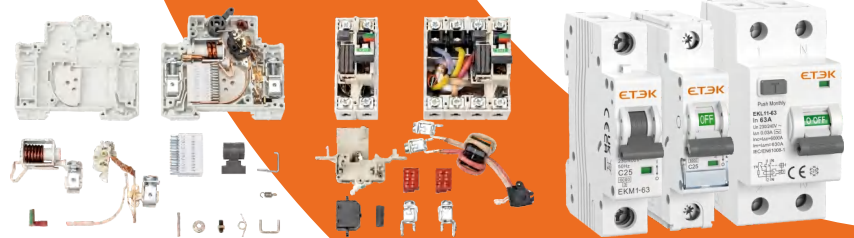


LOCALIZED ASSEMBLY SOLUTIONS

» *Always for your safety*



ZHEJIANG ETEK
ELECTRICAL TECHNOLOGY CO.,LTD.

Company Introduction

Zhejiang ETEK Electrical Technology Co., Ltd. (Abbreviation: ETEK Electric) is a professional manufacturing company dedicated to the research, development, production, and sales of low-voltage electrical appliances. The company was established in 2011 and is located in Wenzhou City, Zhejiang Province. At present, the company has 40K sqm of modern manufacturing bases in Wenzhou and Wuhu with over 500 employees, including over 50 R&D and technical personnel. ETEK Electric has multiple production workshops for mold design, parts manufacturing, welding, and assembly. Additionally, they have multiple automated production lines for MCB and RCCB. Our products include MCB, RCCB, RCBO, AFDD, MCCB, ACB, EV Chargers, Photovoltaic DC products, etc., which can meet the needs of different countries and are widely used in fields such as residential, commercial, and industrial.

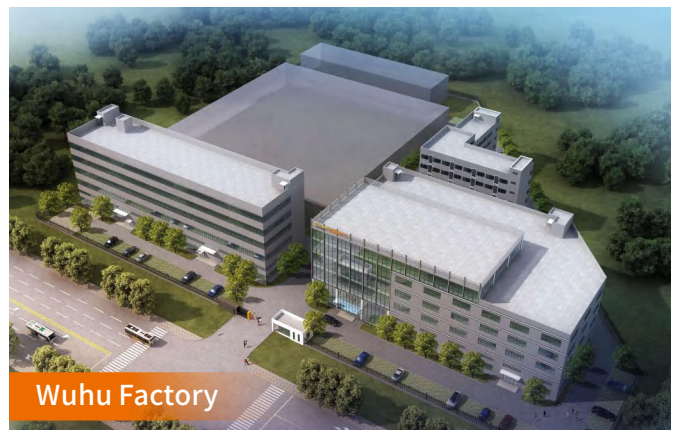
ETEK Electric has passed ISO9001 quality management system and environmental management system certification. The company have built our own low-voltage electrical testing center, and most of the testing items can meet the requirements of international IEC standards, in addition, our products have obtained international CB, TUV, VDE, CE, RoHS and other quality certificates.

ETEK Electric constantly masters and breaks through the core technology of circuit breakers, with more than 100 national patents. Focusing on independent brand construction is crucial for the company's development. The "ETEK" trademark is registered in over 80 countries. Products are exported to over 60 countries and regions including the European Union, South America, the Middle East, Africa, and Southeast Asia.

We also support OEM, ODM, OBM, SKD, CKD and other business cooperation models, and provide customers with a full range of services covering market cultivation, technical training, and factory construction.

ETEK Electric has been adhering to the business policy of "Growth", "Quality", "Efficiency", and "Innovation". In 2023, ETEK Electric has formulated the fifth 3-year strategic plan, which specifies the three major initiatives of expanding the production scale, enhancing the new energy market share, and expanding the independent brand, to realize the annual revenue target of \$50 million by 2026.

Looking forward to the future, ETEK Electric will be committed to becoming a globally renowned manufacturer in the power distribution and electrical industry, safeguarding the power safety of global customers, and helping the development of green and digital energy.





