CHANA® EKL1-63 (Electro-magnetic Type) RCCB Residual Current Circuit Breaker

Standard: **IEC61008-1**

Technical Data

Electrical Features

- Type (wave form of the earth leakage sensed):AC,A,AC~S,A~S
- Rated current In :25, 32,40, 50, 63A
- Poles:2P(1P+N), 4P(3P+N)
- Rated voltage Ue : 240/415V
- Rated sensitivity I△n :0.03, 0.1, 0.3A
- Insulation voltage Ui:500V
- Rated residual making and breaking capacity
- I△m:500A(In=25A/40A) 630A(In=50/63A)
- Short-circuit current Inc=I△c:6,000A
- SCPD fuse: 6,000
- Break time under I△n :≤0.1s
- Rated frequency:50/60Hz
- Rated impulse withstand voltage (1.2/50)Uimp:4,000V
- Dielectric TEST voltage at ind. Freq. for 1min:2.5kV
- Pollution degree:2

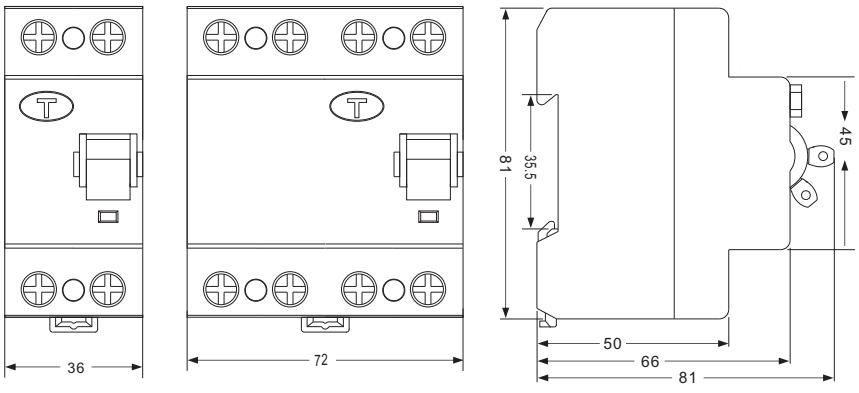
Mechanical Features

- Electrical life:2,000 Cycles
- Mechanical life:4,000 Cycles
- Fault current indicator: Yes
- Protection degree: IP20
- Ambient temperature (with daily average≤35℃):-5℃~+40℃
- Storage temperature: -25℃~+70℃

Installation

- Terminal connection type: Cable/U-type busbar/Pin-type busbar
- Terminal size top/bottom for cable: 25mm² 18-3AWG
- Terminal size top/bottom for busbar: 25mm² 18-3AWG
- Tightening torque 2.5 N*m 18In-lbs.
- Mounting: On DIN rail EN 60715 (35mm) by means of fast clip device
- Connection: From top and bottom

Overall and Installation Dimension(mm)



CHANA® EKL2-40 (Electronic Type) RCBO RCCB with Overcurrent Protection

Standard: **IEC61009-1**

Technical Data

Electrical Features

- Type (wave form of the earth leakage sensed):AC,A
- Thermo-magnetic release characteristic:B,C
- Rated current In : 6, 10, 16, 20, 25, 32, 40A
- Poles:1P+N
- Rated voltage Ue: 230/240V
- Rated sensitivity I△n:0.03, 0.1, 0.3A
- Rated residual making and breaking capacity I△m:500A
- Rated short-circuit capacity Icn:6,000A
- Break time under I△n :≤0.1s
- Rated frequency:50/60Hz
- Rated impulse withstand voltage (1.2/50)Uimp:4,000V
- Dielectric TEST voltage at ind. Freq. for 1min:2kV
- Insulation voltage Ui:500V
- Pollution degree:2

Mechanical Features

- Electrical life:4,000 Cycles
- Mechanical life:8,000 Cycles
- Contact position indicator: Yes
- Protection degree:IP20
- Ambient temperature (with daily average≤35℃): -5℃~+40℃
- Storage temperature: -25℃~+70℃

