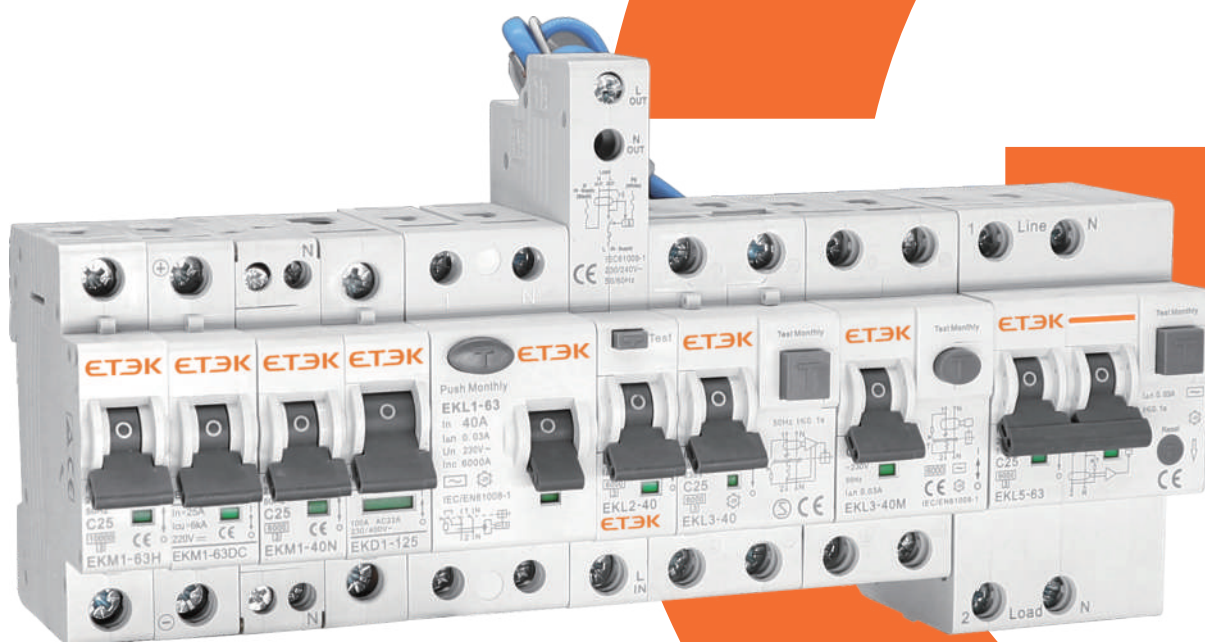


# ETEK®

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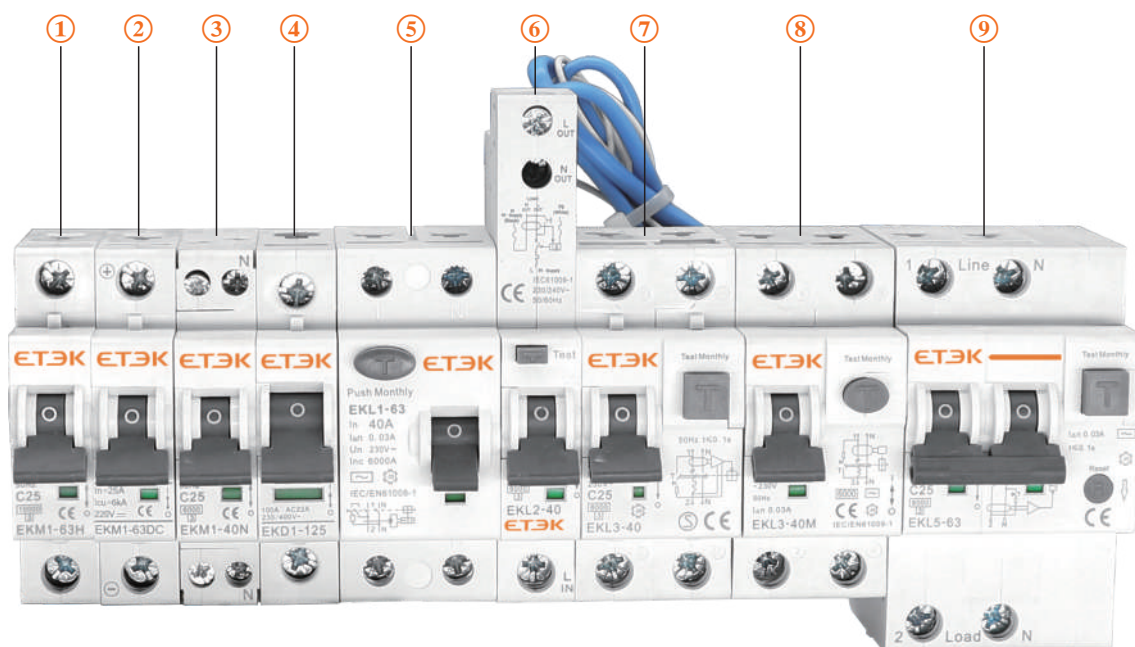
ZHEJIANG ETEK  
ELECTRICAL TECHNOLOGY CO.,LTD.

# MAIN PRODUCTS



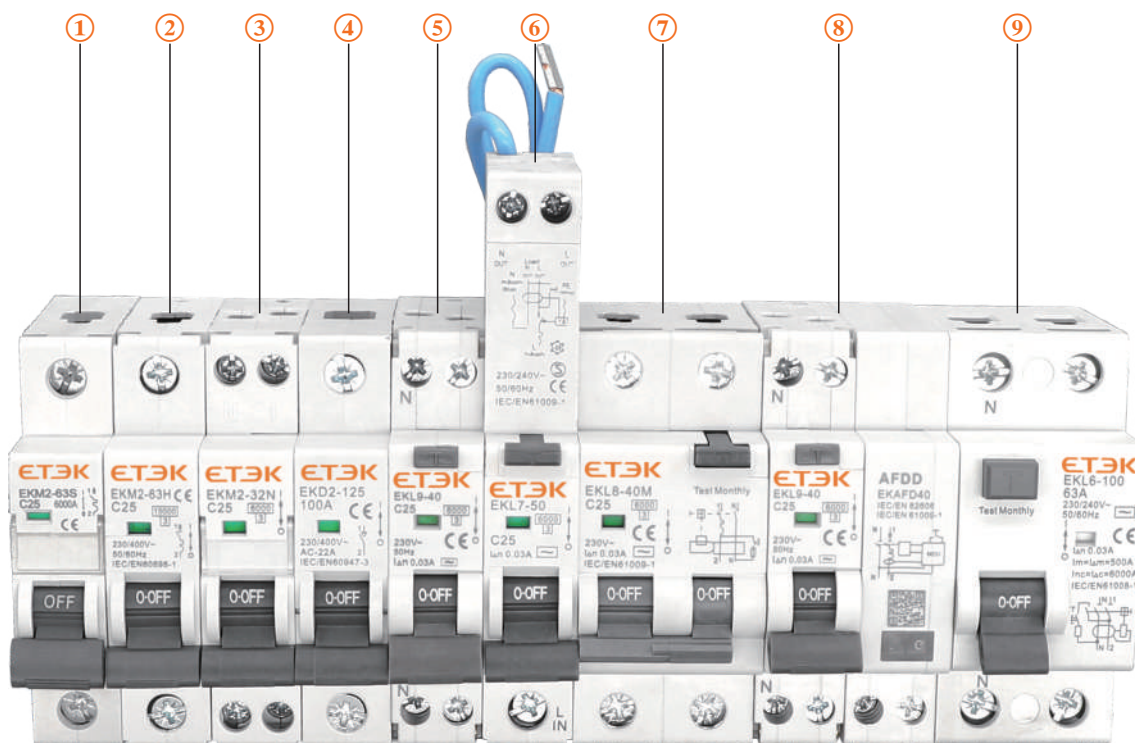
ZHEJIANG ETEK  
ELECTRICAL TECHNOLOGY CO.,LTD.

## S1(Series No.1)



- 1) MCB, Breaking Capacity 6/10KA, In:1-63A
- 2) DC MCB, Breaking Capacity 6/10KA, In:1-63A
- 3) MCB 1P+N W=18MM, Breaking Capacity 6KA, In:1-40A
- 4) Isolation Switch, In: 32-125A
- 5) RCCB Electromagnetic type, Breaking Capacity 6/10KA, In:25-63A
- 6) RCBO W=18MM Electronic type, Breaking Capacity 6KA, In:6-40A
- 7) RCBO W=36MM Electronic type, Breaking Capacity 6KA, In:6-40A
- 8) RCBO W=36MM Electromagnetic type, Breaking Capacity 6KA, In:6-40A
- 9) RCBO Electronic type, Breaking Capacity 6/10KA, In:6-63A

## S2(Series No.2)



- 1) MCB, Breaking Capacity 4.5KA, In:1-63A
- 2) MCB, Breaking Capacity 6/10KA, In:1-63A
- 3) MCB 1P+N W=18MM, Breaking Capacity 6KA, In:1-32A
- 4) Isolation Switch, In: 32-125A
- 5) RCBO W=18MM Electronic type, Breaking Capacity 6KA, In:6-40A
- 6) RCBO W=18MM Electronic type, Breaking Capacity 6/10KA, In:6-50A
- 7) RCBO W=36MM Electromagnetic type, Breaking Capacity 6KA, In:6-40A
- 8) AFDD + RCBO, Electronic type, Breaking Capacity 6KA, In:6-40A
- 9) RCCB Electromagnetic type, Breaking Capacity 6/10KA, In:25-100A



# COMPANY

## >>> INTRODUCTION



Zhejiang ETEK Electrical Technology Co.,Ltd. was founded on January of 2011, which has more than 200 employees now. It is a professional manufacturing company engaging in R & D, production and sale of high and low voltage electrical products, such as Terminal distribution electrical appliances, Industrial distribution electrical appliances, Industrial control electrical appliances, DC systems distribution appliances, etc. It possesses three major manufacturing departments and one import & export trading company. The three manufacturing departments are Terminal distribution electrical appliances manufacturing department, Industrial distribution electrical appliances manufacturing department and Industrial control electrical appliances manufacturing department.

The series of products manufactured by the company are mainly sold to international market. All the products produced are in strictly accordance with international IEC/EN standards and China's GB standards. Most of these product have gained TUV and Intertek issued CCC,CE,TUV,SEMKO,EAC,SAA, INMETRO,ISO9001-2008 certificates and CB test reports. The products are sold to more than 50 countries and regions throughout the world, such as UK, France, Australia, Russia, Ukraine, Turkey, Brazil and so on. The quality of the products has been widely praised by the majority of users.

**RoHS**

**EAC**



**CB**



**CE**



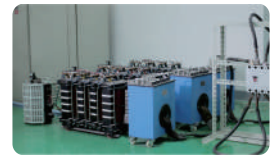
## WORKSHOPS



## MAIN PRODUCTS CLASSIFICATION CHART

Manufacturing department of ETEK Electric	Terminal Power Distribution	MCB	
		RCCB & RCBO	
		Isolation Switch	
		Accessories of Breakers	
		Modular Contactor	
		Modular Indicator & Socket	
		Other Modular Products	
	Industrial Power Distribution		
		MCCB	
		ACB	
		MPCB	
		ATS	
		Isolator	
	Industrial Control		
		Contactor	
		Thermal Relay	
		Electromagnetic Starter	
		Push Button Switch	
		LED Indicator & Voltage Meter	

# LOW-VOLTAGE ELECTRICAL TESTING CENTER



## Test Capabilities List

### I. Electromagnetic compatibility laboratory

- 1.Lightning surge immunity test
- 2.Pulse immunity test of electric fast transient group
- 3.Electrostatic Discharge immunity test
- 4.Power frequency magnetic field resistance test
- 5.Verify the performance
- 6.Residual current tripping test
- 7.2-stage power frequency withstand voltage test
- 8.Impulse withstand voltage test, leakage current test of RCBO under the condition of surge current generated by impulse voltage

### II. Mechanical life laboratory

- 1.Mechanical life test of Mini Circuit Breaker
- 2.Mechanical life test of Moulded Case Circuit Breaker
- 3.Mechanical life test of AC Contactor
- 4.Small reclosing electrical life test of Electrical Meter External Circuit Breaker

### III. High current characteristic laboratory

- 1.Temperature rise test of Circuit Breaker
- 2.Characteristics test of Circuit Breaker
- 3.Reliability test of Intelligent Circuit Breaker Test of Circuit Breaker
- 4.Product packaging simulation transport vibration

### IV. Material property laboratory

- 1.Thermal bimetallic deflection measurement test
- 2Automatic High Voltage continuous film test of enamelled Wire
- 3.Thermal softening breakdown test of enamelled wire
- 4.Enamelled wire stripping test
- 5Simply supported beam impact test
- 6.Looping resistance test
- 7.Intelligent low resistance test

### V. Insulating material laboratory

- 1.Thermal and Ignition Resistance test of Insulation Materials
- 2.Horizontal vertical combustion
- 3.Insulating materials-determination of the relative leakage mark index
- 4.Salt spray corrosion resistance test
- 5.5-stage power frequency voltage resistance test

### VI. Environmental test chamber

- 1.High and low temperature hygrothermal test
- 2.Circuit board aging test
- 3.Constant temperature test
- 4.Action characteristics test of AC Contacto
- 5.Measuring instruments

### VII. Comprehensive characteristic laboratory

- 1.Temperature rise, reliability test of circuit breaker
- 2.Small reclosing characteristic test
- 3.Js7 delay characteristics testing
- 4.Overloading characteristics test of circuit breaker
- 5.Temperature rise test of CAC Contactor



## International Team



## Main Exhibition

HANNOVER MESSE	Hannover
MEE	Dubai
FIEE	Sao Paulo
CANTON FAIR	Guangzhou





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EKM1-63 6KA MCB Mini Circuit Breaker	03
EKM1-63H 10KA MCB Mini Circuit Breaker	05
EKM1-63DC 6KA/10KA DC MCB Mini Circuit Breaker	07
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# EKM1-63S 4.5KA/6KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

<b>Electrical Features</b>	Rated current In	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N,4P
	Rated voltage Ue	240/415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	1-40A 6,000A / 50-63A 4,500A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
<b>Mechanical Features</b>	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
<b>Combination with accessories</b>	Auxiliary contact	EKM1S-OF
	Alarm contact	EKM1S-FB
	Shunt release	EKM1S-MX
	Over/Under voltage release	EKM1S-MV+MN



# EKM1-63S 4.5KA/6KA MCB

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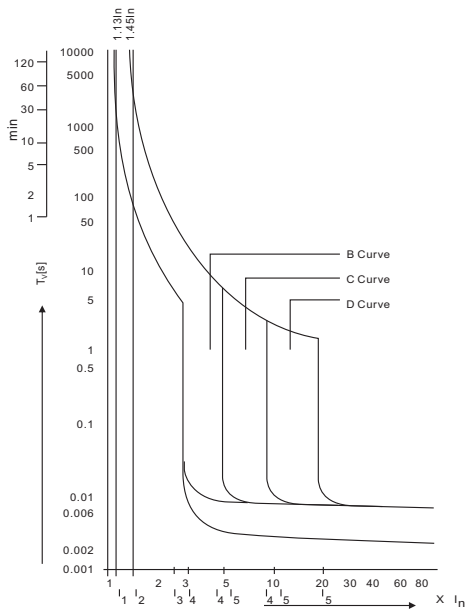
Mini Circuit Breaker

Standard\_ IEC60898-1

## MCB Characteristics

### Characteristics

#### Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$ $< 0.1s$

### Tripping characteristics

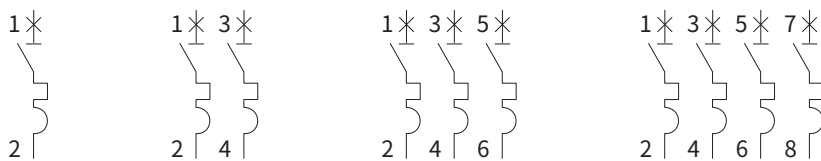
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to  $(3-5)I_N$ .

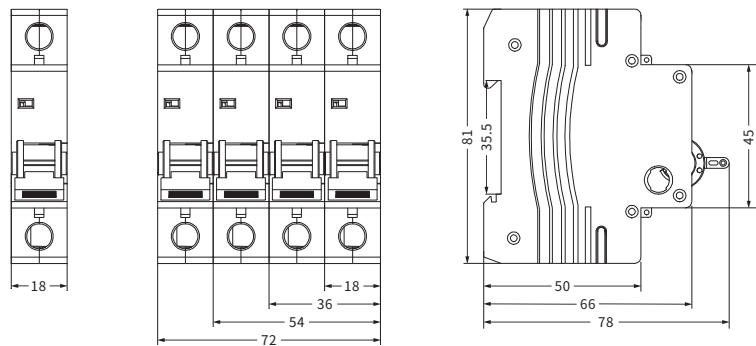
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to  $(5-10)I_N$ .

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformer, pump machines etc) Short circuit release is set to  $(10-20)I_N$ .

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM1-63 6KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

<b>Electrical Features</b>	Rated current In	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N,4P
	Rated voltage Ue	240/415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
Thermo-magnetic release characteristic		B,C,D

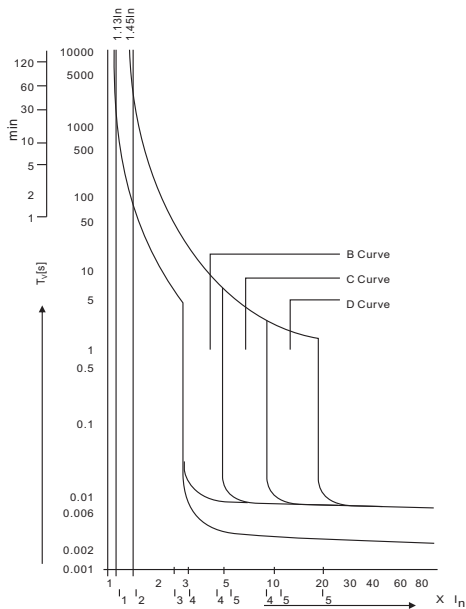
<b>Mechanical Features</b>	Electrical life	8,000 Cycles
	Mechanical life	20,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C

<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

<b>Combination with accessories</b>	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
	Over/Under voltage release	EKM1-MV+MN

MCB Characteristics

Characteristics  
Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$ $< 0.1s$

Tripping characteristics

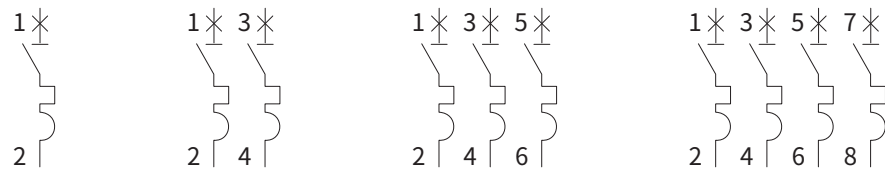
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to  $(3-5)I_N$ .

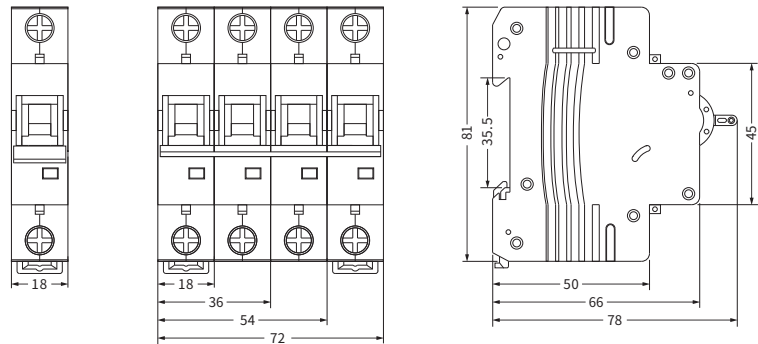
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to  $(5-10)I_N$ .

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformers, x-ray machines etc.)Short circuit release is set to  $(10-20)I_N$ .

Circuit Diagram



Overall and Installation Dimension(mm)





# EKM1-63H 10KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

<b>Electrical Features</b>	Rated current In	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N,4P
	Rated voltage Ue	230/400V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	10,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
<b>Mechanical Features</b>	Electrical life	8,000 Cycles
	Mechanical life	20,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
<b>Combination with accessories</b>	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
	Over/Under voltage release	EKM1-MV+MN

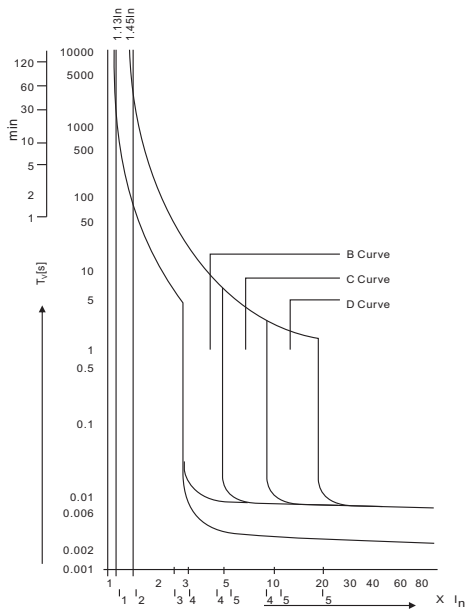
# EKM1-63H 10KA MCB



Mini Circuit Breaker ----- Standard\_ IEC60898-1

## MCB Characteristics

### Characteristics Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

### Tripping characteristics

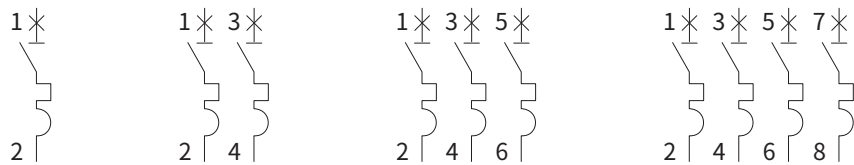
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to  $(3-5)I_N$ .

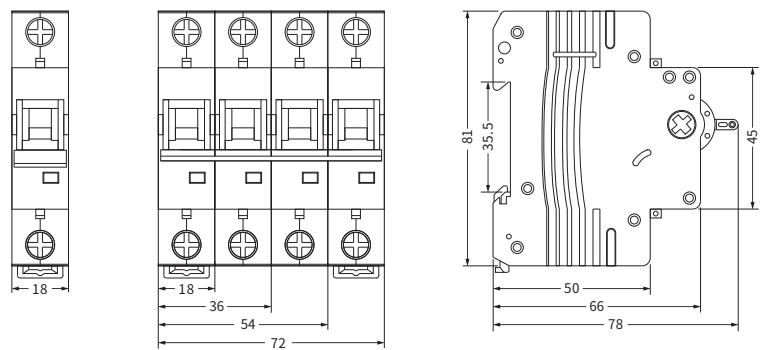
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to  $(5-10)I_N$ .

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM1-63DC 6KA/10KA DC MCB

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Mini Circuit Breaker ..... Standard\_ IEC60947-2



## Technical Data

Electrical Features	Rated current In	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 2P, 4P
	Rated voltage Ue	1P(250V), 2P(500V), 4P(1000V)
	Rated breaking capacity	6,000/10,000A
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	8~12
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	According to the wiring diagram
Combination with accessories	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
	Over/Under voltage release	EKM1-MV+MN



# EKM1-63DC 6KA/10KA DC MCB

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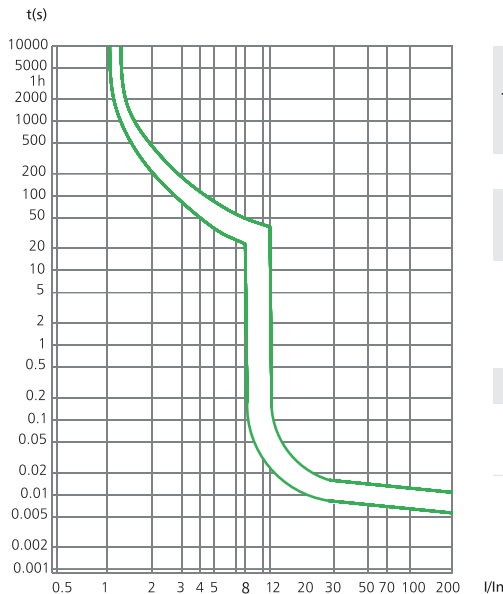
Mini Circuit Breaker

Standard\_ IEC60947-2

## MCB Characteristics

### Characteristics

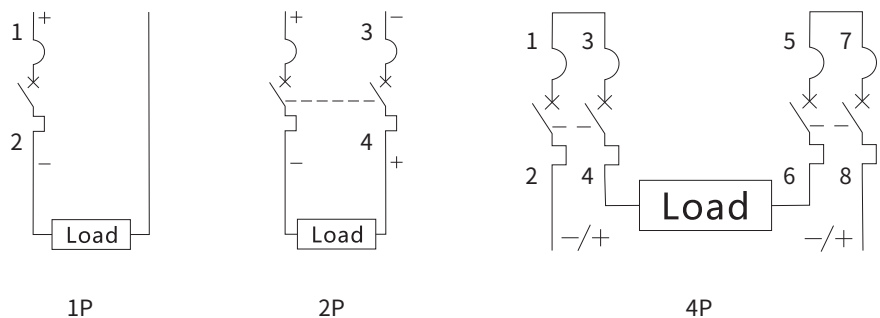
#### Curves



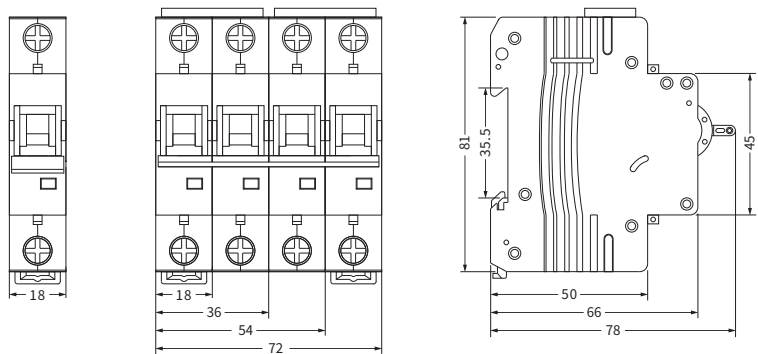
Test	Test current	Initial state	Time limit for tripping or not tripping	Expected result	Remarks
a	$1.05I_n$	Cold state a	$t \leq 1h$	Not tripping	
b	$1.30I_n$	Right after test number a	$t < 1h$	Tripping	The current is rising within 5s
c	$8I_n$	Cold state a	$0.2s < t < 15s$ ( $I_n \leq 32A$ ) $0.2s < t \leq 30s$ ( $I_n > 32A$ )	Tripping	
d	$12I_n$	Cold state a		Tripping	

Note: The terminology "Cold state" means that the test is performed at the base calibration temperature with no load prior to the test.

