

产品规格书

SPECIFICATION

储能电池管理系统总控

Energy Storage System BMS - BAU

BAU-B30-003

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Preface

Thank you for choosing our products.

This document is used to understand the detailed specifications of the third-generation general control product BAU-B30-003 of battery management system of the energy storage system. Please keep the document properly after reading for future reference.

Symbol Conventions

The following symbols may appear in this document and have the following meanings.

Logo	Meaning
 说明	Indicates that the information is an attachment to the main text, which emphasizes and supplements the main text.
 注意	Indicates potential risks that, if ignored, may result in device damage, data loss, device performance degradation, or unpredictable results.
 危险	Indicates a hazardous situation with a high degree of risk which, if not avoided, will result in death or serious injury.

Change Log

Document Version	Changes	Written by	release date
V1.0	Initial release	Yu Qichao	2023.10.24
V 1.1	Added system configuration instructions and interface wiring methods. Changed 485 terminal resistor connection instructions. Added DO11 default function	Yu Qichao	2024.02.27
V 1.2	Content Optimization	Yu Qichao	2024.07.29
V 1.3	Add recommended wiring and products with different configurations, and add installation precautions.	Yu Qichao	2024.10.14
V 1.4	Changed the J2/J3/J4/J5/J6/J7 connector models, improved the recommended use of communication isolation ground, and added different configuration options	Yu Qichao	2025.05.22

Contents

Legal Notice	I
Preface	II
1 Product Overview	1
2 Features	1
3 Configuration selection	1
4 Specifications	2
5 Structural dimensions	3
6 Interface Definition	4
6.1 Bottom side interface	4
6.1.1 Interface Diagram	4
6.1.2 Pin Definition	5
6.2 Top side interface	8
6.2.1 Interface Diagram	8
6.2.2 Pin Definition	8
6.3 Left side interface	10
6.3.1 Interface Diagram	10
6.3.2 Interface Description	10
7 Installation Instructions	12
7.1 Installation Notes	12
7.2 Installation Process	12
8 Typical Applications	14
8.1 System Architecture	14
8.2 Wiring Diagram	15
8.2.1 DI input wiring	15
8.2.2 DIO input wiring	15
8.2.3 Dry contact output wiring	15
8.2.4 High side switch wiring	16
8.2.5 Terminal resistor short-circuit	17
8.3 Interface application recommendation	17

1 Product Overview

The general control unit (BAU) is the bank-level management unit of the battery management system. By communicating with the general control units of each battery rack, it monitors the battery cell voltage and temperature, the total voltage of the battery pack, the charge and discharge current, the insulation impedance and other characteristics, estimates and monitors the capacity, SOC, SOH and other states of the battery, and provides the battery pack charge and discharge management, thermal management, insulation detection, single cell balance management, fault alarm, data storage and other functions. It can also communicate with external devices such as PCS and EMS to ensure the safe and stable operation of the energy storage system.

2 Features

- Supports rack grid-connection management of battery banks
- Supports charge and discharge management of battery racks
- Real-time dynamic estimation and monitoring of SOC and SOH of battery bank
- Provide HMI function, support threshold configuration and data viewing
- Provides 485 and CAN interfaces to support communication with PCS , EMS and other devices
- Provides a variety of external interfaces to support access to various dynamic environment detection equipment
- Support Wi-Fi function (optional)
- Support TF card and SSD storage (optional) and data will not be lost when power is off
- Support 4G function (optional)
- Support FTP data export
- Support USB flash drive to upgrade BMS software
- Support Modbus, IEC104 and IEC61850

3 Configuration selection

Model	Storage	4G Capabilities	Wi-Fi Capability	Item Number	Remark
BAU-B30-003-001-001	128G TF card	None	Support	51.20.000.1753	
BAU-B30-003-001-002	256G SSD	Domestic GSM	Support	51.20.000.1754	Without 4G card
BAU-B30-003-002-001	256G SSD	Global GSM	Support	51.20.000.1755	Without 4G card

BAU-B30-003-003-001	128 G TF card	None	None	51.20.000.2503	
BAU-B30-003-003-002	128G SSD	None	None	5 1.20.000.3022	

4 Specifications

Parameter		Description
Processor		Quad-core 64-bit Cortex-A55/2.0GHz
Memory		2GB LPDDR4
Operating system		Linux
Display		10.1 inch capacitive touch screen, resolution 1280×800
Communication Protocol		Modbus RTU, Modbus TCP, IEC104, IEC 61850
Battery management capabilities		Maximum 500 series × 60 racks
Interface	CAN	3 isolation channels, rate 250k/500k bps
	RS485	9 isolation channels, rate 9600bps ~ 57600bps
	DI	18 channels, 7 channels high effective and 11 channels low effective
	Dry contact output	16 channels, maximum voltage is 32V , maximum current is 500mA
	High side output	4 channels, maximum voltage is 24V, maximum current is 500mA
	Ethernet	4 ports, 2 of which are Gigabit and 2 are 100M
	TYPE-C	1
	USB	3 channels, the read and write speed depends on the USB flash drive used, the typical rate is 5 MB/s
	TF	1 TF slot, the read and write speed depends on the TF card used, the typical rate is 3MB/s
	Wi-Fi	1 channel
	HDMI	1 channel
	4G	1 channel, supports domestic and global GSM communication
Environment	Power supply voltage	DC 12V-32V
	Power consumption	<10W
	Operating temperature	-20 °C ~ 65 °C
	Storage temperature	-40 °C ~ 85 °C
	Relative humidity	5%~ 95 %, no condensation
	Applicable altitude	<4000m
Case	Size	- Dimensions : 288mm × 190mm × 43mm - Installation dimensions: 266mm × 179 mm
	Material	ABS+PC, black fine line frosted
	Flame retardant grade	UL 94-V0