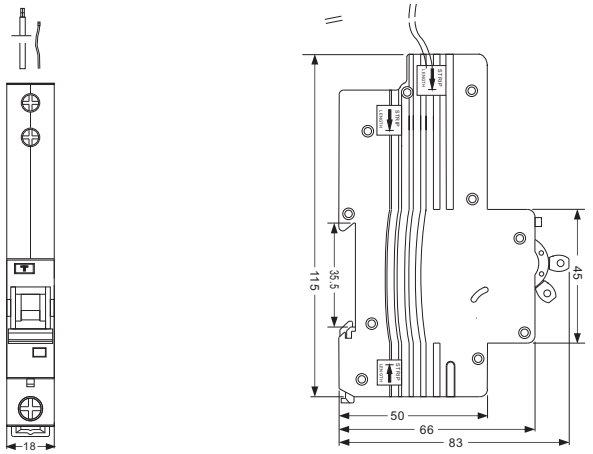
Installation

- Terminal connection type: Cable/U-type busbar/Pin-type busbar
- Terminal size top/bottom for cable: 25mm^2 18-3AWG
- Terminal size top/bottom for busbar: 25mm^2 18-3AWG
- Tightening torque 2 N*m 18In-lbs.
- Mounting: On DIN rail EN 60715 (35mm) by means of fast clip device
- Connection: From top

Combination with accessories

- Auxiliary contact: Yes
- Shunt release: Yes
- Under voltage release: Yes
- Alarm contact: Yes

Overall and Installation Dimension(mm)



CHANA® EKL3-40 (Electronic Type) RCBO RCCB with Overcurrent Protection

Standard: **IEC61009-1**

Technical Data

Electrical Features

- Type (wave form of the earth leakage sensed):AC,A
- Thermo-magnetic release characteristic:B,C
- Rated current In :6, 10, 16, 20, 25, 32, 40A
- Poles:1P+N
- Rated voltage Ue: 230/240V
- Rated sensitivity I△n:0.01, 0.03, 0.1, 0.3A
- Rated residual making and breaking capacity I△m:500A
- Rated short-circuit capacity Icn:6,000A
- Break time under I△n :≤0.1s
- Rated frequency:50/60Hz
- Rated impulse withstand voltage (1.2/50)Uimp:4,000V
- Dielectric TEST voltage at ind. Freq. for 1min:2kV
- Insulation voltage Ui:300V
- Pollution degree:2

Mechanical Features

- Electrical life:4,000 Cycles
- Mechanical life:8,000 Cycles
- Contact position indicator: Yes
- Protection degree:IP20
- Ambient temperature (with daily average≤35℃): -5℃~+40℃
- Storage temperature: -25℃~+70℃

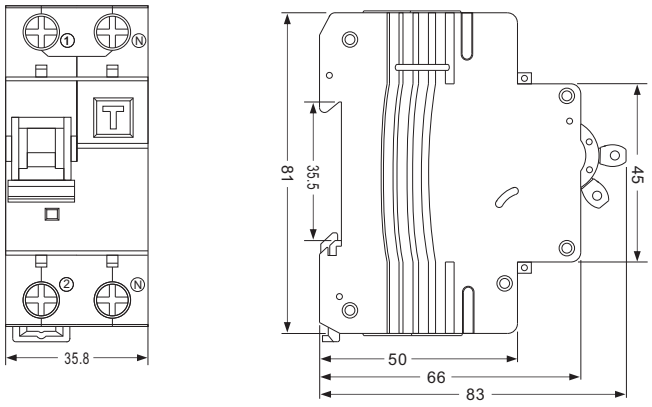
Installation

- Terminal connection type: Cable/Pin-type busbar
- Terminal size top/bottom for cable: 25mm^2 18-3AWG
- Terminal size top/bottom for busbar: 25mm^2 18-3AWG
- Tightening torque 2.0 N*m 11In-lbs.
- Mounting: On DIN rail EN 60715 (35mm) by means of fast clip device
- Connection :From top

Combination with accessories

- Auxiliary contact: Yes
- Shunt release: Yes
- Under voltage release: Yes
- Alarm contact: Yes

Overall and Installation Dimension(mm)



