



CDM1 L Series Residual Current Circuit Breaker

User Manual



Available standard: GB/14048.2 IEC 60647-2

□ Please carefully read this User Manual before installing and using the product, and keep it in a safe place for further reference.

CDM1L Series Residual Current Circuit Breaker

Safety Notice

Please carefully read this manual before performing the installation, operation, running, maintenance and inspection, and accurately install and use this product according to this manual.



Danger:

- Do not operate the circuit breaker with your wet hands;
- Do not touch the live part in use;
- Disconnect the power supply before the maintenance and service of the product;
- Do not perform the product test using a short circuit method;



Attention:

- The installation, maintenance and service shall be performed by the qualified professional;
- The three-pole and four-pole products only use three-phase system power supply;
- All features of the product have been set in the factory; do not dismantle or adjust any part in use without permission;
- Check that the working voltage, the rated current, the frequency and the characteristics of the product meet the working requirements before use;
- To prevent the interphase short circuit, the bare wires or the copper busbar at the wiring terminal shall be insulated;
- To test the insulation resistance or the power frequency withstand voltage, please disconnect the electronic components between the current circuit, or this may cause damage to the product performance;
- This product only provides the protection for the leakage fault occurred at the load terminal;
- This product cannot provide the leakage protection for less wiring and wrong wiring;
- If heard the damage or abnormal sound when unpacking, stop the product immediately, and contact the supplier;
- Thanks for your cooperation to conduct the waste disposal for the scrapped product.

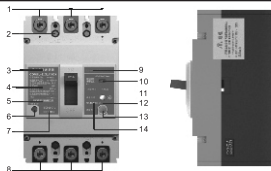
Warning: This product is used in the environment A. The harmful electromagnetic interference will occur when this product is used in the environment B, so the appropriate protection measures are taken by the user for this.

Understand CDM1L

● Packing list

No.	Name	Unit	Qty.
1	Product body	Pcs	1
2	Phase partition	Set	1 (2 for two-pole, 4 for three-pole, and 6 for four-pole)
3	Wiring screw	Set	1 (4 for two-pole, 3 for three-pole, and 8 for four-pole)
4	Mounting screw	Set	1 (2 for two-pole, 4 for three-pole, and 4 for four-pole)
5	Manual	Copy	1
6	Certificate	Sheet	1

● Introduction to panel



1	Power end	6	Test button	11	Breaking time
2	Mounting hole	7	Available standard	12	Indicator button
3	Product name	8	Load end	13	Test button
4	Technical parameters	9	Manufacture trademark	14	Use category
5	Manufacturer name	10	Rated residual current regulating switch		

Table Main technical parameters

Model	Rated working current I_n A	Rated insulation voltage U_i V	Rated impulse withstand voltage U_{imp} kV	Rated frequency Hz	Number of poles	Rated current I_n A	Rated limit circuit breaker breaking capacity $I_{cu}/\cos\phi$	Rated running circuit breaker breaking capacity $I_{cs}/\cos\phi$	Rated residual action current $I_{\Delta n}$ mA	Rated residual non-action current $I_{\Delta no}$ mA
CDM1L-100L	AC400	AC800	8	50	3	16, 20, 25, 32, 40, 50, 63, 80, 100	35kA/0.25	22kA/0.25	30/100/500	15/50/250
CDM1L-100M					4		50kA/0.25	35kA/0.25		
CDM1L-225L					2	100, 125, 140, 160, 180, 200, 225	30kA/0.25	15kA/0.25	100/300/500	50/150/250
CDM1L-225M					3		35kA/0.25	22kA/0.25		
CDM1L-400L					4		50kA/0.25	35kA/0.25		
CDM1L-400M					3	200, 250, 315, 350, 400	50kA/0.25	30kA/0.25	100/300/500	50/150/250
CDM1L-800L					4		70kA/0.2	40kA/0.25		
CDM1L-800M					3	400, 500, 630, 700, 800	50kA/0.25	30kA/0.25	300/500/1000	150/250/500
CDM1L-800M					4		70kA/0.2	40kA/0.25		

