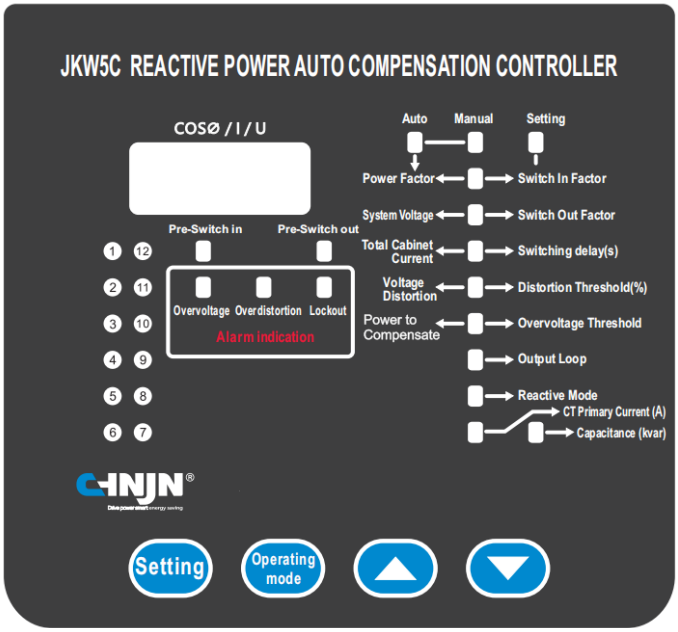
Reactive power automatic compensation controller

无功功率自动补偿控制器

用户使用手册

User Manual



CHNJN® 锦能电力

Drive power smart energy saving

1. Product overview

JKW series automatic reactive power compensation controller, suitable for low voltage 400V system balance distribution network reactive power automatic regulation control, so that the power factor of the power grid to reach a predetermined state, improve the utilization efficiency of power transformers, reduce line loss, improve the quality of power supply voltage, reduce or eliminate force regulation fines, improve economic and social benefits.

2. Controller Model

JKW5C-12 12-loop common compensation node output line voltage 400V

JKW5C-12 12-loop common compensation node output phase voltage 230V

JKW5C-12 12-loop common compensation node output line voltage 400V with communication (custom order required)

JKW5C-12 12-loop common compensation node output phase voltage 230V with communication (custom order required)

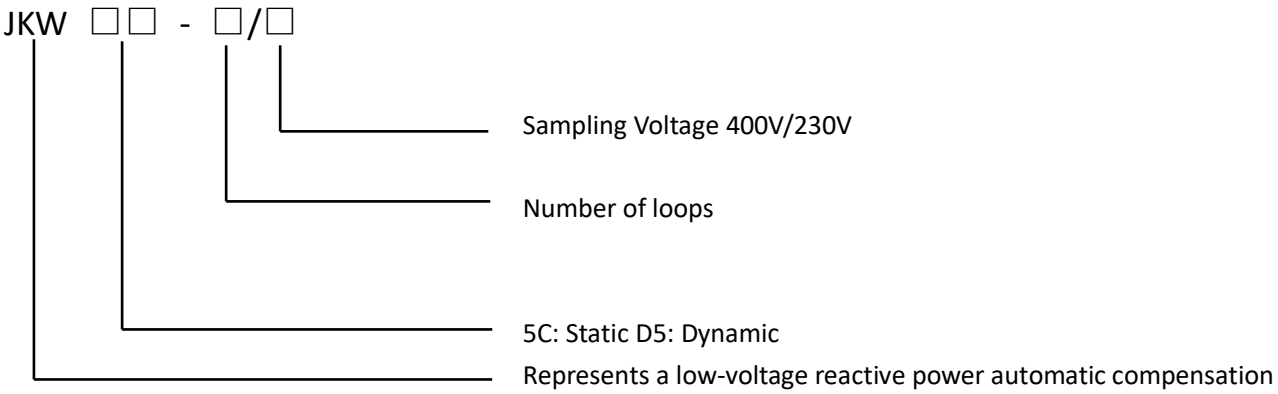
JKWD5-12 12-loop common compensation active output line voltage 400V

JKWD5-12 12-loop common compensation active output phase voltage 230V

JKWD5-12 12-loop common compensation active output line voltage 400V with communication (custom order required)

JKWD5-12 12-loop common compensation active output phase voltage 230V with communication (custom order required)

3. Model meaning



4. Function features

● In power factor mode, it has the function of switching shock blocking.

