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DELIXI
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Product sample of CDLE6 residual current protection circuit breaker

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Delixi Electric – Become an excellent international low-voltage electrical leader

As the first generation of outstanding private enterprises in China's reform and opening up, Delixi Group, after nearly 40 years of unremitting struggle, with the long-term trust and support of customers and partners, jointly established Delixi Electric Co., Ltd. (Hereinafter referred to as "Delixi Electric") with Schneider Electric, one of the top 500 companies in the world, in 2007. Delixi Electric's business covers three major areas of distribution electricity, industrial control automation and household electricity, and is committed to creating comfortable, beautiful, safe and intelligent household electricity environment and professional, safe, reliable and efficient industrial automati on electricity for customers in emerging markets around the world with cost-effective, efficient and high-quality products and services. Explore the new development mode of China's low-voltage electrical industry enterprises.

We take the interests of customers and partners as the starting point, adhere to the business philosophy of technological innovation, quality assurance, five-star service and brand-driven, and create a new ecology of the whole electrical industry chain. We have more than 700 first-class agents, many offline stores in 60000, many online sales platforms and partners, 5 R & D centers, 3 national laboratories, 3 automation industrial production bases, five-star customer support service teams, 17 domestic logistics centers and dozens of transportation partners. One international logistics center and four major business partners in developing countries, as well as continuous and consistent all-round brand building and promotion, are committed to creating the best closed-loop customer experience worldwide.

Adhering to the values of "customer first, cooperation, agility, innovation and transcendence", we serve our customers wholeheartedly, and work with our partners to establish a social responsibility ecosphere with unified values, give back to the society through the "German Fund" and practice corporate social responsibility with practical actions. Continuously build the enterprise public welfare brand of "one old and one small traditional culture" with the characteristics of Delixi Electric, and build an international low-voltage electrical leading enterprise with temperature.







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DELIXI
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CDLE6 Residual Current Protective Circuit Breaker

Full functions: with multiple protection functions to meet more application requirements;
Easy to operate: more intuitive human-computer interface, easier key operation
Intelligence: high-performance 32-bit ARM microprocessor is adopted for real-time signal processing and intelligent control.
Monitoring: real-time monitoring and tracking of residual current of the line, automatic adjustment of the gear, to ensure the reliability of the product.
There are many options: 645, Modbus two communication protocols are available, which is convenient for users to choose.







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Product introduction









Product overview

CDLE6 Residual Current Operated Circuit Breaker for use in three-phase, four-wire, direct-grounded (TT) distribution networks with AC 50 Hz, rated voltage up to 400 V, rated current up to 800 A. It is used to provide indirect contact protection, prevent fire hazard caused by grounding fault current due to equipment insulation damage, and distribute electric energy to protect lines and power supply equipment from overload, undervoltage, short circuit, single-phase grounding and other fault hazards.

CDLE6 residual current operated circuit breaker is an integrated, multi-functional, communicatable and loadcurrent adjustable residual current operated circuit breaker, which meets the intelligent requirements of smart grid management, is especially suitable for comprehensive protection at all levels of urban and rural power grids, and is the preferred product for the operation of the national smart grid.

Main functions and features

- High-performance 32-bit ARM microprocessor is adopted for real-time signal processing and intelligent control.
- LCD Chinese display, friendly man-machine interface, easy to operate
- Residual current (leakage) protection, residual current gear can be set online, with reclosing function
- Monitor and track the residual current of the line in real time, automatically adjust the gear, and ensure the operation rate and reliability of the product.
- Long time delay, short time delay and instantaneous three-stage protection, with electronic tripping, independent of power supply voltage
- Overvoltage protection, undervoltage protection, phase loss protection
- Real-time display of line residual current, three-phase power supply voltage and load current
- Protection function and parameters can be set and modified online
- Identification, display, storage, query and deletion of tripping type (residual current, blocking, overload, undervoltage, overvoltage and phase loss)
- With communication function, remote signaling, remote measurement, remote control and remote regulation can be realized
- It has the function of infrared communication and can be equipped with external lightning protection module.

Product selection

Model description

Product name	Display mode	Shell frame level	Breaking capacity	N-phase position	Derived code
CDLE6	Y	250	M	The N pole is on the left	
	Default: digital type Y: liquid crystal type	100:100A 125:125A 250:250A 400:400A 630:630A 630b:630A 800:800A	S: Normal type M: Standard type H: High break type	Default: N pole on the right The N pole is on the left	Default: None With lightning protection Auxiliary terminal type Infrared communication With fee control

Note: 1) Auxiliary accessories of 250AF and below are 1K1B, and auxiliary accessories of 400AF and above are 2K2B;
2) 630b and 800AF have no left zero;
3) Auxiliary default terminal type;

