



## SUNNY TRIPOWER SMART ENERGY

Approved Batteries and Information on Battery Communication Connection

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# 1 Approved Batteries

In the tables, you will find the batteries which have been tested and are approved for operation with the following hybrid inverters of SMA Solar Technology AG (status: 2024/10):

- STP5.0-3SE-40
- STP6.0-3SE-40
- STP8.0-3SE-40
- STP10.0-3SE-40

## **i** Firmware version of the battery

The firmware versions of the batteries can be viewed via the user interface of the respective battery after successful commissioning. For BYD and LG batteries, the firmware of the batteries is updated via the user interface of the battery (see manufacturer's manual). For batteries from SMA, BMZ, IBC, and AXITEC, the battery is automatically charged with the update of the inverter firmware.

## **i** Inverter firmware version

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

Type (Manufacturer)	Firmware version of battery:	Firmware version of inverter:
SMA Home Storage (6.5-16.4) (SMA Solar Technology AG)	≥ 1.01.16.R	≥ 3.04.16.R
Battery-Box Premium HVM (11.0-22.1) (BYD Company Limited)	BMU = 3.16 <sup>1)</sup> BMS = 3.24 <sup>1)</sup>	≥ 1.00.00.R
Battery-Box Premium HVS (5.1-12.8) (BYD Company Limited)	BMU = 3.16 <sup>1)</sup> BMS = 3.24 <sup>1)</sup>	≥ 1.00.00.R
LG RESU FLEX (8.6-17.2) (LG Energy Solution, Ltd.)	= 1.0.0.R <sup>1)</sup>	≥ 3.04.16.R
Hyperion 10.0, 12.5 and 15.0 (Art. no.: 616038) with Helios VE module (Art. no.: 612033) (BMZ GmbH)	= 4.17.R <sup>1)</sup>	≥ 3.02.20.R
era:powerbase 10.0, 12.5 and 15.0 (Art. no.: 609811) with Helios VE module (Art. no.: 612033) (IBC SOLAR AG)		
AXIstorage Li SH 10.0, 12.5 and 15.0 (Art. no.: 616039) with Helios VE module (Art. no.: 612033) (AXITEC)		
Varta.wall 10 kWh / 15 kWh / 20 kWh (Varta AG)	= 2.70.1 <sup>1)</sup>	≥ 3.05.18.R

<sup>1)</sup> Compatibility with this firmware version was tested and approved by SMA Solar Technology AG. For the operation with another battery firmware version, contact the battery manufacturer.

## 2 Batteries in parallel operation mode

The following batteries are approved for parallel operation of several battery units in conjunction with the Sunny Tripower Smart Energy. Note the manuals of the battery manufacturers:

Type (Manufacturer)	Firmware version of the battery for parallel op- eration mode	Firmware version of the inverter for parallel op- eration mode	Number of battery units in parallel operation mode
Battery-Box Premium HVM (11.0-22.1) (BYD Company Limited)	BMU = 3.16 <sup>2)</sup> BMS = 3.24 <sup>2)</sup>	≥ 3.04.16.R	≤ 3
Battery-Box Premium HVS (5.1-12.8) (BYD Company Limited)	BMU = 3.16 <sup>2)</sup> BMS = 3.24 <sup>2)</sup>	≥ 3.04.16.R	≤ 3

<sup>2)</sup> Compatibility with this firmware version was tested and approved by SMA Solar Technology AG. For the operation with another battery firmware version, contact the battery manufacturer.

## 3 Usable power

### 3.1 General information on usable power

#### Synchronizing the battery and hybrid 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 Tripower Smart Energy. 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 hybrid inverter in use.