Normal operation, installation and transport conditions

● Normal working condition

- (1) The upper limit of the ambient temperature cannot exceed $+40^{\circ}\text{C}$, and the lower limit cannot be below -5°C , and the average within 24h cannot exceed $+35^{\circ}\text{C}$;
- (2) The altitude of the installation site cannot be greater than 2000m.
- (3) The relative humidity of atmosphere cannot exceed 50% at the highest ambient temperature of $+40^{\circ}\text{C}$, and there is a higher relative humidity at the lower temperature (for example, 90% at 20°C) by considering the condensation on the product due to the temperature changes;
- (4) Used in the medium without any explosion risk and without gas and conductive dust that may result in the corrosion to the metal and in the damage to the insulation;

● Normal installation conditions

- (1) Installed in the place without impact vibration and rain and snow invasion; the upper wiring terminal is connected to the power side and the lower wiring terminal is connected to the load side, with the inclination of not greater than 5° in each direction;
- (2) Pollution level: Grade 3
- (3) Installation category: III
- (4) The external magnetic field near the circuit breaker installation site cannot exceed 5 times of the Earth's magnetic field in any direction;

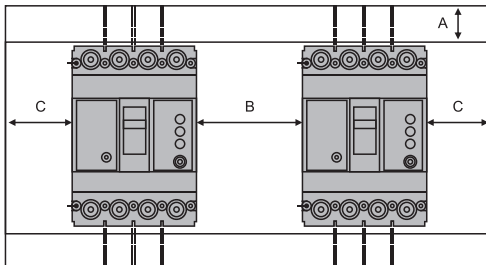
● Normal storage and transport conditions

- (1) The lower temperature limit is not below -25°C , and the upper limit cannot exceed $+55^{\circ}\text{C}$;
- (2) The relative humidity (at 25°C) cannot exceed 95%;
- (3) Please handle the product gently and do not make it upside down without any violent collision;

Install CDM1L

● Installation method

Safety gap for installation of circuit breaker



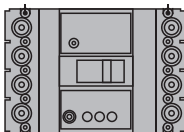
- Notes: A: From the circuit breaker terminal to the upper and lower terminal housing
B: Between two parallel circuit breakers
C: From the circuit breaker to the housing of the non-conductive part

Model	A	C	B (With accessories)	B (Without accessories)
CDM1L-100	60	30	60	30
CDM1L-225	60	30	60	30
CDM1L-400	110	35	70	35
CDM1L-800	110	35	70	35

- The circuit breaker can be mounted vertically or horizontally



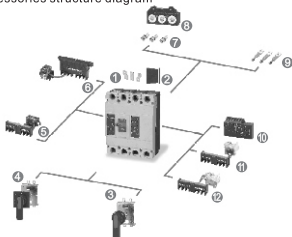
Vertical installation



Horizontal installation

Install CDM1L

- Accessories structure diagram

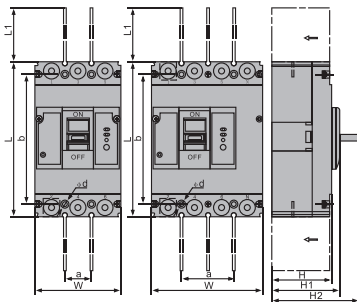


1. Expansion terminal
2. Phase partition
3. Round extended rotary handle
4. Square extended rotary handle
5. Shunt release
6. Undervoltage release
7. Plug-in wiring terminal
8. Plug-in plate
9. Fixed plate
10. Leakage alarm module
11. Alarm contact
12. Auxiliary contact