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM3-63 6KA MCB

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Mini Circuit Breaker

Standard\_ IEC60898-1

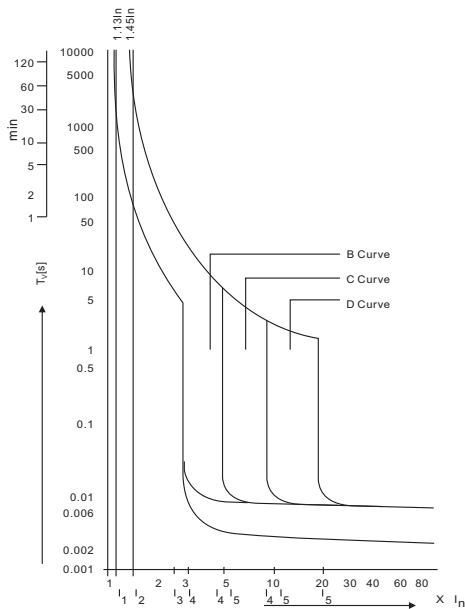


## Technical Data

<b>Electrical Features</b>	Rated current In	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N,4P
	Rated voltage Ue	240/415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
<b>Mechanical Features</b>	Electrical life	8,000 Cycles
	Mechanical life	20,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
<b>Combination with accessories</b>	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
	Over/Under voltage release	EKM1-MV+MN

## MCB Characteristics

### Characteristics Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$ $< 0.1s$

### Tripping characteristics

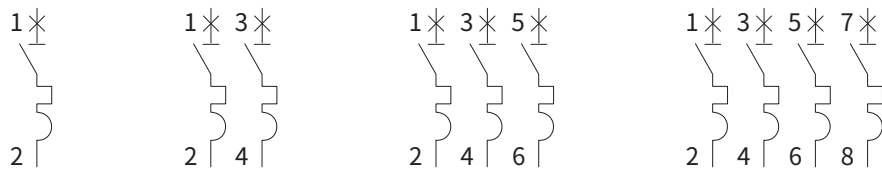
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)In.

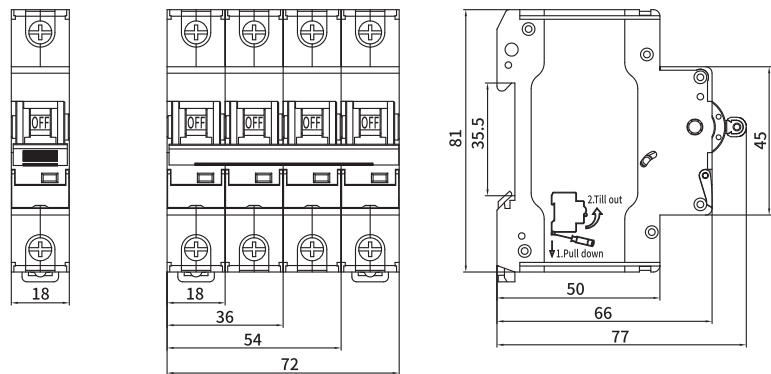
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)In.

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformes, x-ray machines etc,)Short circuit release is set to (10-20)In.

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM1-40N 6KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

Electrical Features	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	230/240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	16mm <sup>2</sup> 18-5AWG
	Terminal size top/bottom for busbar	16mm <sup>2</sup> 18-5AWG
	Tightening torque	1.5Nm 14In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
	Over/Under voltage release	EKM1-MV+MN

# EKM1-40N 6KA MCB

ETEK®

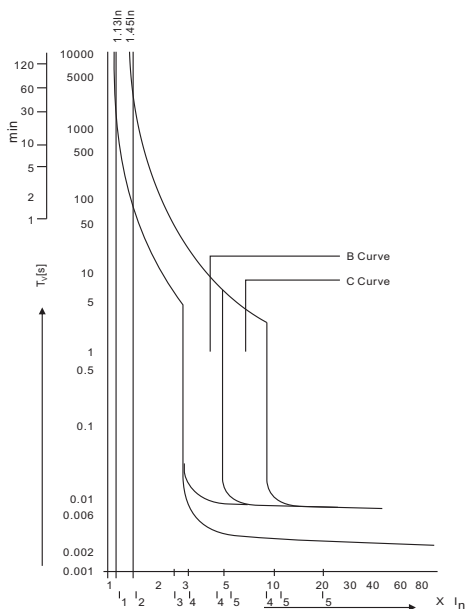
Mini Circuit Breaker

Standard\_ IEC60898-1

## MCB Characteristics

### Characteristics

#### Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$

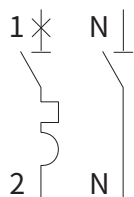
### Tripping characteristics

Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

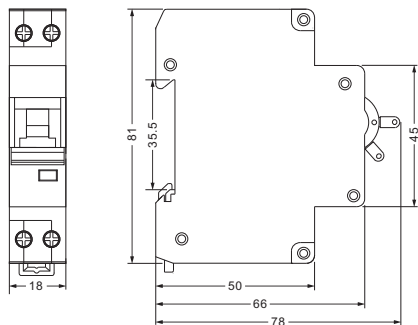
“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)In.

“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)In.

## Circuit Diagram



## Overall and Installation Dimension(mm)





# EKM1-125 10KA MCB

ETЭК®

Mini Circuit Breaker

Standard\_ IEC60947-2



## Technical Data

Electrical Features	Rated current In	63,80,100,125A
	Poles	1P,1P+N,2P,3P,3P+N,4P
	Rated voltage Ue	240/415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	10,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	8-12In
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average ≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	50mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	50mm <sup>2</sup> 18-2AWG
	Tightening torque	3.5Nm 30In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

# EKM1-125 10KA MCB

ETЭК®

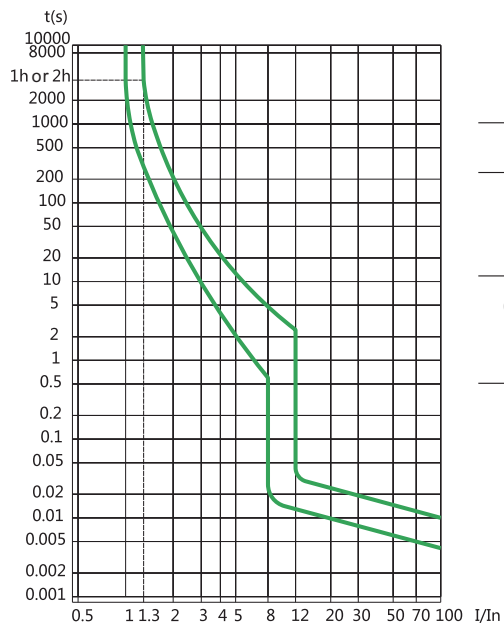
Mini Circuit Breaker

Standard\_ IEC60947-2

## MCB Characteristics

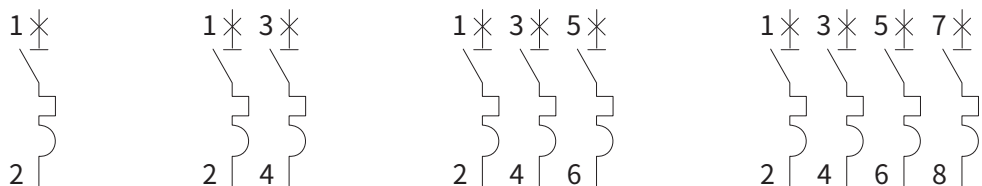
### Characteristics

#### Curves

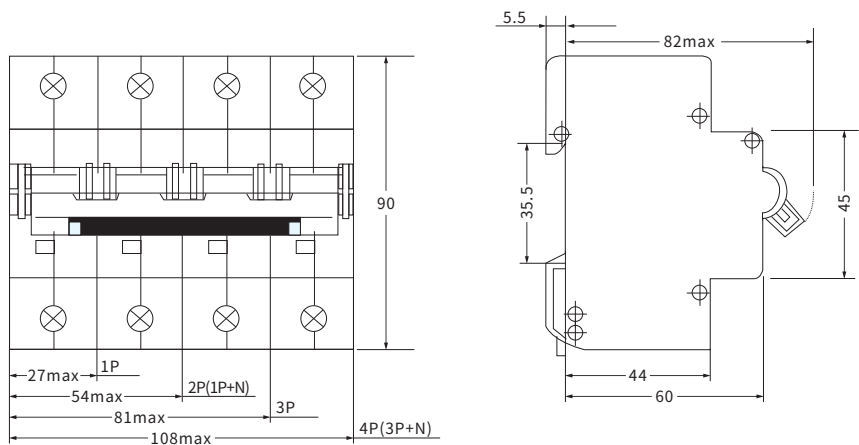


Thermal Tripping				Magnetic Tripping		
As per IEC60947	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
63-125A	$1.05 \times I_N$	$1.30 \times I_N$	$\geq 2h$ $< 1h$	$8 \times I_N$	$12 \times I_N$	$\geq 0.2s$ $< 0.2s$

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL1-63 6KA RCCB EKL1-63H 10KA RCCB



ETEK®

Residual Current Circuit Breaker

Standard\_ IEC61008-1



## Technical Data

Electrical Features	Mode	Electromagnetic
	Type	AC,A,G,S
	Rated current $I_n$	16,25,32,40,63,80A
	Poles	2P(1P+N),4P(3P+N)
	Rated voltage $U_e$	2P 240V~ 4P 415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operation current( $I_{\Delta n}$ )	10,30,100,300mA
	Rated residual making and breaking capacity ( $I_{\Delta m}$ )	500A( $I_n \leq 40A$ ), 10In( $I_n > 40A$ )
	Short-circuit current $I_{nc} = I_{\Delta c}$	EKL1-63 6,000A
		EKL1-63H 10,000A
	SCPD fuse	EKL1-63  6000
		EKL1-63H  10000
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
	Electrical life	2,000 Cycles
	Mechanical life	4,000 Cycles
Installation	Contact position indicator	Yes
	Protection degree	IP20
	Ambient temperature(with daily average $\leq 35^\circ C$ )	$-5^\circ C \sim +40^\circ C$
	Storage temperature	$-25^\circ C \sim +70^\circ C$
	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
Mounting	On DIN rail EN60715(35mm) by means of fast clip device	
	Connection	Power supply in both directions




# EKL1-63 6KA RCCB EKL1-63H 10KA RCCB



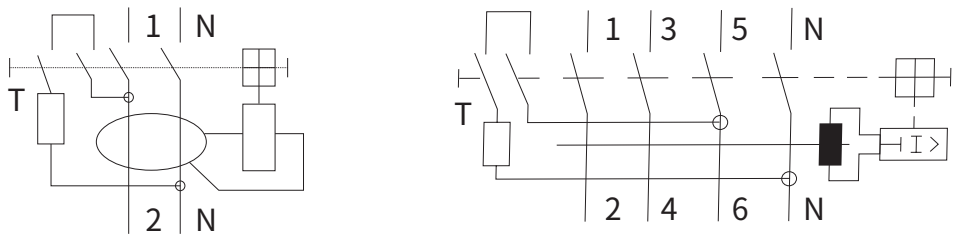
Residual Current Circuit Breaker

Standard\_ IEC61008-1

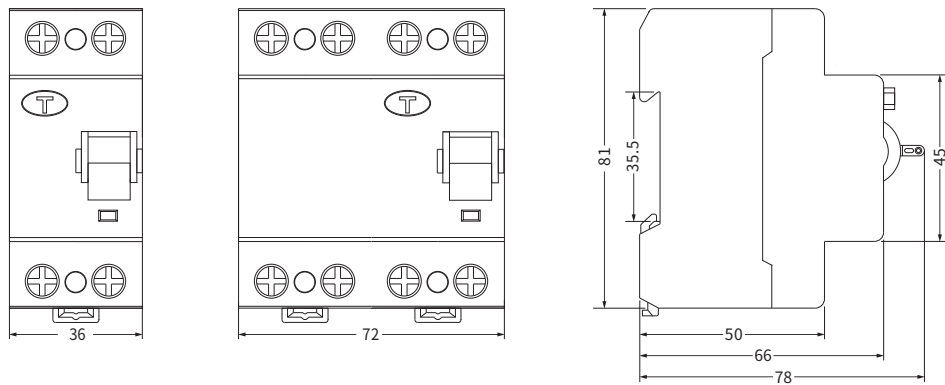
Tripping Current Range	Type	Tripping current $I_{\Delta}/A$		
	AC	$0.5I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
	A	Lagging Angle	$I_{\Delta n} > 0.01A$	$I_{\Delta n} \leq 0.01A$
		0°	$0.35I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.35I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		90°	$0.25I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.25I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		135°	$0.11I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.11I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$

Alternative Current Sensitive	Pulsating direct current sensitive	Surge current proof
 <p>They react to AC current which, whether suddenly applied or slowly arising.</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>RCCB' s surge capacity. 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>

## Circuit Diagram



## Overall and Installation Dimension(mm)





# EKL1-63B 10KA B Type RCCB


ETEK®

Residual Current Circuit Breaker

Standard\_ IEC61008-1  
IEC62423



## Technical Data

Electrical Features	Mode	Electromagnetic
	Type(wave form of the earth leakage sensed)	B
	Rated current $I_n$	25,40,63A
	Poles	2P(1P+N), 4P(3P+N)
	Rated voltage $U_e$	2P 240V~, 4P 415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operation current( $I_{\Delta n}$ )	30, 100, 300mA
	Rated residual making and breaking capacity ( $I_{\Delta m}$ )	500A( $I_n \leq 40A$ ), 10In( $I_n > 40A$ )
	Short-circuit current $I_{nc} = I_{\Delta c}$	10,000A
	SCPD fuse	 10000
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
	Electrical life	2,000 Cycles
	Mechanical life	4,000 Cycles

Installation	Contact position indicator	Yes
	Protection degree	IP20
	Ambient temperature(with daily average $\leq 35^\circ C$ )	$-5^\circ C \sim +40^\circ C$
	Storage temperature	$-25^\circ C \sim +70^\circ C$
	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions


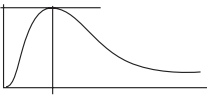
# EKL1-63B 10KA B Type RCCB

ETEK®

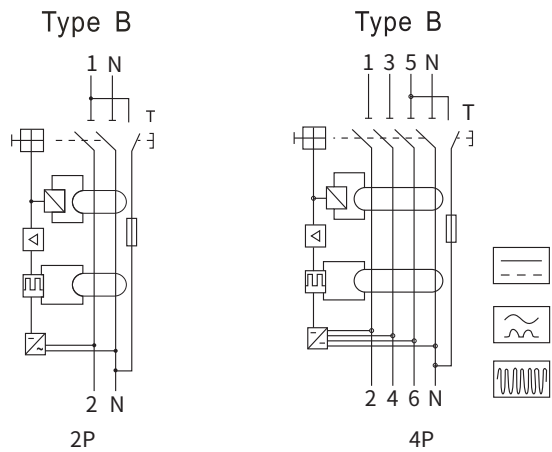
Residual Current Circuit Breaker

Standard\_ IEC61008-1  
IEC62423

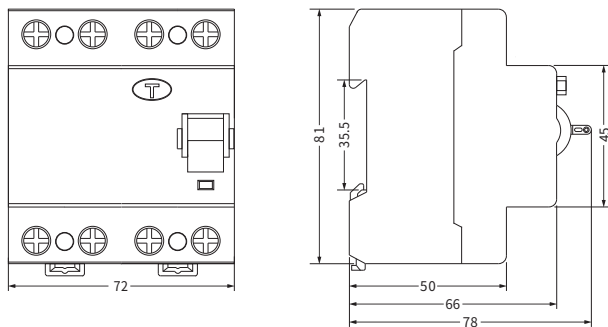
Tripping Current Range	Type	Tripping current $I\Delta/A$		
	AC	$0.5I\Delta n < I\Delta < I\Delta n$		
	A	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
		0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
		90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
		135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

Alternative Current Sensitive	Pulsating direct current sensitive	Surge current proof
<p>B class</p> <p>Tripping is ensured for sinusoidal AC residual currents pulsed DC residual currents, alternating residual sinusoidal currents up to 1000Hz, pulsating direct residual currents and for smooth direct residual currents, whether applied suddenly or increasing slowly.</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>RCCB' s surge capacity. 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>

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL2-40 6KA RCBO

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

Electrical Features	Mode	Electronic
	Type	AC,A
	Rated current $I_n$	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage $U_e$	230/240V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operation current( $I_{\Delta n}$ )	10,30,100,300mA
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from button
Specialfunction can customized	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

# EKL2-40 6KA RCBO

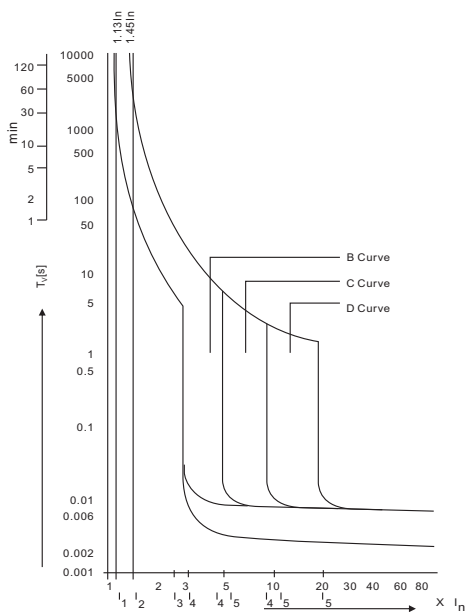
ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1

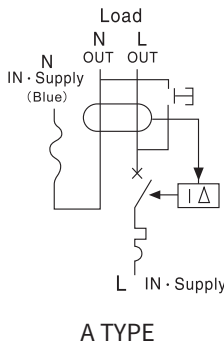
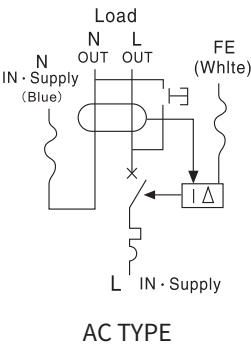
Tripping Current Range	Type	Tripping current $I\Delta/A$		
	AC	$0.5I\Delta n < I\Delta < I\Delta n$		
	A	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
		0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
		90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
		135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

## Characteristics Curves

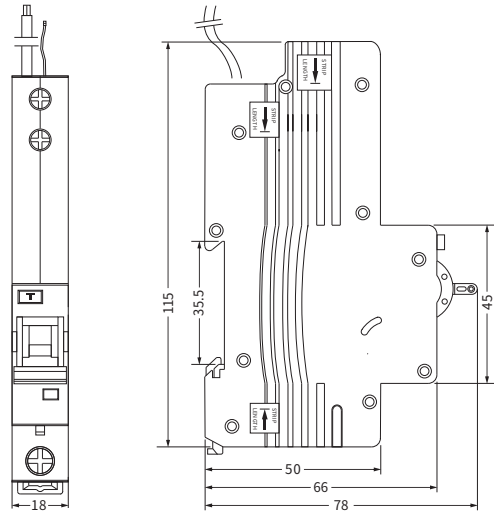


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)





# EKL3-40 6KA RCBO

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

Electrical Features	Mode	Electronic
	Type	AC,A
	Rated current $I_n$	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage $U_e$	230/240V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operating current( $I_{\Delta n}$ )	10,30,100,300mA
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
Combination with accessories	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

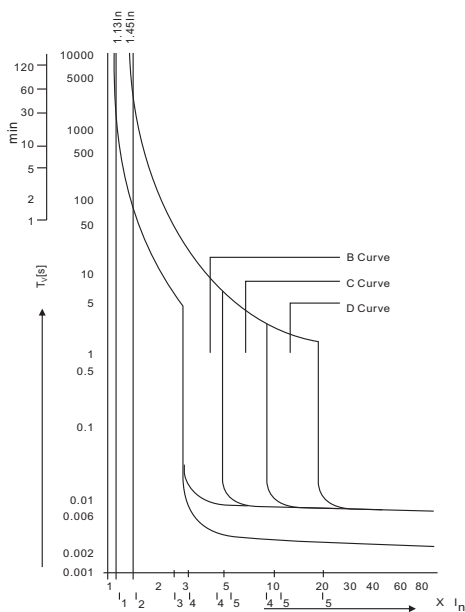
# EKL3-40 6KA RCBO

RCCB with Overcurrent Protection

Standard\_ IEC61009-1

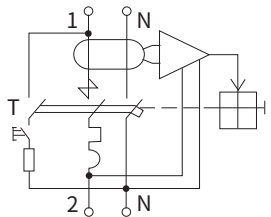
Tripping Current Range	Type	Tripping current $I\Delta/A$		
	AC	$0.5I\Delta n < I\Delta < I\Delta n$		
	A	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
		0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
		90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
		135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

## Characteristics Curves

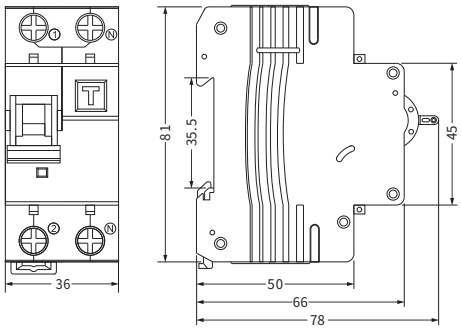


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL3-40M 6KA RCBO (Electromagnetic Type)

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

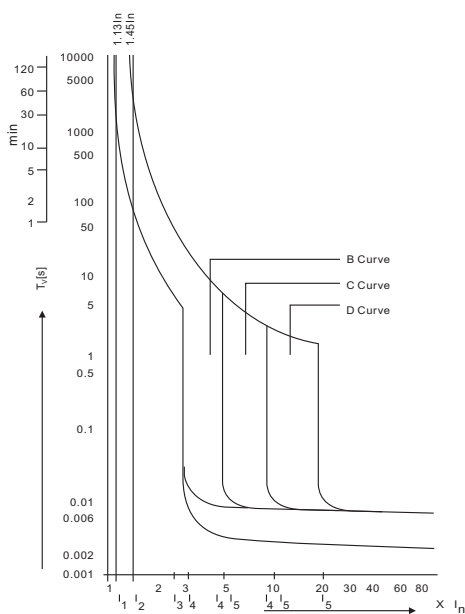
Electrical Features	Mode	Electromagnetic
	Type	AC,A
	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	230/240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(IΔn)	30,100,300mA
	Break time under IΔn	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average ≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX

**ETAK®**

Standard\_ IEC61009-1

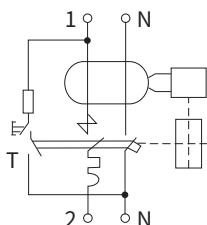
Tripping Current Range	Type	Tripping current IΔ/A		
	AC	0.5IΔn<IΔ<IΔn		
	A	Lagging Angle	IΔn>0.01A	IΔn≤0.01A
		0°	0.35IΔn≤IΔ≤1.4IΔn	0.35IΔn≤IΔ≤2IΔn
		90°	0.25IΔn≤IΔ≤1.4IΔn	0.25IΔn≤IΔ≤2IΔn
135°		0.11IΔn≤IΔ≤1.4IΔn	0.11IΔn≤IΔ≤2IΔn	

## Characteristics Curves

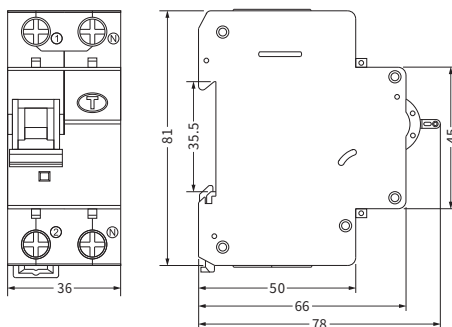


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$		$\geq 1h$	$3 \times I_N$		$\geq 0.1s$
		$1.45 \times I_N$	$< 1h$		$5 \times I_N$	$< 0.1s$
C Curve	$1.13 \times I_N$		$\geq 1h$	$5 \times I_N$		$\geq 0.1s$
		$1.45 \times I_N$	$< 1h$		$10 \times I_N$	$< 0.1s$

## Circuit Diagram



### Overall and Installation Dimension(mm)





# EKL4-40S 6KA RCBO

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

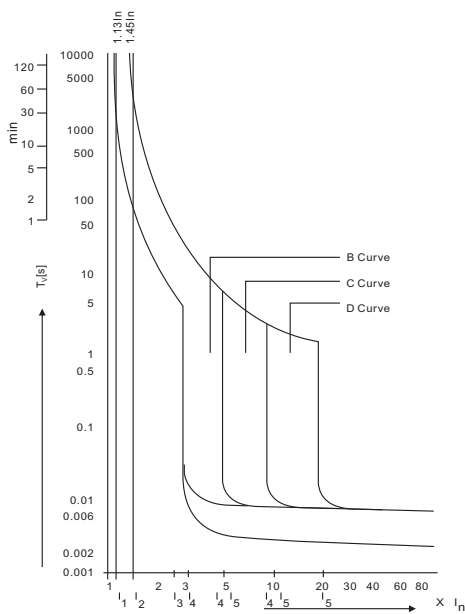
Electrical Features	Mode	Electronic
	Type	AC,A
	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	10,30,100,300mA
	Break time under I $\Delta$ n	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	16mm <sup>2</sup> 18-5AWG
	Terminal size top/bottom for busbar	16mm <sup>2</sup> 18-5AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from top
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
Combination with accessories	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

# EKL4-40S 6KA RCBO

RCCB with Overcurrent Protection ----- Standard\_ IEC61009-1

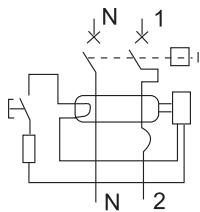
Tripping Current Range	Type	Tripping current $I\Delta/A$		
	AC	$0.5I\Delta n < I\Delta < I\Delta n$		
	A	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
		0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
		90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
		135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

## Characteristics Curves

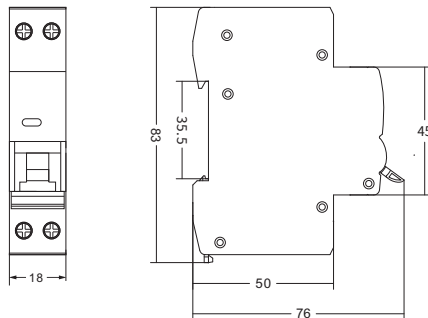


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL5-63 6KA RCBO EKL5-63H 10KA RCBO

**ETEK®**

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

<b>Electrical Features</b>	Mode	Electronic
	Type	AC,A,S
	Rated current In	6,8,10,13,16,20,25,32,40,50,63A
	Poles	2P (1P+N),4P (3P+N)
	Rated voltage Ue	2P 240V~ 4P 415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	10,30,100,300mA
	Break time under I $\Delta$ n	≤0.1s(S type<0.5s)
	Rated breaking capacity	EKL5-63 6,000A EKL5-63H 10,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq.for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
<b>Mechanical Features</b>	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature(with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from top
<b>Combination with accessories</b>	Auxiliary contact	EKM1-OF
	Alarm contact	EKM1-FB
	Shunt release	EKM1-MX
<b>Combination with accessories</b>	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