➤ Design and manufacture the following equipment

1. Automatic Single Pole Threading, Riveting
2. Automatic Thermal Measurement
3. Automatic Cooling
4. Handle Automatic Assembly Equipment
5. Automatic Multi-level Assembly
6. Automatic Instantaneous Withstand Voltage
7. Automatic Sealing Sticker
8. Pin Automatic Assembly Equipment
9. Automatic Laser Marking

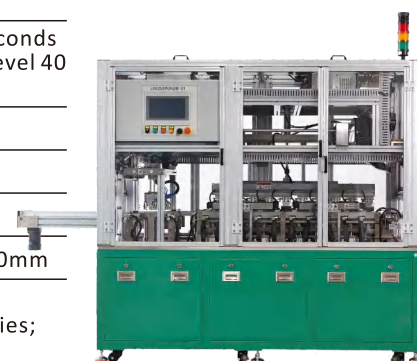
➤ Automatic Single Pole Threading, Riveting

Takt Time	1.8 seconds per unit
Working Voltage	220V ± 10%, 50Hz
Equipment Energy Consumption	Operating power 550W, standby power 100W
The Device Is Suitable For	1P automatic threading and riveting
Equipment Dimensions	Length 1800 * Width 1200mm * Height 1800mm
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



➤ Automatic Thermal Measurement

Takt Time	Production speed of the production line: ≤ 1.8 seconds per unit; Single sided 10 workstations, entering level 40 products at once.
Working Voltage	AC220V, 50Hz
Equipment Energy Consumption	Operating power 8kW, standby power 1.5kW
The Device Is Suitable For	Miniature circuit breakers 1P, 2P, (10-63A)
Equipment Dimensions	Length ≤ 2500mm * Width 1200mm * Height 1800mm
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



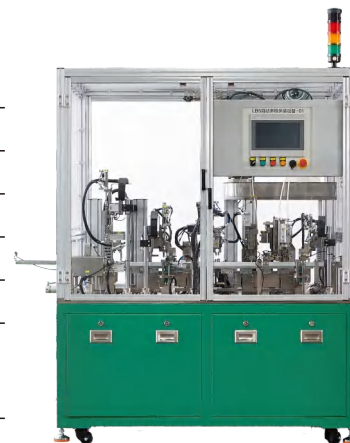
➤ Automatic Cooling

Takt Time	1.8 seconds per unit.
Working Voltage	AC220V, 50Hz
Equipment Energy Consumption	Operating power 5kW, standby power 500W
The Device Is Suitable For	1P, 2P (10-63A)
Equipment Dimensions	L ≤ 1600mm * W 1200mm * H 1800mm
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



▶ Handle Automatic Assembly Equipment

Takt Time	1.8 seconds per unit
Working Voltage	220V ± 10%, 50Hz
Equipment Energy Consumption	Operating power 550W, standby power 100W
The Device Is Suitable For	1P automatic threading and riveting
Equipment Dimensions	Length 1800 * Width 1200mm * Height 1800mm
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



▶ Automatic Multi-level Assembly

Takt Time	1.8 seconds per unit
Working Voltage	220V ± 10%, 50Hz
Equipment Energy Consumption	550W, 100W in standby mode
The Device Is Suitable For	2P automatic threading and riveting
Equipment Dimensions	1600 length * 1200mm width * 1800mm height
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



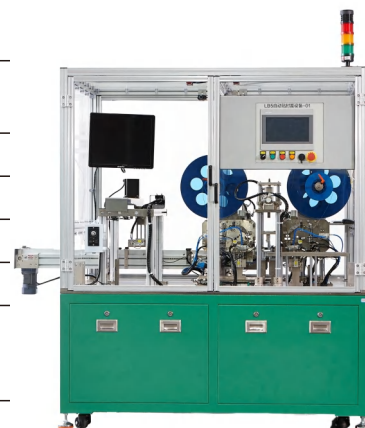
▶ Automatic Instantaneous Withstand Voltage

Takt Time	1.8 seconds/single pole
Working Voltage	220V ± 10%, 50Hz
Equipment Energy Consumption	8kW, 1.5kW in standby mode
The Device Is Suitable For	Mini circuit breaker 1P and 2P products
Equipment Dimensions	Length ≤ 1800mm * Width 1200mm * Height 1800mm
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machine interface: 10 inch TCP1071Gi series; Sensor: Omron; Distribution electrical parts: Bull; Automatic instantaneous source: Xinliwei or Juchuang; Pressure tester: CS2673DX, a product of Nanjing Changsheng Company



