Three-phase Motor Energy Storage Controller -PSME109 Series

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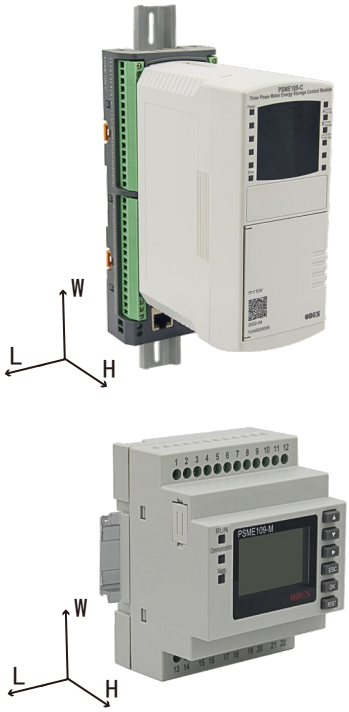
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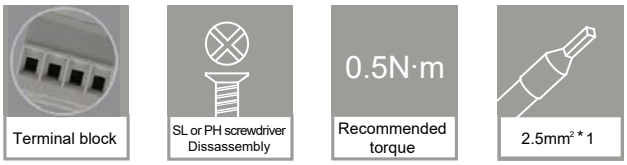
Product Overview



Three-phase motor energy storage controller -PSME109 series

Application scenarios and features

- The product is composed of control module and display module, which is connected by communication cable through RJ 45 interface.
- Applied to the spring and hydraulic energy storage scenarios of the circuit breaker, to realize the drive, control and protection functions of the energy storage motor.
- With the motor energy storage control in the phase separation circuit breaker.
- It has the functions of blocking and limiting flow, energy storage timeout, energy storage frequency limit protection and other functions during operation.
- Control module LED indicates the operation, control and fault status of the controller.
- Display module LCD display operating parameters and set parameters (current blocking value, energy storage overtime time) and other information.
- Real-time collection of unenergy storage signal and stop signal, for in-place logical judgment.
- Output is directly connected to the motor load, replacing the contactor function, and simplifying the wiring real-time output energy storage pressure and energy storage center.
- Control module size: 190mm (L) x 72mm (w) x 147.6 mm (H)
- Display module size: 90 mm (L) x 71mm (w) x 61.2 mm (H)
- Installation method (compatible with longitudinal and horizontal installation): the control module is compatible with fixed installation and guide rail installation.



Order Information

PSME109 series naming rules

Typical models	PSME	109	-C	1	220V

Series Model
PSME=Three-phase circuit breaker controller

Functionality Definition
109=Energy storage controller

Functional module code
-C=Control module
-M=Display module

Customized functions (for -C modules)
None = standard (clause 8.1 in the function logic), no special functions
-1=Customize 24-hour energy storage counting logic;
-2=Customize no motor control function

Voltage Rating (for the -C modules)
100VDC = auxiliary/motor supply voltage of 100VDC;
110VDC = auxiliary/motor supply voltage of 110VDC
110VAC = auxiliary/motor supply voltage of 110VAC
125VDC = auxiliary/motor supply voltage is 125VDC;
125VAC = auxiliary/motor supply voltage is 125VAC
220VDC = auxiliary/motor supply voltage is 220VDC;
220VAC = auxiliary/motor supply voltage is 220VAC
250VDC = auxiliary/motor supply voltage of 250VDC;
250VAC = auxiliary/motor supply voltage of 250VAC
220V = Auxiliary power supply voltage is 220VAC;
motor power supply is 220VAC rectified by rectifier bridge

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Order Information

General model of PSME109 series

ODES Model	ABB Material Number	Model Description	Remarks
PSME109-C/110VDC	1HZB000083R3142	Working power supply: 85-265VAC / 88-370VDC Motor power supply: DC110V / DC125V / DC220 V / DC250V	The DC type-the control module
PSME109-C/125VDC			
PSME109-C/220VDC			
PSME109-C/250VDC			
PSME109-C/220VAC	1HZB000083R3217	Working power supply: 85-265VAC / 88-370VDC Motor power supply: AC220V	
PSME109-C/220V	1HZB000083R3239	Working power supply: 85-265VAC / 88-370VDC Motor power supply: the power supply after the rectifier bridge rectification	
PSME109-C1/220VDC		None	Customized 24-hour energy storage count
PSME109-C2/220VDC	1HZB000083R3259	None	Only counting, no control
PSME109-M	1HZB000083R3143	None	Display module, ac/DC universal
PSME109-C/100VDC		Working power supply: 50-125VDC Motor power supply: DC100V	The DC type-the control module

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Human Machine Interface



Control module



Display module

Control module

	Definition	Description
Indicator lamp	Run	Green, indicating the current power state of the controller, constant light indicates that the control is in the live state, off means that the controller is not live state.
	A-phase energy storage	Green, flashing indication is energy storage, constant light indicates that energy storage has been completed, extinguished means that energy storage is insufficient.
	B-phase energy storage	Green, flashing indication is energy storage, constant light indicates that energy storage has been completed, extinguished means that energy storage is insufficient.
	C-phase energy storage	Green, flashing indication is energy storage, constant light indicates that energy storage has been completed, extinguished means that energy storage is insufficient.
	Alarm	Red, indicating the current state of the equipment, constant light indicates that it is in the fault state, extinguished indicates the normal state of the equipment.

Display module

	Definition	Description
Indicator lamp	RUN	Green, indicating the current power state of the controller, constant light indicates that the control is in the live state, off means that the controller is not live state.
	Communication	Green, indicating the current communication status, flashing indicates communication, extinguish means not communication.
	Alarm	Red, indicating the current state of the equipment, often bright indicates that it is in the fault state, extinguished indicates the normal state of the equipment.
Button	▲	Use to move the select cursor up or turn the page up.
	▼	Use to move down to select a cursor or to turn pages down.
	▶	Use to move right to select the cursor or turn the page right.
	ESC	For returning to the previous level menu
	OK	For entry to selection or confirmation
	RESET	To reset the fault information