# EKL5-63 6KA RCBO EKL5-63H 10KA RCBO

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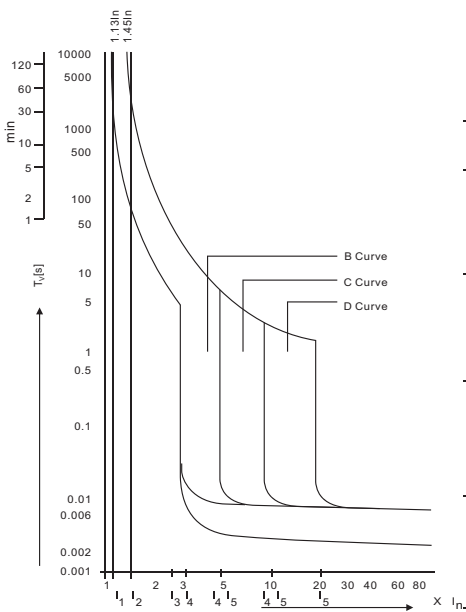
RCCB with Overcurrent Protection

Standard\_ IEC61009-1

Tripping Current Range	Type	Tripping current $I_{\Delta}/A$		
	AC	$0.5I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
	A	Lagging Angle	$I_{\Delta n} > 0.01A$	$I_{\Delta n} \leq 0.01A$
		0°	$0.35I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.35I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		90°	$0.25I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.25I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		135°	$0.11I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.11I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$

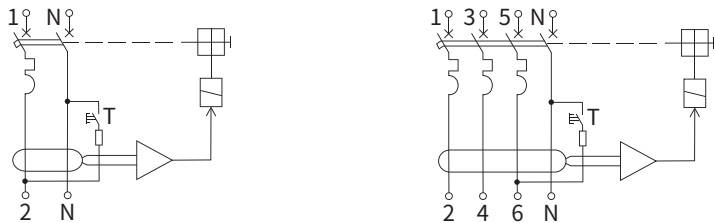
## Characteristics

### Curves

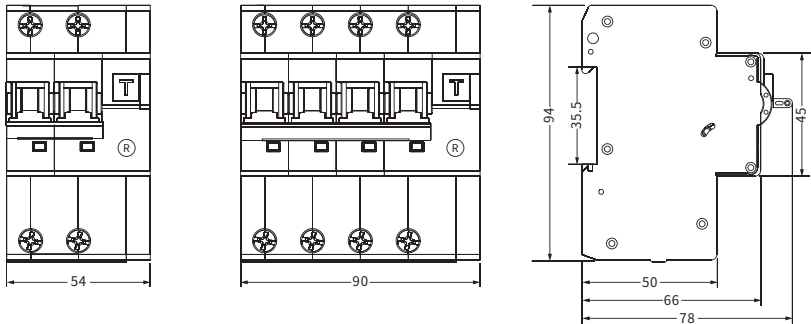


Thermal Tripping				Magnetic Tripping		
Asper IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
BCurve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
CCurve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
DCurve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)

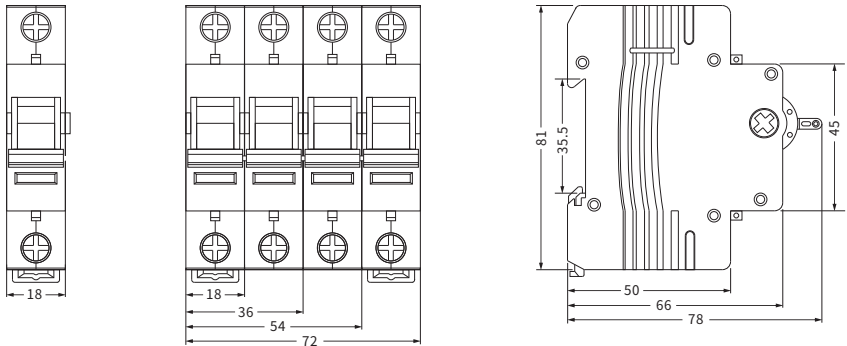




## Technical Data

Electrical Features	Rated current In	32,40,50,63,80,100,125A
	Poles	1P,2P,3P,4P
	Rated voltage Ue	240/415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated short-time withstand current Icw	12Ie,1s
	Rated making and breaking capacity	3Ie,1.05Ue,cos ϕ =0.65
	Rated short circuit making capacity	20Ie,t=0.1s
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
Utiliaztion category		AC-22A
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	50mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	50mm <sup>2</sup> 18-2AWG
	Tightening torque	3.5Nm 30In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

## Overall and Installation Dimension(mm)



# EKM1-OF

Auxiliary Contact for EKM1,EKL3

# EKM1-FB

Alarm Auxiliary Contact for EKM1,EKL3



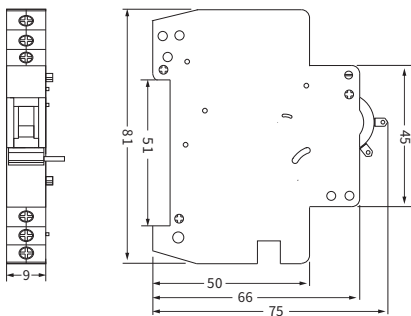
----- Standard\_ IEC60947-5-1



## Technical Data

Electrical Features	Rated value	AC415/400V 50/60Hz 3A
		AC240/400V 50/60Hz 3A
		DC130V 1A
		DC48V 2A
		DC24V 6A
	Configurations	EKM1-OF 1N/O+1N/C
		EKM1-FB 2N/O+2N/C
	Rated impulse withstand voltage (1.2/50)Uimp	4,000V
	Rated short circuit making capacity	20Ie, t=0.1s
	Dielectric test voltage at ind. Freq. for 1min	2kV
Mechanical Features	Insulation voltage Ui	500V
	Pollution degree	2
	Electrical life	6,000 Cycles
	Mechanical life	10,000 Cycles
	Protection degree	IP20
Installation	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
	Terminal connection type	Cable
	Terminal size top/bottom for cable	2.5mm <sup>2</sup> 18-13AWG
	Tightening torque	0.8 Nm 7In-lbs

## Overall and Installation Dimension(mm)



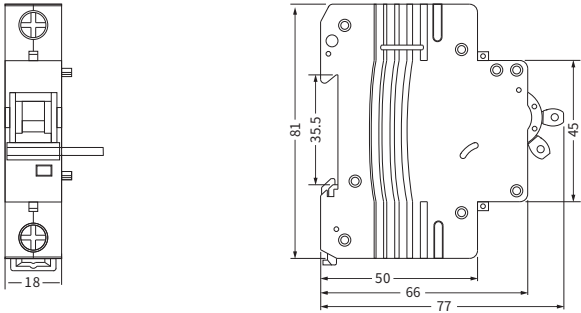


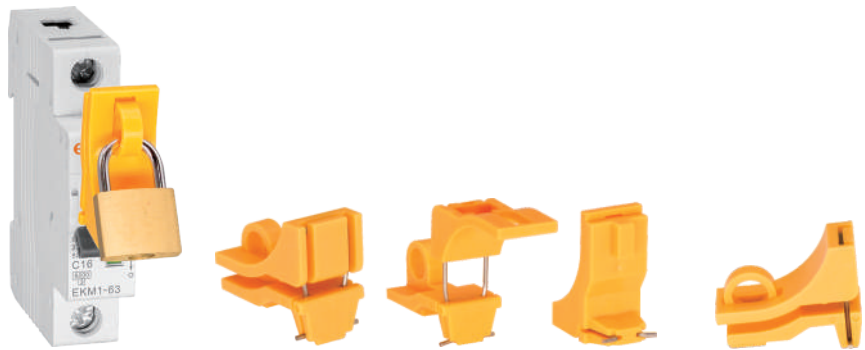


Technical Data

Electrical Features EKM1-MX	Rated voltage US(V)	AC230/400 50/60Hz DC24 DC48 AC24 50/60Hz
	Rated impulse withstand voltage (1.2/50)Uimp	4,000V
	Rated short circuit making capacity	20Ie, t=0.1s
	Dielectric test voltage at ind. Freq. for 1min	2kV
	Insulation voltage Ui	500V
	Pollution degree	2
EKM1-MV+MN	Rated voltage (Ue)	AC230V
	Rated insulating voltage(Ui)	500V
	Over-voltage tripping range	280V±5%
	Under-voltage tripping range	170V±5%
	Mounted on the right side of circuit breaker, actuate the combined device to trip in case of under-voltage or over-voltage, effectively prevent the device from closing operation under abnormal power voltage condition.	
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	4,000 Cycles
	Protection degree	IP20
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable
	Terminal size top/bottom for cable	2.5mm <sup>2</sup> 18-13AWG
	Tightening torque	0.8 Nm 7In-lbs

Overall and Installation Dimension(mm)





## Handle Lock for MCB

Specification	Model No. EKLK18	
	It is used to lock Breaker handle on the OFF or ON position.	
	Suitable for MCB,RCCB,RCBO	
	Colour	Yellow
	Material	Nylon PA66 and Stainless



## Plug Part for MCB

Specification	It is used to seal the MCB screw hole for protecting and locking	
	Colour	Light Grey
	Material	Nylon PA66
	Model No. EKM1PL	
	Suitable for MCB Model EKM1-63,EKM1-63H,EKM1-63DC,RCBO Model EKL3-40	
	Model No. EKM1PLS	
	Suitable for MCB Model EKM1-63S	

# EKM2-63S 4.5KA/6KA MCB

**ETEK®**

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

<b>Electrical Features</b>	Rated current $I_n$	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N, 4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	1-40A 6,000A / 50-63A 4,500A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
Thermo-magnetic release characteristic		B,C,D

<b>Mechanical Features</b>	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C

<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

<b>Combination with accessories</b>	Auxiliary contact	EKM1S-OF
	Alarm contact	EKM1S-FB
	Shunt release	EKM1S-MX
	Over/Under voltage release	EKM1S-MV+MN

# EKM2-63S 4.5KA/6KA MCB

ETEK®

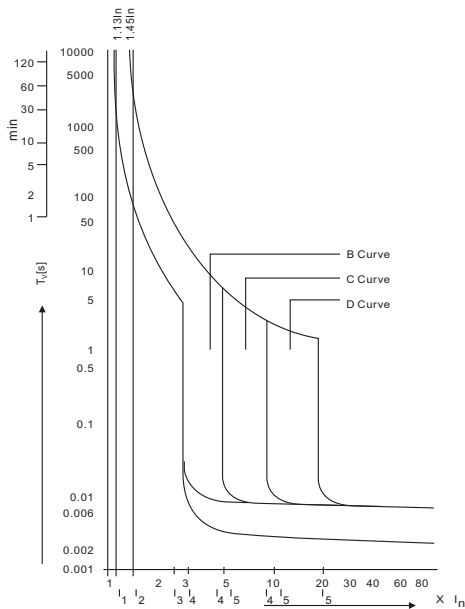
Mini Circuit Breaker

Standard\_ IEC60898-1

## MCB Characteristics

### Characteristics

#### Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$ $< 0.1s$

### Tripping characteristics

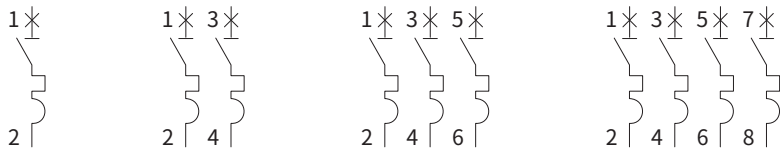
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)  $I_N$ .

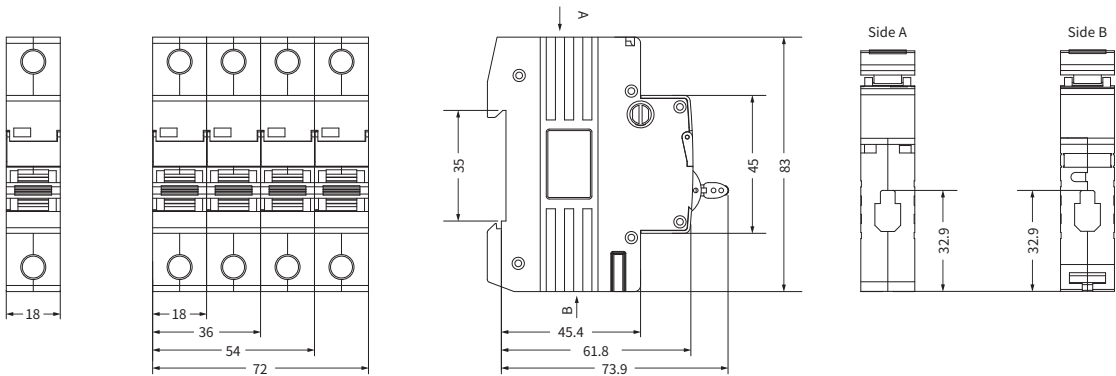
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)  $I_N$ .

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformes, x-ray machines etc,) Short circuit release is set to (10-20)  $I_N$ .

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM2-63 6KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



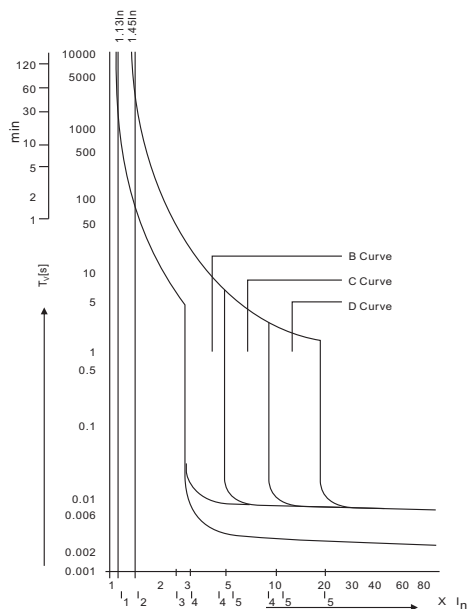
## Technical Data

<b>Electrical Features</b>	Rated current $I_n$	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N, 4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
<b>Mechanical Features</b>	Electrical life	8,000 Cycles
	Mechanical life	20,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
<b>Combination with accessories</b>	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
	Over/Under voltage release	EKM2-MV+MN

## MCB Characteristics

### Characteristics

#### Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

### Tripping characteristics

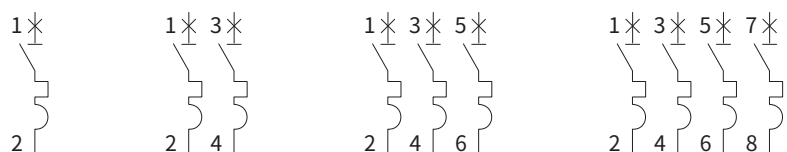
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5) $I_N$ .

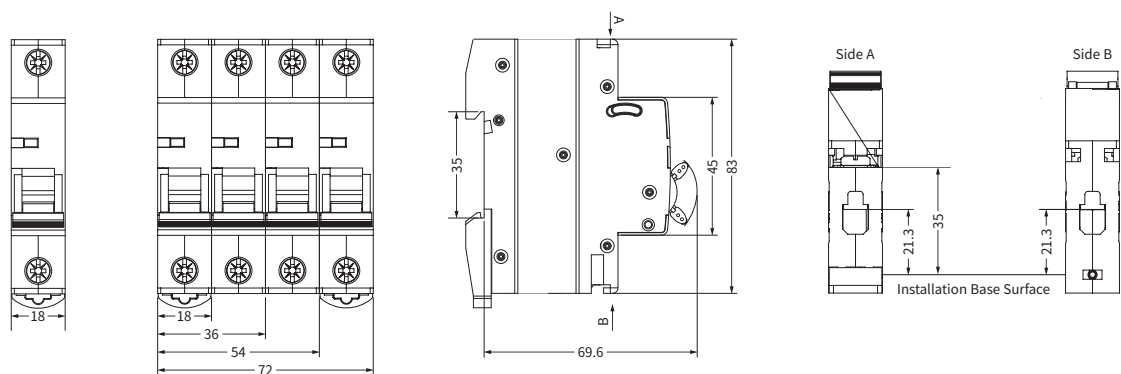
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10) $I_N$ .

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformes, x-ray machines etc,) Short circuit release is set to (10-20) $I_N$ .

## Circuit Diagram



## Overall and Installation Dimension(mm)





# EKM2-63H 10KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



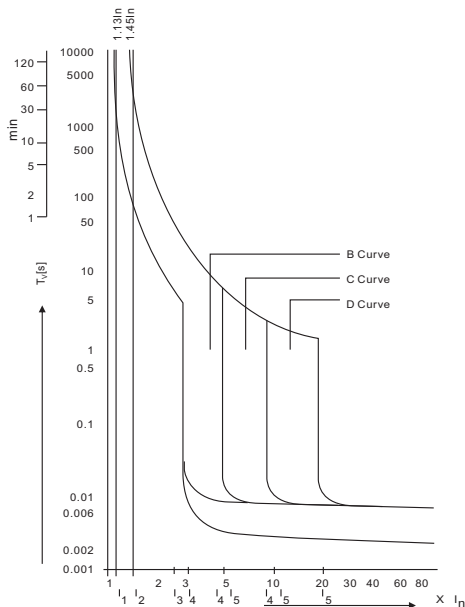
## Technical Data

Electrical Features	Rated current $I_n$	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P, 1P+N, 2P, 3P, 3P+N, 4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	10,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
Mechanical Features	Electrical life	8,000 Cycles
	Mechanical life	20,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
	Over/Under voltage release	EKM2-MV+MN

## MCB Characteristics

### Characteristics

#### Curves



As per IEC60898	Thermal Tripping			Magnetic Tripping		
	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

### Tripping characteristics

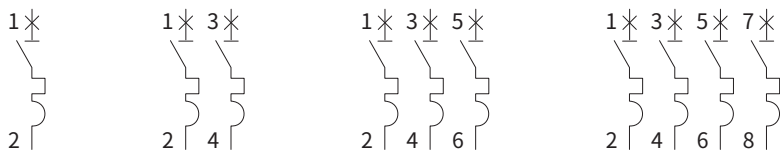
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)In.

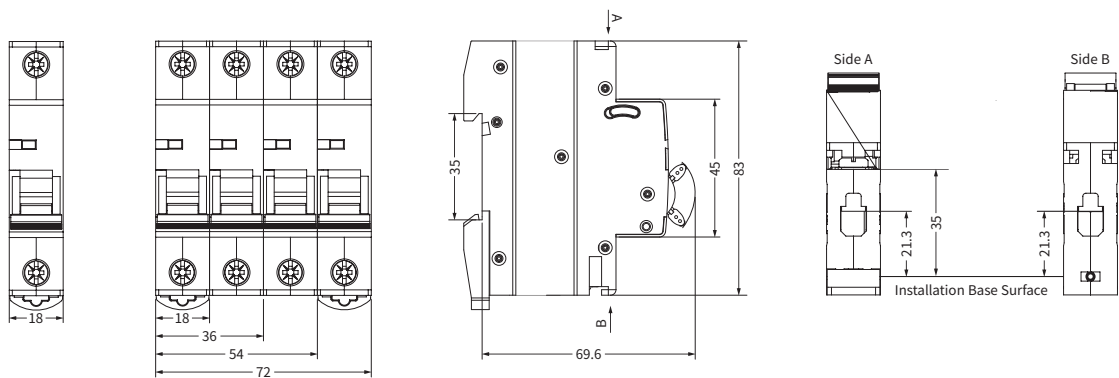
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)In.

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformes, x-ray machines etc,) Short circuit release is set to (10-20)In.

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM2-32N 6KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

Electrical Features	Rated current $I_n$	6,8,10,13,16,20,25,32A
	Poles	1P+N
	Rated voltage $U_e$	230/240V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	16mm <sup>2</sup> 18-5AWG
	Terminal size top/bottom for busbar	16mm <sup>2</sup> 18-5AWG
	Tightening torque	1.5Nm 14In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
	Over/Under voltage release	EKM2-MV+MN

# EKM2-32N 6KA MCB

ETEK®

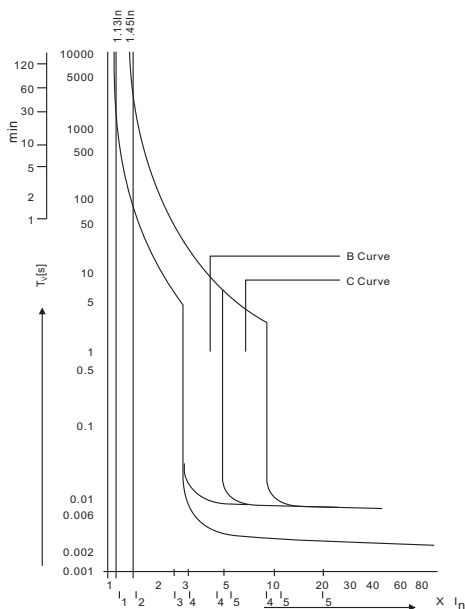
Mini Circuit Breaker

Standard\_ IEC60898-1

## MCB Characteristics

### Characteristics

#### Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$

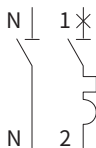
### Tripping characteristics

Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

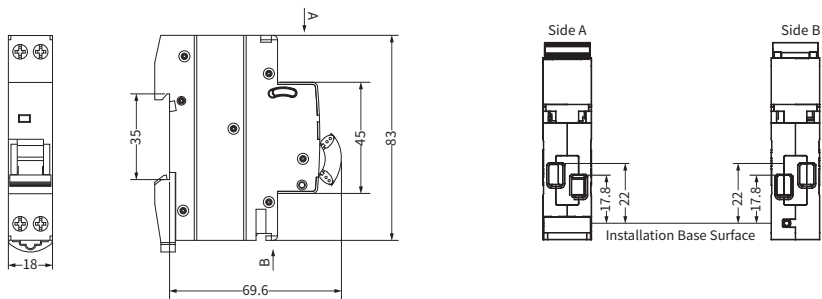
“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)In.

“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)In.

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM2-125H 10KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60947-2



## Technical Data

Electrical Features	Rated current $I_n$	63,80,100,125A
	Poles	1P,1P+N,2P,3P,3P+N,4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	10,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	8-12In
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	50mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	50mm <sup>2</sup> 18-2AWG
	Tightening torque	3.5Nm 30In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
	Over/Under voltage release	EKM2-MV+MN

# EKM2-125H 10KA MCB

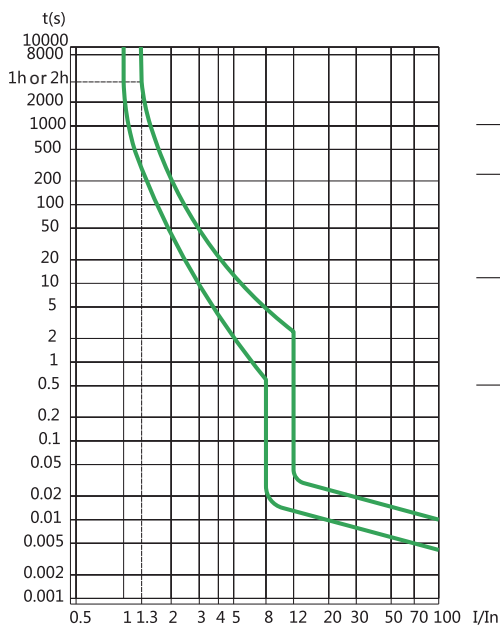
ETEK®

Mini Circuit Breaker

Standard\_ IEC60947-2

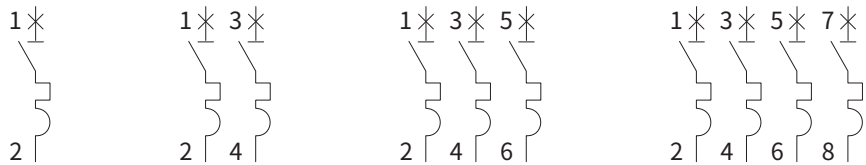
## MCB Characteristics

Characteristics  
Curves

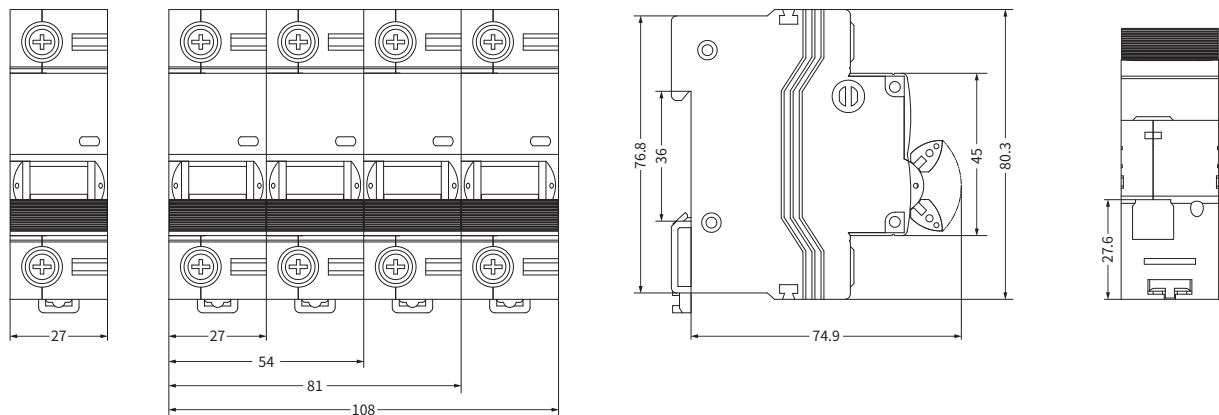


Thermal Tripping				Magnetic Tripping		
As per IEC60947	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
63-125A	$1.05 \times I_N$	$1.30 \times I_N$	$\geq 2h$ $< 1h$	$8 \times I_N$	$12 \times I_N$	$\geq 0.2s$ $< 0.2s$

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL6-100 6KA RCCB EKL6-100H 10KA RCCB



ETEK®

Residual Current Circuit Breaker

Standard\_ IEC61008-1



## Technical Data

Electrical Features	Mode	Electromagnetic
	Type	AC,A,G,S
	Rated current $I_n$	16,25,32,40,63,80,100A
	Poles	2P(1P+N),4P(3P+N)
	Rated voltage $U_e$	2P 240V~ 4P 415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operation current( $I_{\Delta n}$ )	30,100,300mA
	Rated residual making and breaking capacity ( $I_{\Delta m}$ )	500A( $I_n \leq 40A$ ), 10In( $I_n > 40A$ )
	Short-circuit current $I_{nc} = I_{\Delta c}$	6,000A/10,000A
	SCPD fuse	 [6000] /  [10000]
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
	Electrical life	2,000 Cycles
	Mechanical life	4,000 Cycles
Installation	Contact position indicator	Yes
	Protection degree	IP20
	Ambient temperature(with daily average $\leq 35^\circ C$ )	$-5^\circ C \sim +40^\circ C$
	Storage temperature	$-25^\circ C \sim +70^\circ C$
	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	35mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	35mm <sup>2</sup> 18-2AWG
	Tightening torque	3.0Nm 22In-lbs
Mounting		On DIN rail EN60715(35mm) by means of fast clip device
Connection		Power supply in both directions