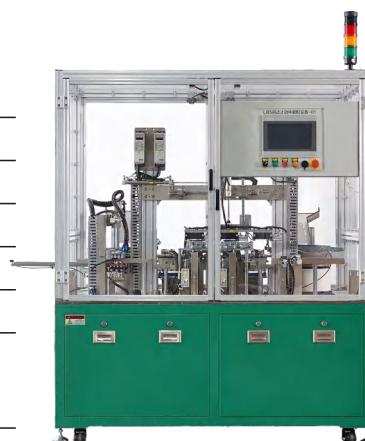
➤ Automatic Sealing Sticker

Takt Time	1.8 seconds per unit; Compatible with 1-2P products, one click automatic changeover
Working Voltage	220V ± 10%, 50Hz ± 1Hz
Equipment Energy Consumption	1kW, 200W in standby mode
The Device Is Suitable For	Compatible with 1-2P products
Equipment Dimensions	1600mm long * 1200mm wide * 1800mm high
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



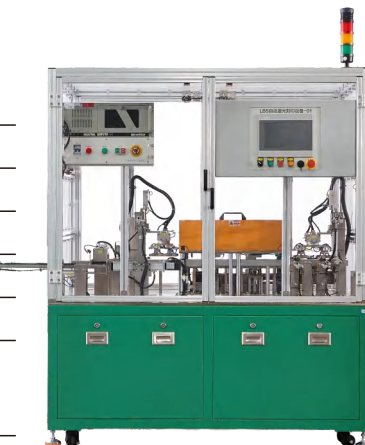
➤ Pin Automatic Assembly Equipment

Takt Time	1.8 seconds per unit
Working Voltage	220V ± 10%, 50Hz
Equipment Energy Consumption	Operating power 550W, standby power 100W
The Device Is Suitable For	1P2P products
Equipment Dimensions	1600mm long * 1200mm wide * 1800mm high
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



➤ Automatic Laser Marking

Takt Time	1.8 seconds per unit
Working Voltage	220V ± 10% 50Hz
Equipment Energy Consumption	The insulation resistance of the equipment is ≥ 5M Ω,
The Device Is Suitable For	1P and 2P products
Equipment Dimensions	1200mm long * 1200mm wide * 1800mm high
Main component manufacturers	Pneumatic components: SMC; PLC: Omron; Human machineinterface: 10 inch TCP1071Gi series; Sensor: Omron; Electrical distribution parts: Bull



