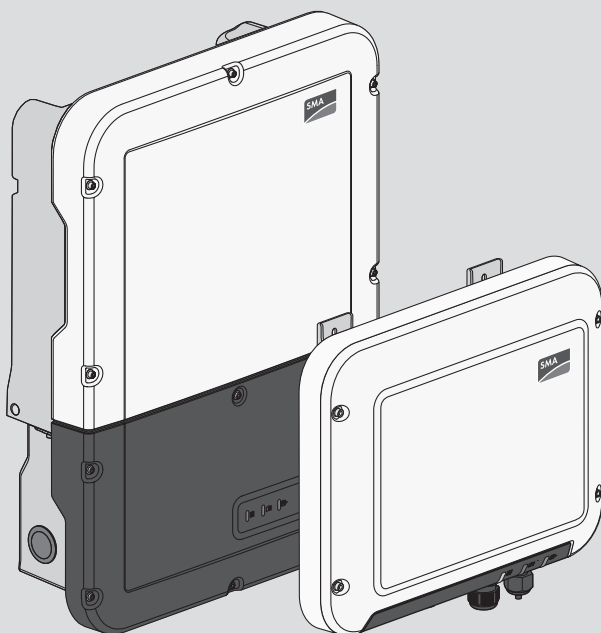


Technical Information

## SUNNY BOY STORAGE

Approved Batteries and Information on Battery  
Communication Connection



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# 1 Approved Batteries

## 1.1 SBS2.5-1VL-10 / SBS3.7-10 / SBS5.0-10 / SBS6.0-10

In these tables, you find the batteries that are approved for the operation with the following battery inverters of SMA Solar Technology AG (status: 03/2019):

- SBS2.5-1VL-10 (Sunny Boy Storage 2.5)
- SBS3.7-10 (Sunny Boy Storage 3.7)
- SBS5.0-10 (Sunny Boy Storage 5.0)
- SBS6.0-10 (Sunny Boy Storage 6.0)

Type (Manufacturer)	Battery required Firmware version for: *		Required inverter firmware version for: **	
	SBS2.5-1VL-10	SBS3.7-10, SBS5.0-10, SBS6.0-10	SBS2.5-1VL-10	SBS3.7-10, SBS5.0-10, SBS6.0-10
RESU7H / EH111063P3S3 Type C (LG Chem)	≥ 15.02.4.R	≥ 16.02.6 R***	≥ 2.04.23.R	≥ 1.00.20.R
RESU10H / 15563P3SDLT Type C (LG Chem)	≥ 13.13.0.R***	≥ 16.13.6 R***	≥ 2.04.14.R	≥ 1.00.20.R
RESU10M / EH155063P3S7**** (LG Chem)	-	≥ 11.00.1 R***	-	≥ 3.00.22.R
Battery-Box H 5.1 (BYD Company Limited)	≥ 3.0004R	≥ 3.0004R	≥ 2.04.23.R	≥ 1.00.20.R
Battery-Box H 6.4 (BYD Company Limited)	≥ 3.0004R	≥ 3.0004R	≥ 2.04.23.R	≥ 1.00.20.R
Battery-Box H 7.7 (BYD Company Limited)	≥ 3.0004R	≥ 3.0004R	≥ 2.04.23.R	≥ 1.00.20.R
Battery-Box H 9.0 (BYD Company Limited)	≥ 3.0004R	≥ 3.0004R	≥ 2.04.23.R	≥ 1.00.20.R

Type (Manufacturer)	Battery required Firmware version for:*		Required inverter firmware version for:**	
	SBS2.5-1VL-10	SBS3.7-10, SBS5.0-10, SBS6.0-10	SBS2.5-1VL-10	SBS3.7-10, SBS5.0-10, SBS6.0-10
Battery-Box H 10.2 (BYD Company Limited)	≥ 3.0004R	≥ 3.0004R	≥ 2.04.23.R	≥ 1.00.20.R

\* The firmware version of the battery can be accessed via the user interface of the inverter. The firmware version of the BYD batteries can also be accessed via the user interface of the battery (see manufacturer's manual).

\*\* The firmware version of the inverter can be accessed via the user interface of the inverter.