EKL4-40 (Electronic Type) RCBO RCCB with Overcurrent Protection

Standard: **IEC61009-1**

Technical Data

Electrical Features

- Type (wave form of the earth leakage sensed):AC,A
- Thermo-magnetic release characteristic:C
- Rated current In : 6, 10, 16, 20, 25, 32,40A
- Poles:1P+N
- Rated voltage Ue: 230/240V
- Rated sensitivity I△n:0.03, 0.1, 0.3A
- Rated residual making and breaking capacity I△m:500A
- Rated short-circuit capacity Icn:6,000A
- Break time under I△n :≤0.1s
- Rated frequency:50/60Hz
- Rated impulse withstand voltage (1.2/50)Uimp:4,000V
- Dielectric TEST voltage at ind. Freq. for 1min:2kV
- Insulation voltage Ui:500V
- Pollution degree:2

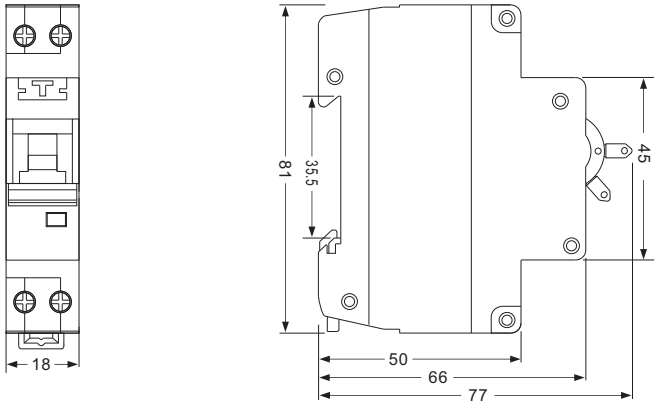
Mechanical Features

- Electrical life:2,000 Cycles
- Mechanical life:4,000 Cycles
- Contact position indicator: Yes
- Protection degree:IP20
- Ambient temperature (with daily average≤35℃): -5℃~+40℃
- Storage temperature: -25℃~+70℃

Installation

- Terminal connection type: Cable/Pin-type busbar
- Terminal size top/bottom for cable: 16mm^2 18-5AWG
- Terminal size top/bottom for busbar: 16mm^2 18-5AWG
- Tightening torque 2 N*m 18In-lbs.
- Mounting: On DIN rail EN 60715 (35mm) by means of fast clip device
- Connection: From top

Overall and Installation Dimension(mm)



CHANA® EKL5-63 (Electronic Type) RCBO RCCB with Overcurrent Protection

Standard: **IEC61009-1**

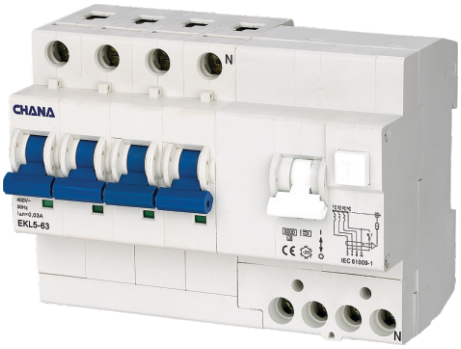
Technical Data

Electrical Features

- Type (wave form of the earth leakage sensed):AC,A
- Thermo-magnetic release characteristic:B,C
- Rated current In MCB+add-on RCD block:6, 10, 16, 20, 25, 32, 40, 50, 63A
- Poles: 2P(1P+N),4P (3P+N)
- Rated voltage Ue: 240/415V
- Rated sensitivity I△n MCB+add-on RCD block:0.03, 0.1, 0.3A
- Rated residual making and breaking capacity I△m:500A(In≤40A) 630(In>40A)
- Rated short-circuit capacity Icn:6,000A
- Break time under I△n :≤0.1s
- Rated frequency:50/60Hz
- Rated impulse withstand voltage (1.2/50)Uimp:4,000V
- Dielectric TEST voltage at ind. Freq. for 1min:2kV
- Insulation voltage Ui:500V
- Pollution degree:2

