Batteries in Sunny Island Systems

List of Approved Batteries

The Sunny Island product family (SI3.0M, SI4.4M, SI6.0H and SI8.0H) is equipped with an integrated battery management system for lead-acid batteries of type FLA and VRLA.

It is also possible to connect an external battery management that uses different battery technologies.

⚠ WARNUNG

Danger to life due to fire or explosion when batteries are fully discharged

A fire may occur due to incorrect charging of fully discharged batteries. This can result in death or serious injury.

- Before commissioning the system, verify that the battery is not fully discharged.
- Do not commission the system if the battery is fully discharged.
- If the battery is fully discharged, contact the battery manufacturer for further proceedings.
- Only charge fully discharged batteries as instructed by the battery manufacturer.

Legal Provisions

This document does not replace any regional, state, provincial, federal or national laws, regulations or standards that apply to the installation, electrical safety and use of the product. SMA Solar Technology AG assumes no responsibility for the compliance or non-compliance with such laws or codes in connection with the installation of the Sunny Island.

Retrofit

The batteries listed in this document can also be retrofitted to systems already in operation using Sunny Island-11/-12/-13. The prerequisite for this is a firmware update of the inverter. The update file is, for example, available for download on the product page of the inverter at www.SMA-Solar.com.

Using lead-acid batteries

The battery management integrated in the Sunny Island ensures that the lead-acid battery is charged carefully, deep discharge is avoided and the state of charge of the battery is determined. Prerequisite for optimum operation of the system and, in particular, for gentle treatment of the lead-acid battery is the adjustment of the parameters of the lead-acid battery to the values of each respective application recommended by the battery manufacturer (see operation and installation manual).

Using lithium-ion and hybrid (sodium)-ion batteries

All lithium-ion and hybrid (sodium)-ion batteries supply a defined nominal current. The full functionality for the PV storage system can only be guaranteed if the battery capacity (battery capacity and battery currents) is matched to the Sunny Island system constellation used. In particular, three-phase systems usually require more than one battery.

- Pay attention to the battery manufacturers' recommendations at the end of this document or to the minimum configuration lists regarding the suitable dimensioning of the battery (battery type, circuitry and number of battery modules). Only this ensures that the nominal and overload currents specified in the datasheet for the various system constellations and applications can be achieved.

The lithium-ion batteries of the following manufacturers are approved for the SMA Flexible Storage System with the Sunny Island 3.0M / 4.4M / 6.0H / 8.0H:

			Self-consumption systems			Battery backup systems			Off-grid systems		
Manufacturer	**Type**	**as of firmware**	**1~**	**3~**	**Comment**	**1~**	**3~**	**Comment**	**1~**	**3~**	**Comment**
ADS-TEC	StoraXe® Home & Small Business SRS0009	–	✓	–	–	✓	–	–	–	–	–
Akasol	neeoQube	–	✓	–	–	–	–	–	–	–	–
	neeoRack	–	✓	✓	–	✓	✓	Only for Sunny Island 3.0M and 4.4M	✓	✓	Only for Sunny Island 3.0M and 4.4M
Axitec	AXITEC AXIstorage Li7S	2.04	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
	AXITEC AXIstorage Li9S	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
	AXITEC AXistorage Li10S	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
BMZ	BMZ ESS 3.0	2.04	✓	✓	–	✓	✓	–	✓	✓	–
	BMZ ESS 7.0	2.04	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
	BMZ ESS 9.0	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
	BMZ ESS X	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
BYD	B-BOX	2.7	✓	✓	–	✓	✓	–	✓	✓	–
	Battery-Box LV	1.0	✓	✓	–	✓	✓	3~ only for Sunny Island 4.4M	–	–	–
	Battery-Box Premium LVL 15.4	BMU: 1.8 BMS: B-1.3	✓	✓	–	✓	✓	–	✓	✓	–
	Battery-Box Premium LVS 4.0-24.0	BMU: 1.18 BMS: 1.8	✓	✓	-	✓	✓	-	✓	✓	-
Cegasa	eBick PRO 280	3.2.0	✓	✓	–	✓	✓	–	✓	✓	–
GS HUB	HomeHub (MU8G1 + BU25G1);	MU > 8.5 BU > 3.13	✓	✓	3~ only for Sunny Island 4.4M***	✓	–	-	✓	–	-
GNB	Sonnenschein lithium	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
Hoppecke	sun|powerpack premium	1.1.0 r11767	✓	✓	–	✓	✓	–	✓	✓	–
IBC	SolStore X.X Li	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
Leclanché	Apollion Cube	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
LG Energy Solution	RESU 5.0	–	✓	–	–	–	–	–	–	–	–
	RESU 6.4	–	✓	–	Recommended for Sunny Island 3.0M and 4.4M	✓	–	Only for Sunny Island 3.0M and 4.4M	–	–	–
	RESU 3.3	–	✓	–	Only for Sunny Island 3.0M and 4.4M	–	–	–	–	–	–
	RESU 6.5	–	✓	–	–	✓	–	Only for Sunny Island 3.0M	–	–	–
	RESU 10	–	✓	–	–	✓	–	Only for Sunny Island 3.0M and 4.4M	–	–	–
	RESU 12*	2.0.0.0	✓	–	–	✓	–	Only for Sunny Island 4.4M and 6.0H	–	–	–
	RESU 13*	1.7.0.3	✓	–	–	✓	–	Only for Sunny Island 4.4M and 6.0H	–	–	–
	RESU Plus Extension Kit (accessory for parallel connection of 2 RESU batteries)**	–	✓	–	–	✓	–	Only for Sunny Island 3.0M and 4.4M	–	–	–

