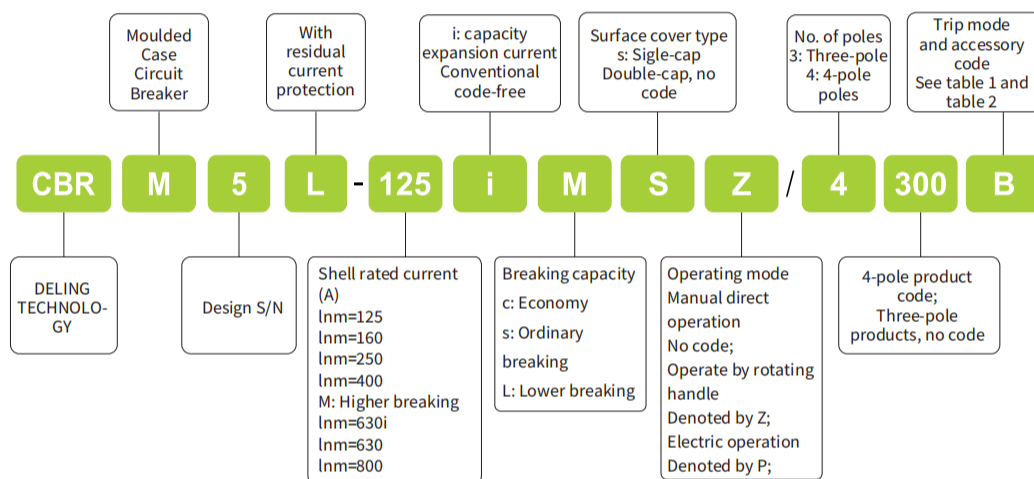




Scope of Application

CBRM 5L Series Circuit Breaker with Residual Current Protection (hereinafter referred to as Circuit Breaker) is suitable for distribution network with a frequency of 50Hz AC, the rated working voltage of 400V, the rated insulation voltage of 1000V and the rated current of 800A. It can be used to provide indirect contact protection for people, prevent fire danger caused by grounding fault current caused by equipment insulation damage, distribute electric energy, protect overload and short circuit of lines and equipment, and also be used for infrequent switching of lines and infrequent starting of motors. The rated residual current $I_{\Delta n}$ and the maximum operating time of the rated residual current can be adjusted on site according to the actual situation; When the phase voltage is reduced to 85V, the leakage protection module can still work normally and has the function of leakage alarm output. The products conform to IEC60947-2 and GB/T14048.2 standards.

Model and Meaning



4-pole product code

Type A: Overcurrent tripping element is not installed at N pole, and N pole is always ON and not combined with other three poles.

Type B: Overcurrent tripping element is not installed at N pole, and N pole is combined with other three poles (N pole is combined first and then separated).

Environmental conditions

- ◆ The installation site shall be free of conductive dust, corrosive gas, flammable and explosive gas, rain and snow;
- ◆ Altitude: *2000m;
- ◆ Ambient temperature: -5°C~+40°C, Average maximum temperature/day: ≤+35°C;
- ◆ Relative humidity: ≤ 50% (when the ambient temperature is +40°C);
- ◆ The magnetic field strength of the external magnetic field in any direction of the installation site shall not exceed 5 times of the geomagnetic field;
- ◆ The installation position shall have good ventilation and heat dissipation conditions.

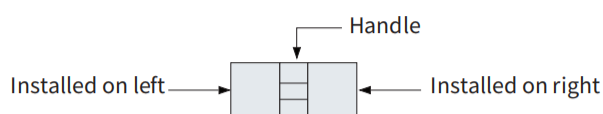
Classification of circuit breakers

Classified according to the number of poles: triple-pole and 4-pole

Classified according to the application: For power distribution and motor protection

Classified according to the operation modes: Operated by handle, electric operation (denoted by P), operated by rotating handle (denoted by Z for switchgear)

Trip mode and accessory code

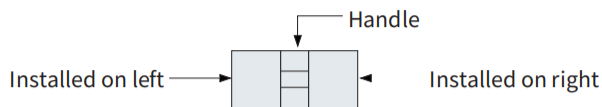


- Alarm contact ○ Undervoltage trip
- Auxiliary contact → Lead direction
- Shunt trip