MCB EKM1-63 6kA



Mini Circuit Breaker

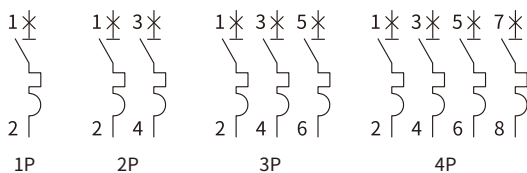
Standard_IEC60898-1



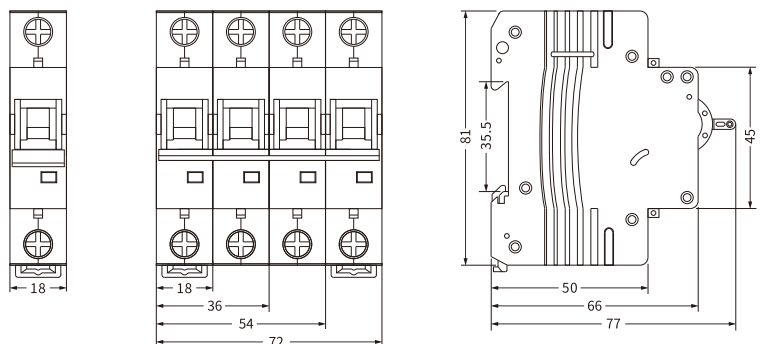
Technical Data

Standard	IEC/EN60898-1
Protection	Overcurrent and short circuit
Type of trip	Thermo-magnetic
No.of poles	1P,1P+N,2P,3P,3P+N,4P
Rated currents I_n	1,2,3,4,5,6,10,16,20,25,32,40,50,63A
Rated voltage U_e	240/415V~
Rated frequency	50/60Hz
Rated breaking capacity	6,000A
Energy Limiting Class	3
Rated impulse withstand voltage(1.2/50) U_{imp}	4,000V
Dielectric test voltage at Ind. Freq.for 1 min	2kV
Thermal release characteristic	(1.13-1.45) x I_n
Magnetic release characteristic	B:(3-5) x I_n , C:(5-10) x I_n , D:(10-20) x I_n
Electrical life	4,000 Cycles
Mechanical life	10,000 Cycles
Contact position indicator	Yes
Protection degree	IP20
Ambient temperature	-5°C to +40°C, Max.95% humidity
Terminal connection type	Cable/Pin-type busbar
Max.terminal size for cable	25mm ²
Max.tightening torque	2.5N.m
Installation	Mounting on 35mm DIN rail
Connection	From top and bottom

Circuit Diagram



Overall and Installation Dimension(mm)



MCB EKM3-63 6kA



Mini Circuit Breaker

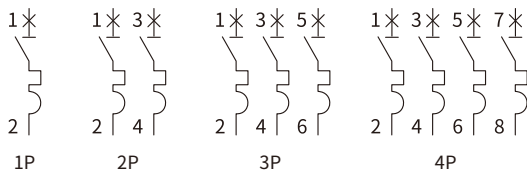
Standard IEC60898-1
IEC60947-2



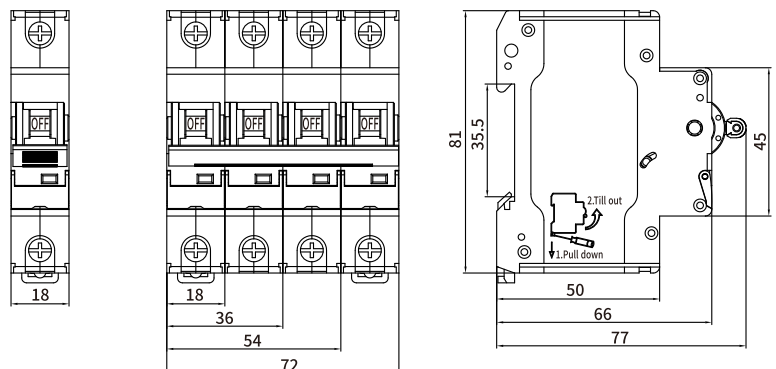
Technical Data

Standard	IEC/EN60898-1	IEC/EN60947-2
Protection	Overcurrent and short circuit	
Type of trip	Thermo-magnetic	
No. of poles	1P, 1P+N, 2P, 3P, 3P+N, 4P	
Rated currents I_n	1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63A	
Rated voltage U_e	240/415V~	
Rated frequency	50/60Hz	
Rated breaking capacity	6,000A	
Energy Limiting Class	3	
Rated impulse withstand voltage(1.2/50) U_{imp}	6,000V	
Dielectric test voltage at Ind. Freq. for 1 min	2kV	
Thermal release characteristic	$(1.13-1.45) \times I_n$	$(1.05-1.30) \times I_n$
Magnetic release characteristic	B: $(3-5) \times I_n$, C: $(5-10) \times I_n$	$(8-12) \times I_n$
Electrical life	8,000 Cycles	
Mechanical life	20,000 Cycles	
Contact position indicator	Yes	
Protection degree	IP20	
Ambient temperature	-5°C to +40°C, Max.95% humidity	
Terminal connection type	Cable/Pin-type busbar	
Max.terminal size for cable	25mm ²	
Max.tightening torque	2.5N.m	
Installation	Mounting on 35mm DIN rail	
Connection	From top and bottom	

