Operators must be given training on the following subjects by qualified persons:

- Training on the dangers involved when handling electrical devices
- Training on the operation of the Sunny Island
- Training on the safe handling of batteries
- Training on the secure disconnecting of the Sunny Island under fault conditions
- Training on how to secure a system against unintentional reactivation
- Training on the maintenance and cleaning of the Sunny Island inverter
- Knowledge of and compliance with this document and all safety information

Qualified persons

Only qualified persons are allowed to perform the activities marked in this document with a warning symbol and the caption "Qualified person". Qualified persons must have the following skills:

- Training in how to deal with the dangers and risks associated with installing and using electrical devices and batteries
- Training in the installation and commissioning of electrical devices
- Knowledge of and adherence to the local standards and directives
- Knowledge of and compliance with the documentation of the Sunny Island inverter with all safety information

1.3 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
⚠ QUALIFIED PERSON	Information advising that the following section contains activities that may only be performed by qualified persons.
	Content that is relevant for SMA Flexible Storage Systems.
	Content that is relevant for off-grid systems.
i	Information that is important for a specific topic or goal, but is not safety-relevant
☐	Indicates a requirement for meeting a specific goal
☑	Desired result
✖	A problem that might occur

1.4 Typographies

Typography	Use	Example
bold	• Display messages • Parameters • Connections • Slots • Elements to be selected or entered	• Connect PE to **AC2Gen/Grid**. • Select the parameter **235.01 GnAutoEna** and set to **Off**.
>	• Connects several elements to be selected	• Select **600# Direct Access > Select Number.**

1.5 Nomenclature

Complete designation	Designation in this document
Off-grid system, battery backup system, system for increased self-consumption	System
Sunny Boy, Sunny Mini Central, Sunny Tripower	PV Inverters

Menus are presented as follows: menu number, hash, and menu name (e.g., 150# Compact Meters).

Parameters are presented as follows: menu number, period, parameter number, and parameter name (e.g., 150.01 GdRmgTm). The term parameter includes parameters with configurable values as well as parameters for displaying values.

2 Safety

2.1 Intended Use

Sunny Island

The Sunny Island is a battery inverter which controls the electrical energy balance in an off-grid system, in a battery backup system, or in a system for increased self-consumption. In a battery backup system, you can also use the Sunny Island for increased self-consumption.

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. Any changes to the electrical installation must be performed in accordance with the Sunny Island inverter installation manual.

The Sunny Island is not suitable for supplying life-sustaining medical devices. A power outage must not lead to personal injury.

The Sunny Island uses batteries for the storage of energy. The battery room must be ventilated in accordance with the requirements of the battery manufacturer and with the locally applicable standards and directives (see documentation of the battery manufacturer).

Alterations to the product, e.g., modifications or conversions, are permitted only with the express written permission of SMA Solar Technology AG. Unauthorized alterations will void guarantee and warranty claims and usually void the operation permit. SMA Solar Technology AG shall not be held liable for any damage caused by such changes.

Any use of the product other than that 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.

The type label must remain permanently attached to the product.

Sunny Remote Control

You can configure and control the system from a central location using the Sunny Remote Control display.

Only use the product in accordance with the information provided in the enclosed documentation. Alterations to the product, e.g., modifications or conversions, are permitted only with the express written permission of SMA Solar Technology AG. Unauthorized alterations will void guarantee and warranty claims and usually void the operation permit. SMA Solar Technology AG shall not be held liable for any damage caused by such changes.

Any use of the product other than that 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.

The type label must remain permanently attached to the product.

2.2 Safety Information

This section contains safety information 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 observe all safety information at all times.

> **⚠ WARNING**
>
> **Danger to life from electric shocks due to live voltage and risk of injury from short-circuit currents**
>
> High voltages are present inside the Sunny Island. When the enclosure lid is removed, live components can be touched which can result in death or serious injury due to electric shock. Short-circuit currents in the battery can cause heat build-up and electric arcs. Burns or eye injuries due to flashes may result.
>
> - When carrying out any work on the electrical installation, wear suitable personal protective equipment.
> - Turn off or disconnect the following devices from voltage sources in the given order:
>   - Sunny Island
>   - In the distribution board the circuit breakers of the Sunny Island inverters and of the control and measurement voltages
>   - Load-break switch of the battery
> - Ensure that the system cannot be reconnected.
> - Open the enclosure lid of the Sunny Island and ensure that no voltage is present.
> - Ground and short-circuit the AC conductors outside the Sunny Island inverter.
> - Cover or isolate any adjacent live components.
>
> **Danger to life from electric shock due to damaged Sunny Island**
>
> Operating a damaged Sunny Island can lead to hazardous situations that can result in death or serious injuries due to electric shock.
>
> - Only operate the Sunny Island when it is technically faultless and in an operationally safe state.
> - Regularly check the Sunny Island for visible damage.
> - Make sure that all external safety equipment is freely accessible at all times.
> - Make sure that all safety equipment is in good working order.
>
> **Risk of crushing injuries due to movable generator parts**
>
> Moving parts in the generator can crush or sever body parts. A generator can be started automatically by the Sunny Island.
>
> - Only operate the generator with the safety equipment.
> - Install, maintain, and operate the generator according to the manufacturer's specifications.

⚠ CAUTION

Risk of burns due to short-circuit currents on the disconnected Sunny Island

The capacitors at the DC connection input area store energy. After the battery is isolated from the Sunny Island, battery voltage is still temporarily present at the DC terminal. A short circuit on the DC connection can lead to burns and may damage the Sunny Island.

- Wait 15 minutes before performing any work at the DC connection or on the DC cables. This allows the capacitors to discharge.

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. Heat build-up 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

Destruction of the Sunny Island inverter due to electrostatic discharge (ESD)

By touching electronic components within the Sunny Island, you can damage or destroy the Sunny Island.

- Do not touch any electronic assemblies.
- Ground yourself before touching any connections.

2.3 Information for Handling Batteries

> ⚠ **WARNING**
>
> **Danger to life due to explosive gases**
>
> Explosive gases may escape from the battery and cause an explosion. This can result in death or serious injury.
>
> - Protect the battery environment from open flames, embers, or sparks.
> - Install, operate, and maintain the battery in accordance with the manufacturer's specifications.
> - Do not heat the battery above the temperature permitted or burn the battery.
> - Ensure that the battery room is sufficiently ventilated.
>
> **Chemical burns and poisoning due to battery electrolyte**
>
> If handled inappropriately, battery electrolyte can cause irritation to the eyes, respiratory system, and skin, and it can be toxic. This may result in blindness and serious chemical burns.
>
> - Protect the battery enclosure against destruction.
> - Do not open or deform the battery.
> - Whenever working on the battery, wear suitable personal protective equipment such as rubber gloves, apron, rubber boots, and goggles.
> - Rinse acid splashes thoroughly with clear water and consult a doctor.
> - Install, operate, maintain, and dispose of the battery according to the manufacturer's specifications.
>
> **Risk of injury due to short-circuit currents**
>
> Short-circuit currents in the battery can cause heat build-up and electric arcs. Burns or eye injuries due to flashes may result.
>
> - Remove watches, rings, and other metal objects.
> - Use insulated tools.
> - Do not place tools or metal parts on the battery.

> ⚠ **CAUTION**
>
> **Risk of burns due to hot battery components**
>
> Improper battery connection may result in excessively high transition resistances. Excessive transition resistances give rise to localized heat build-up.
>
> - Ensure that all pole connectors are connected with the connecting torque specified by the battery manufacturer.
> - Ensure that all DC cables are connected with the connecting torque specified by the battery manufacturer.

NOTICE

Damage to the battery due to incorrect settings

Incorrect settings lead to premature aging of the battery. Settings of the parameters in the menu **220# Battery** influence the charging behavior of the Sunny Island.

- Check whether initial battery charging with special settings is required.

  If initial charging is required, adjust the charging behavior of the Sunny Island for one-off initial charging.

- Ensure that the values for the battery as recommended by the battery manufacturer are set in the menus **222# Chargemode** and **223# Protection** (for the technical data of the battery, see the documentation provided by the battery manufacturer). Note that the charging behavior names used by SMA Solar Technology AG and the battery manufacturer may, in some cases, differ in meaning (for the charging behavior of the Sunny Island inverter, see technical information "Battery Management"). Tip: For questions relating to the settings of the Sunny Island, please contact the SMA Service Line.

Permanent damage to the battery due to improper handling

Improper set-up and maintenance of the battery can cause it to become permanently damaged. Logs can help to determine the cause.

- Comply with all requirements of the battery manufacturer with regard to mounting location.
- Check and log the status of the battery before performing maintenance work:
  - Check the battery for visible damage and log.
  - Measure and log the fill level and acid density of FLA batteries.
  - In the case of lead-acid batteries, measure and log the voltages of the individual cells.
  - Perform and log the test routines required by the battery manufacturer.

Tip: Many battery manufacturers provide suitable logs.

ℹ **Prior damage to batteries**

Batteries may already have suffered damage due to production defects. Logs can help to determine the cause.

- Check and log the status of the battery before performing maintenance work.

Performance impairment of batteries

Transition resistances can impair the performance of the batteries.

- Ensure that the torques at the battery connections are correct each time that maintenance is performed.

3 Product Description

3.1 Sunny Island

The Sunny Island is a battery inverter and controls the electrical energy balance in off-grid systems, in battery backup systems, or in systems for increased self-consumption. In a battery backup system, you can also use the Sunny Island for increased self-consumption.
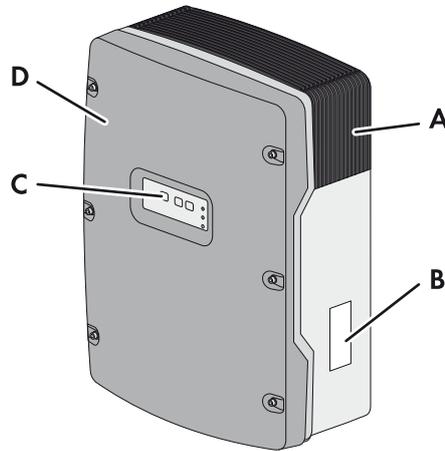
Figure 1:   Design of the Sunny Island inverter

Position	Designation
A	Ventilation grid
B	Type label
C	Control panel
D	Enclosure lid

The Sunny Island supplies AC loads in the system from a battery or charges the battery with the energy provided by AC sources (e.g., PV inverter). AC sources supply loads and are used by the Sunny Island to recharge the battery.

3.2   Control Panel of the Sunny Island Inverter
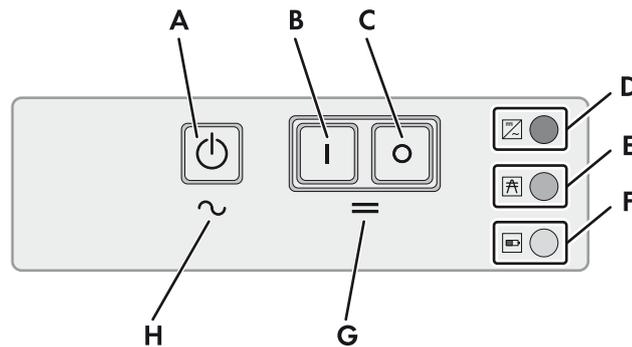
Figure 2:   Layout of the control panel

Position	Symbol	Designation	Status	Explanation
A	⏻	Start-stop button **TSS**	–	By pressing the start-stop button, you can start or stop the system. In display messages on the Sunny Remote Control, the start-stop button is referred to as **TSS**.
B	I	"On" button	–	Pressing the "On" button will switch the Sunny Island on. The Sunny Island is in standby mode after being switched on.
C	O	"Off" button	–	Pressing the "Off" button will switch the Sunny Island off.
D		Inverter LED	not glowing	The Sunny Island is switched off.
			glowing green	The Sunny Island is in operation.
			glowing orange	The Sunny Island is in standby mode.
			glowing red	The Sunny Island switched off due to an error.
			flashing quickly*	The Sunny Island is not configured.
			flashing slowly**	The Sunny Island is in overnight shutdown.
E		Grid LED	not glowing	There is no voltage present from the generator or the utility grid.
			glowing green	Generator or utility grid is connected.
			glowing orange	The Sunny Island is synchronizing the stand-alone grid with the generator or the utility grid.
			glowing red	Error at the connection of the generator or the utility grid.
F		Battery LED	glowing green	The state of charge is more than 50%.
			glowing orange	The state of charge is between 50% and 20%.
			glowing red	The state of charge is less than 20%.
G	=	Standby	–	Position of the buttons for switching on and off
H	∼	AC operation	–	Position of the button for starting and stopping operation

   * Flashing at intervals of 0.5 s to 1 s
  ** Flashing at intervals of 1.5 s to 2 s

3.3   Type Label

The type label clearly identifies the product. The type label is located on the right-hand side of the enclosure. You will find the following information on the type label:

- Address of SMA Solar Technology AG
- Device type (Model)
- Serial number (Serial No.)
- Device-specific characteristics

You will require the information on the type label to use the product safely and when seeking customer support from the SMA Service Line.

Symbols on the type label

Symbol	Explanation
	Danger to life due to high voltages
	The product operates at high voltages. All work on the product must be carried out by qualified persons only.
	Risk of burns due to hot surfaces
	The product can get hot during operation. Avoid contact during operation. Allow the product to cool down sufficiently before carrying out any work. Wear personal protective equipment such as safety gloves.
	Observe the documentation.
	Observe all documentation supplied with the product.
	AC
	Alternating current
	DC
	Direct current
	Transformer
	The product has a transformer.
	WEEE designation
	Do not dispose of the product together with the household waste but in accordance with the locally applicable disposal regulations for electronic waste.
CE	CE marking
	The product complies with the requirements of the applicable EU directives.
	Protection class I
	All electrical equipment is connected to the grounding conductor system of the product.
IP54	Degree of protection
	The product is protected against interior dust deposits and splashing water from all angles.
	Certified safety
	The product is VDE-tested and complies with the requirements of the German Equipment and Product Safety Act.
	RCM tick
	The product complies with the requirements of the applicable Australian EMC standards.

3.4 Sunny Remote Control

You can configure and control the system from a central location using the Sunny Remote Control display.
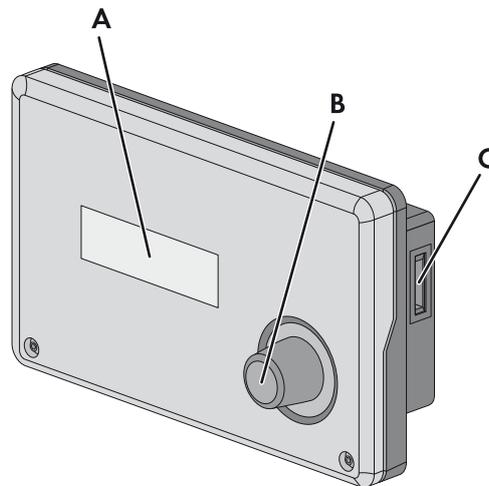
Figure 3:   Layout of the Sunny Remote Control

Position	Designation	Explanation
A	Display	Four-line display displays operating data (e.g., operating state, display values) and events, warnings, or errors on the Sunny Island inverter.
		The display backlight is automatically deactivated after a short period of inactivity.
B	Button	Pressing the button will turn on the backlight, confirm parameters, or switch the level within a menu. The return symbol " ⏎ " in the display indicates when you can perform an action by pressing the button.
		Turning the button will switch on the backlight, change parameters, or navigate within a menu level.
C	Slot for the SD memory card	–

Service interface, SD memory card

The Sunny Remote Control has a slot for SD memory cards. The SD memory card stores data for system control and facilitates service work. The SD memory card also allows you to update the firmware on the Sunny Island inverter. The following data is stored on the SD memory card:

- Parameter settings
- Every minute, measurement data from the areas:
    - Battery
    - Sunny Island
    - Generator
    - Utility grid
    - Stand-alone grid
- Events and errors
- Statistical values of the battery

The SD memory card must be formatted as FAT-16 or FAT-32.

4 Starting and Stopping the System

4.1 Switching on the Sunny Island

Requirements:

☐ The load-break switch in the DC cable must be closed.

☐ The Sunny Island must not have switched itself off (see Section 9.6 "Charging the Battery After Automatic Shutdown in Off-Grid Systems", page 72).

Procedure:

- For systems with one Sunny Island, press the "On" button on the Sunny Island.

- For systems with up to three Sunny Island inverters, press and hold the "On" button on the master until an acoustic signal sounds.

- For multicluster systems, press and hold the "On" button on each master until an acoustic signal sounds.
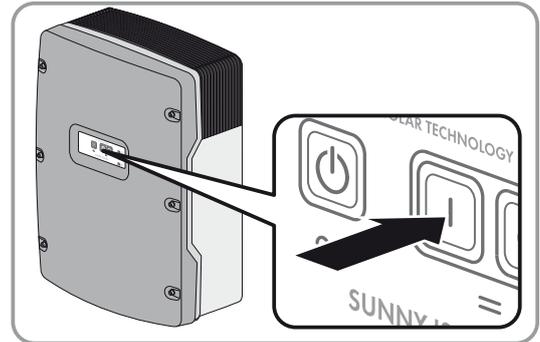
☑ The inverter LED on each Sunny Island inverter is glowing orange and the Sunny Island inverters are in standby.

4.2 Starting the System

Requirement:

☐ All Sunny Island inverters must be switched on.

Procedure:

- Press the start-stop button on the Sunny Island and hold it until an acoustic signal sounds.

    or
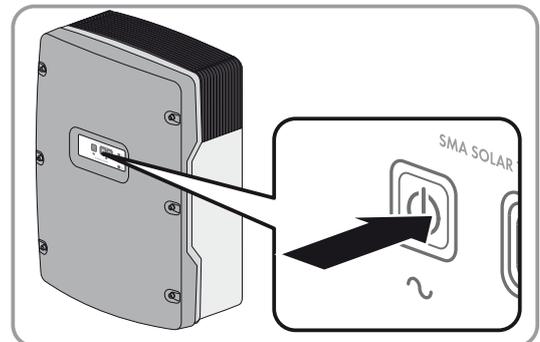
Press and hold the button on the Sunny Remote Control until an acoustic signal sounds.

☑ The inverter LED on each Sunny Island is glowing green.

4.3   Stopping the System

If you stop the system, the Sunny Island switches from operation into standby mode. In standby mode, the Sunny Island discharges the battery due to its standby consumption. Tip: For longer shut-down periods, switch off the Sunny Island (see Section 4.4, page 19).

Procedure

- Press and hold the start-stop button on the Sunny Island until the inverter LED is glowing orange.

  or
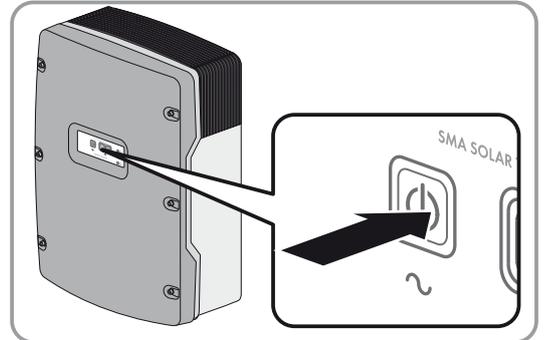
  Press and hold the button on the Sunny Remote Control until the progress bar has run down.
- ☑ The inverter LED on each Sunny Island is glowing orange. The Sunny Island inverters are in standby.

4.4   Switching off the Sunny Island

Requirement:

- ☐ The system is stopped.

Procedure:

- Press and hold the "Off" button on the Sunny Island until an acoustic signal sounds.
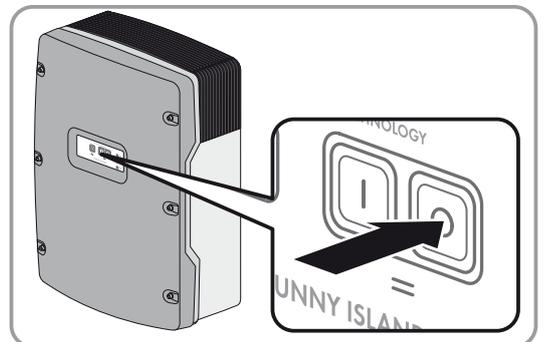
- ☑ The inverter LED is off on all Sunny Island inverters.

4.5 Tripping the Emergency Disconnection of the System

ℹ Effects of an emergency disconnection

Emergency disconnection triggers the uncontrolled shutdown of the system and unsaved data is lost.

- Only use emergency disconnection to avoid danger or consequential damages.

Procedure:

- Press and hold the "Off" button on the Sunny Island until an acoustic signal sounds.
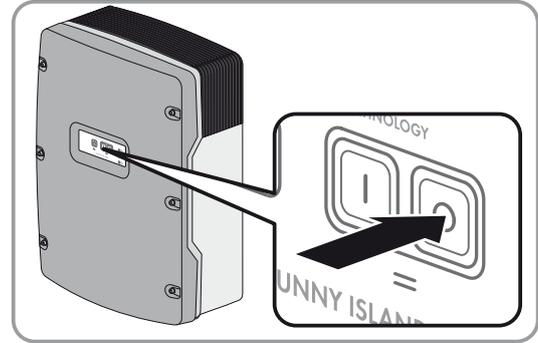
☑ The inverter LED is off on all Sunny Island inverters.

4.6 Setting Time-Controlled Inverter Operation in Off-Grid Systems

Example: Parameter settings for time-controlled inverter operation

You want to operate the Sunny Island in inverter operation every Sunday from 10:00 a.m. to 6:00 p.m., starting on Sunday, January 8, 2012. To do this, set the Sunny Island as follows:

- Str.Date: 08.01.2012
- Start Time: 10:00:00
- Run Time: 08:00:00
- Repetition: Weekly

Requirement:

☐ The Sunny Remote Control must be in user mode (see Section 5.3, page 27).

Procedure:

1. Select the **Inverter** display page on the Sunny Remote Control and press the button.

   ☑ The Sunny Remote Control switches to the **Inverter** setting page.

2. Set the time-controlled inverter operation:
   - Select the **Start Date** parameter and set it to the desired start date.
   - Select the **Start Time** parameter and set it to the desired start time.
   - Select the **Run Time** parameter and set it to the desired run time.
   - Select the **Repetition** parameter and set it to the desired repetition cycle.
3. To activate time-controlled inverter operation, select the **Timed Start** parameter and set it to **Enable**.

☑ Time-controlled inverter operation is activated. If the Sunny Island has started automatically under time-control and you stop the Sunny Island, time-controlled inverter operation is deactivated automatically.

5 Operation of the Sunny Island Inverter With the Sunny Remote Control

5.1 Display Modes

The Sunny Remote Control uses four display modes for the display. The Sunny Remote Control will switch to standard mode if the button has not been used for over five minutes.

Mode	Page content
Standard mode **\<home\>**	• Message regarding operating states • Display of energy flows • Display of key parameters In display messages on the Sunny Remote Control, **\<home\>** refers to the standard mode.
User mode **User**	• Display of and access to key operating parameters In display messages on the Sunny Remote Control, **User** refers to the user mode.
Installer mode **Installer**	• Display of and access to configuration and operation parameters The installer mode is protected with an installer password. In display messages on the Sunny Remote Control, **Installer** refers to the installer mode.
Expert mode **Expert**	• Display of and access to all parameters for the system configuration set in QCG The expert mode can only be accessed via installer mode (see Section 5.4.1, page 29). In display messages on the Sunny Remote Control, **Expert** refers to the expert mode.

The parameters for devices that are not configured are hidden, e.g., the generator parameters are hidden for systems without a generator. The parameters for multicluster systems are only available in expert mode.

5.2 Standard Mode

5.2.1 Display of Operating States

The Sunny Remote Control displays the following operating states until the Sunny Island is started.

Figure 4:   Display of operating states (example **Standby**)

Position	Designation	Explanation
A	Boot	The Sunny Island is initializing.
	Error	The Sunny Island is in error status.
	LBM 1	The Sunny Island is in battery protection mode 1.
	LBM 2	The Sunny Island is in battery protection mode 2.
	LBM 3	The Sunny Island is in battery protection mode 3.
	Restart	The Sunny Island is performing a restart.
	Shutdown	The Sunny Island is stopped.
	Silent	The Sunny Island is in energy saving mode.
	Standby	The Sunny Island is in standby mode or in time-controlled operation.
	Startup	The Sunny Island is starting up.

5.2.2 Information Page in Systems for Increased Self-Consumption and Battery Backup Systems

When the Sunny Island is started, the Sunny Remote Control provides information on the status of the system for increased self-consumption.
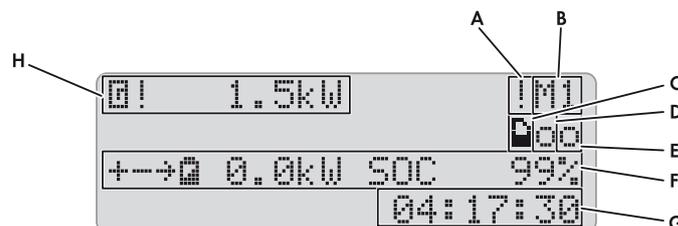
Figure 5:   Energy flows and status messages of the Sunny Island

Position	Symbol	Designation	Explanation
A	!	Warning symbol	Symbol for warnings and errors that do not affect the Sunny Island operation.
			If this symbol is flashing, acknowledge the error or warning (see Section 9.2, page 42).

Position	Symbol	Designation	Explanation
B	M1	Device assignment	The Sunny Island connected to the Sunny Remote Control is the master.
	S1		The Sunny Island connected to the Sunny Remote Control is slave 1.
	S2		The Sunny Island connected to the Sunny Remote Control is slave 2.
C	▯	SD memory card	SD memory card inserted.
	Symbol flashing		The Sunny Island is accessing the SD memory card.
	No symbol		SD memory card not inserted.
D	▢	Multifunction relay 1	Multifunction relay 1 is deactivated.
	▰		Multifunction relay 1 is activated.
E	▢	Multifunction relay 2	Multifunction relay 2 is deactivated.
	▰		Multifunction relay 2 is activated.
F	→	Battery power and state of charge	The battery is being charged.
	←		The battery is being discharged.
	▣		Battery power in kW, state of charge (SOC) in %
G	hh:mm:ss	Time	System time
H	▣	Power and status of the utility grid	Power in kW
	✳		The utility grid voltage and frequency are within the configured limits.
	!		The maximum reverse power in the utility grid has been exceeded.

