

HV BMS Modbus Protocol V3.0

Revision history

2020/11/10		V1.0.0
2021/09/01		V2.0.0
2022/08/20		V2.1.0
2022/09/20		V3.0.0

一. Modbus Protocol

1. Baud Rate: 9600(Default, Subject to the BMS Specification)

Parity Bit: No

Data Bits: 8

Stop Bit: 1

2. Read registers

Send by the master SMPS

Slave Address	Function Code	Starting Address(Hi)	Starting Address(Lo)	Num of register (Hi)	Num of register (Lo)	CRC (Lo)	CRC (Hi)
01	03	XX	XX	XX	XX	XX	XX

BMS:address0x01

二. Data information

1. Data acquisition

No	Register Address	Content	Length	Data type	R/W	Unit	Remark
1	0x40H	BMS Status	2byte	UINT16	R		See description -1
2	0x41H	Voltage of pack	2byte	UINT16	R	1bit/100mV	123.4V(04D2H)
3	0x42H	Current	2byte	INT16	R	1bit/100mA	Positive: charging Negative: discharging
4	0x43H	Charging current	2byte	UINT16	R	1bit/100mA	25.0A(0FAH)
5	0x44H	Discharging curreent	2byte	UINT16	R	1bit/100mA	25.0A(0FAH)
6	0x45H	SOC	2byte	UINT16	R	1bit/0.1%	80.0%(320H)
7	0x46H	Max Cell Voltage	2byte	UINT16	R	1bit/mV	3600mV (0E10H)
8	0x47H	Max Cell Voltage serial	2byte	UINT16	R	1bit/节	20 (014H)
9	0x48H	NC					Reserved
10	0x49H	Min Cell Voltage	2byte	UINT16	R	1bit/mV	3600mV (0E10H)
11	0x4AH	Min Cell Voltage serial	2byte	UINT16	R	1bit/节	20 (014H)
12	0x4BH	NC					Reserved
13	0x4CH	Max Temprature	2byte	INT16	R	1bit/°C	55°C(037FH)
14	0x4DH	Max Temprature serial	2byte	UINT16	R	1bit/节	2 (02H)
15	0x4EH	NC					
16	0x4FH	Min Temprature	2byte	INT16	R	1bit/°C	55°C(037FH)
17	0x50H	Min Temprature serial	2byte	UINT16	R	1bit/节	2 (02H)
18	0x51H	NC					Reserved
19	0x52H	Relay Status	2byte	UINT16	R		See description-2
20	0x53H	Alarm Status	2byte	UINT16	R		See description-3

21	0x54H	Protection Status	2byte	UINT16	R		See description-4
22	0x55H	NC					Reserved
23	0x56H	NC					Reserved
24	0x57H	Remain capacity	2byte	UINT16	R	10mAH	
25	0x58H	Full capacity	2byte	UINT16	R	10mAH	
26	0x59H	Design capacity	2byte	UINT16	R	10mAH	
27	0x5AH	Battery cycle counts	2byte	UINT16	R		

description-1 :

BMS Status. 0:BMS normal, 1:BMS Alarm, 2:BMS Protection.