● Can automatically identify the current signal polarity, identification accuracy and reliability is very high.

● Simple operation and friendly human-computer interaction.

● With harmonic measurement and protection function.

● The control parameters are all digital adjustable.

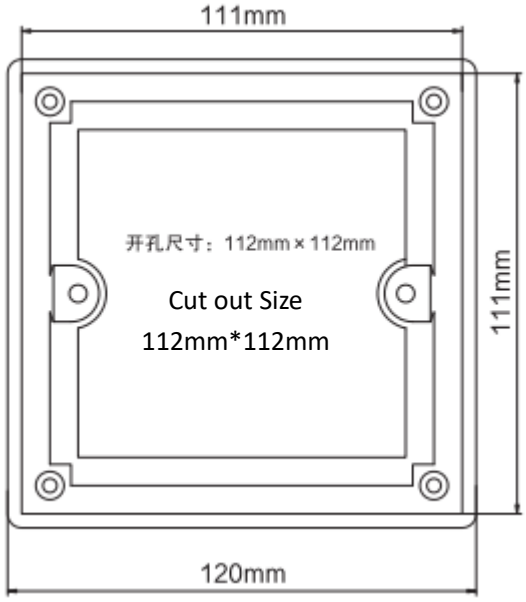
● With manual and automatic operation mode, easy installation and debugging.

● With overvoltage protection function.

● Once the control parameters are adjusted, they are permanently saved and not lost after power failure.

5. Technical parameters

- Rated voltage: phase 230V, line 400V.
- Rated frequency: 50Hz.
- Voltage range: 90%-120%.
- Current range: 0-5.5A.
- Power consumption: <3VA.
- Node control capacity: 5A/220V/ loop.
- Active control capacity: -12V/8mA/ loop.
- Switch control mode: cycle switching (equal capacity), optimal switching (unequal capacity).
- Installation mode: embedded installation, accessories fixed.
- Opening size :110mm×110mm.