### 3.2 Usable power when using the STP10.0-3SE-40 together with SMA Home Storage

	SMA Home Storage 6.5	SMA Home Storage 9.8	SMA Home Storage 13.1	SMA Home Storage 16.4
Voltage range of battery	180 V to 216 V	270 V to 324 V	360 V to 432 V	450 V to 540 V
Maximum current	19.7 A to 27.4 A	30 A	30 A	30 A
Maximum power	3.5 kW to 5.9 kW	8.1 kW to 9.7 kW	10.6 kW	10.6 kW

### 3.3 Usable power when using the STP10.0-3SE-40 together with Battery-Box Premium HVS

	HVS 5.1	HVS 7.7	HVS 10.2	HVS 12.8
Voltage range of battery	160 V to 240 V	240 V to 360 V	320 V to 480 V	400 V to 600 V
Maximum current	14.6 A to 25 A	25 A	25 A	25 A
Maximum power	2.4 kW to 6 kW	6 kW to 9 kW	8 kW to 10.6 kW	10 kW to 10.6 kW

### 3.4 Usable power when using the STP10.0-3SE-40 together with Battery-Box Premium HVM

	HVM 8.3	HVM 11.0	HVM 13.8	HVM 16.6	HVM 19.3	HVM 22.1
Voltage range of battery	Not compatible	160 V to 236 V	200 V to 295 V	240 V to 354 V	280 V to 413 V	320 V to 472 V
Maximum current	Not compatible	12 A to 30 A	25 A to 30 A	30 A	30 A	30 A
Maximum power	Not compatible	1.9 kW to 7.1 kW	5.9 kW to 8.9 kW	7.2 kW to 10.6 kW	8.4 kW to 10.6 kW	9.6 kW to 10.6 kW

### 3.5 Usable power when using the STP10.0-3SE-40 together with LG RESU FLEX

	LG RESU FLEX 8.6	LG RESU FLEX 12.9	LG RESU FLEX 17.2
Voltage range of battery	192 V to 266 V	288 V to 398 V	384 V to 531 V
Maximum current	22 A	22 A	22 A
Maximum power	4.3 kW	6.5 kW	8.5 kW

### 3.6 Usable power when using the STP10.0-3SE-40 together with BMZ Hyperion / IBC era:powerbase / AXITEC AXIstorage LI SH with Helios VE modules

	3 modules	4 modules	5 modules	6 modules
	7.5 kWh	10.0 kWh	12.5 kWh	15.0 kWh
Voltage range of battery	Not compatible	179 V to 227 V	224 V to 284 V	268 V to 340 V
Maximum current	Not compatible	17 A to 29 A	29 A	29 A
Maximum power	Not compatible	3.0 kW to 6.6 kW	6.5 kW to 8.2 kW	7.8 kW to 9.9 kW

### 3.7 Usable power when using the STP10.0-3SE-40 together with Varta.wall

	Varta.wall 10	Varta.wall 15	Varta.wall 20
	10.0 kWh	15.0 kWh	20 kWh
Voltage range of battery	168 V to 226 V	252 V to 340 V	336 V to 453.6 V
Maximum current (Charge)		22 A	
Maximum current (Discharge)		26 A	
Maximum charging power	3.7 kW to 5.0 kW	5.5 kW to 7.5 kW	7.4 kW to 10 kW
Maximum discharge power	4.4 kW to 5.9 kW	6.6 kW to 8.8 kW	8.7 kW to 10.6 kW

## 4 Battery Communication Connection

### 4.1 Requirements for the Battery Communication and Power Cables

SMA Solar Technology AG recommends that you use the cable with the following designation, which is available from SMA.

- HS-COM-CBL-3-10

This cable is preassembled for use with SMA Home Storage. This cable can be used with any other battery by rewiring it.

When using another cable, observe the following cable requirements:

- Twisted pair conductors
- Cable category: minimum CAT5e
- Cable with shielding: Yes
- Conductor cross-section: 0.1 mm<sup>2</sup> to 1.5 mm<sup>2</sup>
- External diameter: 5.3 mm to 7 mm
- Maximum cable length: 10 m
- UV-resistant for outdoor use.
- Recommendation: Use a network installation cable with 1-core rigid wire
- Comply with the requirements of the battery manufacturer.
- If an installation cable is not used, the individual cable ends must be provided with a 12 mm long bootlace ferrule.

