BMS Modbus RTU Protocol

Port Support: RS485

Hardware BMS: BMS48100/48200

Version : V0.1

Date : 2023/02/09

Revision history

Index	Description	Version	Date	Author
0	Document created	V0.1	2023-02-09	
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1. Communication Parameters

1.1 Configuration:

Baud Rate：19200
Parity bit：No
Data Bits：8
Stop Bit：1

1.2 Port features:

RS485:BMS response which is self address only.

2. Frame format of communication data

2.1.1 List of function code supported:

Function code	Meaning	Notes
0X01	Read Coil status	Supported data block PIC/SFA/EIC
0X0F	Write Coil status	
0X04	Read command	Supported data block PIA/PIB/SPA/SCA/HIA/VIA/EIA/EIB/PCT
0X10	Write command	

2.1.2 Device supported:

Device Name	Device Id	Supported data block
BMS	0X00~0X7F	PIA/PIB/PIC/SPA/SCA/HIA/VIA/SFA
EMS	0XB0~0XBF	
ECU	0XC0	EIA/EIB/EIC
2.4'or 5'or7' TFT/LCD	0XE0	PIA/PIB/PIC/SCA
Bluetooth	0XE0/0X00~0X10/0XC0	PIA/PIB/PIC/EIA/EIB/EIC/SCA/PCT

2.2 0X04 Command

2.2.1 Host node sending

Item	0	1	2	3	4	5	6	7
Field definition	ADDR	CMD	MSB	LSB	MSB	LSB	LSB	MSB

Explanation	BMS address	Type of command(0x04)	Beginning register address	Resister number n	CRC

2.2.2 Slave node Normal response

Item	0	1	2	3|4…	3+2n	4+2n
Field definition	ADDR	CMD	Length	…	LSB	MSB
Explanation	BMS address	Type of command	2n	register value…	CRC	

2.3 0X10 Command

2.3.1 Host node sending

Item	0	1	2	3	4	5	6	7|8…	7+2n	8+2n
Field definition	ADDR	CMD	MSB	LSB	MSB	LSB	Length	…	LSB	MSB
Explanation	BMS address	Type of command (0x10)	Beginning register address		Resister number n		2n	Resister Value …	CRC	

2.3.2 Slave node Normal response

Item	0	1	2	3	4	5	6	7
Field definition	ADDR	CMD	MSB	LSB	MSB	LSB	LSB	MSB
Explanation	BMS address	Type of command	Beginning register address		Resister number n		CRC	

2.4 0X01 Command

2.4.1 Host node sending

Item	0	1	2	3	4	5	6	7
Field definition	ADDR	CMD	MSB	LSB	MSB	LSB	LSB	MSB
Explanation	BMS address	Type of command(0x01)	Beginning coil address		Bits number n		CRC	

2.4.2 Slave node Normal response

Item	0	1	2	3…	4+N	5+N
Field definition	ADDR	CMD	Length	…	LSB	MSB

Explanation	BMS address	Type of command	Bytes length N	Coil value…	CRC

Bytes length N：请求是 bits 数目，回复是 Bytes 数目，多出部分填 0

2.5 0X0F Command

2.5.1 Host node sending

Item	0	1	2	3	4	5	6	7	8+N	9+N
Field definition	ADDR	CMD	MSB	LSB	MSB	LSB	Length	…	LSB	MSB
Explanation	BMS address	Type of command (0x0F)	Beginning coil address		Bits number n		Bytes number N	Coil Value …	CRC	

2.5.2 Slave node Normal response

Item	0	1	2	3	4	5	6	7
Field definition	ADDR	CMD	MSB	LSB	MSB	LSB	LSB	MSB
Explanation	BMS address	Type of command	Beginning coil address		Bits number n		CRC	

2.6 Error Code

2.6.1 Abnormal response of format from slave node

Item	0	1	2	3	4
Field definition	ADDR	CMD+128	Err Code	LSB	MSB
Explanation	Controller address	Type of command +128	Error Code	CRC parity	

2.6.2 Error code defined

Error Code	Defined	Notes
0x01	illegal function	Function that does not supported
0x02	Illegal data address	Register address that does not supported
0x03	Illegal data value	Data value is not allowed
0x04	Salve device failure	Salve node fault
0x05	Acknowledge	Need master waiting
0x06	Slave device busy	
0x08	Memory parity error	

