

GGD-CDCE9 Low voltage Intelligent Capacitor

Applications

Local reactive power compensation

The product is flexible and convenient to use, and can be used without special boxes, cabinets, and without additional controllers. It can realize small-capacity reactive power automatic compensation in various occasions, and the effect is ideal.

In box substation

In box substation, it is assembled into the reactive power automatic compensation device with block type, or combined with the integrated measurement and control device of the distribution transformer, it is assembled into the distribution inspection and measurement system and the reactive power automatic compensation system, which occupies little space, is easy to install, easy to maintain and adjust the capacity.

In new outdoor distribution transformer JP cabinet

It is applied to the reactive power automatic compensation of the 0.4kV voltage feeder terminal. Small size, better use of the space of the JP cabinet.

In low-voltage switchgear

The products are assembled in the cabinet and form areactive power automatic compensation device, which breaks the structural mode of the existing reactive power automatic compensation device. The compact size , the same cabinet can compensate for more capacity, easy installation, convenient maintenance, each intelligent. The operating condition indication and display on the capacitor allows manual retraction of a single unit without the need for additional manual operation.





GGD-CDCE9 Low voltage Intelligent Capacitor

Product Overview

CDCE 9 series low voltage capacitor compensation device in low voltage power capacitor as the main body, the software and hardware technology, micro sensor technology, microelectronics miniature network technology and electrical appliance manufacturing technology such as the latest technological achievements, the intellectualization, realizing the low voltage reactive power compensation function and convenient for, protection, measurement, signal, online, etc. Series of functions, is a breakthrough of the low voltage reactive power automatic compensation technology, flexible use in low voltage reactive power compensation of various occasions, to change the structure of the existing low voltage reactive power compensation equipment and automatic mode.

GGD-CDCE9 series low-voltage intelligent capacitor compensation device has the characteristics of flexible compensation mode, good compensation effect, small size, low power consumption, convenient installation and maintenance, long service life and high reliability, which can meet users' fine requirements for reactive power compensation to improve power factor, improve power quality and energy saving loss.

Product Features

Intelligent network

This product is a main control type product, which can realize active control of the product without additional controller.

Self-test self-regulation

Total compensation priority optimization

Operating passing zero

Synchronous switching, voltage zero - crossing input, current zero - crossing cutting, switching no inrush current.

Explosion-proof patent

Product built-in explosion-proof device, high reliability.

Invention patent : CN201510299889.2

CN201520376876.6

Small size

The product is small, standardized and modular.

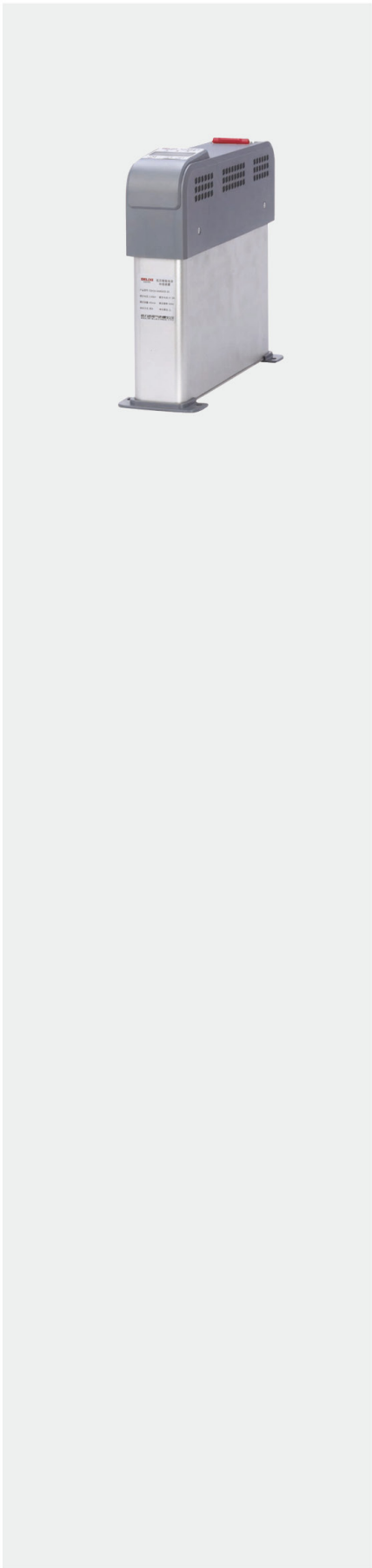
- For example: GGD-CDCE9-450/10.10, Dimensions: W80mm * L360mm * H272mm

Nine protections

- The product has 9 protection functions: undervoltage protection, overvoltage protection, undercurrent protection, overcurrent protection, unbalance protection, power failure protection, Phase loss protection, capacitor discharge protection, over temperature protection.
- Safe, reliable, and meticulous

Easy maintenance

- LCD display Chinese display protection action type;
- Smart capacitors have self-diagnostics;
- The fault content is reflected on the LCD screen, which is good for on-site fault finding;
- Capacitor damage requires a simple and quick replacement of the unit.



GGD-CDCE9 Low voltage Intelligent Capacitor

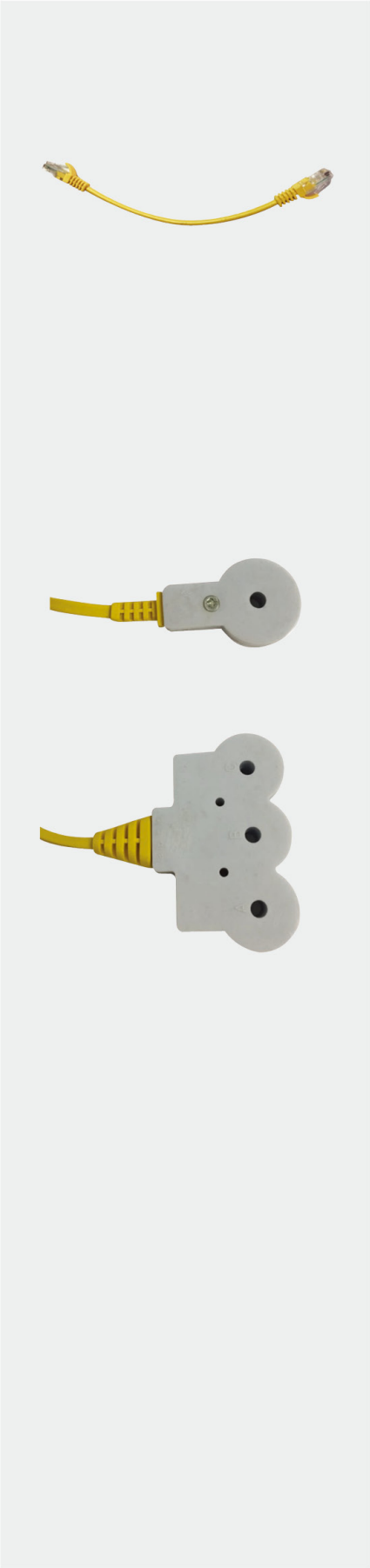
Selection Guide

Product name	Compensation method	Control mode	Capacitor rated voltage	Rated capacity (kvar)
GGD-CDCE9	S	A	0450	0505
	S: Three-phase compensation	A: Automatic control	Common compensation: 0450: 450V (Line voltage)	Common compensation: 0505: 5+5kvar 1005: 10+5kvar 1010: 10+10kvar 1515: 15+15kvar 2020: 20+20kvar
	F: Split phase compensation		Split compensation: 0250: 2 50V (Phase voltage)	Split compensation: 0005: 5kvar 0010: 10kvar 0015: 15kvar 0020: 20kvar 0030: 30kvar