Manufacturer	Type	as of firmware	Self-consumption systems			Battery backup systems			Off-grid systems		
			1~	3~	Comment	1~	3~	Comment	1~	3~	Comment
Mercedes-Benz Energy GmbH	Mercedes-Benz Energiespeicher Home	29.30 - 5.X	✓	–	Recommended for Sunny Island 3.0M and 4.4M	✓	–	Only for Sunny Island 3.0M and 4.4M	–	–	–
	Mercedes-Benz Energy Storage Home (2.0)	10.xx	✓	–	–	–	–	–	–	–	–
Murata	Murata PLC-BMU Solution with IJ1101M	–	–	–	–	–	–	–	✓	✓	–
Pylontech	US2000 US2000C	2.9 2.1	✓	✓	–	✓	✓	–	✓	✓	When used in a off-grid system, the battery protection mode level 3 must not be set below 4 % on the inverter.
	US3000 US3000C	2.9 2.1	✓	✓	–	✓	✓	–	✓	✓	
	US5000	1.0	✓	✓	–	✓	✓	–	✓	✓	
	US5000B	1.0	✓	✓	–	✓	✓	–	✓	✓	
	UP5000	2.1	✓	✓	–	✓	✓	–	✓	✓	
Sony	Controller IJ1004C Module fORTELION IJ1001M	–	✓	✓	–	✓	✓	–	✓	✓	–
SSL Energie GmbH	eSafe©	1.0.35	✓	✓	–	✓	✓	–	✓	✓	–
Tesvolt	Tesvolt Lithium-Ion storage Li10	3.17	✓	✓	–	✓	✓	–	✓	✓	–
	Tesvolt Lithium-Ion storage Li 20 and higher	1.11	✓	✓	–	✓	✓	–	✓	✓	–
	TS-Series	1.06	✓	✓	–	✓	✓	–	✓	✓	–

* RESU 12 and RESU 13 are designed to be discharged under power of 5 kW in all operating modes (self-consumption system and battery-backup system). The overload capability of the battery is limited to a duration of 3 sec for all conditions exceeding nominal power. Ensure that the system is operated according to its intended use.

** If two RESU batteries are used with the RESU Plus Extension Kit, the total battery capacity is equal to the sum of the two individual battery capacities. However, the maximum peak power of both batteries is always 5 kW.

*** During three-phase continuous operation with the nominal power of the inverter, derating of the battery may occur depending on the temperature and state of charge of the battery. Derating the battery temporarily reduces the power of the entire system.