Note that the requirements are different when using an LG RESU FLEX:

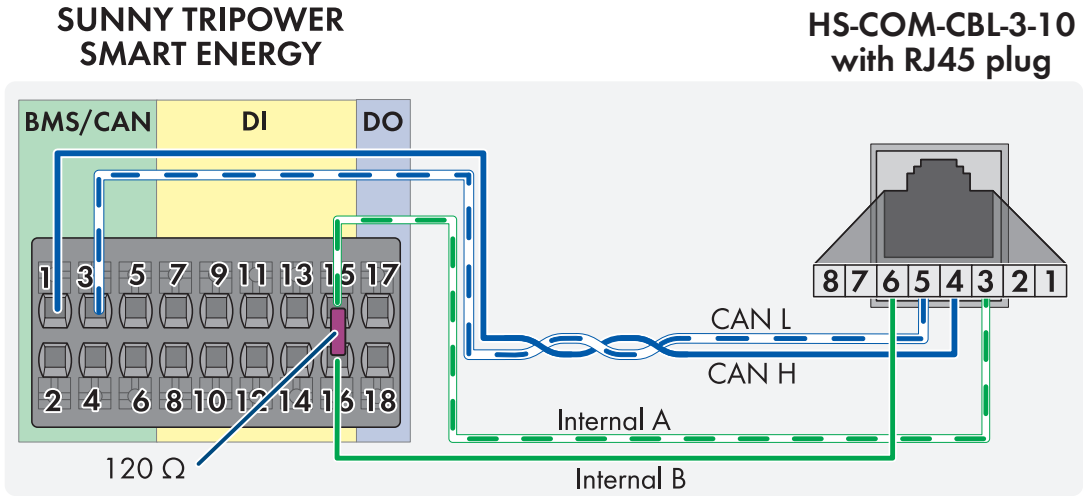
- Conductor cross-section: 0.3 mm<sup>2</sup> to 0.5 mm<sup>2</sup>
- External diameter: 5.5 mm to 6.5 mm

#### **i** Observe manufacturer's specifications for battery power cables

When crimping battery power cables, the appropriate tool, correct cable cross-section, proper insulation stripping length, and a firm but non-damaging crimp are essential for a safe and conductive connection. Make sure not to damage the stranded wires and to insert and tighten all components correctly, especially the strain relief, to ensure a durable, moisture-proof, and abrasion-resistant connection.

## 4.2 Connection to SMA Home Storage

### 4.2.1 Cabling plan with SMA Home Storage



Terminal point at inverter	Function	Terminal point at battery
1	CAN H (twisted pair conductors, at least CAT5e)	4
3	CAN L (twisted pair conductors, at least CAT5e)	5
6	Shielding (if necessary)	-
15	Internal bus A (with 120 ohm terminator)	3
16	Internal bus B (with 120 ohm terminator)	6

### 4.2.2 Connection with RJ45 adapter

To connect the Sunny Tripower Smart Energy to the SMA Home Storage, you must use an RJ45 adapter for the plug connection. The adapter is included in the scope of delivery of the battery.

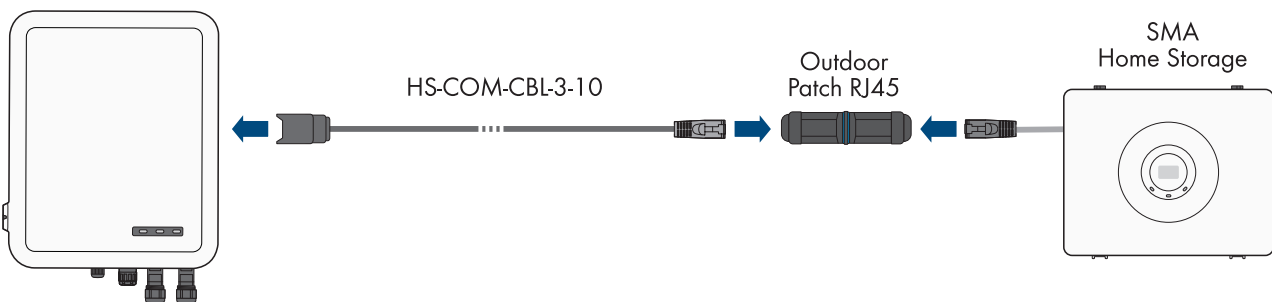


Figure 1: Connection between Sunny Tripower Smart Energy and SMA Home Storage with RJ45 adapter.

