

Jikong BMS RS485 Modbus general protocol (V1.1)

Version History			
Date version	number	describe	author
2023.02	V1.0	1. Write communication protocol;	Zhang Peng
2024.01	V1.1	1. Fixed some errors and added some register support	Zhang Peng

Jikong BMS RS485 Modbus general protocol (V1.1)

The Jikong BMS RS485 Modbus universal protocol uses a master-slave response method for data communication. Only the host can initiate a request using a unique slave address, and the BMS (slave) responds based on the host's request, i.e., half-duplex communication. This protocol only allows the host to initiate requests, and the slave to passively respond, so the slave will not actively occupy the communication line and cause data conflicts.

1. Physical Interface

Communication The electrical characteristics of the physical

interface are as	UART
follows:	RS485
Communication	115200bps
interface level	
standard Baud	8 1
rate Data bits Stop bits Parity bits	none

2. Protocol Format

Information transmission is asynchronous, using hexadecimal for communication, information frame format:

Address code	function code	data area	CRC check
1 byte	1 byte	1 byte	2 bytes

1) Address

code The address code is the first byte of each communication information frame and supports 1 to 247. The address of each slave on the bus must be unique. Only the slave that matches the address code sent by the host can respond and return data.

2) Function code

The function code is the second byte of each communication information frame. The host sends it and tells the slave device what to do through the function code.

What operation is to be performed? The function code is

Function	defined as follows:	Operation
03H	Definition Read Register	reads data from one or more registers
10H	Write Register	Write data to one or more registers

3) Data Area

The data area varies with the function code and data direction. These data can be different combinations of "register first address + read register number", "register address + operation data", "register first address + operation register number + data length + data", etc. The data area of different function codes is explained in detail in "Function Code Analysis".

3) CRC check CRC

check is used to ensure the correctness and integrity of data transmission.

3. Error Feedback

Address and CRC check errors will not receive data feedback from the slave, and other errors will return an error code to the host. Adding 0x80 to the second bit of the data frame indicates that an error has occurred in the request (illegal function code, illegal data value, etc.). The error data frame is as follows:

Address code	Function code	Error code area CRC	check
1 byte	1 byte	1 byte	2 bytes

error code is defined as follows:

value	Function	illustrate
01H	code with illegal name	This function code does not support register operation
02H	Register address error	Accessing a register that is prohibited from being accessed by the slave
03H	Illegal data	The data logic is illegal or exceeds the limit
04H	CRC check error	CRC check error

4. Information Transmission Process

When the communication command is sent from the host to the slave, the slave that matches the address code sent by the host receives the communication command.

If the CRC check is correct, the corresponding operation will be executed and the execution result (data) will be returned to the host.

The address code, function code, executed data and CRC check code are included.

If the test fails, no information will be returned.

5. Function code analysis

1) Function code 03H: Read register

For example: the host wants to read the data of two holding registers whose slave address is 01H and the starting register address is 05H.

According to the command, the host sends:

Host sends		Data (HEX)
address code		01H
Function code		03H
Starting register address	High Byte	00H
	Low Byte	05H
Number of registers	High Byte	00H
	Low Byte	02H
CRC check	Low Byte	D4H
	High Byte	0AH

If the data of the slave holding register 05H and 06H are 1122H and 3344H, the slave returns:

Slave return data (HEX)		
Address code		01H
Function code		03H
Number of bytes		04H
Register 05 data	High byte	11H
	low byte	22H
Register 06 data	high byte	33H
	low byte	44H
CRC check	low byte	4BH
	high byte	C6H

2) Function code 10H: write register

For example: the host wants to save data 0005H, 2233H to the slave address 01H, the starting register address is

In the two registers of 0020H, the host sends:

The host sends		Data (HEX)
the address		01H
code function code		10H
Starting register address	High byte	00H
	low byte	20H
Number of registers	high byte	00H
	low byte	02H
write bytes		04H
0000H register to be written	High byte	00H
	Low byte	05H
0001H register to be written	High byte	22H
	Low Byte	33H
CRC check	Low Byte	B9H
	High Byte	03H

10H operation, the slave returns:

Slave returns		Data (HEX)
address code		01H
Function code		10H
Starting register address	High Byte	00H
	Low Byte	20H
Number of registers	High Byte	00H
	Low Byte	02H
CRC check	Low Byte	40H
	High Byte	02H

