






**Cabinet Environmental Power Supply
Monitoring Module (24VDC)**

CMS031-S01

User Manual

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Symbol Definition	
	WARNING: Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	RISK OF ELECTRICAL SHOCK: Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	ESD HAZARD: Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user.

Safety& Caution Symbols

The following table lists Safety& Caution symbols used on equipments.














No.	Symbol	Description
1		Direct current (DC)
2		Alternating current (AC)
3		Ground (Earth) terminal
4		Protective earth (ground) terminal
5		Reference ground (Earth) terminal
6		Frame or chassis
7		Equipotentiality
8		On (power)
9		Off (power)
10		Caution, risk of electric shock
11		Caution, hot surface
12		Caution, risk of danger
13		Electrostatic sensitive devices (ESD)

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Cabinet Environmental Power Supply Monitoring Module CMS031-S01

Section 1 Overview

Cabinet environmental power supply monitoring module CMS031-S01 (hereinafter referred to as “CMS031”) can monitor the redundant 24V DC’s voltage, current and redundant power supply balance. CMS031 is usually used with an intelligent temperature control module thus building a cabinet environmental intelligent management system.

If any of the redundant power supplies abnormally outputs, the module will upload the abnormal information and logs to intelligent temperature control module through RS-485 serial communication port, so the temperature control module can start or stop environmental adjustment devices according to the cabinet environment.

Section 2 Technical Specifications

Table 2-1 Technical specifications

Parameter		Description
Model		CMS031-S01
Working power	Working voltage	24V DC \pm 10 %
	Power distribution method	Unified distribution of in-cabinet bus
	Power consumption	<0.5 W
Voltage and current monitoring	Voltage monitoring range	0 to 60 VDC, configured by software
	Voltage monitoring accuracy	\pm 0.5%
	Current monitoring range	0 to 40 A or 0 to 20 A is selectable; work with current transducer and configured by software
	Current monitoring accuracy	\pm 2%
EMC level		Industrial III B
Anti-corrosion		G3 anti-corrosion
IP rating		IP20
Dimensions (W \times H \times D)		78 mm \times 105 mm \times 53 mm (3.07" \times 4.13" \times 2.09")
Temperature	Operating temperature	-20 to +70 °C
	Storage temperature	-40 to +85 °C
Humidity	Operating humidity	10% to 90% (RH), non-condensing
	Storage humidity	5% to 95% (RH), non-condensing

Section 3 Hardware Structure

The hardware structure of CMS031 is shown in Figure 3-1.