### 4.3 Cabling plans with BYD Battery-Box Premium HVM/HVS and BCU 1.0

The CAN communication cable can be connected either to the RJ45 socket for CAN communication or to the terminal block of the battery.

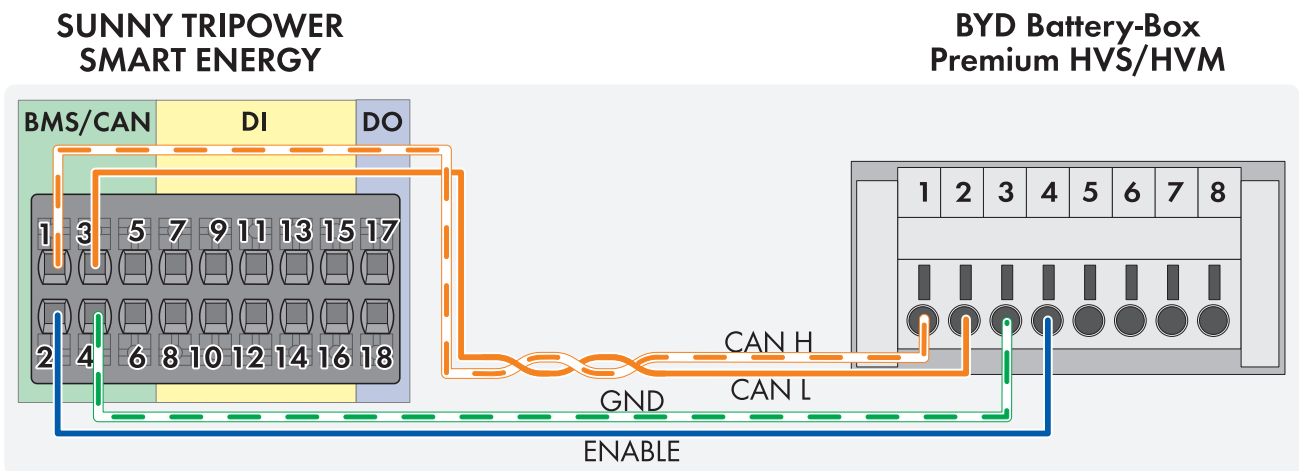


Figure 2: Cabling plan in accordance with TIA-568B: Sunny Tripower Smart Energy with BYD Battery-Box Premium HVM/HVS when using an installation cable. The individual cable ends must be provided with a 12 mm long wire end sleeve.