寄存器映射表Register Map

起始地址码 Address Field	偏移Index		数据类型 Type	长度 Length	R/W	数据内容Content	单位 Unit	备注Note	
	HEX	DEC							
	0x0000	0	UINT32	4	RW	进入休眠电压VolSmartSleep	mV		
	0x0004	4	UINT32	4	RW	单体欠压保护VolCellUV	mV		
	0x0008	8	UINT32	4	RW	单体欠压保护恢复VolCellUVPR	mV		
	0x000C	12	UINT32	4	RW	单体过充保护VolCellOV	mV		
	0x0010	16	UINT32	4	RW	单体过充保护恢复电压VolCellOVPR	mV		
	0x0014	20	UINT32	4	RW	触发均衡压差VolBalanTrig	mV		
	0x0018	24	UINT32	4	RW	SOC-100%电压VolSOC100%	mV		
	0x001C	28	UINT32	4	RW	SOC-0%电压VolSOC0%	mV		
	0x0020	32	UINT32	4	RW	推荐充电电压VolCellRCV	mV		
	0x0024	36	UINT32	4	RW	浮充电压VolCellRFV	mV		
	0x0028	40	UINT32	4	RW	自动关机电压VolSysPwrOff	mV		
	0x002C	44	UINT32	4	RW	持续充电电流CurBatCOC	mA		
	0x0030	48	UINT32	4	RW	充电过流保护延迟TIMBatCOCPDly	S		
	0x0034	52	UINT32	4	RW	充电过流保护解除TIMBatCOCPRDly	S		
	0x0038	56	UINT32	4	RW	持续放电电流CurBatDcOC	mA		
	0x003C	60	UINT32	4	RW	放电过流保护延迟TIMBatDcOCPDly	S		
	0x0040	64	UINT32	4	RW	放电过流保护解除TIMBatDcOCPRDly	S		
	0x0044	68	UINT32	4	RW	短路保护解除TIMBatSCPRDly	S		
	0x0048	72	UINT32	4	RW	最大均衡电流CurBalanMax	mA		
	0x004C	76	INT32	4	RW	充电过温保护TMPBatCOT	0.1℃		
	0x0050	80	INT32	4	RW	充电过温恢复TMPBatCOTPR	0.1℃		
	0x0054	84	INT32	4	RW	放电过温保护TMPBatDcOT	0.1℃		
	0x0058	88	INT32	4	RW	放电过温恢复TMPBatDcOTPR	0.1℃		
	0x005C	92	INT32	4	RW	充电低温保护TMPBatCUT	0.1℃		
	0x0060	96	INT32	4	RW	充电低温恢复TMPBatCUTPR	0.1℃		
	0x0064	100	INT32	4	RW	MOS过温保护TMPMosOT	0.1℃		
	0x0068	104	INT32	4	RW	MOS过温保护恢复TMPMosOTPR	0.1℃		
	0x006C	108	UINT32	4	RW	单体数量CellCount	串		
	0x0070	112	UINT32	4	RW	充电开关BatChargeEN		1: 打开; 0: 关闭	
	0x0074	116	UINT32	4	RW	放电开关BatDisChargeEN		1: 打开; 0: 关闭	
	0x0078	120	UINT32	4	RW	均衡开关BalanEN		1: 打开; 0: 关闭	

0x1000

0x007C	124	UINT32	4	RW	电池设计容量CapBatCell	mA		
0x0080	128	UINT32	4	RW	短路保护延迟SCPDelay	us		
0x0084	132	UINT32	4	RW	均衡起始电压VolStartBalan	mV		
0x0088	136	UINT32	4	RW	连接线内阻0CellConWireRes0	uΩ		
0x008C	140	UINT32	4	RW	连接线内阻1CellConWireRes1	uΩ		
0x0090	144	UINT32	4	RW	连接线内阻2CellConWireRes2	uΩ		
0x0094	148	UINT32	4	RW	连接线内阻3CellConWireRes3	uΩ		
0x0098	152	UINT32	4	RW	连接线内阻4CellConWireRes4	uΩ		
0x009C	156	UINT32	4	RW	连接线内阻5CellConWireRes5	uΩ		
0x00A0	160	UINT32	4	RW	连接线内阻6CellConWireRes6	uΩ		
0x00A4	164	UINT32	4	RW	连接线内阻7CellConWireRes7	uΩ		
0x00A8	168	UINT32	4	RW	连接线内阻8CellConWireRes8	uΩ		
0x00AC	172	UINT32	4	RW	连接线内阻9CellConWireRes9	uΩ		
0x00B0	176	UINT32	4	RW	连接线内阻10CellConWireRes10	uΩ		
0x00B4	180	UINT32	4	RW	连接线内阻11CellConWireRes11	uΩ		
0x00B8	184	UINT32	4	RW	连接线内阻12CellConWireRes12	uΩ		
0x00BC	188	UINT32	4	RW	连接线内阻13CellConWireRes13	uΩ		
0x00C0	192	UINT32	4	RW	连接线内阻14CellConWireRes14	uΩ		
0x00C4	196	UINT32	4	RW	连接线内阻15CellConWireRes15	uΩ		
0x00C8	200	UINT32	4	RW	连接线内阻16CellConWireRes16	uΩ		
0x00CC	204	UINT32	4	RW	连接线内阻17CellConWireRes17	uΩ		
0x00D0	208	UINT32	4	RW	连接线内阻18CellConWireRes18	uΩ		
0x00D4	212	UINT32	4	RW	连接线内阻19CellConWireRes19	uΩ		
0x00D8	216	UINT32	4	RW	连接线内阻20CellConWireRes20	uΩ		
0x00DC	220	UINT32	4	RW	连接线内阻21CellConWireRes21	uΩ		
0x00E0	224	UINT32	4	RW	连接线内阻22CellConWireRes22	uΩ		
0x00E4	228	UINT32	4	RW	连接线内阻23CellConWireRes23	uΩ		
0x00E8	232	UINT32	4	RW	连接线内阻24CellConWireRes24	uΩ		
0x00EC	236	UINT32	4	RW	连接线内阻25CellConWireRes25	uΩ		
0x00F0	240	UINT32	4	RW	连接线内阻26CellConWireRes26	uΩ		
0x00F4	244	UINT32	4	RW	连接线内阻27CellConWireRes27	uΩ		
0x00F8	248	UINT32	4	RW	连接线内阻28CellConWireRes28	uΩ		
0x00FC	252	UINT32	4	RW	连接线内阻29CellConWireRes29	uΩ		
0x0100	256	UINT32	4	RW	连接线内阻30CellConWireRes30	uΩ		
0x0104	260	UINT32	4	RW	连接线内阻31CellConWireRes31	uΩ		

