



ESS 7.0 / 9.0

QUICK GUIDE ESS 7.0 / 9.0
INSTALLATION WITH SUNNY ISLAND PRODUCTS

IDENTIFICATION

PRODUCT

Model: ESS 7.0 | ESS 9.0
Country of origin: Germany
Signs: CE

MANUFACTURER

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CUSTOMER SERVICE

Please contact your contract partner.

DOCUMENT

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Installation mit Sunny Island Produkten“
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Applicable documents: Operating Manual ESS 7.0,
Installation manual for Sunny Island inverter.

Subject to change without notice.

IMPORTANT INFORMATION ABOUT THIS MANUAL

PURPOSE AND TARGET GROUP

This manual describes the installation of one ESS 7.0 or ESS 9.0 battery and its connection to the SMA Sunny Island inverter.

The installation must only be done by qualified electricians. Before you install the ESS make sure you understand this quick guide.

STRUCTURE OF THE DOCUMENTATION

If you want to install more than one ESS battery, please refer to the operating manual:

www.bmz-group.com ⇒ Products ⇒ Energy Storage
⇒ ESS 7.0 / 9.0 ⇒ Operating manual

EXPLANATION OF SIGNS AND WARNINGS






Symbol	Meaning
	indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.
	indicates a hazardous situation, which if not avoided, could result in minor or moderate injury.
	indicates situations related to material damage.
	indicates hints and further information.

TABLE 1: EXPLANATION OF SIGNS AND WARNINGS

TRADEMARKS

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URHEBERRECHT

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1 SAFETY NOTES

The design of the energy storage system ensures that people are not exposed to avoidable hazards. Particular hazardous spots are secured by special guards.

Nevertheless, hazardous spots always remain. When working on the energy storage system, you must know these hazardous spots and know what to do in order to keep the risk of injuries and damage to material as low as possible.

GENERAL

Only put the system in operation when all safety devices are built in and ready to use.

Never install or run a potentially defective or obviously defective energy storage system! Keep the energy storage system clean and in good condition. The energy storage system must only be used in a faultless condition.

Only use original parts. The use of parts that do not meet our specifications may endanger people and the system.

Do not modify the product. BMZ GmbH is not liable for damage to persons and/or property due to modifications to the system.

Do not solder cables to the battery.

Do not short-circuit the battery.

Never open, disassemble, pierce, or crush the battery.

Schließen Sie die Batterie nicht kurz.

Öffnen, zerlegen, durchbohren, zerquetschen Sie die Batterie niemals.

Never allow the battery to fall.

Do not expose batteries to rain or dip them in liquids.

Do not touch damaged batteries with bare hands. Lithium can cause severe skin burns. Handle damaged batteries with suitable safety equipment and tools.

Do not use defective, damaged or leaked batteries.

Do not use batteries that show discolouration, deformations, unusual noises or severe heat.

INSTALLATION AND REPAIR

Wear personal protective equipment (PPE):

- Safety shoes class S3
- ESD-protective clothing
- Suitable protective gloves
- Suitable safety goggles
- No electrically conductive objects (jewelry, rings, watches, necklaces...)

Danger to life when touching live components! You may also fall or be slung away due to contact with electric

potential. You may get burns when touching defective and/or overloaded parts.

- When working on the current circuit or on the battery, always switch off the main switch first. Secure it with a padlock.
- When working on the current circuit or on the battery, always open the safety disconnection elements first. Secure the battery in which the disconnection elements are spatially separated and kept.
- Pay attention to the risk of electric arcs when pulling the NH1 isolator under the full load of the battery.
- Follow the 5 safety rules of battery technology.

If a tool is not removed before commissioning, it may cause a short-circuit and injure persons or damage the system.

- Do not keep any tools or metal parts on or in the battery.
- Only use the completely insulated tool.
- Before commissioning/re-commissioning the battery system, ensure that there are no tools in the battery system.

TRANSPORT

There is a risk of injuries due to the weight of the system. The system may tilt or fall in case of improper transport.

- Only use the transport aids that are suitable for the weight.
- Ensure the correct weight distribution of the system when transporting.
- The transport aids must provide a braking effect in case of a steep transport route.

OPERATION

Fire may erupt during operation due to sparks or heated surfaces.

- Follow the corresponding safety regulations (5 safety rules).
- Furthermore, only experts may maintain, modify or dismantle the battery storage system.
- Never install or operate a potentially or obviously defective battery storage.

