



Description of RS485 for Helios&BPlus communication protocol

1)The function cannot be used at the same time with **CAN's BMS of BMS**, BMS of CAN has priority. Once the CAN channel is connected, the BMS channel of RS485 will temporarily be disabled. But if the BMS of CAN is 3)lost for over 10 seconds, the function will be reactivated. BMS of RS485 will be disconnected and make all data disable for also losing 10 seconds of communication

2)The protocol is based on RTU protocol of MODBUS standard protocol,the baud rate is fixed to 9600, 8 bit data format, **no bit parity bit**, a stop bit

3)In this communication module, Helios is used as **main site, slave station default to 1**

4)**The main station** will one-time access to data of **64 words (128 byte)**

5)Only BMS control panel that is fully compatible with this protocol can meet application requirement

6)In communication, only packets with the satisfactory format, length and checking code can be applied, or, the packets will be discarded.

7)The protocol reserves one byte of working state area that can command **host inverter** to work, over/low voltage protection or over/low temperature protection.When the communication is disconnected, the command is disabled and the inverter part will run to default pattern with no BMS

8)The protocol reserves one byte of charging state area that can command host inverter to work, over/low voltage protection or over/low temperature protection.When the communication is disconnected, the command is disabled and the inverter part will run to default pattern with no BMS

9)**The main station** accesses to **slave station** every about 1 second

Remark: the variables of register in the protocol compatible with GX-ZY-CAN-V1.00 of national standard CAN (ISO 11898-1:2006 1st part, SAE J1939-11:2006 11th part & SAE J1939-21:2006 21st part). Attention-it is compatibility for register but not protocol or physical connection. For protocol and physical connection, please see as shown in the second article and appended picture.

Main station issues command(“ ’?’ ” in form is ASCII code, “ 0x?” is the value of hexadecimal bases)

	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8	Byte9	Byte10	Byte11	Byte12	Byte13	Byte14	Byte15	Byte16
Sense	Beginnin g symbol	Station Address h	Station Addressl	Command Word(rea d)h	Command Word(rea d)l	Register Address Hh	Register Address Hl	Register AddressL h	Register AddressL l	Access Word Quantity Hh	Access Word Quantity Hl	Access Word Quantity Lh	Access Word Quantity Ll	Check and LRC(h)	Check andLRC(l)	Ending 1	Ending 2
Content	' :	' 0'	' 1'	' 0'	' 3'	' 0'	' 0'	' 0'	' 0'	' 0'	' 0'	' 1'	' 0'	' B'	' B'	CR	LF
Hexadeci mal Bases	0X3A	0X30	0X31	0x30	0x33	0x30	0x30	0x30	0x30	0x30	0x30	0x31	0x30	0x42	0x42	0xD	0xA

Outline of slave station respond

	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7...Byte69						Byte70	Byte71	Byte72	Byte73
Sense	Beginnin g symbo	Station Address h	Station Addressl	Command Word(rea d)h	Command Word(rea d)l	Byte Reply Quantity h	Byte Reply Quantity l	128 data area(Occupy 256 byte in real)						Check and LRC(h)	Check andLRC(l)	Ending1	Ending2
Content	' :	' 0'	' 1'	' 0'	' 3'	' 2'	' 0'	The data will change according to the BMS content in this area, see details below, skip here								CR	LF
Hexadeci mal Bases	0X3A	0X30	0X31	0x30	0x33	0x32	0x30									0xD	0xA

Data Area Content Intruction

Data Location	Sense						Occupy ASCII Byte	Ratio	Unit
0	Battery Voltage						4	0.1	V
4	Battery Current						4	0.1	A
8	Every value of SOC percentage=0.4% For example 250=100%						2	0.4	%
10	mark:every 2BIT is a mark						4	-	-
Number	position	sense	00	01	10	11			
1	bit1, bit0	Over voltage	Normal	Charging limited or current feedback, battery is full	Forbid feedback, forbid charging	BMS cut charging relay			
2	bit3, bit2	Low voltage	Normal	Need charging, output power limited	Stop output power	BMS cut output(dischargeing) relay			
3	bit5, bit4	Charging overcurrent	Normal	Charging limited or current feedback	BMS cut charging/discharging relay	Retain			
4	bit7, bit6	Discharging overcurrent	Normal	Output power limited	BMS cut charging/discharging relay	Retain			
5	bit9, bit8	Temperature inbalance	Normal	>10% Alarm	>%15 Alarm	Retain			
6	bit11, bit10	Over temperature	Normal	Alarm	BMS cut charging/discharging relay	Retain			
7	bit13, bit12	Low Temperature	Normal	BMS cut charging relay	BMS cut charging/discharging relay	Retain			
8	bit14	Voltage inbalance	Normal	Alarm	-	-			
9	bit15	Internal fault	Normal	BMS controller internal fault, cut charging/discharging relay	-	-			
14	number of circulation						2	1	times
16	Max. charging current allowed						4	0.1	A
20	Max. discharging current allowed						4	0.1	A
24	Retain						4	-	-
28	Temperature value in Max. temperature range of the battery pack						2	1	℃
30	Temperature value in Min. temperature range of the battery pack						2	1	℃

32	Max. monomer voltage	4	0.01	V
36	Min. monomer voltage	4	0.01	V
40	Battery pack No. of Max. monomer voltage	2	-	-
42	Battery pack serial number of Max. monomer voltage	2	-	-
44	Battery pack No. of Min. monomer voltage	2	-	-
46	Battery pack serial number of Min. monomer voltage	2	-	-
48..63	Retain	2	-	-

Hardware electric connection diagram