\*\*\* The firmware version of the battery can be updated via the user interface of the inverter. Only as of inverter firmware version 3.00.10.R can the firmware version of the RESU10M be updated via the user interface of the inverter.

\*\*\*\* The battery is allowed to operate only with the SBS3.7-10. In order to be able to operate with the SBS3.7-10, all DC terminals of the SBS3.7-10 have to be connected in parallel with the jumpers. Additionally, the battery must be connected to the terminal blocks **A+** and **A-**.

## Synchronizing the battery and battery inverter

All batteries mentioned supply a defined nominal current. Please pay attention to the battery manufacturer's recommendation regarding the suitable dimensioning of the battery in order to achieve the nominal and overload currents of the systems stated in the datasheet with a Sunny Boy Storage. Only if the dimensioning of the battery size is synchronized (battery capacity, battery currents, number of battery modules if necessary), the full functionality and power incl. overload can be guaranteed for the PV storage system with the respective battery inverter in use.

## Recommendations for the use in various systems for SBS3.7-10 / SBS5.0-10 / SBS6.0-10:

Type	Use in systems for increased self- consumption	Use in systems with secure power supply operation	Use in battery- backup systems
RESU7H type C	✓	✓	✓*
RESU10H type C	✓	✓	✓*
RESU10M**	✓	✗	✗
Battery-Box H 5.1	✓	✓	✓***
Battery-Box H 6.4	✓	✓	✓****
Battery-Box H 7.7	✓	✓	✓
Battery-Box H 9.0	✓	✓	✓

Type	Use in systems for increased self-consumption	Use in systems with secure power supply operation	Use in battery-backup systems
Battery-Box H 10.2	✓	✓	✓

\* Depending on the state of charge in terms of battery and PV generation, it can happen that the battery-backup grid is interrupted for a few seconds in battery-backup operation mode during load changes and then restarts again. With an additional parameter setting, it will be possible in future to limit the output power of the PV inverter dynamically or to limit to 0 W or to deactivate the PV inverter. This parameter setting is expected to be available after a firmware update in Q2/2019.

\*\* The battery is allowed to operate only with the SBS3.7-10. In order to be able to operate with the SBS3.7-10, all DC terminals of the SBS3.7-10 have to be connected in parallel with the jumpers. Additionally, the battery must be connected to the terminal blocks **A+** and **A-**.

\*\*\* When using a SBS6.0-10 with a Battery-Box H 5.1, ensure that the load does not exceed 5 kW.

\*\*\*\* When using a SBS6.0-10 with a Battery-Box H 6.4, ensure that the load does not exceed 6 kW.

✓ = Yes, ✗ = No

### Recommendations for the use in various systems for SBS2.5-1VL-10:

Type	Use in systems for increased self-consumption	Use in systems with secure power supply operation	Use in battery-backup systems
RESU7H type C	✓	✗	✗
RESU10H type C	✓	✗	✗
Battery-Box H 5.1	✓	✗	✗
Battery-Box H 6.4	✓	✗	✗
Battery-Box H 7.7	✓	✗	✗
Battery-Box H 9.0	✓	✗	✗
Battery-Box H 10.2	✓	✗	✗

✓ = Yes, ✗ = No

## 1.2 SBS3.8-US-10 / SBS5.0-US-10 / SBS6.0-US-10

In these tables, you find the batteries that are approved for the operation with the following battery inverters of SMA Solar Technology AG (status: 03/2019):

- SBS3.8-US-10 (Sunny Boy Storage 3.8-US)
- SBS5.0-US-10 (Sunny Boy Storage 5.0-US)
- SBS6.0-US-10 (Sunny Boy Storage 6.0-US)

Type (Manufacturer)	Required battery firmware version for:*	Required inverter firmware version for:**
RESU10H*** / R15563P3SDLT (LG Chem)	≥ 16.13.6 R****	≥ 1.00.20.R
Battery-Box H 5.0*** (BYD Company Limited)	≥ 3.0004R	≥ 1.00.20.R
Battery-Box H 7.5*** (BYD Company Limited)	≥ 3.0004R	≥ 1.00.20.R
Battery-Box H 10.0*** (BYD Company Limited)	≥ 3.0004R	≥ 1.00.20.R

\* The firmware version of the battery can be accessed via the user interface of the inverter. The firmware version of the BYD batteries can also be accessed via the user interface of the battery (see manufacturer's manual).