PREVENTION OF FIRE AND EXPLOSION

The battery storage system does not pose a fire hazard. In case of a fire in the system, avoid its spreading to other objects.

Keep a fire extinguisher (class D) in the immediate vicinity of the system.

The battery storage system is de-energised at the time of delivery. Internal connection poles are always live. Therefore, ensure that a tool or a metallic object is not kept in the battery system. This could lead to a short-

circuit and severe heat formation, which in turn could cause an explosion.

The battery storage system is not suitable for use in explosive atmospheres. Ensure that there are no ignition sources in the within a radius of 3 m around the system.

IN CASE OF FIRE

Possible risk of life due to electric shock when quenching fire or due to flooding!

Keep in mind that poisonous vapours may be developed due to burning batteries and may hamper and damage the function of respiratory tracts.

If you do not observe the following behavioural instructions, they may cause material damage and personal injuries; BMZ GmbH shall not bear any liability in such a case.

- Switch off the battery storage system if it is possible without any risk.
- Notify the fire brigade immediately.
- Help others and yourself to get out of the danger area immediately.
- Inform the fire brigade about the presence of lithium-ion batteries.

IN CASE OF DAMAGE

Possible risk to life due to leaking electrolytes! If cells and the housing are damaged, there is a risk of contact with electrolytes.

- Switch off the battery storage system if it is possible without any risk.
- Ensure adequate ventilation outside.

CLEANING

Risk of damaged machine.

- Never clean the system or system parts using a vapour jet or spray water. Dirt and water may enter the system and cause major damage.
- Use only a moist and clean cotton cloth for cleaning.

2 INSTALLING THE ESS (SINGLE-MODE)

2.1 INSTALLATION SITE

The installation site must fulfil the following requirements:

- Lockable room in a building
- Inaccessible for children and unauthorized persons
- No direct solar radiation
- Levelled, dry surface
- Floor loading: 105 kg per module
- Ambient temperature: 2 °C ... 45 °C

- Free access to the NH isolator
- Distance to wall ≥ 20 cm
- Distance to ceiling ≥ 50 cm
- Below 2000-metre altitude

2.2 UNPACKING AND CLEANING

UNPACKING

Check the ESS for transport damage.

Energiespeicher auf Transportschäden prüfen. An indication can be a deformation of the carton. Do not install damaged energy storage systems.

Indiz hierfür kann eine sichtbare Deformierung der Verpackung sein. Beschädigte Energiespeicher nicht installieren. The consequences would be:

- Fire hazard
- Loss of warranty
- Manufacturer is not liable for consequential damage
- Functionality not guaranteed

Check cables for defects. Do not use defective cables to prevent electric shocks.

CLEANING

Make sure that the contacts are dry and clean. If required, clean with a clean and dry cloth.

2.3 CONNECTING

WARNING

Hazardous voltage

Touching live parts will result in electric shock which may have a thermal or muscle-paralysing effect. The latter can cause ventricular fibrillation, cardiac arrest or respiratory paralysis resulting in death.

- ▶ Avoid touching live parts.
- ▶ Wear protective clothing.
- ▶ Use insulated tools.

INTRODUCTION

This short guide describes the connecting of a single battery. The installation of cluster systems is described in the operating manual.

PREREQUISITES

- The battery is switched off.
- The inverter is switched off and ready to connect.
- All connectors are dry and clean.

TOOLS

- Screwdriver (see SMA specifications)

INSTRUCTION

1. Connect the cables (50 mm²) to the inverter according to SMA specifications. Make sure that the contact surfaces are in full contact.



Polarity

red
⇒ Plus
black
⇒ Minus

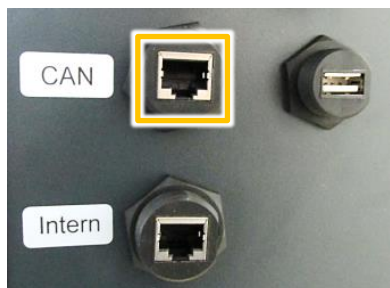
Parts

2x screw M8x20
2x washer
2x safety washer

Torque

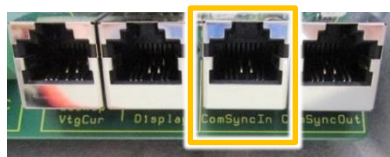
12 N m

2. Connect the CAN sockets of the inverter and the ESS with the patch cable (RJ45).



Parts

1x Patch cable



Sunny Island 6.0:

Use patch cable (here: red) to connect the ESS ComSyncIn socket with the Sunny Island inverter.