- Outline and installation dimensions

Outline and installation dimensions before installing circuit breaker

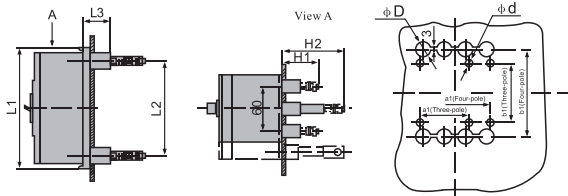
Unit: mm



Outline and installation dimensions before installing circuit breaker										
Model	Number of poles	Outline dimensions						Installation dimensions		
		L	L1	W	H	H1	H2	a	b	d
CDM1L-100	3	150	50	92	90	98	110	30	129	4.5
	4	150	50	122	90	98	110	60	129	4.5
CDM1L-225	2	166	65	75	71	79	94	35	126	4.5
	3	165	65	107	90	98	110	35	126	4.5
	4	165	65	142	90	98	110	70	126	4.5
CDM1L-400	3	258	100	150	102	113	154	44	194	6.5
	4	258	100	198	105	113	154	44	194	6.5
CDM1L-800	3	280	100	210	111	119	160	70	243	7
	4	280	100	280	111	119	160	70	243	7

Outline and installation dimensions after installing circuit breaker

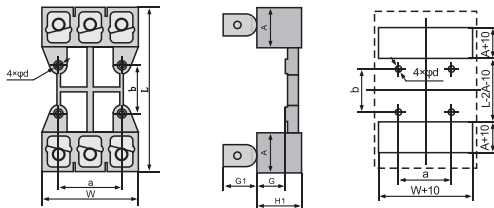
Unit: mm



Outline and installation dimensions after installing circuit breaker										
Model	Outline dimensions					Installation dimensions				
	L1	L2	L3	H1	H2	a1		b1		d
CDM1L-100	164	132	35	53	93	Three-pole	72	Four-pole	102	22
CDM1L-225	173	144	35	55	100	Three-pole	87	Four-pole	122	24
CDM1L-400	267	224	37	48.5	108.5	Three-pole	124	Four-pole	172	26
CDM1L-800	295	243	37	62	62	Three-pole	178	Four-pole	248	48

Outline and installation dimensions after installing the plug-in plate

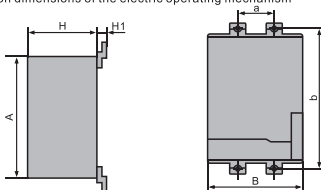
Unit: mm



Outline and installation dimensions after installing the plug-in plate											
Model	W		L	A	H1	G	G1	a		b	d
	Three-pole	Four-pole						Three-pole	Four-pole		
CDM1L-100	94	125	170	38	50	33	38	60	90	56	5.5
CDM1L-225	110	145	186	46	50	33	40	70	105	54	7
CDM1L-400	152	200	280	50	60	37	48	60	108	129	9
CDM1L-800	212	282	298	57	100	43	129	140	210	143	9

Outline and installation dimensions of the electric operating mechanism

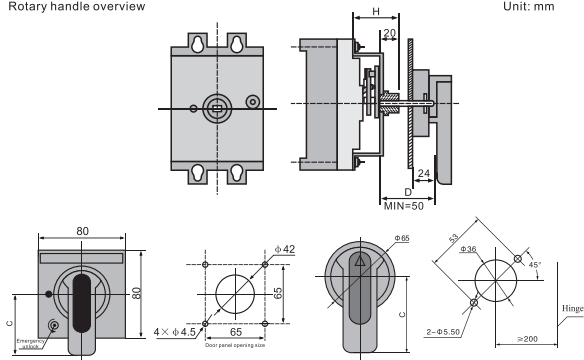
Unit: mm



Outline and installation dimensions of the electric operating mechanism						
Model	A	B	H	H1	a	b
CDM1L-100	116	90	77	12.5	30	129
CDM1L-225	116	90	77	15	35	126
CDM1L-400	176	130	115	27	44	215
CDM1L-800	176	130	115	31	70	243

Rotary handle overview

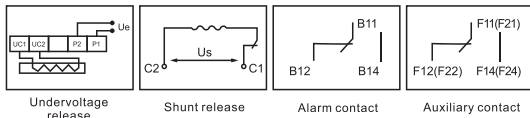
Unit: mm



Size C: CDM1L-100: 69 or 95 is optional, with the default value of 65
 CDM1L-225: 65 or 95 is optional, with the default value of 95
 CDM1L-400, 800: 95 or 125 is optional, with the default value of 125