0x0108	264	UINT32	4	RW	设备地址DevAddr	H		
0x010C	268	UINT32	4	RW	放电预充时间TIMProdischarge	S		
0x0114	276	UINT16	2	RW	加热开关HeatEN		1: 打开; 0: 关闭	BIT0
				RW	温度传感器屏蔽Disable temp-sensor		1: 打开; 0: 关闭	BIT1
				RW	GPS心跳检测GPS Heartbeat		1: 打开; 0: 关闭	BIT2
				RW	复用端口功能Port Switch		1: RS485; 0: CAN	BIT3
				RW	显示器常亮LCD Always On		1: 打开; 0: 关闭	BIT4
				RW	专用充电器识别Special Charger		1: 打开; 0: 关闭	BIT5
				RW	智能休眠SmartSleep		1: 打开; 0: 关闭	BIT6
				RW	禁用并联限流DisablePCLModule		1: 打开; 0: 关闭	BIT7
				RW	数据定时存储TimedStoredData		1: 打开; 0: 关闭	BIT8
0x0118	280	UINT8	2	RW	智能休眠时间TIMSmartSleep	H		
		UINT8		R	数据域使能控制0			
0x0000	0	UINT16	2	R	单体电压0CellVol0	mV		
0x0002	2	UINT16	2	R	单体电压1CellVol1	mV		
0x0004	4	UINT16	2	R	单体电压2CellVol2	mV		
0x0006	6	UINT16	2	R	单体电压3CellVol3	mV		
0x0008	8	UINT16	2	R	单体电压4CellVol4	mV		
0x000A	10	UINT16	2	R	单体电压5CellVol5	mV		
0x000C	12	UINT16	2	R	单体电压6CellVol6	mV		
0x000E	14	UINT16	2	R	单体电压7CellVol7	mV		
0x0010	16	UINT16	2	R	单体电压8CellVol8	mV		
0x0012	18	UINT16	2	R	单体电压9CellVol9	mV		
0x0014	20	UINT16	2	R	单体电压10CellVol10	mV		
0x0016	22	UINT16	2	R	单体电压11CellVol11	mV		
0x0018	24	UINT16	2	R	单体电压12CellVol12	mV		
0x001A	26	UINT16	2	R	单体电压13CellVol13	mV		
0x001C	28	UINT16	2	R	单体电压14CellVol14	mV		
0x001E	30	UINT16	2	R	单体电压15CellVol15	mV		
0x0020	32	UINT16	2	R	单体电压16CellVol16	mV		
0x0022	34	UINT16	2	R	单体电压17CellVol17	mV		
0x0024	36	UINT16	2	R	单体电压18CellVol18	mV		
0x0026	38	UINT16	2	R	单体电压19CellVol19	mV		
0x0028	40	UINT16	2	R	单体电压20CellVol20	mV		