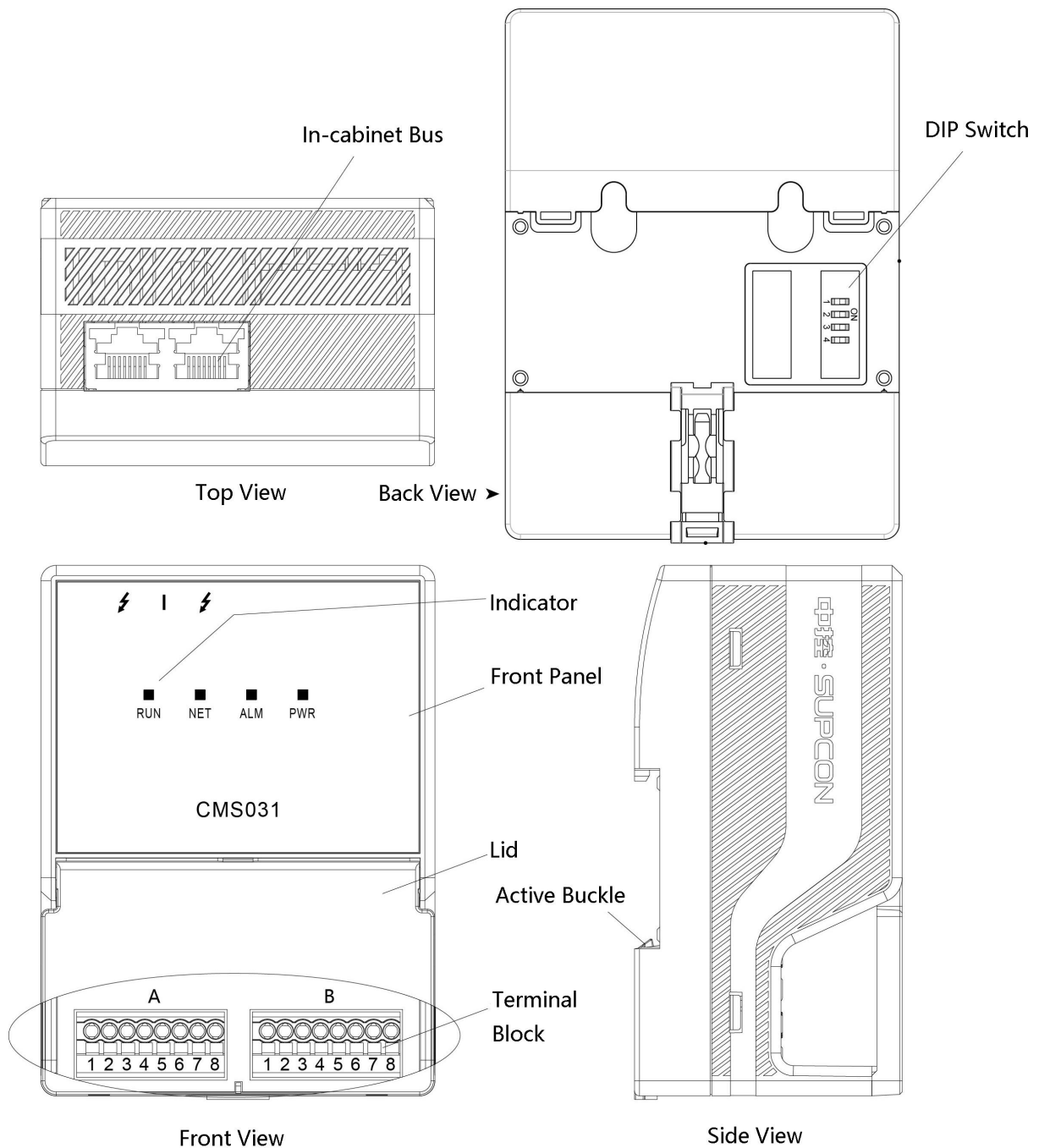


Figure 3-1 Structure diagram

Section 4 Setting Communication Address

4Pin DIP switch on the back of CMS031 is used to set communication address on the in-cabinet bus communication network, and address range is from 1 to 15. The DIP switch 1 is low and 4 is high. The relationship between the switch position (ON or OFF) and the address is shown as the following table.

Figure 4-1 The relationship between switch position and the address

4	3	2	1	Address
OFF	OFF	OFF	ON	1
OFF	OFF	ON	OFF	2
OFF	OFF	ON	ON	3
...
ON	ON	ON	ON	15

Section 5 Dimensions and Mounting



Risk of Electrical Shock:

Power supply of the module must be cut off before the mounting.