Circuit Diagram

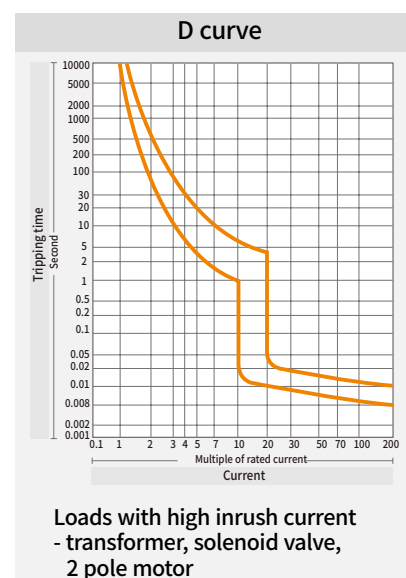
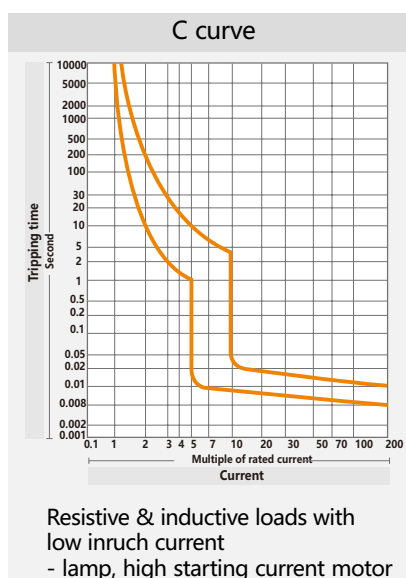
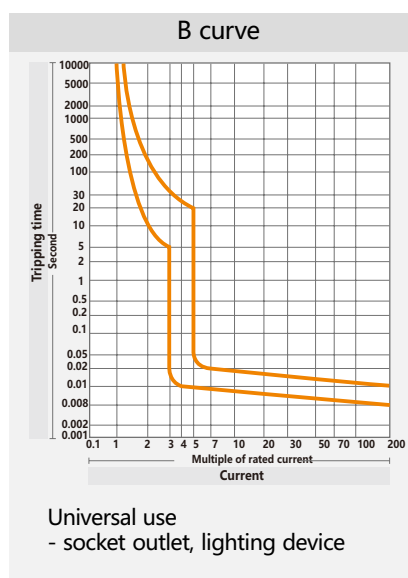


Overall and Installation Dimension(mm)



Tripping Characteristic (IEC60898-1)

Curve	Rated current	Condition						
		Thermal release				Magnetic release		
		Non-tripping	Tripping	Non-tripping	Tripping time	Holding current	Tripping current	Tripping time
B	1-63A	1.13 × I _n		≤1h		3 × I _n		≥0.1
			1.45 × I _n		<1h		5 × I _n	<0.1
C	1-63A	1.13 × I _n		≤1h		5 × I _n		≥0.1
			1.45 × I _n		<1h		10 × I _n	<0.1
D	1-63A	1.13 × I _n		≤1h		10 × I _n		≥0.1
			1.45 × I _n		<1h		20 × I _n	<0.1

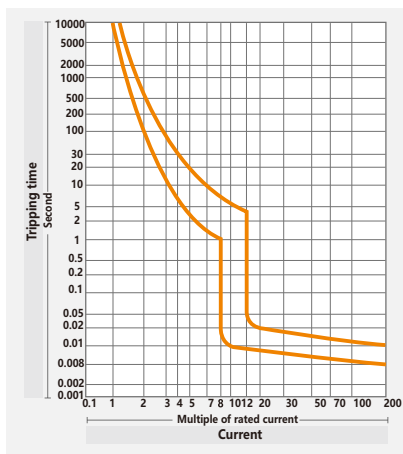
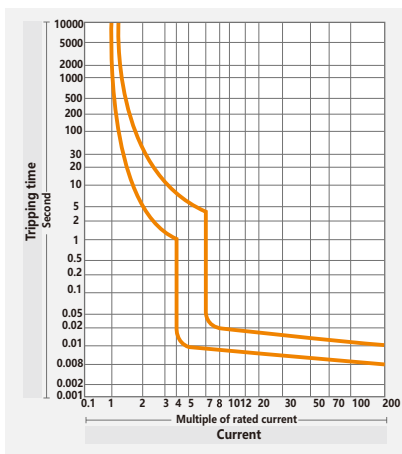


