JKESS

Battery Management System

目 录

1. Product Overview

The slave BMS is an important part of the energy storage battery management

System (BMS), which plays a decisive role in the safe application and life extension

of the energy storage battery pack when it is used in groups. The slave control unit

can realize the real-time monitoring of the battery state by accurately collecting

the voltage and temperature of each single battery. The module has reliable data

communication function. During the operation of the System, it can realize the

communication with the main control unit of the battery management System or

other necessary equipment. In the design, a highly reliable automotive control chip

is used, and the latest acquisition technology is used, which has high acquisition

accuracy and provides a good physical basis for SOC estimation

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2. Functions and Features

☆ Support 6S~24S monomer voltage acquisition function

☆ Support up to 12 channels of external temperature acquisition function

☆ Supports Bidirectional DC Balance and can provide a balance current of not less than 2A

☆ IsoSPI communication

☆ 1-Way CANBUS communication

☆ 2 high Side switch Outputs

☆ 4-Way GPIO port:： Input and Output can be configured

3. Application Scope

✓ Suitable for lithium iron phosphate batteries(Lifepo4), Ternary lithium batteries(Li-ion), Lithium manganese oxide batteries(LiMn$_2$O$_4$), Lithium titanium oxide batteries(LTO), and lithium cobalt oxide batteries(LiCoO2), Sodium-ion batteries;

✓ Energy storage System, Energy storage Power station;

✓ Backup Power supply for communication base stations and radar ground stations;

✓ Upgrade the capacity of old batteries in a tiered manner;

4. Operating Environment

- Working temperature: -25 ℃ to 85 ℃

- Storage temperature: -40 ℃ to 105 ℃

- Relative humidity: 5% to 95% RH in non condensing state

- Working height: 3000 meters

5. Electrical characteristics

5.1 Maximum limit parameter

Features		Min	MAX	Unit	Note
BAT2~BAT1 INPUT		-0.3	5.0	V	
BAT1~GND INPUT		-0.3	5.0	V	
Usage Environment	temperature	-30	85	℃	
	humidity	5	95	%	
	altitude		4000	m	
Storage Temperature		-40	125	℃	
ESD Protection		-	AIR15	kV	
			Touch 8		

Notes:

1) The maximum limit value means that beyond the working range, the module

may be permanently damaged.

2) When the temperature rises, the maximum allowable Power consumption

decreases, which is determined by the maximum working temperature T,

ambient temperature TA and heat dissipation conditions.

5.2 Electrical parameters

Unless otherwise specified, the following parameters refer to the maximum limit

parameters at 25 ℃ ambient temperature

Main Technical Parameters		MIN	Typical	MAX	Unitt	Note
Low Voltage Power Supply	Voltage	17	24	32	V	
	Current		0.01	2	A	MAX value is 2A when opening 1 channel of high Side Output
Cell Voltage	Voltage Range	0		5.0	V	
	Sampling Accuracy			±3.0	mV	2.5V~4.5V,-30℃~85℃
Temperature Sampling	Temperature Range	-40		125	℃	Storage temperature
	Sampling Units			12	PCS	6 Units per 12 strings
	Sampling Accuracy			±2	℃	-30℃~85℃
HighSide Switch Output	Continuous Current			1	A	Single Output
	Voltage Value		24		V	Consistent with Power Input
Digital Input	Input Voltage Value	0	-	32	V	Internal 100k pull up to PWR+
	Input Current Value		1		mA	
Digital Output	Output Voltage					
	Output Current			20	mA	
Active Balance	Current			2	A	
Working Power Consumption	Low Voltage Zone			240	mW	
	High Voltage Zone			75	mW	Voltage Sampling per 12 strings
Sleep Power Consumption	High Voltage Zone		5.5		uA	
Insulation and Withstand Voltage	Insulation Resistance	20			MΩ	Voltage Sampling terminal, housing and digital interface terminal
	Rated Operational Voltage			1500	V	
	compression	Apply 50Hz 3000VAC test voltage between the voltage Sampling terminal and the housing and digital interface terminal,No breakdown and flashover for 1 minute				