Mechanical Features

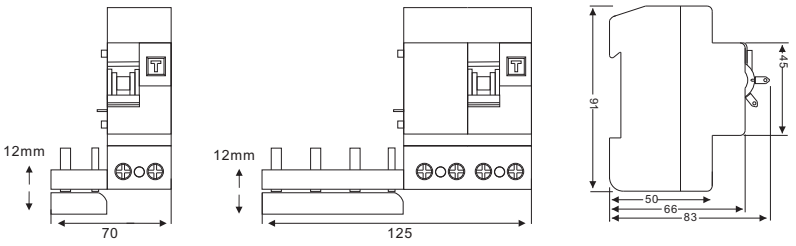
- Electrical life:4,000 Cycles
- Mechanical life:8,000 Cycles
- Contact position indicator: Yes
- Protection degree:IP20
- Ambient temperature (with daily average≤35℃): -5℃~+40℃
- Storage temperature: -25℃~+70℃



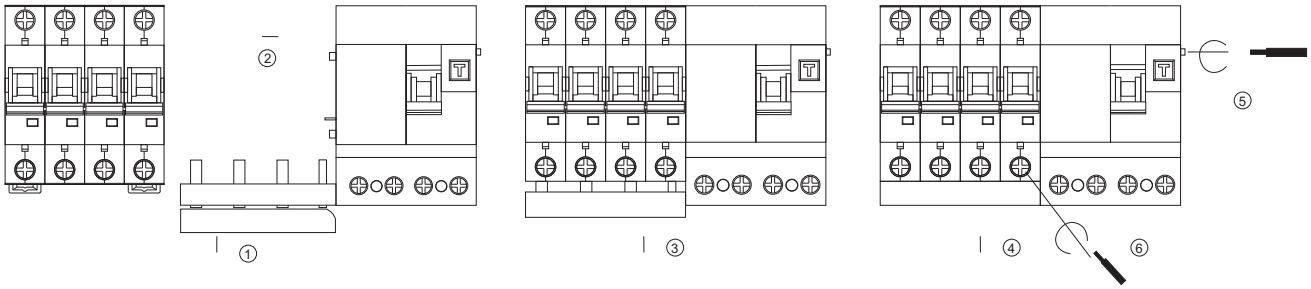
Installation

- Terminal connection type: Cable/U-type busbar/Pin-type busbar
- Terminal size top/bottom for cable: 25mm² 18-3AWG
- Terminal size top/bottom for busbar: 25mm² 18-3AWG
- Tightening torque 2 N*m 18In-lbs.
- Mounting: On DIN rail EN 60715 (35mm) by means of fast clip device
- Connection: From top and bottom (for combined type)
  From top (MCB+add-on RCD block)

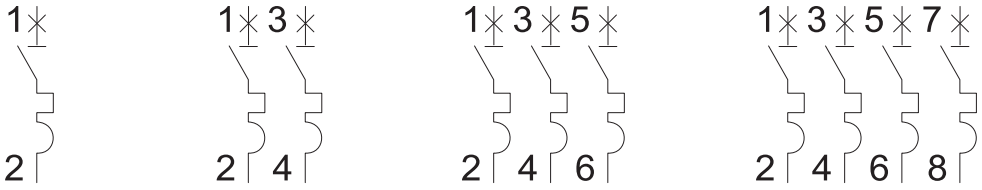
Dimensions (mm)



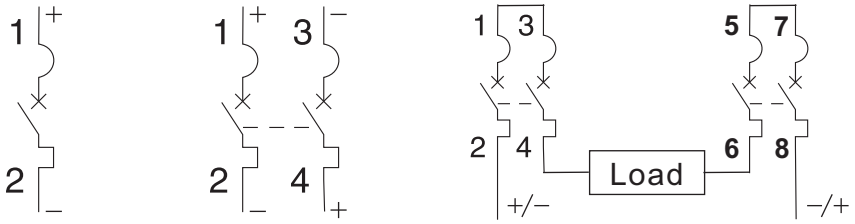
Installation instructions (mm)