Temperature Derating Table

Rated current (A)	Correction factor for ambient temperature											
	-40°C	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
1	1.33	1.29	1.25	1.2	1.15	1.11	1.05	1	0.94	0.88	0.82	0.75
2	2.67	2.58	2.49	2.4	2.31	2.21	2.11	2	1.89	1.76	1.63	1.49
3	4	3.9	3.7	3.6	3.5	3.3	3.2	3	2.8	2.6	2.4	2.2
4	5.3	5.2	5	4.8	4.6	4.4	4.2	4	3.8	3.5	3.3	3
5	6.7	6.5	6.31	6.1	5.8	5.5	5.25	5	4.7	4.3	4	3.7
6	8	7.7	7.5	7.2	6.9	6.6	6.3	6	5.7	5.3	4.9	4.5
10	13.3	12.9	12.5	12	11.5	11.1	10.5	10	9.4	8.8	8.2	7.5
16	21.3	20.7	20	19.2	18.5	17.7	16.9	16	15.1	14.1	13.1	11.9
20	26.7	25.8	24.9	24	23.1	22.1	21.1	20	18.9	17.6	16.3	14.9
25	33.3	32.3	31.2	30	28.9	27.6	26.4	25	23.6	22	20.4	18.6
32	42.7	41.3	39.9	38.5	37	35.4	33.7	32	30.2	28.2	26.1	23.9
40	53.3	51.6	49.9	48.1	46.2	44.2	42.2	40	37.7	35.3	32.7	29.8
50	66.7	64.5	62.4	60.1	57.7	55.3	52.7	50	47.1	44.1	40.8	37.3
63	84	81.3	78.6	75.7	72.7	69.6	66.4	63	59.4	55.6	51.4	47

Tripping Characteristic (IEC60947-2)

Current(A)		Rated current(A)	Thermal Release				Magnetic release	
			Non-tripping current(A)	Tripping current(A)	Non-tripping time(h)	Tripping time(h)	Holding time(S)	Tripping time(S)
10In±20%	8-12In	1-63	1.05In		≤1		≤0.2	
				1.30In		<1		<0.2



Temperature Derating Table

Rated current (A)	Correction factor for ambient temperature											
	-40°C	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
1	1.33	1.29	1.25	1.2	1.15	1.11	1.05	1	0.94	0.88	0.82	0.75
2	2.67	2.58	2.49	2.4	2.31	2.21	2.11	2	1.89	1.76	1.63	1.49
3	4	3.9	3.7	3.6	3.5	3.3	3.2	3	2.8	2.6	2.4	2.2
4	5.3	5.2	5	4.8	4.6	4.4	4.2	4	3.8	3.5	3.3	3
5	6.7	6.5	6.31	6.1	5.8	5.5	5.25	5	4.7	4.3	4	3.7
6	8	7.7	7.5	7.2	6.9	6.6	6.3	6	5.7	5.3	4.9	4.5
10	13.3	12.9	12.5	12	11.5	11.1	10.5	10	9.4	8.8	8.2	7.5
16	21.3	20.7	20	19.2	18.5	17.7	16.9	16	15.1	14.1	13.1	11.9
20	26.7	25.8	24.9	24	23.1	22.1	21.1	20	18.9	17.6	16.3	14.9
25	33.3	32.3	31.2	30	28.9	27.6	26.4	25	23.6	22	20.4	18.6
32	42.7	41.3	39.9	38.5	37	35.4	33.7	32	30.2	28.2	26.1	23.9
40	53.3	51.6	49.9	48.1	46.2	44.2	42.2	40	37.7	35.3	32.7	29.8
50	66.7	64.5	62.4	60.1	57.7	55.3	52.7	50	47.1	44.1	40.8	37.3
63	84	81.3	78.6	75.7	72.7	69.6	66.4	63	59.4	55.6	51.4	47

RCCB EKL11-63(H)