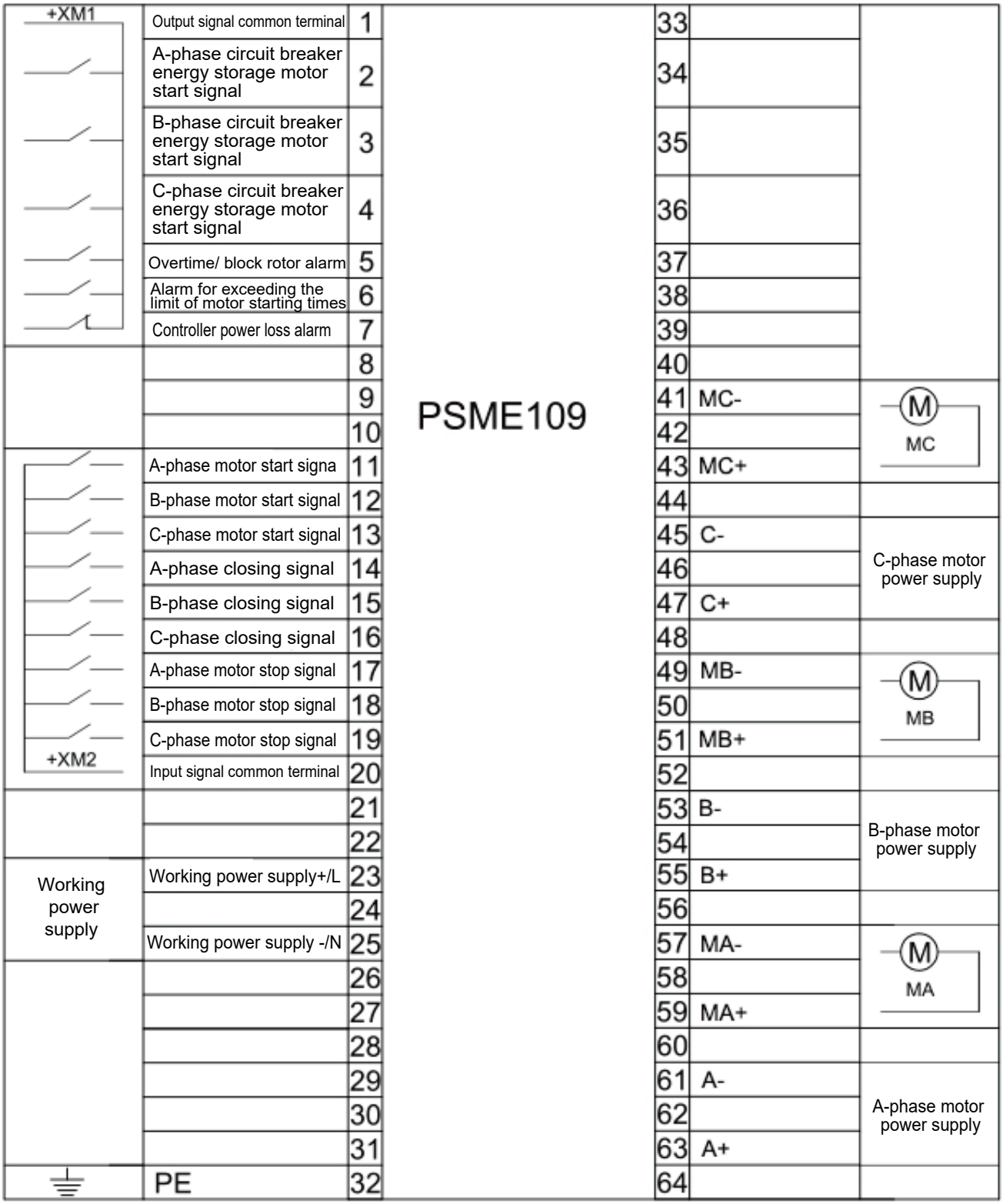
Three-phase Motor Energy Storage Controller -PSME109 Series
Product Technical Parameters and Executive Standards

Input circuit-Auxiliary/Motor Power			
DC voltage	100VDC,110VDC,125VDC,220VDC,250VDC	AC voltage	110VAC，125VAC，220VAC,250VAC
Input loop-switch quantity			
Effective recognition voltage	55%-75%Un (Un is the working supply voltage)		
Output loop-motor load			
Motor output mode relay contact	Relay contact and switching tube combination	motor load	≤2000W
Maximum operating current	19A/100VDC, 19A/110VDC, 17A/125VDC, 10A/220VDC, 5A/250VDC		
Protection requirements			
Protection class	IP30		
Product power consumption	Overall power consumption of control module: ≤10W (MAX) Overall power consumption of display module: ≤2W (MAX)		
Terminal block	Screw terminals	Wire diameter of terminal block	≤2.5mm²

EMC (Electromagnetic Compatibility)		
Anti-interference	GB/T 17626.1-2006	Electromagnetic compatibility test and measurement techniques -Tmmunity Test GeneralIntroduction
Electrostatic discharges	GB/T 17626.2-2018	Level 4(15kV/air discharge, 8kV/contact discharge)
Radio-frequency radiation	GB/T 17626.3-2016	Level 3（10V/m）
Electric rapid transients	GB/T 17626.4-2018	Level 4（±4kV Power，±2kV Input/Output）
Surge (Impact)	GB/T 17626.5-2019	Level 4（common mode ±4kV, differential mode ±2kV）
RF conduction interference	GB/T 17626.6-2017	Level 3（10V）
Damage oscillation wave	GB/T 17626.18-2016	Level 3 (±2.5kV line to ground, ±1kV line to line)
Isolation parameter		
Insulation property	GB/T 14598.3-2006	
Insulation resistance		The insulation resistance of each conductive loop to the ground and between each conductive loop is not less than 100MΩ
Dielectric strength		AC 2kV，1min，leakage current 5mA
surge voltage		1.2/50μs，±5kV，3 times
Vibration and collision		
Vibration	GB/T 2423.10-2019	Environmental experiments part 2： verification Methods ExperimentsFc Vibration (sinusoidal)
Vibration response		Acceleration amplitude of 10m/s²
Vibration durability		Acceleration amplitude of 20m/s²
Shock	GB/T 2423.5-2019	Environmental Testing, Part 2: test method to verify Ea and guidelines：lash
Shock response		Acceleration amplitude of 98m/s²
Shock durability		Acceleration amplitude of 294m/s²
Collision	GB/T 2423.5-2019	Environmental testing for electrical and electronic products - Part 2 Test methods Test Ea and guidelines impact
Collision response		Acceleration amplitude of 196m/s²
Environmental data		
Salt spray test	GB/T 2423.17-2008	(35±2)℃，6.5~7.2PH, 96H
Cyclone	GB/T 2423.21-2008	25℃，altitude≤4500m
Working/Strage	-25℃~+70℃/-40℃~+70℃	
Flame retardant		
Flame retardant grade	UL94 V-0 flame retardant(750℃，30s)	

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Product Terminal Definition



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Product Functional Logic

1 Motor energy storage control logic

Operation logic table of the energy storage motor		
Energy storage motor status	Start motor input signal (high level valid)	Motor stop signal (low level effective)
RUN	1	1
Cease	0	0
	1	0

When the A-phase energy storage motor starts, 'the A-phase circuit breaker energy storage motor start signal 'closes, and when the A-phase energy storage motor stops, 'the A-phase circuit breaker energy storage motor start signal 'opens.
When the A-phase energy storage motor starts, 'the A-phase circuit breaker energy storage motor start signal 'closes, and when the A-phase energy storage motor stops, 'the A-phase circuit breaker energy storage motor start signal 'opens.
When the A-phase energy storage motor starts, 'the A-phase circuit breaker energy storage motor start signal 'closes, and when the A-phase energy storage motor stops, 'the A-phase circuit breaker energy storage motor start signal 'opens.

