SEPLOS Smart BMS LCD Screen Protocol

1: Frame Formats

Item	Start Bits	LENGTH	Function Code	DATA	CRC	Stop Bits
Byte	1	1	1	n	2	1

Note:

1. Start bit: 0x55
2. Function code: 0x46
3. The length occupies only one byte. And the length contains the number of bytes of subsequent data.
4. Default CRC-16/XMODEM. And the range is from the function code to the last bit of the data.
5. Baud rate: 9600

2: Data analysis

Item	Content	hex bytes
1	Function code	1
2	Length	1
3	Cell quantity	1
4	Voltage value of the 1st cell (mV)	2
	Voltage value of the 2nd cell (mV)	2
	...	
	Voltage value of the Mth cell (mV)	2
5	Temperature value quantity N=6	1
	Temperature of the 1st cell (0.1℃)	2
	Temperature of the 2nd cell (0.1℃)	2
	Temperature of the 3rd cell (0.1℃)	2
	Temperature of the 4th cell (0.1℃)	2
	Ambient temperature (0.1℃)	2
	BMS temperature (0.1℃)	2
7	Charge and discharge current (0.01A)	2
8	Total voltage (0.01V)	2
9	Remaining capacity (0.01Ah)	2
10	Customize P=10	1
11	Battery capacity (0.01Ah)	2
12	Cycle life	2
13	Voltage of the port(0.01V)	2

System status	Marker bit information (1:Enter 0: Back)
0	Discharge
1	Charge
2	Float charge
3	Preserved bits
4	Standby
5	Power off
6	Preserved bits
7	Preserved bits

System status	Marker bit information (1:ON 0: OFF)
0	Discharge on/off status
1	Charge on/off status
2	Current limiting on/off status
3	Heating on/off status
4-7	Preserved bits

Waning bits		
27	Warning status 1	1
28	Warning status 2	1
	Warning status 3	1
	Warning status 4	1
	Warning status 5	1
	Warning status 6	1
Preserved bits		1
Preserved bits		1

Warning status 1	**Marker bit information (1:ON 0: OFF)**
0	Voltage sensor failure
1	Temperature sensor failure
2	Current sensor failure
3	Button failure
4	Voltage difference failure
5	Charge switch failure
6	Discharge switch failure
7	Current limiting failure
Warning status 2	**Marker bit information (1:ON 0: OFF)**
0	Over voltage warning of individual cell
1	Over voltage trip of individual cell
2	Low voltage warning of individual cell

3	Low voltage trip of individual cell	
4	Over voltage warning of pack voltage	
5	Over voltage trip of pack voltage	
6	Low voltage warning of pack voltage	
7	Low voltage trip of pack voltage	
Warning status 3	**Marker bit information (1:ON 0: OFF)**	
0	Charge high temperature warning	Cell temperature
1	Charge high temperature trip	
2	Charge low temperature warning	
3	Charge low temperature trip	
4	Discharge high temperature warning	
5	Discharge high temperature trip	
6	Discharge low temperature warning	
7	Discharge low temperature trip	
Warning status 4	**Marker bit information (1:ON 0: OFF)**	
0	Ambient high temperature warning	Ambient temperature
1	Ambient high temperature trip	
2	Ambient low temperature warning	
3	Ambient low temperature trip	
4	High temperature warning (PCB)	Temperature of BMS PCB board
5	High temperature trip (PCB)	
6	Heating	
7	Preserved bits	
Warning status 5	**Marker bit information (1:ON 0: OFF)**	
0	Over current warning (Charge)	
1	Over current trip (Charge)	
2	Over current warning (Discharge)	
3	Over current trip (Discharge)	
4	Over current trip (Transient)	
5	Short circuit trip (Output current)	
6	Over current lock (Transient)	
7	Short circuit lock (Output current)	
Warning status 6	**Marker bit information (1:ON 0: OFF)**	
0	High voltage trip (Charge)	
1	Intermittent power supply waiting	
2	Remaining capacity warning	
3	Remaining capacity trip	
4	Stop charging warning of low cell voltage	
5	Reverse polarity protection (Output)	
6	Output connection failure	
7	Internal bit	

Temperature	Unsigned integer (0.1K), actual value = (transmission value-2731)/10 (℃). For example: 3032 means (3032-2731) /10 (℃)=30.1℃
Total current	Signed integer (A), actual value = transmission value/100(A). For example: 4500 means 45.00 A
Total voltage	Unsigned integer (V), actual value=transmission value/100(V). For example: 5400 means 54.00 V
Capacity	Unsigned integer (Ah), actual value = transmission value/100(Ah). For example: 4830 means 48.30Ah

3: Receive example

55 46 46 10 00 00 00 00 00 00 00 00 00 12 00 18 00 89 00 00 00 00
00 04 00 10 00 4D 01 19 02 85 0F AC 06 08 B7 08 B7 08 B7 0B 9B 0B
9C 00 00 02 09 07 B4 03 0F A0 00 00 15 DD 10 00 06 12 8A 80 00 00 10 00
00 2E 2D AA

Analysis:

94. Start bits: 0x55
95. The function code follows the start bit 0x46
96. Length 0x46 => (The data bytes of the yellow parts are 70)
97. The yellow part is the data content
98. CRC 0x2E 0x2D
99. Stop bits: 0xAA