5 Structural dimensions

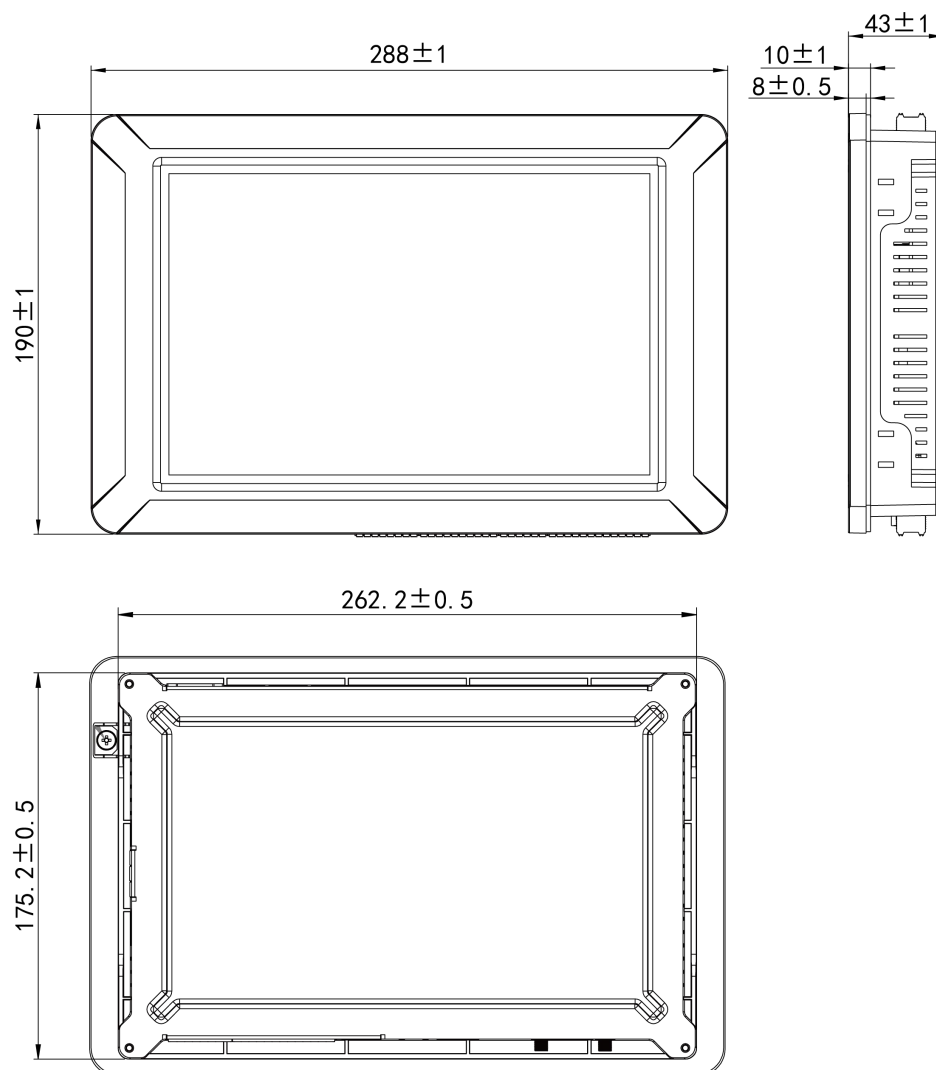


Figure 5-1 Structural dimensions (unit: mm)

6 Interface Definition

6.1 Bottom side interface

6.1.1 Interface Diagram

The BAU bottom interface is as follows.

