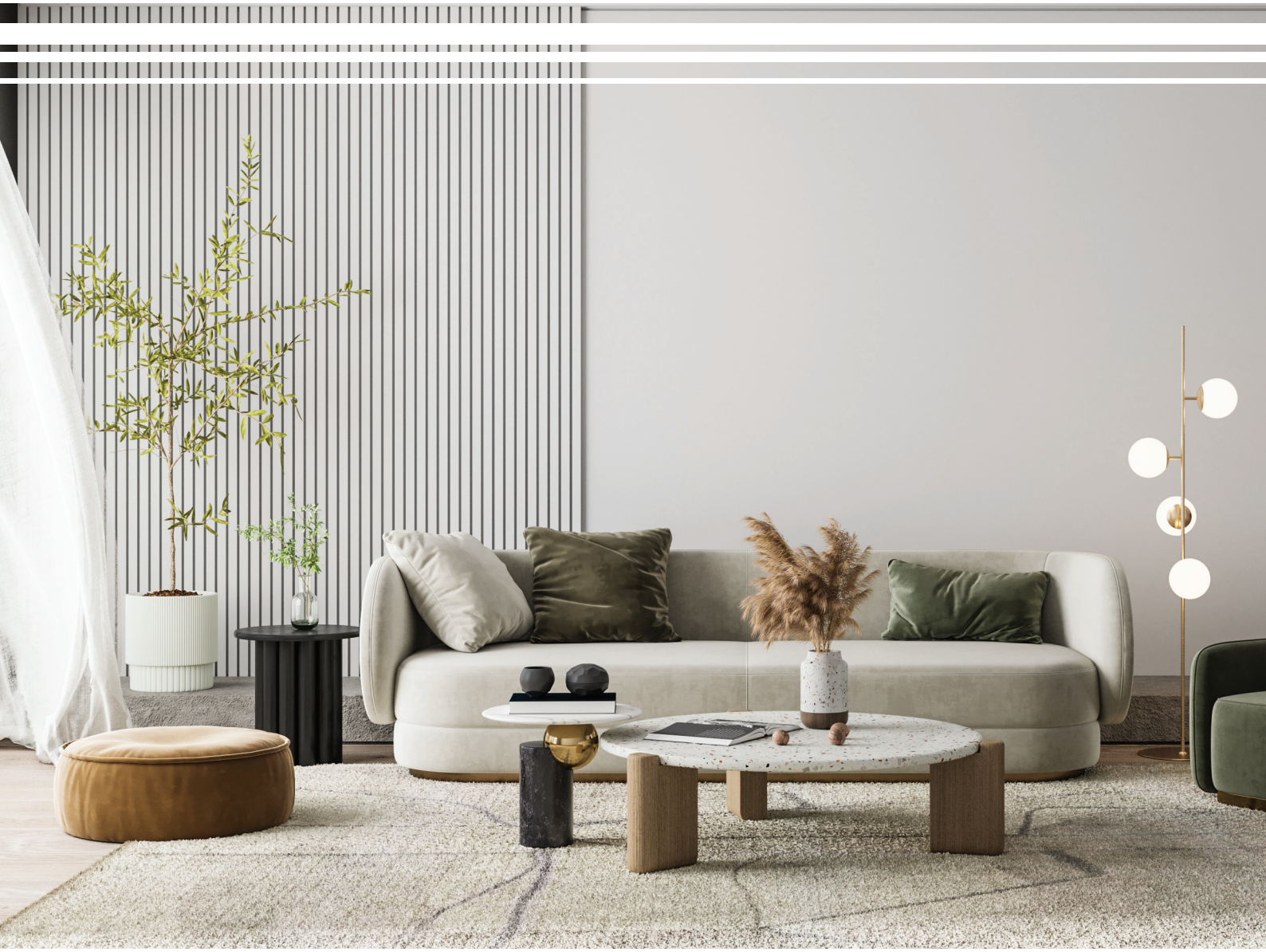
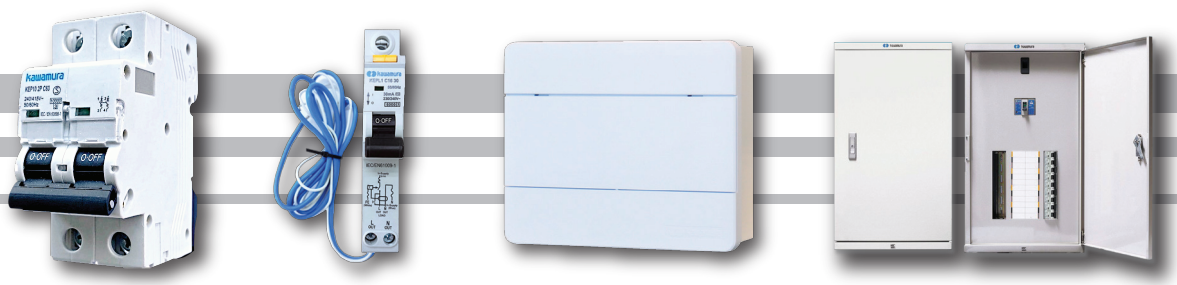
THAI AICHI DENKI