0x0A	Gateway path unavailable	
0x0B	Gateway target device failed to respond	
0x81	No history record	
Others	Reservation	

3. Data information

TA01:

Relative Address	Name	名称	R/W	Data type	Bytes	Unit
Pack Info. A(电池信息 PIA)						
1000	Pack Voltage	总压	R	UINT16	2	10mV
1001	Current	电流	R	INT16	2	10mA
1002	Remaining capacity	剩余容量	R	UINT16	2	10mAH
1003	Total Capacity	总容量	R	UINT16	2	10mAH
1004	Total Discharge Capacity	总放电容量	R	UINT16	2	10AH
1005	SOC	电荷状态	R	UINT16	2	0.1%
1006	SOH	电池健康度	R	UINT16	2	0.1%
1007	Cycle	循环次数	R	UINT16	2	1
1008	Averag of Cell Votage	平均电芯电压	R	UINT16	2	1mV
1009	Averag of Cell Temperature	平均电芯温度	R	UINT16	2	0.1K
100A	Max Cell Voltage	最高电芯电压	R	UINT16	2	1mV
100B	Min Cell Voltage	最低电芯电压	R	UINT16	2	1mV
100C	Max Cell Temperature	最高电芯温度	R	UINT16	2	0.1K
100D	Min Cell Temperature	最低电芯温度	R	UINT16	2	0.1K
100E	reserve	预留				
100F	MaxDisCurt	建议最大放电电流	R	UINT16	2	1A
1010	MaxChgCurt	建议最大充电电流	R	UINT16	2	1A
…..						
Pack Info. B(电池信息 PIB)						
1100	Cell1 Voltage	电芯01 电压	R	UINT16	2	1mV
1101	Cell2 Voltage	电芯 02 电压	R	UINT16	2	1mV
1102	Cell3 Voltage	电芯 03 电压	R	UINT16	2	1mV
1103	Cell4 Voltage	电芯 04 电压	R	UINT16	2	1mV
1104	Cell5 Voltage	电芯 05 电压	R	UINT16	2	1mV
1105	Cell6 Voltage	电芯 06 电压	R	UINT16	2	1mV
1106	Cell7 Voltage	电芯 07 电压	R	UINT16	2	1mV

1107	Cell8 Voltage	电芯 08 电压	R	UINT16	2	1mV
1108	Cell9 Voltage	电芯 09 电压	R	UINT16	2	1mV
1109	Cell10 Voltage	电芯 10 电压	R	UINT16	2	1mV
110A	Cell11 Voltage	电芯 11 电压	R	UINT16	2	1mV
110B	Cell12 Voltage	电芯 12 电压	R	UINT16	2	1mV
110C	Cell13 Voltage	电芯 13 电压	R	UINT16	2	1mV
110D	Cell14 Voltage	电芯 14 电压	R	UINT16	2	1mV
110E	Cell15 Voltage	电芯 15 电压	R	UINT16	2	1mV
110F	Cell16 Voltage	电芯 16 电压	R	UINT16	2	1mV
1110	Cell temperature 1	电池温度 1	R	UINT16	2	0.1K
1111	Cell temperature 2	电池温度 2	R	UINT16	2	0.1K
1112	Cell temperature 3	电池温度 3	R	UINT16	2	0.1K
1113	Cell temperature 4	电池温度 4	R	UINT16	2	0.1K
.....	reserve	预留				
1118	Environment Temperature	环境温度	R	UINT16	2	0.1K
1119	Power temperature	功率温度	R	UINT16	2	0.1K
.....						
Pack Info. C(电池信息 PIC)						
1200	Cells voltage 08-01low alarm state	电芯08-01电压低	R	HEX	1	1：alarm
1208	Cells voltage 16-09low alarm state	电芯16-09电压低	R	HEX	1	1：alarm
1210	Cells voltage 08-01high alarm state	电芯08-01电压高	R	HEX	1	1：alarm
1218	Cells voltage 16-09 high alarm state	电芯16-09电压高	R	HEX	1	1：alarm
1220	Cell 08-01 temperature Tlow alarm state	电芯温度08-01低	R	HEX	1	1：alarm
1228	Cell 08-01 temperature high alarm state	电芯温度08-01高	R	HEX	1	1：alarm
1230	Cell 08-01 equalization event code	电芯 08-01 均衡事件代码	R	HEX	1	1:on 0:off
1238	Cell 16-09 equalization event code	电芯 16-09 均衡事件代码	R	HEX	1	1:on 0:off
1240	System state code	系统状态代码	R	HEX	1	**See TB09**
1248	Voltage event code	电压事件代码	R	HEX	1	**See TB02**
1250	Cells Temperature event code	电芯温度事件代码	R	HEX	1	**See TB03**
1258	Environment and power Temperature event code	环境温度、功率温度事件代码	R	HEX	1	**See TB04**
1260	Current event code1	电流事件代码 1	R	HEX	1	**See TB05**
1268	Current event code2	电流事件代码 2	R	HEX	1	**See TB16**
1270	The residual capacity code	剩余容量告警	R	HEX	1	**See TB06**