Core material order number

Core material order number	Trade name
CDLE6125M	CDLE6-125M digital type
CDLE6250M	CDLE6-250M digital typel
CDLE6400M	CDLE6-400M digital type
CDLE6630H	CDLE6-630H digital type
CDLE6800M	CDLE6-800M digital type
CDLE6Y125M	CDLE6Y-125M liquid crystal type
CDLE6Y250M	CDLE6Y-250M liquid crystal type
CDLE6Y400M	CDLE6Y-400M liquid crystal type
CDLE6Y630H	CDLE6Y-630H liquid crystal type
CDLE6Y800M	CDLE6Y-800M liquid crystal type

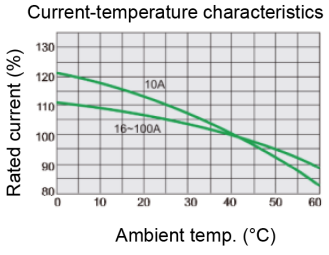
Technical parameters

Technical parameters

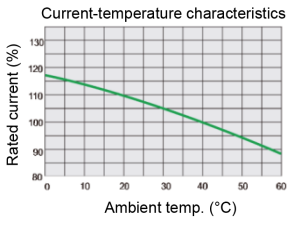
Model		CDLE6-125 CDLE6Y-125			CDLE6-250 CDLE6Y-250			CDLE6-400 CDLE6Y-400		
Shell frame current		125			250			400		
Number of poles		3P+N			3P+N			3P+N		
Rated working voltage Ue (V)		AC400			AC400			AC400		
Rated current		50A, 63A, 80A, 100A, 125A adjustable			100A, 125A, 140A, 160A, 180A, 200A, 225A, 250A adjustable			200A,225A,250A,315A,350A,400A adjustable		
Rated insulation voltage Ui(V)		1000			1000			1000		
Rated impulse withstand voltage Uimp (kV)		8			8			8		
Rated frequency (Hz)		50			50			50		
Type of release		Electronic			Electronic			Electronic		
		S	M	H	S	M	H	S	M	H
Breaking capacity	Rated limit short circuit minute Breaking capacity Icu(kA)	25	50	70	35	50	70	35	65	85
	Rated operating shortcircuit breaking capacity Ics(kA)	20	35	50	35	35	50	35	42	65
Short-time withstand current Icw		1.5kA/1s			3kA/1s			5kA/1s		
Residual current operating characteristic		AC								
Rated residual operating current I△n(mA)		50 ~ 300 adjustable (Default 300mA)	50/ 100/ 200/ 300/ 400/ 500/ 600/ 800 adjustable + automatic + OFF (default 500mA)		50 ~ 300 adjustable (Default 300mA)	50/ 100/ 200/ 300/ 400/ 500/ 600/ 800 adjustable + automatic + OFF (default 500mA)		50 ~ 300 adjustable (Default 300mA)	50/ 100/ 200/ 300/ 400/ 500/ 600/ 800 adjustable + automatic + OFF (default 500mA)	
Residual current operation time characteristic		Delayed/non-delayed								
Breaking time	Delay type (s)	I△n≤0.5s; 2I△n≤0.2s; 5I△n≤0.15s; 10I△n≤0.15s								
	Non-delay type (s)	I△n≤0.3s; 2I△n≤0.15s; 5I△n≤0.04s; 10I△n≤0.04s								
2I△n delay type limit non-driving time (s)		0.06s								
Auto-reclosing time (s)		20~60s								
Life	Electrical	9000			8000			5000		
	Mechanical	1500			1500			1200		

Note: The leakage function of PV products is turned off by default.

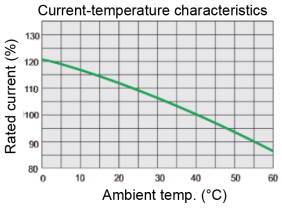
Temperature capacity reduction factor



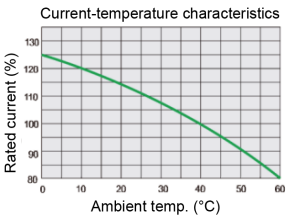
CDLE6-125



CDLE6-250



CDLE6-400



CDLE6-630/800

Technical parameters

CDLE6-630 CDLE6Y-630		CDLE6-630b CDLE6Y-630b			CDLE6-800 CDLE6Y-800
630		630			800
3P+N		3P+N			3P+N
AC400		AC400V			AC400
315A, 350A, 400A, 500A, 630A adjustable		315A, 350A, 400A, 500A, 630A adjustable			400A, 500A, 630A, 700A, 800A adjustable
1000		1000			1000
8		8			8
50		50			50
Electronic		Electronic			Electronic
S	M	S	M	H	M
50	85	50	65	85	65
50	65	50	50	65	42
		8kA/1s			10kA/1s
50 ~ 300 adjustable (Default 300mA)	50/ 100/ 200/ 300/ 400/ 500/ 600/ 800/1000 adjustable + automatic + OFF (default 500mA)	50 ~ 300 adjustable (Default 300mA)	50/ 100/ 200/ 300/ 400/ 500/ 600/ 800/1000 adjustable + automatic + OFF (default 500mA)		100/ 200/ 300/ 500/ 800/1000 adjustable + automatic + OFF (default 500mA)
Delayed/non-delayed					
I△n≤0.5s; 2I△n≤0.2s; 5I△n≤0.15s; 10I△n≤0.15s					
I△n≤0.3s; 2I△n≤0.15s; 5I△n≤0.04s; 10I△n≤0.04s					
0.06s					
20~60s					
5000		5000			4000
1200		1200			1000