KAWAMURA PRODUCT CATALOG





kawamura

Consumer Unit - Din Type

IEC 61439-3

The cabinet frame is made of 0.8 mm thick steel plate and the cover is made of plastic, suitable for indoor installation, and includes a large cabinet designed for large homes. It is coated with anti-rust and UV protection using Powder Coating technology and can withstand short-circuit currents of up to 10kA.

Channels	Product Code	Dimension (Body) W x H x D (mm.)	Net. Weight (kg)	Thicknesses Cover/Cabinet
6	KWCN 6	282 x 236 x 100	1.38	2.5 / 0.8 (mm)
8	KWCN 8	282 x 236 x 100		
10	KWCN 10	358 x 236 x 100	1.83	
12	KWCN 12	358 x 236 x 100		
14	KWCN 14	434 x 236 x 100	2.29	
16	KWCN 16	434 x 236 x 100		
18	KWCN 18	510 x 236 x 100	2.73	
20	KWCN 20	510 x 236 x 100		
22	KWCN 22	358 x 420 x 100	3.28	
24	KWCN 24	358 x 420 x 100		

Accessory

Accessory	Product Code	Description
Comb Bus Bar for 63AT	10111-339	Comb bus bar 1 phase 5 pole
	10111-340	Comb bus bar 1 phase 7 pole
	10111-341	Comb bus bar 1 phase 11 pole
	10111-342	Comb bus bar 1 phase 15 pole
	10111-343	Comb bus bar 1 phase 17 pole
	10111-344	Comb bus bar 1 phase 19 pole
Comb Bus Bar for 100AT	10111-345	Comb bus bar 1 phase 11 pole (100A)
	10111-346	Comb bus bar 1 phase 18 pole (100A)
Stopper	41401-230	BNL6 End plate
Space Cover 1P	10121-065	Cover 1P space CU

Load Center

IEC 61439-3

This cabinet is made of 1.2mm thick steel plate for the 100A model and 1.5mm thick steel plate for the 250A model, making it suitable for indoor installation. It is coated with powder coating for anti-rust and UV protection.

100 AF

Number of Way	Product Code	Dimension W x H x D (mm.)	Net. Weight (kg)	Thicknesses Cover/Cabinet
12	KWLN 112	430 x 490 x 115	10.3	1.0 / 1.2 (mm)
18	KWLN 118	430 x 550 x 115	11.5	
24	KWLN 124	430 x 600 x 115	12.5	
30	KWLN 130	430 x 660 x 115	13.7	
36	KWLN 136	430 x 710 x 115	14.8	
42	KWLN 142	430 x 760 x 115	15.8	
48	KWLN 148	430 x 820 x 115	17.0	