5.1 Dimensions

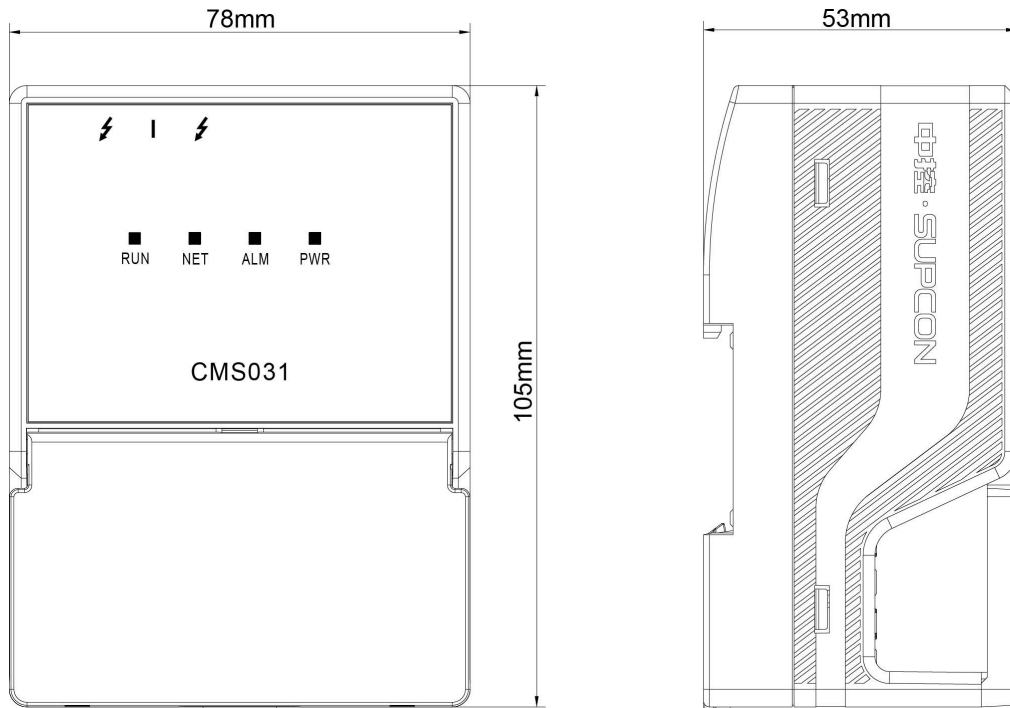


Figure 5-1 Dimensions

5.2 Mounting

The module applies standard DIN rail and it's generally mounted at the cabinet or the air outlet of the console.

- 1) Attach the side without a buckle of the module to the rail, as ① shows in Figure 5-2.
- 2) Rotate the module and fix the side of active buckle into the rail as ② shows in Figure 5-2 to complete the mounting.
- 3) Connect the wires and properly sort them.

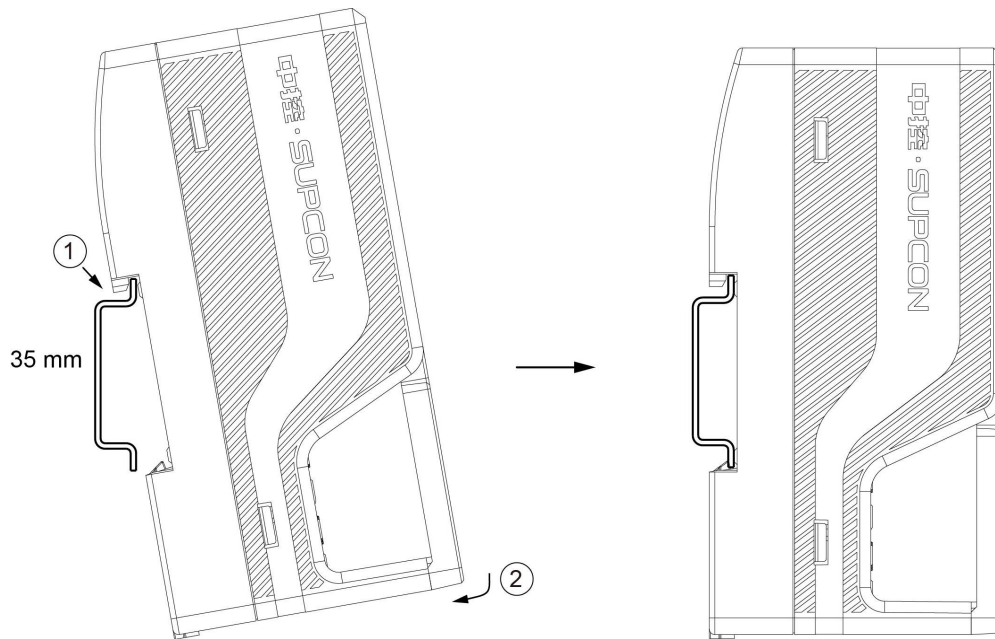


Figure 5-2 Mount the module

5.3 Disassembly

- 1) Cut off the power supply and disassemble the wires.
- 2) Pry open the active tab with the slotted screwdriver (medium or small size), as ① shows in Figure 5-3.
- 3) Rotate the module, as ② shows in Figure 5-3.
- 4) Remove the module from the guide rail and finish the disassembly.