NOTICE:
Assignments and names may vary. See SMA specifications.



3. According to the permitted currents of the inverter, insert the NH1 fuses and close the NH isolator.



Parts

2x NH fuse

Recommendations

80 A
⇒ SI 3.0 M-11
100 A
⇒ SI 4.4 M-11
160 A
⇒ SI 6.0 H-11
200 A
⇒ SI 8.0 H-11

4. Press the start button for 1 second.



NOTE: After starting the battery, the inverter is being precharged for about 30 s. Then both LEDs are flashing.

⇒ The inverter can now be switched on, parameterized and used according to SMA specifications.

3 OPERATING THE ESS

3.1 SWITCH ON THE ESS

- ▶ Push start button for 1 second.

3.2 SWITCH OFF THE ESS

- ▶ Push start button for 10 seconds.
 - ⇒ After 8 seconds both LEDs flash quickly.
 - ⇒ After 10 seconds the battery switches off.

4 PARAMETERISING THE SUNNY ISLAND INVERTER

In order to ensure the optimum working range of the battery and to optimise the quantity of storable energy, the battery manufacturer provides the following recommendations for the parameters of the inverter.

NOTE

A detailed description of parameters is given in the operating manual of your SMA Sunny Island inverter.

ANLEITUNG

1. Enter the following values in the quick configuration guide during the basic configuration of the Sunny Island inverter (see the documentation of the system):

- **BatTyp:** Lilon_Ext-BMS
 - **BatCpyNom:** For Ah values see type plate on the battery's backside (C10). Multiply the value for each battery in parallel
2. After the basic configuration of the Sunny Remote Control, turn the knob and select the input page **Password (1/1)**. Press the button to confirm.
 3. Calculate the checksum of the Runtime operating hours to determine the installer password.
 - **Example:** The Runtime operating hours are 1234 h. The checksum is the sum of all digits: $1 + 2 + 3 + 4 = 10$
 4. Select **Set** on the Sunny Remote Control and press the button.
 5. Set the determined installer password and press the button.
 - ⇒ Sunny Remote Control is in installer mode.
 6. **Select 700# Operator Level.**

```
Installer
500# Operation
600# Direct Access
700# Operator Level
```
 7. **Select 700.01 ActLev. Set to Expert.**

```
Operator Level
700#01      <Set>
           ActLev
           Expert
```
 8. Conform **<accept Y/N>** with **Y**.
 9. Set the following parameters only to optimize the Sunny Island units for on-grid-systems (4.1/4.2) or for off-grid-systems (4.3).

4.1 ON-GRID PARAMETERS OPTIMIZED FOR OWN CONSUMPTION

Nummer	Name	Wert
261.03	Saisonenable	No
262.01	ProtResSOC	3 %
262.02	BatResSOC	2 %
262.04	PVResSOC	5 %
262.05	MinSIfCsmplSOC	90 %

4.2 ON-GRID PARAMETERS OPTIMIZED FOR BACKUP POWER SYSTEMS INCLUDING OWN CONSUMPTION

Nummer	Name	Wert
261.03	Saisonenable	No
262.01	ProtResSOC	3%
262.02	BatResSOC	2%
262.03	BUResSOC	1%
262.04	PVResSOC	5%
262.05	MinSIfCsmplSOC	89%

4.3 OFF-GRID PARAMETERS

Nummer	Name	Wert
235.xx	Diesel Generator Anfrage	12 %
242.xx	Lastabwurf Relais	10 %
223.07	BatProSoc 3	3 %
223.06	BatProSoc 2	5 %
223.05	BatProSoc 1	7 %

LEARNING CYCLE

In order to optimize the efficiency of the battery, the battery automatically executes a learning cycle at periodic intervals, wherein the actually usable capacity of the battery is automatically determined.

In this learning cycle, the battery must cover the SOC limits of 100% and 12% as frequently as possible.

The learning cycle starts at 100% SOC (battery full) and ends at 12% SOC. If both incidents occur in succession and, in the meantime, the energy is not charged more than 20% SOC, then the learning cycle is evaluated as 'successfully executed'.

The higher the frequency of execution of this learning cycle, the more precise is the SOC calculation. The higher the frequency of execution of this learning cycle, the more the energy that the battery can save and transfer.



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