Main product model specifications

Material No.	Description	Compensation method	Capacitor rated voltage	Rated capacity (kvar)
GGD-CDCE9SA04500505	GGD-CDCE9-SA450/5.5	Three-phase compensation	450	10
GGD-CDCE9SA04501005	GGD-CDCE9-SA450/10.5		450	15
GGD-CDCE9SA04501010	GGD-CDCE9-SA450/10.10		450	20
GGD-CDCE9SA04501515	GGD-CDCE9-SA450/15.15		450	30
GGD-CDCE9SA04502020	GGD-CDCE9-SA450/20.20		450	40
GGD-CDCE9FA02500005	GGD-CDCE9-FA250/5	Split phase compensation	250	5
GGD-CDCE9FA02500010	GGD-CDCE9-FA250/10		250	10
GGD-CDCE9FA02500015	GGD-CDCE9-FA250/15		250	15
GGD-CDCE9FA02500020	GGD-CDCE9-FA250/20		250	20
GGD-CDCE9FA02500030	GGD-CDCE9-FA250/30		250	30

Ordering instructions:
When selecting the type, the special specification capacity can be negotiated.
Common compensation products, 5-40kvar other capacity can be customized.
Split compensation products, other capacity within 5-30kvar can be customized.



Communication line ordering coding rule

The communication line is used for communication between two adjacent smart capacitors in the same network (cabinet). The communication line is an 8-core conventional network cable. The product body comes with a 20cm network cable. Customers can customize it if they need other sizes.

Product name	Communication line	Length	Remark
GGD-CDCE9	L	20	
	L: Communication line	20: Length 20cm 70: Length 70cm 300: Length 300cm	Standard for ontology products Optional Optional

Secondary transformer order coding rules

When the product is used as active control for reactive power compensation, the secondary current transformer for sampling must be configured. (≤ 20 units)

The secondary current transformer is used for current sampling , and the secondary current (0-5A) of the primary current transformer of the incoming line cabinet is again converted. It is a (0~5mA) current signal.

A system of secondary transformers with one:

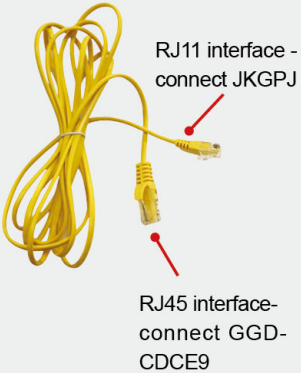
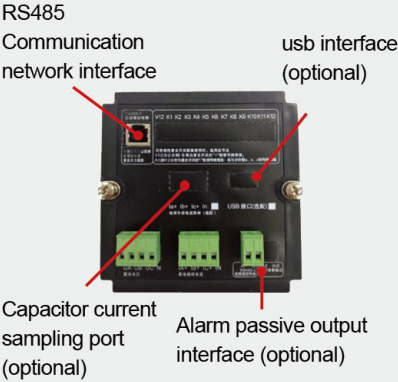
Only a total complemented network system is equipped with a single-hole secondary current transformer;

The networking system with sub-compensation is equipped with a three-hole secondary current transformer.

This accessory is not required when networked with an external controller(JKGPJ).

Product name	Current sampling hole number	CT	Remark
GGD-CDCE9	1	CT	
	1: Single hole 3: Three hole	CT: secondary current transformer	Three-phase co-compensation scheme for active control of products Three-phase mixing scheme for active control of products

Hole diameter: Φ5mm



External controller-JKGPJ

- This product is an integrated controller for reactive power compensation and power distribution monitoring. It integrates data acquisition, communication, reactive power compensation, grid parameter measurement, analysis and other functions.
- Using RS485 communication mode, it can be used as external controller to communicate with up to 31 GGD-CDCE9 products.
- Standard one-meter 3 meter communication line (one end RJ11 interface, one end RJ45 interface)

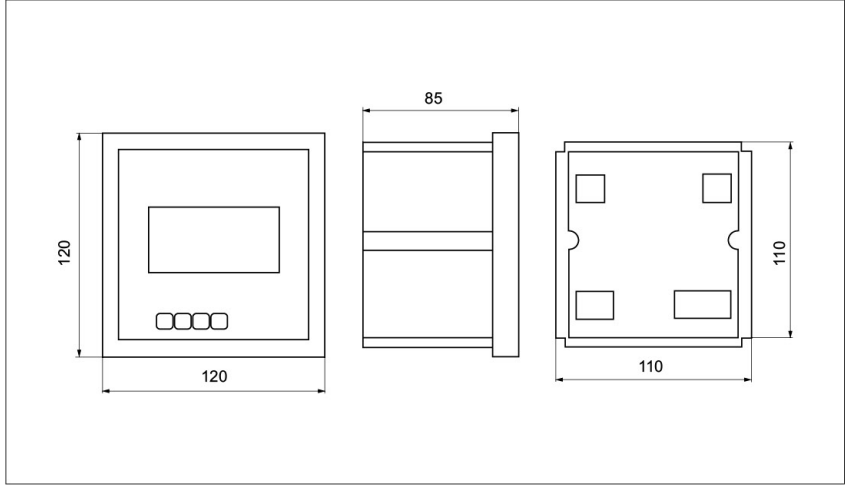
JKGPJ controller

Product name	Voltage	Function option
JKGPJ	M	Z
	M: 220V	Z: Communication control 31 circuit

Technical parameter

Standard	JB/T 9663
Sampling voltage (V)	3*220V ± 20%
Sampling current (A)	≤ 5A
Sensitivity	≤ 200mA
Action error	≤ ± 2.0%
Clock error	< 1s/d
Power consumption	≤ 2VA
Control smart capacitor	S31 pcs
Protection degree	IP30

Overall and Installation Dimensions (mm)



Product Specifications

Working conditions

- Ambient temperature (normal condition): $-25^{\circ}\text{C} \sim 40^{\circ}\text{C}$
- Storage temperature: $-25^{\circ}\text{C} \sim 55^{\circ}\text{C}$ (within 24h, up to 70°C)
- Altitude: $< 2000\text{m}$
- Relative humidity: 40°C , $20\% \sim 90\%$
- Rated voltage (common compensation): AC400
- Rated voltage (split compensation): AC230
- Voltage deviation: $\pm 20\%$
- Voltage waveform: sine wave, the total distortion rate is not more than 5%
- Working frequency: 50Hz soil 1.5Hz