2.Sequential start control logic

In order to avoid the sequential start function of any two items starting the control module at the same time, for example, A and B receive the energy storage command at the same time, the waiting time T after phase A starts the energy storage for phase B energy storage, and the time T can be adjusted by the display module, from 10ms to 5000ms, the default is 500ms, and the minimum step size of the setting is 1ms.

3.Energy storage time over limit protection

When any phase starts energy storage, the control module can monitor the energy storage time. When it exceeds the threshold, the control module automatically stops energy storage and outputs an alarm signal. The alarm can be reset by the display module, and the threshold can be set by the display module.

4.Energy storage current over limit protection

The control module monitors the energy storage current. When the current exceeds the threshold I, the control module automatically stops the energy storage and outputs an alarm signal. The alarm can be reset through the display module. When the motor starts, the module has the function of avoiding surge current to avoid false alarm. Threshold I can be set by the display module, 1A to 20A can be set, the default is 15A, and the minimum step size is 0.1A.

5.24 hours energy storage times over limit protection

Within 24 hours, if any of the A/B/C one-phase energy storage motor starts more than X times, the module passes the threshold contact output one alarm signal, which is normally open contact.When an alarm is generated, you can reset the storage count using the display module. After the reset, all energy storage counts within 24 hours are cleared, but the total energy storage count is not affected.You can use the display module to distinguish which phase the alarm is generated.If the controller module is powered off, the alarm is cleared.The threshold X can be set by the display module, 1 to 20 can be set, the default is 10.

6.Power loss alarm logic

The alarm contact is a normally closed contact. When the energy storage control module loses power, this contact outputs an alarm signal. This alarm cannot be reset.

7.Display Module Energy Storage Counting Logic

The control module counts and saves the number of times each phase (A/B/C) is stored energy, and this count value is not lost even in the event of power failure. The display module can obtain the historical number of stored energy through communication with the control module and display it.

8.Hour storage count logic for display module 24-hour storage count logic

8.1 The control module monitors the number of times each phase (A, B, C) stores energy within the past 24 hours. Each time energy is stored, the count value is accumulated. This count value is reset to zero after the control module loses power and restarts. The display module can display the 24-hour energy storage count by communicating with the control module.

8.2 Customized 24-hour energy storage count function (invalid energy storage count): The control module monitors the number of times each phase (A, B, C) stores energy within the past 24 hours. Each time energy is stored, the count value is accumulated. Whenever there is a closing operation, the 24-hour energy storage count will not be accumulated in the next energy storage operation. The remaining 24-hour energy storage count is the invalid energy storage count. The invalid energy storage count can be obtained by communicating with the display module through the control module and displayed.

9.Logic for counting the number of times the display module is closed and locked

The control module counts and saves the number of closing operations for phase A/phase B/phase C. This count value is not lost even when power is off. The display module can obtain the historical number of closing operations through communication with the control module and display it.

10.Screen backlight function

The screen backlight of the Min model automatically turns off when there is no key operation, but it does not turn off when there is an alarm.

11.Display module parameter settings

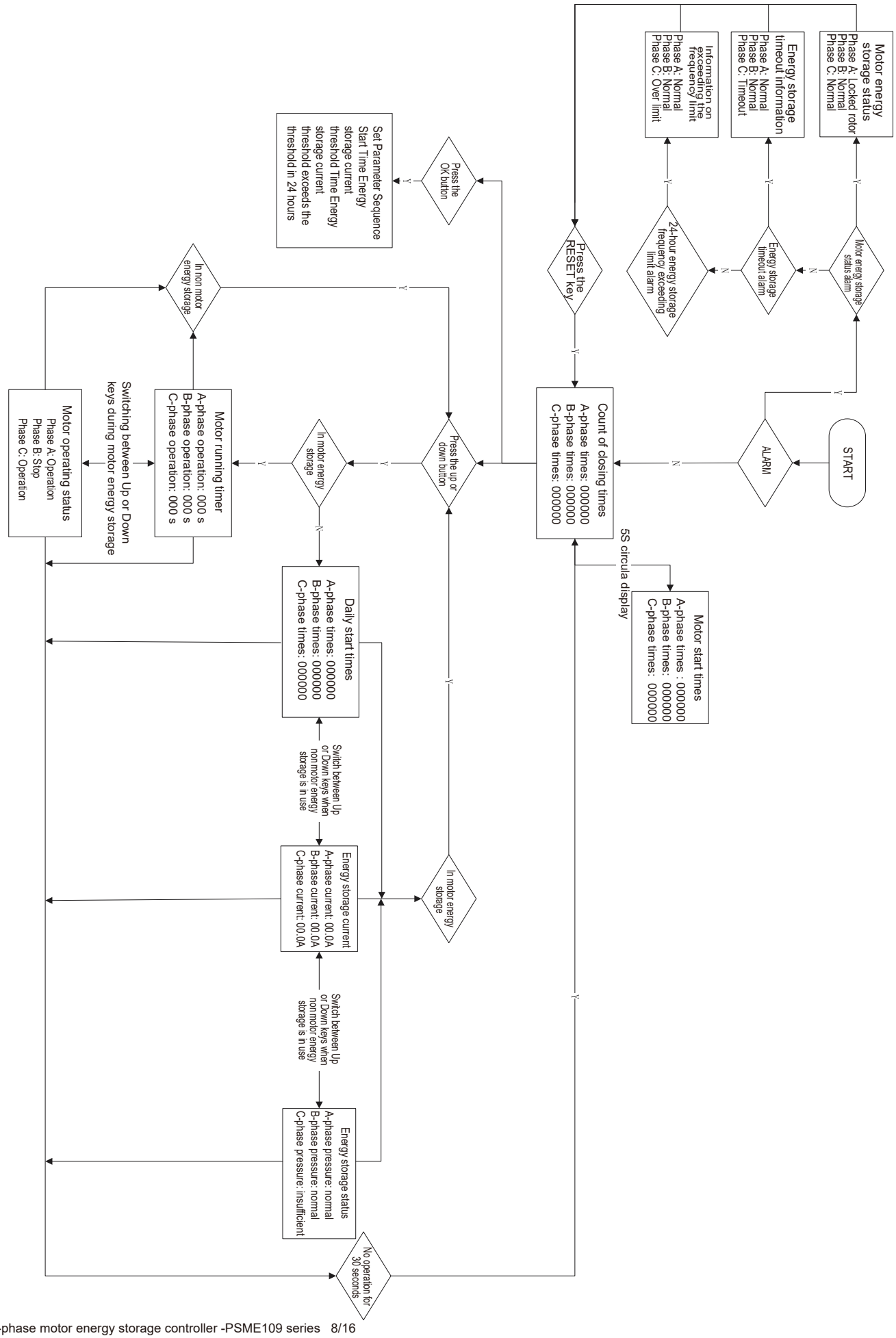
When the setting state is not entered, the number of closing times and motor startup times are alternately displayed. When the setting of the page module is not static (the motor does not operate), press the OK key to enter the parameter setting interface. After the parameter setting is completed, press the OK key and enter the password to confirm modifying the parameter.