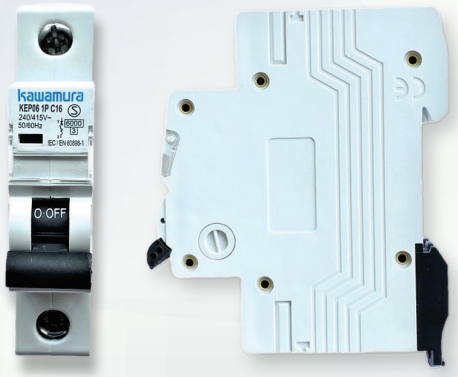
250 AF

Number of Way	Product Code	Dimension W x H x D (mm.)	Net. Weight (kg)	Thicknesses Cover/Cabinet
12	KWLN 212	490 x 720 x 115	18.2	1.0 / 1.5 (mm)
18	KWLN 218	490 x 770 x 115	19.5	
24	KWLN 224	490 x 830 x 115	21.1	
30	KWLN 230	490 x 850 x 115	21.9	
36	KWLN 236	490 x 900 x 115	23.2	
42	KWLN 242	490 x 950 x 115	24.5	
48	KWLN 248	490 x 1,010 x 115	26.1	

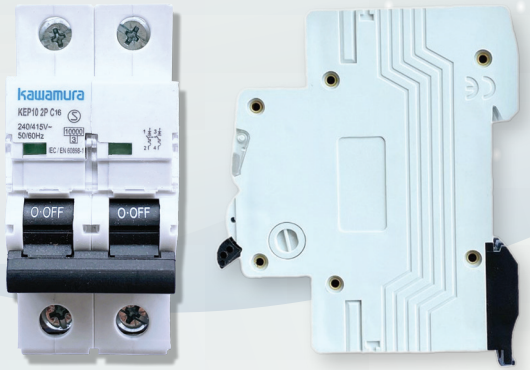
Miniature Circuit Breaker - Din Type

IEC 60898

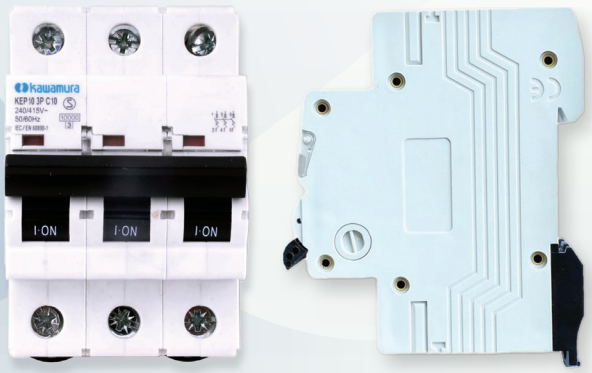
This miniature circuit breaker is suitable for both sub-circuits and main circuits. It features shock protection and overcurrent protection using a thermomagnetic system.



Pole	Breaking Capacity	Amp Trip	Product Code
1P	6kA	10	KEP06 1P C10
		16	KEP06 1P C16
		20	KEP06 1P C20
		25	KEP06 1P C25
		32	KEP06 1P C32
		40	KEP06 1P C40
		50	KEP06 1P C50
		63	KEP06 1P C63
	10kA	10	KEP10 1P C10
		16	KEP10 1P C16
		20	KEP10 1P C20
		25	KEP10 1P C25
		32	KEP10 1P C32
		40	KEP10 1P C40
		50	KEP10 1P C50
		63	KEP10 1P C63



Pole	Breaking Capacity	Amp Trip	Product Code
2P	10kA	10	KEP10 2P C10
		16	KEP10 2P C16
		20	KEP10 2P C20
		25	KEP10 2P C25
		32	KEP10 2P C32
		40	KEP10 2P C40
		50	KEP10 2P C50
		63	KEP10 2P C63
		80	KEP10 2P C80
		100	KEP10 2P C100



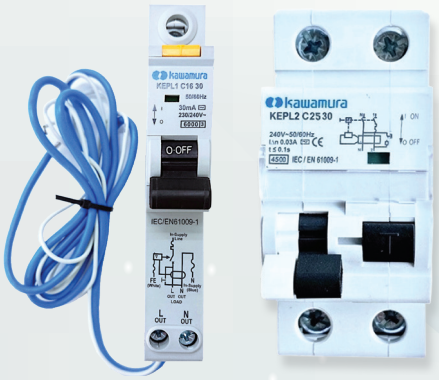
Pole	Breaking Capacity	Amp Trip	Product Code
3P	6kA	10	KEP06 3P C10
		16	KEP06 3P C16
		20	KEP06 3P C20
		25	KEP06 3P C25
		32	KEP06 3P C32
		40	KEP06 3P C40
		50	KEP06 3P C50
		63	KEP06 3P C63
	10kA	10	KEP10 3P C10
		16	KEP10 3P C16
		20	KEP10 3P C20
		25	KEP10 3P C25
		32	KEP10 3P C32
		40	KEP10 3P C40
		50	KEP10 3P C50
		63	KEP10 3P C63