Reactive power compensation parameter

- Switching structure: synchronous switch
- Capacitor switching in terval: $\leq 0\text{s} \sim 180\text{s}$ (can be set)
- Network connection: online ≤ 20 sets

Error requirement

- Voltage measurement: $\leq 0.6\%$
- Current measurement: $\leq 1.0\%$
- Power measurement: $\leq 2.5\%$
- Power factor measurement: ± 0.01
- Temperature measurement: $\pm 1^{\circ}\text{C}$

Product performance

- Over temperature protection: $40^{\circ}\text{C} \sim 80^{\circ}\text{C}$ adjustable (factory setting is 80°C)
- Switching inrush current: $\leq 3\text{In}$
- Withstand voltage shock: $\geq \text{AC}3500\text{V}$ (DC5000V)
- Operation noise: $\leq 70\text{dB}$ (A sound level)
- Power consumption: Standby $\leq 4\text{VA}$ (Icd)
- Control accuracy: 100%
- Take and cut allowed times: 1 million times or more (with load)
- Annual failure rate: $\leq 0.1\%$

Standard

- Standard: GB/T 15576
- Certificate: CCC

Product parameters

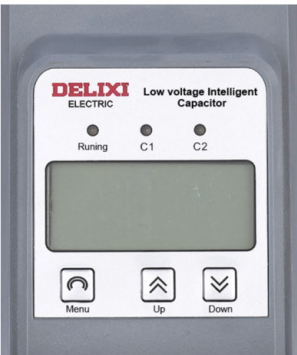
Controller function	Common compensation		Split compensation	
Protective function				
Undervoltage protection			■	
Overvoltage protection			■	
Undercurrent protection			■	
Overcurrent protection			■	
Unbalance protection	-		■	
Power failure protection			■	
Phase-break protection			■	
Capacitor discharge protection			■	
Over temperature protection			■	
Setting function	Factory setting	Setting range	Factory setting	Setting range
Capacitance capacity setting	Nominal value	1-40 (kvar)	Nominal value	1-40 (kvar)
Input threshold Setting	0.95	0.90-0.98	0.95	0.90-0.98
Switching delay setting	10s	0-180s	10s	0-180s
Primary CT ratio setting (n: 1)	100	1-999	100	1-999
Communication address setting, 255 is automatic networking	255	000-200,255	255	000-200,255
Over temperature protection value setting	80℃ ¹⁾	40-80 (℃)	80℃ ¹⁾	40-80 (℃)
Primary overvoltage protection value setting	430V	400-490 (V)	240V	230-290 (V)
Secondary overvoltage protection value setting	450V	405-495(V)	250V	235-295(V)
Undervoltage protection value setting	310V	280-310(V)	190V	160-190(V)
Voltage harmonic threshold setting	0.05	0-30 (%)	0.05	0-30 (%)
Current h armonic threshold setting	0.15	0-30 (%)	0.15	0-30 (%)
Protection delay setting	10s	1-20 (s)	10s	1-20 (s)
Capacitance overcurrent blocking threshold setting	1.3	1.1-1.5	1.3	1.1-1.5
Secondary side underflow threshold setting	200 (mA)	0-500 (mA)	200 (mA)	0-500 (mA)
Capacitor discharge protection delay	90s	-	90s	-
Unbalance protection value setting	-	-	0.1	0-40 (%)

- No this option

■ Standard

1. The temperature means that when the internal temperature of the product exceeds the set value during the use, the product will automatically exit the operation, which can effectively protect the product, and the customer can adjust according to their actual use requirements.(40℃ ~80℃)

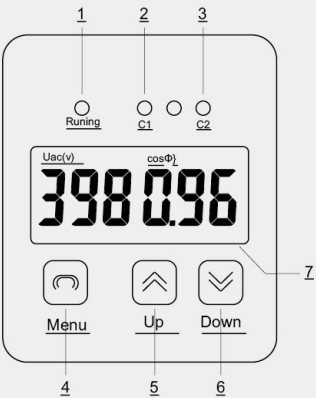
Controller display and function



- Nine Protective functions
- Undervoltage protection
 - Overvoltage protection
 - Undercurrent protection
 - Overcurrent protection
 - Unbalance protection
 - Power failure protection
 - Phase-break protection
 - Capacitor discharge protection
 - Over temperature protection
- Safe
Reliable
Meticulous

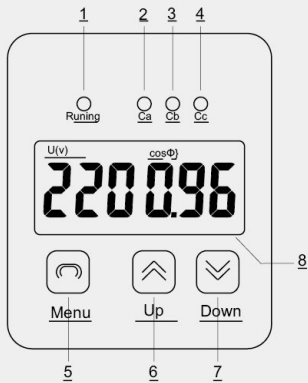
LCD type common compensation operation interface

Specification	Length	Function
1	Runing	Dual-color indicator light green means that the system is in automatic operation
		Dual-color indicator light red means that the system is in manual operation
		Dual-color indicator light red and green, means that the system is in a fault condition
2	C1	Indicator light is red, means that the first group of capacitors have been put into operation
		Indicator light is green means that the first group of capacitors has been removed
3	C2	The indicator light is red means that the second group of capacitors has been put into operation;
		Indicator light is green means that the second group of capacitors has been removed.
4	Menu	Press "Menu" menu button (automatic status: switch display parameters); (in manual, debug, setting status: return to automatic status); use the combined button to see the operating instructions.
5	Up button	Press "Up" to increase the value (set state); manual input (manual state)
6	Down button	Press "Down" to decrease the value (set state); manually cut (manual state)
7	LCD display	Shows setup parameters, measurement parameters and fault information