Note: 1. The password of the display module is preset according to the requirements of customers, and the password is 6 digits, each 0-9 combination, which can only be modified by the original factory and cannot be modified after the appearance

2. C2 only retains the function of count overlimit and alarm issuing in 8.1, excluding all the functions in function 2, 3, and 4 above

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Display Module Interface Content and Interface Display Logic Diagram



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Display Module Interface Operating Instructions

1.Enter the parameter setting interface, in the static (motor does not operate)state, press "OK" button to enter the parameter setting interface, after 30s of non-operation， return to the "closing count" and "number of times of motor startups count" alternating display interface.

2.Sequential start time setting: in the parameter setting interface, press "▲" and "▼" button to select "Sequential start time", press "OK" button to enter the specific parameter setting, press "▶" button to move the cursor to the corresponding position, press "▲" button to increase the number, press "▼" button to decrease the number, set up the time to enter the administrator's password interface, the password is entered and pressed the "OK" button, the sequential start time setting is completed,if the password is not inputted or inputted incorrectly, the parameter setting will not be successful, press "ESC" button to return to the previous level interface.

3.Energy storage overrun time setting: In the parameter setting interface, press "▲" and "▼" button to select "energy storage overrun time", press "OK" button to enter the specific parameter setting, press "▶" button to move the cursor to the corresponding position, press "▲" button to increase the number, press "▼" button to decrease the number, set up the time and press "OK" button to enter the administrator's password interface, press "OK" button to finish entering the password and the energy storage overrun time setting is completed, if the password is not inputted or inputted incorrectly, the parameter setting will not be successful, press "ESC" button to return to the previous level interface.

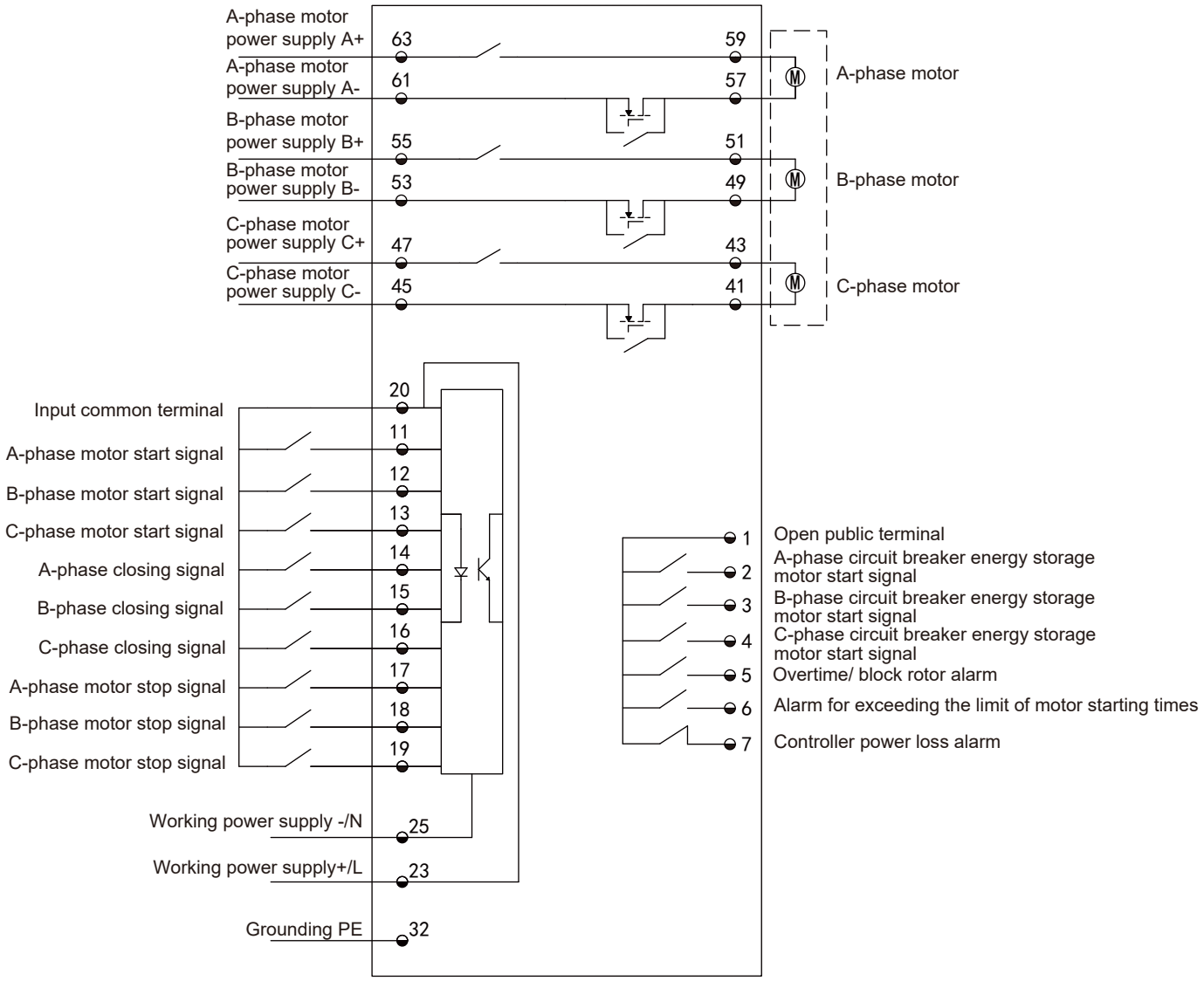
4.Energy storage current threshold setting: In the parameter setting interface, press "▲" and "▼" button to select "energy storage current threshold", press "OK" button to enter the specific parameter setting, press "▶" button to move the cursor to the corresponding position, press "▲" button to increase the number, press "▼" button to decrease the number, press "OK" button to enter the administrator's password interface after the password is inputted and press "OK" button to finish the setting of the energy storage current threshold, if the password is not inputted or inputted incorrectly, the parameter setting will not be successful, press "ESC" button to return to the previous level interface.