Residual Current Circuit Breakers with Overcurrent Protection (RCBO)

TIS 909-2548
Thai Aichi Denki Co.,Ltd.

IEC 61009

This Residual Current Circuit Breakers with Overload Protection breaker is leakage protection device that cuts off the circuit when a leakage of 30mA or less is detected, and it will cut off the leakage within 30ms (0.03 seconds). It can detect leakage in both L and N and is compliant with the industrial standard TIS 909-2548.



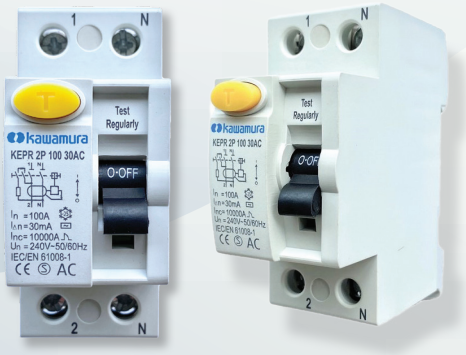
Pole	Amp Trip	Product Code	Breaking Capacity	Rated Residual Operating Current (mA)
2P	25	KEPL2 C25 30	4.5kA	30
	32	KEPL2 C32 30	4.5kA	30
1P + N	16	KEPL1 C16 30	6kA	30
	20	KEPL1 C20 30	6kA	30
	25	KEPL1 C25 30	6kA	30
	32	KEPL1 C32 30	6kA	30
	40	KEPL1 C40 30	6kA	30

Residual Current Circuit Breaker (RCCB)

TIS 2425-2560
Thai Aichi Denki Co.,Ltd.

IEC 61008

This Residual Current Circuit Breaker does not provide overcurrent device, so it needs to be used with a sub-breaker. It cuts off the circuit when a leakage of 30mA or less is detected and will cut off the leakage within 30ms (0.03 seconds). It can detect leakage in both L and N and is compliant with the industrial standard TIS 2425-2560



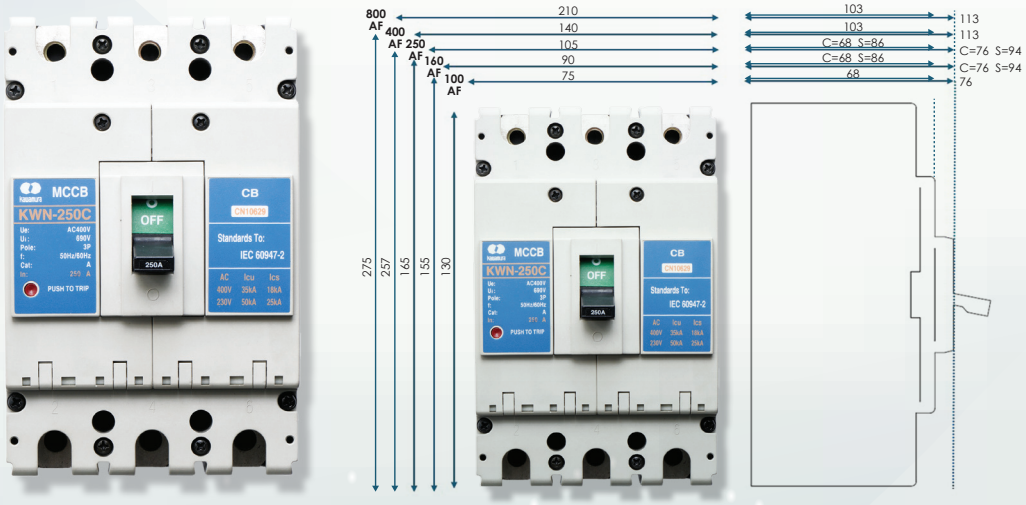
Pole	Amp Trip	Product Code	Rated Residual Operating Current (mA)
2P	63	KEPR 2P 63 30AC	30
	80	KEPR 2P 80 30AC	30
	100	KEPR 2P 100 30AC	30

- **Safety Reminder**
  For your safety, please regularly press the test button on the leakage protection device.