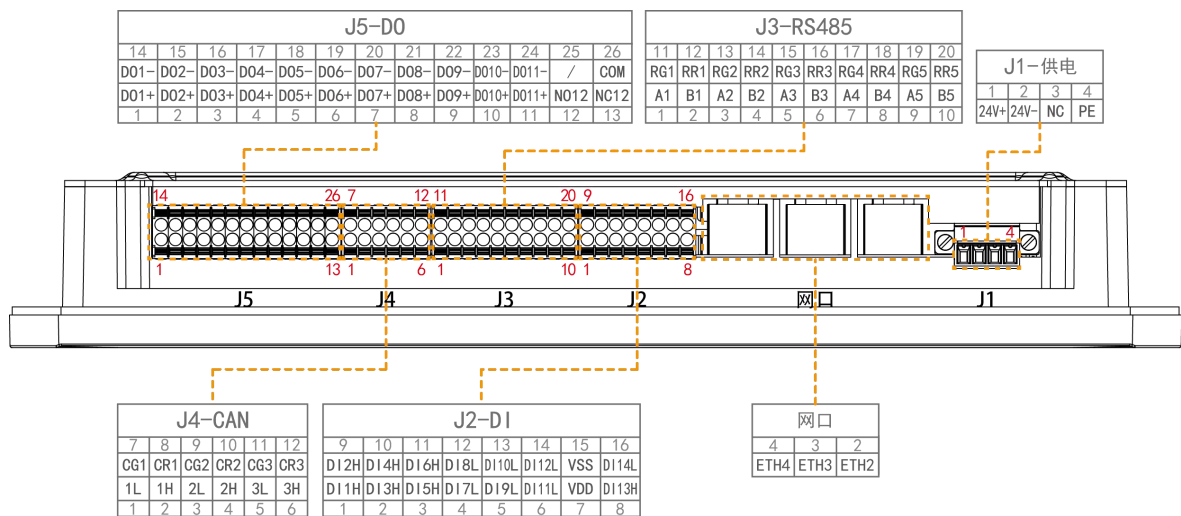


Figure 6-1 Bottom interface diagram

Table 6-1 Connector Description

Connectors	model	Number of Pins	Brand
J1 (green)	Socket (board end): MC1.5/4-GF-3.81 Plug (wire end): MC1.5/4-STF-3.81	4	Phoenix
J2 (black)	Socket (board end): JL15EDGRHC-35008B01 Plug (wire end): JL15EDGKNH-35008B01	16	Jin Ling
J3 (black)	Socket (board end): JL15EDGRHC-35010B01 Plug (wire end): JL15EDGKNH-35010B01	20	Jin Ling
J4 (black)	Socket (board end): JL15EDGRHC-35006B01 Plug (wire end): JL15EDGKNH-35006B01	12	Jin Ling
J5 (black)	Socket (board end): JL15EDGRHC-35013B01 Plug (wire end): JL15EDGKNH-35013B01	26	Jin Ling

Note: BAU is shipped with a plug (wire end) connector by default.

6.1.2 Pin Definition

Table 6-2 Pin Definition

Interface description	Pin number	Pin Definition	Functional Description	Remark
J1-Power supply	1	24V+	Power supply input positive pole	BAU power supply
	2	24V-	Power supply input negative pole	
	3	NC	No connection	
	4	PE	Grounding	Must be grounded
J2-DI	1	DI1H	1st high effective digital signal input	
	9	DI2 H	2nd high effective digital signal input	
	2	DI3H	3rd high effective digital signal input	
	10	DI4H	4th high effective digital signal input	
	3	DI5H	5th high effective digital signal input	
	11	DI6H	6th high effective digital signal input	
	4	DI7L	7th low effective digital signal input	
	12	DI8L	8th low effective digital signal input	
	5	DI9L	9th low effective digital signal input	
	13	DI10L	10th low effective digital signal input	
	6	DI11L	11th low effective digital signal input	
	14	DI12L	12th low effective digital signal input	
	8	DI13H	13th high effective digital signal input	
	16	DI14L	14th low effective digital signal input	
	7	VDD	DI isolated power supply input positive pole	
	15	VSS	DI isolated power supply input negative pole	
J3-RS485	1/2	A1/B1	1st RS485 communication	RR is left floating, the corresponding RS485 interface does not have a 120Ω terminal resistor. If RR is short-circuited with line B, the corresponding RS485
	11	RG1	1st RS485 isolation ground	
	12	RR1	1st RS485 terminal resistor	
	3/4	A2/B2	2nd RS485 communication	
	13	RG2	2nd RS485 isolation ground	
	14	RR2	2nd RS485 terminal resistor	

Interface description	Pin number	Pin Definition	Functional Description	Remark
	5/6	A3/B3	3rd RS485 communication	interface has a 120 Ω terminal resistor. It is recommended that the isolation ground be connected to the signal ground of the device on the bus or left floating.
	15	RG3	3rd RS485 isolation ground	
	16	RR3	3rd RS485 terminal resistor	
	7/8	A4/B4	4th RS485 communication	
	17	RG4	4th RS485 isolated ground	
	18	RR4	4th RS485 terminal resistor	
	9/10	A5/B5	5th RS485 communication	
	19	RG5	5th RS485 isolation ground	
	20	RR5	5th RS485 terminal resistor	
J4-CAN	1/2	1L/1H	1st CAN communication	If CR is left floating, the corresponding CAN interface does not have a 120 Ω terminal resistor. If the CR and L lines are short-circuited, the corresponding CAN interface has a 120 Ω terminal resistor. It is recommended that the isolation ground be connected to the signal ground of the device on the bus or left floating.
	7	CG1	1st CAN isolation ground	
	8	CR1	1st CAN terminal resistor	
	3/4	2L/2H	2nd CAN communication	
	9	CG2	2nd CAN isolation ground	
	10	CR2	2nd CAN terminal resistor	
	5 /6	3L/3H	3rd CAN communication	
	11	CG3	3rd CAN isolation ground	
	12	CR3	3rd CAN terminal resistor	
J5-DO	1/14	DO1+/DO1-	1st normally open dry contact output	
	2/15	DO2+/DO2-	2nd normally open dry contact output	
	3/16	DO3+/DO3-	3rd normally open dry contact output	
	4/17	DO4+/DO4-	4th normally open dry contact output	
	5/18	DO5+/DO5-	5th normally open dry contact output	
	6/19	DO6+/DO6-	6th normally open dry contact output	
	7/20	DO7+/DO7-	7th normally open dry contact output	
	8/21	DO8+/DO8-	8th normally open dry contact output	
	9/22	DO9+/DO9-	9th normally open dry contact output	
	10/23	DO10+/DO10-	10th normally open dry contact output	
	11/24	DO11+/DO11-	11th normally open dry contact output	
	12/26	NO12/COM	12th normally open dry contact	

Interface description	Pin number	Pin Definition	Functional Description	Remark
			output	
	13/26	NC12/COM	12th normally closed dry contact output	
	25	/	No connection	
Network port	2	ETH2	100M /1000M Ethernet	Default protocol communication interface
	3	ETH3	100M /1000M Ethernet	
	4	ETH4	10M/100M Ethernet	Default main communication interface

6.2 Top side interface

6.2.1 Interface Diagram

The BAU top side interface is as follows.