Table 1

Single-cap type	trip mode		Accessory installation side and lead direction			
	Internal accessory code					
Accessory name	Electromagnetic type Trip	Composite Trip	CBRM5L-125, 160	CBRM5L-250	CBRM5L-400, 630i	CBRM5L-630, 800
No accessories	200	300				
Alarm contact	208	308				
Shunt trip	210	310				
Auxiliary contact	220	320				
Undervoltage trip	230	330				
Shunt trip Auxiliary contact	240	340				
Shunt trip Undervoltage trip	250	350	—	—	—	—
Two sets of auxiliary contacts	260	360				
Auxiliary contact Undervoltage trip	270	370				
Shunt trip Alarm contact	218	318				
Auxiliary contact Alarm contact	228	328				
Undervoltage trip Alarm contact	238	338				
Shunt trip Auxiliary contact Alarm contact	248	348				
Two sets of auxiliary contacts Alarm contact	268	368				
Auxiliary contact Undervoltage trip Alarm contact	278	378				

Trip mode and accessory code



- Alarm contact ○ Undervoltage trip
- Auxiliary contact → Lead direction
- Shunt trip

Table 2

Double-cap	trip mode Internal accessory code		Accessory installation side and lead direction		
Accessory name	Electromagnetic type Trip	Composite Trip	CBRM5L-125, 160	CBRM5L-250	CBRM5L-400, 630i
No accessories	200	300			
Alarm contact	208	308			
Shunt trip	210	310			
Auxiliary contact	220	320			
Undervoltage trip	230	330			
Shunt trip, auxiliary contact	240	340			
Shunt trip, undervoltage trip	250	350			
Two sets of auxiliary contacts	260	360			
Auxiliary contact, undervoltage trip	270	370			
Shunt trip, alarm contact	218	318			
Auxiliary contact, alarm contact	228	328			
Undervoltage trip, alarm contact	238	338			
Shunt trip Auxiliary contact Alarm contact	248	348			
Two sets of auxiliary contacts Alarm contact	268	368			
Auxiliary contact Undervoltage trip Alarm contact	278	378			

Only type B can be used when accessories are installed on right side of current leakage 4P product

Main Technical Parameters

Model		CBRM5L-125、160				CBRM5L-250				CBRM5L-400、630i				CBRM5L-630、800			
Shell current Inm (A)		125、160				250				400、630i				630、800			
Rated working current In (A)		16、20、25、32、40、50、63、80、100、125、140、160				100、125、140、160、180、200、225、250				225、250、315、350、400、500、630				400,500 630,700,800			
No. of poles		3	4			3	4			3	4			3	4		
Rated insulation voltage Ui(V)		1000												800			
Rated working voltage Ue(V)		AC400															
Rated impact withstand voltage (kV)		8															
Flashing distance (mm)		50								100							
Breaking ability level			S	L	M		S	L	M		S	L	M		S	L	M
Limit short circuit breaking capacity Icu (kA)			25	36	50		25	36	50		50	50	70		50	50	70
Short circuit breaking capacity Ics (kA)			15	25	36		15	25	36		36	50	70		36	50	70
Rated residual operating current IΔn (mA)		100 / 300 / 500												300 / 500 / 1000			
Rated residual non-operating current IΔno(mA)		1/2 IΔn															
Residual current protection operation time		IΔn	2IΔn	5IΔn	10IΔn	IΔn	2IΔn	5IΔn	10IΔn	IΔn	2IΔn	5IΔn	10IΔn	IΔn	2IΔn	5IΔn	10IΔn
Maximum breaking time (s)	Non-delay type	0.3	0.15	0.04	0.04	0.3	0.15	0.04	0.04	0.3	0.15	0.04	0.04	0.3	0.15	0.04	0.04
	Delay time	0.4/1															
Operational performance (times)	Powered	1500				1000				1000				1000			
	Not powered	8500				7000				4000				4000			
	Total	10000				8000				5000				5000			