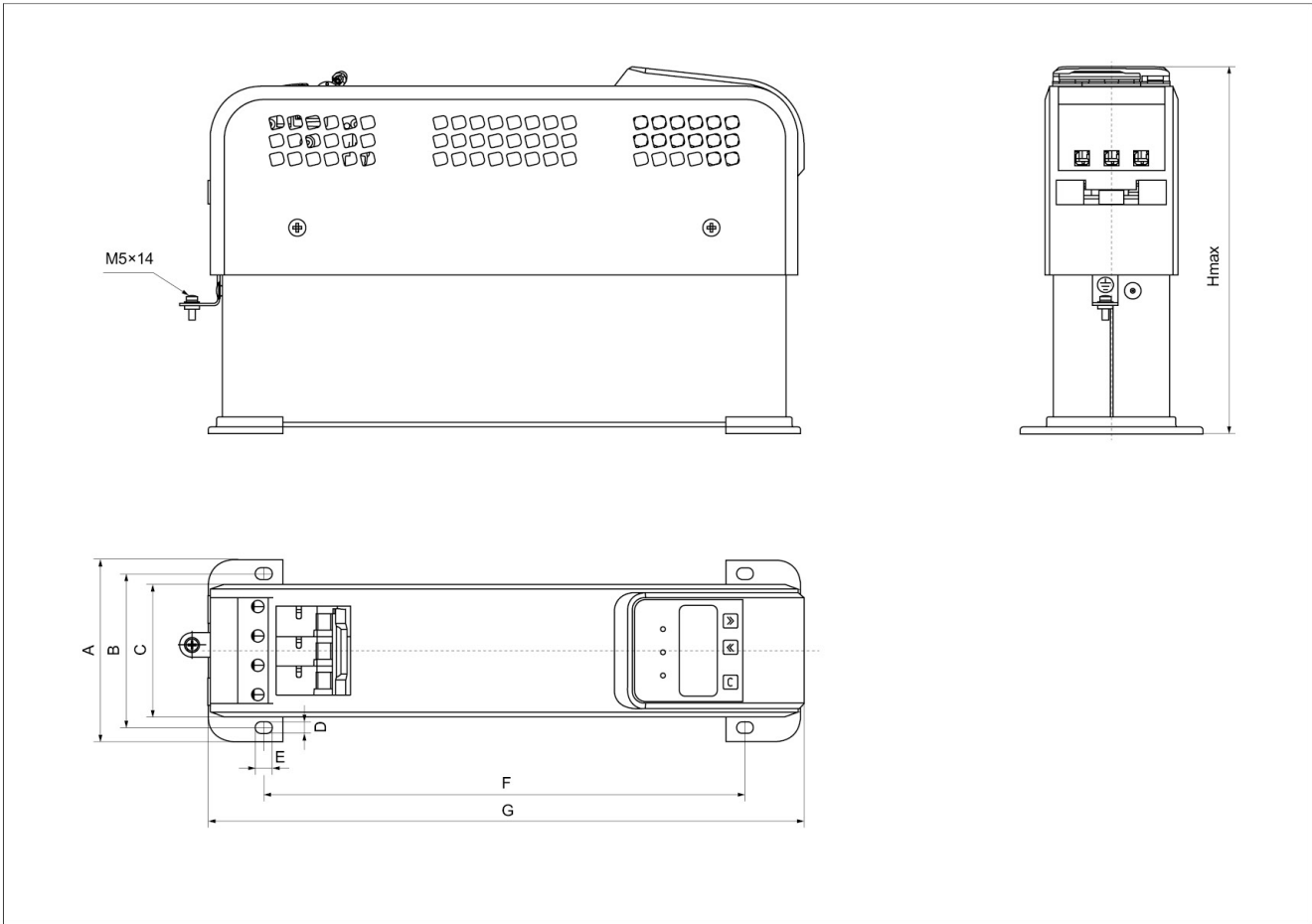
LCD type split compensation operation interface

Specification	Length	Function
1	Runing	Dual-color indicator lights green means that the system is in automatic operation
		Dual-color indicator lights red means that the system is in manual operation
		Dual-color indicator lights red and green, means that the system is in a fault condition
2	Ca	Indicator light is red, means that the split A-phase capacitor has been input
		Indicator light is green means that the split A-phase capacitor has been removed
3	Cb	Indicator light is red, means that the split B-phase capacitor has been input
		Indicator light is green means that the split B-phase capacitor has been removed
4	Cc	Indicator light is red, means that the split C-phase capacitor has been input
		Indicator light is green means that the split C-phase capacitor has been removed
5	Menu	Press "Menu" menu button (automatic status: switch display parameters); (in manual, debug, setting status: return to automatic status); use the combined button to see the operating instructions.
6	Up button	Press "Up" to increase the value (set state); manual input (manual state)
7	Down button	Press "Down" to decrease the value (set state); manually cut (manual state)
8	LCD display	Shows parameters, measurement parameters and fault information