The hybrid (sodium)-ion batteries of the following manufacturers are approved for the SMA Flexible Storage System and the Sunny Island 3.0M / 4.4M / 6.0H / 8.0H:

Manufacturer	Type	as of firmware	Self-consumption systems			Battery backup systems			Off-grid systems		
			1~	3~	Comment	1~	3~	Comment	1~	3~	Comment
Aquion Energy*	Aspen 48S / 48M	–	✓	✓	–	✓	✓	–	✓	✓	–

* Contact Aquion Energy if services are required.

The lithium-ion batteries of the following manufacturers are approved for the Sunny Island 4548-US / 6048-US:

Manufacturer	Type	as of firmware	Self-consumption systems			Battery backup systems			Off-grid systems		
			1~	3~	Comment	1~	3~	Comment	1~	3~	Comment
Axitec	AXITEC AXIstorage Li 7S	2.04	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
	AXITEC AXIstorage Li 9S	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
	AXITEC AXistorage Li10S	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
BMZ	BMZ ESS 3.0	2.04	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer
	BMZ ESS 7.0	2.04	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer Emergency power generator
	BMZ ESS 9.0	2.06	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer Emergency power generator
	BMZ ESS X	2.06	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer Emergency power generator
BYD	B-BOX	2.7	✓	✓	–	✓	✓	–	✓	✓	–
Leclanché	Apollion Cube	2.06	✓	✓	–	✓	✓	–	✓	✓	Emergency power generator
Tesvolt	Tesvolt lithium-ion storage	3.17	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer	✓	✓	Always check UL compatibility with manufacturer
	TS-Series	1.06	✓	✓	–	✓	✓	–	✓	✓	–

The hybrid (sodium)-ion batteries of the following manufacturers are approved for the Sunny Island 4548-US / 6048-US:

Manufacturer	Type	as of firmware	Self-consumption systems			Battery backup systems			Off-grid systems		
			1~	3~	Comment	1~	3~	Comment	1~	3~	Comment
Aquion Energy*	Aspen 48S / 48M		✓	✓	–	✓	✓	–	✓	✓	–

* Contact Aquion Energy if services are required.

Recommended minimum configuration for use in different applications

The following minimum configurations are recommended for the following batteries in order to be able to use the rated power and overload capability of the Sunny Island devices. Deviation from these recommendations is possible, but may result in the system not being able to deliver the power specified in the datasheet of our devices. Especially for battery-backup or off-grid operations where no other AC sources are available, the specified configurations should be considered.

Some electrical loads (e.g. motors) may have high starting currents for a short time. These electrical loads may require a larger design with more battery modules or systems than specified by minimum configuration.

BYD Battery-Box Premium LVS

Application		Inverter	Battery modules	Systems (towers)
Self-consumption	Single-phase	SI 4.4M	≥ 1	≥ 1
		SI6.0H	≥ 2	≥ 1
		SI8.0H	≥ 3	≥ 1
	Three-phase	SI 4.4M	≥ 4	≥ 1
		SI6.0H	≥ 6	≥ 2
		SI8.0H	≥ 8	≥ 2
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 2	≥ 1
		SI6.0H	≥ 4	≥ 1
		SI8.0H	≥ 4	≥ 1
	Three-phase	SI 4.4M	≥ 8	≥ 2
		SI6.0H	≥ 12	≥ 3
		SI8.0H	≥ 12	≥ 3

BYD Battery-Box Premium LVL 15.4

Application		Inverter	Systems (towers)
Self-consumption	Single-phase	SI 4.4M	≥ 1
		SI6.0H	≥ 1
		SI8.0H	≥ 1
	Three-phase	SI 4.4M	≥ 1
		SI6.0H	≥ 2 * LVL 15.4
		SI8.0H	≥ 2* LVL 15.4
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 1
		SI6.0H	≥ 1
		SI8.0H	≥ 1
	Three-phase	SI 4.4M	≥ 2* LVL 15.4
		SI6.0H	≥ 3* LVL 15.4
		SI8.0H	≥ 3* LVL 15.4