\*\* The firmware version of the inverter can be accessed via the user interface of the inverter.

\*\*\* This battery is certified for the operation with the Sunny Boy Storage in SMA Energy Storage systems according to UL 9540. The battery is listed within the SMA Energy Storage systems according to UL 9540.

\*\*\*\* The firmware version of the battery can be updated via the user interface of the inverter.

## Synchronizing the battery and battery inverter

All batteries mentioned supply a defined nominal current. Please pay attention to the battery manufacturer's recommendation regarding the suitable dimensioning of the battery in order to achieve the nominal and overload currents of the systems stated in the datasheet with a Sunny Boy Storage. Only if the dimensioning of the battery size is synchronized (battery capacity, battery currents, number of battery modules if necessary), the full functionality and power incl. overload can be guaranteed for the PV storage system with the respective battery inverter in use.

## Recommendations for the use in various systems for SBS3.8-US-10 / SBS5.0-US-10 / SBS6.0-US-10:

Type	Use in systems for increased self- consumption	Use in systems with secure power supply operation	Use in battery- backup systems
RESU10H type C	✓	✓	✓*
Battery-Box H 5.0	✓	✓	✓
Battery-Box H 7.5	✓	✓	✓

Type	Use in systems for increased self-consumption	Use in systems with secure power supply operation	Use in battery-backup systems
Battery-Box H 10.0	✓	✓	✓

\* Depending on the state of charge in terms of battery and PV generation, it can happen that the battery-backup grid is interrupted for a few seconds in battery-backup operation mode during load changes and then restarts again. With an additional parameter setting, it will be possible in future to limit the output power of the PV inverter dynamically or to limit to 0 W or to deactivate the PV inverter. This parameter setting is expected to be available after a firmware update in Q2/2019.

✓ = Yes, ✗ = No

## 2 Battery Communication Connection

### 2.1 Cable Requirements

#### 2.1.1 SBS2.5-1VL-10

- Twisted pair conductors
- Cable category: minimum CAT5e
- Shielding: yes
- Conductor cross-section: 0.25 mm<sup>2</sup> to 0.34 mm<sup>2</sup> (24 AWG to 16 AWG)
- Recommended number of conductor pairs: 4
- Maximum cable length: 10 m (33 ft)
- The cable has to be insulated for 600 V.
- UV-resistant for outdoor use. SMA Solar Technology AG recommends the cable "UC900 SS23 Cat.7 PE"
- Comply with the requirements of the battery manufacturer.

#### 2.1.2 SBS3.7-10 / SBS5.0-10 / SBS6.0-10

- Twisted pair conductors
- Cable category: minimum CAT5e
- Shielding: yes
- Conductor cross-section: 0.25 mm<sup>2</sup> to 0.34 mm<sup>2</sup> (24 AWG to 16 AWG)
- External diameter: 6 mm to 8.5 mm (0.24 in to 0.33 in)
- Recommended number of conductor pairs: 4
- Maximum cable length between battery and inverter and, in battery-backup systems, between automatic transfer switch and inverter: 10 m (33 ft)
- The cable has to be insulated for 600 V.
- UV-resistant for outdoor use.
- Comply with the requirements of the battery manufacturer.

### 2.1.3 SBS3.8-US-10 / SBS5.0-US-10 / SBS6.0-US-10

- Twisted pair conductors
- Cable category: minimum CAT5e
- Shielding: yes
- Conductor cross-section: 0.25 mm<sup>2</sup> to 0.34 mm<sup>2</sup> (24 AWG to 16 AWG)
- External diameter: 6 mm to 8.5 mm (0.24 in to 0.33 in)
- Recommended number of conductor pairs: 4
- Maximum cable length between battery and inverter and, in battery-backup systems, between automatic transfer switch and inverter: 10 m (33 ft)
- If the cables are routed together with the DC conductors in a conduit, each cable has to be insulated for 600 V.
- UV-resistant for outdoor use.
- Comply with the requirements of the battery manufacturer.