1278	The FET event code	FET 状态代码	R	HEX	1	**See TB07**
1280	battery equalization state code	均衡状态代码	R	HEX	1	**See TB08**
1288	Hard fault event code	硬件失效代码	R	HEX	1	**See TB15**
…..						
System Parameter (电池配置参数 SPA)						
1300	Ntc number	电芯温度数目	R	UINT16	2	----
1301	Cell number serial battery	串联电池节数	R/W	UINT16	2	----
1302	Battery high voltage recover	总压高压恢复	R/W	UINT16	2	10mV
1303	Battery High voltage alarm	总压高压告警	R/W	UINT16	2	10mV
1304	Battery over voltage recover	总压过压恢复	R/W	UINT16	2	10mV
1305	Battery over voltage protection	总压过压保护	R/W	UINT16	2	10mV
1306	Battery low voltage Recover	总压低压恢复	R/W	UINT16	2	10mV
1307	Battery low voltage alarm	总压低压告警	R/W	UINT16	2	10mV
1308	Battery under voltage Recover	总压欠压恢复	R/W	UINT16	2	10mV
1309	Battery under voltage protection	总压欠压保护	R/W	UINT16	2	10mV
130A	Cell high voltage recover	单体高压恢复	R/W	UINT16	2	1mV
130B	Cell high voltage alarm	单体高压告警	R/W	UINT16	2	1mV
130C	Cell over voltage recover	单体过压恢复	R/W	UINT16	2	1mV
130D	Cell over voltage protection	单体过压保护	R/W	UINT16	2	1mV
130E	Cell low voltage Recover	单体低压恢复	R/W	UINT16	2	1mV
130F	Cell low voltage alarm	单体低压告警	R/W	UINT16	2	1mV
1310	Cell under voltage Recover	单体欠压恢复	R/W	UINT16	2	1mV
1311	Cell under voltage protection	单体欠压保护	R/W	UINT16	2	1mV
1312	Cell under voltage Fault	电芯欠压失效	R/W	UINT16	2	1mV
1313	Cell Diff protection	单体压差保护	R/W	UINT16	2	1mV
1314	Secondary Charge current protection	压差保护恢复	R/W	INT16	2	1mV
1315	Charge high current recover	充电过流恢复	R/W	UINT16	2	A
1316	Charge high current alarm	充电过流告警	R/W	INT16	2	A
1317	Charge over current protection	充电过流保护	R/W	UINT16	2	A
1318	Charge over current time delay	充电过流延时	R/W	INT16	2	0.1s
1319	Secondary Charge current protection	充电二级过流保护	R/W	INT16	2	A
131A	Secondary Charge current time dela	充电二级过流延时	R/W	INT16	2	ms
131B	Discharge low current recover	放电过流恢复	R/W	INT16	2	A
131C	Discharge low current alarm	放电过流告警	R/W	INT16	2	A
131D	Discharge over current protection	放电过流保护	R/W	UINT16	2	A
131E	Discharge over current time delay	放电过流延时	R/W	INT16	2	0.1s
131F	Secondary discharge current protection	放电二级过流保护	R/W	UINT16	2	A
1320	Secondary discharge current time	放电二级过流延	R/W	INT16	2	ms