description-2

Bit0: Relay 1, "0" OFF, "1" ON

Bit1: Relay 2, "0" OFF, "1" ON

Bit2: Relay 3, "0" OFF, "1" ON

Bit3: Relay 4, "0" OFF, "1" ON

Bit4: Relay 5, "0" OFF, "1" ON

Bit5: Relay 6, "0" OFF, "1" ON

description-3 description-4

Bit0: battery pack overvoltage, "0" OFF, "1" ON

Bit1: battery pack low voltage, "0" OFF, "1" ON

Bit2: cell overvoltage, "0" OFF, "1" ON

Bit3: cell low voltage, "0" OFF, "1" ON

Bit4: charging high temperature, 0" OFF, "1" ON

Bit5: charging low temperature, "0" OFF, "1" ON

Bit6: cell high diff, 0" OFF, "1" ON

Bit7: charging over current, "0" OFF, "1" ON

Bit8: discharging over current, 0" OFF, "1" ON

Bit9: SOC Low, "0" OFF, "1" ON

Bit10: discharging high temperature, 0" OFF, "1" ON

Bit11: discharging low temperature, 0" OFF, "1" ON

Bit12: diff high temperature "0" OFF, "1" ON

Bit13: insulation low 0" OFF, "1" ON

Bit14: SOC high, 0" OFF, "1" ON

TX: 01 03 00 40 00 1E C4 16

RX: 01 03 3C 00 00 08 AE 00 00 00 00 00 00 01 0E 0D A7 00 40 00 00 0D 7A 00 01 00 00 00 1E 00 0C 00 00 00

19 00 01 00 00 00 0E 00 D5 A2

2 System parameter

2.1 parameter

No	Register Address	Content	Length	Data type	R/W	Unit	Remark
1	0x7EH	HW VER	2byte	UINT16	R		0x151:V1.5.1
2	0x7FH	SW VER	2byte	UINT16	R		0x300:V3.0.0
3	0x80H	Cell number	2byte	UINT16	R	1bit/1	38S(0x26H)
4	0x81H	Temperature number	2byte	UINT16	R	1bit/1	6(0x6H)
5	0x82H	Shunt xxA/75mV	2byte	UINT16	R/W	1bit/A	50A(0x32H)
6	0x83H	Cell OV alarm	2byte	UINT16	R/W	1bit/mV	3600mV(0xE10H)
7	0x84H	Cell OV protection	2byte	UINT16	R/W	1bit/mV	3600mV(0xE10H)
8	0x85H	Cell OV release protection	2byte	UINT16	R/W	1bit/mV	3600mV(0xE10H)
9	0x86H	Cell OV protection delay	2byte	UINT16	R/W	1bit/mS	2000mS(0x7D0H)
10	0x87H	Cell UV alarm	2byte	UINT16	R/W	1bit/mV	2900mV(0xB54H)
11	0x88H	Cell UV protection	2byte	UINT16	R/W	1bit/mV	2900mV(0xB54H)
12	0x89H	Cell UV release protection	2byte	UINT16	R/W	1bit/mV	3600mV90xE10H)
13	0x8AH	Cell UV protection delay	2byte	UINT16	R/W	1bit/mS	2000mS(0x7D0H)
14	0x8BH	pack OV alarm	2byte	UINT16	R/W	1bit/100mV	136.8V(0x558H)
15	0x8CH	pack OV protection	2byte	UINT16	R/W	1bit/100mV	136.8V(0x558H)

16	0x8DH	pack OV releasse protection	2byte	UINT16	R/W	1bit/100mV	136.8V(0x558H)
17	0x8EH	pack OV protection delay	2byte	UINT16	R/W	1bit/mS	2000mS(0x7D0H)
18	0x8FH	pack UV alarm	2byte	UINT16	R/W	1bit/100mV	110.2V(0x44EH)
19	0x90H	pack UV protection	2byte	UINT16	R/W	1bit/100mV	110.2V(0x44EH)
20	0x91H	pack UV releasse protection	2byte	UINT16	R/W	1bit/100mV	110.2V(0x44EH)
21	0x92H	pack UV protection delay	2byte	UINT16	R/W	1bit/mS	2000mS(0x7D0H)
22	0x93H	Charging OT alarm	2byte	INT16	R/W	1bit/°C	55°C(0x37H)
23	0x94H	Charging OT protection	2byte	INT16	R/W	1bit/°C	55°C(0x37H)
24	0x95H	Charging OT release protection	2byte	INT16	R/W	1bit/°C	55°C(0x37H)
25	0x96H	Charging UT alarm	2byte	INT16	R/W	1bit/°C	-5°C(0xFFFBH)
26	0x97H	Charging UT protection	2byte	INT16	R/W	1bit/°C	-10°C(0xFF6H)
27	0x98H	Charging UT release protection	2byte	INT16	R/W	1bit/°C	5°C(0x05H)
28	0x99H	Charging OC alarm	2byte	UINT16	R/W	1bit/100mA	25.0A(0xFAH)
29	0x9AH	Charging OC protection	2byte	UINT16	R/W	1bit/100mA	50.0A(0x1F4H)
30	0x9BH	Charging OC protection delay	2byte	UINT16	R/W	1bit/mS	2000mS(0x7D0H)
31	0x9CH	discharging OC alarm	2byte	UINT16	R/W	1bit/100mA	25.0A(0xFAH)
32	0x9DH	discharging OC protection	2byte	UINT16	R/W	1bit/100mA	50.0A(0x1F4H)
33	0x9EH	discharging OC protection delay	2byte	UINT16	R/W	1bit/mS	2000mS(0x7D0H)
34	0x9FH	Balance start cell voltage	2byte	UINT16	R/W	1bit/mV	3600mV(0xE10H)
35	0xA0H	Balance start delta voltage	2byte	UINT16	R/W	1bit/mV	50mV(0x32H)
36	0xA1H	SOC low alarm	2byte	UINT16	R/W	1bit/0.1%	80.0%(0x320H)
37	0xA2H	SOC low protection	2byte	UINT16	R/W	1bit/0.1%	80.0%(0x320H)
38	0xA3H	SOC high alarm	2byte	UINT16	R/W	1bit/0.1%	80.0%(0x320H)
39	0xA4H	SOC high protection	2byte	UINT16	R/W	1bit/0.1%	80.0%(0x320H)
40	0xA5H	Cell diff alarm	2byte	UINT16	R/W	1bit/0.1%	80.0%(0x320H)
41	0xA6H	Cell diff protection	2byte	UINT16	R/W	1bit/0.1%	80.0%(0x320H)
42	0xA7H	discharging OT alarm	2byte	INT16	R/W	1bit/°C	55°C(0x37H)
43	0xA8H	discharging OT protection	2byte	INT16	R/W	1bit/°C	55°C(0x37H)
44	0xA9H	discharging OT release protection	2byte	INT16	R/W	1bit/°C	55°C(0x37H)
45	0xAAH	discharging UT alarm	2byte	INT16	R/W	1bit/°C	-5°C(0xFFFBH)
46	0xABH	discharging UT protection	2byte	INT16	R/W	1bit/°C	-10°C(0xFF6H)
47	0xACH	discharging UT release protection	2byte	INT16	R/W	1bit/°C	5°C(0x0AH)
48	0xADH	Temperature diff alarm	2byte	UINT16	R/W	1bit/°C	10°C(0x05H)
49	0xAEH	Temperature diff protection	2byte	UINT16	R/W	1bit/°C	20°C(0x14H)
50	0xAFH	charging OC release protection delay	2byte	UINT16	R/W	1bit/100mS	600S(0x1770H)
51	0xB0H	discharging OC release protection delay	2byte	UINT16	R/W	1bit/100mS	600S(0x1770H)
52	0xB1H	Start fan temperature	2byte	INT16	R/W	1bit/°C	-5°C(0xFFFBH)
53	0xB2H	Stop fan temperature	2byte	INT16	R/W	1bit/°C	10°C(0x0AH)
54	0xB3H	Start heating temperature	2byte	INT16	R/W	1bit/°C	45°C(0x2DH)
55	0xB4H	Stop heating temperature	2byte	INT16	R/W	1bit/°C	35°C(0x23H)
56	0xB5H	Battery Charge Voltage	2byte	UINT16	R/W	1bit/100mV	136.8V(0x558H)
57	0xB6H	Battery discharge Voltage	2byte	UINT16	R/W	1bit/100mV	110.2V(0x44EH)
58	0xB7H	Charge Current Limitation	2byte	UINT16	R/W	1bit/100mA	25.0A(0xFAH)
59	0xB8H	Discharge Current Limitation	2byte	UINT16	R/W	1bit/100mA	50.0A(0x1F4H)