6. Product Appearance

6.1 Slave BMS interface definition
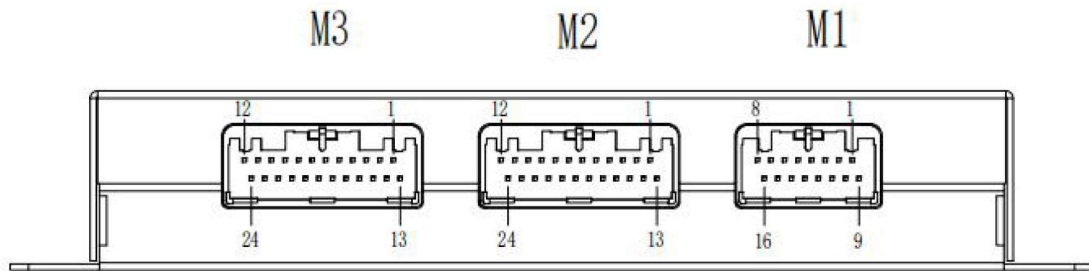
Interface front view

Connector	Brand	PIN	BMS Code/Model	Cable Code/Model
Plug spring terminal: 63.09.002.0002/M34S75C4F1/FOR 0.22~0.35mm2 Wire diameter				
M1	JAE	16	63.09.000.0001/ MX34016NF1	63.09.001.0003/MX34016SF1
M2	JAE	24	63.09.000.0002/ MX34024NF1	63.09.001.0004/MX34024SF1
M3	JAE	24	63.09.000.0002/ MX34024NF1	63.09.001.0004/MX34024SF1

M1 (BMS) : MX34016NF1							
PIN	8	7	6	5	4	3	2	1
Definition	OUT_IPB	IN_IPA	EXT_CAN1_H	EXT_DIO3	EXT_DIO1	H_OUT2	H_OUT1	PWR+
PIN	16	15	14	13	12	11	10	9
Definition	OUT_IMB	IN_IMA	EXT_CAN1_L	EXT_DIO4	EXT_DIO2	PWR_IN+	CAN_EARTH1	PWR-

M2 (BMS) : MX34024NF1											
PIN	12	11	10	9	8	7	6	5	4	3	2	1
Definition	BAT11	BAT10	BAT9	BAT8	BAT7	BAT6	BAT5	BAT4	BAT3	BAT2	BAT1	BAT0
PIN	24	23	22	21	20	19	18	17	16	15	14	13
Definition	BAT12	PW1+	RT6A	RT5A	RT4A	RT3A	RT2A	RT1A	6811_GND1	6811_GND1	6811_GND1	PW1-

M3（BMS）：MX34024NF1											
PIN	12	11	10	9	8	7	6	5	4	3	2	1
Definition	BAT23	BAT22	BAT21	BAT20	BAT19	BAT18	BAT17	BAT16	BAT15	BAT14	BAT13	BAT12 B2
PIN	24	23	22	21	20	19	18	17	16	15	14	13
Definition	BAT24	PW2+	RT6B	RT5B	RT4B	RT3B	RT2B	RT1B	6811_GND2	6811_GND2	6811_GND2	PW2-

6.2 Connector interface description

M1 interface definition

Connector	PIN NUM	Signal Name	Function Description	Default Application
M1 Connector	1	PWR+	System Power Positive	
	2	H_OUT1	First high Side Switch	
	3	H_OUT2	Second high Side Switch	
	4	EXT_DIO1	First Way GPIO	
	5	EXT_DIO3	Third Way GPIO	
	6	EXT_CAN1_H	CANBUS High	
	7	IN_IPA	Isospi Input	
	8	OUT_IPB	Isospi Output	
	9	PWR-	Negative of System Power supply	
	10	EXT_EARTH1	System GND	
	11	PWR_IN+	System Power Positive	
	12	EXT_DIO2	Second Way GPIO	
	13	EXT_DIO4	Fourth Way GPIO	
	14	EXT_CAN1_L	CANBUS Low	
	15	IN_IMA	IsoSPI Input	
	16	OUT_IMB	IsoSPI Output	