Altitude capacity reduction factor

If the altitude exceeds 2000 m of the applicable working environment, the electrical performance of the circuit breaker shall be corrected according to the following table:

Altitude (m)	2000	2500	3000	4000	5000
Power frequency withstand voltage (v)	3000	3000	2500	2200	2000
Insulation withstand voltage (v)	800	800	700	600	500
Maximum operating current (v)	690	690	600	500	440
Operating current correction factor	1	1	0.98	0.95	0.93

Functions and features

Functional classification

Product category		Conventional type	Photovoltaic special type
Protection function	Overload protection	●	●
	Short circuit protection	●	●
	Residual current protection	●	●
	Automatic reclosing	●	●
	Phase loss protection	●	●
	Overvoltage protection	●	●
	Undervoltage protection	●	●
	Surge protection	□	□
	Power-off trip protection	-	●
	Lightning protection	□	□
Measurement shows	Line residual current	●	●
	Three-phase supply voltage	●	●
	Real-time display of load current	●	●
	Overload long delay	1. Overload current gear can be set, please refer to Table 1, default In; 2. Overload action time can be set, please refer to Table 1, default is 12 s; 3. Default trip for function setting (alarm/trip/close);	1. Overload current gear can be set, please refer to Table 1, default In; 2. Overload action time can be set, please refer to Table 1, default is 12 s; 3. Default trip for function setting (alarm/trip/close);
	Short circuit short delay	1. Please refer to Table 3 for short circuit short delay multiple gear that can be set, and the default is 6 times; 2. Short-circuit short delay action time can be set, please refer to Table 3, default 0.4s; 3. Default trip for function setting (alarm/trip/close);	1. Please refer to Table 3 for short circuit short delay multiple gear that can be set, and the default is 6 times; 2. Short-circuit short delay action time can be set, please refer to Table 3, default 0.4s; 3. Default trip for function setting (alarm/trip/close);
	Short circuit instant	1. Instantaneous multiple gear can be set, please refer to Table 5, default 10 times; 2. Default trip for function setting (alarm/trip/close);	1. Instantaneous multiple gear can be set, please refer to Table 5, default 10 times; 2. Default trip for function setting (alarm/trip/close);
	Rated residual operating current	1. Please refer to Table 7 for the setting of leakage action gear. The default is 500mA; 2. Leakage action time gear (0.3, 0.5) can be set, default 0.5; 3. Default trip for function setting (alarm/trip/close);	1. Please refer to Table 7 for the setting of leakage action gear. The default is 500mA; 2. Leakage action time gear (0.3, 0.5) can be set, default 0.5; 3. Function setting (24h alarm/long-term alarm/trip): default long-term alarm;
	Overvoltage protection value	1.Setting range (250 ~ 300 V), step 1V, default 275V; 2.Function setting (alarm/trip/close) is closed by default;	1.Setting range (240 ~ 286 V), step 1V, default 275V; 2.Function setting (alarm/trip/close) is closed by default;
	Undervoltage protection value	1.Setting range (145 ~ 200 V), step 1V, default 145V; 2.Function setting (alarm/trip/close) is closed by default;	1.Setting range (145 ~ 200 V), step 1V, default 145V; 2.Function setting (alarm/trip/close) is closed by default;
	Phase loss protection value	1.Setting range (10 ~ 50 V), step 1V, default 30 V; 2.Function setting (alarm/trip/close) is closed by default;	1.Setting range (10 ~ 50 V), step 1V, default 30 V; 2.Function setting (alarm/trip/close) default trip;
	Mutation protection value	1. Setting range (30 ~ 75 mA), step 1mA, default 30 mA; 2. Action time (20 ~ 90ms), stepping 10ms, default 20ms; 3. Default alarm for function setting (alarm/trip);	1. Setting range (30 ~ 75 mA), step 1mA, default 30 mA; 2. Action time (20 ~ 90ms), stepping 10ms, default 20ms; 3. Default alarm for function setting (alarm/trip);
	Power-on closing value	On by default	On by default
	De-energized trip value	Close by default	On by default
	Voltage reclosing value	On by default	On by default
	Leakage reclosing value	On by default	On by default
Information storage, Query and display	Residual current action	●	●
Communication function	DL/T-645 Modbus (adjustable)	●	●
	Infrared communication	□	□
	Cost control	□	□

Note: ● Standard function □ Optional function-No such function

Functions and features

Description of protection characteristics

1) Overload long time delay protection

● Overload protection is carried out according to inverse time characteristic: T = (6Ir1/I) tr (delay accuracy: ± 10%), where:
T is the action time value, Ir1 is the setting value of long delay protection, I is the fault current, and tr is the setting value of long delay time.