5.2.3 Information Page in Off-Grid Systems
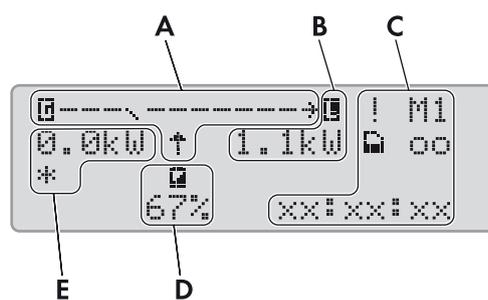
Figure 6: Energy flows and status of the Sunny Island inverter (example)

Position	Designation
A	Graphical representation of the energy flows
B	Status of the stand-alone grid
C	Status of the Sunny Island inverter
D	State of charge of the battery
E	Status of the generator

Graphical representation of the energy flows
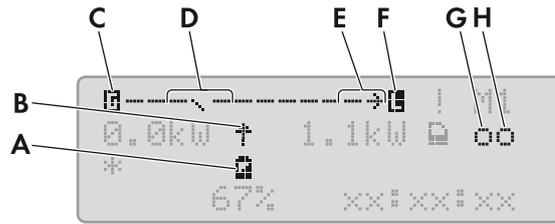
Figure 7:   Energy flow diagram in standard mode (example)

Position	Symbol	Designation	Explanation
A	🔋	Battery	Battery symbol
B	↑	Direction of energy flow	The battery is supplying the loads.
	↓		The battery is being charged.
C	▯	Generator	Generator symbol
D	↘	Internal transfer relay	The generator is disconnected from the stand-alone grid.
	•••••		The stand-alone grid is synchronized with the generator. The generator is supplying the loads and charging the battery.
E	⊹	Direction of energy flow	Loads are being supplied.
	←		AC sources in the stand-alone grid are supplying more energy than is being consumed by the stand-alone grid.
F	▯	Loads in the stand-alone grid	Symbol for loads in the stand-alone grid

Status of the stand-alone grid
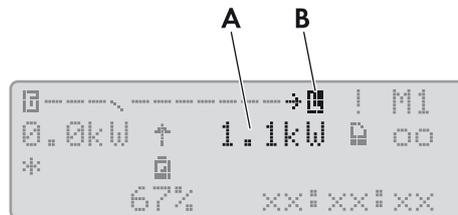
Figure 8:   Status of the stand-alone grid (example)

Position	Designation	Explanation
A	Output power	Output power of the Sunny Island inverter in kW
B	Loads in the stand-alone grid	Symbol for loads in the stand-alone grid

Status of the Sunny Island inverter
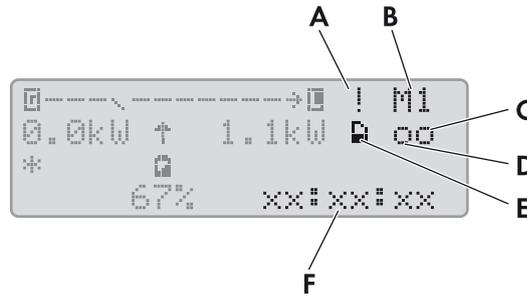
Figure 9: Status of the Sunny Island inverter (example)

Position	Symbol	Designation	Explanation
A	!	Warning symbol	Symbol for warnings and errors that do not affect the Sunny Island operation.
			If this symbol is flashing, acknowledge the error or warning (see Section 9.2, page 42).
B	M1	Device assignment	The Sunny Island connected to the Sunny Remote Control is the master.
	S1		The Sunny Island connected to the Sunny Remote Control is slave 1.
	S2		The Sunny Island connected to the Sunny Remote Control is slave 2.
C	▭	SD memory card	SD memory card inserted.
	Symbol flashing		The Sunny Island is accessing the SD memory card.
	No symbol		SD memory card not inserted.
D	o	Multifunction relay 1	Multifunction relay 1 is deactivated.
	▮		Multifunction relay 1 is activated.
E	o	Multifunction relay 2	Multifunction relay 2 is deactivated.
	▮		Multifunction relay 2 is activated.
F	hh:mm:ss	Time	Off-grid system time

State of charge of the battery

Figure 10: State of charge of the battery in standard mode (example)

Position	Designation	Explanation
A	Battery	Battery symbol
B	State of charge	State of charge of the battery in percent

Status of the external energy source
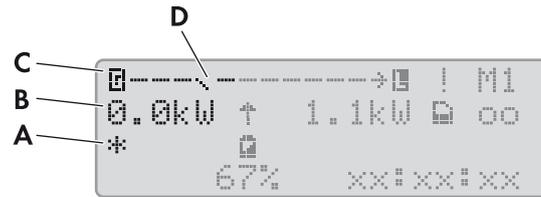
Figure 11: Status of the external energy source in standard mode (example)

Position	Symbol	Designation	Explanation
A	☀	Status of the generator	Voltage and frequency of the generator are within the thresholds set.
	!		The maximum reverse power in the generator has been exceeded.
	B		**B**attery Electricity generator was requested due to state of charge.
	C		**C**ycle Generator was requested via time control.
	E		**E**xternal Generator was requested by an extension cluster.
	L		**L**oad Generator was requested due to load.
	S		**S**tart You have manually started the generator via Sunny Remote Control or a generator was requested via the **DigIn** input.
	T		**T**ime You have started the generator for one hour via Sunny Remote Control.
B	–	Power of the generator or the utility grid	Power in kW
C	▣	Generator	Generator symbol
D	↘	Internal transfer relay	The generator is disconnected from the stand-alone grid.
	----		The stand-alone grid is synchronized with the generator. The generator is supplying the loads and charging the battery.

5.3   User Mode

5.3.1   Displaying Parameters and Operating and Setting the System

User mode displays all important information for the system sorted by category. User mode enables manual control of the Sunny Island inverter or system devices, e.g., generator start.

User mode distinguishes between display pages and setting pages. Display pages show the parameters of a category. Setting pages enable the operation and setting of the system.
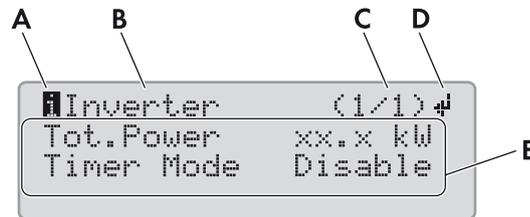
Figure 12: Layout of a page in user mode (example)

Position	Designation	Symbol or message	Explanation
A	Page type	ℹ	**I**nformation
			This symbol indicates display pages.
		▤	**S**et
			This symbol indicates setting pages.
B	Category	–	Category name (see Section 12 "Directory of the Parameters in User Mode", page 83)
C	Page and number of pages	–	Page and number of pages of the selected category
D	Return symbol	↵	On display pages, this symbol means that setting pages are available for this category.
			On setting pages, this symbol points to the selected parameter.
		No symbol	No setting pages are available for this category.
E	Parameters	–	Parameters with the current values

Procedure

1. Press the button to activate the display illumination of the Sunny Remote Control.

2. Turn the button to the right.

   ☑ The Sunny Remote Control switches from standard mode to user mode.
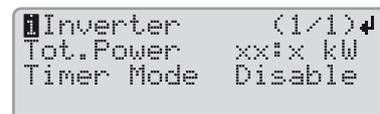
3. To scroll through the display pages, continue to turn the button to the right.

4. To go back to a previous page, turn the button to the left.

5. To select a setting page, scroll to the display page for the category of the desired setting (see Section 12 "Directory of the Parameters in User Mode", page 83).

   Example: Selecting the display page.

   You want to restart the Sunny Island. This setting is in the **Inverter** category.

   • Select display page **Inverter (1/1)**.

6. Press the button. The Sunny Remote Control displays the setting pages belonging to the display page.

Example: Selecting the setting page

You have selected the display page **Inverter (1/1)**.

- Press the button.

```
❚Inverter      (1/1)↵
Tot.Power    xx:x kW
Timer Mode   Disable
```

- ☑ The setting page **Inverter (1/2)** appears.

```
▤Inverter      (1/2)
Restart        ---  ↵
Str.Date xx.xx.xxxx
Start Time xx:xx:xx
```

---

7. To select the desired parameter, turn the button to the right until the return symbol appears to the right of the desired parameter.

☑ You have selected the parameter.

8. To set the parameter, press the button and then turn it to the left or right.

9. Once you have set the required parameter, press the button. This saves the setting.

Example: The Sunny Island is to start in time-controlled operation weekly. For this, the repetition type (Repetition) must be set to "Weekly".

- Access the setting page **Inverter (1/2)**.

  - ☑ The setting page **Inverter (1/2)** appears.

```
▤Inverter      (1/2)
Restart        ---  ↵
Str.Date xx.xx.xxxx
Start Time xx:xx:xx
```

- Turn the button until the return symbol ↵ appears next to the parameter **Repetition**.
  The Sunny Remote Control switches from setting page **Inverter (1/2)** to setting page **Inverter (2/2)**.

- Press the button.

- Turn the button to the right until **Weekly** appears.

- Press the button. This saves the parameter.

  - ☑ You have set the repetition type to **Weekly** in time-controlled operation.

```
▤Inverter      (2/2)
Run Time   xx:xx:xx
Repetition   Weekly↵
Timed Start Disable
```

---

10. To exit the setting page, switch to the display page or the standard mode:

- Turn the button to the left until the return symbol appears in the first line.

- To return to the display page, turn the button to the left until **<back>** appears.

- To switch to standard mode, turn the button to the left until **<home>** appears.

- Press the button.

Tip: **<back>** and **<home>** also appear at the end of the list if the button is turned to the right.

5.4 Installer Mode and Expert Mode

5.4.1 Switching to Installer Mode or Expert Mode

The installer mode is protected with an installer password. The installer password changes constantly and must be recalculated every time. Expert mode can only be accessed via installer mode.

NOTICE

System failures due to entering incorrect parameter values

The system can become unstable and fail due to entering incorrect parameter values. All parameters which could affect the operating safety of the system are protected by the installer password.

- Only a qualified person is permitted to set and adjust system parameters.
- Only give the installer password to qualified persons and operators.

Procedure

1. On the Sunny Remote Control, select the setting page **Password (1/1)** in user mode.
2. Calculate the checksum of the operating hours **Runtime**. This determines the installer password.

Example: Calculating the checksum

The operating hours **Runtime** is 1234 h. The checksum is the sum of all digits:

1 + 2 + 3 + 4 = **10**

The checksum is 10.

---

3. Select the parameter **Set** and set the installer password calculated.

☑ The Sunny Remote Control is in installer mode.

```
Installer
100#  Meters        ↵
200#  Settings
300#  Diagnosis
```

4. To switch to expert mode, select the parameter **700.01 ActLev** and set to **Expert** (see Section 5.4.6 "Setting the Parameters", page 31).

5.4.2 Exiting Installer Mode or Expert Mode

If you do not press or turn the button on the Sunny Remote Control for five minutes, the Sunny Remote Control will switch from installer or expert mode to standard mode automatically.

- Select the parameter **700.01 ActLev** on the Sunny Remote Control and set to **User** (see Section 5.4.6 "Setting the Parameters", page 31).

5.4.3   Menus in Installer and Expert Mode
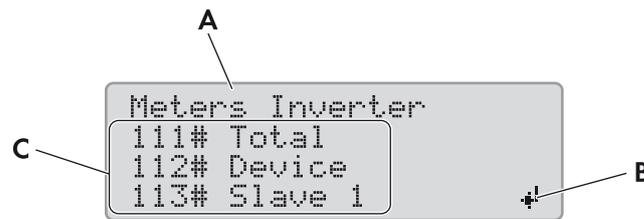
Figure 13: Layout of the menu page in installer mode (example)

Position	Designation	Explanation
A	Menu path	The two previously selected menu levels
		If you are in the top menu level, the display will show **Installer** in installer mode and **Expert** in expert mode.
B	Return symbol	Return symbol for selecting a menu
C	Menu	–

5.4.4   Parameter Page in Installer and Expert Mode
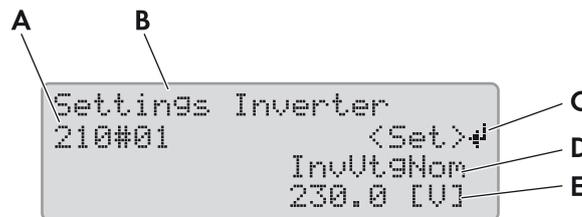
Figure 14: Layout of the parameter page in installer mode (example)

Position	Designation	Explanation
A	Menu number and parameter number	–
B	Menu path	The two previously selected menu levels
C	Return symbol	Return symbol for setting the parameter
		If no return symbol is displayed, the parameter cannot be set.
D	Name of the parameter	–
E	Value and unit of the parameter	–

5.4.5   Selecting Menus and Parameters

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
2. Turn the button to the right until the return symbol appears to the right of the desired menu. The Sunny Remote Control scrolls through the menu items on the display line by line.
3. Press the button. This accesses the sub-menu level.
   ☑ The Sunny Remote Control displays the sub-menu level. The selected menu level is shown in the first line.
4. Repeat steps 2 and 3 until the Sunny Remote Control displays the first parameter page.
5. Turn the button to the right until the Sunny Remote Control displays the desired parameter.
6. Set the parameter (see Section 5.4.6, page 31).

7. To exit the parameter page, switch to the higher level or switch to standard mode:
   - Turn the button to the left until the return symbol appears in the first line.
   - To switch to a higher menu level, turn the button to the left until **<back>** appears.
   - To switch to standard mode, turn the button to the left until **<home>** appears.
   - Press the button.

   Tip: **<back>** and **<home>** also appear at the end of the list if the button is turned to the right.

5.4.6 Setting the Parameters

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).

2. Select the desired parameter. You can only set the parameters for which **< Set >** ⏎ is shown in the second line in the display.

```
Settings interter
210#01         (Set)⏎
          InvVtgNom
          250.0 [V]
```

3. Press the button.

   ☑ The return symbol is flashing next to the value.

   ✖ **Stop device to change the value**? appears in the display.

   The parameter can only be changed in standby mode.
   - Stop the system (see Section 4.3, page 19).

   ✖ **No permission to change the value** appears in the display.

   You are not allowed to change the parameter in installer mode.
   - If you want to change the parameters for the battery, select the menu **New Battery** in the QCG (see Section 10.8 "Replacing the Battery", page 78).
   - For all other settings, select the menu **New System** in the QCG (see the Sunny Island inverter installation manual).

4. To set the parameter, turn the button to the left or right.

5. Press the button.

   ☑ The Sunny Remote Control requests a confirmation of the set parameter.

```
Settings interter
210#01 (accept Y/N)⏎
          InvVtgNom
          230.0 [V]
```

6. To confirm the value, turn the button to the right until **Y** is flashing and then press the button.

7. To discard the value, turn the button to the right until **N** is flashing and then press the button.

5.4.7   Directly Accessing the Parameters

Any parameter can be accessed directly by entering a five-digit number. The five-digit number is composed as follows:

- The first three digits are the menu number.
- The last two digits are the parameter number.

Example: Five-digit number for direct parameter access.

The parameter **111.01 TotInvPwrAt** allows you to display the complete active power of the Sunny Island inverters in a cluster. The five-digit number for direct access is 11101.

Procedure:

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
2. Select the parameter **600.02 Select Number** and set the five-digit number.
   - ☑ The parameter is displayed.
   - ✘ The display shows **Item not Found**?

   You cannot access the parameter in installer mode.
   - Press the button and switch to expert mode (see Section 5.4.1, page 29).

   The number set is incorrect.
   - Press the button and enter the number again.

6 Data Storage and Firmware Update

6.1 Inserting the SD Memory Card

Requirements:

☐ The SD memory card must be formatted as FAT-16 or FAT-32.

☐ The SD memory card must be used exclusively as a data medium for the system.

Procedure:

- Insert the SD memory card, with the slanted corner facing upwards, into the SD memory card slot in the Sunny Remote Control.
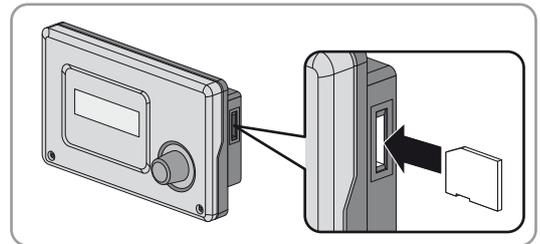
6.2 Saving and Loading Parameters

You can load and save the current parameter settings in two different parameter sets on the SD memory card. The two parameter sets are distinguished by the Sunny Remote Control in **Set1** and **Set2**. Each parameter set saves all settings. This makes it possible to test the settings of a new parameter set without having to delete the old parameter set. Tip: As soon as you have adjusted the system to your requirements, save the parameter settings to the SD memory card. After saving, you can make further adjustments to the system. If the adjustment does not lead to the desired results, reload the saved parameter set.

Requirement:

☐ The SD memory card must be inserted.

Procedure

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).

2. To save a parameter set, select the parameter **550.01 ParaSto** and set the parameter:

Value	Explanation
Set1	Save the settings in the first parameter set.
Set2	Save the settings in the second parameter set.

3. Proceed as follows to load a parameter set:
   - Switch to expert mode on the Sunny Remote Control (see Section 5.4.1, page 29).
   - Select the parameter **550.02 ParaLod** and set the parameter:

Value	Explanation
Set1	Loads the settings from the first parameter set.
Set2	Loads the settings from the second parameter set.
Factory	Starts the quick configuration guide.

6.3 Saving the Event History and Error History

Requirement:

☐ The SD memory card must be inserted.

Procedure:

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
2. To save the event history, select the parameter **550.03 CardFunc** and set to **StoEvtHis**.
3. To save the error history, select the parameter **550.03 CardFunc** and set to **StoFailHis**.
4. To save the error history and the event history, select the parameter **550.03 CardFunc** and set to **StoHis**.

6.4 Displaying the SD Memory Card Status Message

The Sunny Remote Control determines the SD memory card status (see Section 13.3.1 "Inverter (310#)", page 123).

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
2. Select the parameter **312.11 CardStt** and read off the value.

6.5 Removing the SD Memory Card

If the SD memory card is removed without preparation, the removal will cause data loss. Data loss affects the log data of the last 15 minutes at most.

Procedure

1. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
2. Select the parameter **550.03 CardFunc** and set to **ForcedWrite**. Unsaved data will now be saved to the SD memory card.
3. Remove the SD memory card.

6.6 Displaying the SD Memory Card Content

☐ BATSTAT		File Folder
☐ HISTORY		File Folder
☐ LOGGING		File Folder
☐ MISC		File Folder
☐ SIPAR		File Folder
☐ SIM.CCF	1 KB	CCF-Datei
☐ UPDATE.BIN	1.420 KB	BIN-Datei
☐ version.txt	1 KB	Textdokument

Figure 15: Content of an SD memory card (example)

The files saved to the SD memory card depend on the configuration and on the system.

Explanation of the folders:

Folder name	Explanation
BATSTAT	Folder containing battery statistics for each month The files are stored by year and month in sub-folders.
HISTORY	Folder containing event and error histories
LOGGING	Folder containing the data logging, event and error histories for each day The files are stored by year and month in sub-folders.
SIPAR	Folder containing the parameter lists

Explanation of the files within the folders:

File name	Explanation
evthis.log	Event history
errhis.log	Error history
si010112.evt	Event and error histories for one day
	The date (ddmmyy) is part of the file name.
si010112.log	Data logging for the day
	The date (ddmmyy) is part of the file name.
sipar.lst	Current parameter set
sipar1.lst	Parameter set 1
sipar2.lst	Parameter set 2
update.bin	Sunny Island inverter firmware
batstat.txt	Statistical values of the battery
	These values are saved every night at 10:00 p.m.
batstat.sma	Statistical values of the battery for evaluation by SMA Solar Technology AG
sim.ccf	System information of the Sunny Island inverter
bootex.log	File generated by the operating system of the computer
	This file is not generated by every operating system.

Structure of the files:

The files are CSV files, which means that the data is saved as ASCII text. The files are structured as follows:

- The first lines in the file are used for information. Information lines start and end with the character #.
- The data in the following lines is separated by semicolons.
- Decimal places are separated by periods.
- The date format is dd.mm.yyyy.
- The time format is hh:mm:ss.
- Some of the parameter values are saved with plain text numbers (see Section 13 "Directory of the Parameters in Installer Mode and Expert Mode", page 90).

Requirements:

☐ A computer with installed spreadsheet software must be available.

☐ The spreadsheet software must be able to read CSV files.

Procedure

1. Insert the SD memory card into the card reader and display the content.

2. Start the spreadsheet software and import the required file. When importing, set the import filter in accordance with the file structure (see spreadsheet software manual).

6.7 Firmware Update

6.7.1 Updating the Firmware Using an SD Memory Card

$\boxed{\mathbf{i}}$ **Automatic Sunny Island inverter start**

If the Sunny Island was in operation before the firmware update, the Sunny Island restarts automatically upon completion of the firmware update.

Requirements:

☐ The SD memory card must be formatted as FAT-16 or FAT-32.

☐ SD memory card with the current firmware in the main directory must be available.

☐ The SD memory card must be used exclusively as a data medium for the system.

☐ A computer must be able to read from and write to the SD memory card.

☐ The Sunny Remote Control must be connected to the master.

Procedure:

1. Insert the SD memory card into the SD memory card slot (see Section 6.1, page 33).

2. Wait until the message **UPDATE AVAILABLE** appears. This can take up to two minutes.

3. Confirm the question **UPDATE AVAILABLE Start update now ?** with **YES**.

☑ The Sunny Island switches to standby and updates the firmware.

6.7.2 Updating the Firmware Using Sunny Explorer

$\boxed{\mathbf{i}}$ **Automatic Sunny Island inverter start**

If the Sunny Island was in operation before the firmware update, the Sunny Island restarts automatically upon completion of the firmware update.

Using Sunny Explorer, transfer the firmware update to the SMA Speedwire data module Sunny Island. Then, the SMA Speedwire data module Sunny Island automatically transfers the firmware update to the SD memory card in the Sunny Remote Control. This transfer takes some time.

Requirements:

☐ The SMA Speedwire data module Sunny Island of the type SWDMSI-NR10 with firmware version 1.01.06.R or higher must be installed in the system.

☐ A computer with Sunny Explorer and the current firmware must be available.

☐ The Sunny Remote Control must be connected to the master.

Procedure

1. Ensure that a writable SD memory card is inserted in the Sunny Remote Control and remains inserted throughout the entire update.

2. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).

3. Set the parameter **250.32 UpdMode** to **Auto**.

4. Set the parameter **250.33 UpdAutoTime** to the desired firmware update time.

5. Transfer the firmware update from the computer to the Sunny Island using Sunny Explorer (see the Sunny Explorer user manual).

6. Once the transfer is complete, close Sunny Explorer.

☑ Once the transfer to the SD memory card is complete, the Sunny Island updates automatically at the specified time. The Sunny Island switches to standby mode and updates the firmware.

6.7.3   Performing a Remote Update Using the Sunny Home Manager

ⓘ Automatic Sunny Island inverter start

If the Sunny Island was in operation before the firmware update, the Sunny Island restarts automatically upon completion of the firmware update.

The Sunny Home Manager can automatically make the current firmware available via Sunny Portal. For this, the Sunny Home Manager first transfers the firmware update to the SMA Speedwire data module Sunny Island. Then, the SMA Speedwire data module Sunny Island automatically transfers the firmware update to the SD memory card in the Sunny Remote Control. This transfer takes some time.

Requirements:

☐ The Sunny Island must be registered in Sunny Portal.

☐ The SMA Speedwire data module Sunny Island of the type SWDMSI-NR10 must be installed in the system.

☐ The Sunny Home Manager must be integrated in the system.

☐ The Sunny Remote Control must be connected to the master.

Procedure

1. Ensure that a writable SD memory card is inserted in the Sunny Remote Control and remains inserted.
2. Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
3. Set the parameter **250.32 UpdMode** to **Auto**.
4. Set the parameter **250.33 UpdAutoTime** to the desired firmware update time.
5. Activate the automatic software update in the Sunny Home Manager (see user manual of the Sunny Home Manager).

☑ Once the transfer to the SD memory card is complete, the Sunny Island updates automatically at the specified time. The Sunny Island switches to standby mode and updates the firmware.

7   Manually Controlling the Generator

7.1   Starting the Generator with Sunny Remote Control

Requirements:

☐ The Sunny Island must be able to control the generator via a control cable.

☐ The Sunny Remote Control must be in standard mode or user mode.

Procedure

1. Select the **Generator** display page on the Sunny Remote Control and press the button (see Section 5.3.1 "Displaying Parameters and Operating and Setting the System", page 27).

2. To start the generator and run it permanently, select the parameter **Mode** and set to **Start**.

   ☑ The electricity generator starts and runs until you stop it again.

3. To start the generator and run it for one hour, select the parameter **Mode** and set to **Run1h**.

   ☑ The generator starts. If there is no generator request after one hour, the Sunny Island stops the generator.

7.2   Stopping the Generator with Sunny Remote Control

> **⚠ WARNING**
>
> **Risk of crushing injuries due to movable generator parts**
>
> Moving parts in the generator can crush or sever body parts. A generator can be started automatically by the Sunny Island.
>
> - Before performing work on the generator, permanently stop the generator and secure it against inadvertent restarting.
> - Carry out work on the generator in accordance with the manufacturer's specifications.

Requirements:

☐ The Sunny Island must be able to control the generator via a control cable.

☐ The Sunny Remote Control must be in standard mode or user mode.

Procedure

1. Select the **Generator** display page on the Sunny Remote Control and press the button (see Section 5.3.1 "Displaying Parameters and Operating and Setting the System", page 27).

2. Select the parameter **Mode** and set to **Stop**.

   ☑ The generator is stopped temporarily. The generator restarts when a generator request is issued in automatic generator mode and the minimum stop time has elapsed.

3. To permanently stop the generator, deactivate the automatic generator mode:

   - Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
   - Select the parameter **235.01 GnAutoEna** and set to **Disable**.

   ☑ The generator is permanently stopped.

7.3   Starting the Generator without Autostart Function

1. Start the generator (see manufacturer's manual).

2. Close the load-break switch between the generator and Sunny Island.

☑ After the warm-up period, the Sunny Island connects the stand-alone grid to the generator.

7.4   Stopping the Generator without Autostart Function

1. Stop the generator on the Sunny Remote Control (see Section 7.2, page 38). When you do this, the Sunny Island disconnects the stand-alone grid from the generator.

2. Open the load-break switch between the generator and the Sunny Island.

3. Stop the generator (see manufacturer's manual).

☑ The generator is stopped. After the power-down time and the minimum stop time, you can use the generator again.

8 Disconnecting the Sunny Island from Voltage Sources

⚠ **QUALIFIED PERSON**

1. Switch the system off (see Section 4.4, page 19).

2. Disconnect the circuit breakers and the load-break switches in the sub-distributions and secure against reconnection.

3. Open the load-break switch in the DC cable and secure against reconnection.

4. | **NOTICE** |

   Destruction of the Sunny Island inverter due to electrostatic discharge (ESD)

   By touching electronic components within the Sunny Island, you can damage or destroy the Sunny Island.

   - Do not touch any electronic assemblies.
   - Ground yourself before touching any connections.

5. Loosen all screws of the enclosure lid and remove the enclosure lid.

6. Ensure that the **DC** connection is disconnected from voltage sources.

7. Ensure that the connections **AC1 Loads/SunnyBoys**, **AC2 Gen/Grid**, and **ExtVtg** (position A) are disconnected from voltage sources.
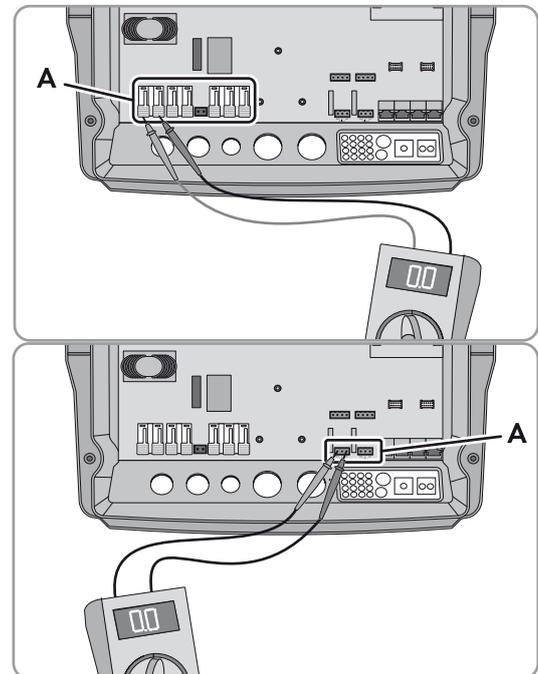
8. Ensure that the connections **Relay1** and **Relay2** (position A) are disconnected from voltage sources.

9. Ground and short-circuit the AC power cables outside the Sunny Island.

10. Cover or isolate any adjacent live components.

9 Troubleshooting

9.1 Sunny Island Inverter Behavior Under Fault Conditions

Display of errors, warnings, and events

Pending warnings and errors are shown automatically on the display of the Sunny Remote Control until the cause of the warning or error is no longer logged by the Sunny Island or has been acknowledged. Events are logged by the Sunny Island. The following menus log warnings, errors and events:

- 410# Error active - display of currently pending warnings and errors
- 420# Error history - warning and error history
- 430# Event history - events history
- In systems for increased self-consumption and battery backup systems: 440# Error Grid - history of the last five utility grid errors

Structure of display numbers

Each error and each event has a unique three-digit display number that is determined based on the parameter or measurement value assignment. Events and errors use the same number range:

- 1xx - Sunny Island
- 2xx - Battery
- 3xx - Generator or utility grid
- 4xx - Generator
- 5xx - Utility grid
- 6xx - Relay
- 7xx - System
- 8xx - External devices and components
- 9xx - General

⌶ **Meaning of abbreviations**

F indicates an error, W a warning, and E an event.

In the event of an error, the display shows whether the error has come or gone using ! for "Set" and C for "Clear".

Error Levels

The Sunny Island distinguishes between five different levels of errors, each requiring different user interaction.

Level	Designation	Display on the Sunny Remote Control	Explanation
1	Warning	Warning	Warning, the Sunny Island continues to run. Information in standard mode indicating that a warning has been generated.
2	Malfunction 1	Malfunction	Malfunction that is only detectable during operation. The Sunny Island shuts down. Restart can be initiated immediately (e.g., via autostart).
3	Malfunction 2	Malfunction	Malfunction that is also detectable in standby mode. The Sunny Island shuts down. Restart is blocked until the malfunction is no longer detected by the Sunny Island.

Level	Designation	Display on the Sunny Remote Control	Explanation
4	Failure	Failure	Device failure, the Sunny Island switches off. Troubleshooting, acknowledgment of the error and manual restart necessary.
5	Device defect	Defect	The Sunny Island is defective and switches itself off. The Sunny Island must be replaced.