TX: 01 03 00 80 00 23 05 FB

RX: 01 03 46 00 40 00 0C 00 64 0E 74 0E D8 0D AC 13 88 09 C4 08 98 0C 1C 13 88 09 38 09 7E 08 C0 07 D0 06
40 05 78 07 C0 13 88 00 37 00 3C 00 32 FF FB FF F6 00 05 02 94 02 BC 4E 20 02 94 02 BC 4E 20 0D AC 00 1E 00
64 00 0A B7 51

3. Temperature

Register Address	Content	Length	Data type	R/W	Unit	Remark
0x100H	Temperature1	2byte	INT16	R	1bit/°C	25°C(0x19H)
0x101H	Temperature2	2byte	INT16	R	1bit/°C	25°C(0x19H)
.....					
0x1FEH	Temperature255	2byte	INT16	R	1bit/°C	25°C(0x19H)
0x1FFH	Temperature256	2byte	INT16	R	1bit/°C	25°C(0x19H)

TX: 01 03 01 00 00 06 C4 34

RX: 01 03 0C 00 19 00 1A 00 1B 00 1A 00 1B 00 1C D9 41

4.cell voltage

Register Address	Content	Length	Data type	R/W	Unit	Remark
0x200H	Cell 1 voltage	2byte	UINT16	R	1bit/mV	3200mV(0xC80H)
0x201H	Cell 2 voltage	2byte	UINT16	R	1bit/mV	3200mV(0xC80H)
.....					
0x2FEH	Cell 255 voltage	2byte	UINT16	R	1bit/mV	3200mV(0xC80H)
0x2FFH	Cell 256 voltage	2byte	UINT16	R	1bit/mV	3200mV(0xC80H)

TX: 01 03 02 00 00 26 C5 A8

RX: 01 03 4C 0C 1C 0C 1D 0C 1E 0C 1F 0C 20 0C 21 0C 23 0C 24 0C 25 0C 26 0C 27 0C 80 0C 81 0C 82 0C 83 0C 84 0C 85 0C 87 0C 88 0C 89 0C 8A 0C 8B 0C E5 0C E4 0C E2 0C E6 0C E4 0C E4 0C E6 0C E5 0C E3 0C E4 0C E3 0C E5 0C E3 0C E4 0C E3 0C E2 02 64