Molded Case Circuit Breaker

IEC 60947-2

This Molded case circuit breaker is suitable for electrical circuits with a 3-phase 4-wire system. Equipped with shock protection and overcurrent protection using a thermomagnetic system.



- **Frame Size 100AF Dimension : 75 x 130 x 68 mm.**

Amp Trip	Breaking Capacity	Product Code
10	15kA	KWN-100C 3P 10
16		KWN-100C 3P 16
20		KWN-100C 3P 20
25		KWN-100C 3P 25
32		KWN-100C 3P 32
40		KWN-100C 3P 40
50		KWN-100C 3P 50
63		KWN-100C 3P 63
80		KWN-100C 3P 80
100		KWN-100C 3P 100

Amp Trip	Breaking Capacity	Product Code
10	30kA	KWN-100S 3P 10
16		KWN-100S 3P 16
20		KWN-100S 3P 20
25		KWN-100S 3P 25
32		KWN-100S 3P 32
40		KWN-100S 3P 40
50		KWN-100S 3P 50
63		KWN-100S 3P 63
80		KWN-100S 3P 80
100		KWN-100S 3P 100

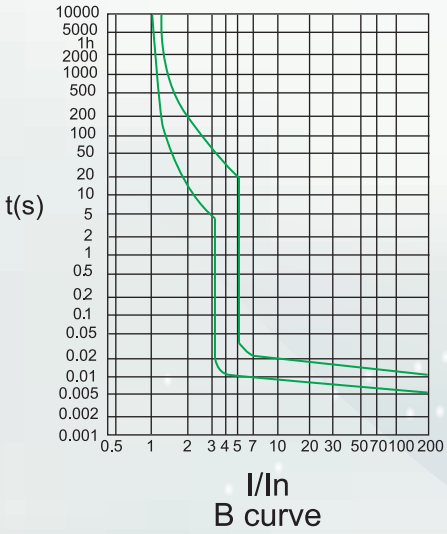
- **Frame Size 250AF Dimension : 105 x 165 x 68 mm.**

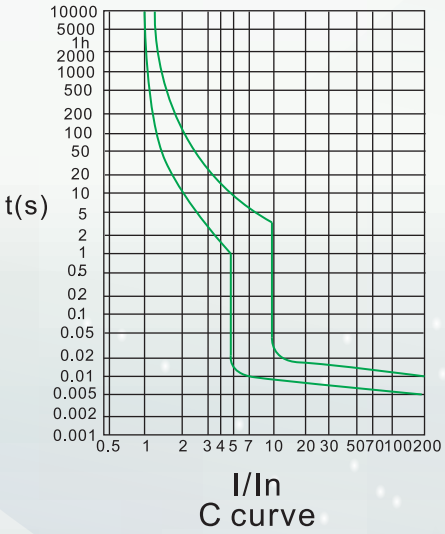
Amp Trip	Breaking Capacity	Product Code
100	35kA	KWN-100C 3P 100
125		KWN-100C 3P 125
160		KWN-100C 3P 160
180		KWN-100C 3P 180
200		KWN-100C 3P 200
225		KWN-100C 3P 225
250		KWN-100C 3P 250

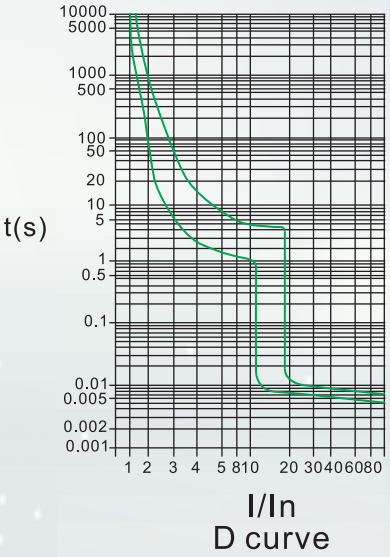
MCB

TECHNICAL DESCRIPTION

For use in commercial and industrial electrical distribution systems
Protects against overloads and short circuits