Handling of pending errors upon activation

During the activation procedure, all pending errors are acknowledged without the error being logged in the list **420# Error history**. Errors which are still pending are entered again after activation. Errors which were detected by the Sunny Island before activation and are no longer detected after activation are shown in the list **420# Error history**.

Autostart

The autostart function allows automatic restarts in the event of malfunctions. If the autostart function fails in the event of a malfunction, the Sunny Island attempts to carry out the next autostart immediately. The number of autostarts is restricted. If the Sunny Island is in operation without malfunctions for ten minutes, it resets the autostart counter.

When the maximum number of autostarts has been reached, the Sunny Island reacts as follows:

- The Sunny Island waits ten minutes.
- The autostart counter is reset.
- The Sunny Island attempts to perform an autostart.
- When the maximum number of autostarts has been reached, the Sunny Island waits again for ten minutes.

9.2 Acknowledging Errors

If a malfunction or failure occurs, the Sunny Island switches to standby mode. Once you have eliminated the cause of the error, you can enable a restart of the Sunny Island inverter by acknowledging the error.

Procedure:

1. Eliminate the cause.
2. Press the button on the Sunny Remote Control. This acknowledges the error.
3. Start the system (see Section 4.2, page 18).

9.3 Logged Events

9.3.1 Sunny Island Category (1xx)

No.	Name	Description
E101	Standby	Waiting mode
E102	Startup	Startup process
E103	Run	Operation
E104	RunExtGn	Operation with a generator
E105	RunExtGd	Operation with the utility grid
E106	RunGdFeed	Feed-in grid operation
E108	Silent	Energy saving mode
E110	ErrShutdown	Shutdown due to error

No.	Name	Description
E115	EmgCharge	Emergency charging
E118	AutoStart	Automatic start
E119	ManStart	Manual start
E120	ManStop	Manual stop
E121	PwrSaveStart	Start of energy saving mode
E122	PwrSaveStop	End of energy saving mode
E129	Ext.Start	External start
E130	Ext.Stop	External stop
E131	AfraStart	Automatic frequency synchronization control is activated.
E132	AfraStop	Automatic frequency synchronization control is not activated.
E133	SlfCsmpStart	Start of increased self-consumption
E134	SlfCsmpStop	Stop of increased self-consumption
E135	SlfCsmpChrgOnly	Battery is charged only when increased self-consumption is active
E136	SLfCsmpBatMnt	Full or equalization charge with active increased self-consumption
E137	SlfCsmpNormal	Switch back to increased self-consumption after completion of full or equalization charge
E138	InvShutdown	The Sunny Island shuts down.
E140	FedInOn	Setpoint activated
E141	FedInOff	Setpoint deactivated

9.3.2 Battery Category (2xx)

No.	Name	Description
E202	BmsNewBat	(Partial) reset of battery management due to new battery
E203	BmsFloat	Battery charge algorithm switches to float charge
E204	BmsBoost	Battery charge algorithm switches to boost charge
E205	BmsFull	Battery charge algorithm switches to full charge
E206	BmsSilent	Switches to energy saving mode
E207	BmsEqual	Battery charge algorithm switches to equalization charge
E224	BMS20PReCal	20% recalibration being performed.

9.3.3 Generator Category (4xx)

No.	Name	Description
E401	GnAutoStart	Automatic generator start (e.g., via state-of-charge-dependent generator request)
E402	GnAutoStop	Automatic generator stop
E403	GnManStart	Manual generator start
E404	GnManStop	Manual generator stop
E405	GnManAck	Manual error acknowledgment of generator error

No.	Name	Description
E406	GnDmdSrc	Generator request
E407	GnCurCtlStr	Current-controlled generator operation started.
E408	GnCurCtlStp	Current-controlled generator operation stopped.

9.3.4 Utility Grid Category (5xx)

No.	Name	Description
E501	GdSocOn	Grid request due to low battery state of charge
E502	GdSocOff	Grid release due to adequate battery state of charge
E503	GdPwrOn	Grid request due to power limit being exceeded
E504	GdPwrOff	Grid release due to power falling below the limit
E505	GdManOn	Manual grid request
E506	GdManOff	Manual grid release
E507	GdFeedStart	Start of grid feed-in to utility grid
E508	GdFeedStop	Stop of grid feed-in to utility grid

9.3.5 Relay Category (6xx)

No.	Name	Description
E601	Rly1Off	Multifunction relay 1 is deactivated.
E602	Rly1On	Multifunction relay 1 is activated.
E603	Rly1Slv1Off	Multifunction relay 1 of slave 1 is deactivated.
E604	Rly1Slv1On	Multifunction relay 1 of slave 1 is activated.
E605	Rly1Slv2Off	Multifunction relay 1 of slave 2 is deactivated.
E606	Rly1Slv2On	Multifunction relay 1 of slave 2 is activated.
E609	TransferOff	Internal transfer relay is open.
E610	TransferOn	Internal transfer relay is closed.
E611	TransferSlv1Off	Internal transfer relay of slave 1 is open.
E612	TransferSlv1On	Internal transfer relay of slave 1 is closed.
E613	TransferSlv2Off	Internal transfer relay of slave 2 is open.
E614	TransferSlv2On	Internal transfer relay of slave 2 is closed.
E617	Rly2Off	Multifunction relay 2 is deactivated.
E618	Rly2On	Multifunction relay 2 is activated.
E619	Rly2Slv1Off	Multifunction relay 2 of slave 1 is deactivated.
E620	Rly2Slv1On	Multifunction relay 2 of slave 1 is activated.
E621	Rly2Slv2Off	Multifunction relay 2 of slave 2 is deactivated.
E622	Rly2Slv2On	Multifunction relay 2 of slave 2 is activated.
E625	DigInOff	No voltage at input **DigIn** (Low).

No.	Name	Description
E626	DigInOn	Voltage at input **DigIn** (High).
E627	DigInSlv1Off	No voltage at input **DigIn** (Low) at slave 1.
E628	DigInSlv1On	Voltage at input **DigIn** (High) at slave 1.
E629	DigInSlv2Off	No voltage at input **DigIn** (Low) at slave 2.
E630	DigInSlv2On	Voltage at input **DigIn** (High) at slave 2.

9.3.6 System Category (7xx)

No.	Name	Description
E705	PwrOn	Device start
E706	DateSet	Date or time has been changed.
E707	NewSys	New system configured in the QCG.
E708	Fw1Update	Part 1 of the firmware updated.
E709	Fw2Update	Part 2 of the firmware updated.
E710	ClstUpdate	Cluster firmware updated.
E711	CardInsert	SD memory card inserted.
E712	ParaUpdate	Parameter set has been loaded from SD memory card.
E715	SRCOn	Sunny Remote Control is activated.
E716	PvDiscon	Disconnection of inverters whose power is not controllable depending on the frequency
E718	NoComMod1	Communication interface 1 is incorrectly plugged or missing.
E719	NoComMod2	Communication interface 2 is incorrectly plugged or missing.

9.3.7 External Device and Component Category (8xx)

No.	Name	Description
E807	StartBox	Multicluster Box ready for operation.
E808	StopBox	Multicluster Box disabled.
E824	UpdFileComplete	File for firmware update transferred.
E825	UpdFileCrcOK	File for firmware update is OK.
E827	UpdFileCrcNOK	File for firmware update is damaged.
E851	Sic1Detect	Sunny Island Charger 1 has been detected.
E852	Sic2Detect	Sunny Island Charger 2 has been detected.
E853	Sic3Detect	Sunny Island Charger 3 has been detected.
E854	Sic4Detect	Sunny Island Charger 4 has been detected.

9.4 Logged Warning Messages and Error Messages

9.4.1 Sunny Island Category (1xx)

No.	Name	Level	Cause	Corrective measures
F 109	InvTmpHi	3	Temperature of the transformer in the master is too high due to overload or ambient temperature.	• Ensure that the Sunny Island is functional. For this, wait until the Sunny Island has cooled down and then restart it.
W 110	InvTmpHiSlv1	1	Temperature of the transformer in slave 1 is too high due to overload or ambient temperature.	• Clean the fans (see Section 10.7 "Cleaning the Fans", page 77).
W 111	InvTmpHiSlv2	1	Temperature of the transformer in slave 2 is too high due to overload or ambient temperature.	• Reduce the total power of the loads, e.g., by staggering their use over time.
F 113	InvTmpHi	3	Temperature of the heat sink in the master is too high due to overload or ambient temperature.	• Ensure that the Sunny Island is functional. For this, wait until the Sunny Island has cooled down and then restart it.
W 114	InvTmpHiSlv1	1	Temperature of the heat sink in slave 1 is too high due to overload or ambient temperature.	• Reduce the total power of the loads, e.g., by staggering their use over time.
W 115	InvTmpHiSlv2	1	Temperature of the heat sink in slave 2 is too high due to overload or ambient temperature.	
F 117	AcCurLim	2	The power of the loads is too high for the master.	• Ensure that the Sunny Island is functional. For this, clean the fans and restart the Sunny Island (see Section 10.7 "Cleaning the Fans", page 77).
W 118	AcCurLimSlv1	1	The power of the loads is too high for slave 1.	
W 119	AcCurLimSlv2	1	The power of the loads is too high for slave 2.	• **⚠ QUALIFIED PERSON** Ensure that there are no short circuits in the system and that the power of the loads is not greater than the power of the Sunny Island inverter.
				• **⚠ QUALIFIED PERSON** Use a star delta electronic circuit to start three-phase loads with a high start-up electricity demand (e.g., engines).
				• **⚠ QUALIFIED PERSON** Connect the loads with very high power directly to the generator whenever possible. Ensure that the generator is not overloaded.

No.		Name	Level	Cause	Corrective measures
F	121	InvVtgHi	3	An overvoltage has occurred at connection **AC1** of the master.	• ⚠ **QUALIFIED PERSON** Ensure that the Sunny Island is functional. For this, disconnect all AC sources and loads from the Sunny Island and restart the Sunny Island.
W	122	InvVtgHiSlv1	1	An overvoltage has occurred at connection **AC1** of slave 1.	
W	123	InvVtgHiSlv2	1	An overvoltage has occurred at connection **AC1** of slave 2.	• ⚠ **QUALIFIED PERSON** Find the cause of the overvoltage through measurement and step-by-step connection of the AC sources and loads.
F	129	InvFrqHi	3	An overfrequency has occurred at connection **AC1** of the master.	• ⚠ **QUALIFIED PERSON** Ensure that the Sunny Island is functional. For this, disconnect all AC sources and loads from the Sunny Island and restart the Sunny Island.
W	130	InvFrqHiSlv1	1	An overfrequency has occurred at connection **AC1** of slave 1.	
W	131	InvFrqHiSlv2	1	An overfrequency has occurred at connection **AC1** of slave 2.	• ⚠ **QUALIFIED PERSON** Find the cause of the overfrequency through measurement and step-by-step connection of the AC sources and loads.
F	133	InvFrqLo	3	An underfrequency has occurred at connection **AC1** of the master.	• ⚠ **QUALIFIED PERSON** Ensure that the Sunny Island is functional. For this, disconnect all AC sources and loads from the Sunny Island and restart the Sunny Island.
W	134	InvFrqLoSlv1	1	An underfrequency has occurred at connection **AC1** of slave 1.	
W	135	InvFrqLoSlv2	1	An underfrequency has occurred at connection **AC1** of slave 2.	• ⚠ **QUALIFIED PERSON** Find the cause of the underfrequency through measurement and step-by-step connection of the AC sources and loads.
W	137	Derate	1	The master has reduced the battery charging current due to overtemperature in the Sunny Island.	• Clean the fans (see Section 10.7 "Cleaning the Fans", page 77). • Reduce the total power of the loads, e.g., by staggering their use over time.
W	138	DerateSlv1	1	Slave 1 has reduced the battery charging current due to overtemperature in the Sunny Island.	• ⚠ **QUALIFIED PERSON** If the Sunny Island frequently reduces its power, increase power by replacing the Sunny Island with a higher-powered version or by installing additional Sunny Island inverters.
W	139	DerateSlv2	1	Slave 2 has reduced the battery charging current due to overtemperature in the Sunny Island.	

No.	Name	Level	Cause	Corrective measures
F 141	InvVtgLo	2	The voltage at connection **AC1** of the master is too low due to AC sources in the system.	• **⚠ QUALIFIED PERSON** Ensure that the Sunny Island is functional. For this, disconnect all AC sources and loads from the Sunny Island and restart the Sunny Island.
W 142	InvVtgLoSlv1	1	The voltage at connection **AC1** of slave 1 is too low due to AC sources in the system.	
W 143	InvVtgLoSlv2	1	The voltage at connection **AC1** of slave 2 is too low due to AC sources in the system.	• **⚠ QUALIFIED PERSON** Find the cause of the undervoltage through measurement and step-by-step connection of the AC sources and loads.
F 158	VtgOnAC1Det	2	The master has measured an undesired voltage at connection **AC1**.	A bypass switch may have bridged the internal transfer relay. • Ensure that the bypass switch is in the position for operation with the Sunny Island.
W 159	VtgOnAC1DetSlv1	1	Slave 1 has measured an undesired voltage at connection **AC1**.	
W 160	VtgOnAC1DetSlv2	1	Slave 2 has measured an undesired voltage at connection **AC1**.	• **⚠ QUALIFIED PERSON** Ensure that the Sunny Island is functional. For this, disconnect all AC sources and loads from the Sunny Island and restart the Sunny Island. A voltage source (e.g., generator) may have been connected to the connection **AC1**. • **⚠ QUALIFIED PERSON** Disconnect voltage source from connection **AC1** and connect to connection **AC2** (see the Sunny Island inverter installation manual).
F 162	OvrCurDet	2	Too much current is flowing through the **DC** connection of the master.	• Reduce the power of the loads.
W 163	OvrCurDetSlv1	1	Too much current is flowing through the **DC** connection of slave 1.	
W 164	OvrCurDetSlv2	1	Too much current is flowing through the **DC** connection of slave 2.	
F 166	Overload5min	3	The five minute overload capacity of the master has been exceeded.	
W 167	Overload5minSlv1	1	The five minute overload capacity of slave 1 has been exceeded.	
W 168	Overload5minSlv2	1	The five minute overload capacity of slave 2 has been exceeded.	

No.		Name	Level	Cause	Corrective measures
F	169	Overload30min	3	The 30 minute overload capacity of the master has been exceeded.	• Reduce the power of the loads.
W	170	Overload30minSlv1	1	The 30 minute overload capacity of slave 1 has been exceeded.	
W	171	Overload30minSlv2	1	The 30 minute overload capacity of slave 2 has been exceeded.	
F	172	Overload	3	The overload capacity of the master has been exceeded.	
W	173	OverloadSlv1	1	The overload capacity of slave 1 has been exceeded.	
W	174	OverloadSlv2	1	The overload capacity of slave 2 has been exceeded.	
F	175	StopSlvError	1	A slave has disconnected	• Contact the SMA Service Line.
F	176	CurTrfSns	4	Internal current sensor is not functioning correctly.	

9.4.2   Battery Category (2xx)

No.		Name	Level	Cause	Corrective measures
F	201	VBATMAX	2	Battery voltage at the master is above the permissible measurement range.	• Check whether the value of the parameter **120.02 BatVtg** is above 65.0 V. If the value is above 65.0 V, check the settings of the DC sources and ensure that the battery capacity is sufficient. When doing so, bear in mind the technical data for the battery at the **DC** connection (see the Sunny Island inverter installation manual).
W	202	VBATMAXSL1	1	Battery voltage at slave 1 is above the permissible measurement range.	
W	203	VBATMAXSL2	1	Battery voltage at slave 2 is above the permissible measurement range.	• ⚠ QUALIFIED PERSON Ensure that the DC sources are correctly connected and configured.
F	206	BatTmpHi	3	The battery temperature is too high.	• Wait for the battery to cool down. Tip: Protect the battery against temperatures above 25°C. This helps prevent premature aging of the battery. • ⚠ QUALIFIED PERSON Check whether the electrical resistance of the battery temperature sensor is approx. 2,000 Ω at 20°C to 25°C. If the resistance deviates strongly from this value, replace the sensor.

No.	Name	Level	Cause	Corrective measures
F 208	BatVtgHi	3	The battery voltage is greater than the target charge voltage.	• **⚠ QUALIFIED PERSON** Ensure that all DC sources are correctly configured. • **⚠ QUALIFIED PERSON** Ensure that all SMA inverters are configured to the country data set for stand-alone grid operation.
W 209	BatVtgWrnHi	1	The battery voltage is too high and has not been generated by the Sunny Island.	• **⚠ QUALIFIED PERSON** Ensure that all DC sources are correctly configured. • **⚠ QUALIFIED PERSON** Ensure that all SMA inverters are configured to the country data set for stand-alone grid operation.
W 210	BatVtgHiWarn	1	Battery voltage is temporarily too high.	• **⚠ QUALIFIED PERSON** Ensure that all DC sources are correctly configured. • **⚠ QUALIFIED PERSON** Ensure that all SMA inverters are configured to the country data set for stand-alone grid operation.
W 211	BatTmpLoWarn	1	The battery temperature is too low.	• Ensure that the battery room is sufficiently warm.
W 212	BatTmpHiWarn	1	The battery temperature is too high.	• Wait for the battery to cool down. Tip: Protect the battery against temperatures above 25°C. This helps prevent premature aging of the battery.
F 213	BatVtgLow	3	Battery voltage is too low.	• **⚠ QUALIFIED PERSON** Charge the battery in emergency charge operation or using an external battery charger (see Section 9.6 "Charging the Battery After Automatic Shutdown in Off-Grid Systems", page 72). • **⚠ QUALIFIED PERSON** Ensure that DC loads are shed via a load-shedding contactor when the battery state of charge is low.
W 220	BatSOH70Warn	1	Available battery capacity is below 70%.	• **⚠ QUALIFIED PERSON** Verify the plausibility of the error message and replace the battery if necessary.
F 221	InvalidBatType	4	External battery management detected although no external energy management has been configured.	• **⚠ QUALIFIED PERSON** Start QCG and configure a new system with external energy management (e.g., system with lithium-ion battery).
W 222	CheckBat	1	The 20% recalibration resulted in a jump of more than 10%.	• Check the battery.

9.4.3   Generator or Utility Grid Category (3xx)

No.	Name	Level	Cause	Corrective measures
W 309	RlyProtect	1	Excessive current has been applied to the internal transfer relay of the master.	• Reduce the total power of the loads, e.g., by staggering their use over time.
W 310	RlyProtectSlv1	1	Excessive current has been applied to the internal transfer relay of slave 1.	• ⚠ **QUALIFIED PERSON** Connect the loads with very high power directly to the generator whenever possible or connect the utility grid. Ensure that the generator is not overloaded.
W 311	RlyProtectSlv2	1	Excessive current has been applied to the internal transfer relay of slave 2.	• ⚠ **QUALIFIED PERSON** In off-grid systems, ensure that the country data sets of the SMA inverters are set to stand-alone grid operation (see the installation manuals of the SMA inverters).
F 314	ExtVtgLoss	2	The voltage and/or frequency of the generator or the utility grid are outside the configured range.	**Corrective measures for a generator:** • ⚠ **QUALIFIED PERSON** Adjust the thresholds for generator frequency and/or voltage on the Sunny Island (see the Sunny Island inverter installation manual). Observe and analyze the measured values **134.02 ExtVtg** and **134.04 ExtFrq** during operation. • ⚠ **QUALIFIED PERSON** Adjust the generator voltage and/or generator frequency. **Corrective measures in battery backup systems:** • Contact the SMA Service Line, if required.

No.	Name	Level	Cause	Corrective measures
W 315	ExtVtgLo	1	The voltage of the generator or the utility grid at the master is too low.	**Corrective measures for a generator:** • ⚠ QUALIFIED PERSON Adjust the thresholds for generator voltage on the Sunny Island (see the Sunny Island inverter installation manual). Observe and analyze the measured values **134.02 ExtVtg** during operation. • ⚠ QUALIFIED PERSON If possible, adjust the generator voltage. **Corrective measures in battery backup systems:** • Contact the SMA Service Line, if required.
W 316	ExtVtgLoSlv1	1	The voltage of the generator or the utility grid at slave 1 is too low.	
W 317	ExtVtgLoSlv2	1	The voltage of the generator or the utility grid at slave 2 is too low.	
W 319	ExtVtgHi	1	The voltage of the generator or the utility grid at the master is too high.	
W 320	ExtVtgHiSlv1	1	The voltage of the generator or the utility grid at slave 1 is too high.	
W 321	ExtVtgHiSlv2	1	The voltage of the generator or the utility grid at slave 2 is too high.	
W 323	ExtFrqLo	1	The frequency of the generator or the utility grid at the master is too low.	**Corrective measures for a generator:** • The generator may be overloaded. Reduce the total power of the loads by staggering their use over time. • ⚠ QUALIFIED PERSON Adjust the thresholds for generator frequency on the Sunny Island (see the Sunny Island inverter installation manual). Observe and analyze the measured values **134.04 ExtFrq** during operation. • ⚠ QUALIFIED PERSON Adjust the frequency of the external energy source. **Corrective measures for a utility grid:** • Contact the SMA Service Line, if required.
W 324	ExtFrqLoSlv1	1	The frequency of the generator or the utility grid at slave 1 is too low.	
W 325	ExtFrqLoSlv2	1	The frequency of the generator or the utility grid at slave 2 is too low.	
W 327	ExtFrqHi	1	The frequency of the generator or the utility grid at the master is too high.	
W 328	ExtFrqHiSlv1	1	The frequency of the generator or the utility grid at slave 1 is too high.	
W 329	ExtFrqHiSlv2	1	The frequency of the generator or the utility grid at slave 2 is too high.	

No.	Name	Level	Cause	Corrective measures
W 331	AntiIsl	1	Undesired stand-alone grid is present at connection **AC2** of the master.	• ⚠ QUALIFIED PERSON Ensure that the insulated wires at connection **AC2** are securely connected and that the conductors in the terminals are free of insulation.
W 332	AntiIslSlv1	1	Undesired stand-alone grid is present at connection **AC2** of slave 1.	
W 333	AntiIslSlv2	1	Undesired stand-alone grid is present at connection **AC2** of slave 2.	**Corrective measures for a generator:** This may be caused by a contactor between the generator and the Sunny Island. • ⚠ QUALIFIED PERSON Control the contactor via a Sunny Island inverter multifunction relay. Set the parameter of the multifunction relay, e.g., **241.01 Rly1Op**, to AutoGn. • ⚠ QUALIFIED PERSON Set the parameter **234.20 GdAiSns** to a lower sensitivity. **Corrective measures for a utility grid:** • Contact the SMA Service Line.
W 335	ExtVtgRdtErr	1	The voltage of the generator or the utility grid at the master is outside the configured thresholds (redundant measurement).	**Corrective measures for a generator:** • ⚠ QUALIFIED PERSON Adjust the thresholds for generator voltage on the Sunny Island (see the Sunny Island inverter installation manual). Observe and analyze the measured values **134.02 ExtVtg** during operation. • ⚠ QUALIFIED PERSON If possible, adjust the generator voltage.
W 336	ExtVtgRdtErrSlv1	1	The voltage of the generator or the utility grid at slave 1 is outside the configured thresholds (redundant measurement).	
W 337	ExtVtgRdtErrSlv2	1	The voltage of the generator or the utility grid at slave 2 is outside the configured thresholds (redundant measurement).	**Corrective measures for a utility grid:** • Contact the SMA Service Line, if required.
W 339	ExtVtgIncPro	1	Voltage increase protection	• ⚠ QUALIFIED PERSON Ensure that the conductor cross-section of the AC cables is correctly sized.
W 340	ExtVtgIncProSlv1	1		
W 341	ExtVtgIncProSlv2	1		

No.	Name	Level	Cause	Corrective measures
W 343	AcVtglim	1	The master disconnects from the external energy source because the voltage at connection **AC2** is too high or the battery voltage too low.	• Contact the SMA Service Line if required.
W 344	AcVtglimSlv1	1	Slave 1 disconnects from the external energy source because the voltage at connection **AC2** is too high or the battery voltage too low.	
W 345	AcVtglimSlv2	1	Slave 2 disconnects from the external energy source because the voltage at connection **AC2** is too high or the battery voltage too low.	
W 347	ExtOverload	1	The master disconnects from the utility grid due to line conductor failure/overload at connection **AC2**.	• Reduce the total power of the loads, e.g., by staggering their use over time. • ⚠ QUALIFIED PERSON Ensure that there is not a short circuit present at connection **AC2**.
W 348	ExtOverloadSlv1	1	Slave 1 disconnects from the utility grid due to line conductor failure/overload at connection **AC2**.	
W 349	ExtOverloadSlv2	1	Slave 2 disconnects from the utility grid due to line conductor failure/overload at connection **AC2**.	
W 351	ExtScirDet	1	There is a short circuit present at connection **AC2** of the master.	• ⚠ QUALIFIED PERSON Eliminate the short circuit.
W 352	ExtScirDetSlv1	1	There is a short circuit present at connection **AC2** of slave 1.	
W 353	ExtScirDetSlv2	1	There is a short circuit present at connection **AC2** of slave 2.	
W 355	PhsAngErr	1	Assignment of the line conductors of the external energy source to the **AC2** connections of the Sunny Island does not result in a right-rotating magnetic field.	• ⚠ QUALIFIED PERSON Ensure that the master is connected to L1, slave 1 to L2, and slave 2 to L3.

No.	Name	Level	Cause	Corrective measures
F 365	VAcExtPhsFail	3	The line conductors of the measured AC voltage at connections **VExt** and **AC2** do not match.	⚠ **QUALIFIED PERSON** • Ensure that the neutral conductor and line conductor are correctly connected to connection **ExtVtg**. • Ensure that the neutral conductor and line conductor are correctly connected to connection **AC2**. • Ensure that the connections **ExtVtg** and **AC2** are connected to the same line conductor.
F 366	HotAcBus	3	When the tie switch is open, AC voltage from an unknown source is present at connection **AC2**.	⚠ **QUALIFIED PERSON** • Ensure that the triggering of the tie switch is correct. • Ensure that the tie switch is correctly wired.
F 367	ExtCtcNotOpen	3	Tie switch does not open.	⚠ **QUALIFIED PERSON** • Ensure that the triggering of the tie switch is correct. • Ensure that the tie switch is correctly wired. • Ensure that the feedback contact is correctly connected.
F 368	NRelNotOpen	3	Neutral conductor relay of the master does not open.	• Contact the SMA Service Line.
W 369	NRelNotOpenSlv1	1	Neutral conductor relay of slave 1 does not open.	
W 370	NRelNotOpenSlv2	1	Neutral conductor relay of slave 2 does not open.	
W 372	VtgFrqRatio	1	Disconnection from the utility grid or generator due to noncompliance with the voltage-frequency ratio at the master	• Contact the SMA Service Line if required.
W 373	VtgFrqRatioSlv1	1	Disconnection from the utility grid or generator due to noncompliance with the voltage-frequency ratio at slave 1	
W 374	VtgFrqRatioSlv2	1	Disconnection from the utility grid or generator due to noncompliance with the voltage-frequency ratio at slave 2	

No.	Name	Level	Cause	Corrective measures
F 376	ExtCtcNotClose	3	Tie switch does not close.	**⚠ QUALIFIED PERSON** • Ensure that the triggering of the tie switch is correct. • Ensure that the tie switch is correctly wired. • Ensure that the feedback contact is correctly connected.
W 380	VAcExtPhsFailS1	1	The line conductors of the measured AC voltage at connections **VExt** and **AC2** do not match.	**⚠ QUALIFIED PERSON** • Ensure that the neutral conductor and line conductor are correctly connected to the connection **ExtVtg**. • Ensure that the neutral conductor and line conductor are correctly connected to connection **AC2**. • Ensure that the connections **ExtVtg** and **AC2** are connected to the same line conductor.
W 381	VAcExtPhsFailS2	1		
W 383	HotAcBusSlv1	1	When the tie switch is open, AC voltage from an unknown source is present at connection **AC2**.	**⚠ QUALIFIED PERSON** • Ensure that the triggering of the tie switch is correct. • Ensure that the tie switch is correctly wired.
W 384	HotAcBusSlv2	1		

9.4.4 Generator Category (4xx)

No.	Name	Level	Cause	Corrective measures
W 401	GnRevPwrProt	1	AC sources in the system are driving the generator. The reverse power in the generator has been exceeded for too long.	• Adjust the generator request to the properties of the AC sources in the system and the loads, e.g., for PV inverters preferably request the generator at night. • **⚠ QUALIFIED PERSON** If the generator can absorb reverse power, adjust the settings for reverse power (see the Sunny Island inverter installation manual).