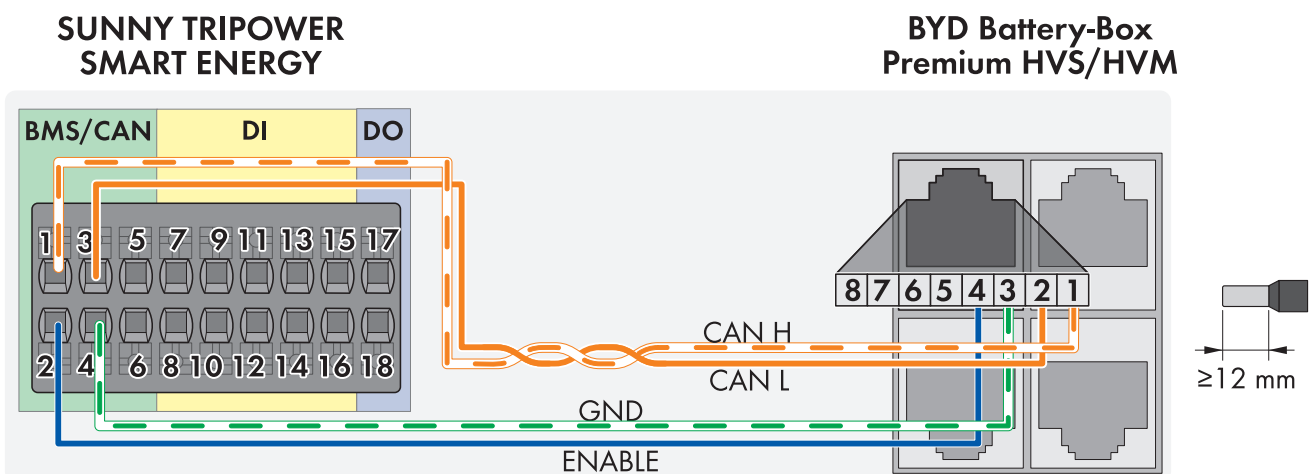


Figure 3: Cabling plan according to the TIA-568B standard (a standard Ethernet cable with one open end): Sunny Tripower Smart Energy with BYD Battery-Box Premium HVM/HVS. The individual cable ends must be provided with a 12 mm long wire end sleeve.

Terminal point at inverter	Function	Terminal point at battery
1	CAN H (twisted pair conductors, at least CAT5e)	1
2	Enable	4
3	CAN L (twisted pair conductors, at least CAT5e)	2
4	GND	3
5	Not used	-
6	Shielding (if necessary)	-

## 4.4 Cabling plans with BYD Battery-Box Premium HVM/HVS and BCU 2.0

The CAN communication cable can be connected to the RJ45 socket for CAN communication.

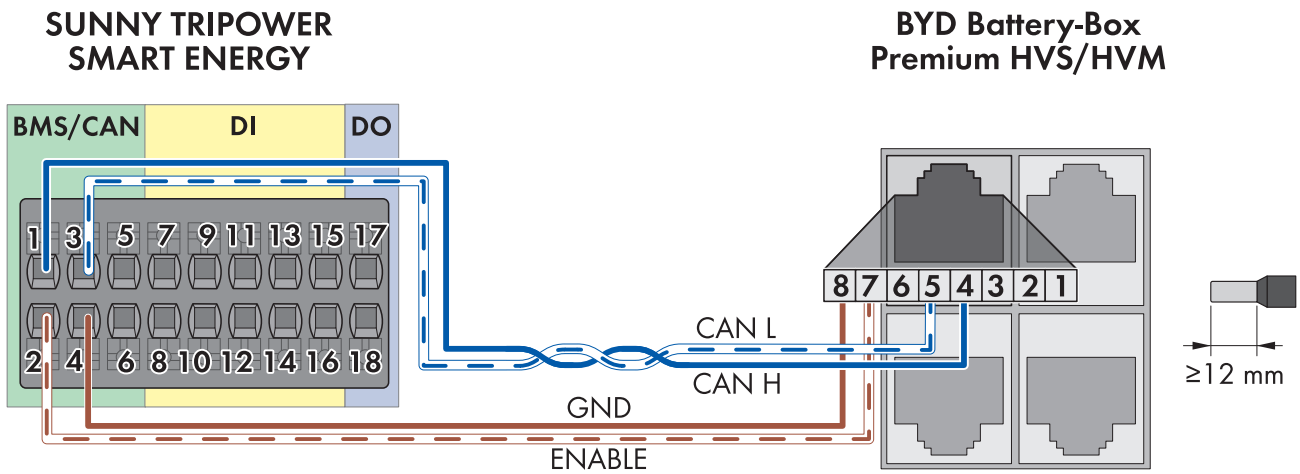


Figure 4: Cabling plan according to the TIA-568B standard (a standard Ethernet cable with one open end): Sunny Tripower Smart Energy with BYD Battery-Box Premium HVM/HVS. The individual cable ends must be provided with a 12 mm long wire end sleeve.