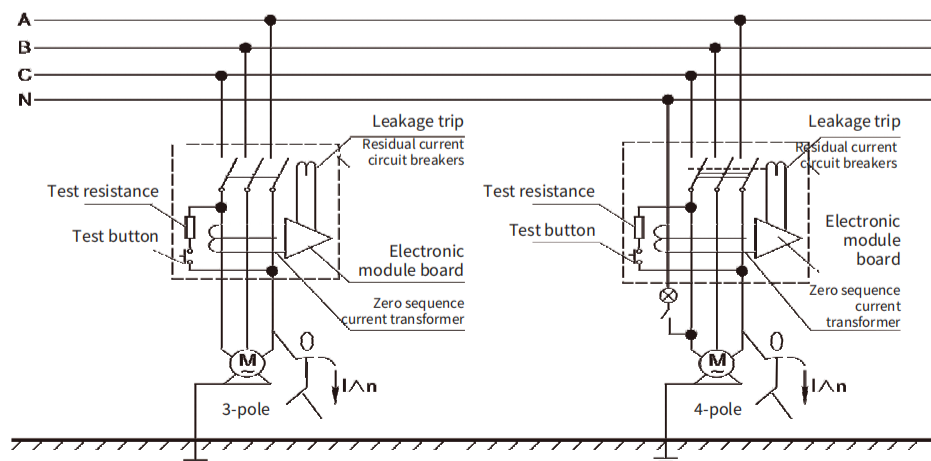
Structure and working principle:

Structure

The series of circuit breakers are electronic current-operated leakage protectors. The main components include main switch (including over-current trip), zero-sequence current transformer, electronic amplification components, leakage trip, test device, all of which are installed in a plastic housing.

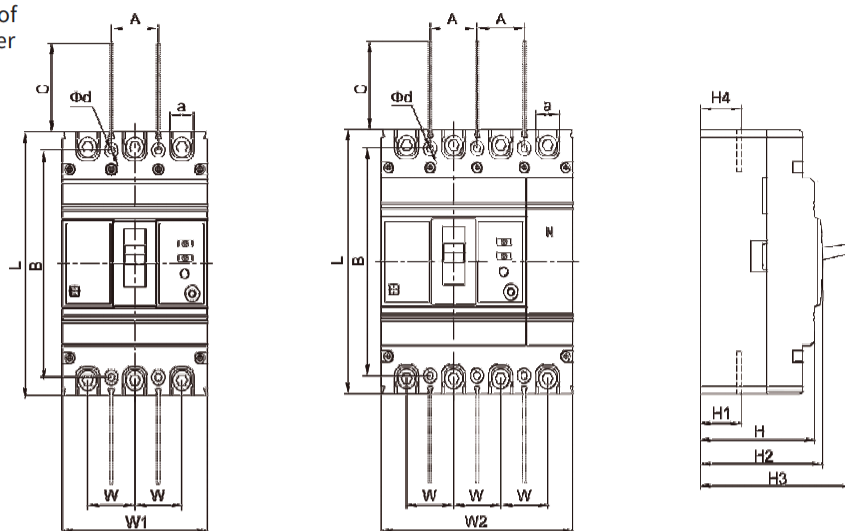
Working principle

In case of any leakage or electric shock in the protected circuit, the zero sequence current transformer has a signal output. When the signal output reaches a certain value, it triggers the thyristor to conduct and makes the leakage trip act, thus driving the traction bar to disconnect the operating mechanism in a short time and cut off the power supply, thus realizing the leakage protection function. (The schematic diagram of working principle is as follows)