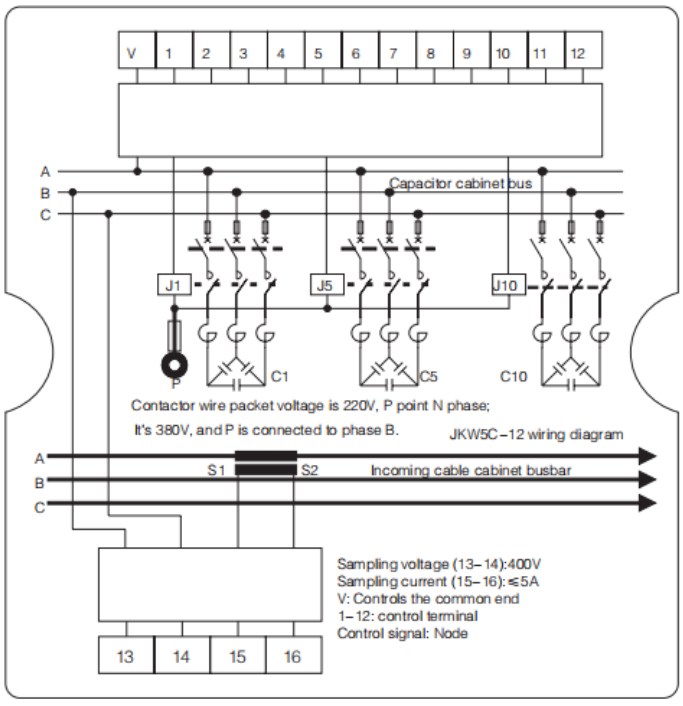


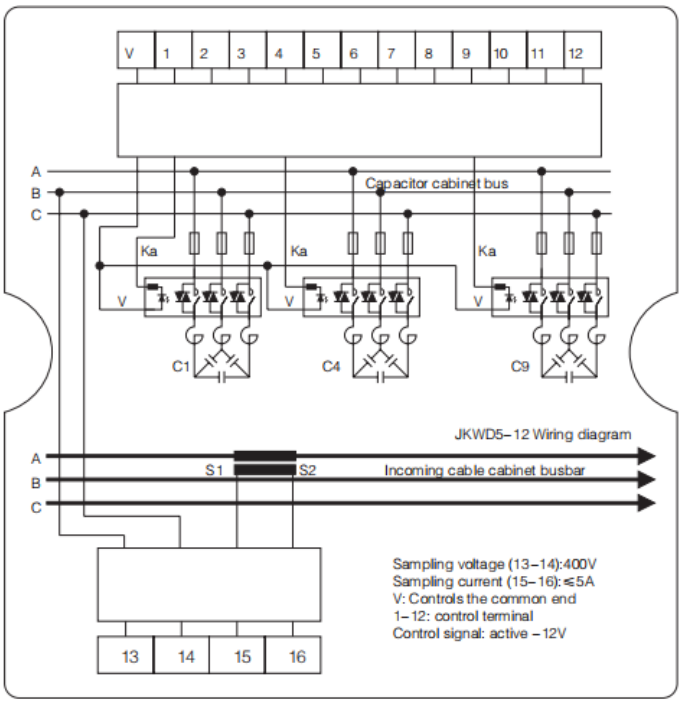
6. Usage conditions

- The altitude is not higher than 2500 meters.
- Ambient temperature -25℃ -40℃ .
- The air humidity does not exceed 50% at 40℃ and 90% at 20℃ .
- There is no violent vibration at the installation site.
- Voltage distortion rate <20%.