No.	Name	Level	Cause	Corrective measures
W 402	GnFailLock	1	Connection of the generator is locked as a result of too many interrupted start processes.	**⚠ QUALIFIED PERSON** • Ensure that the generator triggering is functioning, the generator starts, and there is constant and stable generator voltage present at connection **AC2**. • To re-enable connection of the generator, acknowledge the generator error (see Section 9.2 "Acknowledging Errors", page 42). **⚠ QUALIFIED PERSON** A warm-up time **234.12 GnWarmTm** that is too short may have been configured and hence the generator is unable to supply valid voltage. • Ensure that the generator warm-up time is configured appropriately (see the Sunny Island inverter installation manual).

9.4.5   Utility Grid Category (5xx)

No.	Name	Level	Cause	Corrective measures
W 501	GdRevPwrProt	1	AC sources in the stand-alone grid are performing undesired feed-in to the utility grid. The reverse power to the utility grid has been exceeded for too long.	• Contact the SMA Service Line, if required.
W 502	GdRevPwrProtSL1	1		
W 503	GdRevPwrProtSL2	1		
W 505	GdCurNomExceed	1	The feed-in current of the master is greater than **232.04 GdCurNom**.	• Contact the SMA Service Line, if required.
W 506	GdCurNomExcSlv1	1	The feed-in current of slave 1 is greater than **232.04 GdCurNom**.	
W 507	GdCurNomExcSlv2	1	The feed-in current of slave 2 is greater than **232.04 GdCurNom**.	

9.4.6   Relay Category (6xx)

No.	Name	Level	Cause	Corrective measures
F 605	TransfNotOpn	4	Internal transfer relay in the master does not open.	A bypass switch may have bridged the internal transfer relay. • Ensure that the bypass switch is in the position for operation with the Sunny Island. • **⚠ QUALIFIED PERSON** Ensure that the connections **AC1** and **AC2** are not bridged.
W 606	TransfNotOpnSL1	1	Internal transfer relay in slave 1 does not open.	
W 607	TransfNotOpnSL2	1	Internal transfer relay in slave 2 does not open.	

9.4.7 System Category (7xx)

No.	Name	Level	Cause	Corrective measures
F 702	RsDsp	5	Signal processor has performed a reset.	• Contact the SMA Service Line.
F 703	TimeOut	2	Time for performing a particular task has been exceeded.	
F 704	Calib	4	The system has not calibrated.	
W 705	TimeOut	1	The watchdog of the signal processor of the master has tripped.	• Contact the SMA Service Line if required.
F 706	TimeOut	4	The watchdog of the signal processor of the master has tripped several times.	• Contact the SMA Service Line.
W 707	TimeOutSlv1	1	The watchdog of the signal processor of slave 1 has tripped several times.	
W 708	TimeOutSlv2	1	The watchdog of the signal processor of slave 2 has tripped several times.	
F 710	AutoStrCnt	4	Autostart meter has expired several times in succession.	• **⚠ QUALIFIED PERSON** Read off the pending and logged warnings and errors and eliminate the causes. • Ensure that the parameter **250.01 AutoStr** is set to **3**.
W 713	TimeOut	1	The watchdog of the operation control unit has tripped.	• Contact the SMA Service Line if required.
W 715	MMCUpdFail	1	The update cannot be carried out. The type or format of the SD memory card is not supported.	• Copy the update file to an SD memory card with maximum 2 GB and with FAT-16 format.
F 716	VBATMIN	2	The measured battery voltage of the master is below the permissible measurement range.	• Disconnect the DC loads and charge the battery. The usable battery capacity may be too small, e.g., due to aging. If a load with high power connects, the battery voltage collapses.
W 717	VBATMINSL1	1	The measured battery voltage of slave 1 is below the permissible measurement range.	
W 718	VBATMINSL2	1	The measured battery voltage of slave 2 is below the permissible measurement range.	• **⚠ QUALIFIED PERSON** If DC loads are installed in the system, install load shedding for DC loads. • **⚠ QUALIFIED PERSON** Ensure that all battery cells are functional.
F 720	InvTmpSns	4	The temperature sensor on the transformer of the master is defective.	• Contact the SMA Service Line.
F 721	InvTmpSns	4	The temperature sensor on the heat sink of the master is defective.	

No.	Name	Level	Cause	Corrective measures
W 722	BatTmpSnsShort	1	Short circuit of the battery temperature sensor	• ⚠ **QUALIFIED PERSON** Ensure that the battery temperature sensor is correctly connected (see the Sunny Island inverter installation manual).
W 723	BatTmpSnsOpn	1	Cable break in battery temperature sensor	
				• Contact the SMA Service Line.
W 724	AutoStrCntSlv1	1	Maximum number of autostarts for slave 1 has been reached.	• ⚠ **QUALIFIED PERSON** Read off the pending and logged warnings and errors and eliminate the causes.
W 725	AutoStrCntSlv2	1	Maximum number of autostarts for slave 2 has been reached.	• Ensure that the parameter **250.01 AutoStr** is set to **3**.
F 731	ClstConfig	4	Configuration of the cluster is incorrect.	• ⚠ **QUALIFIED PERSON** Change the addresses of the slaves in the cluster (see Section 9.7, page 74)
F 733	MstrLoss	4	Communication to the master is interrupted.	• ⚠ **QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly.
W 734	Slv1Loss	1	Communication from the master to slave 1 is interrupted.	
W 735	Slv2Loss	1	Communication from the master to slave 2 is interrupted.	• ⚠ **QUALIFIED PERSON** Ensure that the communication bus is equipped with a terminator at both ends.
F 737	BootUpdateFail	4	Updating of the boot loader failed.	• Contact the SMA Service Line.
W 738	GnSynLoss	1	Synchronization with the generator not successful.	• Ensure that the generator can be started. The fuel level may be too low. • ⚠ **QUALIFIED PERSON** Ensure that a constant and stable voltage is present at connection **AC2**. • ⚠ **QUALIFIED PERSON** Ensure that the thresholds for the generator voltage are correctly configured.
F 739	SPICom	3	Internal device communication of the master is disturbed.	• Contact the SMA Service Line.
W 740	SPIComSlv1	1	Internal device communication of slave 1 is disturbed.	
W 741	SPIComSlv2	1	Internal device communication of slave 2 is disturbed.	

No.	Name	Level	Cause	Corrective measures
F 743	CANCom	3	Internal device CAN communication of the master is disturbed.	• **⚠ QUALIFIED PERSON** Ensure that the terminators in the communication bus are attached. • **⚠ QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly. • Contact the SMA Service Line.
W 744	CANComSlv1	1	Internal device CAN communication of slave 1 is disturbed.	
W 745	CANComSlv2	1	Internal device CAN communication of slave 2 is disturbed.	
W 747	InvTmpSnsSlv1	1	Temperature sensor on the transformer of slave 1 is defective.	• Contact the SMA Service Line.
W 748	InvTmpSnsSlv2	1	Temperature sensor on the transformer of slave 2 is defective.	
W 750	InvTmpSnsSlv1	1	Temperature sensor on the heat sink of slave 1 is defective.	
W 751	InvTmpSnsSlv2	1	Temperature sensor on the heat sink of slave 2 is defective.	
W 753	DateInvalid	1	System time is invalid.	• Select the parameter **250.02 Dt** and set the date. Select the parameter **250.03 Tm** and set the time.
F 754	BoxCom	2	Communication with Multicluster Box is interrupted.	• **⚠ QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly. • **⚠ QUALIFIED PERSON** Ensure that the communication bus is equipped with a terminator at both ends.
W 755	LoBatMod1	1	Battery protection mode protects the battery. Level 1 is active.	• Disconnect the loads, start the generator, start the Sunny Island and charge the battery.
W 756	LoBatMod2	1	Battery protection mode protects the battery. Level 2 is active.	
W 757	LoBatMod3	1	Battery protection mode protects the battery. Level 3 is active.	
F 758	McNoVtg	2	Voltage of the main cluster cannot be measured at the master.	• Ensure that all circuit breakers of the Sunny Island inverters in the Multicluster Box are closed. • **⚠ QUALIFIED PERSON** Ensure that the cabling at connection **AC1** is correctly installed.
W 759	McNoVtgSv1	1	Voltage of the main cluster cannot be measured at slave 1.	
W 760	McNoVtgSlv2	1	Voltage of the main cluster cannot be measured at slave 2.	

No.	Name	Level	Cause	Corrective measures
W 778	DSPNoSlv1	1	CAN communication with slave 1 is faulty.	• **⚠ QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly.
W 779	DSPNoSlv2	1	CAN communication with slave 2 is faulty.	• **⚠ QUALIFIED PERSON** Ensure that the communication bus is equipped with a terminator at both ends.
F 781	SlvError	4	Error at a slave in the main cluster causing system shutdown.	• **⚠ QUALIFIED PERSON** Read off the pending and logged warnings and errors and eliminate the causes.
F 782	AIVtgMonFail	4	Monitoring of the utility grid has failed.	• Contact the SMA Service Line.
F 783	CANCom	2	Synchronization in the cluster is interrupted at the master.	• **⚠ QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly.
W 784	CANComSlv1	1	Synchronization in the cluster is interrupted at slave 1.	
W 785	CANComSlv2	1	Synchronization in the cluster is interrupted at slave 2.	• **⚠ QUALIFIED PERSON** Ensure that the communication bus is equipped with a terminator at both ends.
F 787	VcoreFail	3	Internal device voltage in the master is outside the tolerance limits.	• Contact the SMA Service Line.
F 788	VcoreFailSlv1	3	Internal device voltage in slave 1 is outside the tolerance limits.	
F 789	VcoreFailSlv2	3	Internal device voltage in slave 2 is outside the tolerance limits.	
W 791	RsDspSlv1	1	Signal processor has performed a reset.	
W 792	RsDspSlv2	1		
W 793	TimeOutDspSlv1	1	Time for performing a particular task has been exceeded.	
W 794	TimeOutDspSlv2	1		
W 797	AiVtgMonFailSlv1	1	Monitoring of the utility grid has failed.	
W 798	AiVtgMonFailSlv2	1		

9.4.8   External Device and Component Category (8xx)

No.	Name	Level	Cause	Corrective measures
F 801	Box	4	Plausibility check of the contactors in the Multicluster Box has failed.	• Contact the SMA Service Line.
W 805	BoxNoGn	1	Operation with the generator is not possible.	• **⚠ QUALIFIED PERSON** Reset the off-grid system. For this, disconnect all loads, AC sources, generator and DC sources. Open the load-break switch of the BatFuse. Wait ten minutes and restart the off-grid system. Wait until all AC sources are feeding into the stand-alone grid and all loads are connected before connecting the generator. • Contact the SMA Service Line.
F 806	BoxType	4	Configuration of the Sunny Island inverters does not match the Multicluster Box.	• **⚠ QUALIFIED PERSON** Check whether the value of the parameter **250.23 Box** matches the Multicluster Box. If the value does not match, restart the QCG (see the Sunny Island inverter installation manual). • Contact the SMA Service Line.
W 807	BoxGdVtg	1	Voltage of the external energy source is not within the valid thresholds for connection.	• Acknowledge the error (see Section 9.2, page 42). • Contact the SMA Service Line.
F 809	BoxNoLod	4	Load-shedding contactor **Q5** in the Multicluster Box is not functioning correctly.	• Reset the off-grid system. For this, disconnect the off-grid system and restart. The configuration may be incorrect. • **⚠ QUALIFIED PERSON** Start the QCG and reconfigure multicluster operation (see the Sunny Island inverter installation manual). • Contact the SMA Service Line.
F 810	Box15V	4	15 V voltage supply in the Multicluster Box is defective.	• Contact the SMA Service Line.
F 811	Box24V	4	24 V voltage supply in the Multicluster Box is defective.	

No.	Name	Level	Cause	Corrective measures
W 815	BoxQ5	1	Contactor **Q5** in the Multicluster Box is not functioning correctly.	• Reset the off-grid system. For this, disconnect the off-grid system and restart.
				The configuration may be incorrect.
F 816	BoxQ7	2	Contactor **Q7** in the Multicluster Box is not functioning correctly.	• ⚠ QUALIFIED PERSON Start the QCG and reconfigure multicluster operation (see the Sunny Island inverter installation manual).
F 817	BoxQ9	4	Contactor **Q9** in the Multicluster Box is not functioning correctly.	• Contact the SMA Service Line.
F 818	BoxPhsFail	4	One line conductor of a Sunny Island inverter is missing.	• Ensure that all circuit breakers of the Sunny Island inverters in the Multicluster Box are closed. • Reset the off-grid system. For this, disconnect the off-grid system and restart. • ⚠ QUALIFIED PERSON Search for the missing line conductor and eliminate the error. For this, with loads connected, measure the AC voltage between each line conductor and between the line conductors and the neutral conductors. If an AC voltage deviates from the nominal voltage by ±10%, the corresponding line conductor is missing.
W 824	BoxQ4Overload	1	Multicluster Box signals an error at contactor Q4.	• Contact the SMA Service Line.
W 840	eHZ1ComFail	1	Faulty communication with the feed-in meter and purchased electricity meter	• Ensure that the optical probe is correctly mounted. • Ensure that the optical probe is correctly connected.
W 841	eHZ2ComFail	1	Faulty communication with the PV production meter	
W 842	ComBoxFail	1	Faulty communication between the Sunny Island and the Meter Box.	• ⚠ QUALIFIED PERSON Ensure that the data cables are correctly installed.
W 843	ComBoxWD	1	The Meter Box watchdog has triggered.	• Contact the SMA Service Line.
W 844	eHZ1ProtFail	1	Data protocol of the feed-in and purchased electricity meter is unknown.	
W 845	eHZ2ProtFail	1	Data protocol of the PV production meter is unknown.	
W 846	eHzInFail	1	Optical probes have been swapped.	• Swap the optical probe connections.

No.	Name	Level	Cause	Corrective measures
W 847	ComHMFaill	1	Faulty communication between the Sunny Island and Sunny Home Manager.	• ⚠ **QUALIFIED PERSON** Ensure that the data cables are correctly installed. • Ensure that the parameter **250.06 ComBaud** is set to **115k** Bd.
W 851	Sic1BatShort	1	Connection of the battery to the Sunny Island Charger 1 is reverse poled or there is a short circuit.	• ⚠ **QUALIFIED PERSON** Ensure that the battery is correctly connected to the **DC** connection of the Sunny Island Charger charge controller. • ⚠ **QUALIFIED PERSON** Disconnect the PV array from the Sunny Island Charger and restart the system. This will ensure that the PV array is not short-circuited.
W 852	Sic1BatVtgHi	1	Battery voltage at the Sunny Island Charger 1 is too high.	• ⚠ **QUALIFIED PERSON** Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ **QUALIFIED PERSON** Ensure that all DC sources and DC loads are correctly configured and connected. • Reset the system. For this, switch off the system, wait ten minutes and restart.
W 853	Sic1PvVtgHi	1	PV voltage at the Sunny Island Charger 1 is too high.	• Contact the SMA Service Line if required.
W 854	Sic1PvVtgLo	1	No PV voltage at the Sunny Island Charger 1 or there is a short circuit.	
W 855	Sic1TmpLo	1	Sunny Island Charger 1 reports: sensor error or device temperature too low.	• ⚠ **QUALIFIED PERSON** Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).
W 856	Sic1TmpHl	1	Sunny Island Charger 1 reports: sensor error or device temperature too high.	• ⚠ **QUALIFIED PERSON** Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).

No.	Name	Level	Cause	Corrective measures
W 857	Sic1ComLoss	1	Last communication with the Sunny Island Charger 1 was more than 24 hours ago.	• ⚠ QUALIFIED PERSON Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly. • ⚠ QUALIFIED PERSON Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ QUALIFIED PERSON Ensure that the communication interfaces are correctly inserted in the Sunny Island.
W 861	Sic2BatShort	1	Connection of the battery to the Sunny Island Charger 2 is reverse poled or there is a short circuit.	• ⚠ QUALIFIED PERSON Ensure that the battery is correctly connected to the **DC** connection of the Sunny Island Charger charge controller. • ⚠ QUALIFIED PERSON Disconnect the PV array from the Sunny Island Charger and restart the system. This will ensure that the PV array is not short-circuited.
W 862	Sic2BatVtgHi	1	Battery voltage at the Sunny Island Charger 2 is too high.	• ⚠ QUALIFIED PERSON Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ QUALIFIED PERSON Ensure that all DC sources and DC loads are correctly configured and connected. • Reset the system. For this, switch off the system, wait ten minutes and restart.
W 863	Sic2PvVtgHi	1	PV voltage at the Sunny Island Charger 2 is too high.	• Contact the SMA Service Line if required.
W 864	Sic2PvVtgLo	1	No PV voltage at the Sunny Island Charger 2 or there is a short circuit.	
W 865	Sic2TmpLo	1	Sunny Island Charger 2 reports: sensor error or device temperature too low.	• ⚠ QUALIFIED PERSON Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).
W 866	Sic2TmpHI	1	Sunny Island Charger 2 reports: sensor error or device temperature too high.	• ⚠ QUALIFIED PERSON Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).

No.	Name	Level	Cause	Corrective measures
W 867	Sic2ComLoss	1	Last communication with the Sunny Island Charger 2 was more than 24 hours ago.	• ⚠ **QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly. • ⚠ **QUALIFIED PERSON** Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ **QUALIFIED PERSON** Ensure that the communication interfaces are correctly inserted in the Sunny Island.
W 871	Sic2BatShort	1	Connection of the battery to the Sunny Island Charger 2 is reverse poled or there is a short circuit.	• ⚠ **QUALIFIED PERSON** Ensure that the battery is correctly connected to the **DC** connection of the Sunny Island Charger charge controller. • ⚠ **QUALIFIED PERSON** Disconnect the PV array from the Sunny Island Charger and restart the system. This will ensure that the PV array is not short-circuited.
W 872	Sic3BatVtgHi	1	Battery voltage at the Sunny Island Charger 3 is too high.	• ⚠ **QUALIFIED PERSON** Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ **QUALIFIED PERSON** Ensure that all DC sources and DC loads are correctly configured and connected. • Reset the system. For this, switch off the system, wait ten minutes and restart.
W 873	Sic3PvVtgHi	1	PV voltage at the Sunny Island Charger 3 is too high.	• Contact the SMA Service Line if required.
W 874	Sic3PvVtgLo	1	No PV voltage at the Sunny Island Charger 3 or there is a short circuit.	
W 875	Sic3TmpLo	1	Sunny Island Charger 3 reports: sensor error or device temperature too low.	• ⚠ **QUALIFIED PERSON** Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).
W 876	Sic3TmpHI	1	Sunny Island Charger 3 reports: sensor error or device temperature too high.	• ⚠ **QUALIFIED PERSON** Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).

No.	Name	Level	Cause	Corrective measures
W 877	Sic3ComLoss	1	Last communication with the Sunny Island Charger 3 was more than 24 hours ago.	• ⚠ QUALIFIED PERSON Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly. • ⚠ QUALIFIED PERSON Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ QUALIFIED PERSON Ensure that the communication interfaces are correctly inserted in the Sunny Island.
W 881	Sic4BatShort	1	Connection of the battery to the Sunny Island Charger 4 is reverse poled or there is a short circuit.	• ⚠ QUALIFIED PERSON Ensure that the battery is correctly connected to the **DC** connection of the Sunny Island Charger charge controller. • ⚠ QUALIFIED PERSON Disconnect the PV array from the Sunny Island Charger and restart the system. This will ensure that the PV array is not short-circuited.
W 882	Sic4BatVtgHi	1	Battery voltage at the Sunny Island Charger 4 is too high.	• ⚠ QUALIFIED PERSON Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ QUALIFIED PERSON Ensure that all DC sources and DC loads are correctly configured and connected. • Reset the system. For this, switch off the system, wait ten minutes and restart.
W 883	Sic4PvVtgHi	1	PV voltage at the Sunny Island Charger 4 is too high.	• Contact the SMA Service Line if required.
W 884	Sic4PvVtgLo	1	No PV voltage at the Sunny Island Charger 4 or there is a short circuit.	
W 885	Sic4TmpLo	1	Sunny Island Charger 4 reports: sensor error or device temperature too low.	• ⚠ QUALIFIED PERSON Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).
W 886	Sic4TmpHI	1	Sunny Island Charger 4 reports: sensor error or device temperature too high.	• ⚠ QUALIFIED PERSON Set the Sunny Island Charger to the operating mode "SMA operation" (see the Sunny Island Charger charge controller installation manual).

No.	Name	Level	Cause	Corrective measures
W 887	Sic4ComLoss	1	Last communication with the Sunny Island Charger 4 was more than 24 hours ago.	• ⚠ **QUALIFIED PERSON** Ensure that undamaged CAT5e cables are used for communication and that the cables are plugged in correctly. • ⚠ **QUALIFIED PERSON** Ensure that the configuration of the Sunny Island Charger charge controller with the DIP switches is correct. • ⚠ **QUALIFIED PERSON** Ensure that the communication interfaces are correctly inserted in the Sunny Island.
W 890	BoxMeas	2	Disturbance in voltage or current measurement at the measurement point of the Multicluster Box for the master.	• ⚠ **QUALIFIED PERSON** Ensure that the control and measuring cable between the Multicluster Box and the corresponding Sunny Island of the main cluster is correctly inserted. When doing so, observe the correct sequence of the Multicluster Box connections to the Sunny Island inverters (see the Sunny Island inverter installation manual and the Multicluster Box documentation).
W 891	BoxMeasSlv1	2	Disturbance in voltage or current measurement at the measurement point of the Multicluster Box for slave 1.	
W 892	BoxMeasSlv2	2	Disturbance in voltage or current measurement at the measurement point of the Multicluster Box for slave 2.	

9.4.9 General Category (9xx)

No.	Name	Level	Cause
F 905	CalFail	4	Unable to read calibration data.
F 906	CalFailSlv1	4	Unable to read calibration data of slave 1.
F 907	CalFailSlv2	4	Unable to read calibration data of slave 2.
W 915	TimeOut	1	An error has occurred in the program run sequence.
F 952	ExtBMSTimeout	3	Time for communication with the external battery management has been exceeded.
W 953	WrnExtBMSTmOut	1	Time for communication with the external battery management has been exceeded.

9.5   Frequently Asked Questions (FAQ)

9.5.1   Questions Regarding the Sunny Island

The Sunny Island does not switch off even though you have opened the load-break switch of the BatFuse?

The Sunny Island may still be supplied from the AC side.

- **⚠ QUALIFIED PERSON**
  Switch off all AC sources and disconnect them from the Sunny Island.

The Sunny Island does not switch to energy saving mode?

Another function might have a higher priority than energy saving mode, e.g., equalization charge or full charge.

After automatic disconnection in battery protection mode, the Sunny Island can no longer be started?

- **⚠ QUALIFIED PERSON**
  Only charge the battery when the Sunny Island cannot be switched on (see Section 9.6 "Charging the Battery After Automatic Shutdown in Off-Grid Systems", page 72).

- Switch off all loads.

- If there is a generator in the system, start the generator manually. When doing so, observe the warm-up time of the generator. Five minutes without charge current can result in disconnection of the Sunny Island inverter.

- If sufficient power is available from the generator or the AC sources in the stand-alone grid, e.g., sufficient solar irradiation for PV inverters, switch the Sunny Island on. AC sources in the stand-alone grid can only start feeding in electric current once the Sunny Island has been started and is in operation.

9.5.2   Questions Regarding the Sunny Remote Control

The display of the Sunny Remote Control is dark and nothing is displayed?

The Sunny Island might not be switched on.

- Switch the Sunny Island on (see Section 4.1, page 18).

✖ The Sunny Island does not switch on?

- **⚠ QUALIFIED PERSON**
  Ensure that the fuse in the BatFuse is not defective.

The Sunny Remote Control might not be connected to the Sunny Island.

- **⚠ QUALIFIED PERSON**
  Ensure that the Sunny Remote Control is connected to the Sunny Island.

The RJ45 data cable may be damaged.

- **⚠ QUALIFIED PERSON**
  Replace the RJ45 data cable between the Sunny Remote Control and the Sunny Island.

Parameters cannot be changed?

The parameter might only be displayed in expert mode.

- Switch to expert mode on the Sunny Remote Control (see Section 5.4.1, page 29).

The parameter might only be changeable in standby mode or in the QCG.

- Observe the messages in the display (see Section 5.4.6 "Setting the Parameters", page 31).

The parameter may be hidden as it is not required in the configuration set for the system.

- Ensure that the configuration does not deactivate any functions which are required.

"MMC/SD operation failed !" is shown in the display?

An action with the SD memory card has failed.

- Use a computer to ensure that the SD memory card is free of errors.

- ⚠ **QUALIFIED PERSON**

  Ensure that the data cable between the Sunny Remote Control and the Sunny Island is undamaged and that the plugs are firmly inserted into the pin connectors.

The display shows "WRONG FILE SYSTEM"?

The SD memory card is not formatted with the FAT-16 or FAT-32 file system.

9.5.3 Questions Regarding the Battery

A battery cell is defective?

- ⚠ **QUALIFIED PERSON**

  Remove the defective battery cell from the battery system. This reduces the rated voltage of the battery by the voltage of the battery cell.

- ⚠ **QUALIFIED PERSON**

  In the QCG, set the current rated voltage of the battery under **New Battery** (see Section 10.8 "Replacing the Battery", page 78).

The state of charge of the battery is not 100 percent after completion of a full charge?

The power requirements of the loads might have been so high before completion of the full charge that the battery could not be charged 100 percent.

- If necessary, select the parameter **222.03 AptTmFul** and set to a longer time period.

The battery discharges even though the generator is running?

The Sunny Island may not have connected to the generator.

- Eliminate the cause (see Section 9.5.4 "Questions Regarding the Generator", page 70).

The power of the loads might exceed the power of the generator.

What do you need to do after replacing a battery current sensor?

- ⚠ **QUALIFIED PERSON**

  Calibrate the battery current sensor (see the Commissioning section in the Sunny Island inverter installation manual).

9.5.4 Questions Regarding the Generator

The Sunny Island does not connect to the running generator?

A high output power of the Sunny Island inverter when the battery state of charge is low may lead to the Sunny Island not being able to raise the AC voltage in the stand-alone grid to the AC voltage of the generator. The Sunny Island cancels the synchronization.

- To charge the battery, reduce the power of the loads.

The generator voltage might not be within the thresholds for voltage and frequency.

- Check whether the symbol " ✳ " is displayed permanently in standard mode.

  If the " ✳ " symbol is not displayed, ensure that the fuse is not defective or the circuit breaker is activated.

  If the " ✳ " symbol is not displayed permanently, the generator voltage is sporadically outside the thresholds.

  - ⚠ **QUALIFIED PERSON**

    Set the thresholds for voltage and frequency of the generator voltage (see the Sunny Island inverter installation manual).

  If the " ✳ " symbol is displayed permanently, the Sunny Island is in the warm-up period or is blocked for connection. Tip: Check whether the Sunny Remote Control displays the " ⁝ " warning symbol in standard mode.

The Sunny Island only connects to the generator for a short time?

The generator may be overloaded.

- Select the parameter **234.03 GnCurNom** and set it to 75% of the rated current of the generator.
- If possible, reduce the power of the loads.

The maximum permissible generator voltage may be set too low.

- **⚠ QUALIFIED PERSON**
  Select the parameter **234.02 GnVtgMax** and set to the maximum generator voltage.

The minimum frequency for the generator voltage may be set too high.

- **⚠ QUALIFIED PERSON**
  Select the parameter **234.05 GnFrqMin** and set to the minimum frequency of the generator voltage.

The permitted time **234.14 GnRvTm** for reverse power might have been exceeded.

- Check whether warning **W401** is registered in the menu **420# Error history**. Tip: If a warning was registered, the warning symbol " ! " is shown in the standard mode of the Sunny Remote Control.
- Select the **540.02 GnAck** parameter and set to **Ackn**. This acknowledges the generator error.

The Sunny Island does not reconnect to the generator after a disconnection from the generator due to noncompliance with the thresholds for voltage and frequency?

The Sunny Island is switched with a hysteresis, i.e., the thresholds for connection do not correspond to the thresholds for disconnection.

- To unload the generator, disconnect unnecessary loads.
- Wait until the voltage and frequency have reached the nominal values.

9.5.5   Questions Regarding Multicluster Systems

Extension clusters remain in standby mode even though the main cluster is in inverter mode?

The data cable between the masters of the individual clusters might not be connected. The master of the main cluster cannot forward the "Start" command to the masters of the extension clusters.

The multicluster system is not supplying full power?

An extension cluster or individual Sunny Island inverters of an extension cluster might have failed.

High levels of energy are transferred between the clusters in the multicluster system?

The state of charge of the batteries might differ temporarily. The off-grid system equalizes different states of charge automatically.