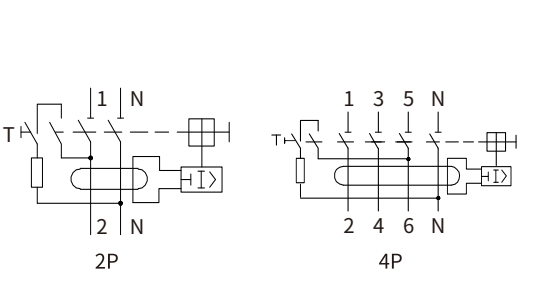
Residual Current Circuit Breaker ----- Standard_IEC61008-1



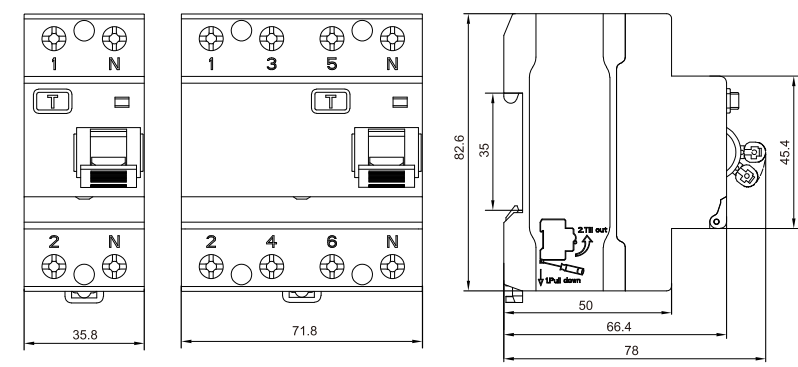
Technical Data

Standard	IEC/EN61008-1
Protection	Ground fault
Type of trip	Electro-magnetic
Type of protection (electric leakage)	AC,A,G,S
No.of poles	2P(1P+N), 4P(3P+N) , N Pole on right
Rated currents (In)	16,25,32,40,63A
Rated sensitivity currents I Δ n	10,30,100,300mA (10mA only for In=16-25A)
Residual current off-time under I Δ n	≤ 0.1s
Rated residual making and breaking capacity(I Δ m)	500A(In≤50A), 10In(In>50A)
Rated voltage (Ue)	1P+N: 230/240V~, 3P+N:400/415V~
Rated frequency	50/60Hz
Rated breaking capacity	6,000A, 10,000A
SCPD fuse	6000 10000
Rated impulse withstand voltage(1.2/50) Uimp	4,000V
Dielectric test voltage at Ind. Freq.for 1 min	2kV
Electrical life	2,000 Cycles
Mechanical life	4,000 Cycles
Contact position indicator	Yes
Protection degree	IP20
Ambient temperature	-25°C to +40°C, Max.95% humidity
Terminal connection type	Cable/Pin-type busbar/Fork-type busbar
Max.terminal size for cable	25mm ²
Max.tightening torque	2.5N.m
Installation	Mounting on 35mm DIN rail
Connection	From top and bottom

Circuit Diagram



Overall and Installation Dimension(mm)



Life

In	Operating cycles		Operating frequency (operations/h)
	On-load operating cycles	Off-load operating cycles	
16,25,32	2000	2000	240
40,63	2000	1000	120

Breaking Time of Residual Current

Max. breaking time					
In(A)	IΔn(A)	IΔn	2IΔn	5IΔn	5,10,20,50,100,200,500A
16,25,32,40,63	0.03, 0.1, 0.3	0.1s	0.08s	0.04s	0.04s

Wiring The suitable conductors should be used for connection, see table below for relative parameters.

Rated current In (A)	Cross section area s (mm ²)	Tightening torque (N.m)
16	2.5	2.5
25	4	2.5
32	6	2.5
40	10	2.5
63	16	2.5

Features

When designing residual current devices, manufacturing technology and type of routine tests, the IEC/EN61008-1 standards were considered. Important features are:

- Up to date design
- User-friendly connection of conductors and busbars
- Resistance to current surges; unwanted tripping excluded
- Simple and solid fixing to a 35mm mounting rail in compliance with EN60715
- Additional colour display of main contacts position (red: contacts closed, green: contacts open)

Against Electrocutation

The use of exposed, substandard, badly wired, wrongly connected or damaged equipment as well as frayed or badly repaired cables reduces the safety of an installation and increases the risk of person receiving an electric shock.