	delay	时				
1321	Output shortcut protection	输出短路保护	R/W	UINT16	2	A
1322	Output shortcut time delay	输出短路延时	R/W	UINT16	2	us
1323	Over current recover time delay	过流恢复延时	R/W	UINT16	2	0.1s
1324	Over current lock times	过流锁定次数	R/W	INT16	2	times
1325	Charge High switch Limited time	充电限流持续时间	R/W	UINT16	2	0.1s
1326	Pluse current	脉冲限流电流	R/W	UINT16	2	A
1327	Pluse time	脉冲限流时间	R/W	UINT16	2	0.1s
.....	reserve	预留				
132B	Precharge Short Percent	短路预充完成率	R/W	UINT16	2	0.1%
132C	Precharge Stop Percent	正常预充完成率	R/W	UINT16	2	0.1%
132D	Precharge Fault Percent	异常预充完成率	R/W	UINT16	2	0.1%
132E	Precharge Over Time	预充超时时间	R/W	UINT16	2	s
132F	Charge high temperature recover	充电高温恢复	R/W	UINT16	2	0.1K
1330	Charge high temperature alarm	充电高温告警	R/W	UINT16	2	0.1K
1331	Charge over temperature recover	充电过温恢复	R/W	UINT16	2	0.1K
1332	Charge over temperature protection	充电过温保护	R/W	UINT16	2	0.1K
1333	Charge low temperature recover	充电低温恢复	R/W	UINT16	2	0.1K
1334	Charge low temperature alarm	充电低温告警	R/W	UINT16	2	0.1K
1335	Charge under temperature recover	充电欠温恢复	R/W	UINT16	2	0.1K
1336	Charge under temperature protection	充电欠温保护	R/W	UINT16	2	0.1K
1337	Discharge high temperature recover	放电高温恢复	R/W	UINT16	2	0.1K
1338	Discharge high temperature alarm	放电高温告警	R/W	UINT16	2	0.1K
1339	Discharge over temperature recover	放电过温恢复	R/W	UINT16	2	0.1K
133A	Discharge over temperature protection	放电过温保护	R/W	UINT16	2	0.1K
133B	Discharge low temperature recover	放电低温恢复	R/W	UINT16	2	0.1K
133C	Discharge low temperature alarm	放电低温告警	R/W	UINT16	2	0.1K
133D	Discharge under temperature recover	放电欠温恢复	R/W	UINT16	2	0.1K
133E	Discharge under temperature protection	放电欠温保护	R/W	UINT16	2	0.1K
133F	High environment temperature recover	环境高温恢复	R/W	UINT16	2	0.1K
1340	High environment temperature alarm	环境高温告警	R/W	UINT16	2	0.1K
1341	Over environment temperature recover	环境过温恢复	R/W	UINT16	2	0.1K
1342	Over environment temperature protection	环境过温保护	R/W	UINT16	2	0.1K
1343	Low environment temperature recover	环境低温恢复	R/W	UINT16	2	0.1K
1344	Low environment temperature alarm	环境低温告警	R/W	UINT16	2	0.1K
1345	Under environment temperature	环境欠温恢复	R/W	UINT16	2	0.1K

