

Inverter system parameters :

	Setting by Customer	BMS	Strategy
Charging cut- off Volt	No setting/ Default 58V	Send to inverter	Comply with BMS * BMS is the priority
Discharging cut-off Volt	No setting / Default 45V	Send to inverter	Comply with BMS priority
Max. charge current	0-100A/ Default 90A	Send to inverter	Use the minimum value
Max. discharge current	0-100A/ Default 90A	Send to inverter	Use the minimum value
Discharge depth	0-97%/ Default 90%	\	Based on different situations
Over voltage protection value	No manual setting /Default 58.4V	\	Charging cut-off Volt +2V _0sec

Protocol description

Description of networking : The BMS refers to a single battery management system, with parallel capability. For a system consisting of multiple batteries in parallel, BMS refers to the host in the system. The master battery will act as pass through unit via BMS * Master/Slave1/Slave2/Slave3/Slave4. The WeCo HeSU series can be paralleled up to 25 units.

Battery charge voltage : Charging voltage calculated by BMS, inverter max charge voltage is set according to this value.

Battery discharge voltage : When the battery voltage is lower than this value, the inverter will stop discharging the battery.

At the DoD set point once the limit has been reached the inverter must stop independently, the BMS usually cannot recognize the inverter LCD setting for the DoD (human setting not part of this protocol)

Note : The battery low voltage limit is set to 45,5V make sure that the inverter can recover at that voltage.

Note2: The battery will automatically restart every 4 hours even if the battery voltage will drop below 45,5.

Note3: The battery will not automatically recover below 32V

DC charge current limitation: limit value of charging current. When this value is 0, inverter stops charging the battery and enter standby mode.

The actual charge current of inverter is decided by actual working condition, it may be a little higher than this value because there is some system error.

BMS allowance is 10% for 30sec above the C rate and above the overload limit.

At SOC 100% the BMS send 0 A and the inverter must stop charging immediately (this signal must not consider a warning, it's juts a normal signal of end charge (avoid any inverter warning or fault message)

At the DoD set point once the limit has been reached the inverter must stop independently, the BMS cannot recognize the inverter LCD setting for the DoD (human setting)

Note> The battery charging current sent by the BMS to the inverter may be reduced as per temperature and/or SOC status and/or due the equalization/balancing process.(BMS Control Logic has the priority)

DC discharge current limitation: limit value of discharging current. When this value is 0, inverter stops discharging the battery and enter standby mode. The actual discharge current of inverter is decided by actual working condition, it may be a little higher than this value because there is some system error. BMS should consider some margin. The update of this value has some delay in seconds. When the battery is full , BMS should send 0 when battery needs to stop discharging then inverter will stop discharging and BMS should keep some dead zone to prevent inverter's repeat start/stop.

Alarms&Warnings: The inverter does not use the BMS fault information as the operating condition. If the inverter needs to stop charging and discharging, please adjust the charging (discharging) current to 0. All fault information can be read out through RS485 slave interface, function code 0x03 reads address 0x023E~0x0241, and lithium battery faults that have occurred are recorded in SD card. At present, the inverter only uses several bits in Alarms as the fault display. Detailed Faults please check in 'Description' in the CAN Description document. No description part is reserved.

Truth table of alarm bits :

Leave	Arrive	0	1
0		Ignore	Tigger alarm
1		Clear alarm	Ignore

Manufacturer-Name-ASCII : Display battery manufacture name in inverter.

BMS version : display in decimal , the form is [major:1].[minor:1].[revision:3], 5 numbers in total. If version is 1.0.103, send decimal 10103.

Bat-Capacity: Total capacity of battery pack in Ah

Remote command : BMS can send commands to control inverters remotely. The remote control commands include: normal operation (corresponding byte to send digital 0), forced replenishment (corresponding byte to send digital 1), emergency shutdown (corresponding byte to send digital 2). This command requires the BMS to continue to send, otherwise the inverter will clear the remote command and resume normal operation after 60 seconds.

Inverter to Battery: ID number 0x305 is the CAN frame sent by the inverter to the BMS. It does not contain the actual content.

It transmits one frame per second and does not require a BMS response.

Configure the battery type as “WeCo HeSU” on the inverter, and the frame data will be sent after the configuration is completed.

CAN parameters

- Protocol Type CAN 2.0B
- Matching resistors need to be added to the battery side
- CAN Communication rate: 500kBits/s
- 11-bit identifiers
- Byte order is little endian

Battery to Inverter contains 6 IDs, of which 0x351, 0x355, and 0x356 must be sent. It is recommended to send the above 3 IDs per second.

Battery to Inverter:

Byte	0	1	2	3	4	5	6	7
CAN-ID								
0x351	Battery charge voltage		DC charge current limitation		DC discharge current limitation		Battery discharge voltage	
0x355	SOC		SOH					
0x356	Battery voltage		Battery current		Battery Temperature		Cycles	
0x35A	Alarms				Warnings			
0x35E	Manufacturer-Name-ASCII							
0x35F			BMS version		Bat-Capacity			
0x30F	Remote command							

Inverter to Battery:

Byte	0	1	2	3	4	5	6	7
CAN-ID								
0x305	0		0		0		0	