The nominal frequencies and nominal voltages may be defined differently.

- Set the frequencies and voltages in the **210# Inverter Settings** menu to the same values for all masters.

The battery capacities might differ significantly.

- **⚠ QUALIFIED PERSON**
  Distribute the battery capacities to the clusters as evenly as possible.

Individual battery cells of a battery might have failed.

- **⚠ QUALIFIED PERSON**
  Disconnect defective battery cells and set the new rated voltage and capacity (see Section 10.8 "Replacing the Battery", page 78).

9.6 Charging the Battery After Automatic Shutdown in Off-Grid Systems

⚠ QUALIFIED PERSON

When a battery undergoes a deep discharge, the Sunny Island shuts down automatically and you cannot restart the Sunny Island. In order to start the Sunny Island again after an automatic shutdown, you must charge the battery in emergency charge mode.

In emergency charge mode, the Sunny Island does not form a separate stand-alone grid, and you can charge the battery using a generator. Battery management is active in emergency charge mode and the Sunny Island charges the battery in accordance with the parameter settings. In standby mode or in the QCG, you can adjust the parameters for the battery, e.g., the battery nominal voltage, if a battery cell fails.

ⓘ Restricted management functions in emergency charge mode

In emergency charge mode, the generator management is not active. The limits for voltage, current and frequency are not monitored. Set the maximum current consumption of the Sunny Island inverter for charging the battery in emergency charge mode. The Sunny Island does not record additional strain on the generator due to loads.

Requirement:

☐ The Sunny Remote Control must be connected to the master.

☐ The system must be an off-grid system.

☐ Lead-acid batteries must be connected.

Procedure

• Connect the generator to connection **AC1**.

• Charge the battery.

• Disconnect the generator from connection **AC1**.

• Start the off-grid system.

Connecting the generator to connection AC1

1. **⚠ WARNING**

   Danger to life from electric shock due to high voltages

   High voltages are present on the AC power cables and on the control cables. Touching live parts can result in death or serious injury due to electric shock.

   • Disconnect the Sunny Island from voltage sources (see Section 8, page 40).

2. If a generator is installed permanently in the off-grid system, bridge the connections **AC1** and **AC2**.

3. If a mobile generator is used, connect the generator to connection **AC1** (see the Sunny Island inverter installation manual).

4. Close the Sunny Island (see Commissioning section in the Sunny Island inverter installation manual).

Charging the battery

1. Switch off all loads.

2. Connect or close all circuit breakers and fuse switch-disconnectors for energy sources.

3. Quickly connect the load-break switch of the BatFuse and close the BatFuse (see BatFuse installation manual).

4. Start the generator.

5. Switch the Sunny Island on (see Section 4.1, page 18).

6. If the Sunny Remote Control displays **<Init System>** ⏎ , press and hold the button.

   ☑ The Sunny Remote Control displays the QCG.

   ```
   Select option
   001#01   [█ooooooo]
                  StartMenu
            Start System⏎
   ```

7. Select the menu **Emerg Charge** and press the button.

   ```
   Select option
   001#01    6oooooo█]
                  StartMenu
            Emerg Charge⏎
   ```

8. Confirm with **Y**.

   ☑ The Sunny Remote Control shows the **ExtCurMax** parameter.

   ```
   Emerg. Charg Mode
   005#22      <Set>⏎
            ExtCurMax
            0.0 [A]
   ```

9. Set the AC current of the connected generator and press the button.

10. Confirm the AC current with **Y**.

11. Turn the button to the right and confirm the message **Emerg. Charge Mode Start?**

   ```
   Emerg. Charg Mode
   Start? <accept Y/N>
   ```

   ℹ️ **Interrupting the emergency charge mode**

   You can interrupt the emergency charge mode, e.g., to add diesel to a generator.

   • Press and hold the button.

     ☑ Emergency charge mode is stopped.

   • Press and hold the button.

     ☑ Emergency charge mode is in operation.

Disconnecting the generator from connection AC1

1. Switch the Sunny Island off (see Section 4.4, page 19).

2. Ensure that the generator is stopped permanently.

3. ⚠️ **WARNING**

   Danger to life from electric shock due to high voltages

   High voltages are present on the AC power cables and on the control cables. Touching live parts can result in death or serious injury due to electric shock.

   • Disconnect the Sunny Island from voltage sources (see Section 8, page 40).

4. If the connections **AC1** and **AC2** are bridged, remove the bridge.

5. If a mobile generator is used, disconnect the generator from connection **AC1**.

6. Close the Sunny Island (see Commissioning section in the Sunny Island inverter installation manual).

Starting the off-grid system

1. Connect or close all circuit breakers and fuse switch-disconnectors.

2. Start the off-grid system (see Section 4.2, page 18).

9.7 Changing Slave Addresses in a Cluster

⚠ **QUALIFIED PERSON**

If you want to change slave addresses (e.g., after replacing a Sunny Island inverter), you can assign the slaves a new address using the QCG. Only the address is changed, all other configurations remain as they were, e.g., assignment of the clusters in a multicluster system. When replacing a master, you must reconfigure the cluster (see the quick reference guide for the relevant system for configuring single-cluster operation or multicluster operation).

Requirements:

☐ All Sunny Island inverters must be switched off.

☐ A Sunny Remote Control is connected to the master only.

Procedure

1. Switch the slave on.

2. Switch the master on.

3. When the Sunny Remote Control shows **<Init System>**, press and hold the button on the Sunny Remote Control.

   ☑ An acoustic signal sounds three times and the QCG starts.

4. Select the **NewClstCfg** menu on the Sunny Remote Control and confirm with **Y**.

5. Select number of line conductors in the system:

   • For a single-phase system, set **1Phs** and press the button.

   • For a three-phase system, set **3Phs** and press the button.

6. Confirm the question **Setup new cluster ?** with **Y**.

7. Wait until the inverter LED of slave 1 is flashing and the Sunny Remote Control shows the message **To identify Slave1 press Tss on the Slv**.

8. Press the start-stop button on slave 1.

   ☑ The QCG configures slave 1.
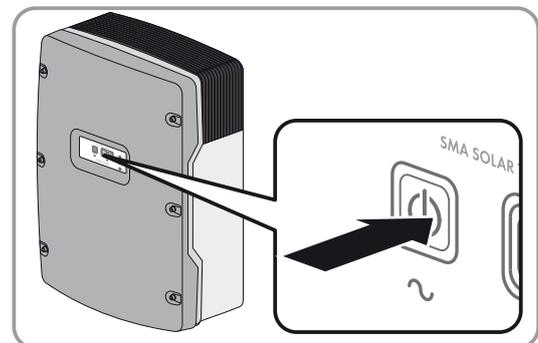
9. To configure slave 2, wait until the inverter LED of slave 2 is flashing and the Sunny Remote Control shows the message **To identify Slave2 press Tss on the Slv**.

10. Press the start-stop button on slave 2.

    ☑ An acoustic signal sounds and the QCG configures slave 2.

11. Press the button on the Sunny Remote Control. This closes the QCG.

☑ The Sunny Remote Control switches from display mode to standard mode.

10 Cleaning and Maintenance

10.1 Cleaning and Checking the Sunny Island Inverter Enclosure

- If the enclosure is heavily soiled, use a soft brush to remove the soiling.
- If the enclosure is dusty, remove the dust with a dry soft cloth. Do not use any solvents, abrasives or corrosive liquids.

10.2 Cleaning the Sunny Remote Control

- Clean the Sunny Remote Control with a dry soft cloth. Do not use any solvents, abrasives or corrosive liquids.

10.3 Performing a Manual Equalization Charge in the Off-Grid System

After extended periods without charging (e.g., systems operated seasonally), perform a manual equalization charge at the end or start of the season.

Requirement:

☐ The Sunny Remote Control must be in standard mode or user mode.

Procedure

1. Select the display page **Battery** on the Sunny Remote Control and press the button (see Section 5.3.1 "Displaying Parameters and Operating and Setting the System", page 27).
2. Select the parameter **Equalize** and set to **Start**.

10.4 Checking the Function

- For the first six months after installation of new systems, check every week whether error messages have been logged. This will reveal any hidden errors in the installation or configuration:
  - Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
  - Select the menu **420# Error history** and check whether any error messages have been logged.
  - If error messages have been logged, eliminate the cause (see Section 9 "Troubleshooting", page 41).
- Check every six months whether error messages have been logged:
  - Switch to installer mode on the Sunny Remote Control (see Section 5.4.1, page 29).
  - Select the menu **420# Error history** and check whether any error messages have been logged.
  - If error messages have been logged, eliminate the cause (see Section 9.4 "Logged Warning Messages and Error Messages", page 46).

10.5 Checking the Connections

⚠ **QUALIFIED PERSON**

1. ⚠ **WARNING**

   Danger to life from electric shock due to live voltage

   High voltages are present inside the Sunny Island. When the enclosure lid is removed, live components can be touched which can result in death or serious injury due to electric shock.
   - Disconnect the Sunny Island from voltage sources (see Section 8, page 40).
2. Ensure that the cables on the **DC+** and **DC–** connections are securely fastened (torque: 12 Nm).
3. Ensure that the connections are free of corrosion.
4. Ensure that the cables in the **AC1** and **AC2** connections are securely fastened.
5. Close the Sunny Island (see the Sunny Island inverter installation manual).
6. Switch on all load-break switches and circuit breakers.

10.6 Checking and Maintaining the Battery

⚠ **QUALIFIED PERSON**

> ⚠ **WARNING**
>
> **Chemical burns and poisoning due to battery electrolyte**
>
> If handled inappropriately, battery electrolyte can cause irritation to the eyes, respiratory system, and skin, and it can be toxic. This may result in blindness and serious chemical burns.
>
> - Protect the battery enclosure against destruction.
> - Do not open or deform the battery.
> - Do not throw batteries into fire. Batteries may explode in fire.
> - Whenever working on the battery, wear suitable personal protective equipment such as rubber gloves, apron, rubber boots, and goggles.
> - Rinse acid splashes thoroughly with clear water and consult a doctor.
> - Install, operate, maintain, and dispose of the battery according to the manufacturer's specifications.

> ⚠ **WARNING**
>
> **Risk of injury due to short-circuit currents**
>
> Short-circuit currents in the battery can cause heat build-up and electric arcs. Burns or eye injuries due to flashes may result.
>
> - Remove watches, rings, and other metal objects.
> - Use insulated tools.
> - Do not place tools or metal parts on the battery.

Requirement:

☐ The Sunny Remote Control is in user mode.

Procedure

1. Check whether the current state of the battery corresponds with the expected state:
   - Select the display page **Battery** on the Sunny Remote Control.
   - Select the parameter **Cycle** and compare the value with the expected nominal energy throughputs.
   - Select the parameter **Health (SOH)** and compare with the expected usable battery capacity.

   If the current state of the battery does not correspond with the expected state, carry out the following steps:
   - Ensure that the requirements for the ambient temperature of the battery are met (see documentation of the battery manufacturer).
   - Check and optimize the battery management settings.
   - If you cannot determine the cause for the deviation, contact the SMA Service Line.
2. Stop the system and switch off the Sunny Island (see Section 6, page 33).
3. Open the load-break switch of the BatFuse and secure against reconnection.
4. Check and maintain the battery (see documentation of the battery manufacturer).
5. Quickly connect the load-break switch of the BatFuse and close the BatFuse (see BatFuse installation manual).
6. Start the system.

10.7 Cleaning the Fans

⚠ QUALIFIED PERSON

If the Sunny Remote Control shows the warning **W137 Derate** exceptionally often, one of the fans is probably defective or blocked.

Procedure

1. **⚠ WARNING**

   Danger to life from electric shock due to live voltage

   High voltages are present inside the Sunny Island. When the enclosure lid is removed, live components can be touched which can result in death or serious injury due to electric shock.

   • Disconnect the Sunny Island from voltage sources (see Section 8, page 40).

2. Wait for the fans to stop rotating.

3. Check whether the fan guard is dusty or badly clogged.

   If the fan guard is dusty, clean it with a vacuum cleaner or a soft brush.

   If the fan guard is heavily soiled, remove it and clean it:

   • Use a screwdriver to push the two locking tabs at the right-hand edge of the fan guard to the right and remove them from the retainer.
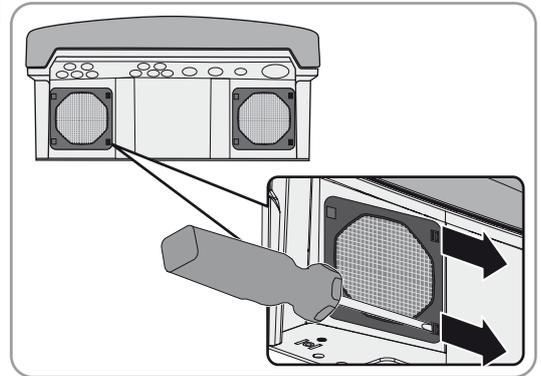
   • Carefully remove the fan guard.

   • Clean the fan guard with a soft brush, a paint brush, a cloth or compressed air.

4. Check whether the fan is soiled.

   If the fan is soiled, remove the fan:

   • If a fan guard is fitted, remove the fan guard (see step 3).

   • Push the front locking tabs of the fan backwards and the rear locking tabs of the fan forwards.
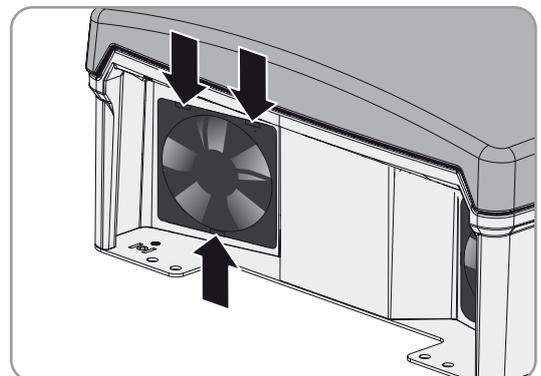
   • Slowly remove the fan from the Sunny Island.

- Release and remove the fan plug.
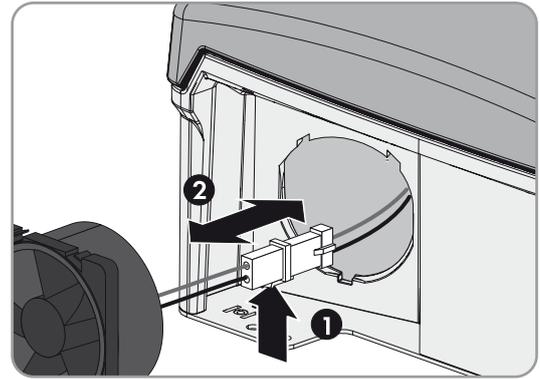
5.   *NOTICE*

Damage to the fan due to compressed air

- Clean the fan with a soft brush, a paint brush, or a damp cloth.

6. Insert the fan plug into the jack until it snaps into place.

7. Insert the fan into the Sunny Island until the fan audibly snaps into place.

8. Press the fan guard into the bracket until it audibly snaps into place.

10.8 Replacing the Battery

⚠ **QUALIFIED PERSON**

⚠ **WARNING**

Risk of injury due to short-circuit currents

Short-circuit currents in the battery can cause heat build-up and electric arcs. Burns or eye injuries due to flashes may result.

- Remove watches, rings, and other metal objects.
- Use insulated tools.
- Do not place tools or metal parts on the battery.

⚠ **WARNING**

Danger to life due to incompatible lithium-ion battery

An incompatible lithium-ion battery can lead to a fire or an explosion. With incompatible lithium-ion batteries, it is not ensured that the battery management is intrinsically safe and will protect the battery.

- Ensure that the battery complies with the locally applicable standards and directives and is intrinsically safe.
- Ensure that the lithium-ion batteries are approved for use with the Sunny Island.

  The list of lithium-ion batteries approved for the Sunny Island is updated regularly (see the Technical Information "List of Approved Lithium-Ion Batteries" at www.SMA-Solar.com).

- If no lithium-ion batteries approved for the Sunny Island can be used, use lead-acid batteries.

> **⚠ WARNING**
>
> **Chemical burns and poisoning due to battery electrolyte**
>
> If handled inappropriately, battery electrolyte can cause irritation to the eyes, respiratory system, and skin, and it can be toxic. This may result in blindness and serious chemical burns.
>
> - Protect the battery enclosure against destruction.
> - Do not open or deform the battery.
> - Do not throw batteries into fire. Batteries may explode in fire.
> - Whenever working on the battery, wear suitable personal protective equipment such as rubber gloves, apron, rubber boots, and goggles.
> - Rinse acid splashes thoroughly with clear water and consult a doctor.
> - Install, operate, maintain, and dispose of the battery according to the manufacturer's specifications.

> **NOTICE**
>
> **Damage to the battery due to incorrect settings**
>
> The battery parameters influence the charging behavior of the Sunny Island. The battery will be damaged by incorrect settings of the parameters for battery type, nominal voltage and capacity.
>
> - Ensure that the values recommended by the battery manufacturer are set for the battery (refer to the technical data of the battery in the manufacturer documentation).

Procedure

1. Stop the system and switch off the Sunny Island (see Section 6, page 33).
2. Ensure that the battery is not grounded unintentionally.

   If the battery is unintentionally grounded, identify the connection between the battery and ground potential and remove the unintentional connection. This helps to prevent electric shock caused by malfunction of other system devices.
3. Open the load-break switch of the BatFuse and secure against reconnection.
4. Remove the battery to be replaced (see battery manufacturer's instructions).
5. Mount and connect the new battery (see manuals of the battery manufacturer). The battery must comply with the technical requirements of the Sunny Island inverter (refer to the Sunny Island inverter installation manual for technical data of the **DC** connection).
6. Quickly connect the load-break switch of the BatFuse and close the BatFuse (see BatFuse installation manual).
7. Switch the Sunny Island on (see Section 4.1, page 18).
8. If the Sunny Remote Control displays **<Init System>** ⏧ , press and hold the button until the Sunny Remote Control displays the QCG.
9. Select the menu **New Battery** and press the button.
10. Confirm with **Y**.
11. Select the parameter **BatTyp**, set the battery type as follows and confirm with **Y**.

Value	Explanation
VRLA	Lead-acid battery with immobilized electrolyte in AGM (Absorbent Glass Mat Separator) or gel
FLA	Lead-acid battery with liquid electrolyte
LiIon_Ext-BMS	Lithium-ion battery

12. Make the following settings for lead-acid batteries.

    • Select the parameter **BatVtgLst**, set the battery voltage and confirm with **Y**.

    • Select the parameter **BatCpyNom**, set the C10 capacity of the battery (see the Sunny Island inverter installation manual for how to calculate the battery capacity) and confirm the battery capacity with **Y**.

13. Make the following settings for lithium-ion batteries.

    • Select the parameter **BatCpyNom**, set the C10 capacity of the battery (see the Sunny Island inverter installation manual for how to calculate the battery capacity) and confirm the battery capacity with **Y**.

14. Select the last page and confirm the question **Setup New Battery** with **Y**.

11 Decommissioning

11.1 Disassembling the Sunny Island

⚠ QUALIFIED PERSON

1. **⚠ WARNING**

   Danger to life from electric shock due to live voltage

   High voltages are present inside the Sunny Island. When the enclosure lid is removed, live components can be touched which can result in death or serious injury due to electric shock.

   • Disconnect the Sunny Island from voltage sources (see Section 8, page 40).

2. Remove all cables from the Sunny Island.

3. Close the Sunny Island.

4. Remove the ventilation grids laterally.
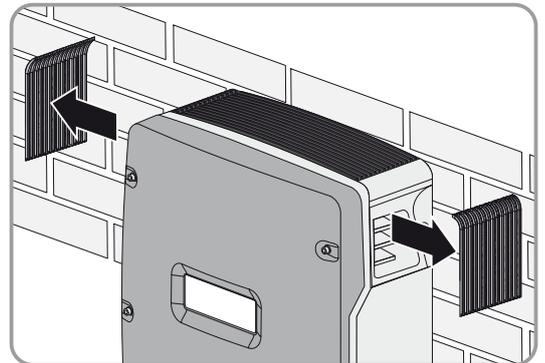
5. If the Sunny Island is protected against theft, loosen the security screws.
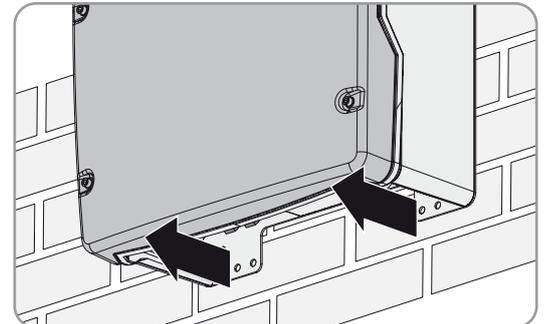
6. Loosen the screws on both sides between the Sunny Island and the wall mounting bracket using an Allen key (AF 5).
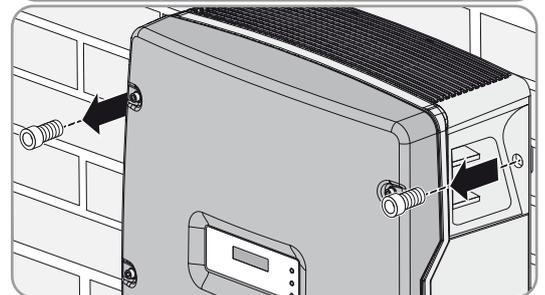
7. **⚠ CAUTION**

Risk of injury due to the heavy weight of the Sunny Island inverter

- Keep in mind the weight of the Sunny Island inverter.
- With the SI3.0M-11 and SI4.4M-11, remove the Sunny Island vertically upwards from the wall mounting bracket. To do this, use the side recess grips. Keep the Sunny Island in a horizontal position when moving it.
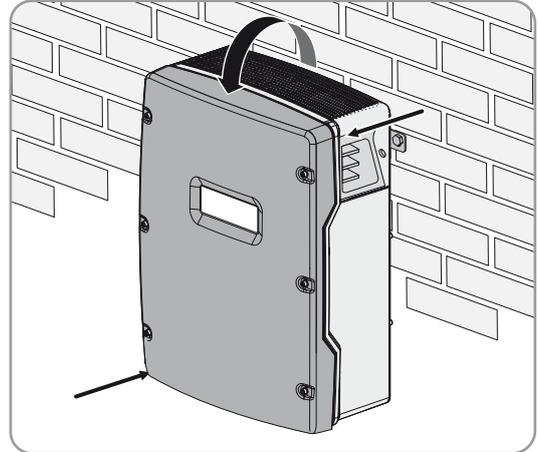
- With the SI6.0H-11 and SI8.0H-11, remove the Sunny Island vertically upwards from the wall mounting bracket. To do this, use the side recess grips or a steel rod (diameter: maximum 30 mm). Keep the Sunny Island in a horizontal position when moving it.
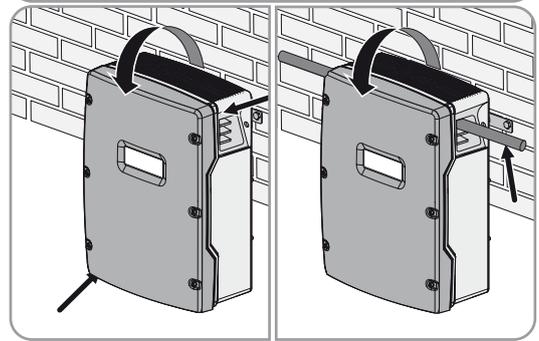
11.2 Packaging the Sunny Island

1. Remove the cable glands from the Sunny Island.
2. Pack the Sunny Island and the cable glands. For this, use the original packaging or packaging that is suitable for the weight and dimensions of the Sunny Island inverter (for the technical data, see the Sunny Island installation manual).

11.3 Disposing of the Sunny Island

- Dispose of the Sunny Island in accordance with the locally applicable disposal regulations for electronic waste.

12 Directory of the Parameters in User Mode

12.1 Inverter Category

Display page

Name	Description	Value	Explanation	🏃	🗙
Tot.Power	Total active power of the Sunny Island inverters in kW This parameter is hidden in multicluster systems.	–	–	✔	✔
MC.Power	Total active power of the multicluster system in kW This parameter is hidden in single systems and single-cluster systems.	–	–	✘	✔
Timer mode	Time-controlled operation of the Sunny Island in off-grid systems	Enable	The Sunny Island is in time-controlled operation.	✘	✔
		Disable	Time-controlled operation is disabled.		

Setting pages

Name	Description	Value	Explanation	🏃	🗙
Restart	Restart of the Sunny Island inverter	Yes	Initiate restart.	✘	✔
		No	Do not initiate a restart.		
Str.Date	Start date for time-controlled operation of the Sunny Island in dd.mm.yy In time-controlled operation, the Sunny Island switches from standby mode to operation for the first time on the start date.	–	–	✘	✔
Start time	Start time for time-controlled operation, in hh:mm:ss	–	–	✘	✔
Run time	Run time for time-controlled operation The Sunny Island switches to operation from the start time for the configured run time.	–	–	✘	✔
Repetition	Repetition cycle for time-controlled operation	Single	Configures one-time operation on the start date.	✘	✔
		Daily	Configures daily operation from the start date.		
		Weekly	Configures weekly operation from the start date. The start date determines the weekday.		
Timed start	Time-controlled operation	Disable	Disables time-controlled operation.	✘	✔
		Enable	Enables time-controlled operation.		

12.2 Battery Category

Display pages

Name	Description	Value	Explanation	🏃	✗
StateOfCharge	Current battery state of charge in %	–	–	✔	✔
Voltage	Battery voltage in V	–	–	✔	✔
PowerOut	Current discharge power of the battery in kW	–	If the value is positive, the battery is discharging. If the value is negative, the battery is charging.	✔	✔
Mode	Current charging process	Boost	Boost charge is enabled.	✔	✔
		Full	Full charge is enabled.		
		Float	Float charge is enabled.		
		Equalize	Equalization charge is enabled.		
		Silent	The Sunny Island has switched to energy saving mode.		
Remain time	Remaining time of current charging process in hh:mm:ss	–	–	✔	✔
Next equal	Remaining time until next equalization charge in days	–	–	✔	✔
Health (SOH)	Ratio of currently usable capacity to nominal capacity, in %	–	–	✔	✔
Cycle	Nominal energy throughputs of the battery A nominal energy throughput is the calculated result of one full charge and discharge of the battery.	–	–	✔	✔

Setting page

Name	Description	Value	Explanation	🏃	✗
Equalize	Manual equalization charge	Start	Starts the equalization charge.	✔	✔
		Stop	Stops the equalization charge.		
		Idle	Remains idle until the requirements for an equalization charge are met.		

12.3 Generator Category

Display pages

The Sunny Remote Control displays these pages whenever a generator has been connected and configured.

Name	Description	Value	Explanation	🚶	⚒
Power	Active power of the generator in kW	–	–	✖	✔
Voltage	Generator voltage	–	–	✖	✔
Frequency	Frequency of generator voltage	–	–	✖	✔
Request by	Source for generator request	None	Generator has not been requested.	✖	✔
		Bat	Electricity generator was requested due to state of charge.		
		Lod	Generator was requested due to load.		
		Tim	Generator requested due to time.		
		Run1h	Generator manually requested for one hour.		
		Start	Generator was started manually.		
		ExtSrcReq	Generator was requested externally.		
Run Time	Current run time of the generator in hh:mm:ss	–	–	✖	✔
Energy	Energy supplied by the generator since the last start in kWh	–	–	✖	✔
No.OfStarts	Number of generator starts	–	–	✖	✔
Op.Hours	Total operating hours of the generator	–	–	✖	✔
Tot.Energy	Total energy supplied by the generator in kWh	–	–	✖	✔

Setting page

The Sunny Remote Control displays these pages whenever a generator has been connected and configured.

Name	Description	Value	Explanation	🚶	⚒
Mode	Generator control	Auto	Enable automatic generator operation.	✖	✔
		Stop	Stops the generator.		
		Start	Starts the generator.		
		Run1h	Starts the generator for one hour.		
Error	Error confirmation for generator error	Ackn.	Acknowledges the error.	✖	✔

12.4 Grid Category

Display page

The Sunny Remote Control displays these pages in a battery backup system.

Name	Description	👤	⚡
Power	Active power of utility grid in kW	✓	✖
Voltage	Voltage of utility grid in V	✓	✖
Frequency	Frequency of the utility grid, in Hz	✓	✖

Setting page

The Sunny Remote Control displays these pages in a battery backup system.

Name	Description	Value	Explanation	👤	⚡
Mode	Manual connection to the utility grid	Auto	Enables automatic connection to the utility grid.	✓	✖
		Stop	Disconnects the Sunny Island from the utility grid.		
		Start	Connects the Sunny Island to the utility grid.		