M2 interface definition

Connector	PIN NUM	Signal Name	Function Description	Default Application
M2 Connector	1	BAT0	1st BATTERY Negative	
	2	BAT1	1st BATTERY Postive	
	3	BAT2	2nd BATTERY Postive	
	4	BAT3	3rd BATTERY Postive	
	5	BAT4	4th BATTERY Postive	
	6	BAT5	5th BATTERY Postive	
	7	BAT6	6th BATTERY Postive	
	8	BAT7	7th BATTERY Postive	
	9	BAT8	8th BATTERY Postive	
	10	BAT9	9th BATTERY Postive	
	11	BAT10	10th BATTERY Postive	
	12	BAT11	11th BATTERY Postive	
	13	PW1-	AFE Power Negative	
	14	6811_GND1	Temperature Sampling Negative	
	15	6811_GND1	Temperature Sampling Negative	
	16	6811_GND1	Temperature Sampling Negative	
	17	RT1A	1st Temperature Sampling Input	
	18	RT2A	2nd Temperature Sampling Input	
	19	RT3A	3rd Temperature Sampling Input	
	20	RT4A	4th Temperature Sampling Input	
	21	RT5A	5th Temperature Sampling Input	
	22	RT6A	6th Temperature Sampling Input	
	23	PW1+	AFE Power Positive	
	24	BAT12	12th BATTERY Postive	

M3 interface definition

Connector	PIN NUM	Signal Name	Function Description	Default Application
M3 Connector	1	BAT12B2	13th BATTERY Negative	
	2	BAT13	13th BATTERY Postive	
	3	BAT14	14th BATTERY Postive	
	4	BAT15	15th BATTERY Postive	
	5	BAT16	16th BATTERY Postive	
	6	BAT17	17th BATTERY Postive	
	7	BAT18	18th BATTERY Postive	
	8	BAT19	19th BATTERY Postive	
	9	BAT20	20th BATTERY Postive	
	10	BAT21	21th BATTERY Postive	
	11	BAT22	22th BATTERY Postive	
	12	BAT23	23th BATTERY Postive	
	13	PW2-	AFE Power Negative	
	14	6811_GND2	Temperature Sampling Negative	
	15	6811_GND2	Temperature Sampling Negative	
	16	6811_GND2	Temperature Sampling Negative	
	17	RT1B	1st Temperature Sampling Input	
	18	RT2B	2nd Temperature Sampling Input	
	19	RT3B	3rd Temperature Sampling Input	
	20	RT4B	4th Temperature Sampling Input	
	21	RT5B	5th Temperature Sampling Input	
	22	RT6B	6th Temperature Sampling Input	
	23	PW2+	AFE Power Positive	
	24	BAT24	24th BATTERY Postive	

6.3 appearance and dimensions

The shape of the product is a sheet metal shell with 4 waist circle fixing holes,