Overall and installation dimensions - single-cap

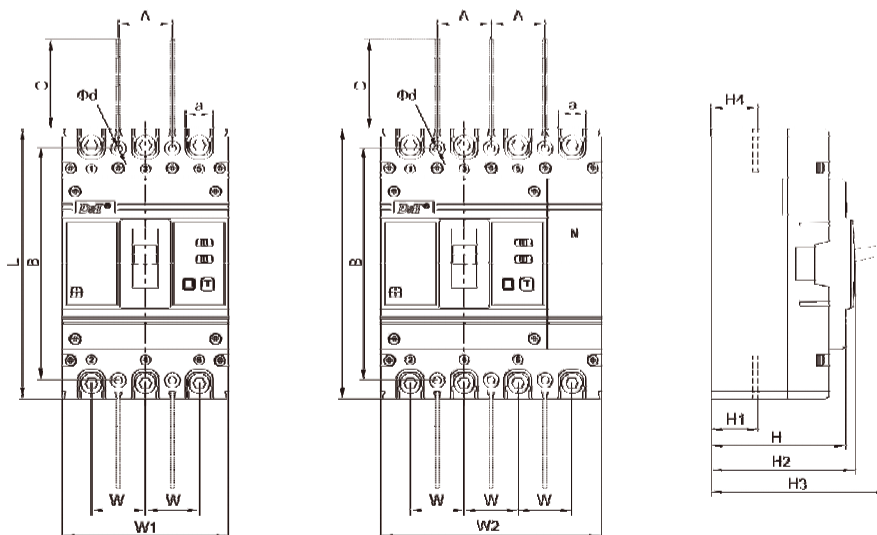
Front wiring of circuit breaker board



Model	Overall dimensions (mm)										Installation size (mm)			
	C	L	A	W1	W2	H	H1	H2	H3	H4	W	B	d	a
CBRM5L-125 CBRM5L-160	50	150	30	92	122	73	26	78.5	98	26	30	129	Φ4.2	20.5
CBRM5L-250	65	165	35	107	142	76.6	27.6	82	103	29	35	126	Φ5	25
CBRM5L-400 CBRM5L-630i	107.5	257	44	140	184	108	35.5	115.2	157	37.5	44	194	Φ7	33
CBRM5L-630 CBRM5L-800	107.5	280	70	210	280	116	42.5	113	155	41	70	243	Φ7	45


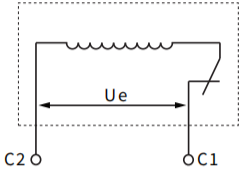

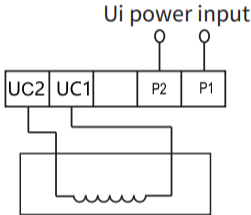


Overall and installation dimensions - double-cap type


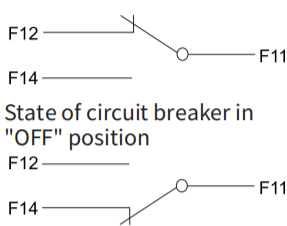
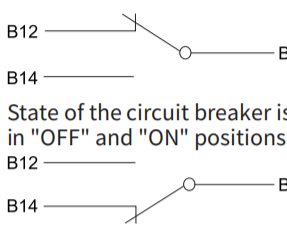
Front wiring of circuit breaker board



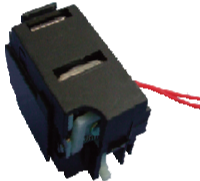
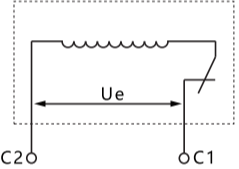
Model	Overall dimensions (mm)										Installation size (mm)			
	C	L	A	W1	W2	H	H1	H2	H3	H4	W	B	d	a
CBRM5L-125 CBRM5L-160	50	150	30	92	122	75	26	80	98	26	30	129	Φ4.2	20.5
CBRM5L-250	65	165	35	107	142	79	27.6	83	103	29	35	126	Φ5	25
CBRM5L-400 CBRM5L-630i	107.5	257	44	140	184	108	35.5	115.2	157	37.5	44	194	Φ7	33


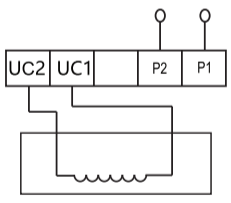
Circuit
Breaker
Accessories
(single-cap)