TRIP CHARACTERISTICS

TYPE "B" CHARACTERISTICS

Developed primarily to protect conductors and low level signal devices such as PLCs instantaneous trip is three to five times the rated current of the Supplementary Protector (3 ~ 5 × In). The fast trip time of these devices minimizes damage to control circuit conductors from low-level faults.

TYPE "C" CHARACTERISTICS

Developed primarily for applications with moderate inrush currents such as lighting, control circuits and appliances. Instantaneous trip is five to ten times the rated current of the Supplementary Protector (5 ~ 10 × In). The higher instantaneous trip level prevents nuisance tripping, and components being protected can typically withstand higher fault currents without being damaged.

TYPE "D" CHARACTERISTICS

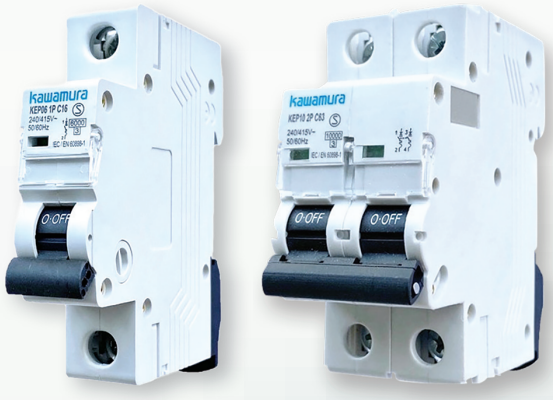
Developed primarily for applications with high inrush currents, i.e., transformers, and motors. Instantaneous trip is ten to twenty times the rated current of the Supplementary Protector (10 ~ 20 × In). The higher instantaneous trip level prevents nuisance tripping, and components being protected can typically withstand higher fault currents without being damaged.

MCB

KEP Series (6kA, 10kA) for 10A – 63A

Functions

Protection against overload and short circuits.



Application

For use in commercial and industrial electrical distribution systems.

Standards and Certificates

KEP06 : IEC 60898-1, KEMA, SEMKO, CE, SIRIM, SNI
KEP10 : IEC 60898-1 & IEC60947-2, KEMA, SEMKO, CE, ABS, SNI

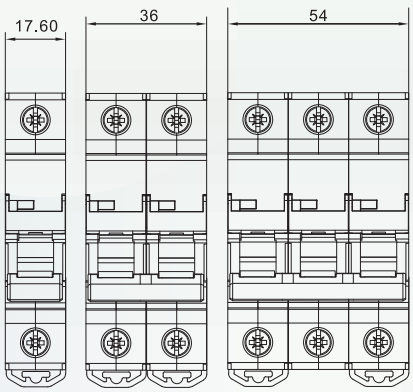
Specifications

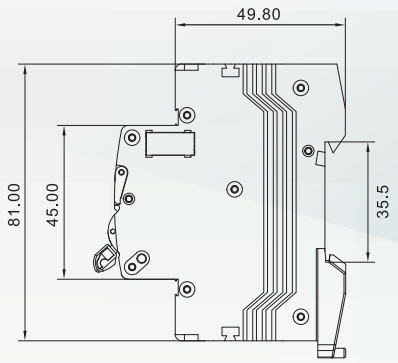
Rated Voltage	Phase to Neutral 230/240V / Phase to Phase 400/415V ~
Characteristics	B Curve (3 ~ 5In) / C Curve (5 ~ 10In) / D Curve (10 ~ 20In)
Capacity	6kA, 10kA
Poles	1P, 2P, 3P
Ampere	10, 16, 20, 25, 32, 40, 50, 63A
Frequency	50 / 60Hz
Calibration Temperature	30°C
Operating Temperature	-25°C to + 45°C
Protection Degree	IP20
Electrical Endurance	> 8,000 cycles
Mechanical Endurance	> 20,000 cycles
Weight (g.)	1P = 103g. / 2P = 207g. / 3P = 311g. (KEP06) 1P = 115g. / 2P = 231g. / 3P = 347g. (KEP10)

Wiring Capacity

Rigid Conductor	35mm^2 Maximum (6kA) / 35mm^2 Maximum (10kA)
Flexible Conductor	25mm^2 Maximum (6kA) / 25mm^2 Maximum (10kA)

Dimension





MCB

KEP Series (10kA) for 80A – 100A

Functions

Protection against overload and short circuits.