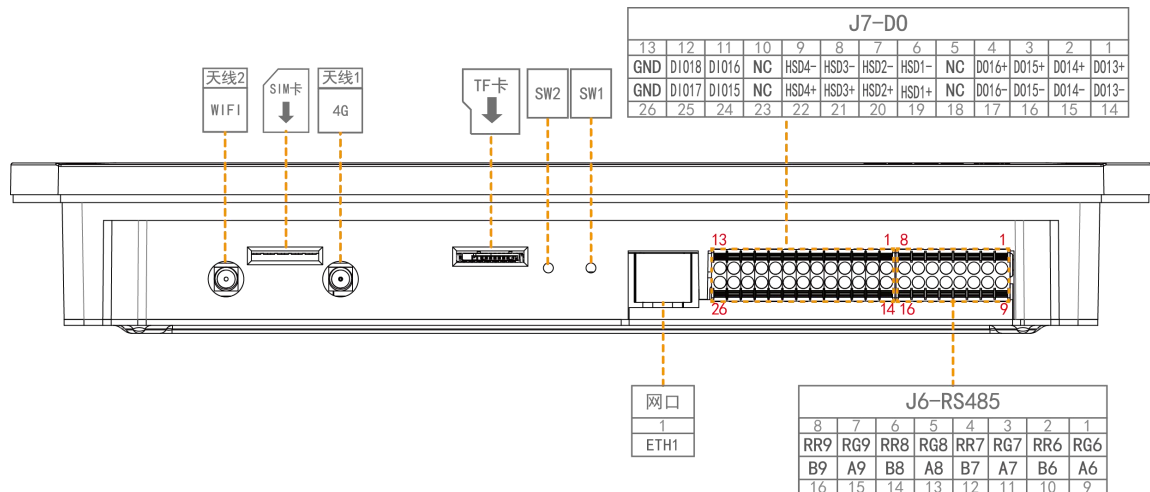


Figure 6-2 Top interface diagram

Table 6-3 Connector Description

Connectors	Model	Number of Pins	Brand
J6 (black)	Socket (board side): JL15EDGRHC-35008B01 Plug (wire end): JL15EDGKNH-35008B01	16	Jin Ling
J7 (black)	Socket (board side): JL15EDGRHC-35013B01 Plug (wire end): JL15EDGKNH-35013B01	26	Jin Ling

6.2.2 Pin Definition

Table 6-4 Interface Description

Interface Name		Interface Definition	Functional Description
Antenna 2	Wi-Fi	Wi-Fi antenna interface	Used to receive Wi-Fi signals
SIM card		SIM card slot	Support domestic and global GSM communication
Antenna 1	4G	4G antenna interface	For receiving 4G signals
TF card		TF card slot	The default is 128G
SW2		RECOVERY button	For firmware burning
SW1		Reset button	To restart the device

Table 6-5 Pin Definition

Interface description	Pin number	Pin Definition	Functional Description	Remark
J6-RS485 (Reserved)	9/10	A6/B6	6th RS485 communication	RR is left floating, the corresponding RS485 interface does not have a 120 Ω terminal resistor. If RR is short-circuited with the line B, the corresponding RS485 interface has a 120 Ω terminal resistor. It is recommended that the isolation ground be connected to the signal ground of the device on the bus or left floating.
	1	RG6	6th RS485 Isolation Ground	
	2	RR6	6th channel RS485 terminal resistor	
	11/12	A7/B7	7th RS485 communication	
	3	RG7	7th RS485 Isolation Ground	
	4	RR7	7th channel RS485 terminal resistor	
	13/14	A8/B8	8th RS485 communication	
	5	RG8	8th Road RS485 Isolation Ground	
	6	R8	8th channel RS485 terminal resistor	
	15/16	A9/B9	9th RS485 communication	
	7	RG9	9th RS485 Isolation Ground	
	8	RR9	9th channel RS485 terminal resistor	
J7-DO (Reserved)	13	GND	Non-isolated power ground	
	26	GND	Non-isolated power ground	
	12	DIO18	18th digital signal input	
	25	DIO17	17th digital signal input	
	11	DIO16	16th digital signal input	
	24	DIO15	15th digital signal input	
	10	NC	No connection	
	23	NC	No connection	
	9/22	HSD4-/HSD4+	4th high side output	
	8/21	HSD3-/HSD3+	3rd high side output	
	7/20	HSD2-/HSD2+	2nd high-side output	
	6/19	HSD1-/HSD1+	1st high-side output	
	5	NC	No connection	
	18	NC	No connection	
	4/17	DO16+/DO16-	16th normally open dry contact output	
	3/16	DO15+/DO15-	15th normally open dry contact output	
	2/15	DO14+/DO14-	14th normally open dry contact output	
	1/14	DO13+/DO13-	13th normally open dry contact output	

Interface description	Pin number	Pin Definition	Functional Description	Remark
Network port	1	ETH1	10M/100M Ethernet	Reserved

Note: J6 , J7 and network port 1 are reserved interfaces. If you need to use them, please contact the technicians in advance .