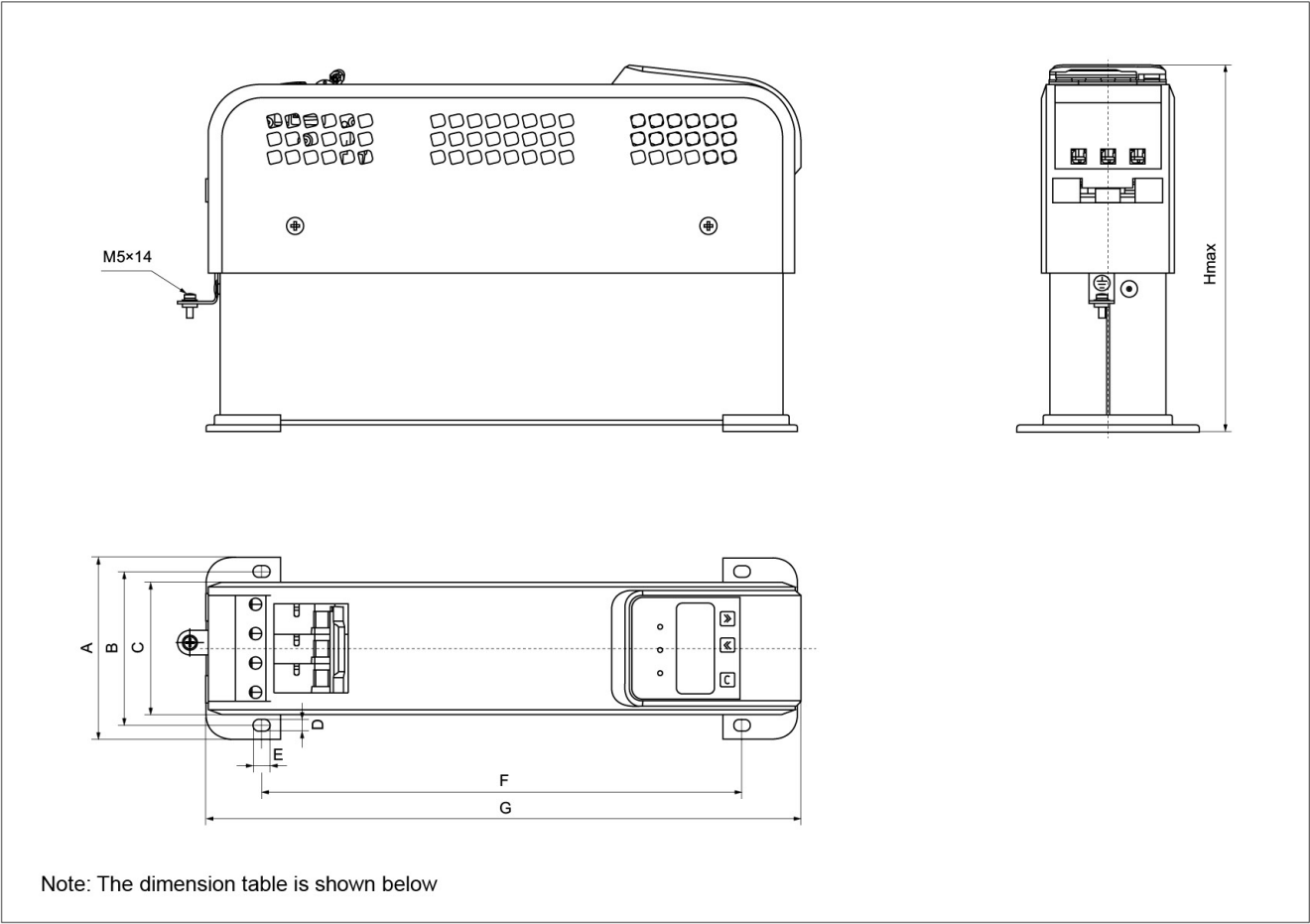


Overall and Installation dimensions

Common-compensation — Installation and dimensions



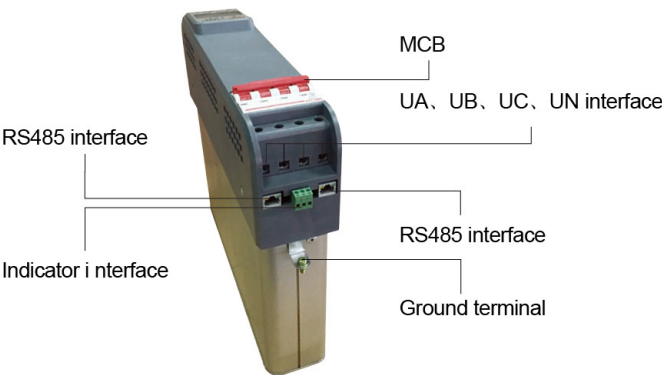
Split-compensation — Installation and dimensions



Product installation and dimensions (mm)

Specifications			Installation dimensions					Overall Dimensions			
Compensation method	Material No.	Description	A	B	D	E	F	C(Length)	G(Width)	H(height)	
Three-phase commoncompensation	GGD-CDCE9SA04500505	GGD-CDCE9-SA450/5.5	110	93	7	10	291	80	360	222	
	GGD-CDCE9SA04501005	GGD-CDCE9-SA450/10.5								272	
	GGD-CDCE9SA04501010	GGD-CDCE9-SA450/10.10						80	360		
	GGD-CDCE9SA04501515	GGD-CDCE9-SA450/15.15									
	GGD-CDCE9SA04502020	GGD-CDCE9-SA450/20.20							322		
Split Phase compensation	GGD-CDCE9FA02500005	GGD-CDCE9-FA250/5	110	93	7	10	291	80	360	222	
	GGD-CDCE9FA02500010	GGD-CDCE9-FA250/10								272	
	GGD-CDCE9FA02500015	GGD-CDCE9-FA250/15						80	360		
	GGD-CDCE9FA02500020	GGD-CDCE9-FA250/20									
	GGD-CDCE9FA02500030	GGD-CDCE9-FA250/30							322		

Product installation instruction

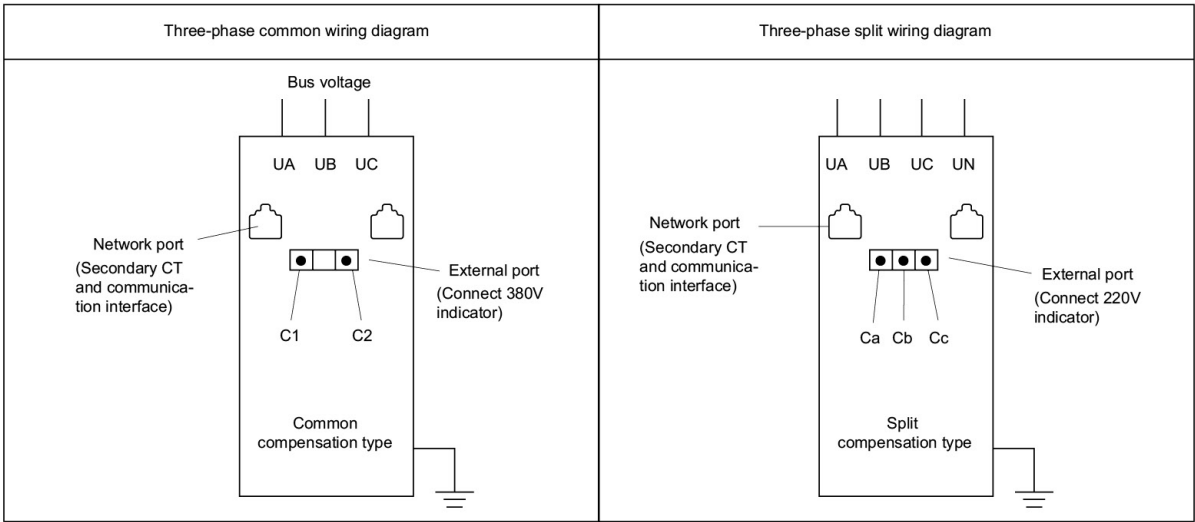


WARNING: spacing $\geq 50\text{mm}$



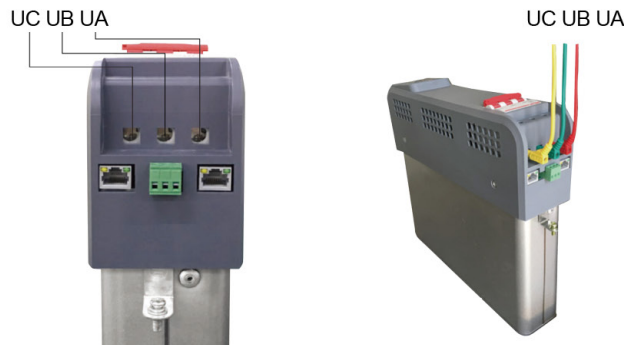
The distance between capacitors must be at least 50mm

Terminal definition and arrangement diagram



Power line connection

1. The power line selects multi-core copper conductors with appropriate cross-sectional area according to the total capacity of the product. Capacitors with a total capacity of 40kvar or more should adopt multi-core copper conductors with a cross-section of 16mm^2 , and others specifications can use multi-core copper conductors of 10mm^2 ;
2. Attention: When connecting the power line, you must select the copper wire of the corresponding specification, tighten the screw, and pull the power cord firmly to ensure that the connection is very firm before use, otherwise the terminal will be excessively heated, which will eventually lead to product damage. The sub-compensated smart capacitor must be connected to the neutral line, and the wire diameter specification is the same as the three-phase power supply.



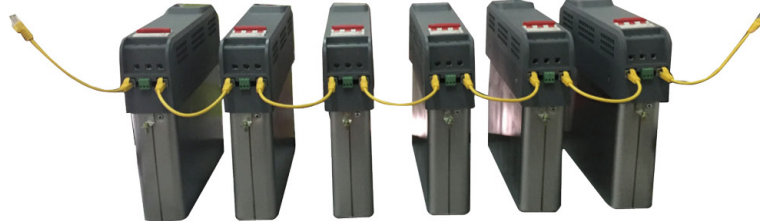
WARNING: Tighten the fastening screw after the cold press joint is inserted

Wiring position of cold pressing parts (three-phase type)

Signal line connection

1. The secondary current signal line is connected by a network cable;
2. The RS485 communication line adopts the plug-in connection of the network cable, and the two smart capacitors can be directly connected by the communication line accessories