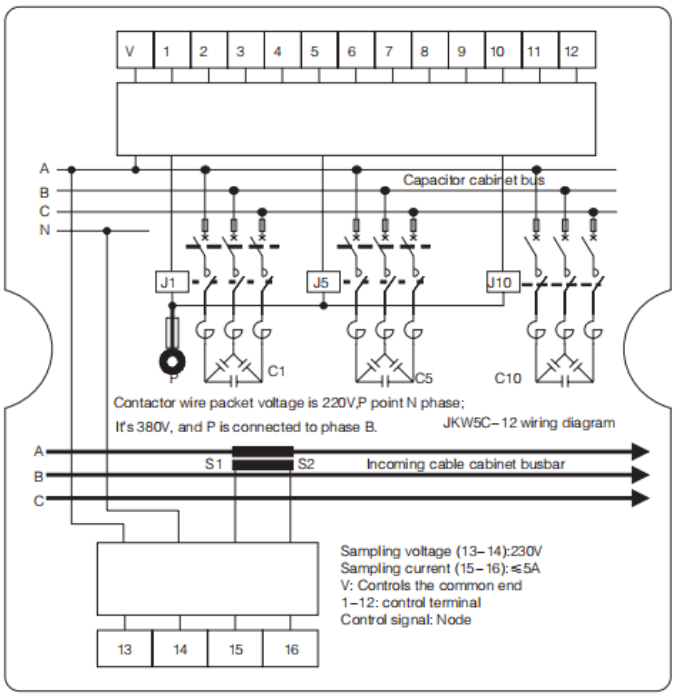
7. JKW diagram

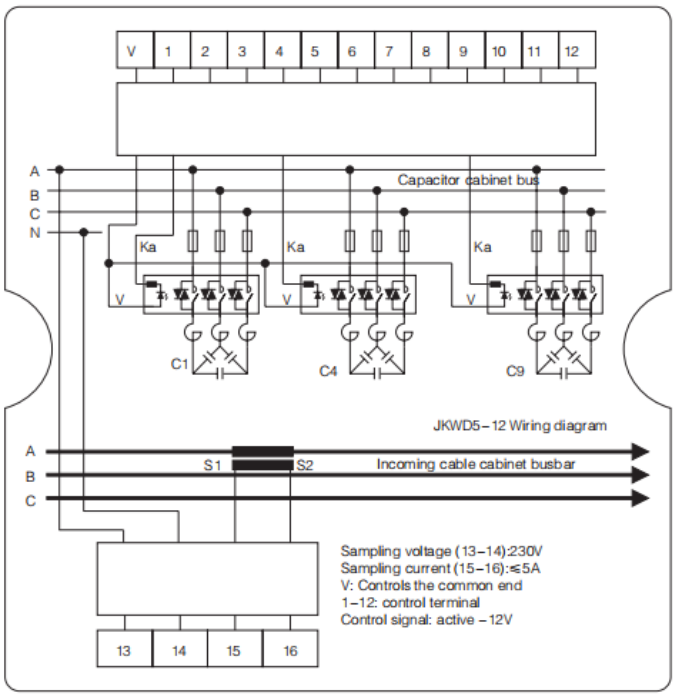
Line voltage sampling 400V



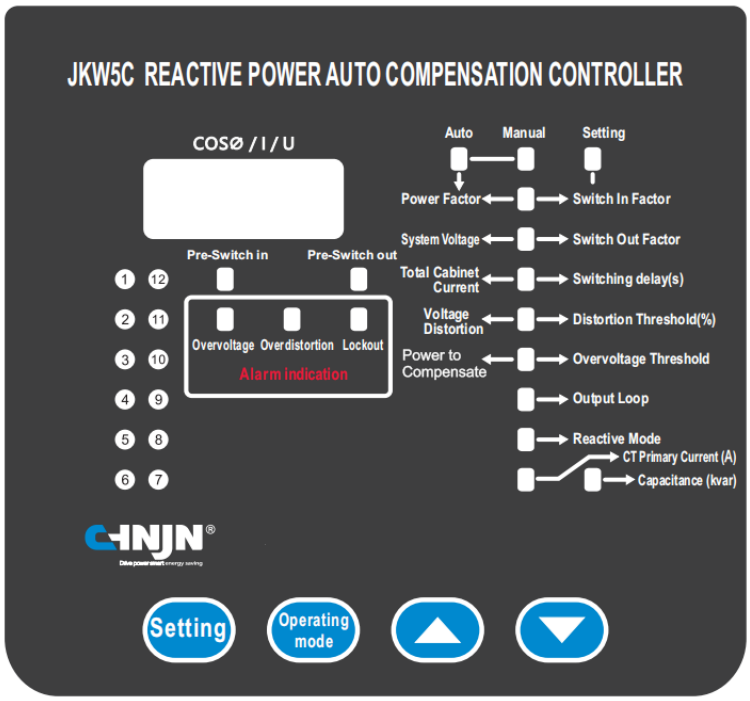


Phase voltage sampling 230V





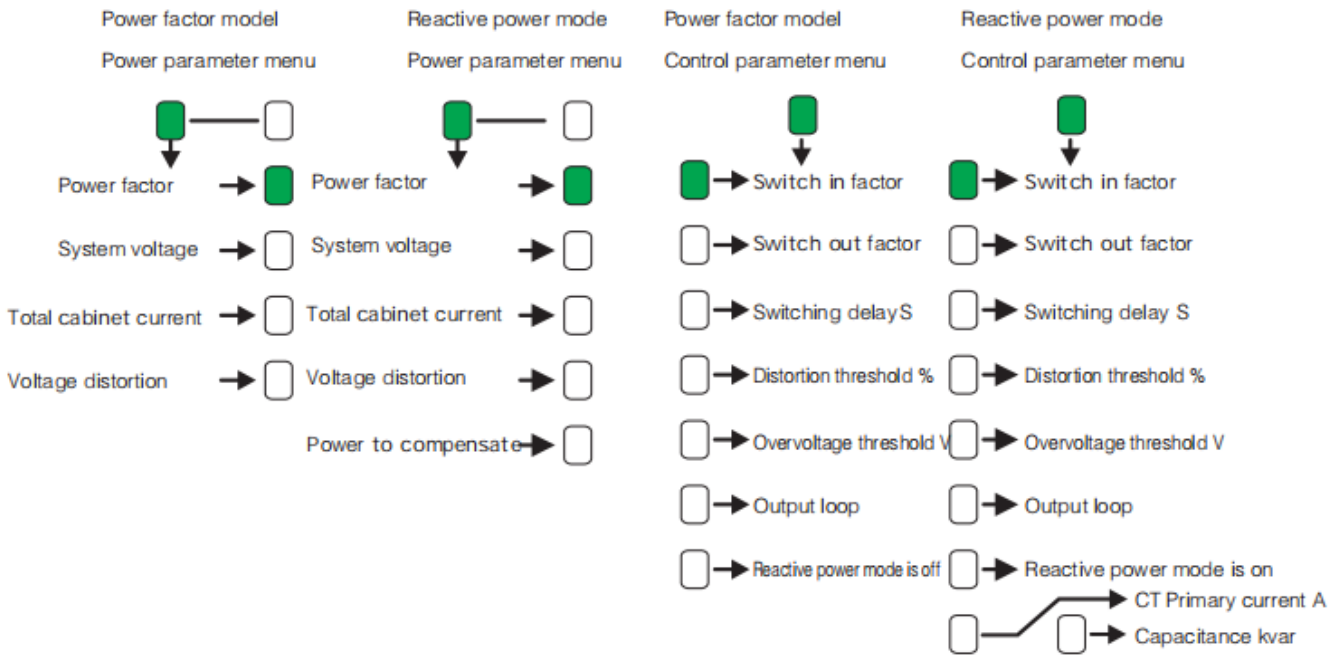
8. Controller panel



9. Button function

			Automatic mode	Manual mode	Setting mode
Setting	设置	Press button,control parameters selection	Parameter preset	Parameter preset	Parameter choose
Operation Mode	运行模式	Press button,automatic manual switch			Return to Auto
Increase	▲		Power parameter selection	Engage capacitor	Increment parameter
Decrease	▼		Power parameter selection	Disconnect capacitor	Decrement parameter