## 2.2 Cabling Plan

### 2.2.1 SBS2.5-1VL-10

#### Sunny Boy Storage with LG Chem RESU7H / RESU10H

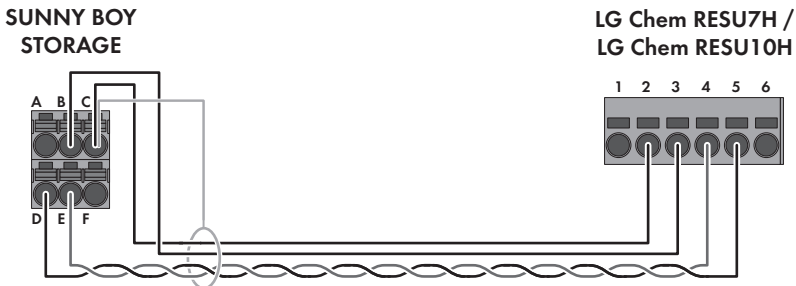


Figure 1: Cabling plan SBS2.5-1VL-10 with RESU7H / RESU10H

Clamping position	Assignment	Clamping position	Assignment
A	Not assigned	-	-
B	Enable	3	BAT EN
C	GND and shielding	2	GND - AUX
D	CAN L (twisted pair conductors, at least CAT5e)	5	CAN - L



Clamping position	Assignment	Clamping position	Assignment
E	CAN L (twisted pair conductors, at least CAT5e)	4	CAN - H
F	Not assigned	-	-

**Sunny Boy Storage (SBS2.5-1VL-10) with BYD Battery-Box H**

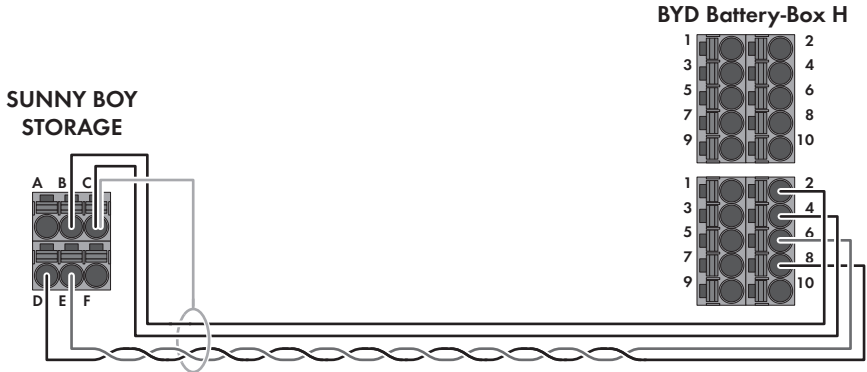


Figure 2: Cabling plan SBS2.5-1VL-10 with Battery-Box H

Clamping position	Assignment	Clamping position	Assignment
A	Not assigned	-	-
B	Enable	2	EN 11 V +
C	GND and shielding	4	EN 11 V-
D	CAN L (twisted pair conductors, at least CAT5e)	8	CANL
E	CAN L (twisted pair conductors, at least CAT5e)	6	CANH
F	Not assigned	-	-

### 2.2.2 SBS3.7-10 / SBS5.0-10 / SBS6.0-10 / SBS3.8-US-10 / SBS5.0-US-10 / SBS6.0-US-10

#### Sunny Boy Storage with LG Chem RESU7H / RESU10H

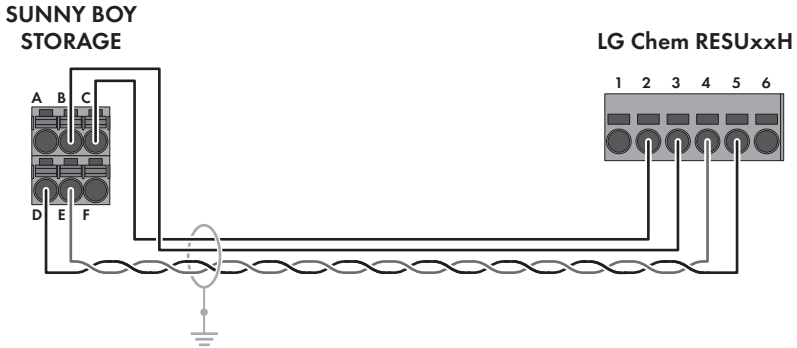


Figure 3: Cabling plan SBS3.7-10 / SBS5.0-10 / SBS6.0-10 / SBS3.8-US-10 / SBS5.0-US-10 / SBS6.0-US-10 with RESU7H / RESU10H