0x002A	42	UINT16	2	R	单体电压21CellVol21	mV		
0x002C	44	UINT16	2	R	单体电压22CellVol22	mV		
0x002E	46	UINT16	2	R	单体电压23CellVol23	mV		
0x0030	48	UINT16	2	R	单体电压24CellVol24	mV		
0x0032	50	UINT16	2	R	单体电压25CellVol25	mV		
0x0034	52	UINT16	2	R	单体电压26CellVol26	mV		
0x0036	54	UINT16	2	R	单体电压27CellVol27	mV		
0x0038	56	UINT16	2	R	单体电压28CellVol28	mV		
0x003A	58	UINT16	2	R	单体电压29CellVol29	mV		
0x003C	60	UINT16	2	R	单体电压30CellVol30	mV		
0x003E	62	UINT16	2	R	单体电压31CellVol31	mV		
0x0040	64	UINT32	4	R	电池状态CellSta		BIT[n]为1表示该电池存在	
0x0044	68	UINT16	2	R	单体平均电压CellVolAve	mV		
0x0046	70	UINT16	2	R	最大压差CellVdifMax	mV		
0x0048	72	UINT8	2	R	最大电压单体编号MaxVolCellNbr			
		UINT8		R	最小电压单体编号MinVolCellNbr			
0x004A	74	UINT16	2	R	均衡线电阻0CellWireRes0	mΩ		
0x004C	76	UINT16	2	R	均衡线电阻1CellWireRes1	mΩ		
0x004E	78	UINT16	2	R	均衡线电阻2CellWireRes2	mΩ		
0x0050	80	UINT16	2	R	均衡线电阻3CellWireRes3	mΩ		
0x0052	82	UINT16	2	R	均衡线电阻4CellWireRes4	mΩ		
0x0054	84	UINT16	2	R	均衡线电阻5CellWireRes5	mΩ		
0x0056	86	UINT16	2	R	均衡线电阻6CellWireRes6	mΩ		
0x0058	88	UINT16	2	R	均衡线电阻7CellWireRes7	mΩ		
0x005A	90	UINT16	2	R	均衡线电阻8CellWireRes8	mΩ		
0x005C	92	UINT16	2	R	均衡线电阻9CellWireRes9	mΩ		
0x005E	94	UINT16	2	R	均衡线电阻10CellWireRes10	mΩ		
0x0060	96	UINT16	2	R	均衡线电阻11CellWireRes11	mΩ		
0x0062	98	UINT16	2	R	均衡线电阻12CellWireRes12	mΩ		
0x0064	100	UINT16	2	R	均衡线电阻13CellWireRes13	mΩ		
0x0066	102	UINT16	2	R	均衡线电阻14CellWireRes14	mΩ		
0x0068	104	UINT16	2	R	均衡线电阻15CellWireRes15	mΩ		
0x006A	106	UINT16	2	R	均衡线电阻16CellWireRes16	mΩ		
0x006C	108	UINT16	2	R	均衡线电阻17CellWireRes17	mΩ		
0x006E	110	UINT16	2	R	均衡线电阻18CellWireRes18	mΩ		

0x1200

0x0070	112	UINT16	2	R	均衡线电阻19CellWireRes19	mΩ		
0x0072	114	UINT16	2	R	均衡线电阻20CellWireRes20	mΩ		
0x0074	116	UINT16	2	R	均衡线电阻21CellWireRes21	mΩ		
0x0076	118	UINT16	2	R	均衡线电阻22CellWireRes22	mΩ		
0x0078	120	UINT16	2	R	均衡线电阻23CellWireRes23	mΩ		
0x007A	122	UINT16	2	R	均衡线电阻24CellWireRes24	mΩ		
0x007C	124	UINT16	2	R	均衡线电阻25CellWireRes25	mΩ		
0x007E	126	UINT16	2	R	均衡线电阻26CellWireRes26	mΩ		
0x0080	128	UINT16	2	R	均衡线电阻27CellWireRes27	mΩ		
0x0082	130	UINT16	2	R	均衡线电阻28CellWireRes28	mΩ		
0x0084	132	UINT16	2	R	均衡线电阻29CellWireRes29	mΩ		
0x0086	134	UINT16	2	R	均衡线电阻30CellWireRes30	mΩ		
0x0088	136	UINT16	2	R	均衡线电阻31CellWireRes31	mΩ		
0x008A	138	INT16	2	R	功率板温度TempMos	0.1℃		
0x008C	140	UINT32	4	R	均衡线电阻状态CellWireResSta		BIT[n]为1表示该均衡线报警	
0x0090	144	UINT32	4	R	电池总电压BatVol	mV		
0x0094	148	UINT32	4	R	电池功率BatWatt	mW		
0x0098	152	INT32	4	R	电池电流BatCurrent	mA		
0x009C	156	INT16	2	R	电池温度TempBat 1	0.1℃		
0x009E	158	INT16	2	R	电池温度TempBat 2	0.1℃		
0x00A0	160	UINT32	4	R	均衡线电阻过大AlarmWireRes		1: 故障; 0: 正常	BIT0
					MOS过温保护AlarmMosOTP		1: 故障; 0: 正常	BIT1
					单体数量与设置值不符合AlarmCellQuantity		1: 故障; 0: 正常	BIT2
					电流传感器异常AlarmCurSensorErr		1: 故障; 0: 正常	BIT3
					单体过压保护AlarmCellOVP		1: 故障; 0: 正常	BIT4
					电池过压保护AlarmBatOVP		1: 故障; 0: 正常	BIT5
					充电过流保护AlarmChOCP		1: 故障; 0: 正常	BIT6
					充电短路保护AlarmChSCP		1: 故障; 0: 正常	BIT7
					充电过温保护AlarmChOTP		1: 故障; 0: 正常	BIT8
					充电低温保护AlarmChUTP		1: 故障; 0: 正常	BIT9
					内部通信异常AlarmCPUAuxCommuErr		1: 故障; 0: 正常	BIT10
					单体欠压保护AlarmCellUVP		1: 故障; 0: 正常	BIT11
					电池欠压保护AlarmBatUVP		1: 故障; 0: 正常	BIT12
					放电过流保护AlarmDchOCP		1: 故障; 0: 正常	BIT13
					放电短路保护AlarmDchSCP		1: 故障; 0: 正常	BIT14