Application

For use in commercial and industrial electrical distribution systems.

Standards and Certificates

KEP10 : IEC 60898-1 & IEC60947-2, KEMA, SEMKO, CE (10kA)

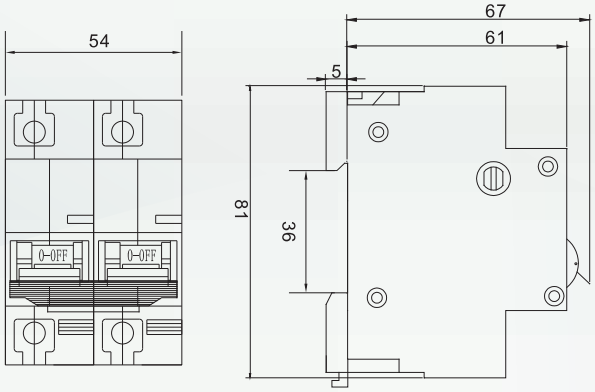
Specifications

Rated Voltage	Phase to Neutral 240V / Phase to Phase 400/415V ~
Characteristics	IEC60898 : B Curve (3 ~ 5In) / C Curve (5 ~ 10In) / D Curve (10 ~ 20In) IEC60947-2
Capacity	10kA
Poles	2P
Ampere	80, 100A
Frequency	50/60Hz
Calibration Temperature	30°C
Operating Temperature	-5°C to + 45°C
Protection Degree	IP20
Electrical Endurance	> 4,000 cycles
Mechanical Endurance	> 8,500 cycles
Weight (g.)	2P = 296g. (KEP10)

Wiring Capacity

Rigid Conductor	50mm^2 Maximum
Flexible Conductor	35mm^2 Maximum

Dimension



RCCB

Technical Description

Providing protection against overloads and short circuits current and protects people against earth fault current : direct or indirect contact, fire etc.

TRIP CHARACTERISTICS

The RCD employs the current balance principle which involves the supply conductors to the load (phase and neutral) wound onto a common transformer core to form the primary windings. Under normal conditions, the current in the phase conductor is equal to the current in the neutral and the vector sum of the current is zero.

In the event of an earth fault, an amount of current will flow to earth creating an out of balance situation in the transformer assembly. This out of balance detected by the secondary winding of the transformer will activate the trip mechanism at a pre-determined level. Single phase and neutral or three phases and neutral units (suitable for both 3 wire and 4 wire systems) ate available, the latter being suitable for balanced or unbalanced 3 phase loads.

The RCD tripping mechanism will operate at a residual current of between 50% - 100% of its rated tripping current. (Sensitivity)

RESIDUAL TRIPPING CURRENTS

10mA	Suitable for use in special applications where additional protection against contact is essential.
30mA	Tripping current to provide additional protection against direct contact shock.
100mA	Suitable for use against direct contact shock or where protection is guard against fire hazards etc.
300mA	Suitable for use in large installations where equipment protection are main considerations and high levels of earth leakage are experienced.

FAULT CURRENT SENSITIVITY

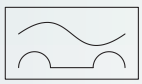
Semi-conductor devices are extensively integrated in eqipments in industries, commerce and in our homes. They can be found in control panels to computers to toys.

As equipments ate fed from the mains electrical supply, in the event of an earth of an earth fault, the presence of semi-conductors may result in the normal AC waveform being replaced by a non-sinusoidal fault current. In some cases, the waveform may be rectified. These waveforms are said to contain a pulsating DC component which can either partially desensitize a standard type AC RCD.

International standards IEC 1008 (RCCBs) and IEC 1009 (RCBOs) divide RCDs into two performance classes.