Terminal point at inverter	Function	RJ45 connector on the battery
1	CAN H (twisted pair conductors, at least CAT5e)	4
2	Enable	7
3	CAN L (twisted pair conductors, at least CAT5e)	5
4	GND	8
5	Not used	-
6	Shielding (if necessary)	-

### 4.5 Cabling plan with LG RESU FLEX

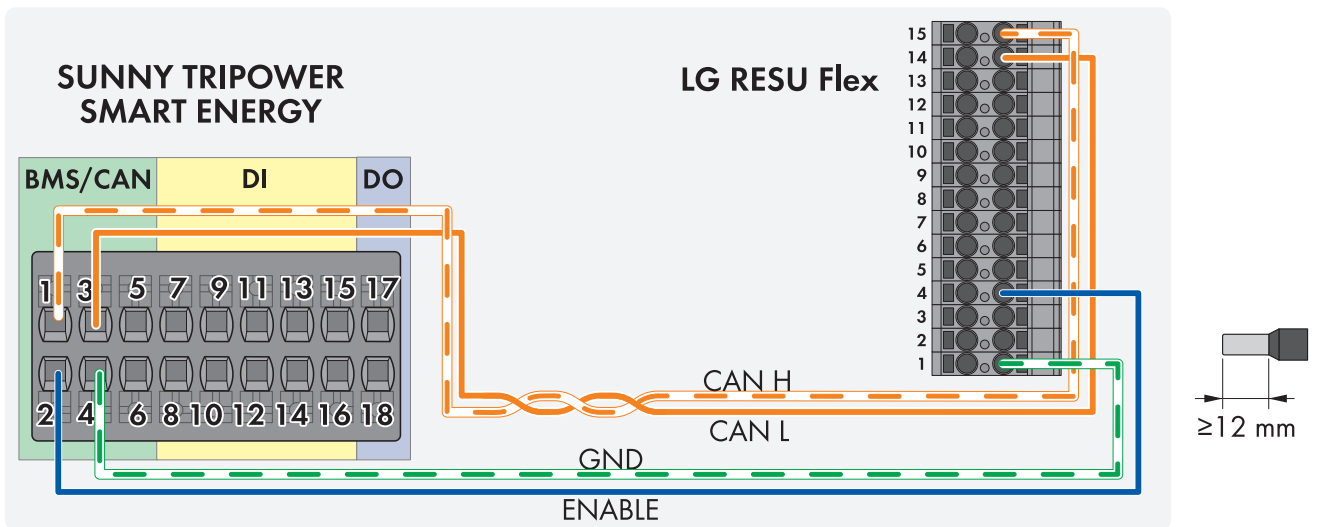


Figure 5: Cabling plan for Sunny Tripower Smart Energy with LG RESU FLEX with installation cable. If an installation cable is not used, the individual cable ends must be provided with a 12 mm long bootlace ferrule.

Terminal point at inverter	Function	Terminal point at battery
1	CAN H (twisted pair conductors, at least CAT5e)	15
2	Enable	4
3	CAN L (twisted pair conductors, at least CAT5e)	14
4	GND	1
5	Not used	-
6	Shielding (if necessary)	-