					放电过温保护AlarmDchOTP		1: 故障; 0: 正常	BIT15
					充电管异常AlarmChargeMOS		1: 故障; 0: 正常	BIT16
					放电管异常AlarmDischargeMOS		1: 故障; 0: 正常	BIT17
					GPS断开连接GPSDisconnected		1: 故障; 0: 正常	BIT18
					请及时修改授权密码Modify PWD. in time		1: 故障; 0: 正常	BIT19
					放电开启失败Discharge On Failed		1: 故障; 0: 正常	BIT20
					电池超温报警Battery Over Temp Alarm		1: 故障; 0: 正常	BIT21
					温度传感器异常Temperature sensor anomaly			
					并联模块故障PLCModule anomaly			
0x00A4	164	INT16	2	R	均衡电流BalanCurrent	mA		
0x00A6	166	UINT8	2	R	均衡状态BalanSta	%	2: 放电; 1: 充电; 0: 关闭	
		UINT8		R	剩余电量SOCStateOfcharge			
0x00A8	168	INT32	4	R	剩余容量SOCCapRemain	MAH		
0x00AC	172	UINT32	4	R	电池实际容量SOCFullChargeCap	MAH		
0x00B0	176	UINT32	4	R	循环次数SOCCycleCount	次		
0x00B4	180	UINT32	4	R	循环总容量SOCCycleCap	MAH		
0x00B8	184	UINT8	2	R	SOH估值SOC SOH	%		
		UINT8		R	预充状态Precharge		1: 打开; 0: 关闭	
0x00BA	186	UINT16	2	R	用户层报警UserAlarm			
0x00BC	188	UINT32	4	R	运行时间RunTime	S		
0x00C0	192	UINT8	2	R	充电状态Charge		1: 打开; 0: 关闭	
		UINT8		R	放电状态Discharge		1: 打开; 0: 关闭	
0x00C2	194	UINT16	2	R	用户层报警2UserAlarm2			
0x00C4	196	UINT16	2	R	放电过流保护解除时间TimeDcOCPR	S		
0x00C6	198	UINT16	2	R	放电短路保护解除时间TimeDcSCPR	S		
0x00C8	200	UINT16	2	R	充电过流保护解除时间TimeCOCPR	S		
0x00CA	202	UINT16	2	R	充电短路保护解除时间TimeCSCPR	S		
0x00CC	204	UINT16	2	R	单体欠压保护解除时间TimeUVPR	S		
0x00CE	206	UINT16	2	R	单体过压保护解除时间TimeOVPR	S		
0x00D0	208	UINT8	2	R	MOS温度传感器MOS TempSensorAbsent			BIT0
					电池温度传感器1 BATTempSensor1Absent		1: 正常; 0: 缺失	BIT1
					电池温度传感器2 BATTempSensor2Absent		1: 正常; 0: 缺失	BIT2
					电池温度传感器3 BATTempSensor3Absent		1: 正常; 0: 缺失	BIT3
					电池温度传感器4 BATTempSensor4Absent		1: 正常; 0: 缺失	BIT4
					电池温度传感器5 BATTempSensor5Absent		1: 正常; 0: 缺失	BIT5