5.Setting of 24-hour overruns: In the parameter setting interface, press "▲" and "▼" to select "24-hour overruns", press "OK" to enter the specific parameter setting, press "▶" to move the cursor to the corresponding bit, press "▲" to increase the number, press "▼" to decrease the number, set the number of times to enter the administrator's password interface, enter the password and press "OK" to finish the password input, the 24-hour overruns will be finished, and the parameter setting will be unsuccessful if no password is inputted or inputted incorrectly, press "ESC" to go back to the previous level interface.

6.In the parameter setting interface for language setting, press "▲" and "▼" button to select "language", press "OK" button to enter the specific parameter setting, press "▲" button to select upward, press "▼" button to select downward, select the language and press "OK" button to enter the administrator's password interface, press "OK" button to finish inputting the password, the language setting will be completed, if the password is not inputted or inputted incorrectly, the parameter setting will be unsuccessful, press "ESC" button to go back to the previous level of the interface.

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Typical Application Wiring Diagram

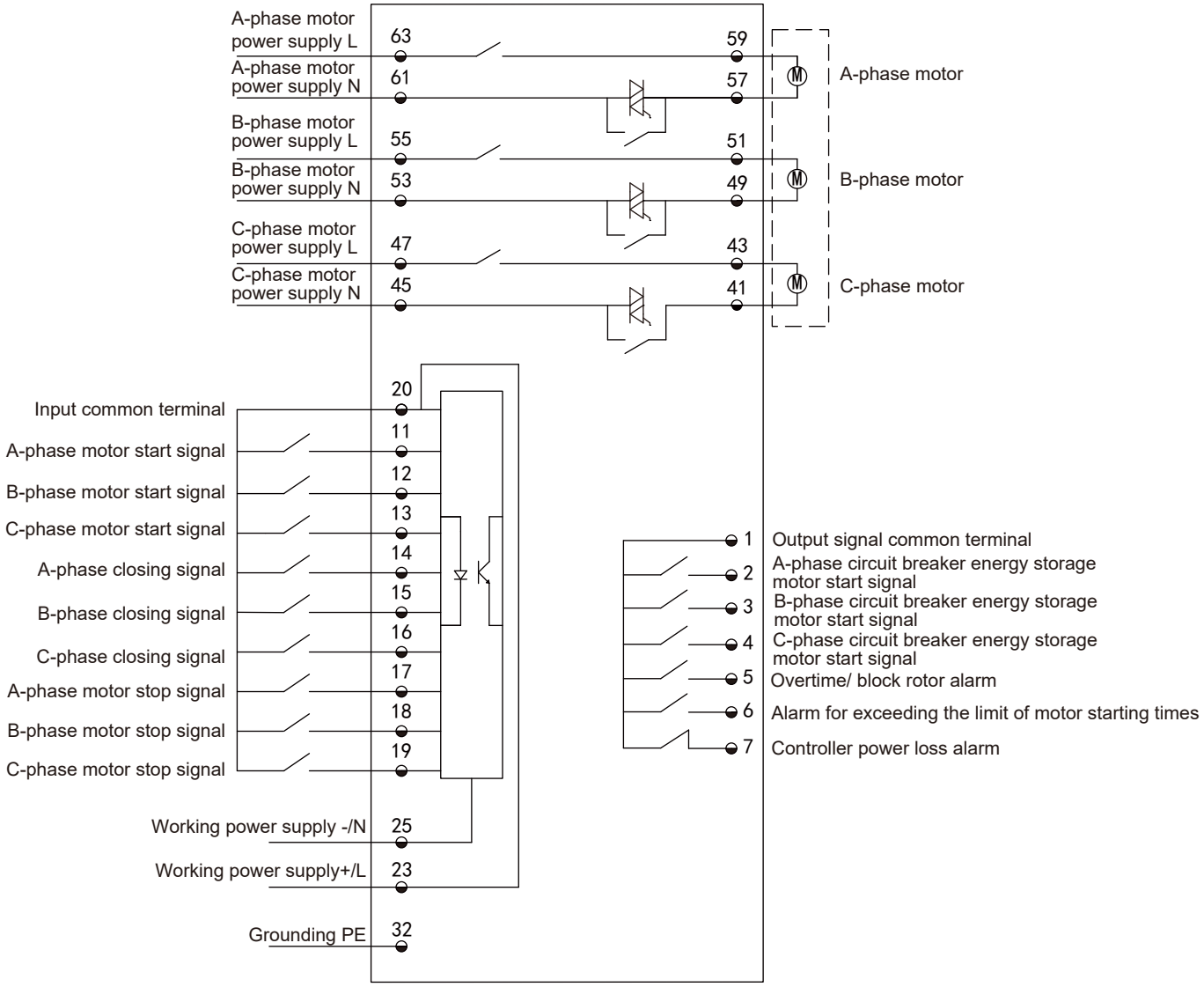


Note: 1. The voltage of the input circuit (external start and stop conditions) is the same as the working voltage, and the output circuit (start and alarm signals) uses dry contact output.

2. The working power is DC power, the motor power is DC power, the typical model is PSME109-C / 220VDC.

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Typical Application Wiring Diagram