## 4.6 Cabling plan with BMZ Hyperion, IBC era:powerbase or Axitec AXIstorage LI SH

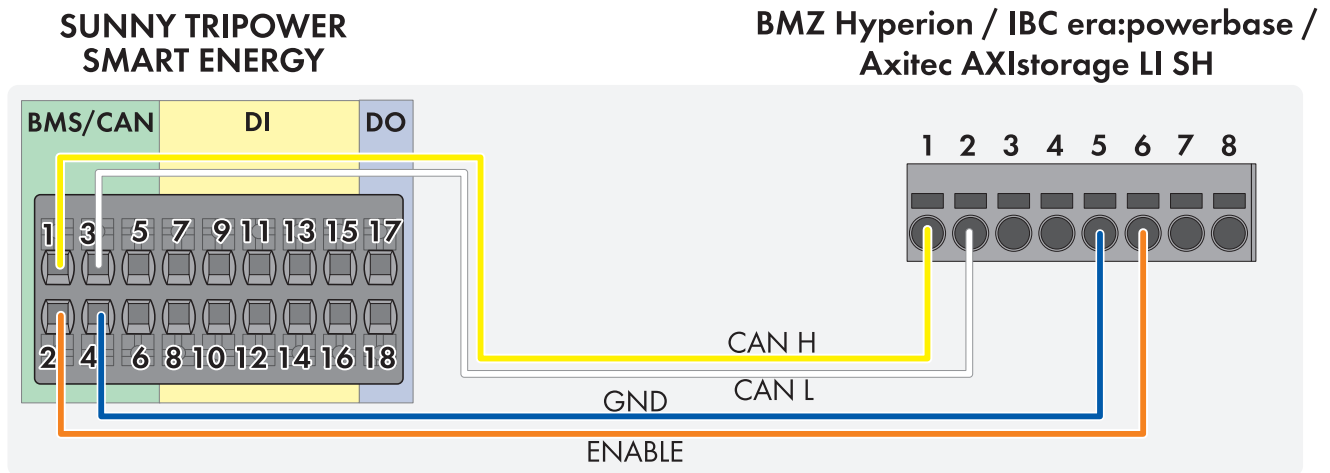


Figure 6: Sunny Tripower Smart Energy with BMZ Hyperion, AXITEC AXIstorage, IBC era:powerbase when using the communication cable provided by the battery manufacturer. If an installation cable is not used, the individual cable ends must be provided with a 12 mm long bootlace ferrule.

Terminal point at inverter	Function	Terminal point at battery
1	CAN H (twisted pair conductors, at least CAT5e)	1
2	Enable	6
3	CAN L (twisted pair conductors, at least CAT5e)	2
4	GND	5
5	Not used	-
6	Shielding (if necessary)	-

## 4.7 Cabling plan with Varta.wall

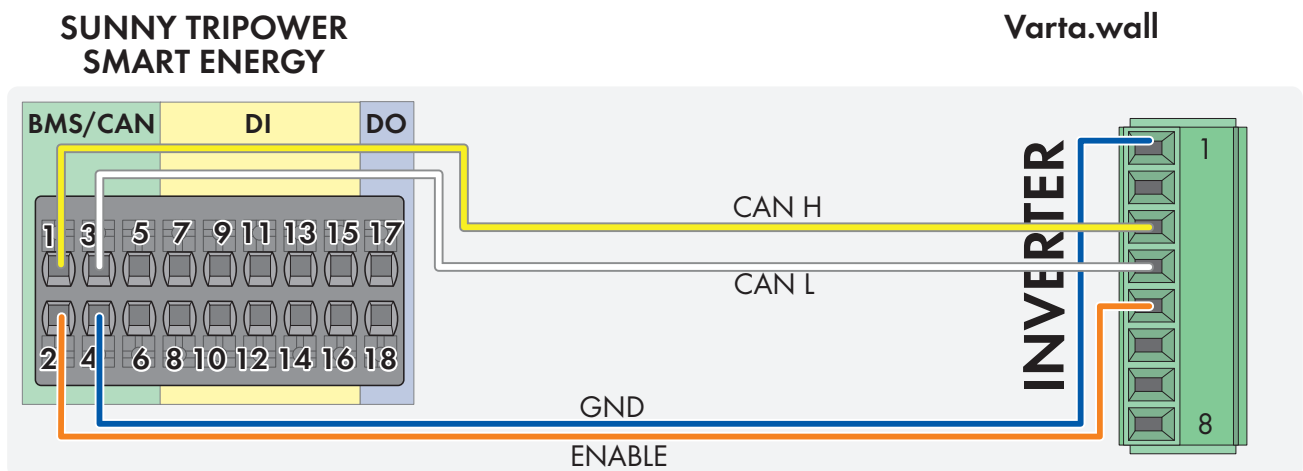


Figure 7: Sunny Tripower Smart Energy with Varta.wall. If an installation cable is not used, the individual cable ends must be provided with a 12 mm long bootlace ferrule.

Terminal point at inverter	Function	Terminal point at battery
1	CAN H (twisted pair conductors, at least CAT5e)	3
2	Enable	5
3	CAN L (twisted pair conductors, at least CAT5e)	4
4	GND	1
5	Not used	-
6	Shielding (if necessary)	-

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