		UINT8		R	加热状态Heating		1: 打开 ; 0: 关闭	
0x00D2	210	UINT16	2	R	Reserved			
0x00D4	212	UINT16	2	R	应急开关时间TimeEmergency	S		
0x00D6	214	UINT16	2	R	放电电流修正因子BatDisCurCorrect			
0x00D8	216	UINT16	2	R	充电电流传感器电压VolChargCur	mV		
0x00DA	218	UINT16	2	R	放电电流传感器电压VolDischargCur	mV		
0x00DC	220	FLOAT	4	R	电池电压修正因子BatVolCorrect			
0x00E4	228	UINT16	2	R	电池电压BatVol	0.01V		
0x00E6	230	INT16	2	R	加热电流HeatCurrent	mA		
0x00EE	238	UINT8	2	R	保留RVD			
		UINT8		R	充电器状态ChargerPlugged		1: 插入 ; 0: 未插入	
0x00F0	240	UINT32	4	R	系统节拍SysRunTicks	0.1S		
0x00F8	248	INT16	2	R	电池温度TempBat 3	0.1℃		
0x00FA	250	INT16	2	R	电池温度TempBat 4	0.1℃		
0x00FC	252	INT16	2	R	电池温度TempBat 5	0.1℃		
0x0100	256	UINT32	4	R	RTC计数器RTCTicks		自2020-1-1开始计时	
0x0108	264	UINT32	4	R	进入休眠时间TimeEnterSleep	S		
0x010C	268	UINT8	2	R	并联限流模块状态PCLModuleSta		1: 打开 ; 0: 关闭	
		UINT8			保留RVD			
0x1400	0x0000	0	ASCII	16	R	厂商型号ManufacturerDeviceID		
	0x0010	16	ASCII	8	R	硬件版本号HardwareVersion		
	0x0018	24	ASCII	8	R	软件版本号SoftwareVersion		
	0x0020	32	UINT32	4	R	累计运行时间ODDRunTime	S	
	0x0024	36	UINT32	4	R	上电次数PWROnTimes	次	
	0x00B2	178	UINT8	2	RW	串口1协议UART1MPRTOLNbr		
			UINT8		RW	CAN协议CANMPRTOLNbr		
	0x00B4	180	UINT8	16	R	串口1协议控制UART1MPRTOLEnable		
	0x00C4	196	UINT8	16	R	CAN协议控制UARTMPRTOLEnable[0-15]		
	0x00D4	212	UINT8	2	RW	串口2协议UART2MPRTOLNbr		
			UINT8		R	串口2协议控制UART2MPRTOLEnable[0]		
	0x00E4	228	UINT8	2	RW	LCD蜂鸣器触发源LCDBuzzerTrigger		
			UINT8			干节点1触发源DRY1Trigger		
	0x00E6	230	UINT8	2	RW	干节点2触发源DRY2Trigger		
			UINT8		R	UART协议库版本UARTMPTLVer		
0x00E8	232	INT32	4	RW	LCD蜂鸣器触发值LCDBuzzerTriggerVal			

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	0x00EC	236	INT32	4	RW	LCD蜂鸣器恢复值LCDBuzzerReleaseVal			
	0x00F0	240	INT32	4	RW	干节点1触发值DRY1TriggerVal			
	0x00F4	244	INT32	4	RW	干节点1触发值DRY1ReleaseVal			
	0x00F8	248	INT32	4	RW	干节点2触发值DRY2TriggerVal			
	0x00FC	252	INT32	4	RW	干节点2恢复值DRY2ReleaseVal			
	0x0100	256	INT32	4	RW	数据存储周期DataStoredPeriod			
	0x0104	260	UINT8	2	RW	充电时间RCVTime	0.1H		
						浮充时间RFVTime	0.1H		
0x1600	0x0106	262	UINT8	2	R	CAN协议库版本CANMPTLVer			
						保留RVD			
	0x0000	0	UINT16	4	W	电压校准VoltageCalibration	mV		
	0x0004	4	UINT16	2	W	保护板关机Shutdown			
	0x0006	6	UINT16	4	W	电流校准CurrentCalibration	mA		
	0x000A	10	UINT16	2	W	一键三元LI-ION			
	0x000C	12	UINT16	2	W	一键铁锂LIFEPO4			
	0x000E	14	UINT16	2	W	一键钛酸锂LTO			
	0x0010	16	UINT16	2	W	应急启动Emergency			
	0x0012	18	UINT32	4	W	对时Timecalibration			