● Operating Value Setting Range Table 1

Parameter	Shell frame current	Set value	Factory setting value
Action set value Ir1	125	50A, 63A, 80A, 100A, 125A	125A
	250	100A, 125A, 140A, 160A, 180A, 200A, 225A, 250A	250A
	400	200A, 225A, 250A, 315A, 350A, 400A	400A
	630	315A, 350A, 400A, 500A, 630A	630A
	800	630A, 700A, 800A	800A
Delay time setpoint tr		3s, 4s, 6s, 8s, 10s, 12s, 16s, 18s, OFF	12s

● Operating Characteristics Table 2

Ambient temperature	Current name	Setting current multiple	63A	>63A
+40°C	Agreed non-tripping current	1.05IR1	1H	2h
	The agreed tripping current	1.3IR1	<2h	<2h

2) Short-circuit short time delay protection characteristics

● Short circuit short time delay protection prevents the resistive short circuit of the distribution system. The trip time delay is to achieve selective protection. The relevant parameter settings are shown in Table 3.

Parameter setting	Set value	Factory setting value
Short time delay action current setting value Ir2	2Ir1, 2.5Ir1, 3Ir1, 4Ir1, 5Ir1, 6Ir1, 7Ir1, 8Ir1, 10Ir1, 12Ir1	6Ir1
Short delay time set value tsd	0.1s, 0.2s, 0.3s, 0.4s, 0.6s, 0.8s, 1.0s, OFF	0.4s

● Table 4 Action Characteristics of Short-circuit Short-time Delay Protection

Characteristic	Fault current multiple	Tripping time	Delay Error
Inoperative characteristic	≤0.8Ir2	No action	±40ms
Action characteristics	>1.2Ir2	Delayed action	±40ms

3) Transient protection

●Table 5 Setting of relevant parameters of short circuit instantaneous protection

Parameter setting	Set value	Factory setting value
Instantaneous operating current setting value Ir3	4Ir1, 6Ir1, 7Ir1, 8Ir1, 10Ir1, 11Ir1, 12Ir1, 13Ir1, 14Ir1, OFF	10Ir1

●Table 6 Action Characteristics of Short-circuit Instantaneous Protection

Characteristic	Current multiple (I/Ir3)	Delay Error
Inoperative characteristic	≤0.8	-
Action characteristics	>1.2	±40ms

4) Residual current protection characteristics table 7

Range of gear setting

Model current	Parameter	Set value (mA)	Factory setting value
125-400A	Residual operating current In	50/100/200/300/400/500/600/800, adjustable, OFF	500
630A		50/100/200/300/400/500/600/800/1000, adjustable, OFF	800
800A		100/200/300/500/800/1000, adjustable, OFF	
Abrupt residual current	When a certain amount of sudden leakage occurs on the load side, the circuit breaker trips. Abrupt residual current 30 ~ 150mA adjustable, factory default setting is off.		

5) Action characteristics table 8

Parameter	Characteristic				
Rated non-operating current	0.5In				
Rated operating current	0.85In				
Delay characteristic	2In Limit non-driving time (t)	Breaking time			
		In	2In	5In	10In
Non-delay type	……	0.3s	0.15s	0.04s	
Delay type	0.06/0.1/0.2s	0.5s	0.2s	0.15s	

6) Automatic gear mode table 9

Each gear value and floating value in automatic gear mode

Gear value (mA)	200	300	400	500
Floating value (mA)	100	150	200	-

When the residual current is greater than the floating value of the gear but does not reach its action value and remains stable for 60s, the gear rises by one gear, and so on, until the maximum gear; When the residual current is less than the floating value of the next gear of the gear and remains stable for 120s, the gear will float down by one gear, and so on, until the minimum gear. Take the "automatic" gear, the initial residual current of the line is 100mA as an example. The circuit breaker is energized, and the gear is automatically set to 300mA. When the residual current increases to more than 150 mA and stabilizes for 60 s, the gear changes to 400 mA; when the residual current decreases to less than 100 mA and stabilizes for 120 s, the gear changes to 200 mA.