Clamping position	Assignment	Clamping position	Assignment
A	Not assigned	-	-
B	Enable	3	BAT EN
C	GND	2	GND - AUX
D	CAN L (twisted pair conductors, at least CAT5e)	5	CAN - L
E	CAN L (twisted pair conductors, at least CAT5e)	4	CAN - H
F	+12V supply for automatic transfer switching device	-	-

**Sunny Boy Storage 3.7 with LG Chem RESU10M**

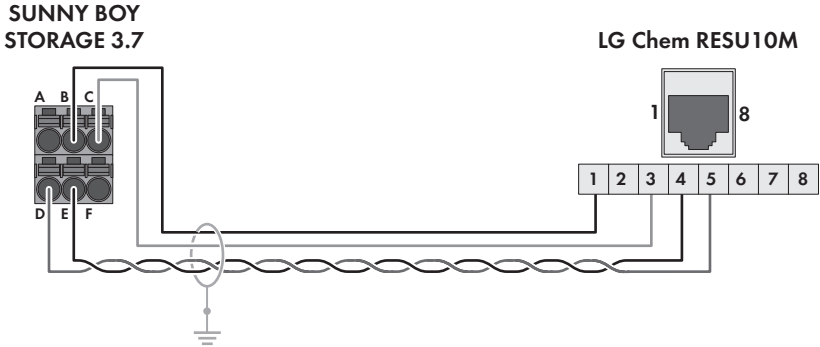


Figure 4: Cabling plan SBS3.7-10 with RESU10M

Clamping position	Assignment	Pin	Assignment
A	Not assigned	-	-
B	Enable	1	Enable
C	GND	3	GND
D	CAN L (twisted pair conductors, at least CAT5e)	5	CAN L
E	CAN L (twisted pair conductors, at least CAT5e)	4	CAN H
F	+12V supply for automatic transfer switching device	-	-

### Sunny Boy Storage with BYD Battery-Box H

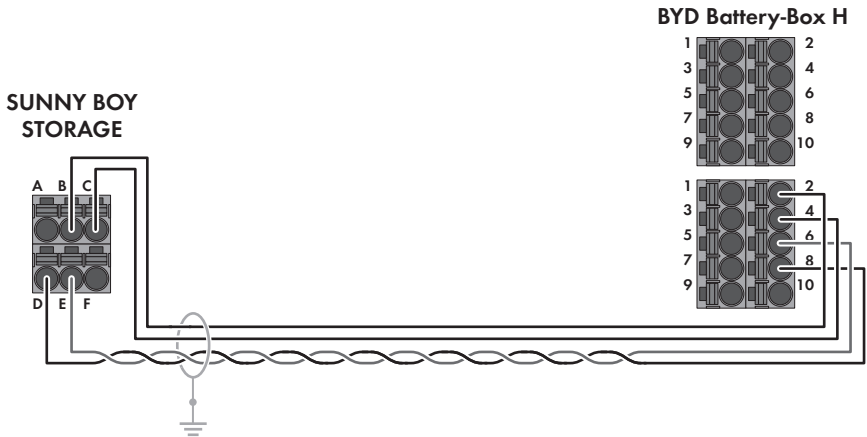


Figure 5: Cabling plan SBS3.7-10 / SBS5.0-10 / SBS6.0-10 / SBS3.8-US-10 / SBS5.0-US-10 / SBS6.0-US-10 with Battery-Box H

Clamping position	Assignment	Clamping position	Assignment
A	Not assigned	-	-
B	Enable	2	EN 11 V +
C	GND	4	EN 11 V -
D	CAN L (twisted pair conductors, at least CAT5e)	8	CANL
E	CAN L (twisted pair conductors, at least CAT5e)	6	CANH
F	+12V supply for automatic transfer switching device	-	-