示例数据

寄存器		数据		寄存器定义	设置数值	发送指令	接收响应
基地址	偏移	类型	长度				
0x1000	0x0000	UINT32	4	进入休眠电压VolSmartSleep	3.54	01 10 10 00 00 02 04 00 00 0D D4 3A A0	01 10 10 00 00 02 45 08
0x1000	0x0004	UINT32	4	单体欠压保护VolCellUV	2.83	01 10 10 04 00 02 04 00 00 0B 0E B9 68	01 10 10 04 00 02 04 C9
0x1000	0x0008	UINT32	4	单体欠压保护恢复VolCellUVPR	2.86	01 10 10 08 00 02 04 00 00 0B 2C 39 24	01 10 10 08 00 02 C4 CA
0x1000	0x000C	UINT32	4	单体过充保护VolCellOV	4.3	01 10 10 0C 00 02 04 00 00 10 CC 33 AF	01 10 10 0C 00 02 85 0B
0x1000	0x0010	UINT32	4	单体过充保护恢复电压VolCellOVPR	4.16	01 10 10 10 00 02 04 00 00 10 40 33 53	01 10 10 10 00 02 44 CD
0x1000	0x0014	UINT32	4	触发均衡压差VolBalanTrig	0.003	01 10 10 14 00 02 04 00 00 00 03 7E 91	01 10 10 14 00 02 05 0C
0x1000	0x0018	UINT32	4	SOC-100%电压VolSOC100%	4.17	01 10 10 18 00 02 04 00 00 10 4A B2 F2	01 10 10 18 00 02 C5 0F
0x1000	0x001C	UINT32	4	SOC-0%电压VolSOC0%	2.85	01 10 10 1C 00 02 04 00 00 0B 22 B8 1F	01 10 10 1C 00 02 84 CE
0x1000	0x0020	UINT32	4	推荐充电电压VolCellRCV	4.2	01 10 10 20 00 02 04 00 00 10 68 30 59	01 10 10 20 00 02 44 C2
0x1000	0x0024	UINT32	4	浮充电压VolCellRFV	4.16	01 10 10 24 00 02 04 00 00 10 40 31 B4	01 10 10 24 00 02 05 03
0x1000	0x0028	UINT32	4	自动关机电压VolSysPwrOff	2.7	01 10 10 28 00 02 04 00 00 0A 8C 3A D4	01 10 10 28 00 02 C5 00
0x1000	0x002C	UINT32	4	持续充电电流CurBatCOC	30	01 10 10 2C 00 02 04 00 00 75 30 1A A6	01 10 10 2C 00 02 84 C1
0x1000	0x0030	UINT32	4	充电过流保护延迟TIMBatCOCPDly	10	01 10 10 30 00 02 04 00 00 00 0A BD 7C	01 10 10 30 00 02 45 07
0x1000	0x0034	UINT32	4	充电过流保护解除TIMBatCOCPRDly	40	01 10 10 34 00 02 04 00 00 00 28 3C 96	01 10 10 34 00 02 04 C6
0x1000	0x0038	UINT32	4	持续放电电流CurBatDcOC	149	01 10 10 38 00 02 04 00 02 46 08 AE BB	01 10 10 38 00 02 C4 C5
0x1000	0x003C	UINT32	4	放电过流保护延迟TIMBatDcOCPDly	30	01 10 10 3C 00 02 04 00 00 00 1E BD 26	01 10 10 3C 00 02 85 04
0x1000	0x0040	UINT32	4	放电过流保护解除TIMBatDcOCPRDly	40	01 10 10 40 00 02 04 00 00 00 28 3A 41	01 10 10 40 00 02 44 DC
0x1000	0x0044	UINT32	4	短路保护解除TIMBatSCPRDly	6	01 10 10 44 00 02 04 00 00 00 06 BB AE	01 10 10 44 00 02 05 1D
0x1000	0x0048	UINT32	4	最大均衡电流CurBalanMax	1	01 10 10 48 00 02 04 00 00 03 E8 3B 47	01 10 10 48 00 02 C5 1E
0x1000	0x004C	INT32	4	充电过温保护TMPBatCOT	75	01 10 10 4C 00 02 04 00 00 02 EE BB 26	01 10 10 4C 00 02 84 DF
0x1000	0x0050	INT32	4	充电过温恢复TMPBatCOTPR	65	01 10 10 50 00 02 04 00 00 02 8A BB 94	01 10 10 50 00 02 45 19
0x1000	0x0054	INT32	4	放电过温保护TMPBatDcOT	75	01 10 10 54 00 02 04 00 00 02 EE BB 8C	01 10 10 54 00 02 04 D8
0x1000	0x0058	INT32	4	放电过温恢复TMPBatDcOTPR	65	01 10 10 58 00 02 04 00 00 02 8A BA 32	01 10 10 58 00 02 C4 DB
0x1000	0x005C	INT32	4	充电低温保护TMPBatCUT	-25	01 10 10 5C 00 02 04 FF FF FF 06 FA D0	01 10 10 5C 00 02 85 1A
0x1000	0x0060	INT32	4	充电低温恢复TMPBatCUTPR	-15	01 10 10 60 00 02 04 FF FF FF 6A F9 BC	01 10 10 60 00 02 45 16
0x1000	0x0064	INT32	4	MOS过温保护TMPMosOT	105	01 10 10 64 00 02 04 00 00 04 1A BA BF	01 10 10 64 00 02 04 D7
0x1000	0x0068	INT32	4	MOS过温保护恢复TMPMosOTPR	90	01 10 10 68 00 02 04 00 00 03 84 39 72	01 10 10 68 00 02 C4 D4
0x1000	0x006C	UINT32	4	单体数量CellCount	15	01 10 10 6C 00 02 04 00 00 00 0F 78 16	01 10 10 6C 00 02 85 15
0x1000	0x0070	UINT32	4	充电开关BatChargeEN	开:	01 10 10 70 00 02 04 00 00 00 01 F8 8B	01 10 10 70 00 02 44 D3
					关:	01 10 10 70 00 02 04 00 00 00 00 39 4B	01 10 10 70 00 02 44 D3