Turning handle installation dimensions				
Model	CDM1L-100	CDM1L-225	CDM1L-400	CDM1L-800
Installation dimension H	61	57	90	88

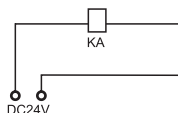
● Accessories wiring diagram



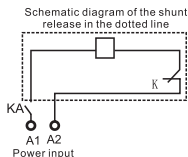
When the rated control power supply of the shunt release has the voltage of DC24V, the maximum length of the copper lead shall meet the following requirements.

Rated control power voltage U_s (DC24V)	Area of lead	1.5mm ²	2.5mm ²
100% U_s 85% U_s		150m 100m	250m 160m

If the requirements of the above table cannot be met, it is recommended that the shunt release control circuit is designed as shown in the figure below.



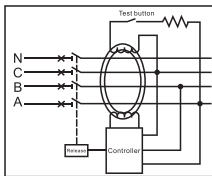
KA: refers to the DC24 intermediate relay, the current capacity of the contact is 1A.



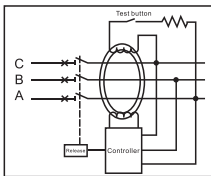
The voltage specifications of the power input end are as follows: AC50Hz 230V, 400V; DC110V, 220V

! The shunt release working time cannot exceed 5s, or the shunt release will be burnt. When the shunt release with the rated power control voltage of DC24V is selected, the rated current shall reach 4.5A to 5.5A.

Wiring diagram



Four-pole circuit breaker



Three-pole circuit breaker

Commissioning and operation

•Operation

Before installing the circuit breaker:

- (1) Check the technical parameters on the label are consistent with those specified in the ordering sheet;
- (2) Turn the handle of the circuit breaker to the "Release" position when in the factory;
- (3) Press the handle to the "Open" position;
- (4) Close the circuit breaker and turn the handle to the "Open" position;
- (5) Press the release button to allow the circuit breaker return back to the "Release" position;

When installing the circuit breaker:

- (1) Check whether the wiring is correct, and check that the "1", "3", "5" and "N" ends of the circuit breaker are incoming terminals, and the "2", "4", "6" and "N" ends are outgoing terminals without any reverse connection.
- (2) The matching between the cross sections of the recommended lead wire and the rated current of the release sees Table 1 and Table 2 to ensure the normal operation of the circuit breaker.
- (3) The torque of the wiring screw is listed in Table 3.

Table 1 Relation between the rated current of not greater than 400A and the cross section of the connecting lead wire

Rated current A	16 20	25	32	40 50	63	80	100	125 140	160	180 200 225	250	315 350	400
Cross section of lead mm ²	2.5	4	6	10	16	25	35	50	70	95	120	185	240

Table 2 Relation between the rated current of greater than 400A and the cross section of the connecting lead wire

Rated current A	Connecting wire			
	Copper lead or insulated copper wire		Copper busbar	
	Qty.	Cross section mm ²	Qty.	Size mmxmm
500	2	150	2	30 × 5
630	2	185	2	40 × 5
700, 800	2	240	2	50 × 5

Table 3 Torque table

Product model	Hex socket	Torque N.m
100/225AF	M8	9.5-10.5
400AF	M10	19.5-20.5
630/800AF	M12	29.5-30.5

● Operation

Select the circuit breaker with the corresponding rated current, the rated residual action current and the remaining break time according to the requirements of the protected objects in use, or select the electric leakage product with the adjustable rated residual action current for correct protection.

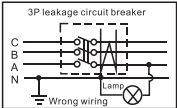
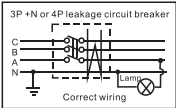
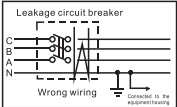
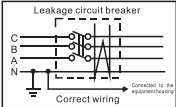
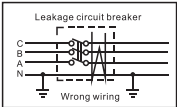
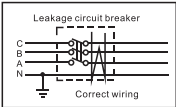
Maintenance and service

The maintenance and service must be performed by the qualified professionals.