12.5 SI Charger Category

Display page

The Sunny Remote Control only shows this page if at least one Sunny Island Charger is used in the off-grid system.

Name	Description	👤	⚡
Tot.Power	Total active power of all Sunny Island Charger charge controllers in kW	✖	✓
Tot.Energy	Total energy of all Sunny Island Charger charge controllers in kWh	✖	✓
Day Energy	Current daily energy of all Sunny Island Charger charge controllers in kWh	✖	✓

12.6 Self Cnsmptn Category

Display pages

The Sunny Remote Control displays these pages if the PV generation in a system for increased self-consumption is transferred to the Sunny Island.

Name	Description	👤	⚡
IncPower	Current increased self-consumption in kW	✓	✖
IncToday	Today's increased self-consumption in kWh	✓	✖
IncEnergy	Total increased self-consumption in kWh	✓	✖
Energy	Total self-consumption in kWh	✓	✖

12.7 Grid Cnsmptn Category

Display page

The Sunny Remote Control displays these pages in a system for increased self-consumption.

Name	Description	🧍	⚡
Power	Power currently consumed in kW	✓	✗
Energy	Energy drawn from the utility grid in kWh	✓	✗

12.8 Grid Feed Category

Display page

The Sunny Remote Control displays these pages in a system for increased self-consumption.

Name	Description	🧍	⚡
Power	Current feed-in power in kW	✓	✗
Energy	Energy fed in in kWh	✓	✗

12.9 Loads Category

Display page

The Sunny Remote Control displays these pages if the PV generation in a system for increased self-consumption is transferred to the Sunny Island.

Name	Description	🧍	⚡
Power	Current power of the loads in kW	✓	✗
Energy	Power consumed by the loads in kWh	✓	✗
ConState	Reserved for future applications	✓	✗

12.10 PV System Category

Display page

The Sunny Remote Control displays these pages if the PV generation in a system for increased self-consumption is transferred to the Sunny Island.

Name	Description	🧍	⚡
Power	Current power of the PV system in kW	✓	✗
Energy	Power fed in by the PV system in kWh	✓	✗
ConState	Reserved for future applications	✓	✗

12.11 System Category

Display page

Name	Description	Value	Explanation	👤	⚒
Type	Configuration of the system	1Phase1	Single-phase system with one Sunny Island	✔	✔
		1Phase2	Single-phase system with two Sunny Island inverters		
		1Phase3	Single-phase system with three Sunny Island inverters		
		3Phase	Three-phase system		
		MC-Box	Multicluster system		
Box Type	Type of connected Multicluster Box This parameter is only shown in multicluster systems.	MC-Box-6	Multicluster Box 6	✘	✔
		MC-Box-12	Multicluster Box 12		
		MC-Box-36	Multicluster Box 36		
Device	Type of cluster This parameter is only shown in multicluster systems.	MainClst	Sunny Remote Control is connected to the main cluster.	✘	✔
		ExtnClst	The Sunny Remote Control is connected to the extension cluster.		

12.12 Time Category

Display page

Name	Description	👤	⚒
Date	Date in dd.mm.yyyy	✔	✔
Time	Time in hh:mm:ss	✔	✔

Setting page

Name	Description	Explanation	👤	⚒
Date	Date in dd.mm.yyyy	Set the date.	✔	✔
Time	Time in hh:mm:ss	Set the time.	✔	✔

12.13 Identity Category

Display page

Name	Description	👤	⚒
Serial No.	Serial number	✔	✔
Firmware	Firmware version	✔	✔

12.14 Password Category

Display page

Name	Description	Value	Explanation	🗼	⚒
Level	Current password level	User	Sunny Remote Control is in user mode.	✓	✓

Setting page

Name	Description	🗼	⚒
Set	Enter the installer password.	✓	✓
Runtime	Displays the operating hours	✓	✓

13 Directory of the Parameters in Installer Mode and Expert Mode

13.1 Display Values

13.1.1 Inverter (110#)

111# Total

No.	Name	Description	🏃	☒
111.01	TotInvPwrAt	Total active power of Sunny Island inverters in a cluster in kW.	✔	✔
111.02	TotInvCur	Total current of Sunny Island inverters in a cluster in A	✔	✔
111.03	TotInvPwrRt	Total reactive power of Sunny Island inverters in a cluster in kVAr (expert mode)	✔	✔
111.05	TotLodPwr	Total current active power of the loads in a cluster in kW	✔	✔
111.06	TotMccLodPwr	Total current active power of the loads in a multicluster system in kW	�’	✔

112# Device

No.	Name	Description	Value (plain text no.)	Explanation	🏃	☒
112.01	InvOpStt	Operating state of the Sunny Island inverter	Init (1)	Initialization	✔	✔
			Startup (2)	Switch from standby to operation		
			Standby (3)	Standby		
			Run (4)	Operation		
			I-Loop (5)	Current-controlled generator operation		
			Error (6)	Error status		
112.02	InvPwrAt	Active power of the Sunny Island inverter in kW	–	–	✔	✔
112.03	InvVtg	Voltage of the Sunny Island inverter in V	–	–	✔	✔
112.04	InvCur	Current of the Sunny Island inverter in A	–	–	✔	✔
112.05	InvFrq	Voltage frequency of the Sunny Island inverter in Hz	–	–	✔	✔
112.06	InvPwrRt	Reactive power of the Sunny Island inverter in kVAr (expert mode)	–	–	✔	✔
112.07	Rly1Stt	Status of multifunction relay 1	Off	Multifunction relay is deactivated.	✔	✔
			On	Multifunction relay is activated.		

No.	Name	Description	Value (plain text no.)	Explanation	🧍	⚒
112.08	Rly2Stt	State of multifunction relay 2	Off	Multifunction relay is deactivated.	✓	✓
			On	Multifunction relay is activated.		
112.12	TrfTmp	Temperature of the transformer in °C (expert mode) The temperature of the transformer is displayed in the master of a cluster.	–	–	✓	✓
112.13	HsTmp	Temperature of the heat sink in the Sunny Island in °C (expert mode) The temperature of the heat sink is displayed in the master of a cluster.	–	–	✓	✓

113# Slave1

No.	Name	Description	Value	Explanation	🧍	⚒
113.01	InvOpSttSlv1	Operating state of slave 1	Init (1)	Initialization	✓	✓
			Startup (2)	Switch from standby to operation		
			Standby (3)	Standby		
			Run (4)	Operation		
			I-Loop (5)	Current-controlled generator operation		
			Error (6)	Error status		
113.02	InvPwrAtSlv1	Active power of slave 1 in kW	–	–	✓	✓
113.03	InvVtgSlv1	Voltage of slave 1 in V	–	–	✓	✓
113.04	InvCurSlv1	Current of slave 1 in A	–	–	✓	✓
113.05	InvPwrRtSlv1	Reactive power of slave 1 in kVAr (expert mode)	–	–	✓	✓
113.06	Rly1SttSlv1	Status of multifunction relay 1 in slave 1	Off	Multifunction relay is deactivated.	✓	✓
			On	Multifunction relay is activated.		
113.07	Rly2SttSlv1	Status of multifunction relay 2 in slave 1	Off	Multifunction relay is deactivated.	✓	✓
			On	Multifunction relay is activated.		
113.09	TrfTmpSlv1	Temperature of the transformer in slave 1 in °C (expert mode)	–	–	✓	✓
113.10	HsTmpSlv1	Temperature of the heat sink in slave 1 in °C (expert mode)	–	–	✓	✓

114# Slave2

No.	Name	Description	Value	Explanation	🏃	⚡
114.01	InvOpSttSlv2	Operating state of slave 2	Init (1)	Initialization	✓	✓
			Startup (2)	Switch from standby to operation		
			Standby (3)	Standby		
			Run (4)	Operation		
			I-Loop (5)	Current-controlled generator operation		
			Error (6)	Error status		
114.02	InvPwrAtSlv2	Active power of slave 2 in kW	–	–	✓	✓
114.03	InvVtgSlv2	Voltage of slave 2 in V	–	–	✓	✓
114.04	InvCurSlv2	Current of slave 2 in A	–	–	✓	✓
114.05	InvPwrRtSlv2	Reactive power of slave 2 in kVAr (expert mode)	–	–	✓	✓
114.06	Rly1SttSlv2	State of multifunction relay 1 in slave 2	Off	Multifunction relay is deactivated.	✓	✓
			On	Multifunction relay is activated.		
114.07	Rly2SttSlv2	State of multifunction relay 2 in slave 2	Off	Multifunction relay is deactivated.	✓	✓
			On	Multifunction relay is activated.		
114.09	TrfTmpSlv2	Temperature of the transformer in slave 2 in °C (expert mode)	–	–	✓	✓
114.10	HsTmpSlv2	Temperature of the heat sink in slave 2 in °C (expert mode)	–	–	✓	✓

13.1.2 Battery (120#)

No.	Name	Description	Value (plain text no.)	Explanation	🏃	⚡
120.01	BatSoc	State of charge of the battery (SOC) based on the nominal battery capacity in %	0% to 100%	–	✓	✓
120.02	BatVtg	Battery voltage in V	–	–	✓	✓
120.03	BatChrgVtg	Charging voltage setpoint in V	–	–	✓	✓
120.04	AptTmRmg	Remaining absorption time upon completion of the active charging process **120.05 BatChrgOp** in hh:mm:ss	–	–	✓	✓

No.	Name	Description	Value (plain text no.)	Explanation	🏗	⚒
120.05	BatChrgOp	Active charging process	Boost (1)	Fast charge	✓	✓
			Full (2)	Full charge		
			Float (3;7)	Float charge		
			Equalize (4;5)	Equalization charge		
			Silent (6;8)	Energy saving mode active		
120.06	TotBatCur	Total battery current of the cluster in A	–	–	✓	✓
120.07	BatTmp	Battery temperature in °C	–	–	✓	✓
120.08	RmgTmFul	Remaining time until next full charge in days	–	–	✓	✓
120.09	RmgTmEqu	Remaining time until next equalization charge in days	–	–	✓	✓
120.10	AptPhs	Status of the absorption phase	Off (1)	Absorption phase not active	✓	✓
			On (2)	Absorption phase is active		
120.11	BatSocErr	Estimated error of the state of charge (SOC) in % (expert mode)	–	–	✓	✓
120.12	BatCpyThrpCnt	Nominal energy throughputs of the battery A nominal energy throughput is the calculated result of one full charge and discharge of the battery.	–	–	✓	✓

13.1.3 External (130#)

131# Total

No.	Name	Description	🏗	⚒
131.01	TotExtPwrAt	Total active power of external energy source in kW	✓	✓
131.02	TotExtCur	Total current of external energy source in A	✓	✓
131.03	TotExtPwrRt	Total reactive power of the external energy source in kVAr	✓	✓

132# Grid State

No.	Name	Description	Value (plain text no.)	Explanation	🧍	⚡
132.01	GdStt	Status of the management for the operation on the utility grid (expert mode)	Off (1)	Grid operation is disabled.	✓	✓
			Init (2)	Utility grid has been detected.		
			Detect (3)	Grid monitoring started.		
			Wait (4)	Waiting until the stand-alone grid is synchronized with the utility grid.		
			RunVExt (5)	The stand-alone grid is synchronized with and connected to the utility grid.		
			Feed (6)	Grid feed-in into the utility grid is possible.		
			Silent (7)	The Sunny Island is in energy saving mode.		
			SiStr (8)	The Sunny Island is switching to energy saving mode.		
			SiStp (9)	The Sunny Island is leaving energy saving mode.		
			Error (10)	An error occurred when connecting.		
			Reinit (11)	Utility grid has been re-detected.		
132.02	GdRmgTm	Remaining time of grid monitoring in hh:mm:ss	–	–	✓	✓

133# Gen State

No.	Name	Description	Value (plain text no.)	Explanation	🧍	⚡
133.01	GnDmdSrc	Source for generator request	None (1)	No request	✗	✓
			Bat (2)	State-of-charge-dependent request		
			Lod (3)	Load-dependent request		
			Tim (4)	Time-controlled request		
			Run1h (5)	Requested for 1 hour		
			Start (6)	Manually started		
			ExtSrcReq (7)	External generator request		

No.	Name	Description	Value (plain text no.)	Explanation	⛫	⚡
133.02	GnStt	Status of the generator management	Off (1)	Deactivated generator operation	✖	✔
			Init (2)	Detecting generator		
			Ready (3)	Waiting for request (ready)		
			Warm (4)	Warming up		
			Connect (5)	Connecting		
			Run (6)	Operation		
			Retry (7)	Restarting		
			Disconnect (8)	Split		
			Cool (9)	Cooling down		
			Lock (10)	Locked after operation		
			Fail (11)	Error		
			FailLock (12)	Locked after error		
			Reinit (13)	Re-detection of the generator		
133.03	GnRmgTm	Remaining minimum run time of the generator in hh:mm:ss	–	–	✖	✔
133.04	GnRnStt	Status of generator feedback (expert mode)	Off (1)	Off	✖	✔
			On (2)	On	✖	✔

134# Device

No.	Name	Description	⛫	⚡
134.01	ExtPwrAt	Active power of external energy source in kW	✖	✔
134.02	ExtVtg	Voltage of external energy source in V	✖	✔
134.03	ExtCur	Current of external energy source in A	✖	✔
134.04	ExtFrq	Frequency of external energy source in Hz	✖	✔
134.05	ExtPwrRt	Reactive power of external energy source in kVAr (expert mode)	✖	✔
134.07	ExtLkRmgTm	Minimum stop time in hh:mm:ss	✖	✔

135# Slave1

No.	Name	Description	⛫	⚡
135.01	ExtPwrAtSlv1	Active power of external energy source at slave 1 in kW	✖	✔
135.02	ExtVtgSlv1	Voltage of external energy source at slave 1 in V	✖	✔
135.03	ExtCurSlv1	Current of external energy source at slave 1 in A	✖	✔
135.04	ExtPwrRtSlv1	Reactive power of external energy source at slave 1 in kVAr (expert mode)	✖	✔

136# Slave2

No.	Name	Description	🧍	⊠
136.01	ExtPwrAtSlv2	Active power of external energy source at slave 2 in kW	✗	✓
136.02	ExtVtgSlv2	Voltage of external energy source at slave 2 in V	✗	✓
136.03	ExtCurSlv2	Current of external energy source at slave 2 in A	✗	✓
136.04	ExtPwrRtSlv2	Reactive power of external energy source at slave 2 in kVAr (expert mode)	✗	✓

13.1.4 Charge Controller (140#)

141# SIC50 Total

No.	Name	Description	🧍	⊠
141.01	TotSicEgyCntIn	Total energy of all Sunny Island Charger charge controllers in kWh	✗	✓
141.02	TSicDyEgyCntIn	Total daily energy of all Sunny Island Charger charge controllers in kWh	✗	✓
141.03	TotSicPvPwr	Total PV power of all Sunny Island Charger charge controllers in W	✗	✓
141.04	TotSicBatCur	Total battery current of all Sunny Island Charger charge controllers in A	✗	✓

142# SIC50 1

No.	Name	Description	🧍	⊠
142.01	Sic1EgyCntIn	Total energy of Sunny Island Charger charge controller 1 in kWh	✗	✓
142.02	Sic1TdyEgyCntIn	Daily energy of Sunny Island Charger charge controller 1 in kWh	✗	✓
142.03	Sic1PvPwr	PV power of Sunny Island Charger charge controller 1 in W	✗	✓
142.04	Sic1PvVtg	PV voltage of Sunny Island Charger charge controller 1 in V	✗	✓
142.05	Sic1BatVtg	Battery voltage of Sunny Island Charger charge controller 1 in V (expert mode)	✗	✓
142.06	Sic1BatCur	Battery current of Sunny Island Charger charge controller 1 in A (expert mode)	✗	✓
142.07	Sic1HsTmp	Heat sink temperature of Sunny Island Charger charge controller 1 in °C (expert mode)	✗	✓

143# SIC50 2

No.	Name	Description	🧍	⊠
143.01	Sic2EgyCntIn	Total energy of Sunny Island Charger charge controller 2 in kWh	✗	✓
143.02	Sic2TdyEgyCntIn	Daily energy of Sunny Island Charger charge controller 2 in kWh	✗	✓
143.03	Sic2PvPwr	PV power of Sunny Island Charger charge controller 2 in W	✗	✓
143.04	Sic2PvVtg	PV voltage of Sunny Island Charger charge controller 2 in V	✗	✓
143.05	Sic2BatVtg	Battery voltage of Sunny Island Charger charge controller 2 in V (expert mode)	✗	✓
143.06	Sic2BatCur	Battery current of Sunny Island Charger charge controller 2 in A (expert mode)	✗	✓
143.07	Sic2HsTmp	Heat sink temperature of Sunny Island Charger charge controller 2 in °C (expert mode)	✗	✓

144# SIC50 3

No.	Name	Description	⚡	🔧
144.01	Sic3EgyCntln	Total energy of Sunny Island Charger charge controller 3 in kWh	✖	✔
144.02	Sic3TdyEgyCntln	Daily energy of Sunny Island Charger charge controller 3 in kWh	✖	✔
144.03	Sic3PvPwr	PV power of Sunny Island Charger charge controller 3 in W	✖	✔
144.04	Sic3PvVtg	PV voltage of Sunny Island Charger charge controller 3 in V	✖	✔
144.05	Sic3BatVtg	Battery voltage of Sunny Island Charger charge controller 3 in V (expert mode)	✖	✔
144.06	Sic3BatCur	Battery current of Sunny Island Charger charge controller 3 in A (expert mode)	✖	✔
144.07	Sic3HsTmp	Heat sink temperature of Sunny Island Charger charge controller 3 in °C (expert mode)	✖	✔

145# SIC50 4

No.	Name	Description	⚡	🔧
145.01	Sic4EgyCntln	Total energy of Sunny Island Charger charge controller 4 in kWh	✖	✔
145.02	Sic4TdyEgyCntln	Daily energy of Sunny Island Charger charge controller 4 in kWh	✖	✔
145.03	Sic4PvPwr	PV power of Sunny Island Charger charge controller 4 in W	✖	✔
145.04	Sic4PvVtg	PV voltage of Sunny Island Charger charge controller 4 in V	✖	✔
145.05	Sic4BatVtg	Battery voltage of Sunny Island Charger charge controller 4 in V (expert mode)	✖	✔
145.06	Sic4BatCur	Battery current of Sunny Island Charger charge controller 4 in A (expert mode)	✖	✔
145.07	Sic4HsTmp	Heat sink temperature of Sunny Island Charger charge controller 4 in °C (expert mode)	✖	✔

13.1.5 Compact (150#)

The menu **150# Compact** displays multiple parameters from the following areas at a glance:

- Battery
- AC measured values of the Sunny Island inverter
- Electric generator or utility grid
- Status of the Sunny Island inverter

Battery (Bat)
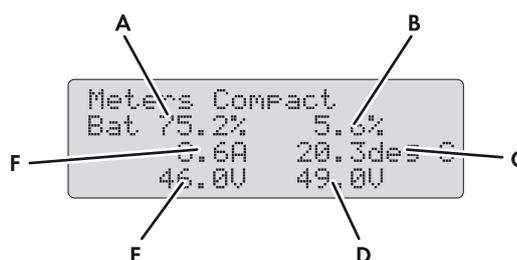
Figure 16: Overview of the menu **Meters Compact** for the battery

Position	Description	Parameters	🚶	⚒
A	State of charge of the battery (SOC) in %	120.01 BatSoc	✔	✔
B	Estimated error of the state of charge in %	120.11 BatSocErr	✔	✔
C	Battery temperature in °C	120.07 BatTmp	✔	✔
D	Setpoint of the charge voltage in V	120.03 BatChrgVtg	✔	✔
E	Battery voltage in V	120.02 BatVtg	✔	✔
F	Total battery current of the cluster in A	120.06 TotBatCur	✔	✔

AC measured values of the Sunny Island inverter (Inv)
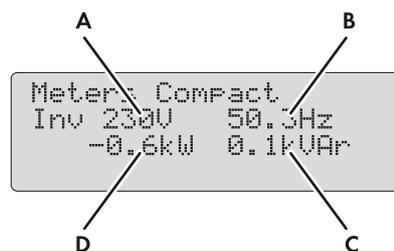
Figure 17: Overview of the menu **Meters Compact** for the AC measured values of the Sunny Island inverter

Position	Description	Parameters	🚶	⚒
A	Voltage of the Sunny Island inverter in V	112.03 InvVtg	✔	✔
B	Voltage frequency of the Sunny Island inverter in Hz	112.05 InvFrq	✔	✔
C	Reactive power of the inverter in kVAr	112.06 InvPwrRt	✔	✔
D	Active power of the inverter in kW	112.02 InvPwrAt	✔	✔

Generator or utility grid (Ext)
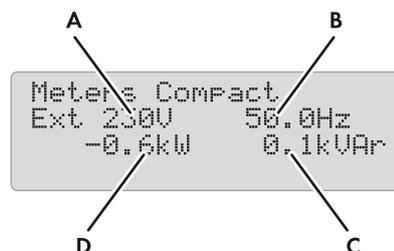
Figure 18: Overview of the menu **Meters Compact** for the generator or the battery backup grid

Position	Description	Parameters	🚶	⚒
A	Voltage of generator or utility grid in V	134.02 ExtVtg	✔	✔
B	Frequency of generator or utility grid in Hz	134.04 ExtFrq	✔	✔
C	Reactive power of generator or utility grid in kVAr	134.05 ExtPwrRt	✔	✔
D	Active power of generator or utility grid in kW	134.01 ExtPwrAt	✔	✔

Status of the Sunny Island inverter (OpStt)

```
Meters Compact
OpStt          Run
```
                                                    A
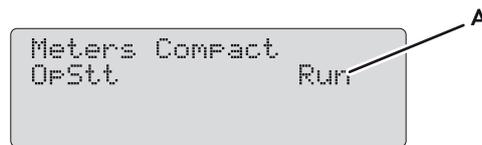
Figure 19: Overview of the menu **Meters Compact** for the status of the Sunny Island inverter

Position	Description	Value	Explanation	Parameters	👤	🗙
A	Operating state of the Sunny Island	Init	Initialization	112.01 InvOpStt	✓	✓
		Standby	Standby			
		Run	Operation			
		EmChargeMod	Emergency charge mode			
		Error	Error			

13.1.6 SlfCsmp (160#)

161# Power

No.	Name	Description	👤	🗙
161.01	TotPvPwrAt	Total PV power in kW	✓	✗
161.02	TotLodPwrAt	Total power consumption in kW	✓	✗
161.03	SlfCsmpPwrAt	Self-consumption in kW	✓	✗
161.04	SlfCsmpIncPwr	Increased self-consumption in kW	✓	✗
161.05	GdCsmpPwrAt	Power drawn from the utility grid in kW	✓	✗
161.06	GdFeedPwrAt	Feed-in power into the utility grid in kW	✓	✗

162# Energy

No.	Name	Description	👤	🗙
162.01	TotLodEgyCnt	Total consumption in kWh	✓	✗
162.02	SlfCsmpIncEgy	Total increased self-consumption in kWh	✓	✗
162.03	SlfCsmpIncTdy	Today's increased self-consumption in kWh	✓	✗
162.04	SlfCsmpEgy	Total self-consumption in kWh	✓	✗
162.05	GdCsmpEgyMtr	Meter reading purchased electricity in kWh	✓	✗
162.06	GdCsmpEgyTdy	Today's purchased electricity in kWh	✓	✗
162.07	GdFeedEgyMtr	Meter reading grid feed-in in kWh	✓	✗
162.08	PvEgyMtr	Meter reading PV production meter in kWh	✓	✗
162.09	GdFeedEgyTdy	Today's grid feed-in in kWh	✓	✗

163# State

No.	Name	Description	Value	Explanation	🧍	☒
163.01	BatMntStt	Status of the full charge or equalization charge If full charge or equalization charge with PV energy has not ended after 24 hours, **163.01 BatMntStt** automatically switches to **On**.	On	Full charge or equalization charge active, energy is drawn from the utility grid	✓	✗
			Wait	If sufficient PV energy is available, full charge or equalization charge active		
			Off	No full charge or equalization charge active		
163.02	SlfCsmpSOCArea	Current range of the state of charge of the battery In systems for increased self-consumption and in battery backup systems, this parameter shows the range in which the state of charge of the battery currently is.	PeakShaveSOC	Range for prevention of derating losses	✓	✗
			SlfCsmpSOC	Range for increased self-consumption		
			PVResSOC	Range for maintaining the state of charge of the battery		
			BUResSOC	Range for the battery backup system function		
			BatResSOC	Range for protection against deep discharge		
			ProtResSOC	Range for protection in the event of deep discharge		
163.03	SlfCsmpSOCLim	Threshold of the current day of the state of charge of the battery for increased self-consumption in % (expert mode) The battery can be used for increased self-consumption up to the displayed threshold.	5% to 90%	–	✓	✗

13.2 Adjustable Parameters

13.2.1 Inverter (210#)

No.	Name	Description	Value	Explanation	👤	⚒	Default value
210.01	InvVtgNom	Nominal voltage of the Sunny Island inverter in V	202.0 V to 253.0 V	230 V/50 Hz	✓	✓	230.0 V
			202.0 V to 242.0 V	220 V/60 Hz			220.0 V
210.02	InvFrqNom	Nominal frequency of the Sunny Island inverter in Hz (expert mode)	45.0 Hz to 55.0 Hz	230 V/50 Hz	✓	✓	50.0 Hz
			55.0 Hz to 65.0 Hz	220 V/60 Hz			60.0 Hz
210.03	InvChrgCurMax	Maximum AC current during charging and discharging in A (expert mode) The actual AC current can be limited due to normative requirements.	0 A to 26.1 A	SI 8.0H	✓	✓	26.1 A
			0 A to 20.0 A	SI 6.0H			20.0 A
			0 A to 14.3 A	SI 4.4M			14.3 A
			0 A to 10 A	SI 3.0M			10 A

13.2.2 Battery (220#)

> **NOTICE**
>
> **Damage to the battery due to incorrect settings**
>
> Settings of the parameters in the menu **220# Battery** influence the charging behavior of the Sunny Island. Incorrect settings lead to premature aging of the battery.
>
> - Ensure that the values recommended by the battery manufacturer are set (refer to the technical data of the battery in the manufacturer documentation).