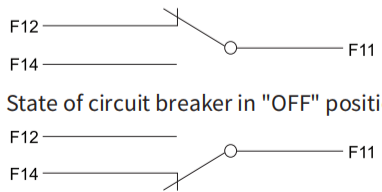
Rated control supply voltage $U_s(V)$	AC230V、AC400V；DC24V
Operating voltage (V)	(0.7~1.1) U_s
Shunt trip <div>  </div>	<div>  </div> <p>Note: K - The normally closed contact of the microswitch connected with the coil in series inside the shunt trip is automatically disconnected when the circuit breaker is opened, the normally closed contact is closed when the circuit breaker is closed. The wiring diagram of internal accessories for the circuit breaker is in the dashed box.</p>
Rated control supply voltage $U_s(v)$	AC230V、AC400V
Operating voltage (V)	When the rated working voltage is at 35% ~ 70%, the circuit breaker can be reliably tripped; When the rated working voltage is at 85% ~ 110%, the circuit breaker should be closed, and when it is lower than 35%, it should be prevented from closing.
Undervoltage trip <div>  </div>	<div>  </div> <p>Note: P1, P2 and UC2, UC1 are terminal numbers</p>
Resistive current $I_{th}(A)$	3A
Rated working current I_e (A)	0.26A when $I_n \leq 250A$; 0.3A when $I_n \geq 400A$
Auxiliary contact <div>  </div>	<p>F12 ———— F11</p> <p>F14 ————</p> <p>State of circuit breaker in "OFF" position</p> <p>F12 ———— F11</p> <p>F14 ————</p> <p>State when the circuit breaker is in "ON" position</p>
Resistive current $I_{th}(A)$	3A
Rated working current $I_e(A)$	0.26A when $I_n \leq 250A$; 0.3A when $I_n \geq 400A$
Alarm contact <div>  </div>	<p>B12 ———— B11</p> <p>B14 ————</p> <p>State of circuit breaker in "OFF" and "ON" positions</p> <p>B12 ———— B11</p> <p>B14 ————</p> <p>State of circuit breaker in free trip position (alarm)</p>

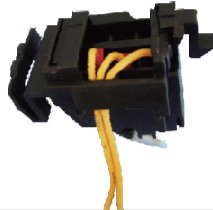

Resistive current $I_{th}(A)$	3A	
Rated working current $I_e(A)$	0.26A when $I_n \leq 250A$; 0.3A when $I_n \geq 400A$	
Auxiliary contact, alarm contact	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>State of circuit breaker in "OFF" position</p> <p>State when the circuit breaker is in "ON" position</p> </div> <div style="text-align: center;">  <p>Wiring diagram</p> </div> <div style="text-align: center;">  <p>State of the circuit breaker is in "OFF" and "ON" positions</p> <p>State of circuit breaker in free trip position (alarm)</p> </div> </div>	

Circuit Breaker Accessories (double-cap)

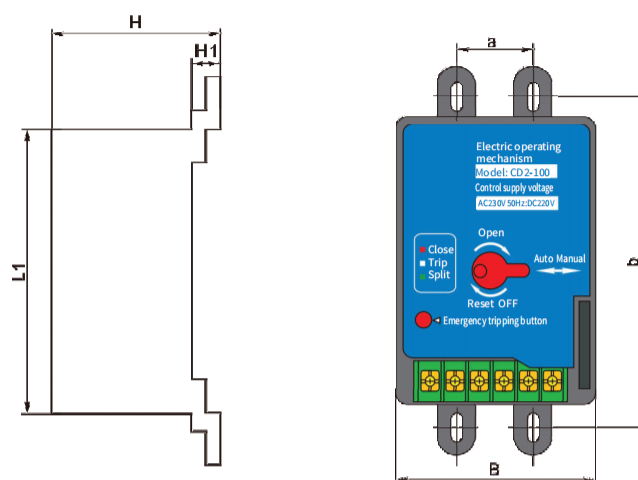
Rated control supply voltage $U_s(v)$	AC230V、AC400V; DC24V	
Operating voltage (V)	$(0.7 \sim 1.1)U_s$	
Shunt trip	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  <p>Note: K - The normally closed contact of the microswitch connected with the coil in series inside the shunt trip is automatically disconnected when the circuit breaker is opened, the normally closed contact is closed when the circuit breaker is closed. The wiring diagram of internal accessories for the circuit breaker is in the dashed box.</p> </div> </div>	

Rated control supply voltage $U_s(v)$	AC230V、AC400V	
Operating voltage (V)	When the rated working voltage is at 35% ~ 70%, the circuit breaker can be reliably tripped; When the rated working voltage is at 85% ~ 110%, the circuit breaker should be closed, and when it is lower than 35%, it should be prevented from closing.	
Undervoltage trip	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Ui power input</p>  <p>Note: x-terminal; the wiring diagram of internal accessories for the circuit breaker is in the dashed box.</p> </div> </div>	