# EKL6-100 6KA RCCB EKL6-100H 10KA RCCB

ETEK®

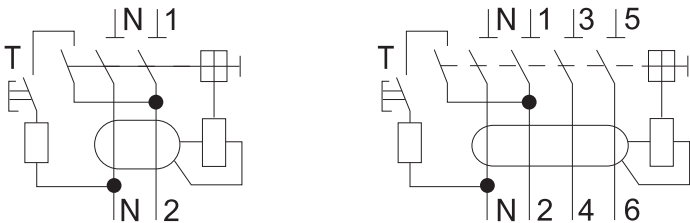
Residual Current Circuit Breaker

Standard\_ IEC61008-1

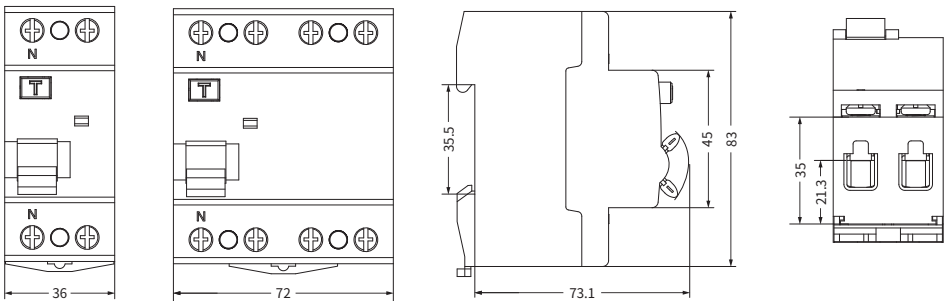
Tripping Current Range	Type	Tripping current $I_{\Delta}/A$		
	AC	$0.5I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
	A	Lagging Angle	$I_{\Delta n} > 0.01A$	$I_{\Delta n} \leq 0.01A$
		0°	$0.35I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.35I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		90°	$0.25I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.25I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		135°	$0.11I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.11I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$

Alternative Current Sensitive	Pulsating direct current sensitive	Surge current proof
 <p>They react to AC current which, whether suddenly applied or slowly arising.</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>RCCB's surge capacity. 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>

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL6-100B 10KA B Type RCCB


ETEK®

Residual Current Circuit Breaker

Standard\_ IEC61008-1  
IEC62423



## Technical Data

Electrical Features	Mode	Electromagnetic
	Type(wave form of the earth leakage sensed)	B
	Rated current $I_n$	25,40,63,80,100A
	Poles	2P,4P
	Rated voltage $U_e$	2P 240V~, 4P 415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operation current( $I_{\Delta n}$ )	30, 100, 300mA
	Rated residual making and breaking capacity ( $I_{\Delta m}$ )	500A( $I_n \leq 40A$ ), 10In( $I_n > 40A$ )
	Short-circuit current $I_{nc} = I_{\Delta c}$	10,000A
	SCPD fuse	 10000
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
	Electrical life	2,000 Cycles
	Mechanical life	4,000 Cycles

Installation	Contact position indicator	Yes
	Protection degree	IP20
	Ambient temperature(with daily average $\leq 35^\circ C$ )	$-5^\circ C \sim +40^\circ C$
	Storage temperature	$-25^\circ C \sim +70^\circ C$
	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	35mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	35mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

# EKL6-100B 10KA B Type RCCB


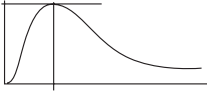
ETEK®

Residual Current Circuit Breaker

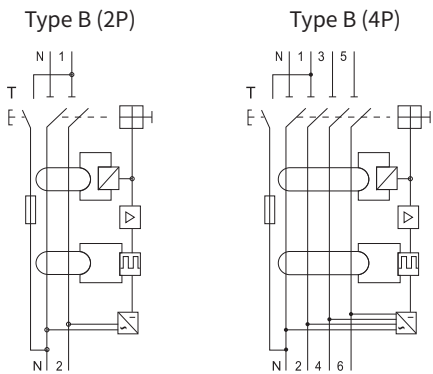
Standard\_ IEC61008-1  
IEC62423

Tripping Current Range	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
	0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
	90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
	135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

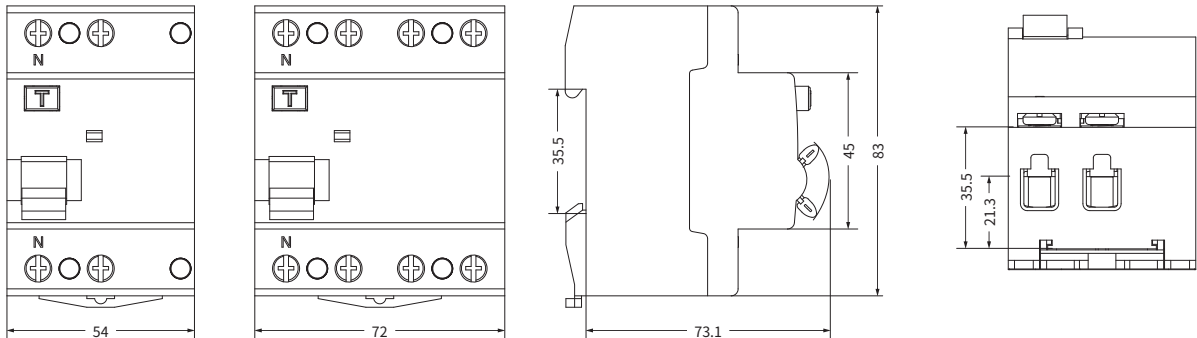
  

Alternative Current Sensitive	Pulsating direct current sensitive	Surge current proof
<p>B class</p> <p>Tripping is ensured for sinusoidal AC residual currents pulsed DC residual currents, alternating residual sinusoidal currents up to 1000Hz, pulsating direct residual currents and for smooth direct residual currents, whether applied suddenly or increasing slowly.</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>RCCB' s surge capacity. 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>

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL6-100B 10KA B Type RCCB with DC 6mA Protection


**ETEK®**

Residual Current Circuit Breaker

Standard\_ IEC61008-1  
IEC62423



## Technical Data

Electrical Features	Mode	Electromagnetic
	Type(wave form of the earth leakage sensed)	B
	Rated current $I_n$	25,40,63A
	Poles	2P,4P
	Rated voltage $U_e$	2P 240V~, 4P 415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated residual operation current( $I_{\Delta n}$ )	30mA
	Rated residual operating current( $I_{\Delta dc}$ )	6mA
	Rated residual making and breaking capacity ( $I_{\Delta m}$ )	500A( $I_n \leq 40A$ ), 10In( $I_n > 40A$ )
	Short-circuit current $I_{nc} = I_{\Delta c}$	10,000A
	SCPD fuse	 10000
	Break time under $I_{\Delta n}$	$\leq 0.1s$
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
	Electrical life	2,000 Cycles
	Mechanical life	4,000 Cycles

Installation	Contact position indicator	Yes
	Protection degree	IP20
	Ambient temperature(with daily average $\leq 35^\circ C$ )	$-5^\circ C \sim +40^\circ C$
	Storage temperature	$-25^\circ C \sim +70^\circ C$
	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	35mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	35mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions


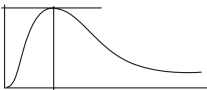
EKL6-100B 10KA B Type RCCB with DC 6mA Protection

ETEK®

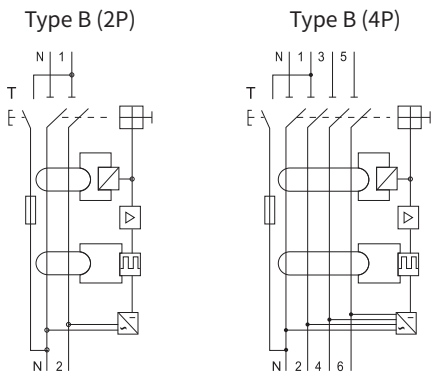
Residual Current Circuit Breaker

Standard\_ IEC61008-1  
IEC62423

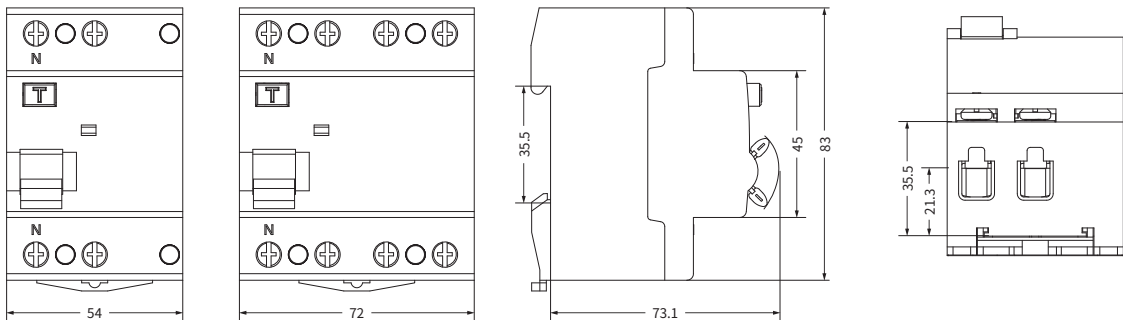
Tripping Current Range	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
	0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
	90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
	135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

Alternative Current Sensitive	Pulsating direct current sensitive	Surge current proof
<p>B class</p> <p>Tripping is ensured for sinusoidal AC residual currents pulsed DC residual currents, alternating residual sinusoidal currents up to 1000Hz, pulsating direct residual currents and for smooth direct residual currents, whether applied suddenly or increasing slowly.</p>	<div></div> <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>	<div></div> <p>RCCB' s surge capacity. 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>

Circuit Diagram



Overall and Installation Dimension(mm)



# EKL7-40 6KA RCBO

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

Electrical Features	Mode	Electronic
	Type	AC,A
	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	10,30,100,300mA
	Break time under I $\Delta$ n	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	16mm <sup>2</sup> 18-5AWG
	Terminal size top/bottom for busbar	16mm <sup>2</sup> 18-5AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from top
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
Combination with accessories	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

Tripping Current Range	Type	Tripping current I $\Delta$ /A		
	AC	0.5I $\Delta$ n<I $\Delta$ <I $\Delta$ n		
	A	Lagging Angle	I $\Delta$ n>0.01A	I $\Delta$ n $\leq$ 0.01A
		0°	0.35I $\Delta$ n $\leq$ I $\Delta$ $\leq$ 1.4I $\Delta$ n	0.35I $\Delta$ n $\leq$ I $\Delta$ $\leq$ 2I $\Delta$ n
		90°	0.25I $\Delta$ n $\leq$ I $\Delta$ $\leq$ 1.4I $\Delta$ n	0.25I $\Delta$ n $\leq$ I $\Delta$ $\leq$ 2I $\Delta$ n
135°		0.11I $\Delta$ n $\leq$ I $\Delta$ $\leq$ 1.4I $\Delta$ n	0.11I $\Delta$ n $\leq$ I $\Delta$ $\leq$ 2I $\Delta$ n	

Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$		$\geq 1h$	$3 \times I_N$		$\geq 0.1s$
		$1.45 \times I_N$	$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$		$\geq 1h$	$5 \times I_N$		$\geq 0.1s$
		$1.45 \times I_N$	$< 1h$			$< 0.1s$

The schematic diagram illustrates a single-phase motor control system. It includes a main power supply labeled "IN · Supply" at the bottom, which branches into a Neutral ("N") line and a Line ("L") line. The "N" line passes through a fuse and connects to the "N OUT" terminal of a Load. The "L" line also passes through a fuse and connects to the "L OUT" terminal of the Load. A branch from the "L" line goes through a switch and a fuse to a contactor. The contactor's main contacts connect to the motor terminals, while its auxiliary contacts are wired to a thermal relay. The thermal relay is connected to the "FE (White)" terminal. A feedback signal path is shown as a dashed line from the thermal relay back to the "L IN · Supply".

[illegible]



# EKL7-40AFD 6KA RCBO+AFDD

ETEK®

RCBO EKL7-40AFD With Arc Fault Protective

Standard\_ IEC62606  
IEC61009



## Protection

- ① Arc Fault Protection
- ② Overload Protection
- ③ Short-Circuit Protection
- ④ Earth-Leakage Protection

## Technical Data

Electrical Features	Mode	Electronic
	Type	A
	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	230/240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	10,30,100,300mA
	Break time under I $\Delta$ n	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average ≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from button

# EKL7-40AFD 6KA RCBO+AFDD

ETEK®

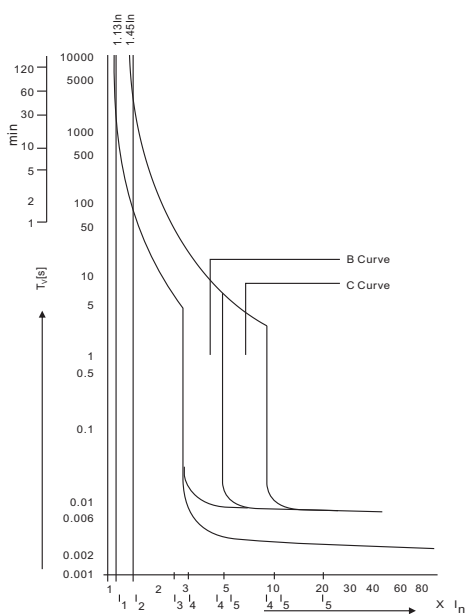
RCBO EKL7-40AFD With Arc Fault Protective

Standard\_ IEC62606  
IEC61009

## Characteristics

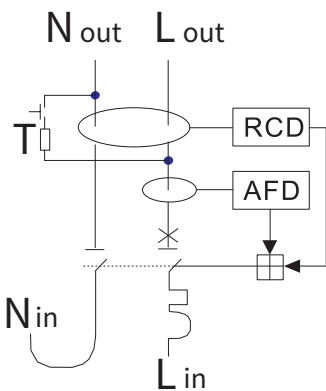
Tripping Current Range	Type	Tripping current $I\Delta/A$		
	A	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
		0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
		90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
		135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

## Characteristics Curves

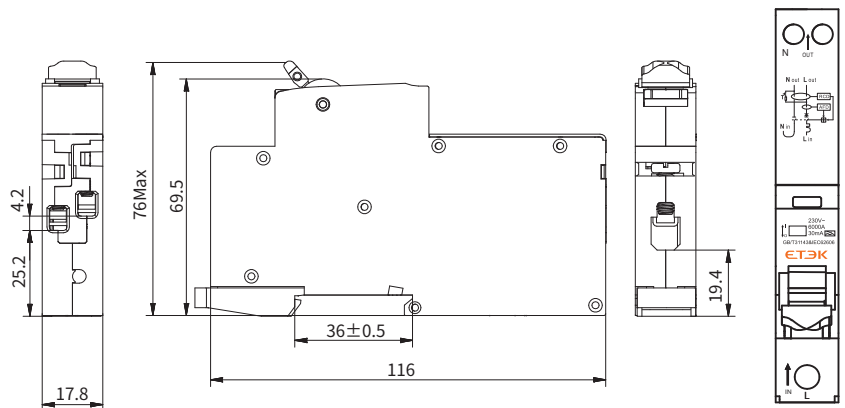


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)





### Technical Data

Electrical Features	Mode	Electronic
	Type	AC,A
	Rated current In	6,8,10,13,16,20,25,32,40, 50A
	Poles	1P+N
	Rated voltage Ue	230/240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	10,30,100,300mA
	Break time under I $\Delta$ n	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average ≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from button
Specialfunction can customized	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

# EKL7-50 6KA RCBO

ETEK®

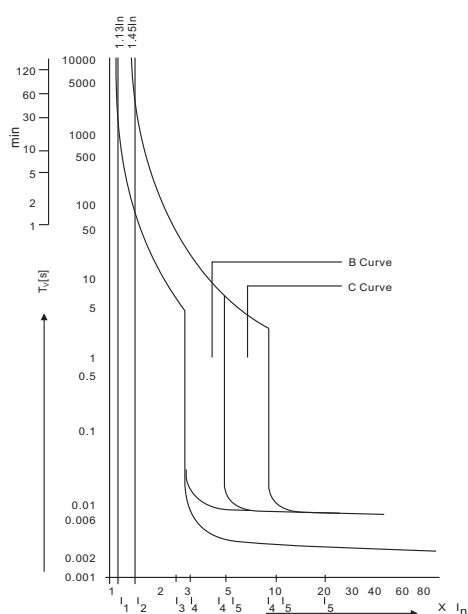
RCCB with Overcurrent Protection

Standard\_ IEC61009-1

## Characteristics

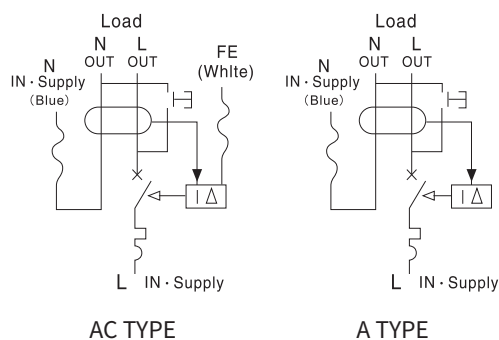
Tripping Current Range	Type	Tripping current $I_{\Delta}/A$		
	AC	$0.5I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
	A	Lagging Angle	$I_{\Delta n} > 0.01A$	$I_{\Delta n} \leq 0.01A$
		0°	$0.35I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.35I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		90°	$0.25I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.25I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		135°	$0.11I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.11I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$

## Characteristics Curves

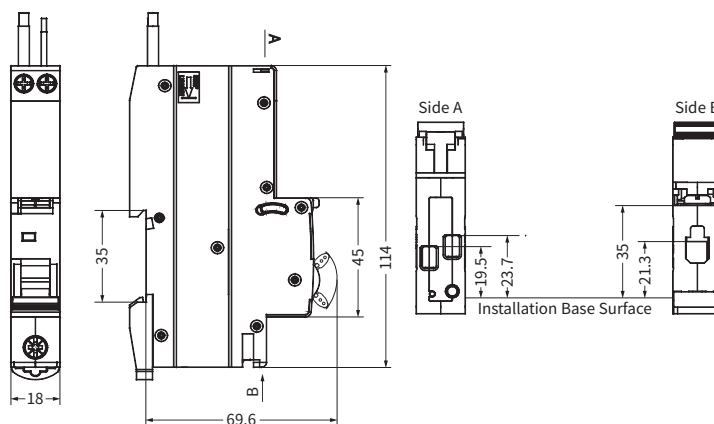


As per IEC60898	Thermal Tripping			Magnetic Tripping		
	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL8-40M 6KA RCBO (Electromagnetic Type)

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

Electrical Features	Mode	Electromagnetic
	Type	AC,A
	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	230/240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	30,100,300mA
	Break time under I $\Delta$ n	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average ≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX

# EKL8-40M 6KA RCBO (Electromagnetic Type)

ETЭK®

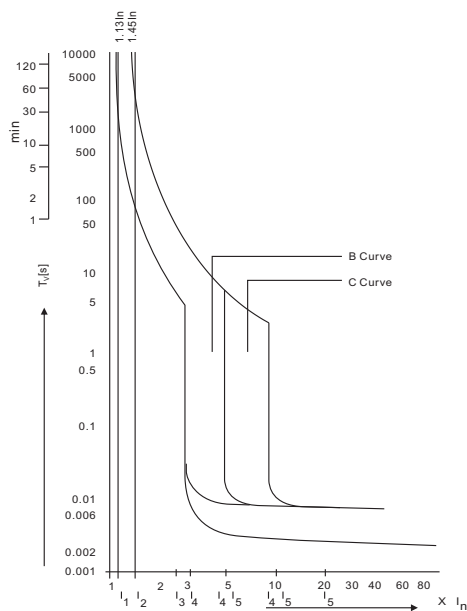
RCCB with Overcurrent Protection

Standard\_ IEC61009-1

## Characteristics

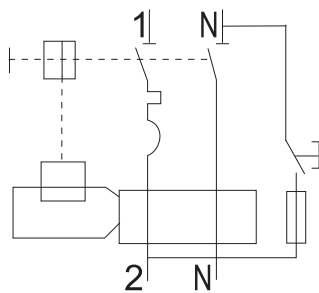
Tripping Current Range	Type	Tripping current $I\Delta/A$		
	AC	$0.5I\Delta n < I\Delta < I\Delta n$		
	A	Lagging Angle	$I\Delta n > 0.01A$	$I\Delta n \leq 0.01A$
		0°	$0.35I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.35I\Delta n \leq I\Delta \leq 2I\Delta n$
		90°	$0.25I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.25I\Delta n \leq I\Delta \leq 2I\Delta n$
		135°	$0.11I\Delta n \leq I\Delta \leq 1.4I\Delta n$	$0.11I\Delta n \leq I\Delta \leq 2I\Delta n$

## Characteristics Curves

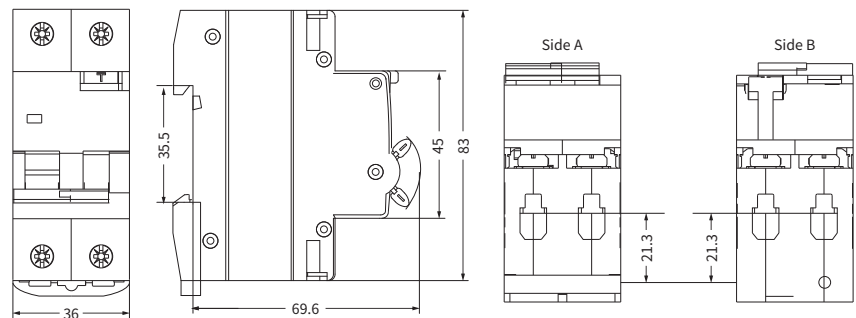


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)



# EKL9-40 6KA RCBO

ETEK®

RCCB with Overcurrent Protection

Standard\_ IEC61009-1



## Technical Data

Electrical Features	Mode	Electronic
	Type	AC,A
	Rated current In	6,8,10,13,16,20,25,32,40A
	Poles	1P+N
	Rated voltage Ue	240V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated residual operating current(I $\Delta$ n)	10,30,100,300mA
	Break time under I $\Delta$ n	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	16mm <sup>2</sup> 18-5AWG
	Terminal size top/bottom for busbar	16mm <sup>2</sup> 18-5AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from top
Combination with accessories	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
Combination with accessories	Over voltage protection	Yes
	Under voltage protection	Yes
	Over/Under voltage protection	Yes

# EKL9-40 6KA RCBO

ETEK®

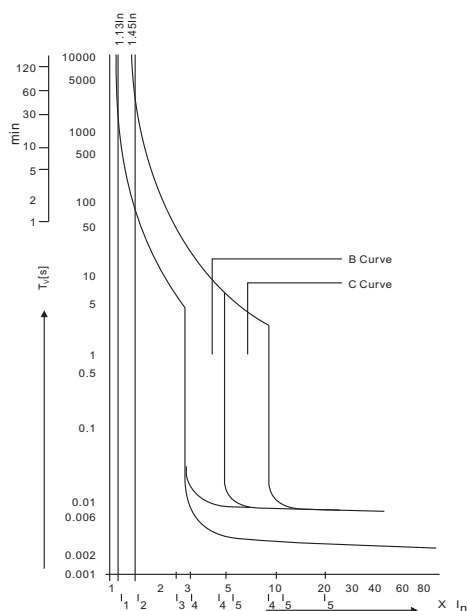
RCCB with Overcurrent Protection

Standard\_ IEC61009-1

## Characteristics

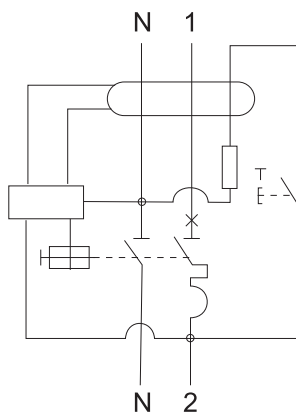
Tripping Current Range	Type	Tripping current $I_{\Delta}/A$		
	AC	$0.5I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
	A	Lagging Angle	$I_{\Delta n} > 0.01A$	$I_{\Delta n} \leq 0.01A$
		0°	$0.35I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.35I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		90°	$0.25I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.25I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		135°	$0.11I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.11I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$

## Characteristics Curves

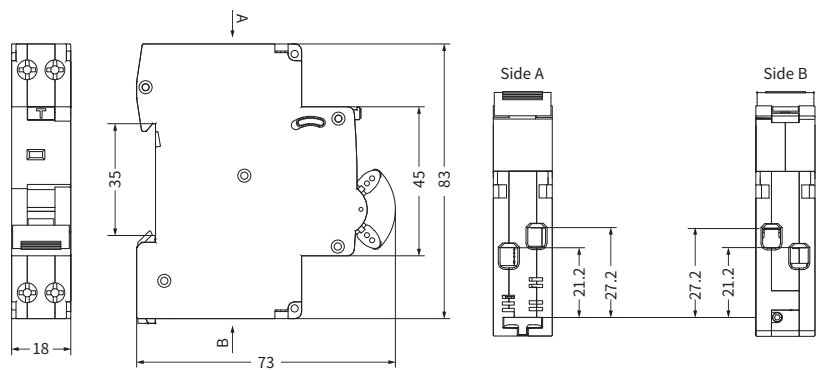


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$
			$< 1h$			$< 0.1s$

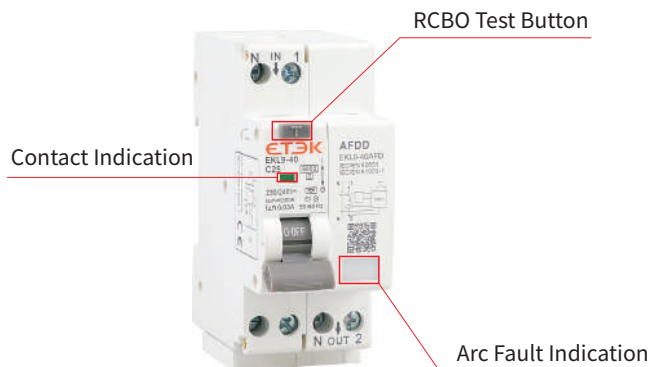
## Circuit Diagram



## Overall and Installation Dimension(mm)







### Protection

- ① Arc Fault Protection
- ② Overload Protection
- ③ Short-Circuit Protection
- ④ Earth-Leakage Protection