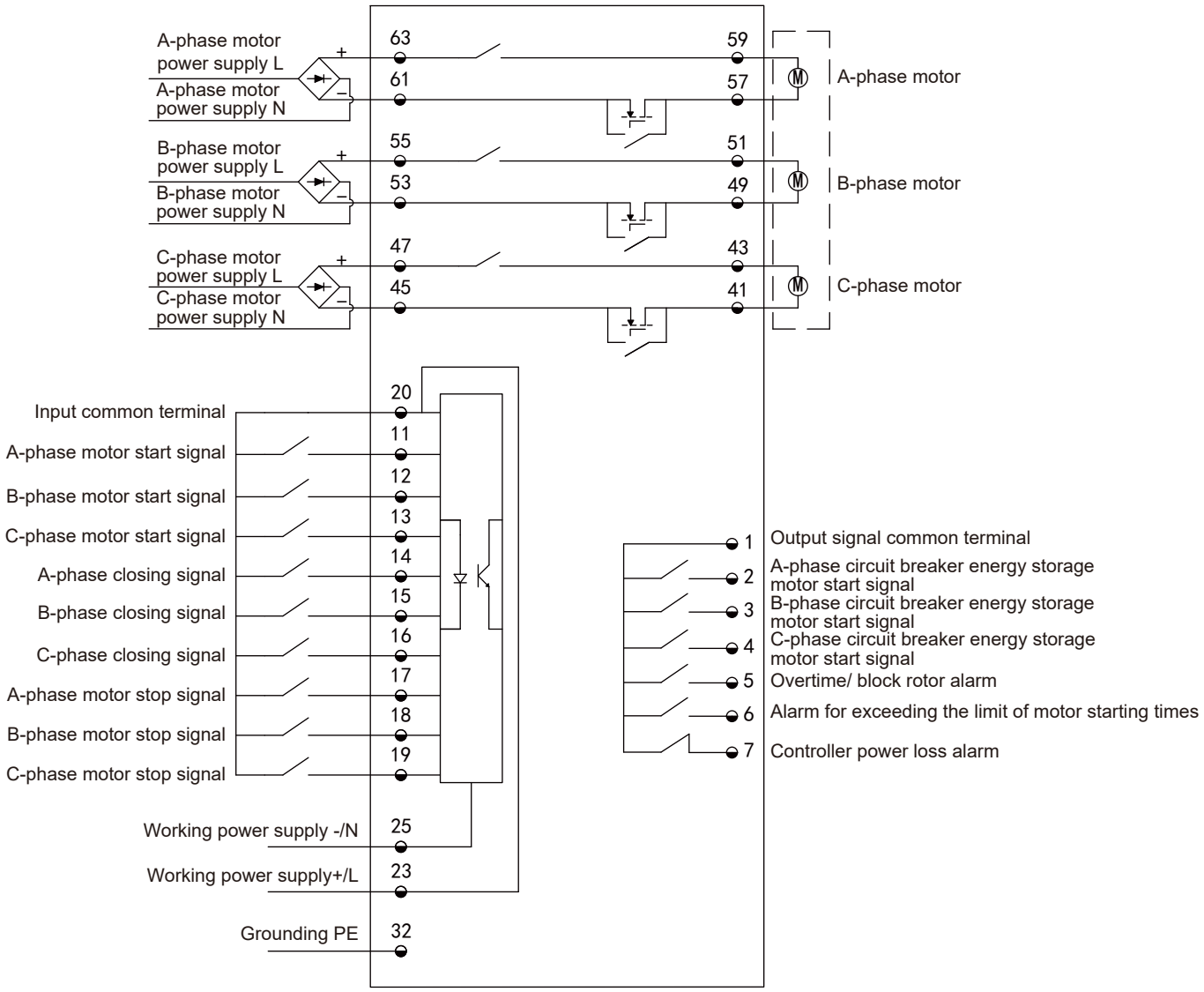


Note: 1. The voltage of the input circuit (external start and stop conditions) is the same as the working voltage, and the output circuit (start and alarm signals) uses dry contact output.

2.The working power supply is DC power supply, and the motor power supply is AC power supply. The typical model is PSME 109-C/220VAC.

Three-phase Motor Energy Storage Controller -PSME109 Series

Typical Application Wiring Diagram

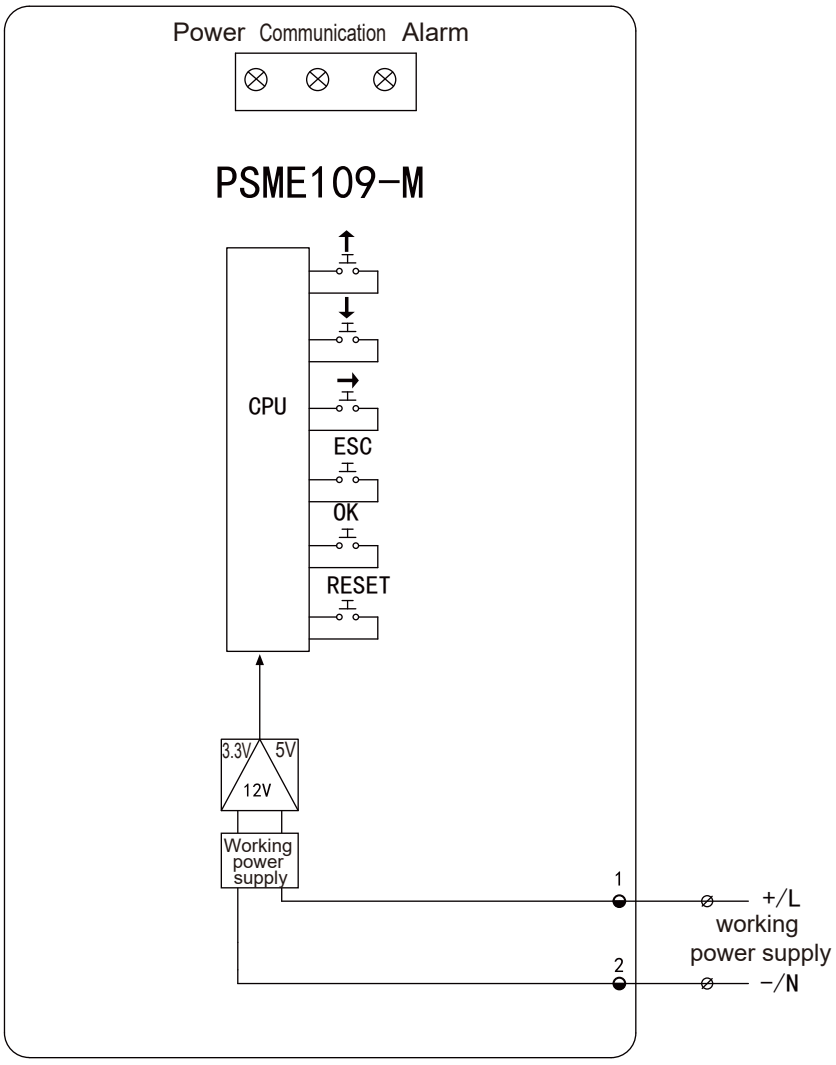


Note: 1. The voltage of the input circuit (external start-stop conditions) is the same as the working voltage, and the output circuit (start and alarm signals) adopts the dry contact output.

2.The working power supply is the DC power supply, and the motor power supply is to convert the AC power supply to the DC power supply through the rectifier bridge. The typical model is PSME109-C / 220V.

