

XBA Module Specification

(Model: XBMU2R2F-16S8T2A3E)

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1. Overview

This module is used to 8s~16s cell pack, provide charge and discharge control, collect battery voltage, collect temperature, SOC, thermal management, data communication and fault management.

- Data Collection, include cell voltage, temperature, current and so on;
- State of charge;
- Fault management, include over/under voltage, over/under temperature, over current, low SOC, BMS fault, and so on;
- Thermal management, heating control for charge and discharge;
- Parameter configuration, user could all of parameter through PC software;
- Low power mode, after system enter low power mode, could wake up through charger or power button;
- Data communication, support 2 channels RS485, and 3 channels CAN.



2. Module Description

2.1 Parameter

Refer to Table 2-1 for module parameter:

Table 2-1 Module Parameter

Parameter Type		Value
Voltage	Range	0~4.5VDC
	Accuracy	≤0.5%FS
	Channel (MAX)	16
Current	Accuracy	≤2%FS
	Channel	1
Temperature	Range	-30~80°C
	Accuracy	± 2°C
	Channel (MAX)	8
SOC	Accuracy	≤10%
RS485	Channel	2
CAN	Channel	3
LED Driver	Channel	3
	Voltage	5V
Working Temperature		-30~75°C
Storage Temperature		-40~85°C
Working Power		≤3W
Working Voltage		24VD or 48VDC
Relay	Channel	2
	Voltage	24V
Output Power Supply	Voltage	5VDC
	Current(MAX)	200mA

2.2 Fault management

Module support three level fault management, warning, fault, and serious fault. All of threshold value could be set through PC software.

- Warning, judgment time is 2 seconds, after trigger warning, module control LED and buzzer to indicate warning status;



- Fault, judgment time is 5 seconds, after trigger fault, module control LED and buzzer to indicate fault status, and then control relay to protect battery and BMS, if the problem disappears, the fault will be cleared and return to work normally;
- Serious fault, judgment time is 2 seconds, after trigger serious fault, module control LED and buzzer to indicate fault status, and then control relay to protect battery and BMS, at this time, must reset module or PACK.

Refer to Table 2-2 for detail threshold value setting (The value depends on the battery type and requirement)

Table 2-2 Threshold Value

Type			Level			
I	II	III	Warning	Fault	Serious Fault	
Battery	Single Voltage	Over Voltage	/	V	V	
		Under Voltage	/	V	V	
		Voltage Difference	/	/	/	
	Total Voltage	Over Voltage	/	V	V	
		Under Voltage	/	V	V	
	Temperature	Over Temperature of Charge	/	°C	°C	
		Under Temperature of Charge	/	°C	°C	
		Over Temperature of Discharge	/	°C	°C	
		Under Temperature of Discharge	/	°C	°C	
		Temperature difference	/	/	/	
	Current	Over Current of Charge	/	A	A	
		Over Current of Discharge	/	A	A	
	SoC			%	/	/
	BMS	Voltage Sampling Function		/	/	√
Current Sampling Function		/	/	√		
Temperature Sampling Function		/	/	√		

2.3 Mechanical

The size of module is 238mm*114mm*30mm. Refer to Figure 2-1 for mechanical figure:

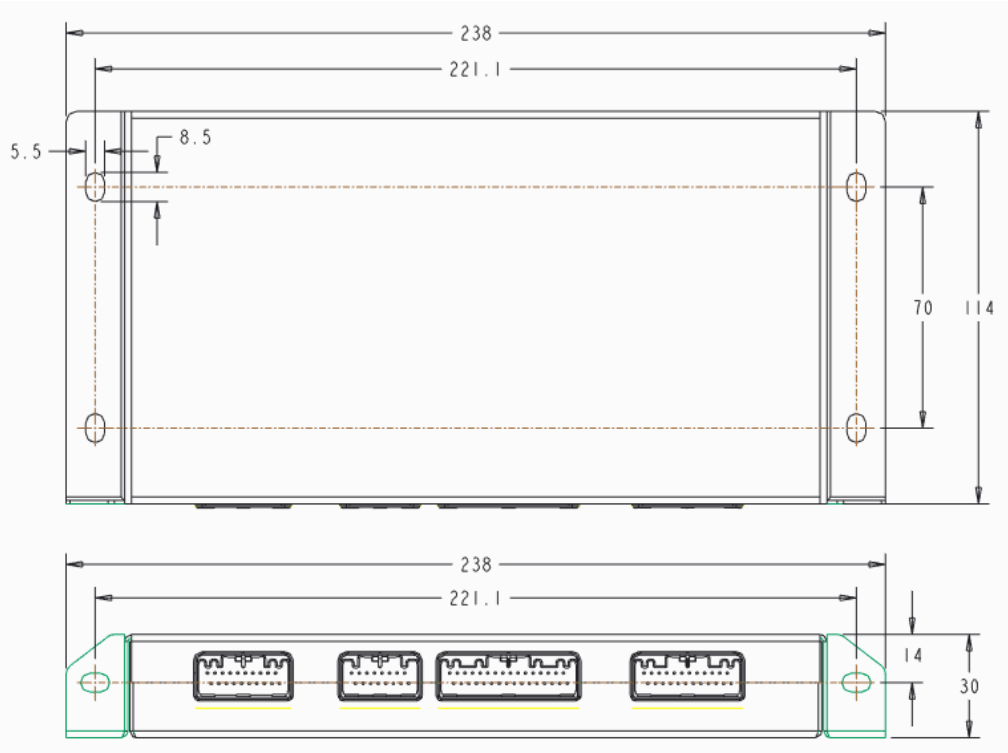


Figure 2-1 Module Mechanical Figure



2.4 System Diagram for example

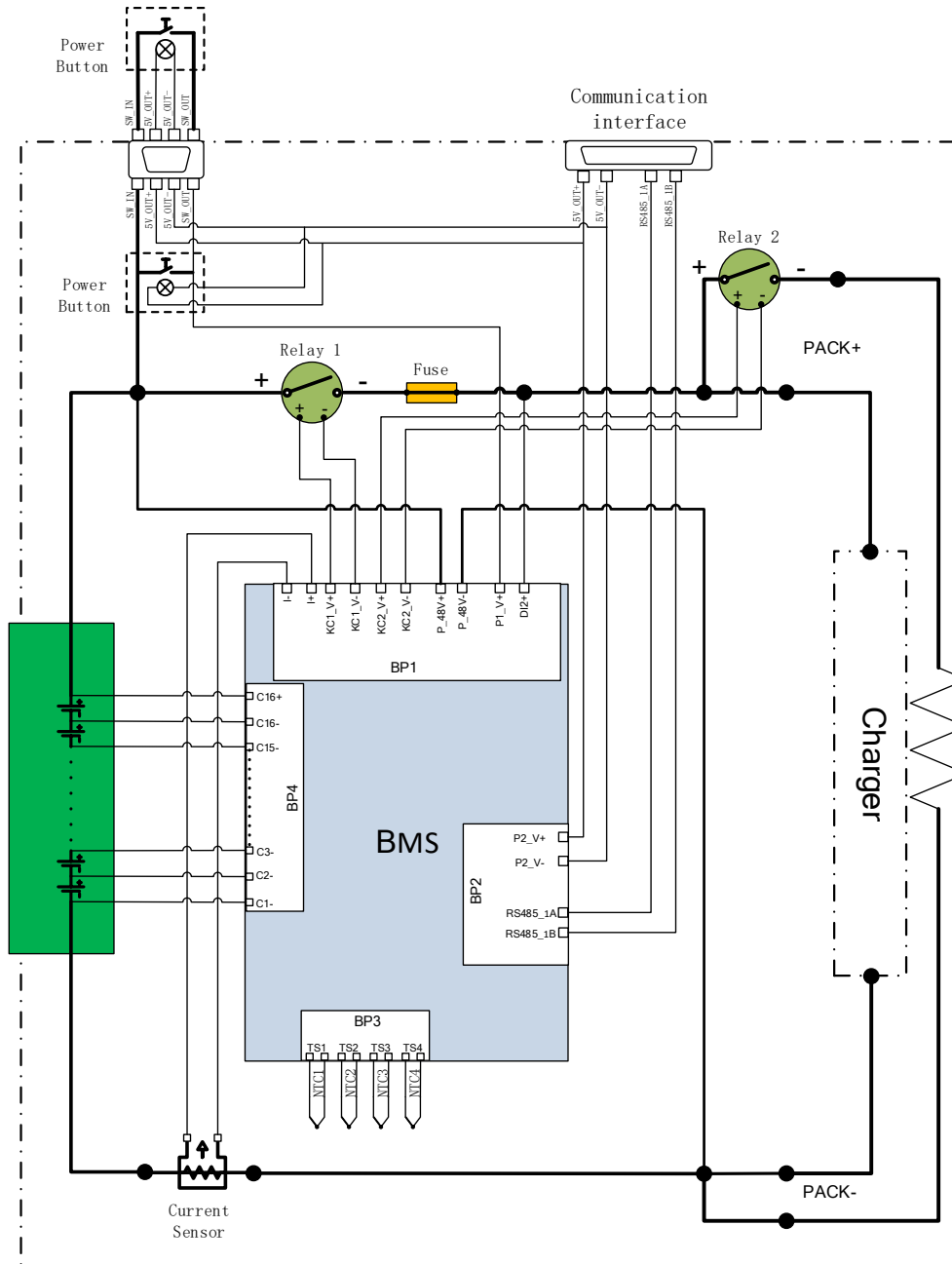


Figure 2-2 System Diagram (Example)