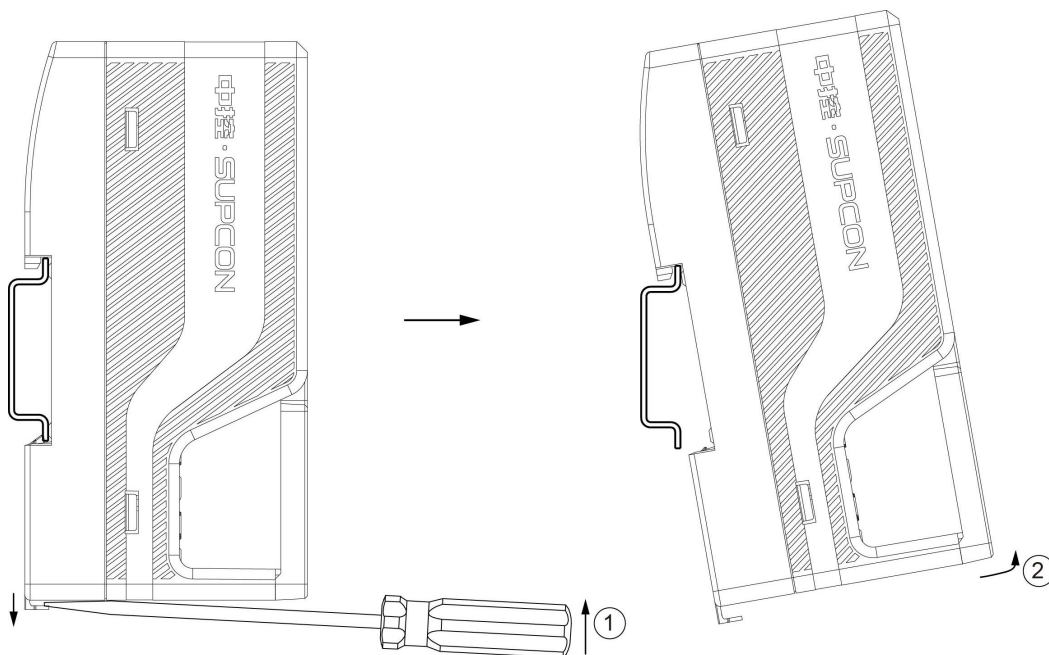


Figure 5-3 Disassemble the module

Section 6 Wiring Instructions

6.1 Terminals

The terminals of CMS031 are as shown in Table 6- 1and Table 6- 2. A and B are redundant power supply.

Table 6- 1 Terminal wiring instruction of row A

Terminal mark of row A	Description
1	Voltage monitoring of power supply A+
2	Voltage monitoring of power supply A-
3	Empty
4	Empty
5	Current transducer of power supply A 5V+ (red cable)
6	Current transducer output of power supply A (yellow cable)
7	Current transducer benchmark of power supply A (white cable)
8	Current transducer ground of power supply A (black cable)

Table 6- 2 Terminal wiring instruction of row B

Terminal mark of row B	Description
1	Voltage monitoring of power supply B+
2	Voltage monitoring of power supply B-
3	Empty
4	Empty
5	Current transducer of power supply B 5V+ (red cable)
6	Current transducer output of power supply B (yellow cable)
7	Current transducer benchmark of power supply B (white cable)
8	Current transducer ground of power supply B (black cable)

6.2 Cable Requirement

Communication and Power Cable Requirement

Category 5e straight-through type Ethernet cable.

Terminal Cable Requirement

The cable that fits to terminal blocks is shown in the table below.

Table 6-3 Cable rule

Parameter	Description
Cross-sectional area	0.2 to 1.5 mm ²
Stripping length	10 mm
Slotted screwdriver	(0.4 × 2.5) mm

6.3 Example of Connecting Wires

- As shown in the figure below, a cascaded network can be built through the two RJ45 ports on CMS031 to realize data communication and power supply with intelligent temperature control module, power monitoring module and so on.
- The terminal blocks underneath the lid on the front of CMS031 are shown as below.
 - Connect 24V+ and 24V- cables of power supply A with terminals 1 and 2 in row A respectively. And connect cables of module B in this way.
 - Feed all 24V+ output cables of power supply A through transducer A, and connect the cables of transducer A with terminals 5 to 8 in row A.
 - Feed all 24V+ output cables of power supply B through transducer B, and connect the cables of transducer B with terminals 5 to 8 in row B.

Note: the arrow direction in the transducer should be the same as the power supply module's current direction.