Three-phase Motor Energy Storage Controller -PSME109 Series

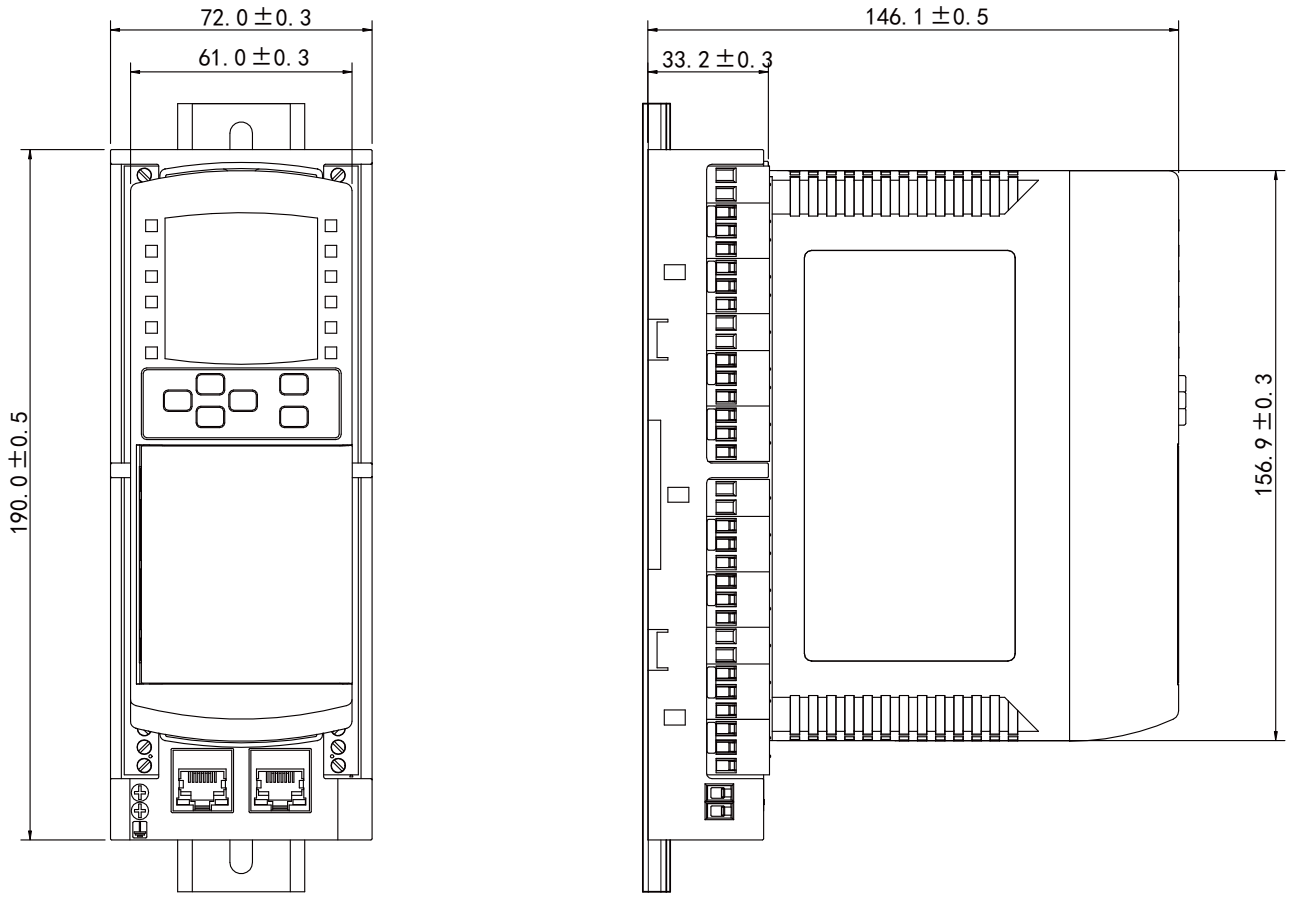
Typical Application Wiring Diagram



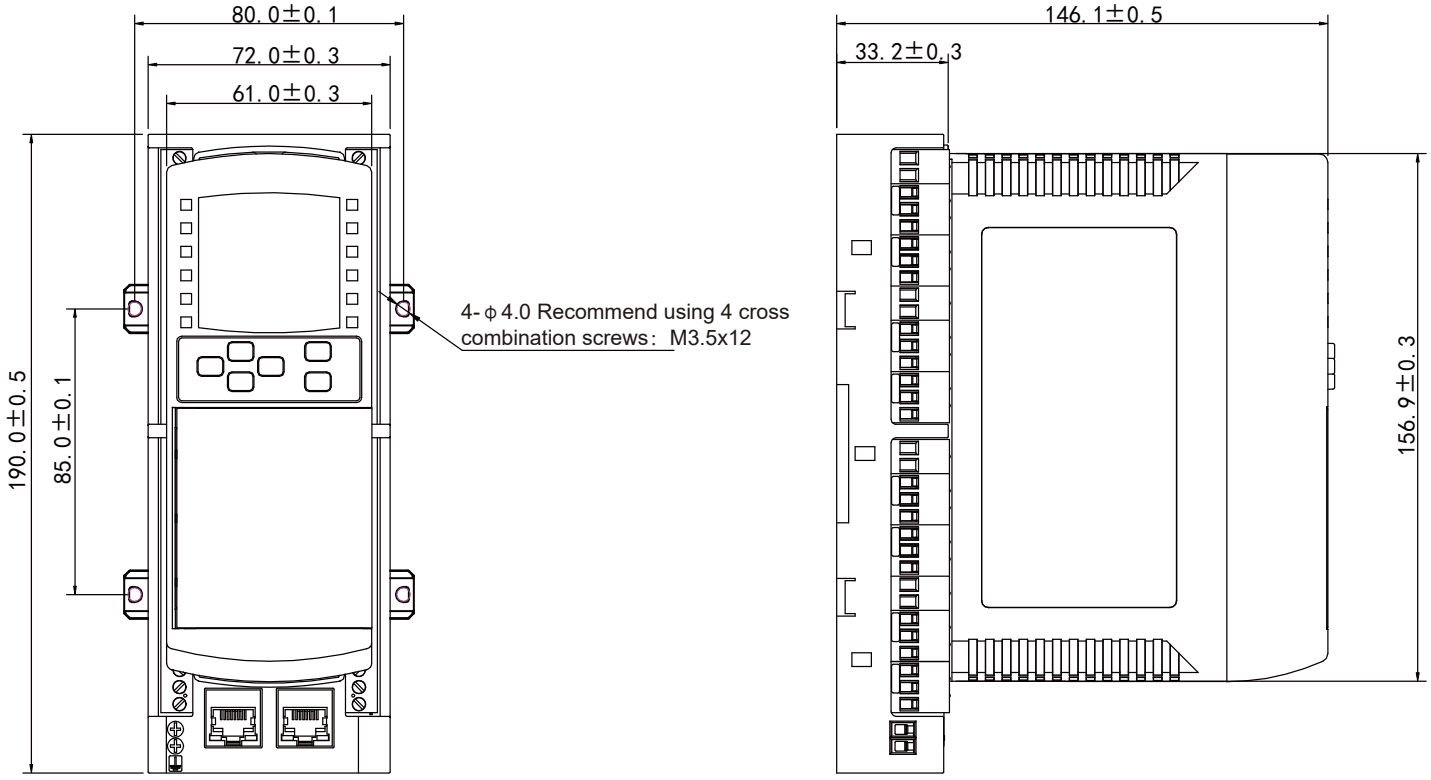
Typical application wiring diagram of display module