Electrocutation is a passage of current through human body, which is dangerous. The flow of current through human body effects vital functions.

1. Breathing
2. Heartbeat

A correctly chosen RCCB can detect small currents flowing to earth and reduce the risk of electrocutation. Effect of electric current through human body has been well researched and following chart summarizes the results.

Effect of electric current through human body has been well researched and following chart summarizes the results:

500mA		Immediate cardiac arrest resulting in death
70-100mA		Cardiac fibrillation; the heart begins to vibrate and no longer beats at a steady rate. This situation is dangerous since it is irreversible
20-30mA		Muscle contraction can cause respiratory paralysis
10mA		Muscle contraction: the person remains "stuck" to the conductor
1-10mA		Prickling sensations

However, electrocutation should not be viewed in terms of "current" alone but in terms of "contact voltage". A person gets electrocuted by coming in contact with an object that has a different potential from his/her own. The difference in potential causes the current to flow through the body.

The human body has known limits:

Under normal dry conditions, voltage limit=50V

in damp surroundings, voltage limit=25V

Against Indirect Contact

Over current protection devices like MCB are unable to act promptly on small earth leakage currents. To comply with wiring regulations the earth fault loop impedance in Ohms, multiplied by the rate tripping current of the RCD in amperes must not exceed 50.

Example

For an RCD with a rated tripping current of 30mA, the maximum permissible earth fault loop impedance is calculated as follows:



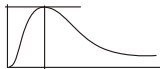


$$Z_s(\max) = 50 / I_n = 50 / 0.03 = 1.666$$

Rated tripping current of the RCD	Maximum permissible earth fault loop impedance in
10mA	5,000
30mA	1,666
100mA	500
300mA	166

Against Fire


The majority of fires which occur as result of faulty wiring are started by current flowing to earth. Fire can be started by fault current of less than lamp.


The normal domestic overload protective device such as a fuse or MCB will not detect such a small current. A correctly chosen RCD will detect this fault current and interrupt the supply, hence reducing the risk of a fire starting.

<p>Rated current I_n</p> <p>Maximum permissible current value determined by heat, breaking capacity and terminals an RCCB can carry.</p> <p>Preferred values: 16, 25, 40, 63, 80, 100A.</p>	<p>Rated Voltage U_n</p> <p>The rated operational voltage of an RCCB is the voltage value, determined by breaking capacity, clearance and creepage distance and test circuit.</p> <p>Preferred values: 230/400V.</p>	<p>Rated fault frequency f_n</p> <p>The frequency which the breaking characteristics of an RCCB are designed.</p> <p>Preferred values: 50/60Hz</p>
<p>Alternative Current Sensitive</p>  <p>They react to AC current which, whether suddenly applied or slowly arising.</p>	<p>Pulsating direct current sensitive</p>  <p>They react to AC and pulsating DC fault current which reach 0 or almost 0 within one time period of the mains frequency.</p>	<p>Surge current proof</p>  <p>RCCB's surge capacity.</p> <p>Not tripping at standardized 8/20 us surge-current waves acc. to VDE 0432 Part 2 with surge current values of up to 250A.</p>
<p>Rated fault current $I_{\Delta n}$</p> <p>Value of a residual fault current at which the RCCB shall trip.</p> <p>Preferred values:10, 30,100, 300mA</p>	<p>Numbers of poles</p> <p>Number of current paths which the RCCB can monitor.</p> <p>Preferred values: 2 and 4.</p>	<p>Breaking capacity</p>  <p>The function of an RCCB is not impaired by short-circuit current of up to 6,000 A resp. 10,000A provided a back-up fuse is used.</p>
<p>Temperature resistance</p> <p>Suitable for temperatures from -25°C up to 40°C.</p>	<p>Surge capacity</p> <p>KV</p> <p>RCCB's surge capacity.</p> <p>Not tripping at standardized 8/20 us surge-current waves acc.to VDE 0432 Part 2 with surge current values of up to 250A.</p>	<p>Short time delay selective</p>  <p>Time Delay Type</p>

Notes

A series of horizontal dashed lines for writing notes.

 The product data referred to in the company shall be subject to material object. Subject to change without notice.
The company has the final right to interpret.

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