Cut off the superior power supply to prevent the live incoming terminal: (except for the item test using the leakage test button); under the normal operation conditions, the maintenance and service shall be performed every year, with the maintenance contents as follows.

Type	Item	Content
Circuit breaker with a leakage function module	Appearance	No dust, no condensation; clean if necessary
		No damage
		No damage on the housing; no discolor on the connection terminal
	Phase partition	Insert the phase partition into the proper position
	Wiring terminal connection	Tightened according to the torque listed in the torque table 3 without any looseness.
	Handle closed/ Open action	Flexible action
	Test button	After release, the handle is in the Release position.
	Insulation test	Do not perform the insulation test between the outgoing terminal phases
	Test button	Perform the simulation leakage protection test monthly (to trip the circuit breaker by test)
With the accessory circuit breaker (if available)	Test button (reset type)	Perform the simulation leakage protection test monthly (to trip the circuit breaker by test); only when the reset button presses, the circuit breaker can be closed normally
	With the undervoltage release	When the undervoltage release power supply is disconnected, the circuit breaker can reliably open The handle is in the release position
	With the shunt release	When the rated voltage is applied onto the release, the circuit breaker can reliably open The handle is in the release position
	With an auxiliary contact	To open and close the circuit breaker, the auxiliary contact switching signal shall be normal
	With an alarm contact	To close and release (press the release button), alarm contact switching signal shall be normal.

Faults and solutions shown in Table below

	Fault	Cause	Solution
Maloperation	Proper operation of the residual current circuit breaker causes maloperation.	As the three-pole residual current circuit breaker is used in the three-phase four-wire circuit, and the normal working current of the zero line does not pass the leakage current mutual inductor, the single-phase load leakage circuit breaker will work when startup. 	The three-phase four-wire circuit must use the four-pole residual current circuit breaker. 
	Zero line grounding at the load side of the residual current circuit breaker causes maloperation.	The grounding of the zero line at the load side of the residual current circuit breaker may result in maloperation due to the normal working current flowing into the earth. 	将接地线接到漏电断路器电源侧的零线上。 
	Caused by the leakage current and the lead-ground capacitance current	The lead wire at the load side is laid too long along with the ground, having a large capacitance current to the ground As the insulation of the lead wire at the load side drops, the leakage current to the ground increases	Select the leakage circuit breaker with a higher residual action current
No action	The residual current circuit breaker does not work	There is repeated grounding at the load side of the residual current circuit breaker. 	Remove the repeated grounding wire at the load side 
	The leakage test circuit breaker does not work	Phases A and C at the power side of the circuit breaker are not both connected to the power supply or the power voltage is abnormal	Connect the phases A and C at the power side to the power supply, or check the power voltage

Company commitment

Under the premise that the user complies with the use, storage conditions and that the product sealing stamp is intact, the company will repair or replace any damaged product and those that cannot be used normally due to poor manufacturing free of charge within 36 months from the date of production. The paid repair will be provided if the warranty period expires. However, the paid repair is only provided for any damage caused by one of the following situations:

- (1) Improper use, maintenance, or storage;
- (2) Modification or improper maintenance without permission;
- (3) Damage caused by falling or installation;
- (4) Force majeure such as earthquakes, fires, lightning strikes, abnormal voltages and secondary disasters.

If you have any questions, please contact your dealer or our customer service department.

DELIXI
ELECTRIC

Certificate

DELIXI ELECTRIC LTD

Name: Residual current
circuit breaker

Model: CDM1L series

This product is allowed to
be shipped because
passing the inspection.

Available
standard: GB/T 14048.2

Inspector: Inspector 1

Manufacture
date: See the label
inside the box

www.cn-delixi.com

This Manual is Third Edition issued in Apr, 2020