6.3 Left side interface

6.3.1 Interface Diagram

The BAU left side interface is as follows.

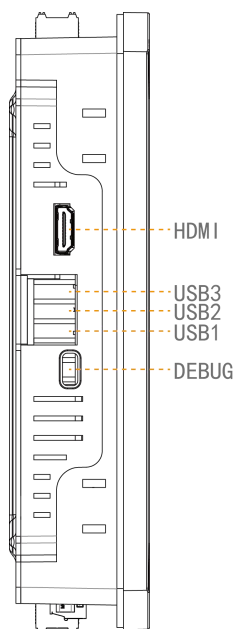


Figure 6-3 Left side interface diagram

6.3.2 Interface Description

Table 6-6 Interface Description

Interface description	Interface Definition	Functional Description
HDMI	HDMI interface	Reserved interface, internal use
USB3	USB interface	USB_2.0, reserved interface, internal use
USB2		USB_3.0, for program burning, internal use
USB1		USB_3.0, used to connect USB disk, upgrade program and read historical data

DEBUG	Debug interface	TPYE-C, internal use
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7 Installation Instructions

7.1 Installation Notes

- Do not install BAU directly on the outer door of the container. If it is installed on the outer door, a light-shielding and waterproof protective cover should be added.
- Before installing the device, carefully inspect the housing for any serious damage.
- After the equipment is installed, connect the communication port connector first, then connect the power cord.
- Before turning on the power, make sure all wiring harnesses are properly connected and there is no risk of short circuit.

7.2 Installation Process

- Step 1 Insert the device into the slot in the cabinet.
- Step 2 Insert the four mounting brackets into the holes on both sides of the device.
- Step 3 Use 4 screws to secure the device to the cabinet.
- Step 4 Plug in the interface socket and wire according to the instructions in the interface definition.