7) Automatic reclosing cooperation/blocking

Auto-reclosing:	When the residual current exceeds the action current value and the gear acts to trip, it can automatically reclose after 20 ~ 60s, but the manual closing is not limited by the time.
Latching:	The locking time is 5S, that is, when the leakage fault occurs again within 5S after the reclosing of the product, the circuit breaker trips and locks again within the action time, the automatic reclosing is not allowed, and the closing must be operated manually; When the product has a leakage fault within 5S after reclosing, the circuit breaker trips within the action time without locking, and it can reclose again after 20 ~ 60sd.

8) Overvoltage protection function

When the line phase voltage is higher than the overvoltage protection set value, the circuit breaker protection trips. When the line voltage is restored to normal voltage, the circuit breaker can be automatically closed and put into operation. The setting value of overvoltage protection ranges from 250 V to 300 V, and the factory setting is 265 V. Users can set or turn off the protection by themselves.

9) Undervoltage protection function

When the line phase voltage is lower than the set value of undervoltage protection, the circuit breaker protection trips. When the line voltage is restored to normal voltage, the circuit breaker can be automatically closed and put into operation. The setting value range of undervoltage protection is 145 ~ 200 V, and the factory setting is 145 V. The user can set or turn off the protection by himself.

10) Phase loss protection function

When phase loss occurs at the power supply end of the line, the circuit breaker protection trips. When the line is restored to normal voltage, it can be automatically closed and put into operation. The factory default setting is off.

11) Zero break protection function

When the neutral line is disconnected at the power supply end of the line, the circuit breaker protection trips. When the line is restored, it can be automatically closed and put into operation. The factory default setting is off.

12) Power-off tripping and power-on closing function

When the power supply end of the line is de-energized, the circuit breaker protection trips. When the line is powered on again, it can be automatically switched on and put into operation. The factory default setting is off.

13) Leakage transient/mutation identification

When a certain amount of sudden leakage occurs on the load side of the residual current protection circuit breaker, the protector trips. The residual current is adjustable from 30 mA to 150 mA. The factory default setting is off.

14) Charge control function

The residual current protection circuit breaker can be used together with the electric energy meter to realize the functions of opening due to arrearage and automatic closing due to arrearage. Cost control products need to be customized separately.

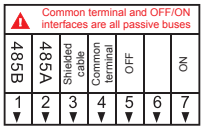
Functions and features

15) Linkage protection function

Through the linkage interface, it can carry out linkage protection with other fire fighting equipment as follows:

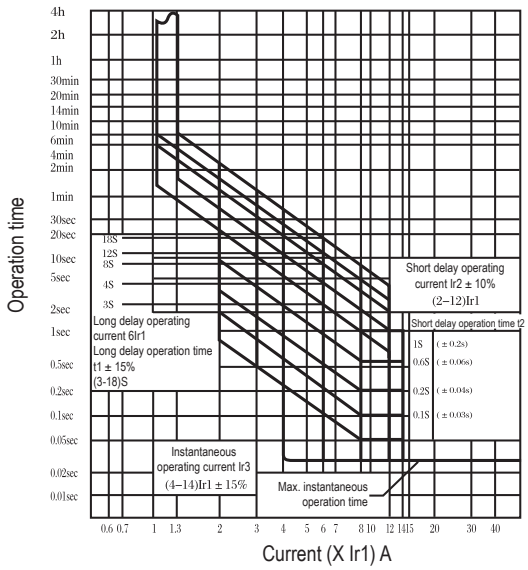
DI input settings		Functional description	Priority	Delay Time(ms)
Input control	Short circuit between 4 and 7	The circuit breaker is closed	Low	40ms
	Short circuit between 4 and 5	The circuit breaker is opened	High	

Note: If 4 and 5 are short-circuited for a long time, the circuit breaker will always be in the open state.



Wiring diagram of secondary terminal

16) Overcurrent and short circuit protection characteristic curve



17) Communication function

Communication interface	Interface type	Communication protocol	Mailing address	Communication rate
RS485	External Terminal	DL/T-645 Modbus (adjustable)	1-255	600-38400 (adjustable)

18) Matching table of sectional area and rated current of connecting wire

The rated current is not more than 400 A and the sectional area matched with the connecting wire

Rated current (A)	16, 20	25	32	40, 50	63	80	100	125, 140	160	180, 200, 225	250	315, 350	400
Conductor sectional area (mm)	2.5	4	6	10	16	25	35	50	70	95	120	185	240

The rated current is greater than 400 A and the matching cross-sectional area of the connecting conductor

Rated current A	Cable		Copper bar	
	Sectional area mm	Quantity	Dimensions mmxmm	Quantity
500	150	2	30x5	2
630	185	2	40x5	2
800	240	2	50x5	2