External secondary CT or controller

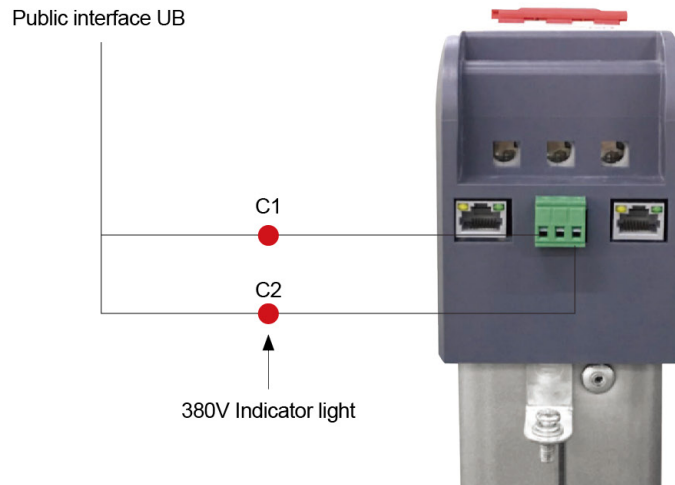


External next capacitor

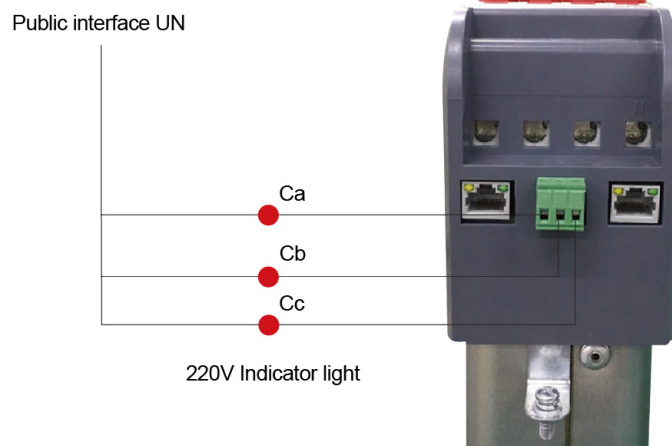
Indicator terminal wiring

If the user has the requirements for the output capacitor status indicator, the external indicator can be as follows:

1. Common compensation: C1 (terminal) and C2 (terminal) are the active signal output terminals of the two sets of capacitor switching status indicators. The C1 and C2 outputs are connected to one end of two AC 380V indicators, and the other end of the indicator light. Connect to phase B (or phase C).

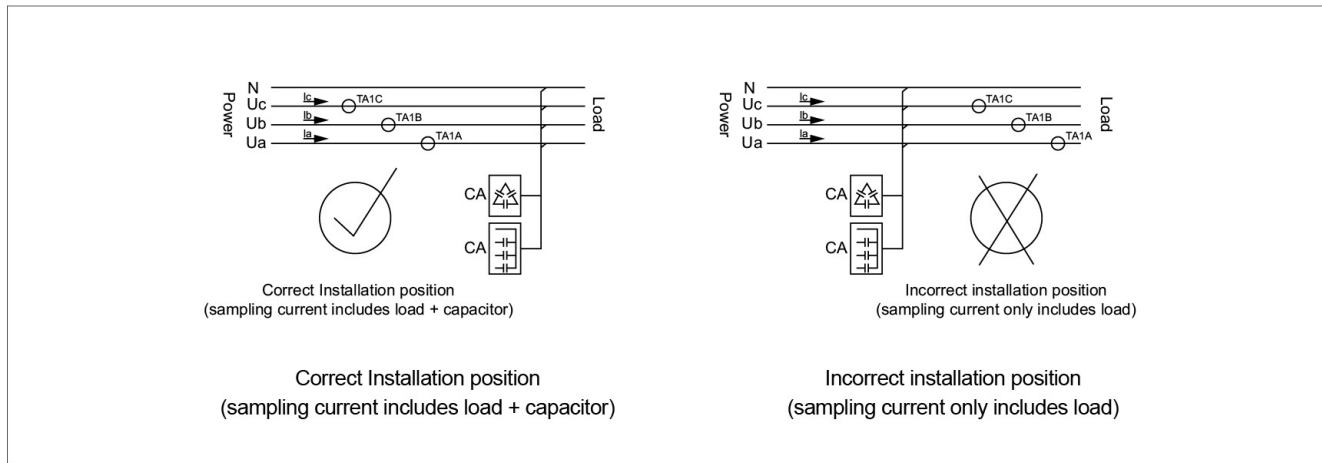


2. Split-compensation : Ca (terminal), Cb (terminal), Cc (terminal) are the active signal output terminals of the threephase capacitor switching status indicator of the supplementary A, B and C. Ca, Cb, and Cc are connected to one end of three AC 220V indicators, and the other end of the indicator is connected to the common terminal (N).