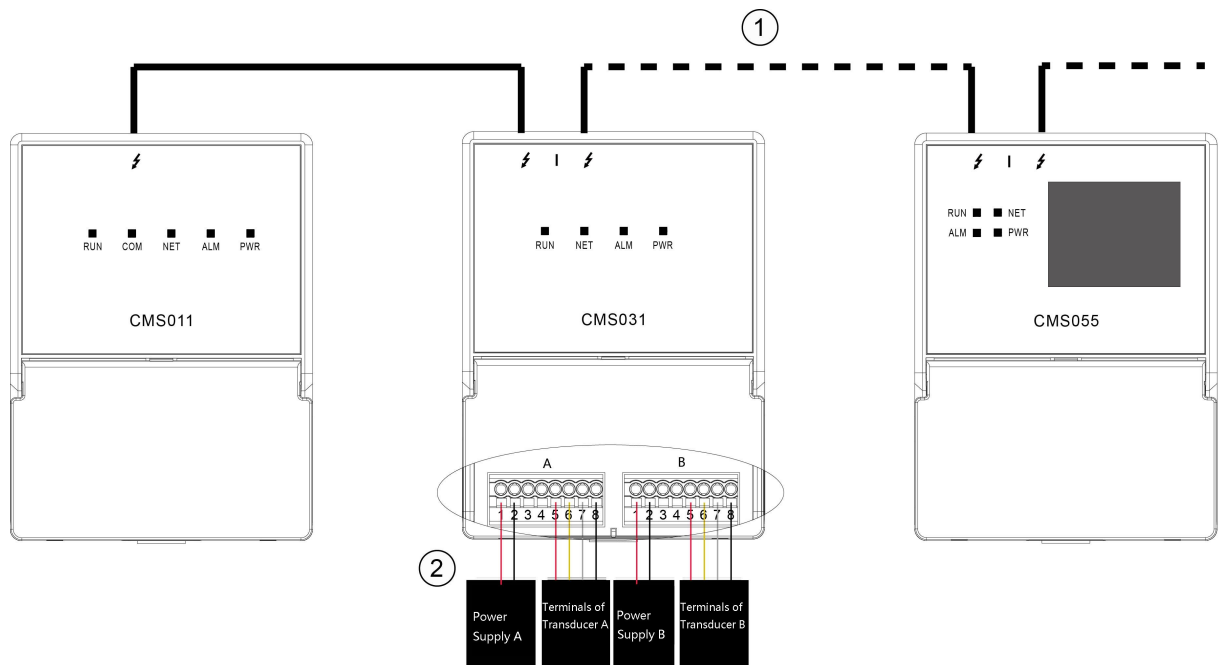


Figure 6-1 Wiring diagram

6.4 Selecting Transducer

CMS031 is compatible with 2 kinds of transducers whose specifications are as below. Each CMS031 can connect with up to two transducers to monitor 2 redundant powers.

- HAS1030-S2: rated input current is 20 A.
- HKS2010-S18: rated input current is 40A.

Section 7 Fault Analysis and Troubleshooting

There is a group of indicators on the module panel which indicate the module operating status. When the fault occurs, you can troubleshoot according to the table below.

Table 7-1 Indicator's illustration

Indicator	Status	Indication and solution
RUN	Green flashing	No configuration
	Solid green	Normal
	Solid red	Module failure
NET	Green on for seconds	With data transmission
	Off	Without data transmission
ALM	Solid green	Normal
	Solid red	Module alarm
PWR	Solid green	Normal
	Off	The power supply is abnormal. Please check the power supply or change the module.

Section 8 Appendix A- Logs

Serial number	Type	Logs
1	Fault information	Communication fault of 485
2	Alarm information	High voltage alarm of channel 1
3		Low voltage alarm of channel 1
4		High current alarm of channel 1
5		Low current alarm of channel 1
6		High power alarm of channel 1
7		Low power alarm of channel 1
8		High voltage alarm of channel 2
9		Low voltage alarm of channel 2
10		High current alarm of channel 2
11		Low current alarm of channel 2
12		High power alarm of channel 2
13		Low power alarm of channel 2
14		Alarm of unbalanced current
15		Alarm of unbalanced power
16	Data information	Configuration data area error
17		Calibration data area error
18	Cold and hot reset	Module cold reset
19		Module hot reset
20	Configuration	Successful configuration
21		The first time to receive time synchronization
22	Other events	Clear log record
23		Log circular recording

Section 9 Revision

Table 9-1 Revision history

Version	Applicable product model	Remarks
V1.0 (20230327)	CMS031-S01 V10.10.00	