	recover					
1346	Under environment temperature protection	环境欠温保护	R/W	UINT16	2	0.1K
1347	High power temperature recover	功率高温恢复	R/W	UINT16	2	0.1K
1348	High power temperature alarm	功率高温告警	R/W	UINT16	2	0.1K
1349	Over power temperature recover	功率过温恢复	R/W	UINT16	2	0.1K
134A	Over power temperature protection	功率过温保护	R/W	UINT16	2	0.1K
134B	Cell heating stop	电芯加热停止	R/W	UINT16	2	0.1K
134C	Cell heating open	电芯加热开启	R/W	UINT16	2	0.1K
134D	Equalization high temperature prohibit	均衡高温禁止	R/W	UINT16	2	0.1K
134E	Equalization low temperature prohibit	均衡低温禁止	R/W	UINT16	2	0.1K
134F	static equilibrium time	静态均衡定时	R/W	UINT16	2	H
1350	Equalization open voltage	均衡开启电压	R/W	UINT16	2	mv
1351	Equalization open voltage difference	均衡开启压差	R/W	UINT16	2	mv
1352	Equalization stop voltage difference	均衡结束压差	R/W	UINT16	2	mv
1353	SOC Full Relese	补电 SOC	R/W	UINT16	2	0.1%
1354	SOC low recover	SOC 低恢复	R/W	UINT16	2	0.1%
1355	SOC low Alarm	SOC 低告警	R/W	UINT16	2	0.1%
1356	SOC Under recover	SOC 保护恢复	R/W	UINT16	2	0.1%
1357	SOC Under protection	SOC 低保护	R/W	UINT16	2	0.1%
1358	Battery rated capacity	电池额定容量	R/W	UINT16	2	10mAH
1359	Battery total capacity	电池总容量	R/W	UINT16	2	10mAH
135A	Residual capacity	电池剩余容量	R/W	UINT16	2	10mAH
135B	Stand-by to sleep time	待机休眠定时	R/W	UINT16	2	H
135C	Focs Output Delay time	强制输出延迟	R/W	UINT16	2	0.1s
135D	Focs Output Splite	强制输出间隔	R/W	UINT16	2	Min
135E	Pcs Output Timers	强制输出次数	R/W	UINT16	2	times
135F	Compensating Position 1	补偿位点 1	R/W	UINT16	2	Cell
1360	Position 1 Resistance	补偿位点 1 电阻	R/W	UINT16	2	m Ω
1361	Compensating Position 2	补偿位点 2	R/W	UINT16	2	Cell
1362	Position 2 Resistance	补偿位点 2 电阻	R/W	UINT16	2	m Ω
1363	Cell Diff alarm	单体压差告警	R/W	UINT16	2	mv
1364	Diff alarm recover	压差告警恢复	R/W	UINT16	2	mv
1365	PCS Request Charge Limit Voltage	充电请求电压	R/W	UINT16	2	10mv
1366	PCS Request Charge Limit Current	充电请求电流	R/W	UINT16	2	A
1367	PCS Request Discharge Limit Current	放电请求电流	R/W	UINT16	2	A
.....						
System Function (电池功能参数 SFA)						
1400	Voltage function switch	电压功能开关	R/W	HEX	1	**See TB02**
1408	Cell Temperature function switch	电芯温度功能开	R/W	HEX	1	**See TB03**

		关				
1410	Environment and power Temperature function switch	环境温度、功率温度功能开关	R/W	HEX	1	See TB10
1418	function switch	功能开关	R/W	HEX	1	See TB17
1420	Current function switch 1	电流功能开关 1	R/W	HEX	1	See TB05
1428	Current function switch 2	电流功能开关 2	R/W	HEX	1	See TB11
1430	Capacity and other function switch	容量及其它功能开关	R/W	HEX	1	See TB08
1438	Equalization function switch	均衡功能开关	R/W	HEX	1	See TB12
1440	Indicator function switch	指示功能开关	R/W	HEX	1	See TB18
1448	Hard fault function switch	失效功能开关	R/W	HEX	1	See TB15
.....						
System Ctrol(系统控制 SCA)						
1500	System Date	系统日历	R/W	8Btyes	8	See TB13
1504	TIMING History	历史记录定时	W	18 Btyes	18	See TB14
150D	Calibration Zero	零点校准	W	UINT16	2	Fixed：55AA
150E	Calibration Current	电流校准	W	INT16	2	10mA
150F	Calibration Voltage	电芯电压校准	W	UINT16	2	1mV
1510	Discharing FETs Control Off	放电管关闭	W	UINT16	2	Ack:55AA Nack:Oters
1511	Charing FETs Control Off	充电管关闭	W	UINT16	2	Ack:55AA Nack:Oters
1512	Current Limit FETs Control Off	限流管关闭	W	UINT16	2	Ack:55AA Nack:Oters
.....	reserve	预留				
1514	Heater FETs Control On	加热管开启	W	UINT16	2	Ack:AA55 Nack:Oters
1515	Charing FETs Control On	充电管开启	W	UINT16	2	Ack:AA55 Nack:Oters
1516	Parameter Reset	恢复出厂	W	UINT16	2	Fixed 55AA