Electrical accessories

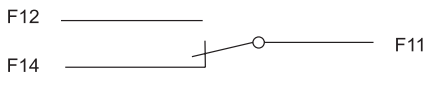
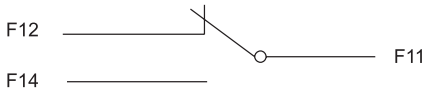
1) Auxiliary contact				
Parameter			Long line	Terminal
Input control	125	Left auxiliary (single auxiliary)	-	-
		Right auxiliary (single auxiliary)	□	●
	250	Left auxiliary (single auxiliary)	-	-
		Right auxiliary (single auxiliary)	□	●
	400	Left auxiliary (double auxiliary)	-	-
		Right auxiliary (double auxiliary)	□	●
	630	Left auxiliary (double auxiliary)	□	□
		Right auxiliary (double auxiliary)	□	●
	800	Left auxiliary (double auxiliary)	-	-
		Right auxiliary (double auxiliary)	□	●

Note: ● Default optional function □ Optional function-No such function
If the lightning protection module is selected, the lightning protection module is installed on the right side and the auxiliary contact is installed on the left side by default.

◆ Electrical parameters

Conventional heating current (A)		3A	
Category of use (14048, 5-1)		AC-15	DC-13
Operating voltage 50/60Hz	AC400V	0.47A	-
	DC220V	-	0.15A