221# Property

No.	Name	Description	Value	Explanation	👤	⚒	Default value
221.01	BatTyp	Battery type	VRLA	Valve-regulated lead–acid battery with immobilized electrolyte in gel or glass mat	✓	✓	–
			FLA	Valve-regulated lead–acid battery with liquid electrolyte			
			LiIon	Lithium-ion battery			

No.	Name	Description	Value	Explanation	🧍	⚒	Default value
221.02	BatCpyNom	Battery nominal capacity C10 in Ah	100 Ah to 10,000 Ah	VRLA, FLA	✓	✓	166 Ah
			50 Ah to 10,000 Ah	Lithium-ion			
221.03	BatVtgNom	Battery nominal voltage in V	40.0 V to 48.0 V	–	✓	✓	–
221.04	BatTmpMax	Maximum battery temperature in °C (expert mode)	221.05 BatTmpStr to 50°C	–	✓	✓	40°C
221.05	BatTmpStr	Start temperature after exceeding the maximum battery temperature in °C (expert mode)	0°C to 221.04 BatTmpMax	–	✓	✓	35°C
221.06	BatWirRes	Resistance of the battery cable in m Ω (expert mode)	0 m Ω to 100 m Ω	–	✓	✓	0 m Ω
221.07	BatFanTmpStr	Start temperature for the **BatFan** function of the multifunction relay in °C	20°C to 221.04 BatTmpMax	–	✓	✓	40°C

222# Chargemode

No.	Name	Description	Value	Explanation	🧍	⚒	Default value
222.01	BatChrgCurMax	Maximum battery charging current in A	10 A to 900 A	–	✓	✓	–
222.02	AptTmBoost	Absorption time of the boost charge in minutes (expert mode)	1 min to 600 min	For VRLA	✓	✓	180 min
				For FLA			90 min
222.03	AptTmFul	Absorption time for full charge in hours (expert mode)	1.0 h to 20.0 h	–	✓	✓	6.0 h
222.04	AptTmEqu	Absorption time for equalization charge in hours (expert mode)	1.0 h to 48.0 h	–	✓	✓	12.0 h
222.05	CycTmFul	Cycle time of full charge in days (expert mode)	1 d to 180 d	–	✓	✓	14 d
222.06	CycTmEqu	Cycle time of equalization charge in days (expert mode)	7 d to 365 d	–	✓	✓	90 d
222.07	ChrgVtgBoost	Setpoint of the cell voltage at boost charge in V (expert mode)	2.20 V to 2.70 V	VRLA	✓	✓	2.40 V
				FLA, off-grid	✗	✓	2.40 V
				FLA, on-grid	✓	✗	2.55 V
222.08	ChrgVtgFul	Cell voltage setpoint for full charge in V (expert mode)	2.30 V to 2.70 V	Off-grid	✗	✓	2.45 V
				On-grid	✓	✗	2.50 V

No.	Name	Description	Value	Explanation	🧍	✖	Default value
222.09	ChrgVtgEqu	Cell voltage setpoint for equalization charge in V (expert mode)	2.30 V to 2.70 V	Off-grid	✖	✓	2.45 V
				VRLA, on-grid	✓	✖	2.55 V
				FLA, on-grid	✓	✖	2.50 V
222.10	ChrgVtgFlo	Cell voltage setpoint for float charge in V (expert mode)	2.20 V to 2.40 V	–	✓	✓	2.25 V
222.11	BatTmpCps	Battery temperature compensation in $mV/°C$ (expert mode)	0.0 $mV/°C$ to 10.0 $mV/°C$	–	✓	✓	4.0 $mV/°C$
222.12	AutoEquChrgEna	Automatic equalization charge (expert mode)	Disable	Disable	✓	✓	Enable
			Enable	Enable			
222.13	BatChrgVtgMan	Manual setpoint of the battery charging voltage with disabled battery management in V (expert mode)	41.0 V to 63.0 V	–	✓	✓	54.0 V

223# Protection

No.	Name	Description	Value	🧍	✖	Default value
223.01	BatPro1TmStr	Start time of the battery protection mode level 1 in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	✖	✓	22:00:00
223.02	BatPro1TmStp	Stop time of the battery protection mode level 1 in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	✖	✓	06:00:00
223.03	BatPro2TmStr	Start time of the battery protection mode level 2 in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	✖	✓	17:00:00
223.04	BatPro2TmStp	Stop time of the battery protection mode level 2 in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	✖	✓	09:00:00
223.05	BatPro1Soc	SOC for battery protection mode level 1 in % (expert mode)	0% to 70%	✖	✓	20%
223.06	BatPro2Soc	SOC for battery protection mode level 2 in % (expert mode)	0% to 70%	✖	✓	15%
223.07	BatPro3Soc	SOC for battery protection mode level 3 in % (expert mode)	0% to 70%	✖	✓	10%
223.08	BatProTmm	Minimum time (in minutes) during which there is no battery current for switching to battery protection mode (expert mode) If the minimum time has elapsed and no battery current was present, the Sunny Island can switch to battery protection mode.	1 min to 20 min	✖	✓	5 min

225# Current Sensor

No.	Name	Description	Value	Explanation	👤	❄	Default value
225.01	BatCurSnsTyp	Type of battery current sensor	None	No sensor is connected	✓	✓	None
			60 mV	60 mV type			
			50 mV	50 mV type			
225.02	BatCurGain60	60 mV type in $A/_{60\,mV}$	$0\,A/_{60\,mV}$ to $1{,}800\,A/_{60\,mV}$	–	✓	✓	$100\,A/_{60\,mV}$
225.03	BatCurGain50	50 mV type in $A/_{50\,mV}$	$0\,A/_{50\,mV}$ to $1{,}800\,A/_{50\,mV}$	–	✓	✓	$100\,A/_{50\,mV}$
225.04	BatCurAutoCal	Automatic calibration of external battery current sensor	Start	Start automatic calibration	✓	✓	–

13.2.3 External/Backup (230#)

231# General

No.	Name	Description	Value	Explanation	👤	❄	Default value
231.01	PvFeedTmStr	Start time for PV grid feed-in in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	–	✗	✓	04:00:00
231.02	PvFeedTmStp	Stop time for PV grid feed-in in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	–	✗	✓	22:00:00
231.03	ExtLkTm	Lock time after reverse power or relay protection in minutes (expert mode)	0 min to 60 min	–	✗	✓	20 min
231.06	ExtSrc	Generator- and grid operating mode	PvOnly	Only AC sources in the stand-alone grid, no generator in the off-grid system	✗	✓	–
			Gen	Generator			
			Grid	Utility grid			
			GenGrid	Electric generator or utility grid			
231.12	ClstPwrNom	Nominal power of the cluster in kW	–	–	✓	✓	–

232# Grid Control

No.	Name	Description	Value	Explanation	👷	🚫	Default value
232.01	Country	Country data set (protected by SMA Grid Guard)	Other	Individual setting	✓	✓	–
			VDE-AR-4105	Code of Practice VDE-AR-N 4105			–
			AS4777	Standard AS4777			
232.02	GdVtgMin	Minimum line voltage in V (expert mode, protected by SMA Grid Guard)	172.50 V to 210.01 InvVtgNom	230 V/50 Hz	✓	✓	184.00 V
				220 V/60 Hz			194.00 V
232.03	GdVtgMax	Maximum line voltage in V (expert mode, protected by SMA Grid Guard)	210.01 InvVtgNom to 264.50 V	230 V/50 Hz	✓	✓	264.50 V
				220 V/60 Hz			242.00 V
232.04	GdCurNom	Nominal line current in A (expert mode, protected by SMA Grid Guard)	0.0 A to 50.0 A	1 inverter SI 3.0M / 4.4M (single-phase)	✓	✗	19 A
				1 inverter SI 6.0H / 8.0H (single-phase)	✓	✗	26.5 A
				3 inverters SI 3.0M / 4.4M (three-phase)	✓	✗	19 A
				3 inverters SI 6.0H / 8.0H (three-phase)	✓	✗	34.5 A
				1 inverter SI 3.0M / 4.4M (single-phase)	✗	✓	16 A
				1 inverter SI 6.0H / 8.0H (single-phase)	✗	✓	16 A
			0.0 A to 100.0 A	2 inverters SI 6.0H / 8.0H (single-phase)	✗	✓	16 A
			0.0 A to 150.0 A	3 inverters SI 6.0H / 8.0H (single-phase)	✗	✓	16 A
			0.0 A to 50.0 A	3 inverters SI 3.0M / 4.4M (three-phase)	✗	✓	16 A
				3 inverters SI 6.0H / 8.0H (three-phase)	✗	✓	16 A

No.	Name	Description	Value	Explanation	🧍	🔧	Default value
232.05	GdFrqNom	Nominal grid frequency in Hz (expert mode, protected by SMA Grid Guard)	232.05 GdFrqMin to 232.06 GdFrqMax	230 V/50 Hz	✓	✓	50.00 Hz
				220 V/60 Hz			60.00 Hz
232.06	GdFrqMin	Minimum power frequency in Hz (expert mode, protected by SMA Grid Guard)	40.00 Hz to 232.04 GdFrqNom	230 V/50 Hz	✓	✓	47.50 Hz
				220 V/60 Hz			59.30 Hz
232.07	GdFrqMax	Maximum power frequency in Hz (expert mode, protected by SMA Grid Guard)	232.4GdFrqNom to 70.00 Hz	230 V/50 Hz	✓	✓	51.50 Hz
				220 V/60 Hz			60.50 Hz
232.08	GdVldTm	Minimum observation time for line voltage and frequency in the permissible range for connection in s (expert mode, protected by SMA Grid Guard)	5 s to 900 s	VDE-AR-N 4105 AS4777	✓	✓	60 s
				220 V/60 Hz			300 s
232.09	GdMod	Grid interface (expert mode, protected by SMA Grid Guard)	GridCharge	Charge on utility grid	✓	✓	–
			GridFeed	Charge and feedback on utility grid			
232.10	GdRvPwr	Permissible active power of grid reverse power in W (expert mode)	0 W to 5,000 W	One Sunny Island or single-cluster system	✗	✓	100 W
			0 W to 20,000 W	Multicluster system			100 W
232.11	GdRvTm	Permissible time for grid reverse power in s (expert mode)	0 s to 60 s	–	✗	✓	5 s
232.12	GdVtgMinDel	Lower voltage difference for valid grid connection in V (expert mode, protected by SMA Grid Guard)	0.0 V to 20.0 V	VDE_AR_4105	✓	✓	11.5 Hz
				AS4777			2.0 Hz
				Off-grid			2.0 Hz
				Other			2.0 Hz
				220 V/60 Hz			2.0 Hz
232.13	GdVtgMaxDel	Upper voltage difference for valid grid connection in V (expert mode, protected by SMA Grid Guard)	0.0 V to 12.0 V	VDE_AR_4105	✓	✓	11.5 Hz
				AS4777			2.0 Hz
				Off-grid			2.0 Hz
				Other			2.0 Hz
				220 V/60 Hz			2.0 Hz

No.	Name	Description	Value	Explanation	🧍	🛠	Default value
232.14	GdVtgMinDel	Lower frequency difference for valid grid connection in Hz (expert mode, protected by SMA Grid Guard)	0.00 Hz to 2.50 Hz	–	✓	✓	0.02 Hz
232.15	GdFrqMaxDel	Upper frequency difference for valid grid connection in Hz (expert mode, protected by SMA Grid Guard)	0.00 Hz to 2.50 Hz	VDE_AR_4105	✓	✓	1.45 Hz
			0.00 Hz to 0.20 Hz	230 V/50 Hz			0.02 Hz
			0.00 Hz to 0.20 Hz	220 V/60 Hz			0.02 Hz
232.16	GdAlSns	Sensitivity of the anti-islanding detection (expert mode, protected by SMA Grid Guard)	Low	Low	✓	✓	Normal
			Medium	Medium			
			Normal	Normal			
			High	High			
232.40	GdRtCurSrc	Place of reactive current compensation in grid operation (expert mode)	External	Sunny Island compensates all reactive currents.	✓	✗	External
			Inverter	Sunny Island does not compensate reactive currents.			
			Shared	Sunny Island partially compensates reactive currents.			
232.41	P-WCtlHzMod	Frequency-dependent active power limitation (expert mode, protected by SMA Grid Guard)	Off	Disable	✓	✓	–
			WCtlHz	Enable			
232.42	P-HzStr	Start frequency of the active power limitation in Hz (protected by SMA Grid Guard)	0.0 Hz to 5.0 Hz	This value defines how many Hz above **210.02 InvFrqNom** the active power limitation starts.	✓	✗	0.2 Hz
232.43	P-HzStop	End frequency of the active power limitation in Hz (protected by SMA Grid Guard)	0.0 Hz to 5.0 Hz	This values defines how many Hz above **210.02 InvFrqNom** the active power limitation stops.	✓	✗	0.2 Hz

No.	Name	Description	Value	Explanation	🏃	❄	Default value
232.44	P-WGra	Increase of the active power limitation in $^{\%}/_{Hz}$ (expert mode, protected by SMA Grid Guard)	$10^{\%}/_{Hz}$ to $130^{\%}/_{Hz}$	–	✓	✓	$40^{\%}/_{Hz}$
232.46	WGraRecon	Power gradient following grid error in % (expert mode, protected by SMA Grid Guard)	1% to 100%	–	✓	✓	10%
232.48	Q-VArMod	Setpoint of the displacement power factor cos φ (expert mode, protected by SMA Grid Guard)	Off	Disable	✓	✓	–
			PFCnst	Constant displacement power factor cos φ			
			PFCtlW	Automatic adaptation of the displacement power factor according to the current active power			
232.49	PF-PF	Setpoint of the displacement power factor cos φ at **PFCnst** (expert mode, protected by SMA Grid Guard)	0.8 to 1	Code of Practice VDE-AR-N 4105	✓	✓	0.9
				Standard AS-4777			1
232.50	PF-PFExt	Type of excitation of the displacement power factor cos φ at **PFCnst** (expert mode, protected by SMA Grid Guard)	OvExt	Lagging	✓	✓	UnExt
			UnExt	Leading			
232.51	PF-PFStr	Displacement power factor cos φ at the start point at **PFCtlW** (expert mode, protected by SMA Grid Guard)	0.8 to 1	–	✓	✓	1
232.52	PF-PFExtStr	Excitation type at the start point at **PFCtlW** (expert mode, protected by SMA Grid Guard)	OvExt	Lagging	✓	✓	OvExt
			UnExt	Leading			
232.53	PF-WNomStr	Proportion of the maximum active power at the start point in % at **PFCtlW** (expert mode, protected by SMA Grid Guard)	0% to **232.56 PF-WNomStop**	–	✓	✓	50%

No.	Name	Description	Value	Explanation	🧍	⚙	Default value
232.54	PF-PFStop	Displacement power factor cos φ at the end point at **PFCtlW** (expert mode, protected by SMA Grid Guard)	0.8 to 1.0	–	✓	✓	0.9
232.55	PF-PFExtStop	Excitation type at the end point at **PFCtlW** (expert mode, protected by SMA Grid Guard)	OvExt	Lagging	✓	✓	UnExt
			UnExt	Leading			
232.56	PF-WNomStop	Proportion of the maximum active power at the end point in % at **PFCtlW** (expert mode, protected by SMA Grid Guard)	232.52 PF-WNomStr to 100%	–	✓	✓	100%
232.58	GdAlFac	Anti-islanding factor in current-controlled grid operation with I-Loop (expert mode)	0.00 to 3.00	–	✓	✓	0.50
232.59	MsPhSel	Line conductor to which the Sunny Island is connected (expert mode)	L1	Line conductor L1	✓	✗	–
			L2	Line conductor L2			
			L3	Line conductor L3			
232.60	EZATyp	Type of PV system feed-in (expert mode)	Asymmetric	At least one PV inverter is single-phase and feeds in asymmetrically.	✓	✗	–
			Symmetric	All PV inverters are three-phase and feed in symmetrically.			

233# Grid Start, for off-grid systems only

No.	Name	Description	Value	Explanation	🧍	⚙	Default value
233.01	GdSocEna	Enable grid request based on SOC (expert mode)	Disable	Disable	✗	✓	Disable
			Enable	Enable			
233.02	GdSocTm1Str	SOC threshold for connection to the utility grid in interval 1 in % (expert mode) Interval 1 begins at time **233.06 GdTm1Str**.	1% to 233.03 GdSocTm1Stp	–	✗	✓	40%

No.	Name	Description	Value	Explanation	🏃	✕	Default value
233.03	GdSocTm1Stp	SOC threshold for disconnection from the utility grid in interval 1 in % (expert mode) Interval 1 begins at time **233.06 GdTm1Str**.	233.02 GdSocTm1Str to 95%	–	✖	✓	80%
233.04	GdSocTm2Str	SOC threshold for connection to the utility grid in interval 2 in % (expert mode) Interval 2 begins at time **233.07 GdTm2Str**.	1% to 233.05 GdSocTm2Stp	–	✖	✓	40%
233.05	GdSocTm2Stp	SOC threshold for disconnection from the utility grid in interval 2 in % (expert mode) Interval 2 begins at time **233.07 GdTm2Str**.	233.04 GdSocTm2Str to 95%	–	✖	✓	80%
233.06	GdTm1Str	Start of interval 1 for grid request in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	–	✖	✓	–
233.07	GdTm2Str	Start of interval 2 for grid request in hh:mm:ss (expert mode)	00:00:00 to 23:59:59	–	✖	✓	–
233.08	GdPwrEna	Grid request based on power (expert mode)	Disable Enable	Disable Enable	✖	✓	Disable
233.09	GdPwrStr	Grid request connection power limit in kW (expert mode)	233.10 GdPwrStp to 300 kW	–	✖	✓	4.0 kW
233.10	GdPwrStp	Grid request disconnection power limit in kW (expert mode)	0 kW to 233.09 GdPwrStr	–	✖	✓	2.0 kW
233.11	GdStrChrgMod	Connection to utility grid in configured charge mode (expert mode)	Off Full Equal Both	Off Full charge Equalization charge Full and equalization charge	✖	✓	Equal

234# Gen Control

No.	Name	Description	Value	Explanation	🏠	✕	Default value
234.01	GnVtgMin	Minimum generator voltage in V (expert mode)	172.5 V to 210.01 InvVtgNom	–	✕	✓	172.50 V
234.02	GnVtgMax	Maximum generator voltage in V (expert mode)	210.01 InvVtgNom to 264.5 V	–	✕	✓	250.0 V
234.03	GnCurNom	Nominal generator current in A	0.0 A to 50.0 A	One Sunny Island	✕	✓	16.0 A
			0.0 A to 100.0 A	Two Sunny Island inverters, parallel			16.0 A
			0.0 A to 150.0 A	Three Sunny Island inverters, parallel			16.0 A
			0.0 A to 50.0 A	Three-phase			16.0 A
			0.0 A to 80.0 A	Multicluster Box 6			60.0 A
			0.0 A to 160.0 A	Multicluster Box 12			160.0 A
			0.0 A to 500.0 A	Multicluster Box 36			435.0 A
234.04	GnFrqNom	Nominal generator frequency under nominal load in Hz (expert mode)	234.05 GnFrqMin to 234.06 GnFrqMax	230 V/50 Hz	✕	✓	50.00 Hz
				220 V/60 Hz			60.00 Hz
234.05	GnFrqMin	Minimum generator frequency in Hz (expert mode)	40.00 Hz to 234.04 GnFrqNom	230 V/50 Hz	✕	✓	44.64 Hz
			50.00 Hz to 234.04 GnFrqNom	220 V/60 Hz			50.00 Hz
234.06	GnFrqMax	Maximum generator frequency in Hz (expert mode)	234.04 GnFrqNom to 70.00 Hz	230 V/50 Hz	✕	✓	60.00 Hz
				220 V/60 Hz			70.00 Hz
234.07	GnStrMod	Generator interface	Manual	Manual	✕	✓	Autostart
			Autostart	Automatic			
234.08	GnOpTmMin	Minimum run time of generator in minutes	0 min to 360 min	–	✕	✓	15 min
234.09	GnStpTmMin	Minimum stop time of the generator in minutes	0 min to 360 min	–	✕	✓	15 min
234.10	GnCoolTm	Cooling time of the generator in minutes	0 min to 60 min	–	✕	✓	5 min

No.	Name	Description	Value	Explanation	🏃	✕	Default value
234.11	GnErrStpTm	Stop time of the generator in the event of an error in hours (expert mode)	0 h to 24 h	–	✘	✓	1 h
234.12	GnWarmTm	Warm-up time in seconds	5 s to 900 s	–	✘	✓	60 s
234.13	GnRvPwr	Active power of the generator reverse power in W (expert mode)	0 W to 5,000 W	One Sunny Island or single-cluster system	✘	✓	100 W
			0 W to 20,000 W	Multicluster system			100 W
234.14	GnRvTm	Permissible time for reverse power or reverse current, in s (expert mode)	0 s to 900 s	–	✘	✓	30 s
234.15	GnCtlMod	Generator control (expert mode) The generator control limits the consumption of generator current.	Cur	Fixed threshold for current limitation	✘	✓	Cur
			CurFrq	Frequency-depen dent current limitation			
234.20	GnAlSns	Anti-islanding sensitivity (expert mode)	Low	Low	✘	✓	Normal
			Medium	Medium			
			Normal	Normal			
			High	High			
234.41	GnCurCtlMod	Enable I-Loop in generator operation (expert mode, only with SI6.0H-11 and SI8.0H-11) I-Loop enables generators with inadequate voltage regulation to be used in the system.	Droop	Standard generator operation without I-Loop	✘	✓	Droop
			CurCtl	Current-controlled generator operation with I-Loop			
234.42	GnAlFac	Anti-islanding factor in current-controlled generator operation with I-Loop (expert mode)	0.00 to 1.00	–	✘	✓	0.10

235# Gen Start

No.	Name	Description	Value	Explanation	🏗	❄	Default value
235.01	GnAutoEna	Automatic restart of generator in the event of disturbance	Off On	Disable Enable	✘	✓	On
235.02	GnAutoStr	Number of attempts to carry out automatic restart of generator (expert mode)	0 to 10	–	✘	✓	3
235.03	GnSocTm1Str	SOC threshold for generator request in interval 1 in % Interval 1 begins at time 235.07 GnTm1Str	1% to 235.04 GnSocTm1Stp	–	✘	✓	40%
235.04	GnSocTm1Stp	SOC threshold for end of generator request in interval 1 in % Interval 1 begins at time **235.07 GnTm1Str**.	235.03 GnSocTm1Str to 95%	–	✘	✓	80%
235.05	GnSocTm2Str	SOC threshold for generator request in interval 2 in % Interval 2 begins at time **235.08 GnTm2Str**.	1% to 235.06 GnSocTm2Stp	–	✘	✓	40%
235.06	GnSocTm2Stp	SOC threshold for end of generator request in interval 2 in % Interval 2 begins at time **235.08 GnTm2Str**.	235.05 GnSocTm2Str to 95%	–	✘	✓	80%
235.07	GnTm1Str	Start of interval 1 for grid request in hh:mm:ss	00:00:00 to 23:59:59	–	✘	✓	00:00:00
235.08	GnTm2Str	Start of interval 2 for grid request in hh:mm:ss	00:00:00 to 23:59:59	–	✘	✓	00:00:00
235.09	GnPwrEna	Load-dependent generator request (expert mode)	Disable Enable	Disable Enable	✘	✓	Enable
235.10	GnPwrStr	Threshold for load-dependent generator request in kW (expert mode)	235.11GnPwrStp to 300.0 kW	–	✘	✓	4.0 kW
235.11	GnPwrStp	Threshold for end of load-dependent generator request, in kW (expert mode)	0.0 kW to 235.10 GnPwrStr	–	✘	✓	2.0 kW
235.12	GnPwrAvgTm	Averaging time for load-dependent generator request in s (expert mode)	1 s to 900 s	–	✘	✓	60 s
235.13	GnTmOpEna	Time-controlled generator operation	Disable Enable	Disable Enable	✘	✓	Disable

No.	Name	Description	Value	Explanation	🧍	🛠	Default value
235.14	GnTmOpStrDt	Start date for time-controlled generator operation in dd.mm.yyyy	–	–	✖	✓	2011-01-01
235.15	GnTmOpStrTm	Time at the start of time-controlled generator operation in hh:mm:ss	00:00:00 to 23:59:59	–	✖	✓	00:00:00
235.16	GnTmOpRnDur	Run time for time-controlled generator operation in hh:mm:ss	00:00:00 to 99:59:00	–	✖	✓	00:00:00
235.17	GnTmOpCyc	Repeat cycle for time-controlled generator operation	Single	Once	✖	✓	Single
			Daily	Daily			
			Weekly	Weekly			
235.18	GnStrChrgMod	Generator request in configured charge mode (expert mode)	Off	Off	✖	✓	Both
			Full	Full charge			
			Equal	Equalization charge			
			Both	Full and equalization charge			
235.19	GnStrDigIn	Generator request in response to signal on activated digital input (expert mode)	Disable	Disable	✖	✓	Disable
			Enable	Enable			

13.2.4 Relay (240#)

241# General

No.	Name	Description	Value	Explanation	👤	🔧	Default value
241.01	Rly1Op	Multifunction relay 1 function	Off	The multifunction relay is always in non-operative mode.	✓	✓	AutoGn
			On	The multifunction relay is permanently activated.			
			AutoGn	The Sunny Island automatically requests the generator. In case of a generator request, the multifunction relay is activated.			
			AutoLodExt	1-level load shedding When connecting the generator, the Sunny Island stops the load shedding. When the loads are to be shed, the multifunction relay is deactivated.			
			AutoLod1Soc	1-level load shedding or first level of 2-level load shedding When the upper SOC threshold is reached, the Sunny Island ends load shedding. When the loads are to be shed, the multifunction relay is deactivated.			
			AutoLod2Soc	Second level of 2-level load shedding When the upper SOC threshold is reached, the Sunny Island ends load shedding. When the loads are to be shed, the multifunction relay is deactivated.			
			Tm1	Timer 1 The Sunny Island controls external processes time-dependently. When the set time **#243 Timer** is reached, the multifunction relay is activated.			
			Tm2	Timer 2 The Sunny Island controls external processes time-dependently. When the set time **#243 Timer** is reached, the multifunction relay is activated.			

No.	Name	Description	Value	Explanation	🏃	✳	Default value
241.01	Rly1Op	Multifunction relay 1 function (continued)	ExtPwrDer	The Sunny Island controls additional loads in order to put excess energy to practical use. When excessive energy can be used, the multifunction relay is activated.	✓	✓	AutoGn
			GnRn	When the generator is running and connected, the multifunction relay is activated.			
			ExtVfOk	When the voltage and frequency of the external energy source are within the valid range for the connection, the multifunction relay is activated.			
			GdOn	When the utility grid is connected, the multifunction relay is activated.			
			Error	When an error message is pending, the multifunction relay is deactivated.			
			Warn	When a warning is pending, the multifunction relay is activated.			
			Run	When the Sunny Island or the cluster is in operation, the multifunction relay is activated.			
			BatFan	The Sunny Island controls the battery room fan. When the battery room is to be ventilated, the multifunction relay is activated.			
			AcdCir	The Sunny Island controls the electrolyte pump of the battery. When the electrolyte is to be circulated, the multifunction relay is activated.			
			MccBatFan	The Sunny Island controls the battery room fan for all clusters together. When the battery room is to be ventilated, the multifunction relay is activated.			
			MccAutoLod	1-level load shedding When all batteries have reached the upper SOC threshold, the Sunny Island ends load shedding. When the loads are to be shed, the multifunction relay is deactivated.			
			CHPReq	No function			
			CHPAdd	No function			

No.	Name	Description	Value	Explanation	🧍	🔧	Default value
241.01	Rly1Op	Multifunction relay 1 function (continued)	SiComRemote	Multifunction relay is controlled via **ComSync**.	✓	✓	AutoGn
			Overload	When the Sunny Island limits its power, the multifunction relay is deactivated.			
			GriSwt	Triggering of contactors for grid disconnection in the battery backup system			
			GndSwt	Triggering of the grounding in the battery backup system			
241.02	Rly2Op	Multifunction relay 2 function	See **241.01 Rly1Op**, page 115 for value and explanation		✓	✓	AutoLodExt

No.	Name	Description	Value	🧍	🔧	Default value
241.07	ExtPwrDerMinTm	Minimum time for the **ExtPwrDer** function of the multifunction relay in minutes	0 min to 600 min	✓	✓	10 min
241.08	ExtPwrDerDltVtg	Voltage difference for the **ExtPwrDer** function of the multifunction relay in V The voltage difference corresponds to the cell voltage of the battery.	0 V to 0.40 V	✓	✓	0.15 V

242# Load

No.	Name	Description	Value	🧍	🔧	Default value
242.01	Lod1SocTm1Str	SOC threshold for starting load shedding 1 in interval 1 in % Interval 1 begins at time **242.05 Lod1Tm1Str**.	1% to 242.02 Lod1SocTm1Stp	✓	✓	30%
242.02	Lod1SocTm1Stp	SOC threshold for stopping load shedding 1 in interval 1 in % Interval 1 begins at time **242.05 Lod1Tm1Str**.	242.01 Lod1SocTm1Str to 90%	✓	✓	50%
242.03	Lod1SocTm2Str	SOC threshold for starting load shedding 1 in interval 2 in % Interval 2 begins at time **242.06 Lod1Tm2Str**.	1% to 242.04 Lod1SocTm2Stp	✓	✓	30%
242.04	Lod1SocTm2Stp	SOC threshold for stopping load shedding 1 in interval 2 in % Interval 2 begins at time **242.06 Lod1Tm2Str**.	242.03 Lod1SocTm2Str to 90%	✓	✓	50%
242.05	Lod1Tm1Str	Start of interval 1 for load shedding 1 in hh:mm:ss	00:00:00 to 23:59:59	✓	✓	–

No.	Name	Description	Value	🚶	✖	Default value
242.06	Lod1Tm2Str	Start of interval 2 for load shedding 1 in hh:mm:ss	00:00:00 to 23:59:59	✓	✓	–
242.07	Lod2SocTm1Str	SOC threshold for starting load shedding 2 in interval 1 in % Interval 1 begins at time **242.11 Lod2Tm1Str**.	1% to 242.08 Lod2SocTm1Stp	✓	✓	30%
242.08	Lod2SocTm1Stp	SOC threshold for stopping load shedding 2 in interval 1 in % Interval 1 begins at time **242.11 Lod2Tm1Str**.	242.07 Lod2SocTm1Str to 90%	✓	✓	50%
242.09	Lod2SocTm2Str	SOC threshold for starting load shedding 2 in interval 2 in % Interval 2 begins at time **242.12 Lod2Tm2Str**.	1% to 242.10 Lod2SocTm2Stp	✓	✓	30%
242.10	Lod2SocTm2Stp	SOC threshold for stopping load shedding 2 in interval 2 in % Interval 2 begins at time **242.12 Lod2Tm2Str**.	242.09 Lod2SocTm2Str to 90%	✓	✓	50%
242.11	Lod2Tm1Str	Start of interval 1 for load shedding 2 in hh:mm:ss	00:00:00 to 23:59:59	✓	✓	00:00:00
242.12	Lod2Tm2Str	Start of interval 2 for load shedding 2 in hh:mm:ss	00:00:00 to 23:59:59	✓	✓	00:00:00