Current transformer wiring

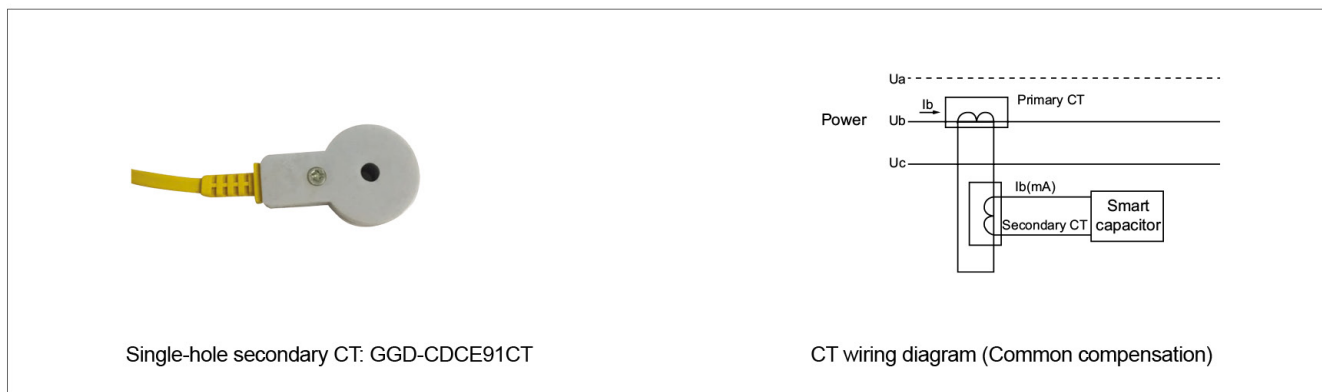
Primary CT installation position



Secondary CT installation

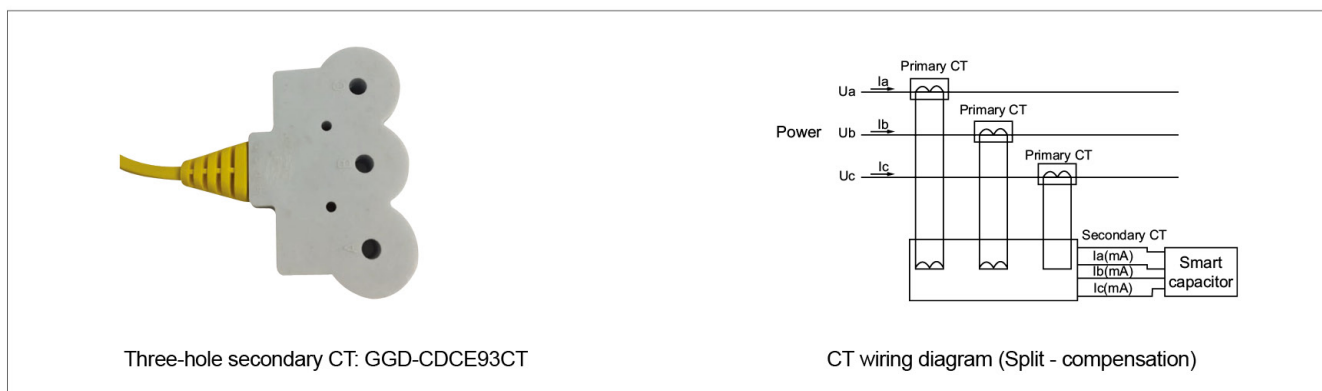
1) Common compensation

Pass the B-phase primary CT output line through the single-hole secondary CT configured by the company, and the secondary CT outputs a terminal cable port. When multiple networked networks are running, only the secondary CT needs to be connected to the host, and the slave only needs to be connected to the host through the network cable;



2) Split-compensation

The A-phase, B-phase, and C-phase primary CT output lines are respectively passed through the three-hole secondary CT configured by the company, and the secondary CT output end is connected to the network cable port. When multiple networked networks are running, only the secondary CT needs to be connected to the host, and the slave only needs to be connected to the host through the network cable.



WARNING: Primary CT sampling (TA1A, TA1B, TA1C) should be installed in front of the capacitor and load in front of the contact (at the bus), and pay attention to the phase sequence.

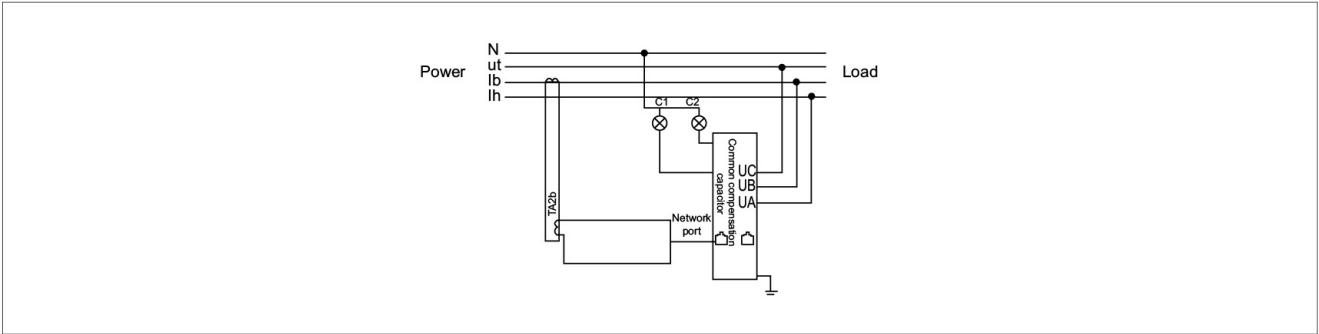
Ground wire connection

There is a grounding mark at the grounding wire. The grounding wire is a copper wire with a cross-sectional area of not less than 2.5 mm². The grounding must be reliable and connected to the external grounding terminal.



Product application wiring diagram

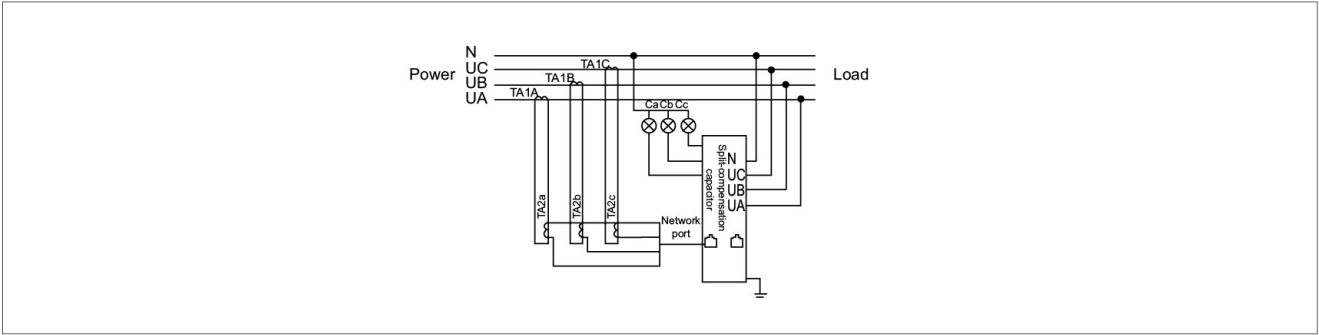
Single unit common compensation wiring diagram (single unit local compensation 1)



List: (For example: common compensation of 40kvar)

Product	Material No.	Description
GGD-CDCE9 three-phase common-compensation *1	GGD-CDCE9SA04502020	GGD-CDCE9-SA450/20.20
GGD-CDCE9 single hole secondary CT*1	GGD-CDCE91CT	GGD-CDCE9 single hole secondary CT

Single Split-compensation wiring diagram (single unit local compensation 2)



List: (For example: Split-compensation of 30kvar)

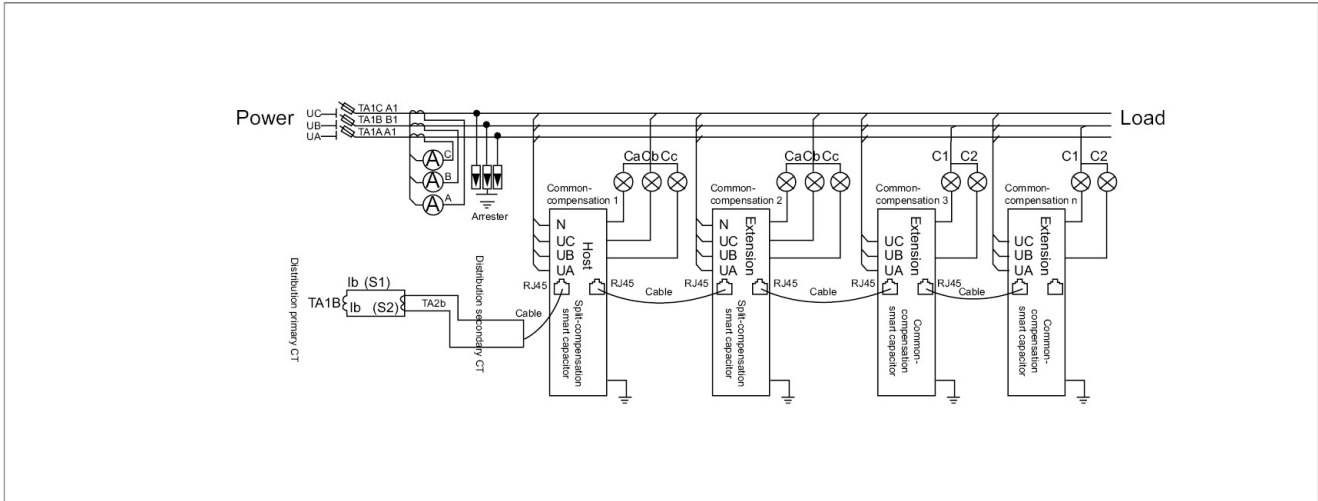
Product	Material No.	Description
GGD-CDCE9 three-phase split compensation product*1	GGD-CDCE9FA02500030	GGD-CDCE9-FA250/30
GGD-CDCE9 three-hole secondary CT*1	GGD-CDCE93CT	GGD-CDCE9 single hole secondary CT