◆ Electrical wiring diagram

Name of the attachment	Switch on	Opening/tripping
Auxiliary contact		

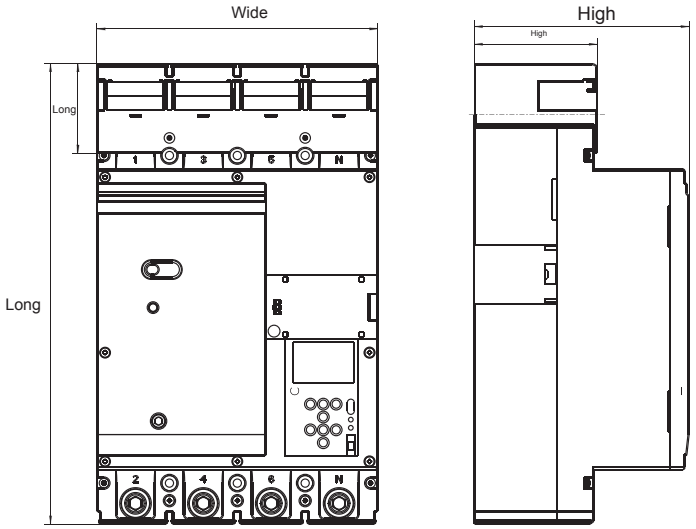
2) Lightning protection module

◆ Universal, power consumption: 0.46 W, users do not need wiring

3) Zero-fly arc cover

◆ 125, 250, 400, 630 B enclosure optional, no 800 enclosure

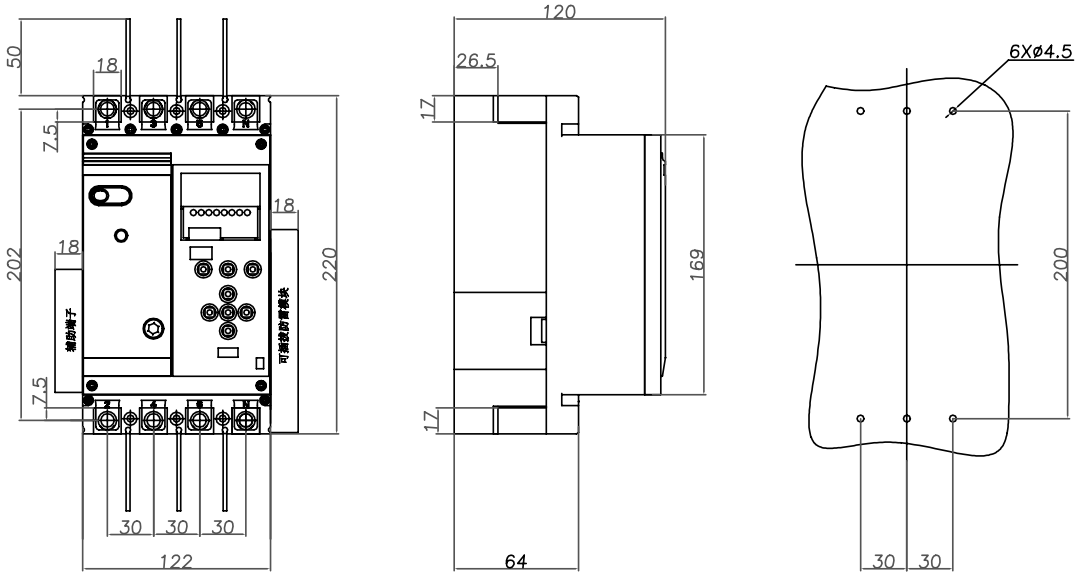
Electrical accessories



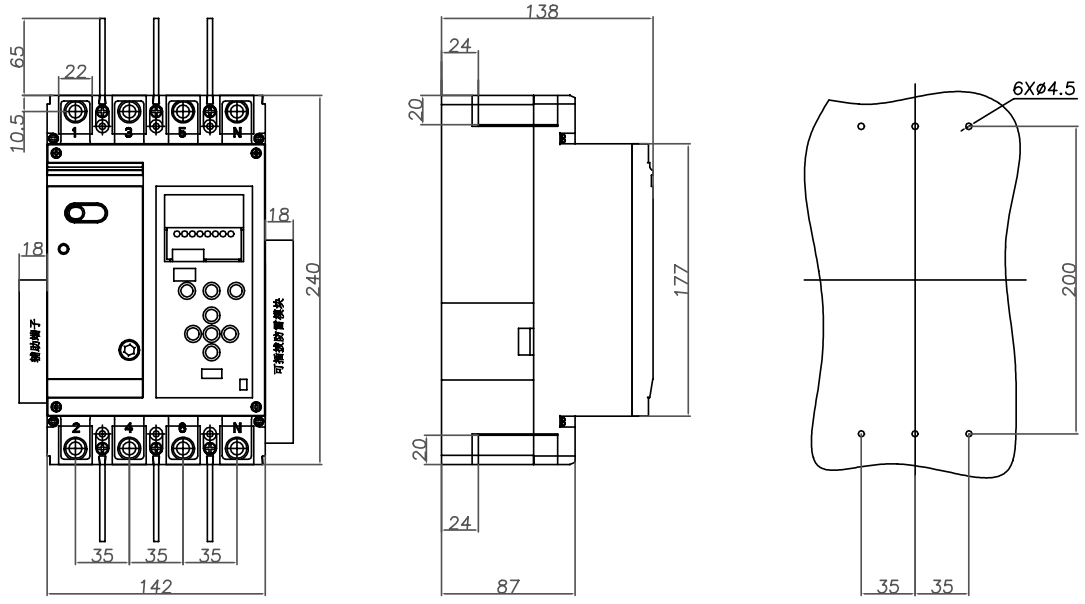
Zero flashover size (L * W * H)

Shell frame	Zero flashover size	Product overall size	Product Plus Zero Flying Fox Size
125	46*122*65	220*122*120	252*122*120
250	52.8*143*87.5	240*142*138	272*143*138
400	80.5*198*101	336*198*180	379.5*198*180
630b	76.5*240*104.5	350*240*183.5	379.5*240*183.5