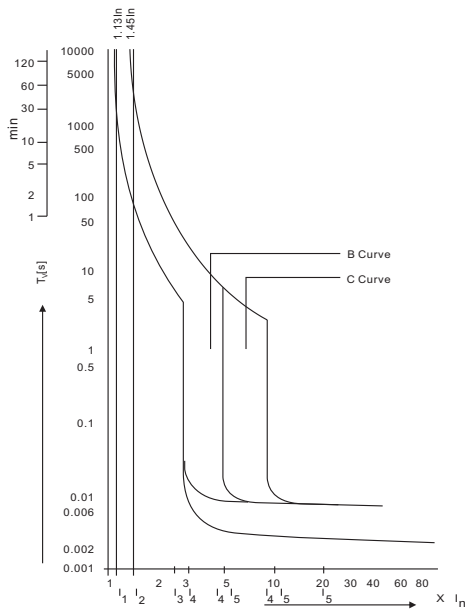
### TechnicalData

<b>Electrical Features</b>	Mode	Electronic
	Type	AC, A
	Rated current In	6, 10, 16, 20, 25, 32, 40A
	Poles	1P+N(Pole N could be On/Off)
	Rated voltage Ue	240V~
	Insulation voltage Ui	400V
	Rated frequency	50Hz
	Rated residual operating current(I $\Delta$ n)	10, 30, 100, 300mA
	Break time under	≤0.1s
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C
<b>Mechanical Features</b>	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average ≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	16mm <sup>2</sup> 18-5AWG
	Terminal size top/bottom for busbar	16mm <sup>2</sup> 18-5AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply from top

## Characteristics

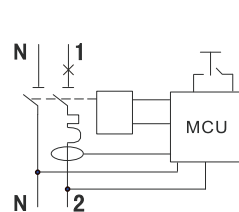
Tripping Current Range	Type	Tripping current $I_{\Delta}/A$		
	AC	$0.5I_{\Delta n} < I_{\Delta} < I_{\Delta n}$		
	A	Lagging Angle	$I_{\Delta n} > 0.01A$	$I_{\Delta n} \leq 0.01A$
		0°	$0.35I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.35I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		90°	$0.25I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.25I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$
		135°	$0.11I_{\Delta n} \leq I_{\Delta} \leq 1.4I_{\Delta n}$	$0.11I_{\Delta n} \leq I_{\Delta} \leq 2I_{\Delta n}$

## Characteristics Curves

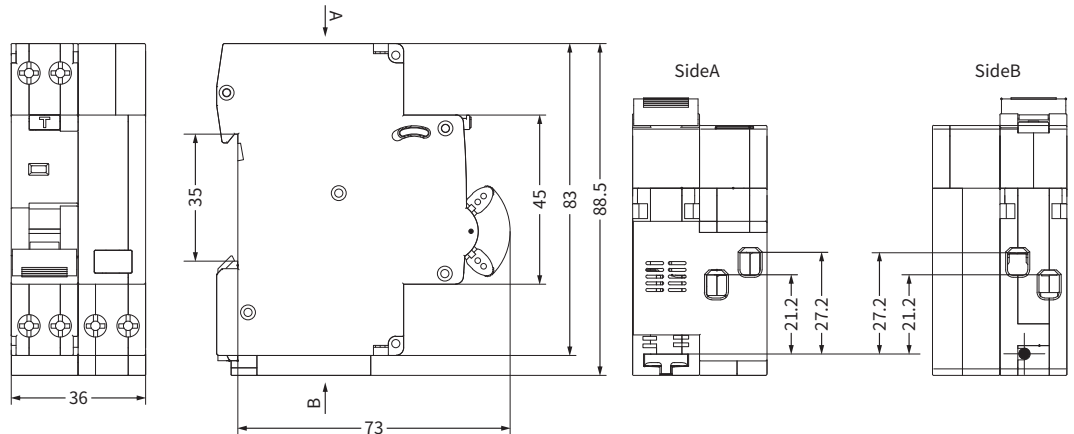


Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$

## Circuit Diagram



## Overall and Installation Dimension(mm)

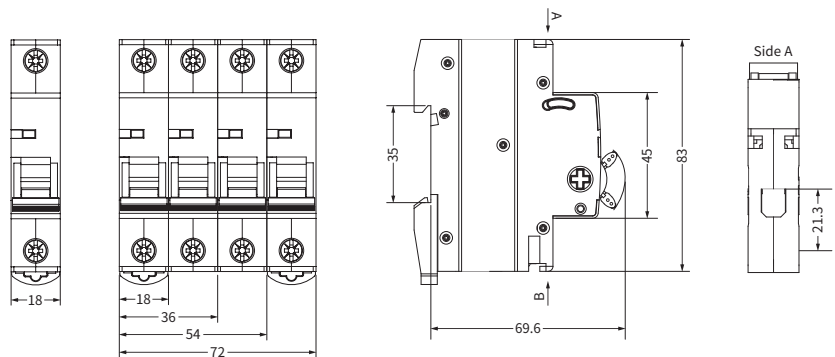




## Technical Data

Electrical Features	Rated current In	32,40,50,63,80,100,125A
	Poles	1P,2P,3P,4P
	Rated voltage Ue	240/415V~
	Insulation voltage Ui	500V
	Rated frequency	50/60Hz
	Rated short-time withstand current Icw	12Ie,1s
	Rated making and breaking capacity	3Ie,1.05Ue,cos φ=0.65
	Rated short circuit making capacity	20Ie,t=0.1s
	Rated impulse withstand voltage(1.5/50) Uimp	4,000V
	Dielectric test voltage at ind.Freq. for 1min	2.5kV
Mechanical Features	Utilization category	AC-22A
	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
Installation	Protection degree	IP20
	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	50mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	50mm <sup>2</sup> 18-2AWG
	Tightening torque	3.5Nm 30In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

## Overall and Installation Dimension(mm)



# DZ47-63S 4.5KA MCB (Economic Type)

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1



## Technical Data

<b>Electrical Features</b>	Rated current $I_n$	1,2,3,4,5,6,8,10,13,16,20,25,32,40,50,63A
	Poles	1P,1P+N,2P,3P,3P+N,4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	4,500A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
<b>Mechanical Features</b>	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	25mm <sup>2</sup> 18-3AWG
	Terminal size top/bottom for busbar	25mm <sup>2</sup> 18-3AWG
	Tightening torque	2.5Nm 22In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

# DZ47-63S 4.5KA MCB (Economic Type)

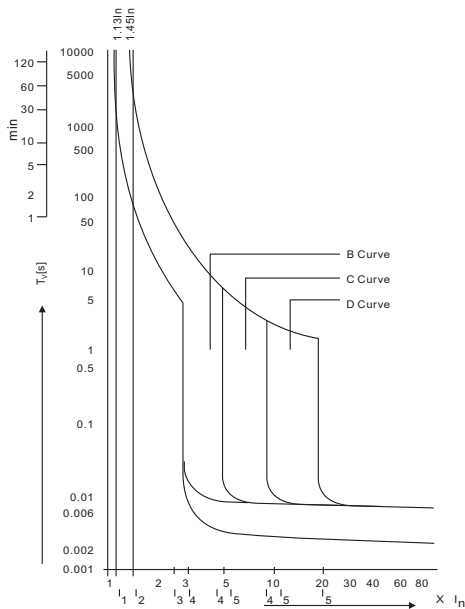


Mini Circuit Breaker ----- Standard\_ IEC60898-1

## MCB Characteristics

### Characteristics

#### Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$ $< 0.1s$

### Tripping characteristics

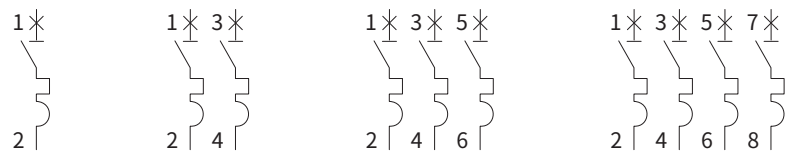
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)In.

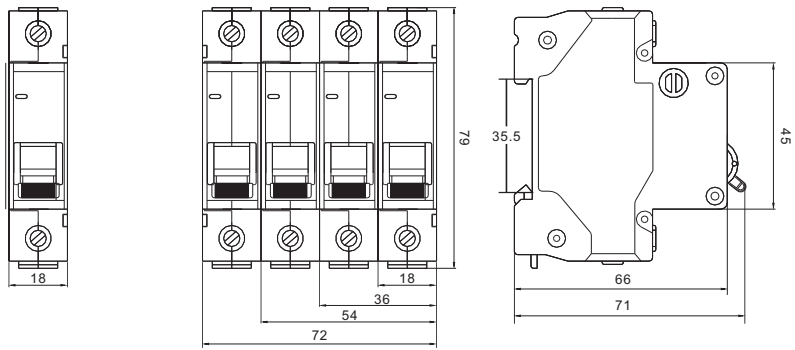
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)In.

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformes, x-ray machines etc,) Short circuit release is set to (10-20)In.

### Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM1-125S 6KA MCB

ETEK®

Mini Circuit Breaker

Standard\_ IEC60898-1

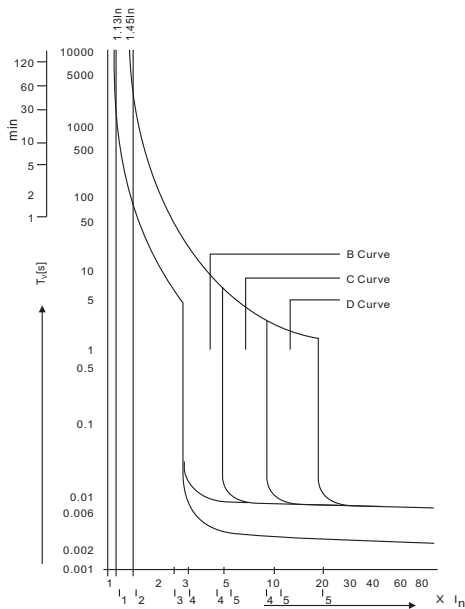


## Technical Data

Electrical Features	Rated current $I_n$	63,80,100,125A
	Poles	1P, 1P+N, 2P, 3P, 3P+N,4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
	Thermo-magnetic release characteristic	B,C,D
Mechanical Features	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable/Pin-type busbar/U-type busbar
	Terminal size top/bottom for cable	50mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	50mm <sup>2</sup> 18-2AWG
	Tightening torque	3.5Nm 30In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions

## MCB Characteristics

### Characteristics Curves



Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$3 \times I_N$	$5 \times I_N$	$\geq 0.1s$ $< 0.1s$
C Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$5 \times I_N$	$10 \times I_N$	$\geq 0.1s$ $< 0.1s$
D Curve	$1.13 \times I_N$	$1.45 \times I_N$	$\geq 1h$ $< 1h$	$10 \times I_N$	$20 \times I_N$	$\geq 0.1s$ $< 0.1s$

### Tripping characteristics

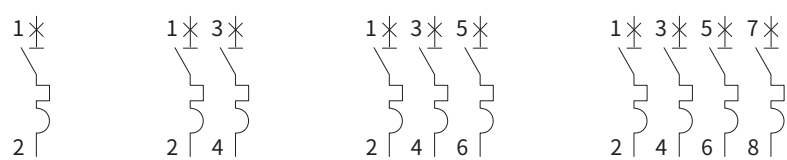
Based on the Tripping Characteristics, MCB are available in “B” , “C” and “D” curve to suit different types of applications.

“B” Curve for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits) Short circuit release is set to (3-5)  $I_N$ .

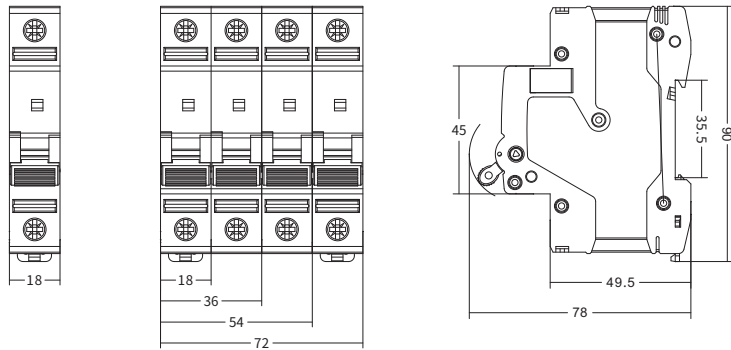
“C” Curve for protection of electrical circuits with equipment that cause surge current (inductive loads and motor circuits) Short circuit release is set to (5-10)  $I_N$ .

“D” Curve for protection of electrical circuits with cause high inrush current ,typically 12-15 times the thermal rated current (transformes, x-ray machines etc,) Short circuit release is set to (10-20)  $I_N$ .

### Circuit Diagram



## Overall and Installation Dimension(mm)



# EKM2-125 6KA MCB (Economic Type)

**ETЭК®**

Mini Circuit Breaker

Standard\_ IEC60947-2  
IEC60898-1



## Technical Data

<b>Electrical Features</b>	Rated current $I_n$	63,80,100,125A
	Poles	1P,1P+N,2P,3P,3P+N,4P
	Rated voltage $U_e$	240/415V~
	Insulation voltage $U_i$	500V
	Rated frequency	50/60Hz
	Rated breaking capacity	6,000A
	Energy limiting class	3
	Rated impulse withstand voltage(1.5/50) $U_{imp}$	4,000V
	Dielectric test voltage at ind. Freq. for 1 min	2kV
	Pollution degree	2
<b>Mechanical Features</b>	Thermo-magnetic release characteristic	8-12 $I_n$ (IEC 60947-2) B/C(IEC60898-1)
	Electrical life	4,000 Cycles
	Mechanical life	10,000 Cycles
	Contact position indicator	Yes
	Protection degree	IP20
	Reference temperature for setting of thermal element	30°C
	Ambient temperature (with daily average $\leq 35^\circ\text{C}$ )	-5°C~+40°C
	Storage temperature	-25°C~+70°C
<b>Installation</b>	Terminal connection type	Cable/Pin-type busbar
	Terminal size top/bottom for cable	50mm <sup>2</sup> 18-2AWG
	Terminal size top/bottom for busbar	50mm <sup>2</sup> 18-2AWG
	Tightening torque	3.5Nm 30In-lbs
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device
	Connection	Power supply in both directions
<b>Combination with accessories</b>	Auxiliary contact	EKM2-OF
	Alarm contact	EKM2-FB
	Shunt release	EKM2-MX
	Over/Under voltage release	EKM2-MV+MN



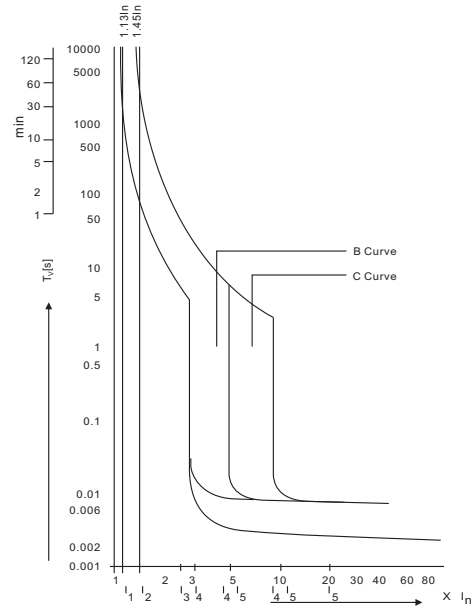
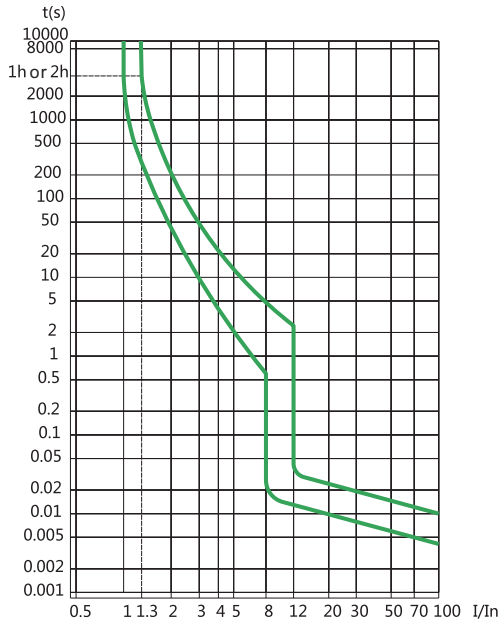
# EKM2-125 6KA MCB (Economic Type)

ETEK®

Mini Circuit Breaker

Standard\_ IEC60947-2  
IEC60898-1

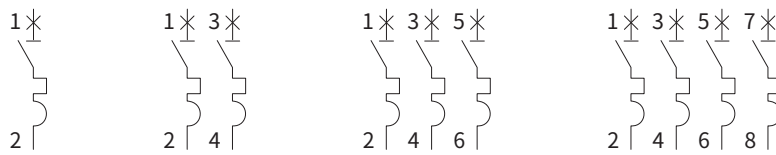
## MCB Characteristics



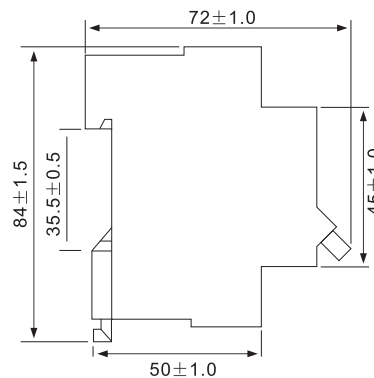
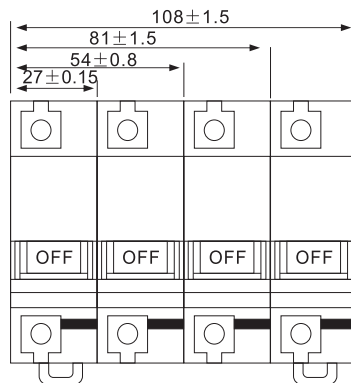
Thermal Tripping				Magnetic Tripping		
As per IEC60947	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
63-125A	$1.05 \times I_N$		$\geq 2h$	$8 \times I_N$		$\geq 0.2s$
		$1.30 \times I_N$	$< 1h$		$12 \times I_N$	$< 0.2s$

Thermal Tripping				Magnetic Tripping		
As per IEC60898	No tripping current	Tripping current $I_2$	Time Limits t	Hold current $I_4$	Trip current $I_5$	Time Limits t
B Curve	$1.13 \times I_N$		$\geq 1h$	$3 \times I_N$		$\geq 0.1s$
		$1.45 \times I_N$	$< 1h$		$5 \times I_N$	$< 0.1s$
C Curve	$1.13 \times I_N$		$\geq 1h$	$5 \times I_N$		$\geq 0.1s$
		$1.45 \times I_N$	$< 1h$		$10 \times I_N$	$< 0.1s$

Circuit Diagram



## Overall and Installation Dimension(mm)

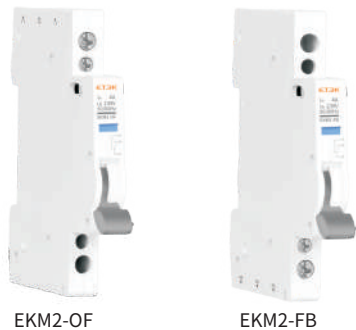


EKM2-OF

EKM2-FB



Auxiliary Contact for EKM2 MCB    Alarm Auxiliary Contact for EKM2 MCB    -----    Standard\_ IEC60947-5-1



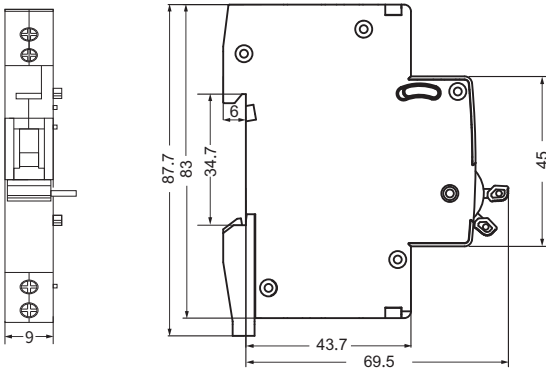
General

Indication of the position of the device's contacts.  
To be mounted on the left side of the MCBs/RCBOs thanks to the special pin.

Technical Data

Electrical Features	Rated value	UN(V)	IN(A)
		AC 415 50/60Hz	3
		AC 240 50/60Hz	6
		DC130	1
		DC48	2
		DC24	6
	Configurations	EKM2-OF 1N/O+1N/C	
		EKM2-FB 1N/O+1N/C	
	Rated impulse withstand voltage (1.2/50)Uimp		4,000V
	Dielectric test voltage at ind. Freq. for 1min		2kV
Mechanical Features	Insulation voltage Ui		500V
	Pollution degree		2
	Electrical life		6,050 Cycles
	Mechanical life		10,000 Cycles
	Protection degree		IP20
	Ambient temperature (with daily average≤35°C)		-5°C~+40°C
Installation	Storage temperature		-25°C~+70°C
	Terminal connection type		Cable
	Terminal size top/bottom for cable		2.5mm² 18-14AWG
Tightening torque		0.8 Nm 7In-lbs	

Overall and Installation Dimension(mm)





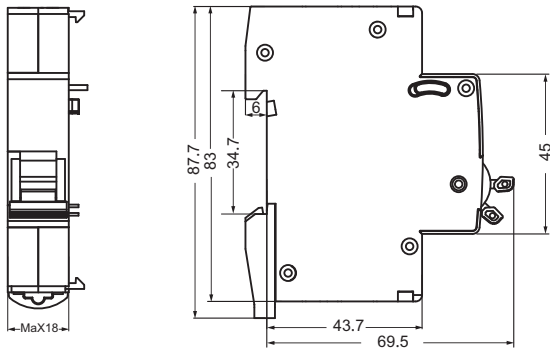
General

- 1.1 Remote opening of the device when a voltage is applied
- 1.2 To be mounted on the left side of the MCBs/RCCBs thanks to the special pin.

Technical Data

Electrical Features	Rated value	AC230V/400V 50/60Hz
		AC/DC24V
		AC/DC48V
	Rated impulse withstand voltage (1.2/50)Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1min	2kV
	Insulation voltage Ui	500V
Mechanical Features	Pollution degree	2
	Electrical life	4000 Cycles
	Mechanical life	4000 Cycles
	Protection degree	IP20
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
Installation	Terminal connection type	Cable
	Terminal size top/bottom for cable	2.5mm² 18-14AWG
	Tightening torque	0.8 Nm 7In-lbs

Overall and Installation Dimension(mm)





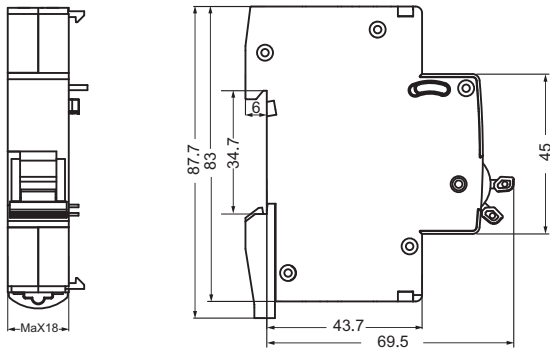
General

- 1.1 Protection of the load in the event of a voltage drop(between 70% and 35% of its rated value)
- 1.2 Positive safety (device's tripping when the voltage is disconnected) emergency stop by means of a button.
- 1.3 To be mounted on the left side of the MCBs/RC-Bos thanks to the special pin.

Technical Data

Electrical Features	AC230V 50/60Hz	
	70-35%Ue, reliable operation	
	<35%Ue,prevent breaker from making	
	85~110%Ue, reliable operation	
	Rated impulse withstand voltage (1.2/50)Uimp	4,000V
	Dielectric test voltage at ind. Freq. for 1min	2kV
Mechanical Features	Insulation voltage Ui	500V
	Pollution degree	2
	Electrical life	4000 Cycles
	Mechanical life	4000 Cycles
	Protection degree	IP20
	Ambient temperature (with daily average≤35°C)	-5°C~+40°C
Installation	Storage temperature	-25°C~+70°C
	Terminal connection type	Cable
	Terminal size top/bottom for cable	2.5mm² 18-14AWG
	Tightening torque	0.8 Nm 7In-lbs

Overall and Installation Dimension(mm)



### Automatic Type



2P/25A



4P/25A



2P/40、63A



4P/40、63A



Aux.