Resistive current $I_{th}(A)$	3A	
Rated working current $I_e(A)$	0.26A when $I_n \leq 250A$; 0.3A when $I_n \geq 400A$	
Auxiliary contact	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;">  <p>State of circuit breaker in "OFF" position</p> <p>State when the circuit breaker is in "ON" position</p> </div> </div>	

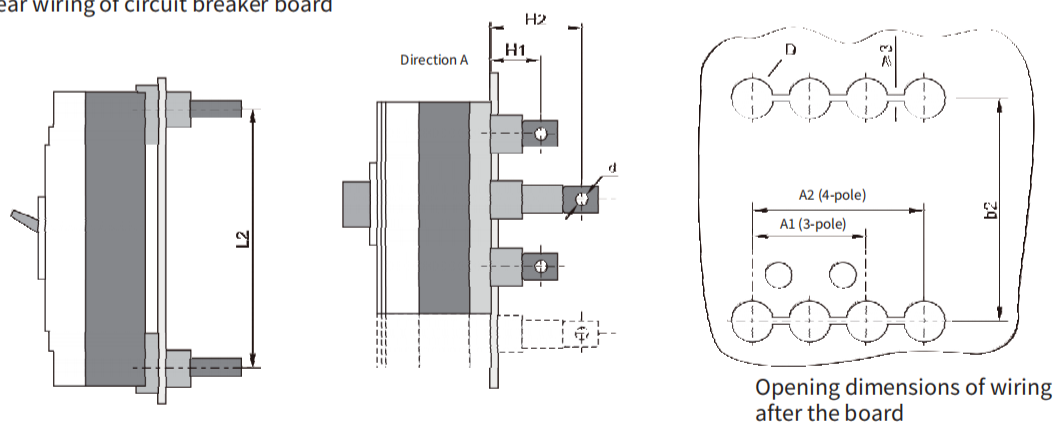
Resistive current I _{th} (A)	3A	
Rated working current I _e (A)	0.26A when I _n ≤250A; 0.3A when I _n ≥400A	
Alarm contact	<div></div> <div><div><div>B12 ———— / ————</div><div>B14 ———— / ————</div><div>State of circuit breaker in "OFF" and "ON" positions</div><div>B12 ———— / ————</div><div>B14 ———— / ————</div><div>State of circuit breaker in free trip position (alarm)</div></div><div></div></div>	
Resistive current I _{th} (A)	3A	
Rated working current I _e (A)	State of circuit breaker in free trip position (alarm)	
Auxiliary contact, alarm contact	<div><div><div><div><div>F12 ———— / ————</div><div>F14 ———— / ————</div><div>State of circuit breaker in "OFF" position</div><div>F12 ———— / ————</div><div>F14 ———— / ————</div><div>State when the circuit breaker is in "ON" position</div></div><div></div></div><div><div><div>B12 ———— / ————</div><div>B14 ———— / ————</div><div>State of circuit breaker in "OFF" and "ON" positions</div><div>B12 ———— / ————</div><div>B14 ———— / ————</div><div>State of circuit breaker in free trip position (alarm)</div></div><div></div></div></div><div>Wiring diagram</div></div>	
Input voltage (V)	AC230V、AC400V；DC110V、DC230V、DC24V	
Electric operating mechanism	<div><div><div></div><div><div><div><div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div></div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Overall and installation dimensions of electric operating mechanism