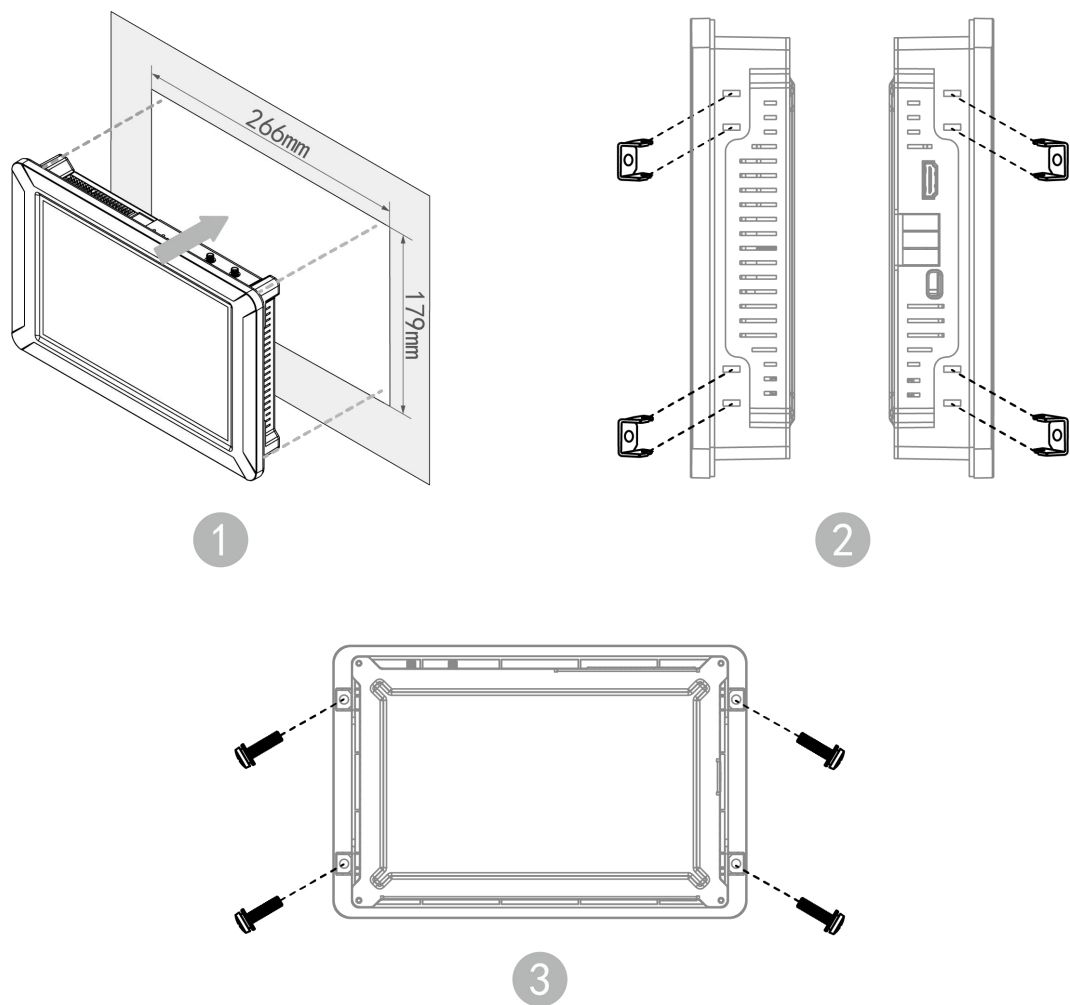


Figure 7-1 Installation diagram

8 Typical Applications

8.1 System Architecture

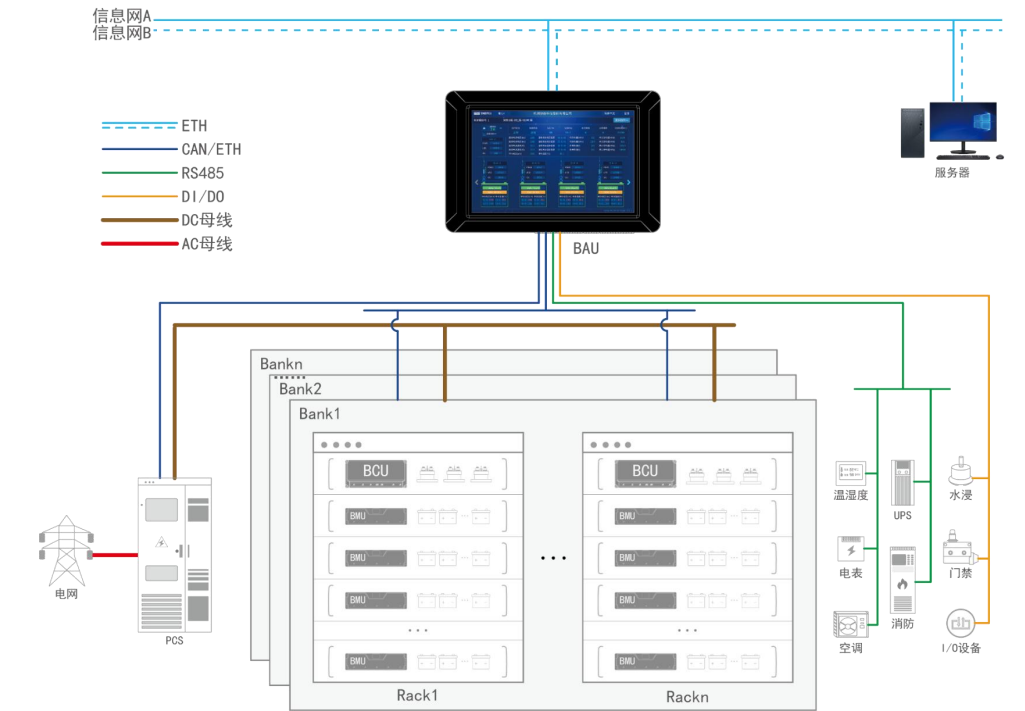


Figure 8-1 Centralized management

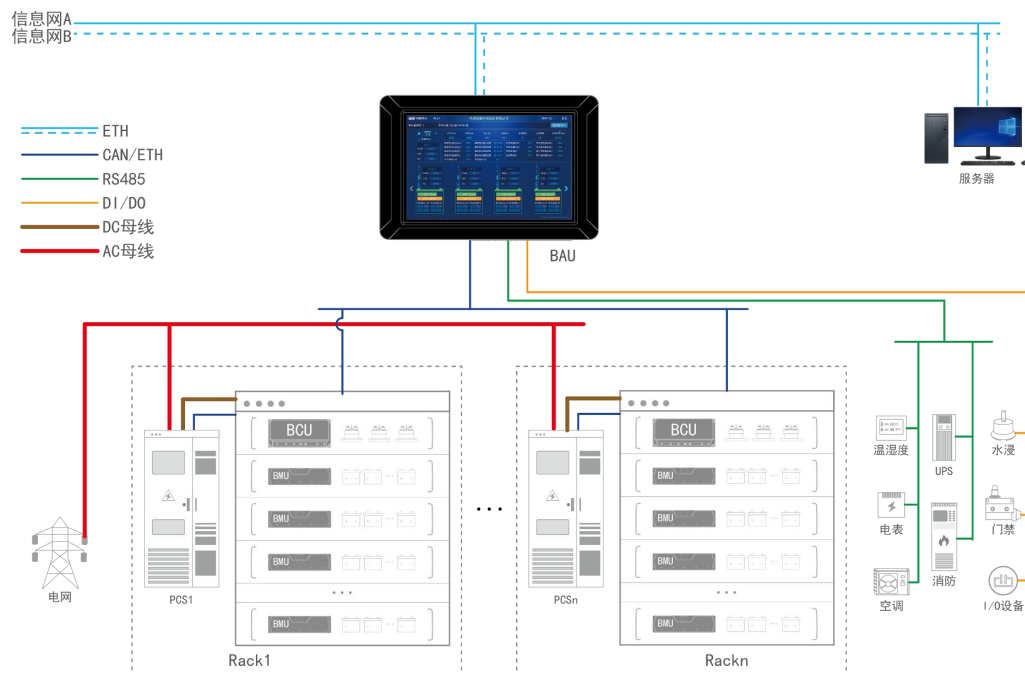


Figure 8-2 String management

8.2 Wiring Diagram

8.2.1 DI input wiring

BAU supports 14-way isolated digital signal input, which is divided into 7 low-effective and 7 high-effective. It can be used to detect external dry contact signals and other digital inputs. The wiring diagram is as follows.