1517	System Power Off	系统关机	W	UINT16	2	Fixed 55AA
1518	System Reset	系统复位	W	UINT16	2	Fixed 55AA
1519	Boot request	刷机请求	W	UINT16	2	Fixed 55AA
.....						
History Info（历史数据 HIA） 备注：获取历史数据请求使用非标，起始寄存器固定为 0X7000;寄存器数目为 55AA 时请求第一条历史记录； 寄存器数目为 AA55 时请求下一条历史记录。						
1600	Remaining record No.	剩余数据条目	R	UINT32	4	---
1602	Record Date	日期和时间	R	8Btyes	8	**See TB13**
1606	System state code	系统状态代码	R	HEX	1	**See TB09**
	Voltage event code	电压事件代码	R	HEX	1	**See TB02**
1607	Cells Temperature event code	电芯温度事件代码	R	HEX	1	**See TB03**
	Environment and power Temperature event code	环境温度、功率温度事件代码	R	HEX	1	**See TB04**
1608	Current event code 1	电流事件代码 1	R	HEX	1	**See TB05**
	Current event code 2	电流事件代码 2	R	HEX	1	**See TB16**
1609	The residual capacity code	剩余容量告警	R	HEX	1	**See TB06**
	The FET event code	FET 状态代码	R	HEX	1	**See TB07**
160A	Battery equalization state code	均衡状态代码	R	HEX	1	**See TB08**
	Hard failt event code	硬件失效代码	R	HEX	1	**See TB15**
160B	Pack Voltage	总压	R	UINT16	2	10mV
160C	Current	电流	R	INT16	2	10mA
160D	Remaining capacity	剩余容量	R	UINT16	2	10mHA
160E	Cell1 Voltage	电芯 01电压	R	UINT16	2	1mV
160F	Cell2 Voltage	电芯 02 电压	R	UINT16	2	1mV
1610	Cell3 Voltage	电芯 03 电压	R	UINT16	2	1mV
1611	Cell4 Voltage	电芯 04 电压	R	UINT16	2	1mV
1612	Cell5 Voltage	电芯 05 电压	R	UINT16	2	1mV
1613	Cell6 Voltage	电芯 06 电压	R	UINT16	2	1mV
1614	Cell7 Voltage	电芯 07 电压	R	UINT16	2	1mV
1615	Cell8 Voltage	电芯 08 电压	R	UINT16	2	1mV
1616	Cell9 Voltage	电芯 09 电压	R	UINT16	2	1mV
1617	Cell10 Voltage	电芯 10 电压	R	UINT16	2	1mV
1618	Cell11 Voltage	电芯 11 电压	R	UINT16	2	1mV
1619	Cell12 Voltage	电芯 12 电压	R	UINT16	2	1mV
161A	Cell13 Voltage	电芯 13 电压	R	UINT16	2	1mV
161B	Cell14 Voltage	电芯 14 电压	R	UINT16	2	1mV

161C	Cell15 Voltage	电芯 15 电压	R	UINT16	2	1mV
161D	Cell16 Voltage	电芯 16 电压	R	UINT16	2	1mV
161E	Cell temperature 1	电池温度 1	R	UINT16	2	0.1K
161F	Cell temperature 2	电池温度 2	R	UINT16	2	0.1K
1620	Cell temperature 3	电池温度 3	R	UINT16	2	0.1K
1621	Cell temperature 4	电池温度 4	R	UINT16	2	0.1K
.....	reserve	预留				
1626	Environment temperature	环境温度	R	UINT16	2	0.1K
1627	Power temperature	功率温度	R	UINT16	2	0.1K
.....						
Version Info(版本信息 VIA)						
备注：内填写小端在前						
1700	Factory Names	制造商名称	R	ASCII	20	
170A	Device Names	设备名称	R/W	ASCII	20	
1714	Firmware Version	固件版本	R	ASCII	2	
1715	Bms SN	BMS 二维码信息	R/W	ASCII	30	
1724	Pack SN	Pack 二维码信息	R/W	ASCII	30	
.....						
PCS Control(版本信息 (PCT)						
1800	PCS Protocol type Switch	逆变器协议切换	R/W	UINT16	2	
1801	PCS baud rate	逆变器速率信息	R	UINT16	2	Kbps/bps
1802	PCS name	逆变器名称	R	ASCII	32	
1812	Protocol support name	协议名称	R	ASCII	32	
1822	Protocol version	协议版本	R	ASCII	2	
1823	PCS Protocol pre Switch	逆变器协议预取	R/W	UINT16	2	
.....						
EMS Info.A(系统信息 EIA)						
2000	Pack Voltage	总压	R	UINT32	4	10mV
2002	Current	电流	R	INT32	4	100mA
2004	Remaining capacity	剩余容量	R	UINT32	4	10mAH
2006	Total Capacity	总容量	R	UINT32	4	10mAH
2008	Total Discharge Capacity	总放电容量	R	UINT32	4	10AH
200A	Rated Capacity	总额定容量	R	UINT32	4	10mAH
200C	Online Pack Flag	并机标志	R	UINT32	4	
200E	Protected Pack bit	保护标志	R	UINT32	4	
2010	Max Discharge current	建议最大放电流	R	UINT32	4	100mA
2012	Max Charge current	建议最大充电流	R	UINT32	4	100mA
2014	Suggest Pack OV	建议总压过压值	R	UINT16	2	100mV
2015	Suggest Pack UV	建议总压欠压值	R	UINT16	2	100mV
2016	System Pack No.	并机数目	R	UINT16	2	
2017	Cycle	平均循环次数	R	UINT16	2	