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Product Installation Dimensions Drawing



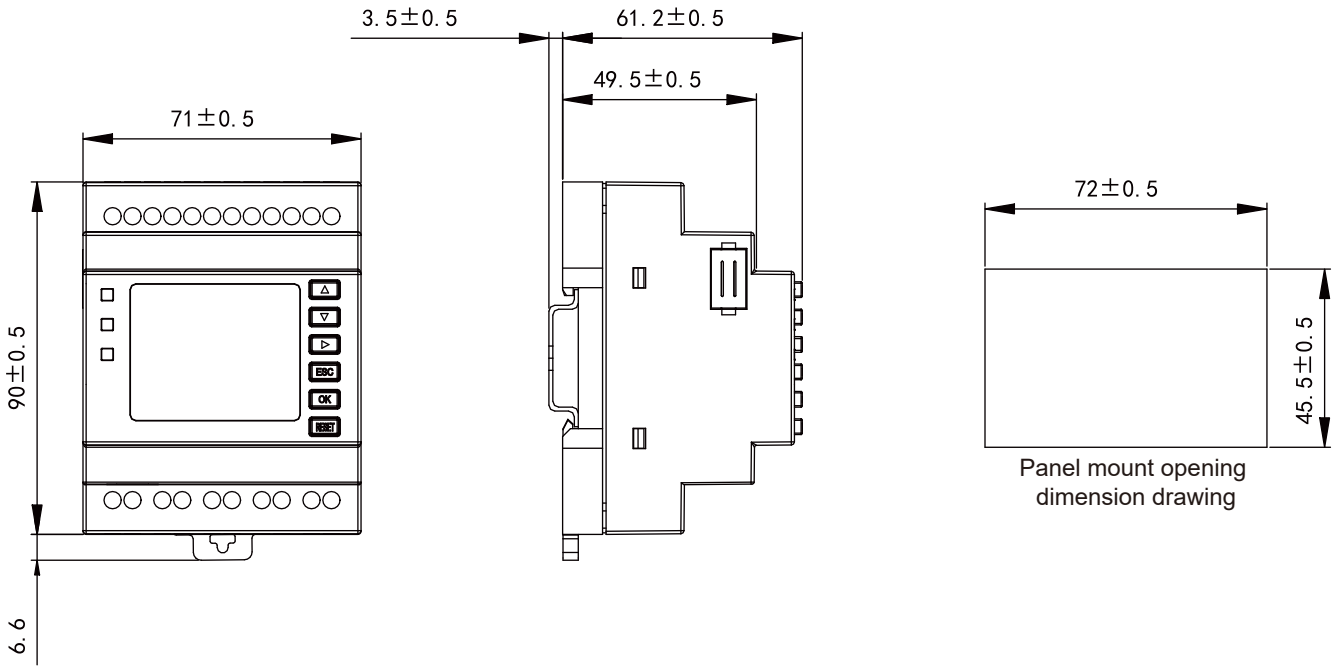
Control Module DIN-Rail Mounting Dimension



Control Module Fixed Mounting Dimension

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Product Installation Dimensions Drawing



Panel mount opening dimension drawing

Installation dimensions drawing of dispaly module

Three-phase Motor Energy Storage Controller -PSME109 Series

Installation Diagram of Product Foolproof Pin


Foolproof pin(pin)

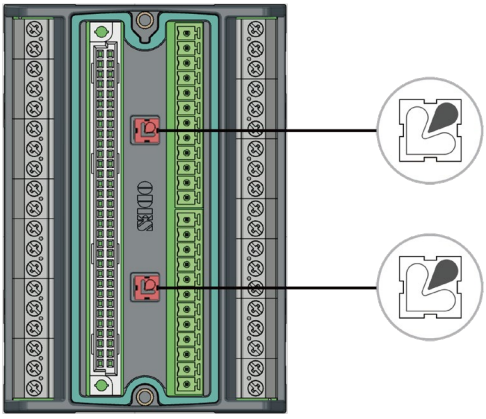

Combination (pin&hole)

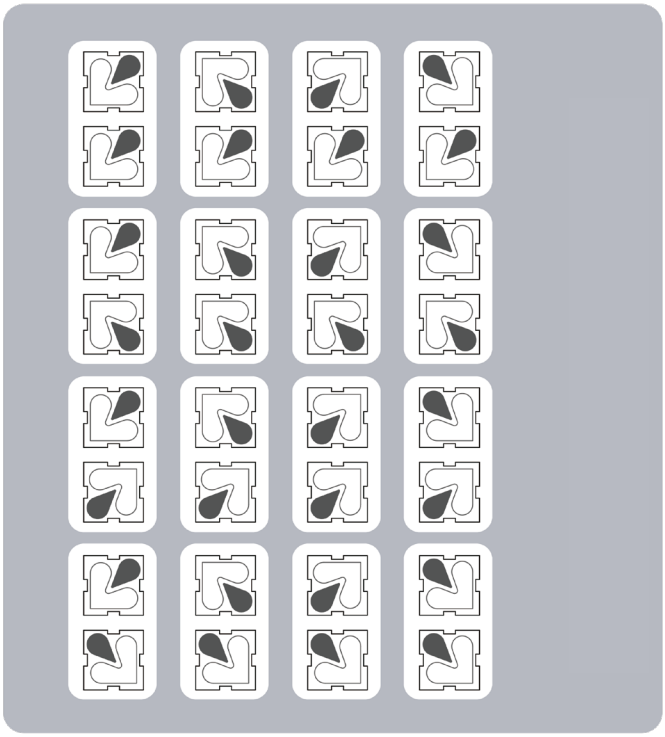

Combination (pin&pin)


Foolproof pin (hole)


Combination (pin&hole)


Combination (hole&hole)





List of pin-type foolproof pin combination

Schematic diagram of the combination of the base pin-type foolproof pin arrangement

Note: 1. It's recommended according to the above table combination of foolproof pins (pins, holes) installation, but also according to your needs.
2. The direction of the plug-in module pin should correspond to the base, please refer to the combination diagram for selection.