Cegasa eBick PRO 280

Application		Inverter	Battery modules	Systems (towers)
Self-consumption	Single-phase	SI 4.4M	≥ 1	≥ 1
		SI6.0H	≥ 1	≥ 1
		SI8.0H	≥ 1	≥ 1
	Three-phase	SI 4.4M	≥ 1	≥ 1
		SI6.0H	≥ 2	≥ 1
		SI8.0H	≥ 2	≥ 1
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 1	≥ 1
		SI6.0H	≥ 1	≥ 1
		SI8.0H	≥ 1	≥ 1
	Three-phase	SI 4.4M	≥ 2	≥ 1
		SI6.0H	≥ 2	≥ 1
		SI8.0H	≥ 3	≥ 1

GS HUB HomeHub

Application		Inverter	Battery modules	Systems (towers)
Self-consumption	Single-phase	SI 4.4M	≥ 2	≥ 1
		SI6.0H	≥ 3	≥ 1
		SI8.0H	≥ 3	≥ 1
	Three-phase	SI 4.4M	≥ 4*	≥ 1
		SI6.0H	-	-
		SI8.0H		
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 3	≥ 1
		SI6.0H	≥ 4	≥ 1
		SI8.0H	≥ 4	≥ 1
	Three-phase	SI 4.4M	-	-
		SI6.0H		
		SI8.0H		

* During three-phase continuous operation with the nominal power of the inverter, derating of the battery may occur depending on the temperature and state of charge of the battery. Derating the battery temporarily reduces the power of the entire system.

Pylontech US2000/2000C

Application		Inverter	Battery modules	Battery-cable sets*
Self-consumption	Single-phase	SI 4.4M	≥ 3	1
		SI6.0H	≥ 4	2
		SI8.0H	≥ 5	2
	Three-phase	SI 4.4M	≥ 9	3
		SI6.0H	≥ 12	4
		SI8.0H	≥ 15	5
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 3	2
		SI6.0H	≥ 4	3
		SI8.0H	≥ 5	3
	Three-phase	SI 4.4M	≥ 9	4
		SI6.0H	≥ 12	6
		SI8.0H	≥ 15	8

* The battery cable sets are required for connection to an inverter, to a DC busbar or to a DC combiner.

Pylontech US3000/3000C

Application		Inverter	Battery modules	Battery-cable sets*
Self-consumption	Single-phase	SI 4.4M	≥ 2	1
		SI6.0H	≥ 3	2
		SI8.0H	≥ 4	2
	Three-phase	SI 4.4M	≥ 6	3
		SI6.0H	≥ 9	4
		SI8.0H	≥ 11	5
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 2	2
		SI6.0H	≥ 3	3
		SI8.0H	≥ 4	3
	Three-phase	SI 4.4M	≥ 6	4
		SI6.0H	≥ 9	6
		SI8.0H	≥ 11	8

* The battery cable sets are required for connection to an inverter, to a DC busbar or to a DC combiner.

Pylontech UP5000

Application		Inverter	Battery modules	Battery-cable sets*
Self-consumption	Single-phase	SI 4.4M	≥ 2	1
		SI6.0H	≥ 3	2
		SI8.0H	≥ 3	2
	Three-phase	SI 4.4M	≥ 5	3
		SI6.0H	≥ 7	4
		SI8.0H	≥ 9	5
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 2	2
		SI6.0H	≥ 3	3
		SI8.0H	≥ 4	3
	Three-phase	SI 4.4M	≥ 5	4
		SI6.0H	≥ 8	6
		SI8.0H	≥ 10	8

* The battery cable sets are required for connection to an inverter, to a DC busbar or to a DC combiner.

Pylontech US5000/US5000B

Application		Inverter	Battery modules	Battery-cable sets*
Self-consumption	Single-phase	SI 4.4M	≥ 1	1
		SI6.0H	≥ 2	2
		SI8.0H	≥ 2	2
	Three-phase	SI 4.4M	≥ 3	3
		SI6.0H	≥ 5	4
		SI8.0H	≥ 6	5
Battery backup / off-grid operation	Single-phase	SI 4.4M	≥ 2	2
		SI6.0H	≥ 2	3
		SI8.0H	≥ 3	3
	Three-phase	SI 4.4M	≥ 4	4
		SI6.0H	≥ 6	6
		SI8.0H	≥ 8	8

* The battery cable sets are required for connection to an inverter, to a DC busbar or to a DC combiner.

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