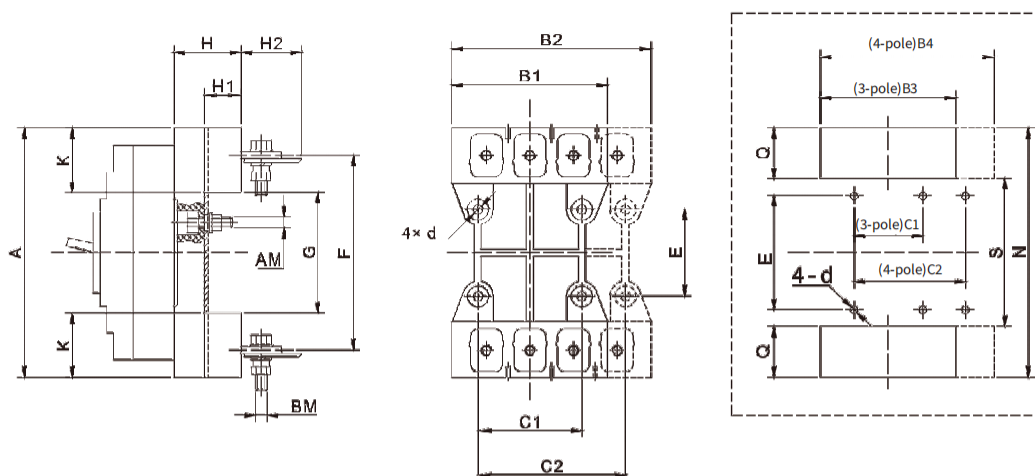
Model	Overall dimension (mm)				Installation size (mm)	
	L1	B	H	H1	a	b
125、160	116	90	97	16	30	129
250	116	90	95	16	35	126
400、630i	176	130	151	34.5	44	194
630、800	176	130	146	31	70	243

Overall and installation dimensions of rear wiring of circuit breaker board



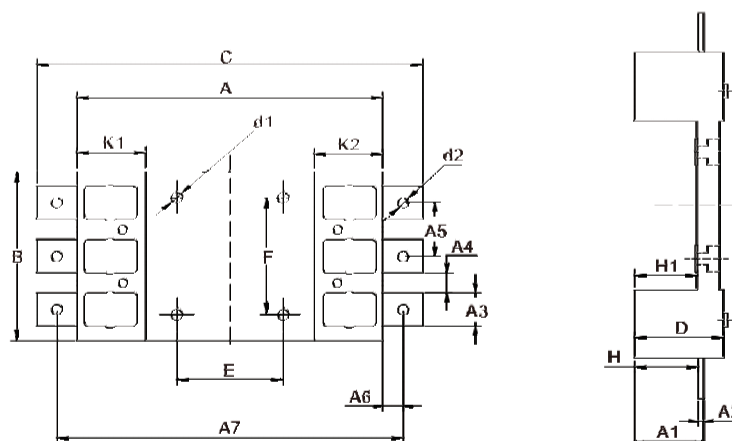
Model	Overall dimension (mm)			Installation size (mm)				
	L2	H1	H2	A1	A2	b2	D	d
125、160	132	42	75	60	90	132	Φ24	Φ8.5
250	144	39	73	70	105	144	Φ24	Φ8.5
400、630i	226	34	69	87	130.5	226	Φ32	Φ12.5
630、800	243	62	84	70	140	243	Φ48	Φ14

Overall and installation dimensions of rear wiring of circuit breaker plug-in board



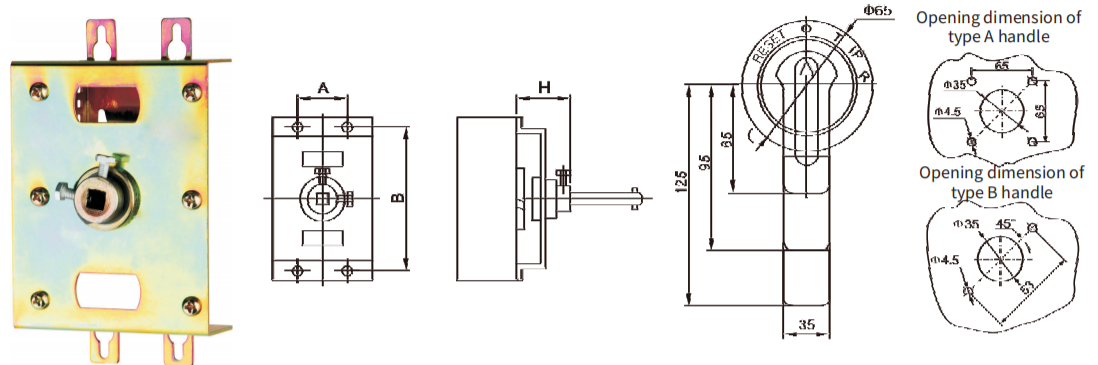
Model	A	B1	B2	C1	C2	E	F	G	K	H	H1	H2	N	S	Q	B3	B4	AM	BM	4-d
125、160	169	91	125	60	90	56	132	92	38	50	33	28	179	83	48	101	135	M6	M8	Φ6.5
250	186	107	145	70	105	54	145	94	46	50	33	37	196	84	56	117	155	M6	M8	Φ6.5
400、630i	280	144	188	88	132	145	224	180	50	60	38	46	290	170	60	154	198	M8	M12	Φ8.5
600、800	300	210	280	90	160	142	243	174	63	87	61	21	315	170	73	220	290	M10	M14	Φ10