243# Timer

No.	Name	Description	Value	Explanation	🚶	✖	Default value
243.01	RlyTmr1StrDt	Start date for timer 1 in dd.mm.yyyy	–	–	✓	✓	2011-01-01
243.02	RlyTmr1StrTm	Start time at which the multifunction relay is activated for timer 1 in hh:mm:ss	00:00:00 to 23:59:59	–	✓	✓	–
243.03	RlyTmr1Dur	Duration for which the multifunction relay remains activated for timer 1 in hh:mm:ss	00:00:00 to 99:59:00	–	✓	✓	–
243.04	RlyTmr1Cyc	Repetition cycle time for timer 1	Single Daily Weekly	Once Daily Weekly	✓	✓	Single
243.05	RlyTmr2StrDt	Start date timer 2	–	–	✓	✓	2011-01-01

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
243.06	RlyTmr2StrTm	Start time at which the multifunction relay is activated for timer 2 in hh:mm:ss	00:00:00 to 23:59:59	–	✓	✓	–
243.07	RlyTmr2Dur	Duration for which the multifunction relay remains activated for timer 2 in hh:mm:ss	00:00:00 to 99:59:00	–	✓	✓	–
243.08	RlyTmr2Cyc	Repetition cycle time for timer 2	Single	Once	✓	✓	Single
			Daily	Daily			
			Weekly	Weekly			

244# Slave1

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
244.01	Rly1OpSlv1	Multifunction relay 1 of slave 1 function	See **241.01 Rly1Op**, page 115 for value and explanation		✓	✓	Off
244.02	Rly2OpSlv1	Multifunction relay 2 of slave 1 function	See **241.01 Rly1Op**, page 115 for value and explanation		✓	✓	Off

245# Slave2

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
245.01	Rly1OpSlv2	Multifunction relay 1 of slave 2 function	See **241.01 Rly1Op**, page 115 for value and explanation		✓	✓	Off
245.02	Rly2OpSlv2	Multifunction relay 2 of slave 2 function	See **241.01 Rly1Op**, page 115 for value and explanation		✓	✓	Off

13.2.5 System (250#)

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
250.01	AutoStr	Number of autostarts	0 to 10	**0** indicates that autostart is disabled.	✓	✓	3
250.02	Dt	Date in dd.mm.yyyy	–	–	✓	✓	–
250.03	Tm	Time in hh:mm:ss	–	–	✓	✓	–
250.04	BeepEna	Key clicks	Off	Disable	✓	✓	On
			On	Enable			

No.	Name	Description	Value	Explanation	🧍	🛠	Default value
250.06	ComBaud	Baud rate in Bd This value cannot be changed with Speedwire.	1,200	Default value for RS485 communication.	✔	✔	–
			4,800	–			
			9,600	–			
			19,200	–			
			115k	Default value for Speedwire communication.			
250.09	ComAdr	Communication address (cannot be adjusted)	0 to 65,535	–	✔	✔	1
250.11	AfraEna	Automatic frequency synchronization (AFRA) (expert mode)	Disable	Disable	✘	✔	–
			Enable	Enable			
250.23	Box	Type of Multicluster Box used	None	None	✘	✔	–
			MC-Box-6	Multicluster Box 6.3			
			MC-Box-9	Multicluster Box 9.3			
			MC-Box-12	Multicluster Box 12.3			
			MC-Box-36	Multicluster Box 36.3			
250.24	ClstMod	Cluster type (adjustable in QCG)	SingleClst	Single cluster	✔	✔	–
			MainClst	Main cluster			
			ExtnClst	Extension cluster			
250.28	ChrgCtlOp	Types of energy sources in the system (expert mode)	Auto	AC sources and DC charge controllers	✘	✔	Auto
			NoFrq	DC charge controllers only The DC charge controllers are not Sunny Island Charger devices and there are no AC sources in the system.		✔	
			SMA	Sunny Island Charger devices only No AC sources in the system.		✔	
250.30	RnMod	Run Mode Behavior under fault conditions	RunAlways	In the event of a slave device error, the cluster remains in operation	✔	✔	RunAlways
			StopAlways	In the event of a device error, the cluster stops operation			

No.	Name	Description	Value	Explanation	🕴	✖	Default value
250.31	ChLstSel	Selection of short or normal channel list (expert mode) The length must be compatible with the communication device.	Short Normal	Short Normal	✔	✔	Normal
250.32	UpdMode	Type of firmware update	Manual Auto Never	Update must be confirmed on the Sunny Remote Control. Update will be performed automatically at the set time **250.33 UpdAutoTime**. Deactivation of all updates	✔	✔	Manual
250.33	UpdAutoTime	Point in time for performing the automatic firmware update in hh:mm:ss	00:00:00 to 23:59:59	–	✔	✖	05:00:00

13.2.6 SlfCsmpBackup (#260)

261# General

No.	Name	Description	Value (plain text no.)	Explanation	🕴	✖	Default value
261.01	SlfCsmpIncEna	Increased self-consumption	Disable Enable	Disable Enable	✔ ✔	✖ ✖	–
261.02	SlfCsmpPosSel	System location (expert mode)	North South	Northern hemisphere Southern hemisphere	✔ ✔	✖ ✖	–
261.03	Saisonenable	Automatic adjustment of the battery depth of discharge (expert mode) In seasons with fewer hours of sunlight, the electric discharge of the battery will be less.	No Yes	Disable Enable	✔ ✔	✖ ✖	Yes

262# BatUsage

No.	Name	Description	Value (plain text no.)	Explanation	🗼	⚡	Default value
262.01	ProtResSOC	Range for protection in the event of deep discharge as a percentage of the battery capacity (expert mode)	10% to 20%	Lead-acid batteries	✓	✗	10%
			3% to 20%	Lithium-ion batteries	✓	✗	3%
262.02	BatResSOC	Range for protection against deep discharge as a percentage of the battery capacity (expert mode)	2% to 50%	Lithium-ion battery, self-consumption only	✓	✗	2%
				Lithium-ion battery, battery backup system	✓	✗	10%
				Lead-acid battery, self-consumption only	✓	✗	30%
				Lead-acid battery, battery backup system	✓	✗	5%
262.03	BUResSOC	Range for the battery backup function on the longest day of the year as a percentage of the battery capacity (expert mode)	0% to 100%	–	✓	✗	0%
262.04	PVResSOC	Range for maintaining the state of charge of the battery as a percentage of the nominal capacity (expert mode)	4% to 20%	–	✓	✗	5%
262.05	MinSlfCsmpSOC	Range for increased self-consumption on the shortest day of the year as a percentage of the battery capacity (expert mode)	0% to 100%	Lithium-ion battery	✓	✗	70%
				Lead-acid battery	✓	✗	35%

13.2.7 Authent (270#)

No.	Name	Description		🗼	⚡
270.01	Auth.Code	Entry of the SMA Grid Guard code		✓	✗

13.3 Information (300#)

13.3.1 Inverter (310#)

311# Total

No.	Name	Description	🏃	⚒
311.01	EgyCntIn	Energy consumed by the Sunny Island inverter in kWh	✔	✔
311.02	EgyCntOut	Energy supplied by the Sunny Island inverter in kWh	✔	✔
311.03	EgyCntTm	Run time of the energy meter in hours	✔	✔

312# Device

No.	Name	Description	Value (plain text no.)	Explanation	🏃	⚒
312.01	Adr	Device address	Master (1)	Address	✔	✔
			Slave1 (2)	Address		
			Slave2 (3)	Address		
312.03	ApplSel	Operating mode of the Sunny Island (expert mode)	Offgrid	Sunny Island is operating in the stand-alone grid.	✔	✔
			OnGrid	Sunny Island is connected to the utility grid.		
312.05	SysFncSel	Selection of the on-grid system	SelfConsOnly	Increased self-consumption only	✔	✘
			BackupOnly	Battery backup only		
			SelfConsBackup	Battery backup with increased self-consumption		
312.06	FwVer	Firmware version of master	–	–	✔	✔
312.07	SN	Serial number of master	–	–	✔	✔
312.08	OnTmh	Operating hours	–	–	✔	✔
312.09	ClstCfgAt	Set configuration of cluster	1Phase1	Single-phase, one Sunny Island	✔	✔
			1Phase2	Single-phase, two Sunny Island inverters		
			1Phase3	Single-phase, three Sunny Island inverters		
			3Phase	Three-phase, three Sunny Island inverters		
312.10	OpStt	Operating state of the Sunny Island inverter	Operating (1)	Operation	✔	✔
			Warning (2)	Warning		
			Failure (3)	Error		

No.	Name	Description	Value (plain text no.)	Explanation	👤	⚒
312.11	CardStt	SD memory card status message	Off (1)	No SD memory card inserted	✔	✔
			Operational (2)	Ready for operation		
			Mount (3)	Initialization		
			OutOfSpace (4)	No storage space available		
			BadFileSys (5)	No file system detected		
			Incomp (6)	File system incompatible		
			Parameter (7)	Parameter set write access		
			ParamFailed (8)	Parameter set write access failed		
			WriteLogData (9)	Log data write access		
312.12	FwVer2	Firmware version of digital signal processor	–	–	✔	✔
312.13	FwVer3	Boot loader of the operation control unit	–	–	✔	✔
312.14	FwVer4	Boot loader of the digital signal processor	–	–	✔	✔
312.18	ComMod1	Type of interface in the interface slot **SISysCan**	– – –	No interface inserted	✖	✔
			SI-SysCan	SI-SYSCAN.BGx inserted (multicluster system)		
312.19	ComMod2	Type of interface in the interface slot **SiComSma**	– – –	No interface inserted	✔	✔
			SI-ComSma	SI-COMSMA.BGx inserted (RS485)		
			SI-SW-DM	SWDMSI-NR inserted (Speedwire)		
312.21	MmcUpdFmVer	OCU firmware version of the update file on the SD memory card	–	–	✔	✔
312.22	MmcUpdFmVer2	DSP firmware version of the update file on the SD memory card	–	–	✔	✔
312.23	MmcFileSys	File system of the SD memory card	FAT16	–	✔	✔
			FAT32	–		

313# Slave1

No.	Name	Description	Value	Explanation	🗼	⚒
313.01	FwVerSlv1	Firmware version of slave 1	–	–	✓	✓
313.02	SNSlv1	Serial number of slave 1	–	–	✓	✓
313.03	OnTmhSlv1	Operating hours of slave 1 in hours	–	–	✓	✓
313.04	PhSlv1	Line conductor assignment of slave 1	L1	Line conductor L1		
			L2	Line conductor L2		
			L3	Line conductor L3		
313.05	OpSttSlv1	Operating state of slave 1	Operating	Operation	✓	✓
			Warning	Warning		
			Failure	Error		
313.06	FwVer2Slv1	DSP firmware version of slave 1	–	–	✓	✓
313.07	FwVer3Slv1	OCU boot loader of slave 1	–	–	✓	✓
313.08	FwVer4Slv1	DSP boot loader of slave 1	–	–	✓	✓

314# Slave2

No.	Name	Description	Value	Explanation	🗼	⚒
314.01	FwVerSlv2	Firmware version of slave 2	–	–	✓	✓
314.02	SNSlv2	Serial number of slave 2	–	–	✓	✓
314.03	OnTmhSlv2	Operating hours of slave 2 in hours	–	–	✓	✓
314.04	PhSlv2	Line conductor assignment of slave 2	L1	Line conductor L1	✓	✓
			L2	Line conductor L2		
			L3	Line conductor L3		
314.05	OpSttSlv2	Operating state of slave 2	Operating	Operation	✓	✓
			Warning	Warning		
			Failure	Error		
314.06	FwVer2Slv2	Firmware version of the digital signal processor of slave 2	–	–	✓	✓
314.07	FwVer3Slv2	Boot loader of the operation control unit of slave 2	–	–	✓	✓
314.08	FwVer4Slv2	Boot loader of the digital signal processor of slave 2	–	–	✓	✓

13.3.2 Battery (320#)

No.	Name	Description	🧍	⚒
320.01	Soh	Usable battery capacity (SOH) in % Ratio of currently usable capacity to the rated value of the battery	✓	✓
320.02	StatTm	Run time of statistics counter in days	✓	✓
320.03	ChrgFact	Charge factor	✓	✓
320.04	BatEgyCntIn	Energy meter for battery charging in kWh	✓	✓
320.05	BatEgyCntOut	Energy meter for battery discharging in kWh	✓	✓
320.06	AhCntIn	Battery charging counter in Ah	✓	✓
320.07	AhCntOut	Battery discharging counter in Ah	✓	✓
320.08	BatTmpPkMin	Minimum battery temperature in °C	✓	✓
320.09	BatTmpPkMax	Maximum battery temperature in °C	✓	✓
320.10	EquChrgCnt	Equalization charge counter	✓	✓
320.11	FulChrgCnt	Full charge counter	✓	✓
320.12	BatCurOfsErr	Estimated offset error of battery current in A (expert mode)	✓	✓
320.13	OcvPointCnt	Open-circuit voltage points meter (expert mode)	✓	✓
320.15	AhCntFul	Ampere-hour meter for battery discharging since the last full charge in $^{Ah}/_{100\ Ah}$	✓	✓
320.16	AhCntEqu	Ampere-hour meter for battery discharging since the last equalization charge in $^{Ah}/_{100\ Ah}$	✓	✓
320.17	BatVtgPk	Maximum battery voltage reached since the last start in V	✓	✓
320.18	BatCurPkIn	Maximum battery current reached since the last start in charge direction in A	✓	✓
320.19	BatCurPkOut	Maximum battery current reached since the last start in discharge direction in A	✓	✓
320.20	SocHgm100	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 100% to and including 90%, based on time in % (expert mode)	✓	✓
320.21	SocHgm090	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 90% to and including 80%, based on time in % (expert mode)	✓	✓
320.22	SocHgm080	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 80% to and including 70%, based on time in % (expert mode)	✓	✓
320.23	SocHgm070	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 70% to and including 60%, based on time in % (expert mode)	✓	✓
320.24	SocHgm060	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 60% to and including 50%, based on time in % (expert mode)	✓	✓
320.25	SocHgm050	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 50% to and including 40%, based on time in % (expert mode)	✓	✓
320.26	SocHgm040	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 40% to and including 30%, based on time in % (expert mode)	✓	✓
320.27	SocHgm030	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 30% to and including 20%, based on time in % (expert mode)	✓	✓
320.28	SocHgm020	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 20% to and including 10%, based on time in % (expert mode)	✓	✓

No.	Name	Description	🕴	⚡
320.29	SocHgm010	Percentage frequency distribution of state of charge (SOC) when SOC is in the range of 10% to and including 0%, based on time in % (expert mode)	✔	✔
320.30	SocHgm000	Frequency distribution of SOC in relation to time, when SOC is equal to 0%, in % (expert mode)	✔	✔
320.31	SocVtgCal	Recalibration of SOC based on open-circuit voltage only in % (expert mode)	✔	✔
320.32	ErrSocVtgCal	Estimated error of the voltage-calibrated state of charge in % (expert mode)	✔	✔
320.33	SocChrgCal	Recalibration of SOC based on full charge only in % (expert mode)	✔	✔
320.34	ErrSocChrgCal	Estimated error of the full-charge-calibrated state of charge in % (expert mode)	✔	✔
320.35	OcvGra	Gradient of the open-circuit voltage characteristic curve in $^{Ah}/_V$ (expert mode)	✔	✔
320.36	OcvMax	Maximum open-circuit voltage in V (expert mode)	✔	✔

13.3.3 External (330#)

331# Grid

No.	Name	Description	🕴	⚡
331.01	GdEgyCntIn	Energy meter for grid feed-in in kWh	✔	✔
331.02	GdEgyCntOut	Energy meter for purchased electricity in kWh	✔	✔
331.03	GdEgyTmh	Duration, in which an energy exchange is possible with the utility grid, in hours	✔	✔
331.04	GdOpTmh	Operating hours counter for grid operation in hours	✔	✔
331.05	GdCtcCnt	Number of grid connections	✔	✔
331.06	TotTmh	Feed-in hours	✔	✔
331.07	GdFailTms	Duration of the grid failure in s	✔	✔

332# Generator

No.	Name	Description	🕴	⚡
332.01	GnEgyCnt	Energy meter for generator in kWh	✘	✔
332.02	GnEgyTm	Duration of the energy measuring for the generator in hours	✘	✔
332.03	GnOpTmh	Operating hours counter for generator in hours	✘	✔
332.04	GnStrCnt	Number of generator starts	✘	✔

13.4 Report (400#)

410# Error active

Display of currently pending warnings and errors (see Section 9 "Troubleshooting", page 41).

420# Error history

History of warnings and errors (see Section 9 "Troubleshooting", page 41).

430# Event history

History of events (see Section 9 "Troubleshooting", page 41).

440# Error grid

History of the last five grid errors (see Section 9 "Troubleshooting", page 41).

13.5 Operation (500#)

13.5.1 Inverter (510#)

No.	Name	Description	Value	Explanation	🧍	🛠	Default value
510.01	InvRs	Triggers a restart of the Sunny Island	No	Do not restart	✓	✓	–
			Yes	Restart			
510.02	InvTmOpEna	Time-controlled operation	Disable	Disable	✗	✓	Disable
			Enable	Enable			
510.03	InvTmOpStrDt	Start date for time-controlled operation in dd.mm.yyyy	–	–	✗	✓	–
510.04	InvTmOpStrTm	Time for the start of time-controlled operation in hh:mm:ss	00:00:00 to 23:59:59	–	✗	✓	–
510.05	InvTmOpRnDur	Run time for time-controlled operation in hh:mm:ss	00:00:00 to 99:59:00	–	✗	✓	–
510.06	InvTmOpCyc	Repetition cycle for time-controlled operation	Single	Once	✗	✓	Single
			Daily	Daily			
			Weekly	Weekly			
510.07	CntRs	Delete energy meter. The value indicates which energy meter is to be deleted.	Inv	Sunny Island	✓	✓	–
			Bat	Battery			
			Gn	Generator			
			Gd	Utility grid			
			All	All energy meters			
			Sic1	Sunny Island Charger 1			
			Sic2	Sunny Island Charger 2			
			Sic3	Sunny Island Charger 3			
			Sic4	Sunny Island Charger 4			
			SicAll	All Sunny Island Charger charge controllers			
510.08	TstClstCom	Activation of communication test between individual clusters (expert mode)	Off	Off	✗	✓	–
			Transmit	Enable			
510.09	ClstComStt	Status of communication test (expert mode)	Wait	Waiting	✗	✓	–
			OK	Completed			

13.5.2 Battery (520#)

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
520.01	ChrgSelMan	Manual equalization charge	Idle	Waiting until conditions are met	✓	✓	Idle
			Start	Start			
			Stop	Stop			

13.5.3 Generator (540#)

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
540.01	GnManStr	Manual generator start	Auto	Automatic	✗	✓	Auto
			Stop	Stop			
			Start	Start			
			Run1h	Start for 1 hour			
540.02	GnAck	Acknowledgment of generator errors	Ackn	Acknowledge	✗	✓	–

13.5.4 MMC-Card (550#)

No.	Name	Description	Value	Explanation	🏃	⚒
550.01	ParaSto	Save parameter settings	Set1	Parameter set 1	✓	✓
			Set2	Parameter set 2		
550.02	ParaLod	Load parameter settings (expert mode)	Set1	Parameter set 1	✓	✓
			Set2	Parameter set 2		
			Factory	Load default settings		
550.03	CardFunc	Functions of the SD memory card	ForcedWrite	Forced write	✓	✓
			StoEvtHis	Storing event memory		
			StoFailHis	Storing fault memory		
			StoHis	Storing event and fault memory		

13.5.5 Grid (560#)

No.	Name	Description	Value	Explanation	🏃	⚒	Default value
560.01	GdManStr	Manual connection to the utility grid Visible if the parameter 233.01 GdSocEna or 233.08 GdPwrEna is enabled.	Auto	Automatic	✗	✓	Auto
			Stop	Stop			
			Start	Start			

14 Menu Structure

14.1 User Mode

Inverter	Tot. Power MC.Power Timer Mode	→	Restart Str. Date Start Time Run Time Repetition Timed Start
Battery	State Of Charge Voltage Power Out Mode Remain Time Next equal Health (SOH) Cycle	→	Equalize
Grid	Power Voltage Freqeuncy	→	Mode
Self Cnsmptn	Inc Power Inc Today Inc Energy Energy		
Grid Cnsmptn	Power Energy		
Grid Feed	Power Energy		
Loads	Power Energy ConState		
PV-System	Power Energy ConState		
System	Type Box Type Device		
Time	Date Time	→	Date Time
Identity	Serial No. Firmware		
Password	Level	→	Set Runtime

Figure 20: Menu structure: user mode

14.2 Installer Mode and Expert Mode

100#	Meters	→	110#	Inverter	→	111#	Total
			120#	Battery		112#	Device
						113#	Slave 1
						114#	Slave 2

	130#	External	→	131#	Total
				132#	Grid State
				133#	Gen State
				134#	Device
				135#	Slave 1
				136#	Slave 2

	140#	Charge Controller	→	141#	SIC50 Total
	150#	Compact		142#	SIC50 1
				143#	SIC50 2
				144#	SIC50 3
				145#	SIC50 4

	160#	SlfCsmp	→	161#	Power
				162#	Energy
200#	Settings	→	210#	Inverter	163#	State

	220#	Battery	→	221#	Property
				222#	Chargemode
				223#	Protection
				224#	BatSilentmode
				225#	Current Sensor

	230#	External	→	231#	General
				232#	Grid Control
				233#	Grid Start
				234#	Gen Control
				235#	Gen Start

	240#	Relay	→	241#	General
	250#	System		242#	Load
				243#	Timer
				244#	Slave1
				245#	Slave2

	260#	SelfCsmpBackup	→	261#	General
	270#	Authent		262#	BatUsage

300#	Information	→	310#	Inverter	→	311#	Total
			320#	Battery		312#	Device
						313#	Slave1
						314#	Slave2

	330#	External	→	331#	Grid
				331#	Generator

400#	Report	→	410#	Error active
			420#	Error history
			430#	Event history
			440#	Error Grid

500#	Operation	→	510#	Inverter
			520#	Battery
			540#	Generator
			550#	MMC-Card
			560#	Grid
			570#	Inst Test

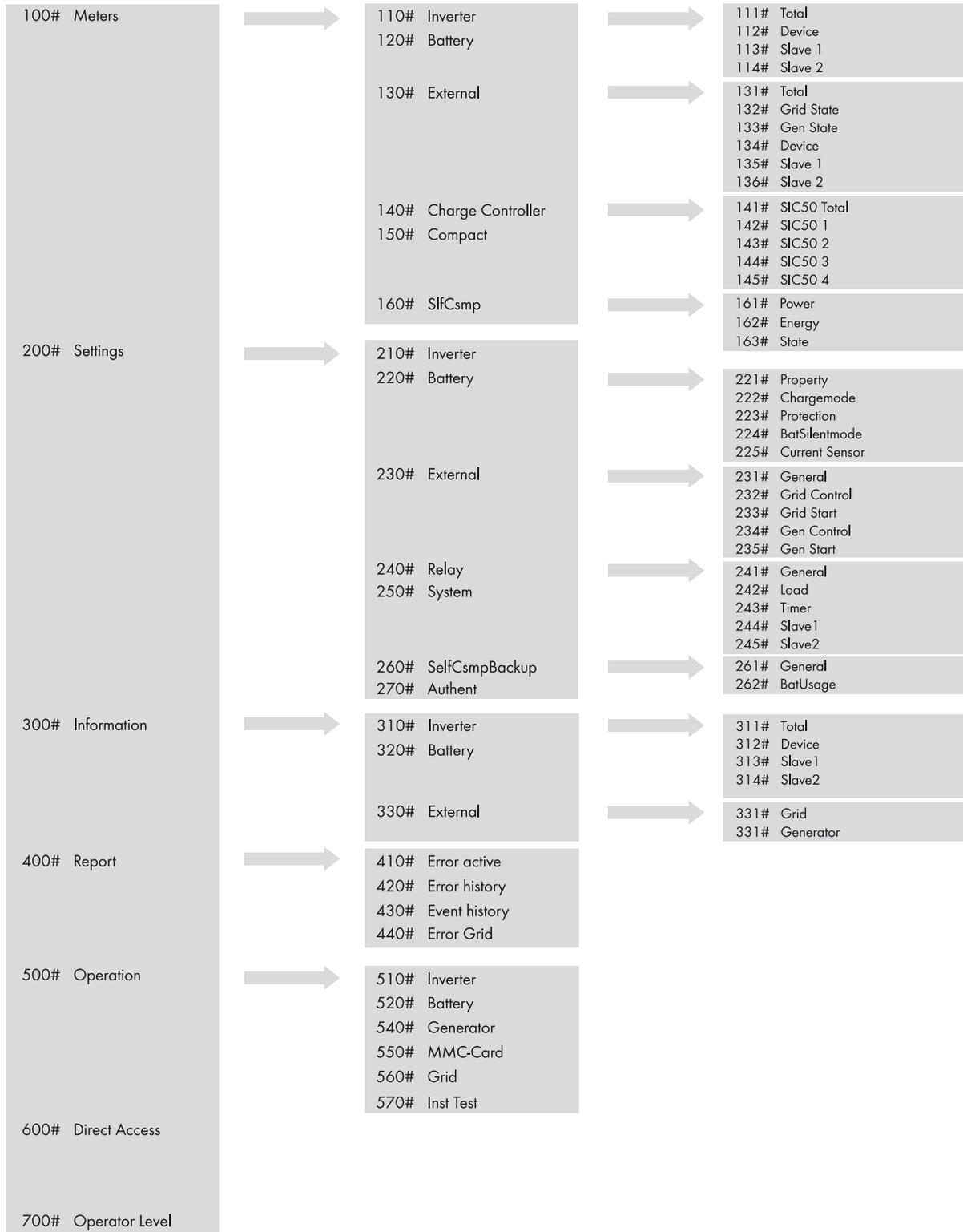| 600#	Direct Access

700#	Operator Level

Figure 21: Menu structure: installer mode and expert mode

15 Contact

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

- Sunny Island inverter type
- Sunny Island inverter serial number
- Sunny Island inverter firmware version
- Displayed error message
- Type of battery connected
- Nominal battery capacity
- Nominal battery voltage
- Type of the communication products connected
- Type and size of additional energy sources

Australia	SMA Australia Pty Ltd. Sydney	Toll free for Australia:	1800 SMA AUS (1800 762 287)
		International:	+61 2 9491 4200
Belgien/ Belgique/ België	SMA Benelux BVBA/SPRL Mechelen	+32 15 286 730	
Brasil	Vide España (Espanha)		
Česko	SMA Central & Eastern Europe s.r.o. Praha	+420 235 010 417	
Chile	Ver España		
Danmark	Se Deutschland (Tyskland)		
Deutschland	SMA Solar Technology AG Niestetal	Medium Power Solutions	
		Wechselrichter:	+49 561 9522-1499
		Kommunikation:	+49 561 9522-2499
		SMA Online Service Center:	www.SMA.de/Service
		Hybrid Energy Solutions	
		Sunny Island:	+49 561 9522-399
		PV-Diesel Hybridsysteme:	+49 561 9522-3199
		Power Plant Solutions	
		Sunny Central:	+49 561 9522-299
España	SMA Ibérica Tecnología Solar, S.L.U. Barcelona	Llamada gratuita en España:	900 14 22 22
		Internacional:	+34 902 14 24 24

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		Communication :	+33 472 09 04 41
		Hybrid Energy Solutions	
		Sunny Island :	+33 472 09 04 42
		Power Plant Solutions	
		Sunny Central :	+33 472 09 04 43
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Italia	SMA Italia S.r.l.	+39 02 8934-7299	
	Milano		
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Luxemburg/ Luxembourg	Siehe Belgien/ Voir Belgien (Belgique)		
Magyarország	lásd Česko (Csehország)		
Nederland	zie Belgien (België)		
Österreich	Siehe Deutschland		
Perú	Ver España		
Polska	Patrz Česko (Czechy)		
Portugal	SMA Solar Technology Portugal, Unipessoal Lda	Gratuito em Portugal:	800 20 89 87
	Lisboa	Internacional:	+351 2 12 37 78 60
România	Vezi Česko (Cehia)		
Schweiz	Siehe Deutschland		
Slovensko	pozri Česko (Česká republika)		
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	Milton Keynes		
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	Αθήνα	International:	+30 212 222 9 222
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