which has a wider product adaptability.
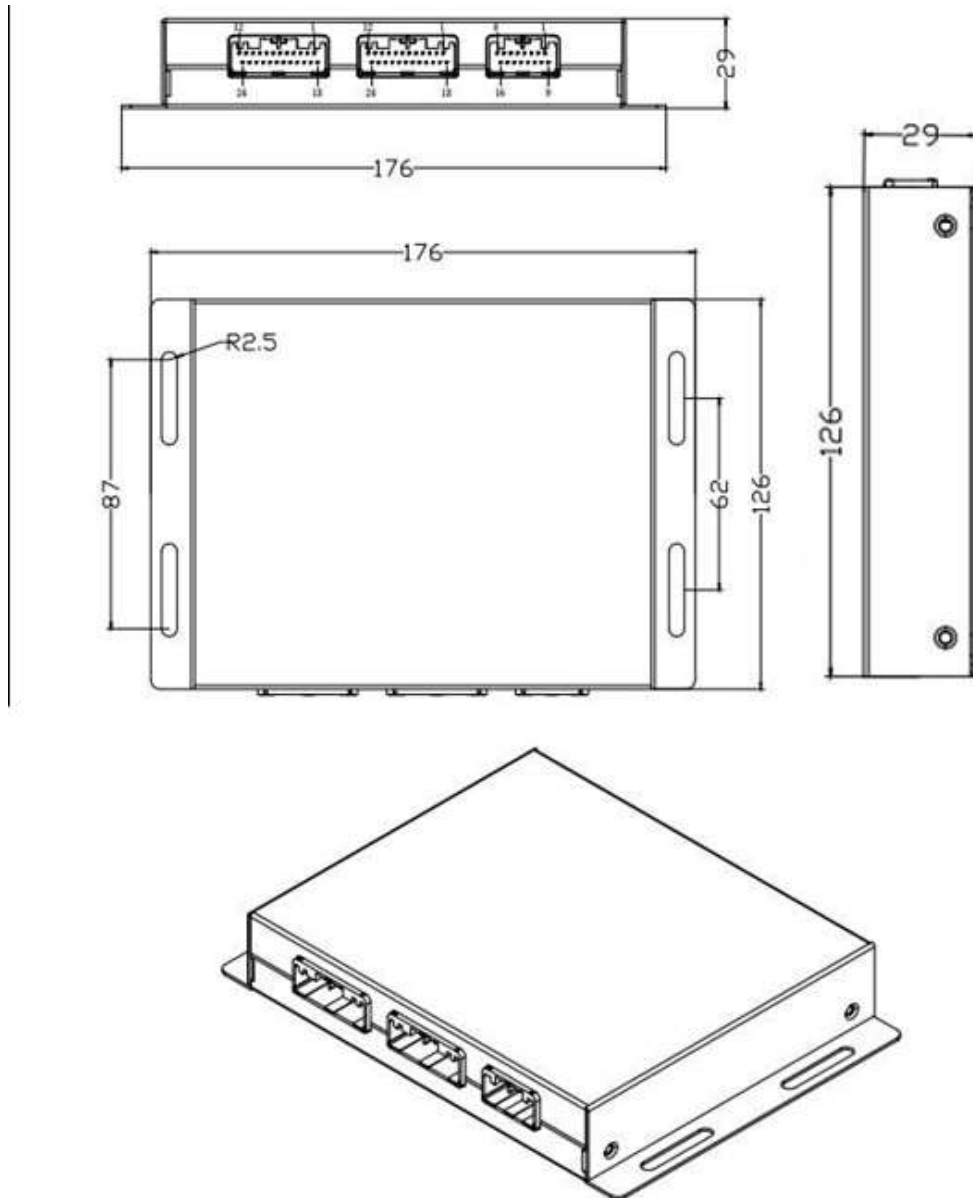
Appearance

7. Precautions for Use

1. Please connect the wire correctly before use. Refer to the product manual or the manufacturer's technical service center for the specific wiring method.

2. If the relay is selected, the charging and discharging current should not exceed the nominal parameter value of the relay or contactor.

3. When not in use, please disconnect the Power supply of the System.

4. Please do not change the System configuration parameters at will.

5. If the product is found abnormal, please cut off the Power in time and contact the company's technical support center.

8. Packaging and Storage

8.1 Packaging

Separate module bubble bag packaging. Carton packaging with cardboard partition.

8.2 Transportation

During transportation, it is necessary to prevent violent vibration, falling from height, extrusion, impact, sun and rain, etc. The stacking height shall not exceed 5 layers, and it is forbidden to place heavy objects.

8.3 Storage

- It is recommended that the storage ambient temperature be between 0 ℃ and 45 ℃.
- It is recommended that the relative humidity for storage be between 25% and 75%.
- Packaged with desiccant to reduce oxidation. Products shall not be stored in harmful gases such as sulfur or chlorine.

9. Technical Support and Service

1. For packaging information, please refer to product shipping packaging information

2. If the product operates above the load indicated in this manual, the product performance cannot be guaranteed to meet all performance indicators in this manual

3. Unless otherwise specified, the data in this paper are measured when ta=25 ℃, humidity<75%, Input nominal voltage and Output rated load

4. The above are the product performance indicators listed in this manual

5. Our company supports product customization. Please feel free to contact us about product use and technology. We will reply to you as soon as we receive the information. We look forward to communicating with you!