Overall and installation dimensions of front wiring of circuit breaker plug-in board



Model	Overall and installation dimensions (mm)																		
	A	B	C	D	E	F	H	H1	K1	K2	d1	d2	A1	A2	A3	A4	A5	A6	A7
125、160	172	96	216	50	61	66	15	35	38	38	Φ6.5	M8	18	3	19	10.5	30	10.5	196
250	183	110	261	51.5	64	70	42.5	35	44	44	Φ6.5	M8	49	3	22	13.5	35	22	227
400、630i	282	144	362	82	146	88	20	59	50	50	Φ8.5	Φ11	26	6	30	14.5	44	25	331
630、800	305	210	409	87	144	90	16	61	62	62	Φ11	Φ13	24	8	35	35	70	36	377

Overall and installation dimensions of rotating handle operating mechanism



Model	125、160	250	400、630i	630、800
Installation dimension H(mm)	60	60	97	90
A	30	35	44	70
B	120	142	195	243

Note: The standard is 150mm for the connecting rod when delivery.

Operation and Maintenance

- ◆ When installing the circuit breaker, it is necessary to read the relevant contents of the overall and installation dimension in detail, and check whether the technical parameters listed on the circuit breaker label meet the service requirements.
- ◆ When installing the circuit breaker with electric operating mechanism, the electric operating mechanism should not be removed, otherwise the operating features of the electric mechanism will be affected. The operating methods are as follows: After the circuit breaker trips, the electric operation will automatically make the circuit breaker in the open position, that is, the circuit breaker will be re-closed. To close the circuit breaker, only the upper computer needs to send a closing command, and when opening, it will send an opening command. If it is required to manually open and close the circuit breaker, toggle the button on the electric operation to manual. If the circuit breaker is in a free tripping position, it must be closed manually first and then close and open the circuit.
- ◆ The internal and external accessories of the circuit breaker have been adjusted according to the technical requirements when leaving the factory. Users should not adjust them without authorization, and they can be installed directly without opening the cover..
- ◆ The phase lines on the circuit breaker should be connected reliably, otherwise the internal electronic circuit will not work normally, which will affect the protection function of the circuit breaker.
- ◆ For circuit breakers equipped with undervoltage trip, the undervoltage trip must be switched on to the corresponding rated working voltage first, otherwise the circuit breaker cannot be closed.

Transportation and Storage

Transposition

During the transportation of products, the invasion and mixed loading of harmful liquids such as water, rain, snow or other chemical solvents and corrosive liquids shall be prevented; Prevent strong impact and extrusion between objects; Stack them according to the direction indicated by packaging, and for the number of stacks, please refer to the outer identification of the package.

Storage

- ◆ Storage environmental conditions: Ambient temperature: $-10^{\circ}\text{C} \sim +45^{\circ}\text{C}$;
- ◆ Relative humidity: $\leq 90\%$ (when the ambient temperature is $+20^{\circ}\text{C}$);
- ◆ The storage site shall be free of dust and conductive dust;
- ◆ No corrosive, flammable and explosive gases, no rain and snow invasion;
- ◆ Good drying and ventilation;
- ◆ Stack according to the direction indicated by packaging, and the number of stacks shall not be higher than the number marked on the outer packaging box.

Precautions

- ◆ We do not assume the responsibility of "Repair, Replacement or Compensation of Faulty Products" for non-quality problems caused by improper installation and use and burning of terminals caused by improper wiring.
- ◆ If there are any problems in the use of products, please contact the local distributor or our customer service centre.