Appearance and installation dimension

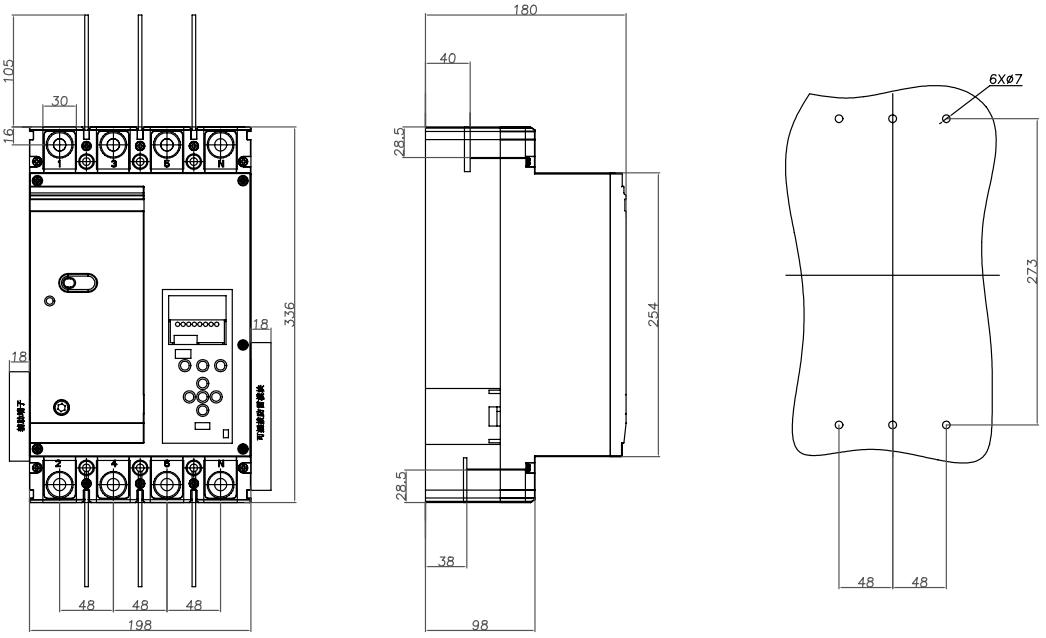


CDLE6-100/125

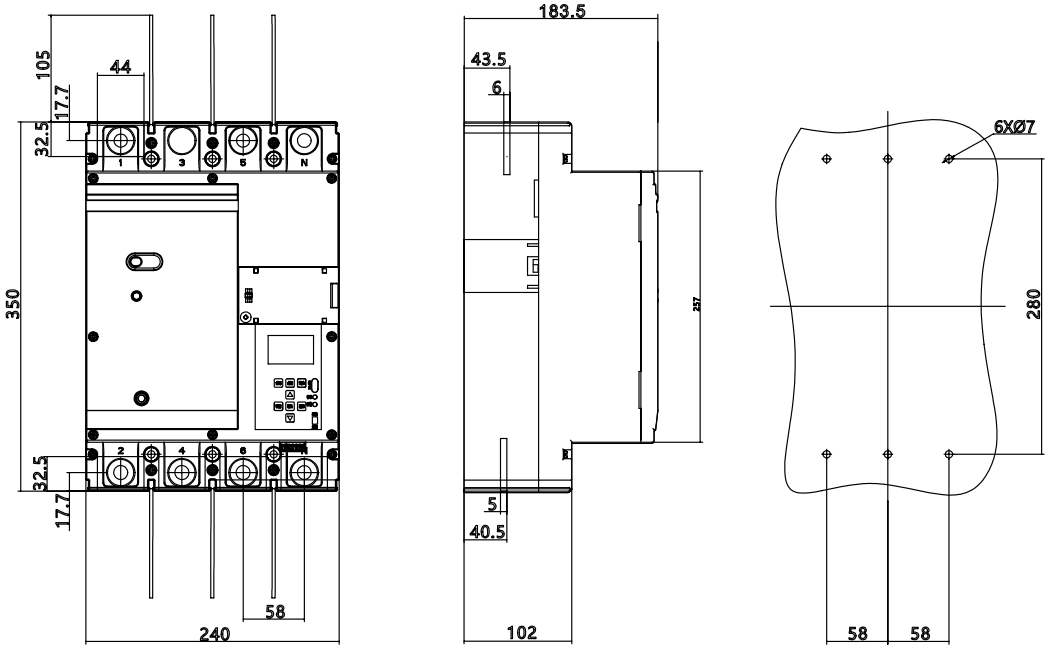


CDLE6-160/250

Appearance and installation dimension

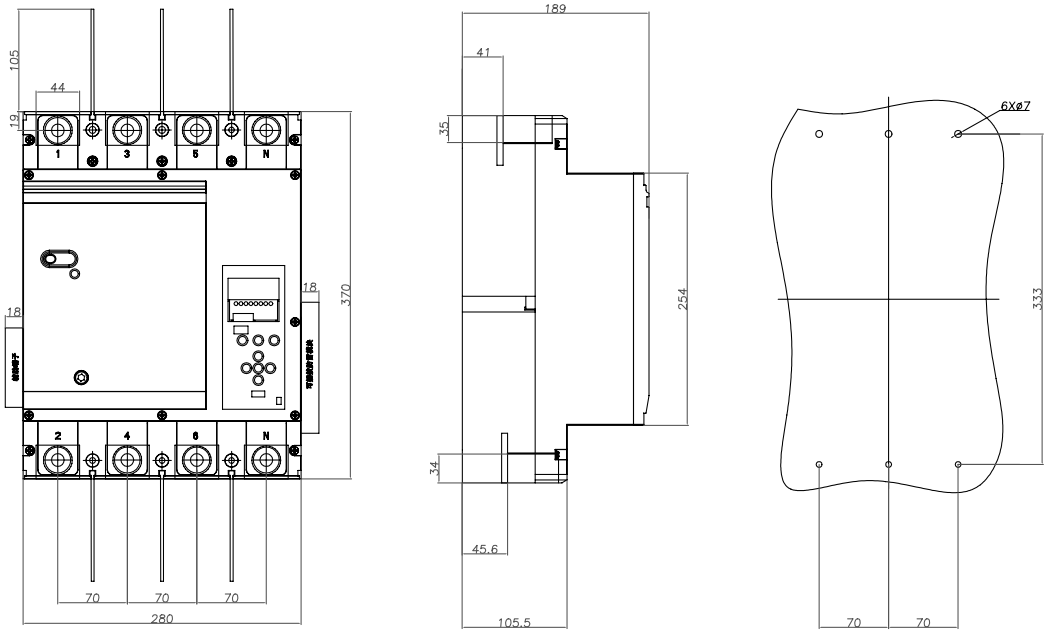


CDLE6-400/630SH



CDLE6-630b

Appearance and installation dimension



CDLE6-800

By default, the upper end of the PV product is connected to the grid side, and the lower end is connected to the inverter side.

Ordering instructions

The product name, model, specification, current, required accessories and quantity must be indicated when ordering.
For example: order CDLE6 residual current protection circuit breaker, 400 shell frame, M type, LCD controller, 100 sets in total; If CDL6Y-400M LCD needs special products such as customized photovoltaic, lightning protection module, infrared communication, etc., please note when ordering.