### Manual Type



2P/25A



4P/25A



2P/40、63A



4P/40、63A

### Technical Data

#### Electrical Features

Voltage rating(Ue)	1P, 2P	250V AC
	3P, 4P	400V AC
Frequency		50/60Hz
Endurance(O-C)		
Electrical life		100,000
Maximum number of switching operation a day		100
Additional characteristics		
Insulation vwltage(Ui)		500V AC
Pollution degree		2
Rated impulse withstand voltage(Uimp)		2.5kV(4kV@ 12/24/48VAC)
Degree of protection		IP20
(IEC 60529)		IP40
Operating temperature		-5°C~+60°C(1)
Storage temperature		-40°C~+70°C
Tropicalization(IEC 60068-1)		Treatment 2(relative humidity 95% at 55°C)
ELSV compliance(Extra Low Safety Voltage)for 12/24/48VAC versions		
The product control conforms to the SELV(safety extra low voltage)requirements		

(1)In the case of contactor mounting in a enclosure for which the interior temperature is in range between 50°Cand 60°C, it is necessary to use a spacer, between each contactor

### EKMF Type Reference List

Automatic Type	No. of Poles	Model	Rating(In)		Rated voltage Ue (V AC)(50Hz)	Circuit Diagram
			AC-7a	AC-7b		
1P	1P	EKMF-1610	16A	6A	24 110 230	
		EKMF-2010	20A	7A		
		EKMF-2510	25A	9A		
		EKMF-1601	16A	6A		
		EKMF-2001	20A	7A		
		EKMF-2501	25A	9A		
		EKMF-3210	32A	12A		
		EKMF-4010	40A	18A		
		EKMF-6310	63A	25A		
		EKMF-3201	32A	12A		
		EKMF-4001	40A	18A		
		EKMF-6301	63A	25A		
2P	2P	EKMF-1620	16A	6A	24 110 230	
		EKMF-2020	20A	7A		
		EKMF-2520	25A	9A		
		EKMF-1611	16A	6A		
		EKMF-2011	20A	7A		
		EKMF-2511	25A	9A		
		EKMF-1602	16A	6A		
		EKMF-2002	20A	7A		
		EKMF-2502	25A	9A		
		EKMF-3220	32A	12A		
		EKMF-4020	40A	18A		
		EKMF-6320	63A	25A		
		EKMF-3211	32A	12A		
		EKMF-4011	40A	18A		
		EKMF-6311	63A	25A		
		EKMF-3202	32A	12A		
		EKMF-4002	40A	18A		
		EKMF-6302	63A	25A		
		EKMF-8011	125A	32A		
		EKMF-8020	32A	32A		
		EKMF-10020	80A	40A		
		EKMF-12520	100A	50A		
		EKMF-10011	100A	40A		
		EKMF-12511	125A	50A		
		EKMF-8002	80A	32A		
		EKMF-10002	100A	40A		
		EKMF-12502	125A	50A		
3P	3P	EKMF-1630	16A	6A	24 110 230 380	
		EKMF-2030	20A	7A		
		EKMF-2530	25A	9A		
		EKMF-1603	16A	6A		
		EKMF-2003	20A	7A		
		EKMF-2503	25A	9A		

### EKMF Type Reference List

Automatic Type	No. of Poles	Model	Rating(In)		Rated voltage Ue (V AC)(50Hz)	Circuit Diagram
			AC-7a	AC-7b		
3P		EKMF-3230	32A	12A	24 110 230 380	
		EKMF-4030	40A	18A		
		EKMF-6330	63A	25A		
		EKMF-3203	32A	12A		
		EKMF-4003	40A	18A		
		EKMF-6303	63A	25A		
4P		EKMF-1640	16A	6A	24 110 230 380	
		EKMF-2040	20A	7A		
		EKMF-2540	25A	9A		
		EKMF-1604	16A	6A		
		EKMF-2004	20A	7A		
		EKMF-2504	25A	9A		
		EKMF-1622	16A	6A		
		EKMF-2022	20A	7A		
		EKMF-2522	25A	9A		
		EKMF-1631	16A	6A		
		EKMF-2031	20A	7A		
		EKMF-2531	25A	9A		
		EKMF-3240	32A	12A		
		EKMF-4040	40A	18A		
		EKMF-6340	63A	25A		
		EKMF-3204	32A	12A		
		EKMF-4004	40A	18A		
		EKMF-6304	63A	25A		
		EKMF-3222	32A	12A		
		EKMF-4022	40A	18A		
		EKMF-6322	63A	25A		
		EKMF-3231	32A	12A		
		EKMF-4031	40A	18A		
		EKMF-6331	63A	25A		
		EKMF-8040	80A	32A		
		EKMF-10040	100A	40A		
		EKMF-12540	125A	50A		
		EKMF-8004	80A	32A		
		EKMF-10004	100A	40A		
		EKMF-12504	125A	50A		
		EKMF-8022	80A	32A		
		EKMF-10022	100A	40A		
		EKMF-12522	125A	50A		
		EKMF-8031	80A	32A		
		EKMF-10031	100A	40A		
		EKMF-12531	125A	50A		

### EKMF Type Reference List

Manual Type	No. of Poles	Model	Rating(In)		Rated voltage Ue (V AC)(50Hz)	Circuit Diagram
			AC-7a	AC-7b		
1P	1P	EKMF-1610M	16A	6A	24 110 230	
		EKMF-2010M	20A	7A		
		EKMF-2510M	25A	9A		
		EKMF-1601M	16A	6A		
		EKMF-2001M	20A	7A		
		EKMF-2501M	25A	9A		
2P	2P	EKMF-1620M	16A	6A	24 110 230	
		EKMF-2020M	20A	7A		
		EKMF-2520M	25A	9A		
		EKMF-1611M	16A	6A		
		EKMF-2011M	20A	7A		
		EKMF-2511M	25A	9A		
		EKMF-1602M	16A	6A		
		EKMF-2002M	20A	7A		
		EKMF-2502M	25A	9A		
		EKMF-3220M	32A	12A		
		EKMF-4020M	40A	18A		
		EKMF-6320M	63A	25A		
		EKMF-3211M	32A	12A		
		EKMF-4011M	40A	18A		
		EKMF-6311M	63A	25A		
		EKMF-3202M	32A	12A		
		EKMF-4002M	40A	18A		
		EKMF-6302M	63A	25A		
3P	3P	EKMF-1630M	16A	6A	24 110 230 380	
		EKMF-2030M	20A	7A		
		EKMF-2530M	25A	9A		
		EKMF-1603M	16A	6A		
		EKMF-2003M	20A	7A		
		EKMF-2503M	25A	9A		
		EKMF-3230M	32A	12A		
		EKMF-4030M	40A	18A		
		EKMF-6330M	63A	25A		
		EKMF-3203M	32A	12A		
		EKMF-4003M	40A	18A		
		EKMF-6303M	63A	25A		
4P	4P	EKMF-1640M	16A	6A	24 110 230 380	
		EKMF-2040M	20A	7A		
		EKMF-2540M	25A	9A		
		EKMF-1604M	16A	6A		
		EKMF-2004M	20A	7A		
		EKMF-2504M	25A	9A		
		EKMF-1622M	16A	6A		
		EKMF-2022M	20A	7A		
		EKMF-2522M	25A	9A		

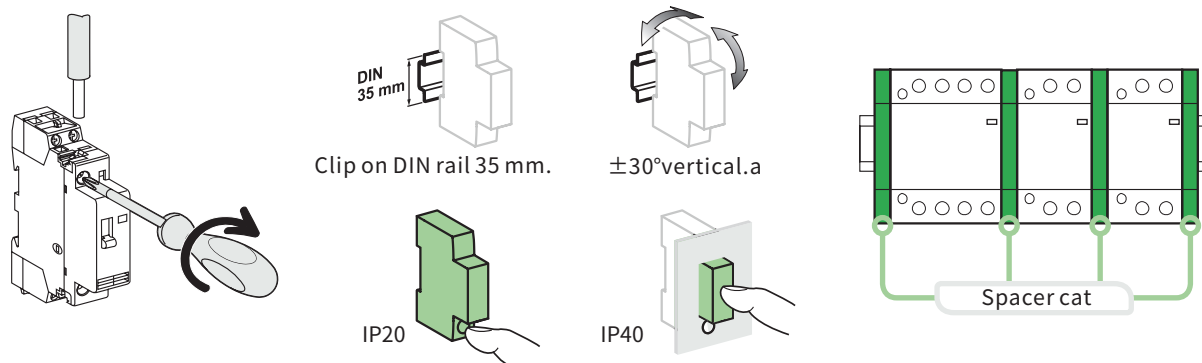


### EKMF Type Reference List

Manual Type	No. of Poles	Model	Rating(In)		Rated voltage Ue (V AC)(50Hz)	Circuit Diagram
			AC-7a	AC-7b		
4P		EKMF-1631M	16A	6A	24 110 230 380	
		EKMF-2031M	20A	7A		
		EKMF-2531M	25A	9A		
		EKMF-3240M	32A	12A		
		EKMF-4040M	40A	18A		
		EKMF-6340M	63A	25A		
		EKMF-3204M	32A	12A		
		EKMF-4004M	40A	18A		
		EKMF-6304M	63A	25A		
		EKMF-3222M	32A	12A		
		EKMF-4022M	40A	18A		
		EKMF-6322M	63A	25A		
		EKMF-3231M	32A	12A		
		EKMF-4031M	40A	18A		
		EKMF-6331M	63A	25A		

### Connection

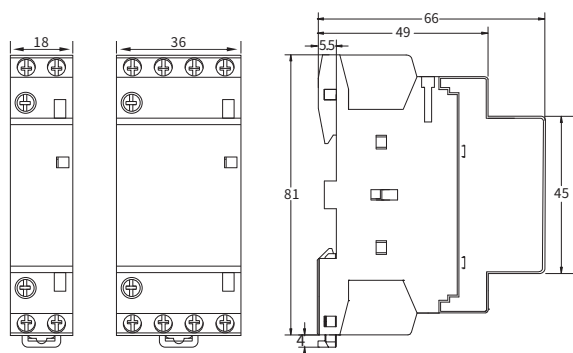
Type		Rating	Length tripping	Circuit	Tightening torque	Copper cables	
						Rigid	Flexible or ferrule
EKMF	PZ1:4MM	16-100A	9mm	Control	0.8N.m		
		16~25A				1.5~2.5mm <sup>2</sup> 2×1.5mm <sup>2</sup>	1.5~2.5mm <sup>2</sup> 2×2.5mm <sup>2</sup>
	PZ2:6MM	40A-63A	14mm	Power	3.5N.m	1.5~6mm <sup>2</sup>	1~4mm <sup>2</sup>
		100A				6~25mm <sup>2</sup> 6×3.5mm <sup>2</sup>	6~16mm <sup>2</sup> 6~35mm <sup>2</sup>



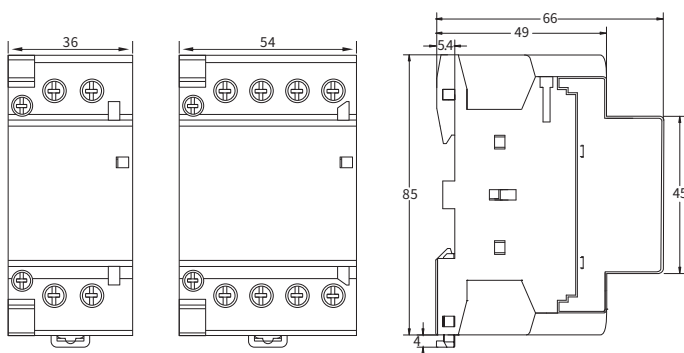
## Consumption

EKMf Contactors -50Hz		Rating(In)		Control voltage(VAC)(50Hz)	Consumption		Max. power
		AC-7a	AC-7b		Holding	Inrush	
1P		16A	6A	230	2.8VA	11.5VA	1.2W
		20A	7A	230	2.8VA	11.5VA	1.2W
		25A	9A	230	2.8VA	11.5VA	1.2W
2P		16A	6A	230	2.8VA	11.5VA	1.2W
		20A	7A	230	2.8VA	11.5VA	1.2W
		25A	9A	240	3.0VA	11.5VA	1.3W
				230	2.8VA	11.5VA	1.2W
		32A	12A	230	4.1VA	31VA	1.6W
		40A	18A	230	4.1VA	31VA	1.6W
		63A	25A	230	4.1VA	31VA	1.6W
		100A	-	230	4.1VA	31VA	2.1W
3P		16A	6A	230	4.1VA	31VA	1.6W
		20A	7A	230	4.1VA	31VA	1.6W
		25A	9A	230	4.1VA	31VA	1.6W
		32A	12A	230	7VA	48VA	2.1W
		40A	18A	230	7VA	48VA	2.1W
		63A	25A	230	7VA	48VA	2.1W
		100A	-	230	13VA	106VA	4.2W
4P		16A	6A	230	4.1VA	31VA	1.6W
		20A	7A	230	4.1VA	31VA	1.6W
		25A	9A	240	4.8VA	33VA	1.6W
				230	4.1VA	31VA	1.6W
		32A	12A	230	7VA	48VA	2.1W
		40A	18A	230	7VA	48VA	2.1W
		63A	25A	230	7VA	48VA	2.1W
		100A	-	230	13VA	106VA	4.2W

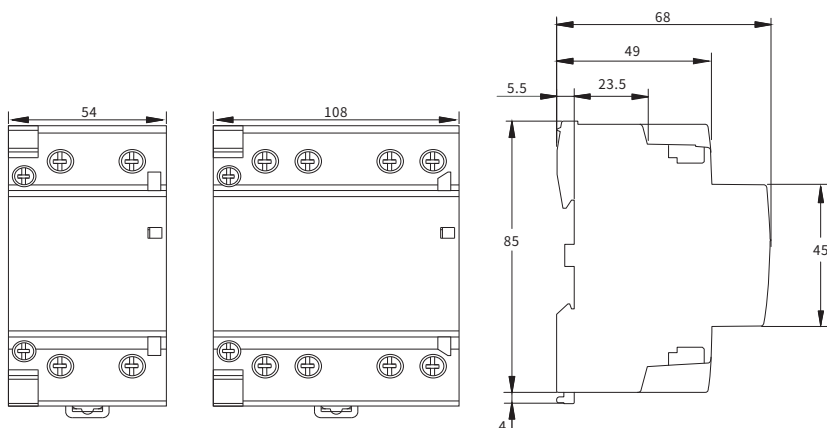
### Overall and Installation Dimension(mm)



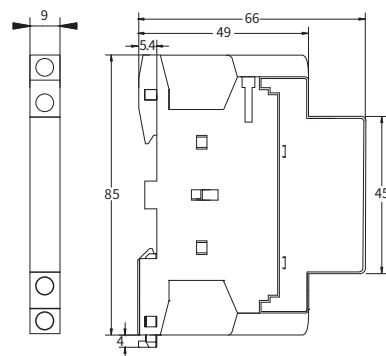
EKMF-16/20/25A



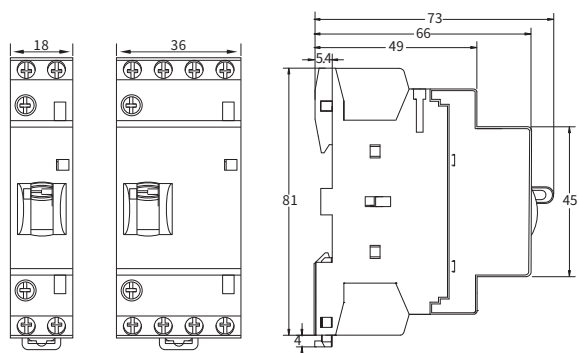
EKMF-32/40/63A



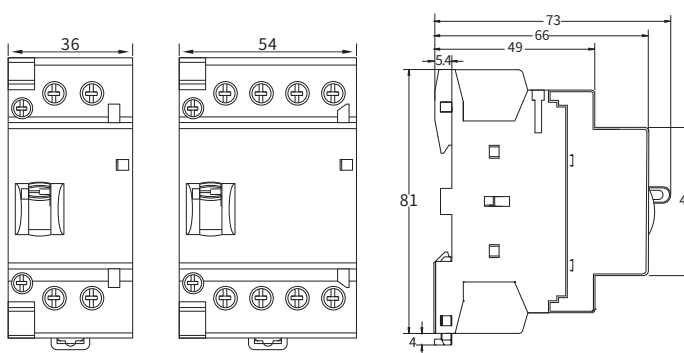
EKMF-80/100/125A



EACTs



EKMF manual control contactor 16/25A



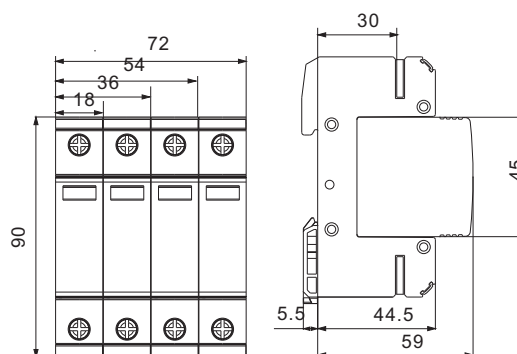
EKMF manual control contactor 40/63A



### Application

### Overall and Installation Dimension(mm)

The type 2 surge protective device are applicable to discharge overvoltage caused by switch-type (8/20 $\mu$ s wave-form) over currents. The type 2 arresters must be installed into sub-distribution boards (at condominium into distribution boards of flats) after main distribution boards containing type 1 arresters. For proper operation at least 10- 15 m cable or wire must be placed between type 1 and type 2 arresters. Otherwise a decoupling coil has to be installed between the two devices. These protectors are modular types with changeable insert; the auxiliary contact is built-in into the housing of the device.



### Technical Data

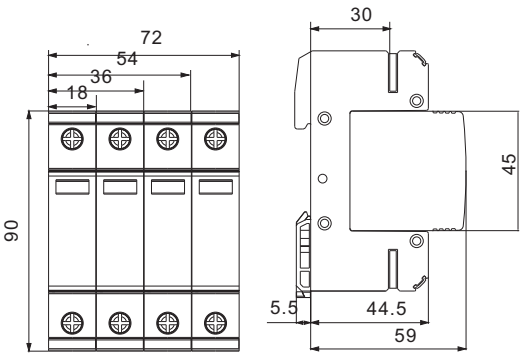
Model	EKU4-20		EKU4-40		EKU4-B+C		EKU4-60		EKU4-80		EKU4-100	
Type	D		C		B+C		B		B		B	
Rated Voltage(Un)	275V	385V	275V	385V	275V	385V	275V	385V	275V	385V	275V	385V
Maximum Continuous Operation Voltage(Uc)	275V	385V	275V	385V	275V	385V	275V	385V	275V	385V	275V	385V
Voltage Protection Level (Up)	1.2KV	1.5KV	1.3KV	1.6KV	1.5KV	2.0KV	1.4KV	2.0KV	1.6KV	2.2KV	2.0KV	2.5KV
Nominal Discharge Current In (8/20 $\mu$ s)	10KA	10KA	20KA	20KA	30KA	30KA	30KA	30KA	40KA	40KA	60KA	60KA
Maximum Discharge Current Imax (8/20 $\mu$ s)	20KA	20KA	40KA	40KA	50KA	50KA	60KA	60KA	80KA	80KA	100KA	100KA
Maximum Discharge Current Imax (10/350 $\mu$ s)					7KA	7KA						
Reaction Time	<25ns		<25ns		<25ns		<25ns		<25ns		<25ns	
Test Level	T2		T2		T1+T2		T2		T2		T2	
Width/Pole	18mm		18mm		18mm		18mm		18mm		18mm	
Color Mark												
Shell Material	PBT		PBT		PBT		PBT		PBT		PBT	
Ambient Temperature	-40°C~80°C		-40°C~80°C		-40°C~80°C		-40°C~80°C		-40°C~80°C		-40°C~80°C	
Fuse or Circuit Breaker Matched	20A		25A		32A		32A		32A		40A	
Terminal Specification	Line	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>
	PE	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>	4.0~35mm <sup>2</sup>
	Signal	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>
No.of Pole	1P, 2P, 3P, 4P, 1P+N, 2P+N, 3P+N											
Protection Degree	IP20											
Mounting	DIN rail 35mm											
Network System	TN, TT, IT											
Signal Terminal	Available											



### Application

The function of lightning and surge protection systems is to protect the devices, functional isolations and overvoltage-sensitive consumer equipments of energy distribution systems against all lightning and overvoltage damages. whole building; the outdoor lightning protection system is generally not sufficient to eliminate such malfunctions. At most of types, the defected protection device can be made operative again by changing the damaged insert; these variants are also equipped with both optical operation signal and auxiliary status contact.

### Overall and Installation Dimension(mm)



### Technical Data

Model and Specification		EKU4-40Z/500	EKU4-40Z/800	EKU4-40Z/1000
Rated Voltage(VDC)		500V	800V	1,000V
Continuous Operation Voltage(VDC)		550V	850V	1,100V
Voltage Protection Level of Up		2.5	3	3.6
Nominal Discharge Current In (8/20μs)		20KA	20KA	20KA
Maximum Discharge Current I <sub>max</sub> (8/20μs)		40KA	40KA	40KA
Reaction Time		<25ns	<25ns	<25ns
Width/Pole		18mm	18mm	18mm
Color Mark		Yellow	Blue	Red
Shell Material		PBT	PBT	PBT
Ambient Temperature		-40°C-80°C	-40°C-80°C	-40°C-80°C
Fuse or Circuit Breaker Matched		25A	25A	25A
Terminal Specification	Line	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>
	PE	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>	2.5~35mm <sup>2</sup>
	Signal	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	1.5mm <sup>2</sup>
No.of Pole		V+/PE/V-	V+/PE/V-	V+/PE/V-
Protection Degree		IP20	IP20	IP20
Mounting		DIN rail 35mm	DIN rail 35mm	DIN rail 35mm
Network System		PV	PV	PV
Signal Terminal		Available	Available	Available



EKMV3

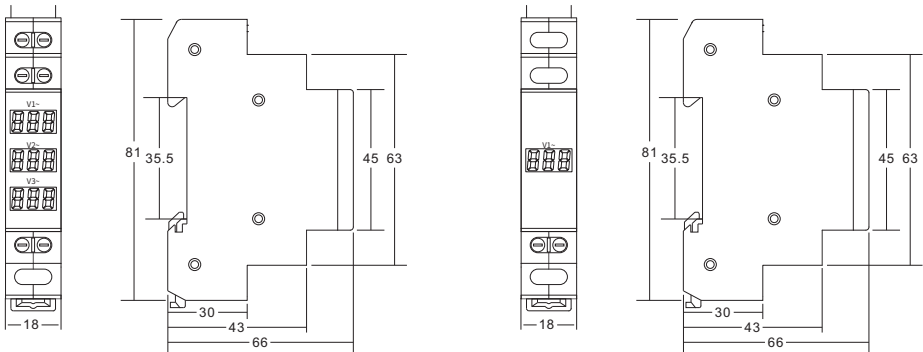


EKMV1

Technical Data

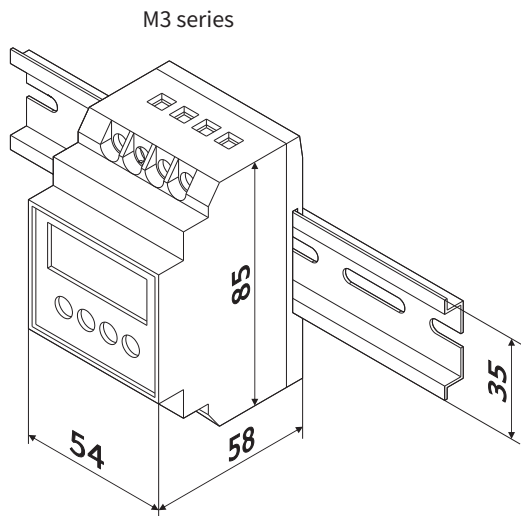
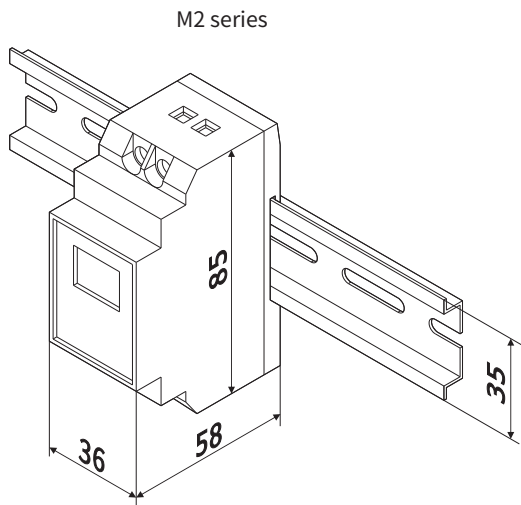
Electrical Features	Type	EKMV1: Single phase 1 LED digital display EKMV3: Three phase 3 LED digital display
	Terminal for wiring	Single phase L+N Three phase 3L+3N
	Digital colour	Red, Green
	Measurement voltage range	AC 80V~500V
	Rated frequency	50/60Hz
	Working current	≤20mA
	Measuring accuracy	1.0
	Measuring rate	>200MS/time
	Protection degree	IP20
	Electrical Life	≥15000 hours
Working Conditions	Ambient temperature(with daily average≤35°C)	-5°C~+40°C
	Storage temperature	-25°C~+70°C
	Air relative humidity	10-80%(no condensation)
	Working pressure	80~160Kpa
	Sunniness	No sunniness
Installation	Terminal for wiring	1.5mm²
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device

Overall and Installation Dimension(mm)



			
<b>Voltage+Amper Meter EKMVA-M2</b>	<b>Voltage+Amper Meter with C.T EKMVACT-M2</b>	<b>Amper Meter EKMA-M2</b>	<b>Amper Meter with C.T EKMACT-M2</b>
Modulars: 2(W=36mm) Measuring Range: 80-300V,0-999A Signal Input: AC 80-300V,5A Accuracy Class: $\pm(1\%FS+1digit)$ Auxiliary Power: No	Modulars: 2(W=36mm) Measuring Range: 80-300V,0-100A Signal Input: AC 80-300V,0-100A Accuracy Class: $\pm(1\%FS+1digit)$ Auxiliary Power: No	Modulars: 2(W=36mm) Measuring Range: 0-999A Signal Input: AC 5A Accuracy Class: $\pm(1\%FS+1digit)$ Auxiliary Power: AC 80-300V	Modulars: 2(W=36mm) Measuring Range: 0-100A Signal Input: AC 0-100A Accuracy Class: $\pm(1\%FS+1digit)$ Auxiliary Power: AC 80-300V
			
<b>Voltage Meter EKMV-M2</b>	<b>Amper Meter EKMA-M3</b>	<b>Voltage Meter EKMV-M3</b>	<b>Hz Meter EKMHZ-M3</b>
Modulars: 2(W=36mm) Measuring Range: 80-300V Signal Input: AC 80-300V,5A Accuracy Class: $\pm(1\%FS+1digit)$ Auxiliary Power: No	Modulars: 3(W=54mm) Measuring Range: 0-9999A Signal Input: AC 5A Accuracy Class: $\pm(0.5\%FS+1digit)$ Auxiliary Power: AC220V,50/60Hz	Modulars: 3(W=54mm) Measuring Range: 0-600V Signal Input: AC 0-600V Accuracy Class: $\pm(0.5\%FS+1digit)$ Auxiliary Power: AC220V,50/60Hz	Modulars: 3(W=54mm) Measuring Range: 30-99A Signal Input: AC 30-500V Accuracy Class: $\pm(0.5\%FS+1digit)$ Auxiliary Power: AC220V,50/60Hz

### Overall and Installation Dimension(mm)

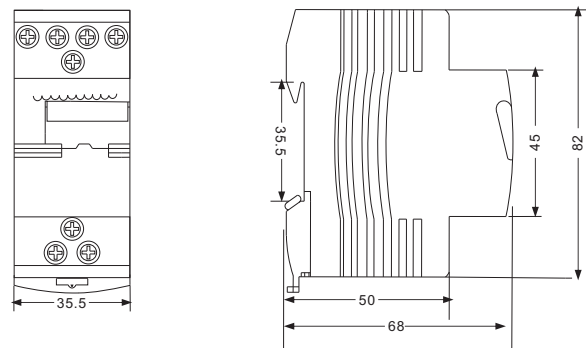




Technical Data

Application	Applicable to circuit with rated voltage 230V~and rated frequency 50/60Hz,used to power electric bell of extra low voltage.	
Construction and Feature	Safe electrical separation between primary and secondary circuit	
	Provides extra low voltage up to 24V	
	Low temperature rising	
	High output accuracy	
Electrical Features	Extra overload capacity up to 25% within 24 hours	
	Rated input voltage	230V AC
	Rated output voltage	8, 12, 16, 24V
	Rated frequency	50/60Hz
	Rated power output	8VA
	Consumption	0.9W
	Service period	Continuous operating
	Pollution class	2
	Connection terminals	Pillar terminal with clamp
	Connection capacity	Rigid conductor 10mm <sup>2</sup>
	Installation	On symmetrical DIN rail 35mm
	Terminal Connection Height	Panel mounting H=15.5mm

Overall and Installation Dimension(mm)







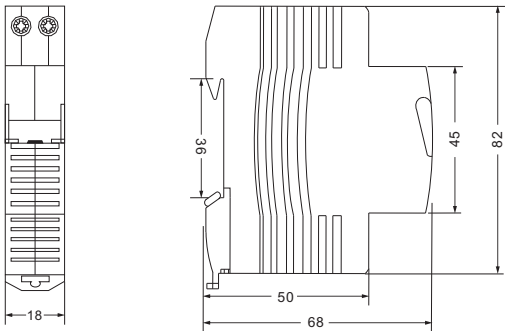
Technical Data

**Application**     The electric bell is suitable for audible signaling for intermittent use only in domestic and commercial installations.