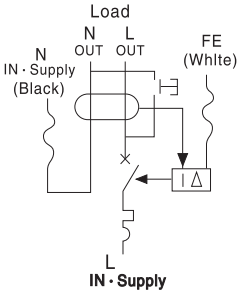
EKM1



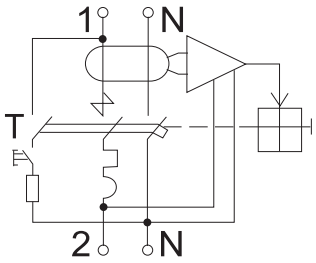
EKM1 (DC)



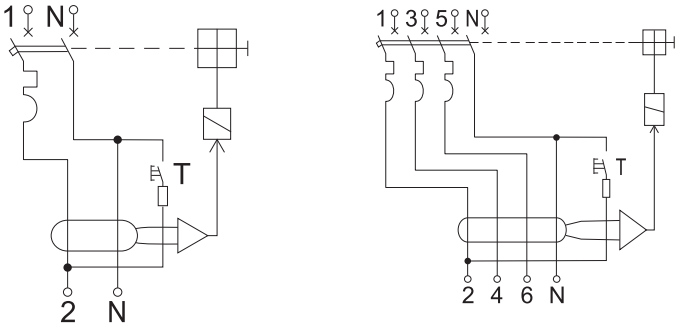
EKL2



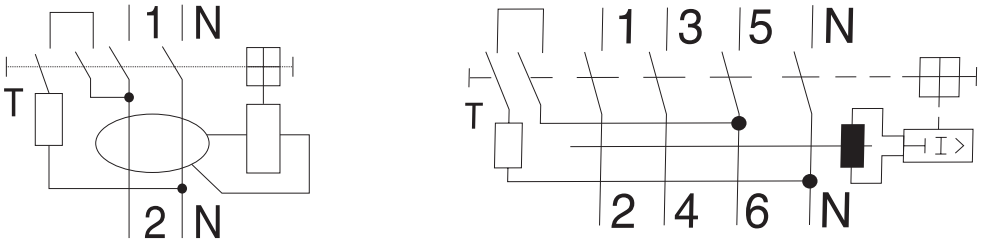
EKL3
EKL4



EKL5



EKL1



Protection

Against Electrocution

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 peron receiving an electric shock.
Electrocution 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 electrocution. 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, electrocution 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: Zs(max)=50/In=50/0.03=1.666

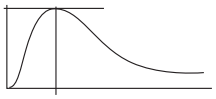
Rated tripping current of the RCD	Maximum permissible earth fault loop impedance in
10mA	5,000
30mA	1,666
100mA	500
300mA	166

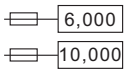
Against fire

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.

Parameters and Properties of RCCB & RCBO

Rated current I_n	Rated Voltage U_n	Rated fault frequency f_n
Maximum permissible current value determined by heat, breaking capacity and terminals an RCCB can carry. Preferred values: 16, 25, 40, 63, 80, 100, 125, 160A.	The rated operational voltage of an RCCB is the voltage value, determined by breaking capacity, clearance and creepage distance and test circuit. Preferred values:230/400V.	The frequency which the breaking characteristics of an RCCB are designed. Preferred values: 10-60Hz

Alternative Current Sensitive	Pulsating direct current sensitive	Surge current proof
		
They react to AC current which, whether suddenly applied or slowly arising.	They react to AC and pulsating DC fault current which reach 0 or almost 0 within one time period of the mains frequency.	RCCB’s surge capacity. Not tripping at standardized 8/20 υs surge-current waves acc.to VDE 0432 Part 2 with surge current values of up to 250A.

Rated fault current $I_{\triangle n}$	Numbers of poles	Breaking capacity	Temperature resistance
Value of a residual fault current at which the RCCB shall trip. Preferred values:10, 30,100, 300,500mA	Number of current paths which the RCCB can monitor. Preferred values: 2 and 4.	 The function of an RCCB is not impaired by short-circuit current of up to 6,000 Aresp. 10,000A provided a back-up fuse is used. 2 and 4.	Suitable for temperatures from -25℃ up to 40℃.

Surge capacity	Short time delay selective
KV RCCB’s surge capacity. Not tripping at standardized 8/20 υs surge-current waves acc.to VDE 0432 Part 2 with surge current values of up to 250A.	**S** Time Delay Type