2018	Soc	SOC	R	UINT16	2	0.1%
2019	Soh	SOH	R	UINT16	2	0.1%
.....						
EMS Info. B(系统信息 EIB)						
2100	Max Cell Voltage	最高电芯电压	R	UINT16	2	1mV
2101	Min Cell Voltage	最低电芯电压	R	UINT16	2	1mV
2102	Max Cell Voltage Id	最高电芯电压位置	R	UINT16	2	
2103	Min Cell Voltage Id	最低电芯电压位置	R	UINT16	2	
2104	Max Pack Voltage	最高 Pack 电压	R	UINT16	2	10mV
2105	Min Pack Voltage	最低 Pack 电压	R	UINT16	2	10mV
2106	Max Pack Voltage Id	最高 Pack 电压位置	R	UINT16	2	
2107	Min Pack Voltage Id	最低 Pack 电压位置	R	UINT16	2	
2108	Max Cell Temperature	最高电芯温度	R	INT16	2	1℃
2109	Min Cell Temperature	最低电芯温度	R	INT16	2	1℃
210A	Avg Cell Temperature	平均电芯温度	R	INT16	2	1℃
210B	Max Cell Temperature Id	最高电芯温度位置	R	UINT16	2	
210C	Min Cell Temperature Id	最低电芯温度位置	R	UINT16	2	
210D	Max Pack Power temperature	最高功率温度	R	INT16	2	1℃
210E	Min Pack Power temperature	最低功率温度	R	INT16	2	1℃
210F	Avg Pack Power temperature	平均电芯温度	R	INT16	2	1℃
2110	Max Pack Power temperature Id	最高功率温度位置	R	INT16	2	
2111	Min Pack Power temperature Id	最低功率温度位置	R	INT16	2	
2112	Max Pack Soc	最大 Pack Soc	R	UINT16	2	0.1%
2113	Min Pack Soc	最小 Pack Soc	R	UINT16	2	0.1%
2114	Max Pack Cycle	最大 pack 循环	R	UINT16	2	
2115	Max Pack Soh	最大 Soh 数	R	UINT16	2	0.1%
.....						
EMS Info. C(系统信息 EIC)						
2200	System state code	系统状态代码	R	HEX	1	**See TB09**
2208	Voltage event code	电压事件代码	R	HEX	1	**See TB02**
2210	Cells Temperature event code	电芯温度事件代码	R	HEX	1	**See TB03**
2218	Environment and power	环境温度、功率	R	HEX	1	**See TB04**

	Temperature event code	温度事件代码				
2220	Current event code1	电流事件代码 1	R	HEX	1	See TB05
2228	Current event code2	电流事件代码 2	R	HEX	1	See TB16
2230	The residual capacity code	剩余容量告警	R	HEX	1	See TB06
2238	The FET event code	FET 状态代码	R	HEX	1	See TB07
2240	battery equalization state code	均衡状态代码	R	HEX	1	See TB08
2248	Hard fault event code	硬件失效代码	R	HEX	1	See TB15
.....						

TB02:

INDEX	Definition
Bit0	Cell high voltage alarm
Bit1	Cell over voltage protection
Bit2	Cell low voltage alarm
Bit3	Cell under voltage protection
Bit4	Pack high voltage alarm
Bit5	Pack over voltage protection
Bit6	Pack low voltage alarm
Bit7	Pack under voltage protection

TB03:

INDEX	Definition
Bit0	Charge high temperature alarm
Bit1	Charge over temperature protection
Bit2	Charge low temperature alarm
Bit3	Charge under temperature protection
Bit4	Discharge high temperature alarm
Bit5	Discharge over temperature protection
Bit6	Discharge low temperature alarm
Bit7	Discharge under temperature protection

TB04:

INDEX	Definition
Bit0	High environment temperature alarm
Bit1	Over environment temperature protection
Bit2	Low environment temperature alarm
Bit3	Under environment temperature protection
Bit4	High Power temperature alarm
Bit5	Over Power temperature protection
Bit6	Cell temperature low heating
Bit7	Reservation