**Construction and Feature**     Elegant appearance,compact size and easy installation  
   Low consumption  
   Product with rated current up to 24V AC to be powered by bell transformer EKEB.

Electrical Features	Rated voltage	8,12,24,230V AC
	Rated frequency	50/60Hz50/60Hz
	Service mode	Intermittent
	Connection terminal	Pillar terminal with clamp
	Connection capacity	Rigid conductor 10mm <sup>2</sup>
	Installation	On symmetrical DIN rail 35mm Panel mounting
	Terminal Connection Height	H=17mm

Overall and Installation Dimension(mm)



# EKSL1, EKSL3

ETEK®

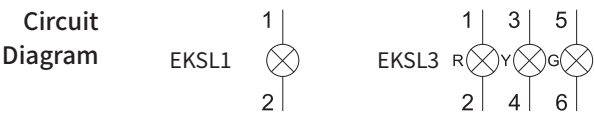
Modular Signal Lamp

Standard\_ IEC60947-5-1

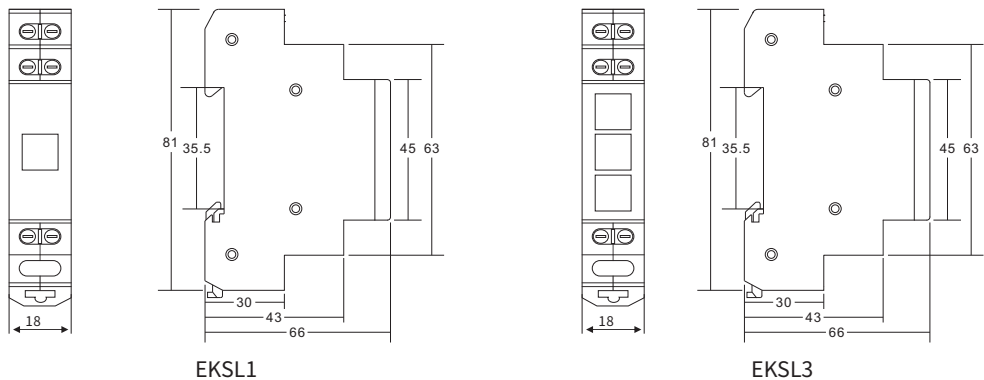


## Technical Data

Application	The Modular Signal Lamp is applicable to circuit with rated voltage 230V~and frequency 50/60Hz for visual indication and signaling.	
Construction and Feature	Low service duration, minimum power consumption	
	Compact design in modular size	
	Easy installation	
Technical Data	Rated voltage	230V AC, 100V AC, 48V AC/DC, 24V AC/DC
	Rated frequency	50/60Hz
	Colour	EKSL1 Red, green, yellow
		EKSL3 Red/Green/Yellow, Red/Green/Blue
	Connection terminal	Pillar terminal with clamp
	Connection capacity	Rigid conductor 1.5mm <sup>2</sup>
	Installation	On symmetrical DIN rail 35mm
		Panel mounting
EKSL1 EKSL3 signal lamp	Max power	0.6W
	Illumination	LED
	Service duration	30,000 hours



## Overall and Installation Dimension(mm)



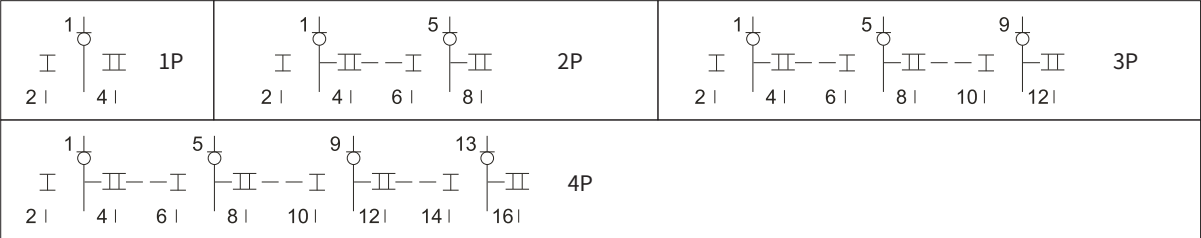


## Application

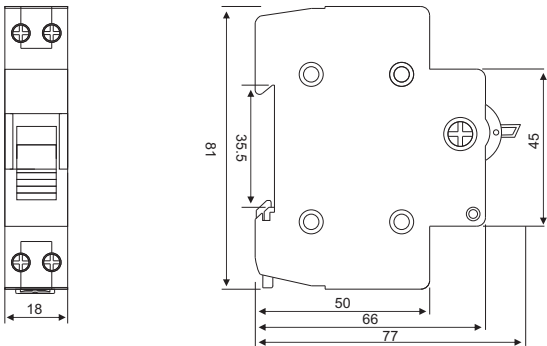
The Changeover Switch can switch on,Load and break the circuit under normal conditions,using as Switch Disconnectors.

Technical Data	Rated Voltage	240/415V
	Rated Current	16,25,32,40A
	Rated Frequency	50/60Hz
	Number of Poles	1,2,3,4P
	Contact form	1-0-2
Electrical Features	Electrical Life	1500 Cycles
	Mechanical Life	8500 Cycles
	Protection degree	IP20
	Ambient Temperature	-5°C...40°C
Electrical Features	Terminal/Cable size	16mm <sup>2</sup>
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device.

## Circuit Diagram



## Overall and Installation Dimension(mm)

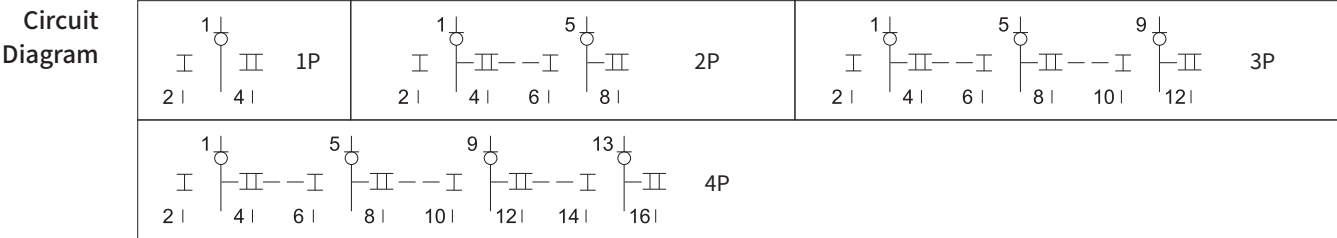




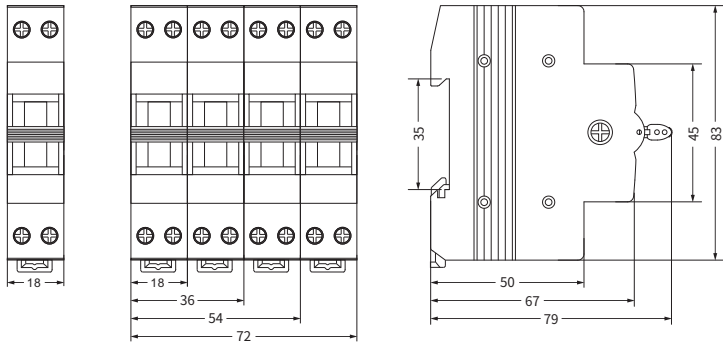
Application

The Changeover Switch can switch on, Load and break the circuit under normal conditions, using as Switch Disconnectors.

Technical Data	Rated Voltage	240/415V~
	Rated Current	16,25,32,40A
	Rated Frequency	50/60Hz
	Number of Poles	1,2,3,4P
	Contact form	1-0-2
Electrical Features	Electrical Life	1500 Cycles
	Mechanical Life	8500 Cycles
	Protection degree	IP20
	Ambient Temperature	-5°C...40°C
Electrical Features	Terminal/Cable size	16mm <sup>2</sup>
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device.



Overall and Installation Dimension(mm)



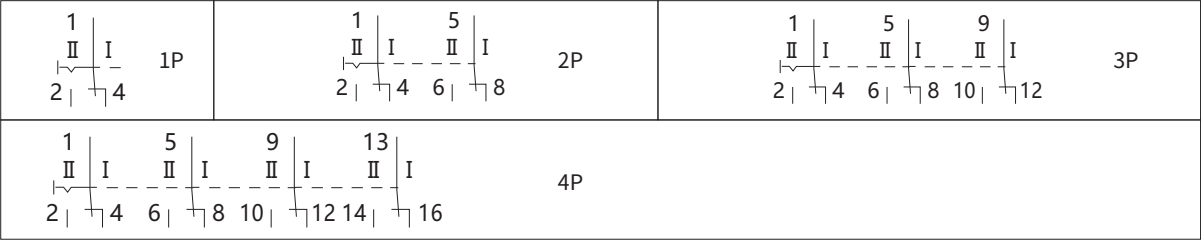


## Application

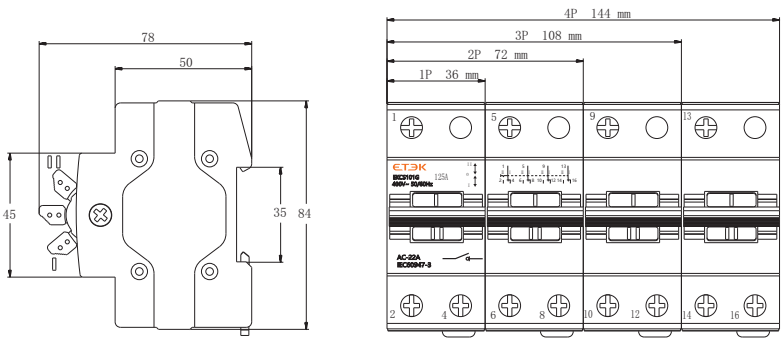
The Changeover Switch can switch on, Load and break the circuit under normal conditions, using as Switch Disconnectors.

Technical Data	Rated Voltage	240/415V~
	Rated Current	63,80,100,125A
	Rated Frequency	50/60Hz
	Number of Poles	1,2,3,4P
	Contact form	1-0-2
Electrical Features	Electrical Life	1500 Cycles
	Mechanical Life	8500 Cycles
	Protection degree	IP20
	Ambient Temperature	-5°C...40°C
Electrical Features	Terminal/Cable size	50mm <sup>2</sup>
	Mounting	On DIN rail EN60715(35mm) by means of fast clip device.

Circuit Diagram



## Overall and Installation Dimension(mm)



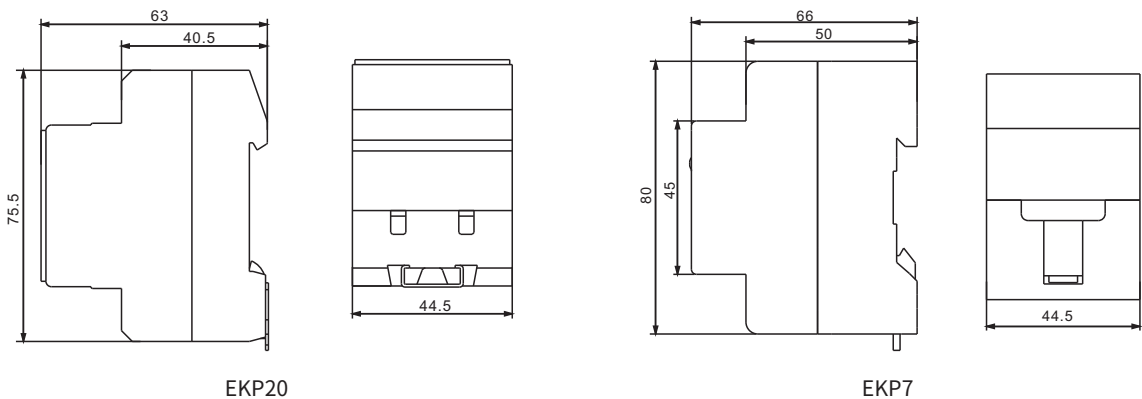


## Technical Data

EKP20,EKP20B and EKP7 Modular Socket can be used together with our modular products for connection of mobile devices, tools or electric and electronic non- Modular equipments directly inside civil and industrial switchboards.

Application	Model	Rated current(A)	Standard	Width(mm)	Connection capacity
	EKP20	16A	Germany	44.5	≤4mm <sup>2</sup>
	EKP7	16A	France	44.5	≤4mm <sup>2</sup>
	EKP20B	13A	UK	44.5	≤4mm <sup>2</sup>
Electrical Features	Main voltage	230/400V, 50Hz/60Hz			
	Electric life	5,000 times			
	Rated insulation voltage Ui	500V			
	Rated impulse withstand voltage Uimp	5,000V			
	Dielectric test voltage at ind. Freq. For 1 min.	2.8kV			
	Mounting category	II, III			
	Pollution degree	2			
	Protection class	IP20			
	Standard mounting	35mm DIN rail			
	Ambient temperature	-5°C to +40°C			
	Storage temperature	-25°C to +70°C			

## Overall and Installation Dimension(mm)





EKF1-32PV



EKF1-32N 1P



EKF1-63 4P



EKF1-125 2P



EKF1-32L 4P



EKF1-63L 1P



EKF1-63L 3P



EKF1-125L 3P

### Technical Data

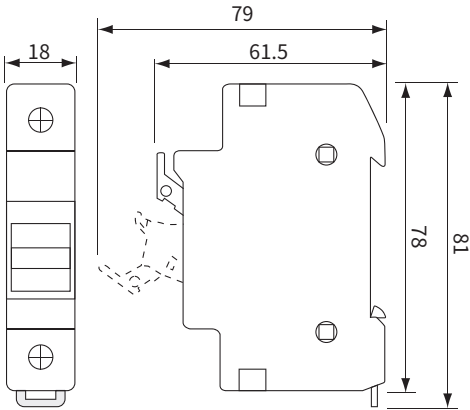
Rated current In		32A,63A,125A
Model No.	General type	EKF1-32,EKF1-63,EKF1-125
	With Indicator type	EKF1-32L,EKF1-63L,EKF1-125L
Poles		1P,2P,3P,4P,1P+N,3P+N
Utilization category		AC-22A
Rated voltage Ue		240/415V~
Insulation voltage Ui		500V
Rated frequency		50/60Hz
Rated impulse withstand voltage(1.5/50) Uimp		4,000V
Electrical life		1,500Cycles
Mechanical life		8,500Cycles
Operating frequency		120/h
Protection degree		IP20
Tightening torque	EKF1-32	1.5Nm 14In-lbs
	EKF1-63	2.5Nm 22In-lbs
	EKF1-125	3.5Nm 30In-lbs
Terminal size for cable	EKF1-32	16mm <sup>2</sup> 18-5AWG
	EKF1-63	25mm <sup>2</sup> 18-3AWG
	EKF1-125	50mm <sup>2</sup> 18-2AWG
Ambient temperature(with daily average≤35°C)		-5°C~+40°C
Storage temperature		-25°C~+70°C
Mounting		On DIN rail EN60715(35mm) by means of fast clip device

Specifications

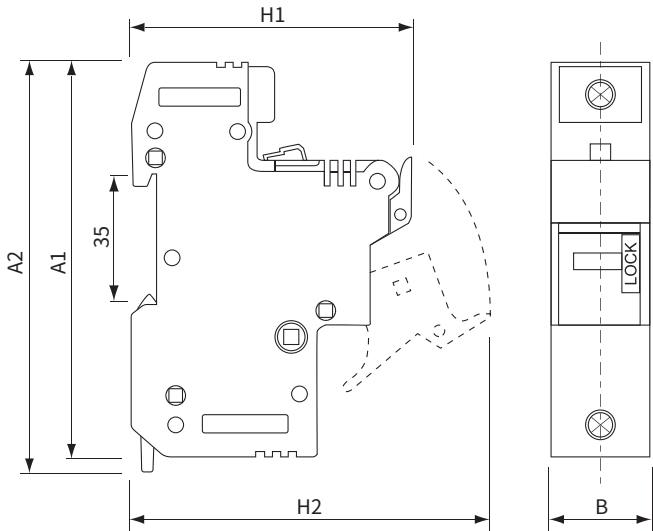
Model No.	Poles	Wide / Pole(mm)	Current Rating	Fuse Link Matched	Size of Fuse Link
EKF1-32N	1P+N	18	32A	EKFL10	10x38mm
EKF1-32NL					
EKF1-32	1-4P,3P+N	18	32A	EKFL10,EKFL10DC	10x38mm
EKF1-32L					
EKF1-63	1-4P,3P+N	27	63A	EKFL14	14x51mm
EKF1-63L					
EKF1-125	1-4P,3P+N	35	125A	EKFL22	22x58mm
EKF1-125L					

Overall and Installation Dimension(mm)

EKF1-32



EKF1-63, EKF1-125






Size	A1	A2	B	H1	H2
EKF1-63	108	111	27	76	100
EKF1-125	127	128	35	77	104



## Technical Data

Material	Porcelain,Copper
Rated Voltage Ui	AC 500V,600V
Rated current In	1-125A
Dimensions	10x38,14x51,22x58
Character	gG,aM,oR
Breaking capacity	100kA,120kA

## Specifications

Current Rating		Size & Mode No.			
					
		10x38mm	14x51mm	22x58mm	10x38mm(DC)
1A		EKFL1001			EKFL1001DC
2A		EKFL1002			EKFL1002DC
4A		EKFL1004			EKFL1004DC
6A		EKFL1006	EKFL1406		EKFL1006DC
8A		EKFL1008	EKFL1408		EKFL1008DC
10A		EKFL1010	EKFL1410		EKFL1010DC
12A		EKFL1012	EKFL1412		EKFL1012DC
16A		EKFL1016	EKFL1416		EKFL1016DC
20A		EKFL1020	EKFL1420		EKFL1020DC
25A		EKFL1025	EKFL1425	EKFL2225	EKFL1025DC
32A		EKFL1032	EKFL1432	EKFL2232	
40A			EKFL1440	EKFL2240	
50A			EKFL1450	EKFL2250	
63A			EKFL1463	EKFL2263	
80A				EKFL2280	
100A				EKFL22100	
125A				EKFL22125	
Breaking capacity	gG type AC 500V	120kA	120kA	120kA	
	aM type AC 500V	100kA	100kA	100kA	
	oR type AC 600V	100kA	100kA	100kA	
	Gpv type DC 1000V				40kA
Voltage Rating		AC 690V	AC 690	AC 690	DC 1000V
Weight(g)		8.4	20.5	58	10.3



Impulse Relays

The impulse relays are used to control, by means of pushbuttons, lighting circuits consisting of:


- Incandescent lamps, low-voltage halogen lamps, etc. (resistive loads)
- Fuorescent lamps, discharge lamps, etc. (inductive loads)

Impulse Relays  
Are Used


- Closing of the impulse relay pole(s) is triggered by an impulse on the coil.
- Having two stable mechanical positions, the pole(s) will be opened by the next impulse. Each impulse received by the coil reverses the position of the pole(s).
- Can be controlled by an unlimited number of pushbuttons.
- Zero energy consumption.

Yellow Clip

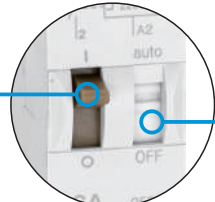
- A simple clip-on system for flexible auxiliaries combination and improved robustness
- For electrical and mechanical connections



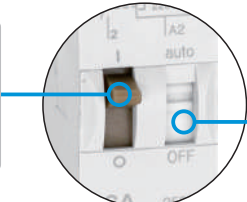
- Insulated terminals IP20



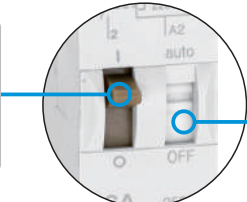
- Built-in or optional auxiliary function: state indication, centralised control, latched control, control for illuminated pushbutton, step-by-step control, time delay



- Manual controls on front face: direct and priority manual control by O-I toggle
- Mechanical contact position indicator

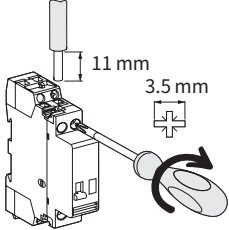


- Disconnection of remote control by selector switch (except for 4P single-piece EKLR16) for maintenance operation

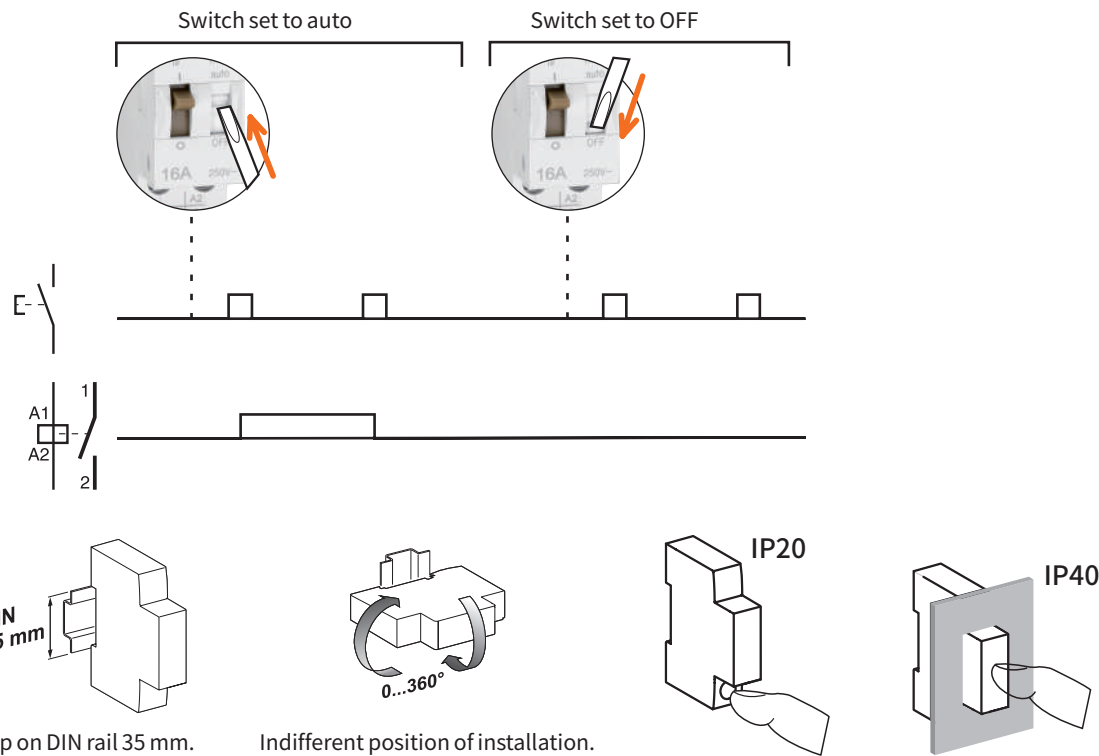


		Choice impulse relays auxiliaries					
Type		Standard EKLR16					
Rating	A	16					
Control voltage	V AC	230/240	130	48	24	45	
	V DC	110	48	24	12	6	

## Connection

	Type	Rating	Circuit	Tightening torque	Copper cables	
					Rigid or ferrule	Flexible or ferrule
	EKLR16	16 A	Control	1 N.m	0.5 to 4 mm <sup>2</sup>	1 to 4 mm <sup>2</sup>
			Power		1.5 to 4 mm <sup>2</sup>	1.5 to 4 mm <sup>2</sup>

## Operation





## Technical Data

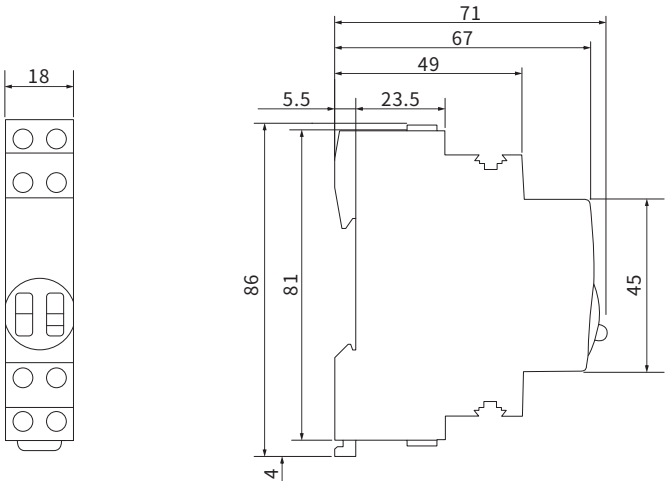
Control circuit		
Dissipated power (during the impulse)	1P, 2P	19 VA
Illuminated PB control		Max. current 3 mA (if > use an ATLz)
Operating threshold		Min. 85 % of Un in conformance with IEC/EN60669-2-2
Duration of the control order		50 ms to 1 s (200 ms recommended)
Response time		
Power circuit		
Voltage rating (Ue)	1P, 2P	24 ...250 V AC
Frequency		50 Hz or 60 Hz
Maximum number of operations per minute		5
Maximum number of switching operation a day		100
Additional characteristics to IEC/EN 60947-3		
Insulation voltage (Ui)		440 V AC
Pollution degree		3
Rated impulse withstand voltage (Uimp)		6 kV





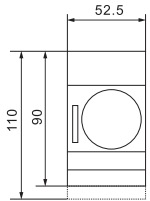
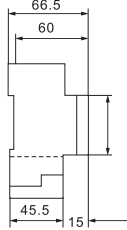
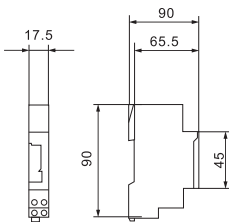
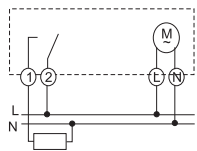
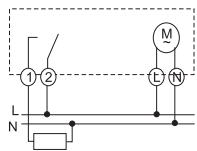
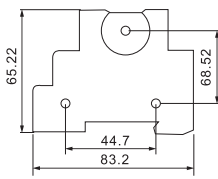
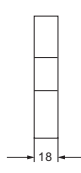
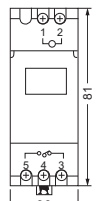
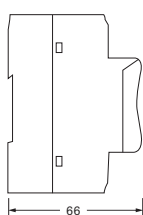
Technical Data

Endurance (O-C)		
Electrical to IEC/EN 60947-3		200,000 cycles (AC21)
		100,000 cycles (AC22)
Overvoltage category		IV
Other characteristics		
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40 Insulation class II
Operating temperature		-20°C to +50°C
Storage temperature		-40°C to +70°C
Tropicalization (IEC 60068-1)		Treatment 2 (relative humidity 95 % at 55°C)