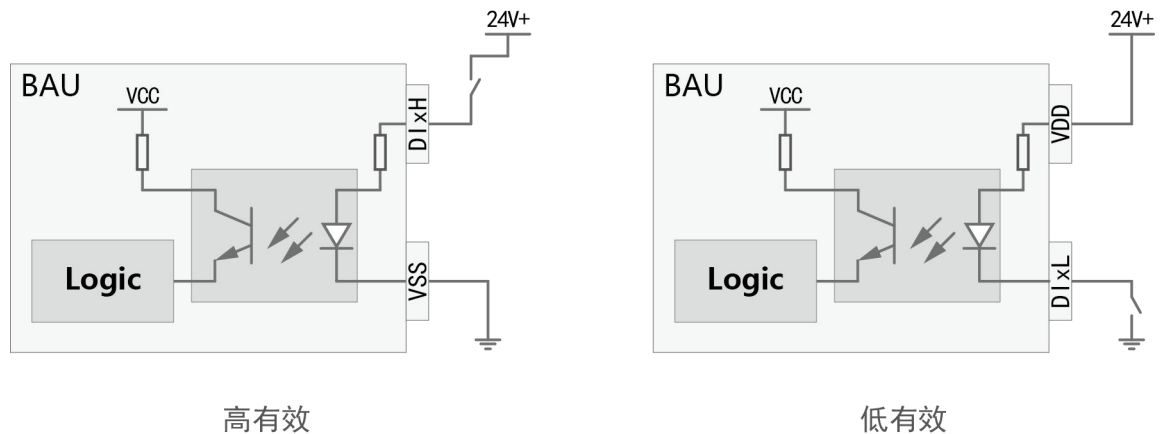


Figure 8-3 DI Input



- ◆ The high-active DIs share VSS, and the low-active DIs share VDD.

8.2.2 DIO input wiring

BAU supports 4-channel digital signal inputs. There are pull-up resistors inside. When the external part is suspended, it is at a high level. When inputting, it is at a low level. The wiring diagram is as follows.

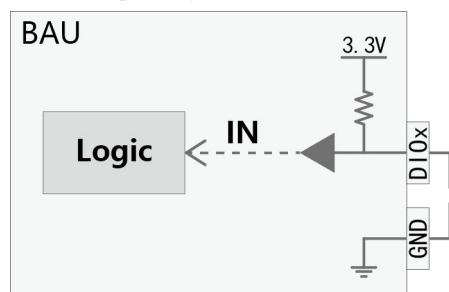


Figure 8-4 DIO Input

8.2.3 Dry contact output wiring

BAU supports 16-channels normally open dry contact outputs, which can be connected to DC appliances

such as relays, lamps, fans, etc. It can also be used as isolated dry contact signal output. The wiring diagram is as follows.

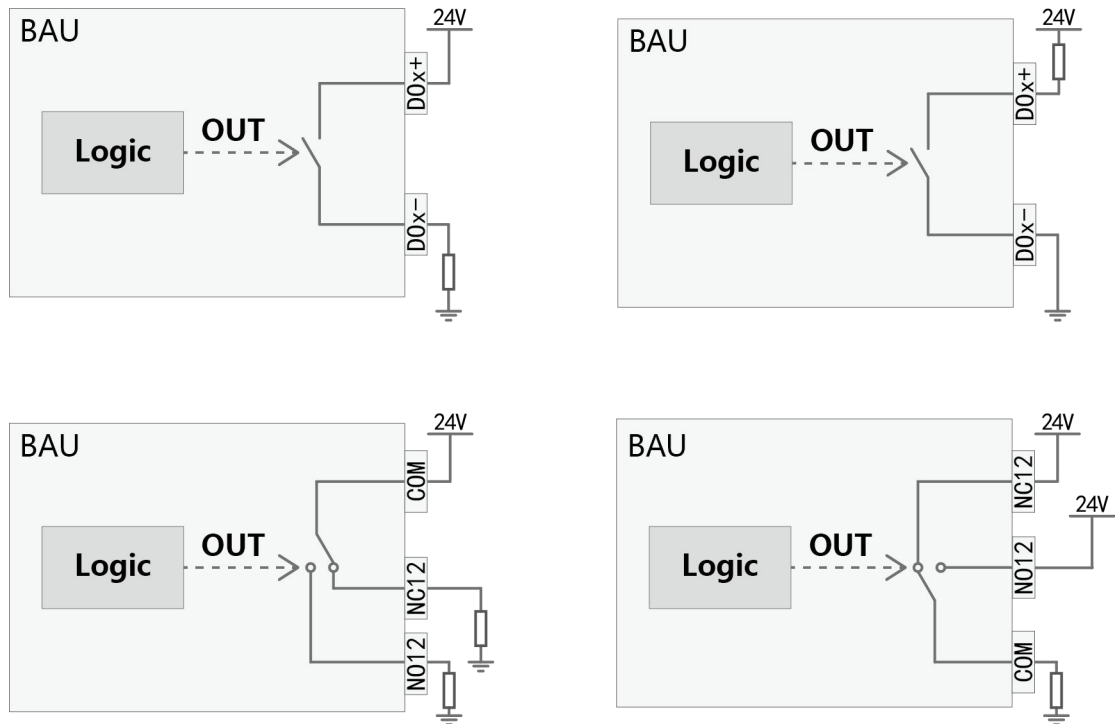


Figure 8-5 Dry contact output



说明

- ◆ DO12 is a single-pole double-throw combination switch, NO12 is a normally open contact, and NC12 is a normally closed contact.