TB05:

INDEX	Definition
Bit0	Charge current alarm
Bit1	Charge over current protection
Bit2	Charge second level current protection
Bit3	Discharge current alarm
Bit4	Discharge over current protection
Bit5	Discharge second level over current protection
Bit6	Output short circuit protection
Bit7	Reservation

TB16:

INDEX	Definition
Bit0	Output short latch up
Bit1	Reservation
Bit2	Second Charge latch up
Bit3	Second Discharge latch up
Bit4	Reservation
Bit5	Reservation
Bit6	Reservation
Bit7	Reservation

TB06:

INDEX	Definition
Bit0	Reservation
Bit1	Reservation
Bit2	Soc alarm
Bit3	Soc protection
Bit4	Cell Diff alarm
Bit5	Reservation
Bit6	Reservation
Bit7	Reservation

TB17:

INDEX	Definition
Bit0	Focs Output
Bit1	Reservation
Bit2	Reservation
Bit3	Reservation
Bit4	Reservation
Bit5	Reservation

Bit6	Reservation
Bit7	Reservation

TB07:

INDEX	Definition
Bit0	Discharge FET on
Bit1	Charge FET on
Bit2	Current limiting FET on
Bit3	Heating on
Bit4	Reservation
Bit5	Reservation
Bit6	Reservation
Bit7	Reservation

TB08:

INDEX	Definition
Bit0	low Soc alarm
Bit1	Intermittent charge
Bit2	External switch control
Bit3	Static standby and sleep mode
Bit4	History data recording
Bit5	Under Soc protect
Bit6	Acktive-Limited Current
Bit7	Passive-Limited Current

TB09:

INDEX	Definition
Bit0	Discharge
Bit1	Charge
Bit2	Floating charge
Bit3	Full charge
Bit4	Standby mode
Bit5	Turn off
Bit6	Reservation
Bit7	Reservation

TB10:

INDEX	Definition
Bit0	High environment temperature alarm
Bit1	Over environment temperature protection
Bit2	Low environment temperature alarm

Bit3	Under environment temperature protection
Bit4	Power high temperature alarm
Bit5	Power over temperature protection
Bit6	Cell temperature low heating
Bit7	Cell voltage Fault

TB11:

INDEX	Definition
Bit0	Output short latch up
Bit1	Reservation
Bit2	Charge second level over current latch up
Bit3	Discharge second level over current latch up
Bit4	Reservation
Bit5	Reservation
Bit6	Reservation
Bit7	Reservation

TB12:

INDEX	Definition
Bit0	Equilibrium module to open
Bit1	Static equilibrium indicate
Bit2	Static equilibrium overtime
Bit3	Equalization temperature limit
Bit4	Reservation
Bit5	Reservation
Bit6	Reservation
Bit7	Reservation

TB13:

INDEX	Definition	Data limited	Data type	Bytes	Unit
0	Year_Low	1—9999	UINT16	1	Year
1	Year_High			1	
2	Month	1—12	UINT8	1	Mon
3	Day	1—31	UINT8	1	Day
4	Hour	0—23	UINT8	1	H
5	Minute	0—59	UINT8	1	Min
6	Second	0—59	UINT8	1	s
7	Reservation		UINT8	1	---

TB14:

INDEX	Definition	Data type	Bytes	Unit

0	Set the start date	8 Bytes	8	**See TB13**
8	Set the end date	8 Bytes	8	**See TB13**
16	SpaceTime_Low	UINT16	1	s
	SpaceTime_High		1	

TB15:

INDEX	Definition	Note
Bit0	NTC Fault	Wire break or short
Bit1	AFE Fault	AFE Comm. Error
Bit2	Charge Mosfets Fault	Mosfets short
Bit3	Discharge Mosfets Fault	Mosfets short
Bit4	Cell Fault	Large Voltage different
Bit5	Break Line Fault	
Bit6	Key Fault	
Bit7	Aerosol Alarm	

TB18:

INDEX	Definition
Bit0	Buzzer indicator
Bit1	LCD display
Bit2	Manual Focs Output
Bit3	Auto Focs Output
Bit4	Under Voltage recover
Bit5	Aerosol Test Function
Bit6	Aerosol Normally Disconnected Mode
Bit7	Temp-Curt Adjust