Security	Accessories	Yellow clips	Spacer
			
	Function	Ensure the mechanical and/or electrical link between impulse relays and their auxiliaries	Required to reduce temperature rise of modular devices installed side by side. Recommended to separate electronic devices (thermostat, programmable clock, etc.) from electromechanical devices (relays, contactors).
Specifications			
	Width in 9 mm modules	-	1

Overall and Installation Dimension(mm)



Classification		24 Hours Timer		Timer	Weekly Programmable Timer
Model		EKTM-181H	EKTM-180A	EKTM-E8	EKTM-15A
Appearance					
Contact Capacity		AC250V 16A	AC250V 16A	AC250V 16A	AC250V 16A
Full Timing Range		24h	24h	7m	Per week or per day cycle
Contact resistance		$\leq 50\text{m}\Omega$	$\leq 50\text{m}\Omega$	$\leq 50\text{m}\Omega$	$\leq 50\text{m}\Omega$
Insulation Resistance		$\geq 100\text{m}\Omega$	$\geq 100\text{m}\Omega$	$\geq 100\text{m}\Omega$	$\geq 100\text{m}\Omega$
Coil Voltage		110,230V AC	110,230V AC	110,230V AC	230V AC 85%~110%
Life	Electrical	$10^5$ times	$10^5$ times	$10^5$ times	$10^5$ times
	Mechanical	$10^7$ times	$10^7$ times	$10^7$ times	$10^7$ times
Operating Temperature		-40°C+55°C	-10°C+55°C	-40°C+55°C	-20°C+55°C
Dimensions (mm)		 	  	 	 
Storage Battery (Working Reserve)		Time 150h	Time 70h	—	Rated Voltage: AC200V 50Hz 85%-110% Contact Form:1NC/1NO Accuracy : $\leq 2\text{s/day}(25^\circ\text{C})$ Expectancy Display:LCD Mounting Form: From panel,DIN Rail
Minimum Setting Unit		30Minutes	15Minutes	0.5Minutes	Programmable: 8time week or day Memory Backup:15days
Set up Times		30m/per times 48 times	15m/per times 96 times	1M,1.5M,2M,2.5M 3M,3.5M,4.5M,5M 5.5M,6M,6.5M,7M	



## Description

The Distribution Box is used for Terminal power distributing system

The Distribution Box are completed with Din-rail 35mm and Neutral Terminal

Electrical Rating	100A/single phase,63A/three phase,240/415V AC 50/60Hz
Protection Degree	IP40
Material	Shell: ABS,ABS-UV Fire-proof
	Door: Transparent PC
Method of Installation	Surface-Mounted and Flush-Mounted

## General Type-Full Plastic

### Surface-Mounted type

Model No.				Ways	Dimension(mm)			Specification of N terminal			Qty/CTN
ABS	Code	ABS-UV	Code		L	W	H	W*H	Screw Qty	Bar Qty	Pcs
EKDB2S2	601101	EKDB2S2V	601201	2	49	130	85				300
EKDB2S3	601102	EKDB2S3V	601202	3	94	148	85				50
EKDB2S4	601103	EKDB2S4V	601203	4	111	200	93	6*8	4	1	30
EKDB2S6	601104	EKDB2S6V	601204	6	148	200	97	6*8	6	2	30
EKDB2S8	601105	EKDB2S8V	601205	8	184	200	96	6*8	8	2	30
EKDB2S10	601106	EKDB2S10V	601206	10	220	200	92	6*8	10	2	20
EKDB2S12	601107	EKDB2S12V	601207	12	254	200	96	6*8	12	2	20
EKDB2S15	601108	EKDB2S15V	601208	15	310	200	97	6*8	15	2	15
EKDB2S18	601109	EKDB2S18V	601209	18	362	219	97	6*8	18	3	10
EKDB2S24	601110	EKDB2S24V	601210	24	271	324	98	6*8	24	4	10
EKDB2S36	601111	EKDB2S36V	601211	36	269	457	100	6*8	36	6	5

### Flush-Mounted type

Model No.				Ways	Dimension(mm)				Specification of N terminal			Qty/CTN
ABS	Code	ABS-UV	Code		L	W	H1	H2	W*H	Screw Qty	Bar Qty	Pcs
EKDB2F2	601121	EKDB2F2V	601221	2	66	137	85	25				200
EKDB2F3	601122	EKDB2F3V	601222	3	94	148	85	26				50
EKDB2F4	601123	EKDB2F4V	601223	4	135	221	87	26	6*8	4	1	30
EKDB2F6	601124	EKDB2F6V	601224	6	171	221	88	26	6*8	6	2	30
EKDB2F8	601125	EKDB2F8V	601225	8	208	221	87	26	6*8	8	2	20
EKDB2F10	601126	EKDB2F10V	601226	10	244	221	86	26	6*8	10	2	20
EKDB2F12	601127	EKDB2F12V	601227	12	280	221	88	24	6*8	12	2	20
EKDB2F15	601128	EKDB2F15V	601228	15	334	221	89	29	6*8	15	2	15
EKDB2F18	601129	EKDB2F18V	601229	18	399	252	86	27	6*8	18	3	10
EKDB2F24	601130	EKDB2F24V	601230	24	300	341	98	31	6*8	24	4	10
EKDB2F36	601131	EKDB2F36V	601231	36	300	480	98	31	6*8	36	6	5

## Double Rows Terminal type-Full Plastic (Australia Type)

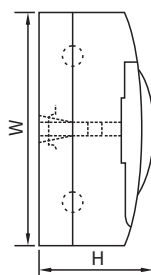
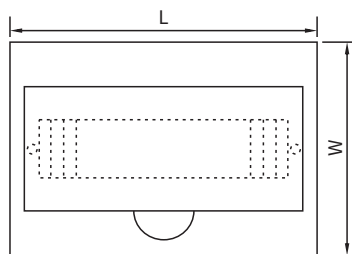
## Surface-Mounted type

Model No.				Ways	Dimension(mm)			Specification of N terminal			Qty/CTN
ABS	Code	ABS-UV	Code		L	W	H	W*H	Screw Qty	Bar Qty	Pcs
EKDB2S4T2	601303	EKDB2S4VT2	601403	4	111	200	93	10*14	8	1	30
EKDB2S6T2	601304	EKDB2S6VT2	601404	6	148	200	97	10*14	12	2	30
EKDB2S8T2	601305	EKDB2S8VT2	601405	8	184	200	96	10*14	16	2	30
EKDB2S12T2	601307	EKDB2S12VT2	601407	12	254	200	96	10*14	24	2	20
EKDB2S18T2	601309	EKDB2S18VT2	601409	18	362	219	97	10*14	36	3	10
EKDB2S24T2	601310	EKDB2S24VT2	601410	24	271	324	98	10*14	48	4	10
EKDB2S36T2	601311	EKDB2S36VT2	601411	36	269	457	100	10*14	72	6	5

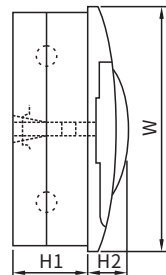
## Flush-Mounted type

Model No.				Ways	Dimension(mm)				Specification of N terminal			Qty/CTN
ABS	Code	ABS-UV	Code		L	W	H1	H2	W*H	Screw Qty	Bar Qty	Pcs
EKDB2F4T2	601323	EKDB2F4VT2	601423	4	135	221	87	26	10*14	8	1	30
EKDB2F6T2	601324	EKDB2F6VT2	601424	6	171	221	88	26	10*14	12	2	30
EKDB2F8T2	601325	EKDB2F8VT2	601425	8	208	221	87	26	10*14	16	2	20
EKDB2F12T2	601327	EKDB2F12VT2	601427	12	280	221	88	24	10*14	24	2	20
EKDB2F18T2	601329	EKDB2F18VT2	601429	18	399	252	86	27	10*14	36	3	10
EKDB2F24T2	601330	EKDB2F24VT2	601430	24	300	341	98	31	10*14	48	4	10
EKDB2F36T2	601331	EKDB2F36VT2	601431	36	300	480	98	31	10*14	72	6	5

## Overall and Installation Dimension(mm)



Surface-Mounted type



Flush-Mounted type



### Description

The Distribution Box is used for Terminal power distributing system

The Distribution Box are completed with Din-rail 35mm and Neutral Terminal (Selectable)

Electrical Rating	100A/single phase,63A/three phase,240/415V AC 50/60Hz
Protection Degree	IP65
Material	Shell: ABS
	Door: Transparent PC
Method of Installation	Surface-Mounted

### Type of open door from right to left

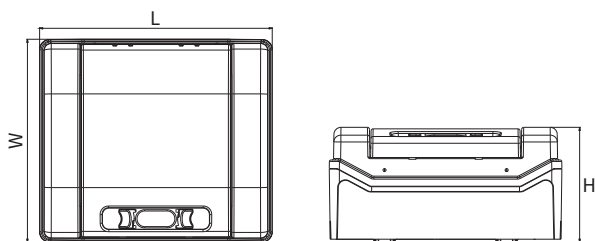
#### Without Neutral Terminal Model

Model No.		Ways	Dimension(mm)			Qty/CTN
PC	Code		L	W	H	Pcs
EKDB4P4R	604241	4	231	166	113	30
EKDB4P6R	604242	6	231	202	113	20
EKDB4P8R	604243	8	231	238	118	20
EKDB4P9R	604244	9	219	200	102	20
EKDB4P12R	604245	12	246	310	148	20
EKDB4P18R	604246	18	286	418	148	20
EKDB4P24R	604247	24	436	310	148	10

#### With Neutral Terminal Model

Model No.		Ways	Dimension(mm)			Qty/CTN
PC	Code		L	W	H	Pcs
EKDB4P4RT	604211	4	231	166	113	30
EKDB4P6RT	604212	6	231	202	113	20
EKDB4P8RT	604213	8	231	238	118	20
EKDB4P9RT	604214	9	219	200	102	20
EKDB4P12RT	604215	12	246	310	148	20
EKDB4P18RT	604216	18	286	418	148	20
EKDB4P24RT	604217	24	436	310	148	10

### Overall and Installation Dimension(mm)







### Description

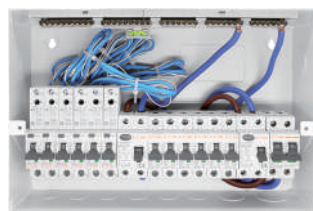
The Distribution Box is used for Terminal power distributing system  
The Distribution Box are completed with Din-rail 35mm and Neutral Terminal (Selectable)

Electrical Rating	100A/single phase,240/415V AC 50/60Hz
Protection Degree	IP40
Material	Steel
Method of Installation	Surface-Mounted

### Empty Box

#### With Neutral and Earth Terminal

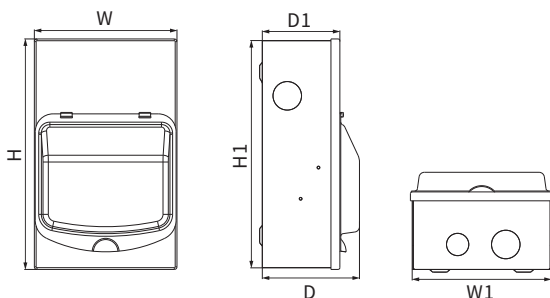
Model No.		Ways	Dimension(mm)						Qty/CTN
Model	Code		H	W	D	D1	W1	H1	Pcs
EKDB6S6	612221	6	258.6	160	109	87	156	255	6
EKDB6S10	612222	10	258.6	232	109	87	228	255	6
EKDB6S14	612223	14	258.6	304	109	87	300	255	4
EKDB6S18	612224	18	258.6	376	109	87	372	255	4
EKDB6S24	612225	24	258.6	484	109	87	480	255	4



#### Complete set of Distribution Box with Busbar, Neutral and Earth Terminals , Cables Connected

Reference No.	Size of Box	Description	Free ways	MCB Selected by user	RCBO Selected by user
EKDB6S6-IS	6WAYS	DB Box with 1x2P 100A Isolator	4	MCB 1P 6KA, type B or type C, Rated Current: 6A,10A,16A,20A,25 A,32A,40A	RCBO 1P+N 6KA, type B or type C, I $\Delta$ n: 30mA Rated Current: 6A,10A,16A,20A,25 A,32A,40A
EKDB6S6-RCD	6WAYS	DB Box with 1x2P 80A RCD	4		
EKDB6S10-IS-RCD	10WAYS	DB Box with 1x2P 100A Isolator + 1x2P 80A RCD	6		
EKDB6S10-IS	10WAYS	DB Box with 1x2P 100A Isolator	8		
EKDB6S10-RCD	10WAYS	DB Box with 1x2P 80A RCD	8		
EKDB6S14-IS-RCD	14WAYS	DB Box with 1x2P 100A Isolator + 1x2P 80A RCD	10		
EKDB6S14-IS-RCD2	14WAYS	DB Box with 1x2P 100A Isolator + 2x2P 80A RCD	4+4		
EKDB6S18-IS-RCD	18WAYS	DB Box with 1x2P 100A Isolator + 1x2P 80A RCD	14		
EKDB6S18-IS-RCD2	18WAYS	DB Box with 1x2P 100A Isolator + 2x2P 80A RCD	6+6		
EKDB6S24-IS-RCD2	24WAYS	DB Box with 1x2P 100A Isolator + 2x2P 80A RCD	9+9		

#### Overall and Installation Dimension(mm)





### Description

The Distribution Box is used for Terminal power distributing system

The Distribution Box are completed with Din-rail 35mm and Neutral Terminal (Selectable)

Electrical Rating 125A single phase/three phase,240/415V AC 50/60Hz

Protection Degree IP40,IP65

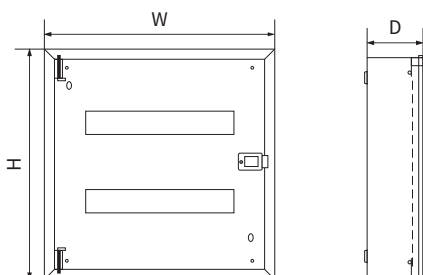
Material Steel

Method of Installation Surface-Mounted and Flush-Mounted

### MCB Type

Model No.			Ways	Dimension(mm)			Thickness(mm)			Qty/CTN	
Model	Row	Code		H	W	D	Door	Body	M.P	Pcs	
EKDB7113	1	616001	13	275	355	110	1.2	1.2	1	1	
EKDB7226	2	616002	26	380	355	110	1.2	1.2	1	1	
EKDB7339	3	616003	39	530	355	110	1.2	1.2	1	1	
EKDB7452	4	616004	52	680	355	110	1.2	1.2	1	1	
EKDB7118	1	616101	18	275	475	110	1.2	1.2	1	1	
EKDB7236	2	616102	36	380	475	110	1.2	1.2	1	1	
EKDB7354	3	616103	54	530	475	110	1.2	1.2	1	1	
EKDB7472	4	616104	72	680	475	110	1.2	1.2	1	1	
EKDB7590	5	616105	90	830	475	110	1.2	1.2	1	1	
EKDB7122	1	616201	22	275	547	110	1.2	1.2	1	1	
EKDB7244	2	616202	44	380	547	110	1.2	1.2	1	1	
EKDB7366	3	616203	66	530	547	110	1.2	1.2	1	1	
EKDB7488	4	616204	88	680	547	110	1.2	1.2	1	1	
EKDB75110	5	616205	110	830	547	110	1.2	1.2	1	1	

### Overall and Installation Dimension(mm)





### Description

The Distribution Box is used for Terminal power distributing system

The Distribution Box are completed with Din-rail 35mm and Neutral Terminal (Selectable)

Electrical Rating 250A three phase, 240/415V AC 50/60Hz

Protection Degree IP40, IP65

Material Steel

Method of Installation Surface-Mounted and Flush-Mounted

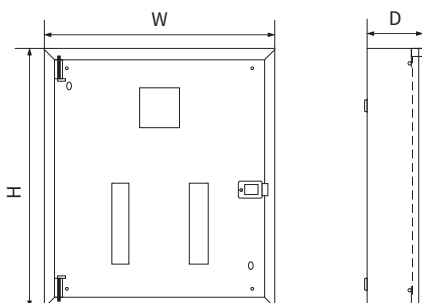
### MCCB Type

Model No.			Ways	Dimension(mm)			Thickness(mm)			Qty/CTN
Model	Model Type	Code		H	W	D	Door	Body	M.P	Pcs
EKDB7-04M	125、160、250	616301	12	573	400	130	1	1	1	1
EKDB7-06M		616302	18	627	400	130	1	1	1	1
EKDB7-08M		616303	24	681	400	130	1	1	1	1
EKDB7-10M		616304	30	735	400	130	1	1	1	1
EKDB7-12M		616305	36	789	400	130	1.2	1.2	1	1
EKDB7-14M		616306	42	843	400	130	1.2	1.2	1	1
EKDB7-16M		616307	48	897	400	130	1.2	1.2	1	1
EKDB7-20M		616308	60	1005	400	130	1.2	1.2	1	1

### Isolation Switch Type

Model No.			Ways	Dimension(mm)			Thickness(mm)			Qty/CTN
Model	Model Type	Code		H	W	D	Door	Body	M.P	Pcs
EKDB7-04I	125、160、250	616401	12	473	400	110	1	1	1	1
EKDB7-06I		616402	18	527	400	110	1	1	1	1
EKDB7-08I		616403	24	581	400	110	1	1	1	1
EKDB7-10I		616404	30	635	400	110	1	1	1	1
EKDB7-12I		616405	36	689	400	110	1.2	1.2	1	1
EKDB7-14I		616406	42	743	400	110	1.2	1.2	1	1
EKDB7-16I		616407	48	797	400	110	1.2	1.2	1	1
EKDB7-20I		616408	60	905	400	110	1.2	1.2	1	1

### Overall and Installation Dimension(mm)





## Description

The Distribution Box is used for Terminal power distributing system

Electrical Rating 63-1250A, Single phase/Three phase,  
240/415V AC 50/60Hz

Protection Degree IP65

Material Steel

Method of Installation Surface-Mounted

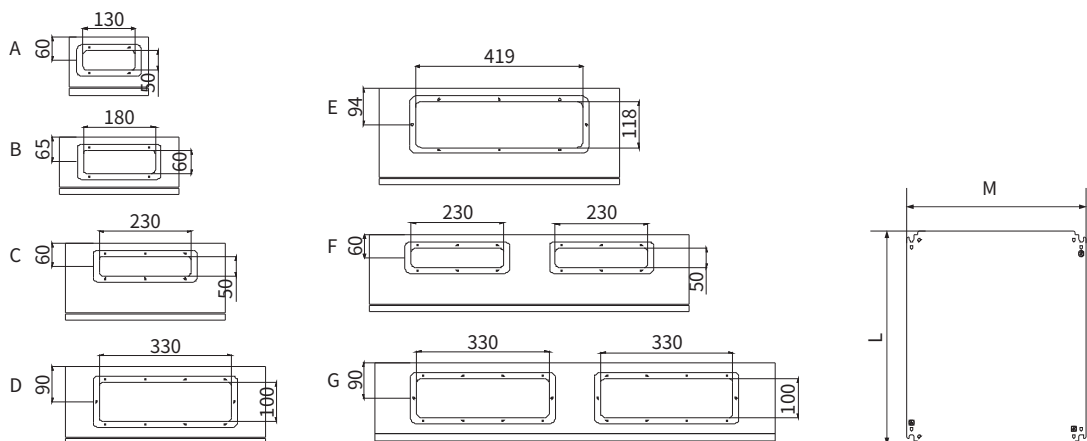
## Main technique parameter

Model No.		Size(mm)			Thickness(mm)			Bottom hole size	Lock QTY	Mounting plate size(mm)	
Model	Code	H	W	D	Door	Body	M.P			L	M
EKDB8 2020/15	610001	200	200	150	1.2	1.2	2	A	1	150	150
EKDB8 2520/15	610002	250	200	150	1.2	1.2	2	A	1	250	150
EKDB8 3020/15	610003	300	200	150	1.2	1.2	2	A	1	250	150
EKDB8 3020/20	610004	300	200	200	1.2	1.2	2	A	1	250	150
EKDB8 3025/15	610005	300	250	150	1.2	1.2	2	A	1	250	200
EKDB8 3025/20	610006	300	250	200	1.2	1.2	2	A	1	250	200
EKDB8 3030/15	610007	300	300	150	1.2	1.2	2	B	1	250	250
EKDB8 3030/20	610008	300	300	200	1.2	1.2	2	B	1	250	250
EKDB8 3030/25	610009	300	300	250	1.2	1.2	2	B	1	250	250
EKDB8 4030/15	610010	400	300	150	1.2	1.2	2	B	1	350	250
EKDB8 4030/20	610011	400	300	200	1.2	1.2	2	B	1	350	250
EKDB8 4030/25	610012	400	300	250	1.2	1.2	2	B	1	350	250
EKDB8 4030/30	610013	400	300	300	1.2	1.2	2	B	1	350	250
EKDB8 4040/15	610014	400	400	150	1.2	1.2	2	C	1	350	250
EKDB8 4040/20	610015	400	400	200	1.2	1.2	2	C	1	350	350
EKDB8 4040/25	610016	400	400	250	1.2	1.2	2	C	1	350	350
EKDB8 4040/30	610017	400	400	300	1.2	1.2	2	C	1	350	350
EKDB8 5030/15	610018	500	300	150	1.2	1.2	2	B	1	450	350
EKDB8 5030/20	610019	500	300	200	1.2	1.2	2	B	1	450	250
EKDB8 5030/25	610020	500	300	250	1.2	1.2	2	B	1	450	250
EKDB8 5040/15	610021	500	400	150	1.2	1.2	2	C	1	450	350
EKDB8 5040/20	610022	500	400	200	1.2	1.2	2	C	1	450	350
EKDB8 5040/25	610023	500	400	250	1.2	1.2	2	C	1	450	350
EKDB8 5040/30	610024	500	400	300	1.2	1.2	2	C	1	450	350
EKDB8 5050/20	610025	500	500	200	1.2	1.2	2	D	1	450	450
EKDB8 5050/25	610026	500	500	250	1.2	1.2	2	D	1	450	450
EKDB8 5050/30	610027	500	500	300	1.2	1.2	2	D	1	450	450
EKDB8 6040/15	610028	600	400	150	1.2	1.2	2	C	2	550	350
EKDB8 6040/20	610029	600	400	200	1.2	1.2	2	C	2	550	350
EKDB8 6040/25	610030	600	400	250	1.2	1.2	2	C	2	550	350
EKDB8 6040/30	610031	600	400	300	1.2	1.2	2	C	2	550	350
EKDB8 6050/15	610032	600	500	150	1.2	1.2	2	D	2	550	450
EKDB8 6050/20	610033	600	500	200	1.2	1.2	2	D	2	550	450
EKDB8 6050/25	610034	600	500	250	1.2	1.2	2	D	2	550	450
EKDB8 6050/30	610035	600	500	300	1.2	1.2	2	D	2	550	450
EKDB8 6060/15	610036	600	600	150	1.2	1.2	2	D	2	550	550
EKDB8 6060/20	610037	600	600	200	1.2	1.2	2	D	2	550	550
EKDB8 6060/25	610038	600	600	250	1.2	1.2	2	D	2	550	550
EKDB8 6060/30	610039	600	600	300	1.2	1.2	2	D	2	550	550

## Main technique parameter

Model No.		Size(mm)			Thickness(mm)			Bottom hole size	Lock QTY	Mounting plate size(mm)	
Model	Code	H	W	D	Door	Body	M.P			L	M
EKDB8 7050/15	610040	700	500	150	1.2	1.2	2	D	2	650	450
EKDB8 7050/20	610041	700	500	200	1.2	1.2	2	D	2	650	450
EKDB8 7050/25	610042	700	500	250	1.2	1.2	2	D	2	650	450
EKDB8 7060/20	610043	700	600	200	1.2	1.2	2	D	2	650	550
EKDB8 7060/25	610044	700	600	250	1.2	1.2	2	D	2	650	550
EKDB8 7060/30	610045	700	600	300	1.5	1.5	2	D	2	650	550
EKDB8 8060/20	610046	800	600	200	1.5	1.5	2	D	2	750	550
EKDB8 8060/25	610047	800	600	250	1.5	1.5	2	D	2	750	550
EKDB8 8060/30	610048	800	600	300	1.5	1.5	2	D	2	750	550
EKDB8 8080/20	610049	800	800	200	1.5	1.5	2	F	2	750	750
EKDB8 8080/25	610050	800	800	250	1.5	1.5	2	F	2	750	750
EKDB8 8080/30	610051	800	800	300	1.5	1.5	2	F	2	750	750
EKDB8 10060/20	610052	1000	600	200	1.5	1.5	2	D	2	950	550
EKDB8 10060/25	610053	1000	600	250	1.5	1.5	2	D	3	950	550
EKDB8 10060/30	610054	1000	600	300	1.5	1.5	2	D	3	950	550
EKDB8 10070/20	610055	1000	700	200	1.5	1.5	2	D	3	950	650
EKDB8 10080/20	610056	1000	800	200	1.5	1.5	2	F	3	950	750
EKDB8 10080/25	610057	1000	800	250	1.5	1.5	2	F	3	950	750
EKDB8 10080/30	610058	1000	800	300	1.5	1.5	2	F	3	950	750
EKDB8 10080/40	610059	1000	800	400	1.5	1.5	2	F	3	950	750
EKDB8 100100/25	610060	1000	1000	250	1.5	1.5	2	G	3	950	950
EKDB8 100100/30	610061	1000	1000	300	1.5	1.5	2	G	3	950	950
EKDB8 12060/20	610062	1200	600	200	1.5	1.5	2	D	3	1150	550
EKDB8 12060/25	610063	1200	600	250	1.5	1.5	2	D	3	1150	550
EKDB8 12060/30	610064	1200	600	300	1.5	1.5	2	D	3	1150	550
EKDB8 12080/20	610065	1200	800	200	1.5	1.5	2	F	3	1150	750
EKDB8 12080/25	610066	1200	800	250	1.5	1.5	2	F	3	1150	750
EKDB8 12080/30	610067	1200	800	300	1.5	1.5	2	F	3	1150	750
EKDB8 12080/40	610068	1200	800	400	1.5	1.5	2	F	3	1150	750
EKDB8 120100/25	610069	1200	1000	250	1.5	1.5	2	G	3	1150	750
EKDB8 120100/30	610070	1200	1000	300	1.5	1.5	2	G	3	1150	950
EKDB8 120100/40	610071	1200	1000	400	1.5	1.5	2	G	3	1150	950
EKDB8 14060/30	610072	1400	600	300	1.5	1.5	2	D	3	1350	550
EKDB8 14080/30	610073	1400	800	300	1.5	1.5	2	F	3	1350	750
EKDB8 14080/40	610074	1400	800	400	1.5	1.5	2	F	3	1350	750
EKDB8 140100/30	610075	1400	1000	300	1.5	1.5	2	G	3	1350	950
EKDB8 140120/30	610076	1400	1200	300	1.5	1.5	2	G	3	1350	1150

## Overall and Installation Dimension(mm)



## CERTIFICATE



## PACKAGING



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