3. Module Interface

Table 3-1 B-P1 Definition

Connector Model		PCBA	Cable	
		MX34024NF1	MX34024SF1	
Connector Manufacturer		JAE		
Terminal Model		\		
		M34S75C4F1(AWG22~24) M34S75C4F2(AWG18~20)		
No.	Pin	Define	Description	Wire
1	1	P_48V+	Module Power+(48V-)	20AWG
2	15	P_48V-	Module Power- (48V-)	20AWG
3	2	P1_V+	Wake up signal of power button	20AWG
4	4	DI2+	Wake up signal of charger	20AWG
5	10	KC1_V+	Control signal of Relay 1(+)	20AWG
6	24	KC1_V-	Control signal of Relay 1(-)	20AWG
7	11	KC2_V+	Control signal of Relay 2(+)	20AWG
8	25	KC2_V-	Control signal of Relay 2(-)	20AWG
9	13	I+	Current sampling signal (+)	20AWG
10	27	I-	Current sampling signal (-)	20AWG

Table 3-2 B-P2 Definition

Connector Model		PCBA	Cable	
		MX34032NF2	MX34032SF2	
Connector Manufacturer		JAE		
Terminal Model		\		
		M34S75C4F1(AWG22~24) M34S75C4F2(AWG18~20)		
No.	Pin	Define	Description	Wire
1	1	CAN_0H	CAN_0 Interface H Line	20AWG
2	17	CAN_0L	CAN_0 Interface L Line	20AWG
3	3	485_0A	RS485_0 Interface A Line	20AWG
4	19	485_0B	RS485_0 Interface B Line	20AWG
5	4	485_1A	RS485_1 Interface A Line	20AWG



6	20	485_1B	RS485_1 Interface B Line	20AWG
7	5	P2_V-	Output Power (5V+)	20AWG
8	6	P2_V+	Output Power (5V-)	20AWG
9	10	CAN_1H	CAN_1 Interface H Line	20AWG
10	26	CAN_1L	CAN_1 Interface L Line	20AWG
11	11	CAN_2H	CAN_2 Interface H Line	20AWG
12	27	CAN_2L	CAN_2 Interface L Line	20AWG
13	13	BUZZ1+	The power of buzzer (+)	20AWG
14	29	BUZZ1-	The power of buzzer (-)	20AWG
15	15	LED_V+	The power signal of LED (+)	20AWG
16	31	LED1	The control signal of LED1	20AWG
17	16	LED2	The control signal of LED2	20AWG
18	32	LED3	The control signal of LED3	20AWG

Table 3-3 B-P3 Definition

Connector		PCBA		Cable	
Model		MX34016NF1		MX34016SF1	
Connector Manufacturer		JAE			
Terminal Model		\		M34S75C4F1(AWG22~24) M34S75C4F2(AWG18~20)	
No.	Pin	Define	Description	Wire	
1	1	TS1	The 1 st Temperature Sensor (NTC)	20AWG	
2	9			20AWG	
3	2	TS2	The 2 nd Temperature Sensor (NTC)	20AWG	
4	10			20AWG	
5	3	TS3	The 3 rd Temperature Sensor (NTC)	20AWG	
6	11			20AWG	
7	4	TS4	The 4 th Temperature Sensor (NTC)	20AWG	
8	12			20AWG	
9	5	TS5	The 5 th Temperature Sensor (NTC)	20AWG	
10	13			20AWG	
11	6	TS6	The 6 th Temperature Sensor (NTC)	20AWG	
12	14			20AWG	



13	7	TS7	The 7 th Temperature Sensor (NTC)	20AWG
14	15			20AWG
15	8	TS8	The 8 th Temperature Sensor (NTC)	20AWG
16	16			20AWG

Table 3-4 B-P4 Definition

Connector Model		PCBA	Cable	
		MX34020NF1	MX34020SF1	
Connector Manufacturer		JAE		
Terminal Model		\		
		M34S75C4F1(AWG22~24) M34S75C4F2(AWG18~20)		
No.	Pin	Define	Description	Wire
1	1	C1-	Cell 1(-)	20AWG
2	12	C2-	Cell 2(-)	20AWG
3	2	C3-	Cell 3(-)	20AWG
4	13	C4-	Cell 4(-)	20AWG
5	3	C5-	Cell 5(-)	20AWG
6	14	C6-	Cell 6(-)	20AWG
7	4	C7-	Cell 7(-)	20AWG
8	15	C8-	Cell 8(-)	20AWG
9	5	C9-	Cell 9(-)	20AWG
10	16	C10-	Cell 10(-)	20AWG
11	6	C11-	Cell 11(-)	20AWG
12	17	C12-	Cell 12(-)	20AWG
13	7	C13-	Cell 13(-)	20AWG
14	18	C14-	Cell 14(-)	20AWG
15	8	C15-	Cell 15(-)	20AWG
16	19	C16-	Cell 16(-)	20AWG
17	9	C16+	Cell 16(+)	20AWG