DELIXI

CAPACITOR COMPENSATION CABINET

Product application wiring diagram

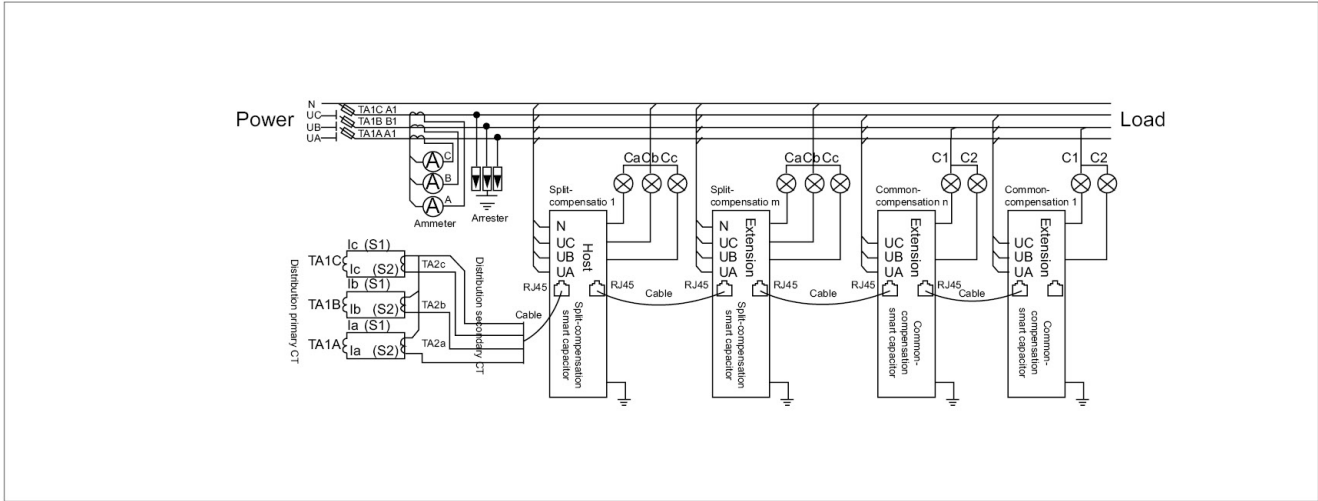
CDCE 9 active control uses multiple three -phase common -compensation (centralized compensation 1)



List: (For example: common compensation of 160kvar)

Product	Material No.	Description
GGD-CDCE9 three-phase common compensation product*4	GGD-CDCE9SA04502020	GGD-CDCE9-SA450/20.20
GGD-CDCE9 single hole secondary CT*1	GGD-CDCE91CT	GGD-CDCE9 single hole secondary CT

GGD-CDCE9 active control uses multiple three-phase mixed-compensation (centralized compensation 2)

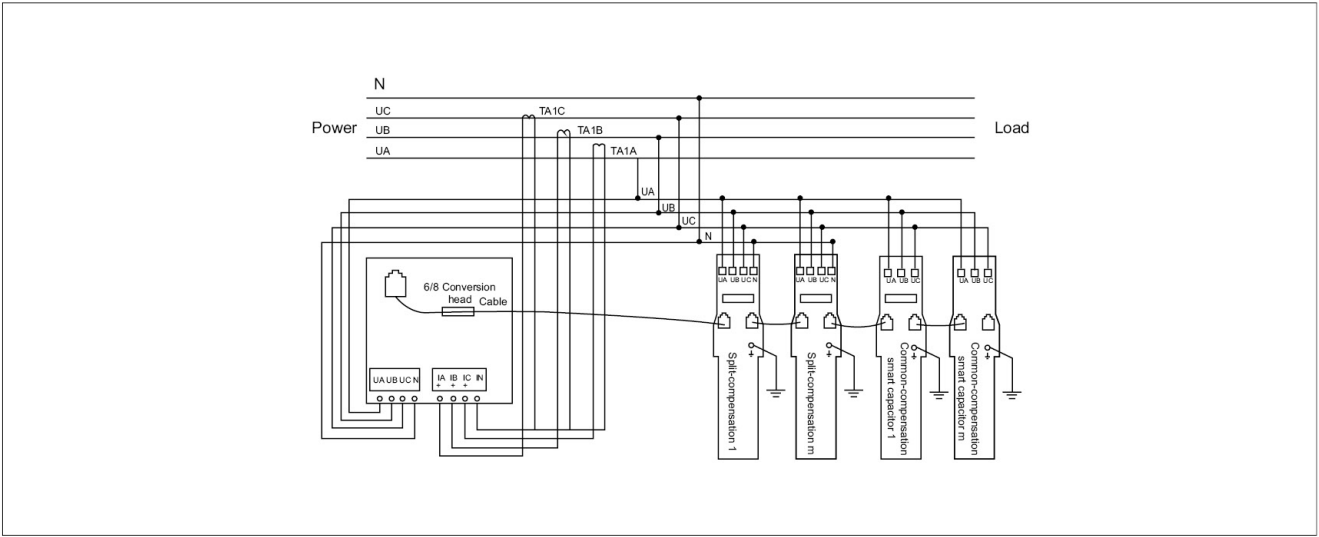


List: (For example: mixed-compensation 140kvar)

Product	Material No.	Description
GGD-CDCE9 three-phase common compensation product*2	GGD-CDCE9SA04502020	GGD-CDCE9-SA450/20.20
GGD-CDCE9 three-phase split compensation product*2	GGD-CDCE9FA02500030	GGD-CDCE9-FA250/30
GGD-CDCE9 three-hole secondary CT *1	GGD-CDCE93CT	GGD-CDCE9 three-hole secondary CT

Product application wiring diagram

External controller (JKGPJ) uses multiple three -phase mixed compensation (centralized compensation 3)



List: (For example: mixed-compensation of 160kvar)

Product	Material No.	Description
GGD-CDCE9 three-phase common compensation product*2	GGD-CDCE9SA04502020	GGD-CDCE9-SA450/20.20
GGD-CDCE9 three-phase split compensation product*2	GGD-CDCE9FA02500030	GGD-CDCE9-FA250/30
JKGPJ Controller	JKGPJMZ	JKGPJ Controller

For total common compensation, please refer to this application mode for wiring.