0x1000	0x0074	UINT32	4	放电开关BatDisChargeEN	开:	01 10 10 74 00 02 04 00 00 00 01 F9 78	01 10 10 74 00 02 05 12
					关:	01 10 10 74 00 02 04 00 00 00 00 38 B8	01 10 10 74 00 02 05 12
0x1000	0x0078	UINT32	4	均衡开关BalanEN	开:	01 10 10 78 00 02 04 00 00 00 01 F9 2D	01 10 16 20 00 01 04 4B
					关:	01 10 10 78 00 02 04 00 00 00 00 38 ED	01 10 16 20 00 01 04 4B
0x1000	0x007C	UINT32	4	电池设计容量CapBatCell	50	01 10 10 7C 00 02 04 00 00 C3 50 69 D2	01 10 10 7C 00 02 84 D0
0x1000	0x0080	UINT32	4	短路保护延迟SCPDelay	140	01 10 10 80 00 02 04 00 00 00 8C 37 AA	01 10 10 80 00 02 44 E0
0x1000	0x0084	UINT32	4	均衡起始电压VolStartBalan	3.1	01 10 10 84 00 02 04 00 00 0C 1C 33 35	01 10 10 84 00 02 05 21
0x1000	0x0088	UINT32	4	连接线内阻0CellConWireRes0	0.1	01 10 10 88 00 02 04 00 00 00 64 36 42	01 10 10 88 00 02 C5 22
0x1000	0x008C	UINT32	4	连接线内阻1CellConWireRes1	0.1	01 10 10 8C 00 02 04 00 00 00 64 37 B1	01 10 10 8C 00 02 84 E3
0x1000	0x0090	UINT32	4	连接线内阻2CellConWireRes2	0.1	01 10 10 90 00 02 04 00 00 00 64 36 E8	01 10 10 90 00 02 45 25
0x1000	0x0094	UINT32	4	连接线内阻3CellConWireRes3	0.1	01 10 10 94 00 02 04 00 00 00 64 37 1B	01 10 10 94 00 02 04 E4
0x1000	0x0098	UINT32	4	连接线内阻4CellConWireRes4	0.1	01 10 10 98 00 02 04 00 00 00 64 37 4E	01 10 10 98 00 02 C4 E7
0x1000	0x009C	UINT32	4	连接线内阻5CellConWireRes5	0.1	01 10 10 9C 00 02 04 00 00 00 64 36 BD	01 10 10 9C 00 02 85 26
0x1000	0x00A0	UINT32	4	连接线内阻6CellConWireRes6	0.1	01 10 10 A0 00 02 04 00 00 00 64 35 FC	01 10 10 A0 00 02 45 2A
0x1000	0x00A4	UINT32	4	连接线内阻7CellConWireRes7	0.1	01 10 10 A4 00 02 04 00 00 00 64 34 0F	01 10 10 A4 00 02 04 EB
0x1000	0x00A8	UINT32	4	连接线内阻8CellConWireRes8	0.1	01 10 10 A8 00 02 04 00 00 00 64 34 5A	01 10 10 A8 00 02 C4 E8
0x1000	0x00AC	UINT32	4	连接线内阻9CellConWireRes9	0.1	01 10 10 AC 00 02 04 00 00 00 64 35 A9	01 10 10 AC 00 02 85 29
0x1000	0x00B0	UINT32	4	连接线内阻10CellConWireRes10	0.1	01 10 10 B0 00 02 04 00 00 00 64 34 F0	01 10 10 B0 00 02 44 EF
0x1000	0x00B4	UINT32	4	连接线内阻11CellConWireRes11	0.1	01 10 10 B4 00 02 04 00 00 00 64 35 03	01 10 10 B4 00 02 05 2E
0x1000	0x00B8	UINT32	4	连接线内阻12CellConWireRes12	0.1	01 10 10 B8 00 02 04 00 00 00 64 35 56	01 10 10 B8 00 02 C5 2D
0x1000	0x00BC	UINT32	4	连接线内阻13CellConWireRes13	0.1	01 10 10 BC 00 02 04 00 00 00 64 34 A5	01 10 10 BC 00 02 84 EC
0x1000	0x00C0	UINT32	4	连接线内阻14CellConWireRes14	0.1	01 10 10 C0 00 02 04 00 00 00 64 33 D4	01 10 10 C0 00 02 45 34
0x1000	0x00C4	UINT32	4	连接线内阻15CellConWireRes15	0.1	01 10 10 C4 00 02 04 00 00 00 64 32 27	01 10 10 C4 00 02 04 F5