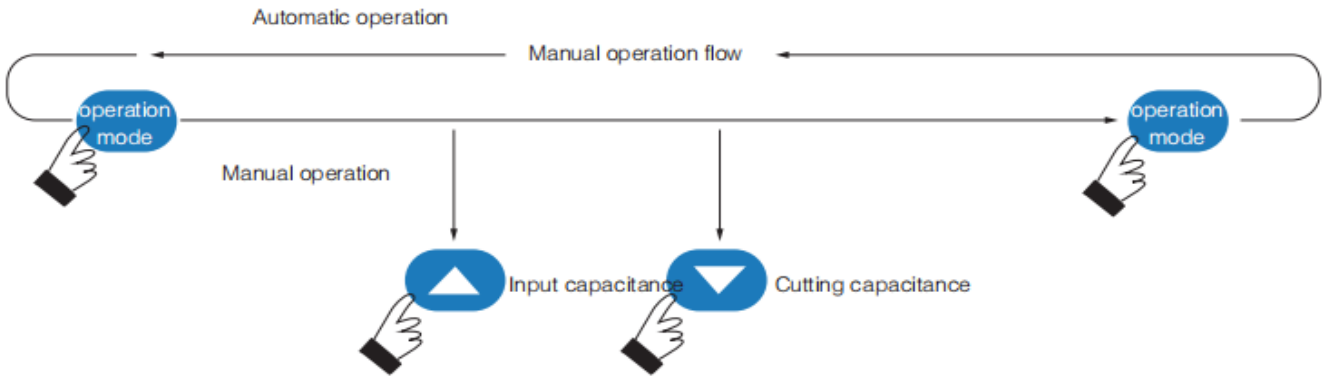
10. Parameter menu



11. Function explain

LED Item	**Indication Meaning**
Pre-switch in	When this LED is on, the controller will energize 1 capacitor after the delay period.
Pre-switch out	When this LED is on, the controller will disconnect 1 capacitor after the delay period.
Overvoltage	When this LED is on, the sampling voltage of the controller exceeds the overvoltage threshold, and the controller will disconnect capacitors circuit by circuit.
Over-distortion	When this LED is on, the distortion rate of the controller's sampling voltage exceeds the over-distortion threshold, and the controller will disconnect capacitors circuit by circuit.
Lockout	When this LED is on, it indicates that the controller has performed multiple repeated switching operations. After the disconnection operation is completed, the controller stops energizing. The Lockout LED will turn off when 30 minutes have elapsed or the current reactive power is 1.3 times the reactive power at the moment of switching oscillation.
① … ⑫	When this LED is on, it indicates the energization status of capacitors in circuits 1-12.
Auto	When this LED is on, the controller is operating in automatic mode.
Manual	When this LED is on, the controller is operating in manual mode. Press the Increase key to energize capacitors and the Decrease key to disconnect capacitors.
Setting	When this LED is on, the controller is in the parameter preset mode, and control parameters can be adjusted.

12. Manual operation process



13. Control parameter preset

Parameter Name	**Parameter Description**	**Factory Default**	**Adjustment Range**
Switch-in PF	When the system power factor is lower than this threshold, the controller will switch in capacitor banks.	① 0.98	0.70 - 0.90
Switch-out PF	When the system power factor is higher than this threshold, the controller will switch out capacitor banks.	① 1.00	0.71 - 0.89
Switching Delay	The delay time from when the grid system parameters allow capacitor bank switching to when the controller switches in the capacitor bank.	30	1-120 seconds
Distortion Threshold	When the system voltage distortion rate exceeds this threshold, the controller will switch out all power capacitor banks at a rate of 1 circuit per second.	5.0	OFF - 3.0 - 5.0% (2% step)
Overvoltage Threshold	When the system voltage exceeds this threshold, the controller will switch out all power capacitor banks at a rate of 1 circuit per second.	450 260	410-480V (7V step) 236-277V (5V step)
Output Circuits	The controller is equipped with 12 output circuits, which can be set by the user as 1-12 output circuits.	12	1-12
Reactive Power Mode	Control mode selection.	② OFF	OFF - On
Total Busbar CT Primary Current	The primary current value of the current transformer for the controller's current signal sampling.	③ 500	50-9000/5A
Total Compensation Capacitance	The total capacitance value of the 1-12 circuits, limited by the output circuits.	④ 30	0-80kvar
PA-1	MODBUS-RTU protocol address.	⑤ 0	0-247
PA-2	Communication baud rate.	9600	1200-115200
PA-3	Communication parity check.	⑤ OFF	OFF, odd, even

Notes:

①When the switch-in power factor is greater than the switch-out power factor, the controller will display an Er-5 error message.

②When the reactive power mode parameter is set to OFF, the controller operates in power factor mode.

When the reactive power mode parameter is set to On, the controller operates in reactive power mode.

③If the CT ratio for the controller's sampled current is 500/5A, the corresponding parameter should be entered as 500.

④In the capacitor capacity menu, long-pressing the Set key can copy the current circuit's capacitor capacity to all subsequent circuits.

In the capacitor capacity menu, long-pressing the Increment and Decrement keys simultaneously can reset all circuit capacitor capacities to zero.

Note: The capacitor capacity setting function is not available in the current path.

⑤This controller is equipped with communication functionality, and the parameter settings are as follows:

1.In parameter preset mode, press and hold the Set and Decrement keys for 2 seconds.

2.Press the Mode key to select the parameter item.

3.Press the Increment or Decrement key to adjust the parameter value.

4.Long-press the Mode key to exit the communication parameter setting program.

Note 1: A communication address of 0 indicates that the communication function is disabled.

Note 2: Parity check:

OFF: No parity check

odd: Odd parity check

even: Even parity check