8.2.4 High side switch wiring

BAU supports 4 high-side outputs and can be connected to DC appliances such as relays, lamps, fans, etc. The wiring diagram is as follows.

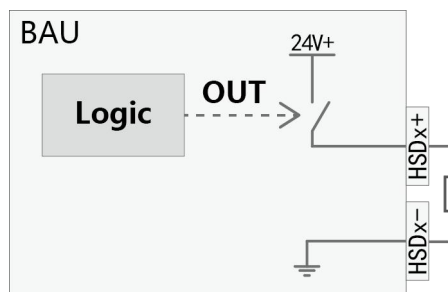


Figure 8-6 High Side Switch

8.2.5 Terminal resistor short-circuit

The BAU 's CAN and RS485 interfaces have reserved terminal resistances, and one end has been connected. Short-circuit the other end and the communication line will have a 120-ohm terminal resistance.

- When a terminal resistor is required on the CAN bus, short-circuit the CR pin with the corresponding L on the wiring harness .
- When a terminal resistor is required on the RS485 communication line, short-circuit the RR pin with the corresponding B on the wiring harness .

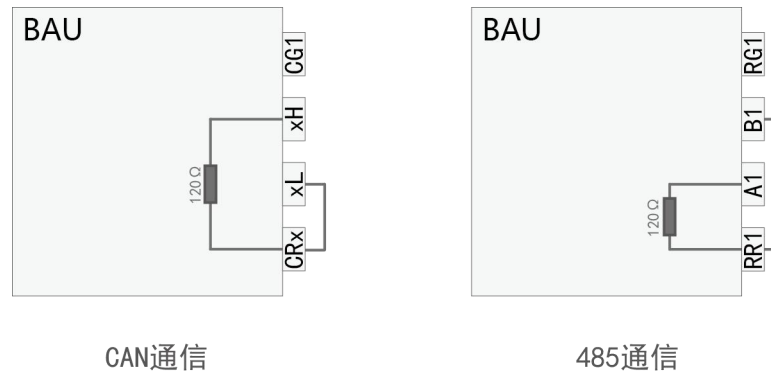


Figure 8-7 Terminal resistance short circuit

8.3 Interface application recommendation

Interface Type	Serial number	Recommended Use	Remark
High effective DI input	DI1H	Emergency stop feedback signal	
	DI2H	Fire alarm feedback signal	
	DI3H	Fire fault feedback signal	
	DI4H	Fire sprinkler feedback signal	
	DI5H	Water immersion feedback signal	
	DI6H	Combiner cabinet DC circuit breaker status detection	
Low active DI input	DI7L	Local/remote feedback signal	
	DI8L	Air conditioning fault feedback signal	
	DI9L	Access control feedback signal	
	DI10L	Surge/lightning protection fault feedback signal	
	DI11L	Feedback signal of main distribution switch QF1	
	DI12L	UPS IO signal	

Interface Type	Serial number	Recommended Use	Remark
High effective DI input	DI13H	Fuse feedback signal	
Low active DI input	DI14 L	Combustible gas alarm feedback signal	
Dry contact output	DO1	Running indicator light	
	DO2	Fault indicator light	
	DO3	BMS fault dry contact output to PCS	
	DO4	Combiner cabinet DC circuit breaker trip output	
	DO5	Combiner cabinet DC circuit breaker close output	
	DO6	Combiner cabinet DC circuit breaker trip control	
	DO7	Main distribution switch QF1 trip control	
	DO 8	Louver Forward/Reverse Rotation Control	
	DO 9	Exhaust fan control	
	DO 10	BAU-BCU address allocation line 2	When both CAN 1 and CAN 2 have master access, it is used to assign the CAN2 master address
	DO11	BAU-BCU address allocation line 1	
	DO12	NA	Normally open + normally closed contacts
485 communication	485-1	Fire Fighting	
	485-2	Liquid Cooler	
	485-3	Air conditioner	
	485-4	Temperature and humidity/UPS	
	485-5	Electricity Meter	
CAN communication	CAN-1	BCU	Compatible with internal debugging CAN , not recommended for other purposes
	CAN-2	PCS	
	CAN-3	NA	Reserved
Ethernet communication	ETH1	NA	100M, reserved
	ETH2	EMS A Network	Gigabit, support IEC61850, IEC104, Modbus TCP (Slave)

Interface Type	Serial number	Recommended Use	Remark
	ETH3	EMS B Network	Gigabit, support IEC61850, IEC104, Modbus TCP (Slave)
	ETH4	NA	100M, reserved

Note: The above is the recommended wiring for the main CAN communication single bank application scenario. If there are other usage scenarios, please contact the technicians in advance .



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