Type AC 

RCDs for which tripping is ensured for residual sinusoidal alterating currents, whether suddenly applied or slowly arising.

Type A 

RCDs for which tripping is ensured for residual sinusoidal alterating currents and residual pulsating direct currents, whether suddenly applied or slowly arising.

RCCB

KEPR2 Series

Functions

Detection and interruption of earth leakage current.

Application

Protect a circuit or an installation against dangerous Residual current.

Standards and Certificates

63A	IEC 61008-1, SEMKO, CE, KEMA, SIRIM, SNI
80A / 100A	IEC 61008-1, SEMKO, CE, KEMA, SIRIM, SNI (2P)

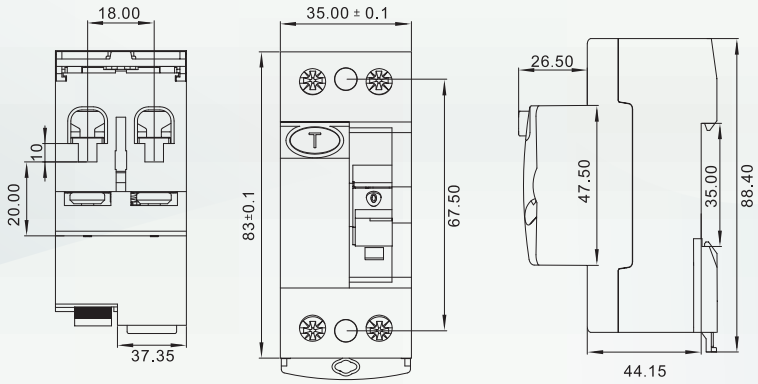
Specifications

Rated Voltage	Phase to Neutral 240V / Phase to 415V~
Characteristics	B Curve (3 ~ 5In) / C Curve (5 ~ 10In)
Capacity	6kA
Poles	2P
Ampere	63, 80, 100A
Rated Residual Operating Current	30mA
Frequency	50Hz
Calibration Temperature	30°C
Operating Temperature	-25°C to + 55°C
Protection Degree	IP20
Electrical Endurance	> 4,000 cycles
Mechanical Endurance	> 8,000 cycles
Weight (g.)	206g.

Wiring Capacity

Rigid Conductor	25mm^2 Maximum
Flexible Conductor	16mm^2 Maximum

Dimension



RCBO

KEPL2 Series (4.5kA) / KEPL1 Series (6kA)

Functions
Detection and interruption of earth leakage current, Over loads and short circuits.

Application
Commercial premises. Neutral conductor is switches on 2 module and unswitched on 1 module versions.

Standards and Certificates
IEC 61009-1, SEMKO, CE
KEPL2 Series
KEPL1 Series

KEPL2 Series

KEPL1 Series

Specifications

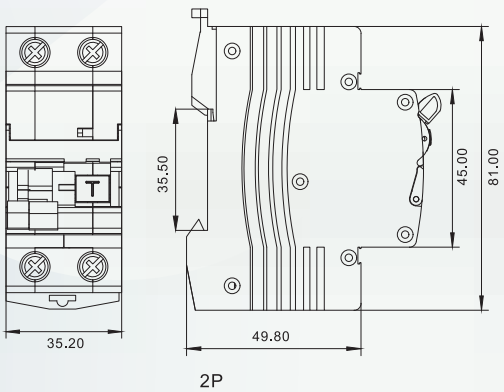
Rated Voltage	AC 240V
Characteristics	B Curve (3 ~ 5In) / C Curve (5 ~ 10In)
Capacity	4.5kA for KEPL2 6kA for KEPL1
Poles	1P (1P+N), 2P
Ampere	25, 32A for KEPL2 16, 20, 25, 32, 40A for KEPL1
Frequency	50Hz
Calibration Temperature	30°C
Operating Temperature	-25°C to + 55°C
Protection Degree	IP20
Electrical Endurance	> 4,000 cycles
Mechanical Endurance	> 8,000 cycles
Weight (g.)	1 module = 178g. (KEPL1), 2 module = 210g. (KEPL2)

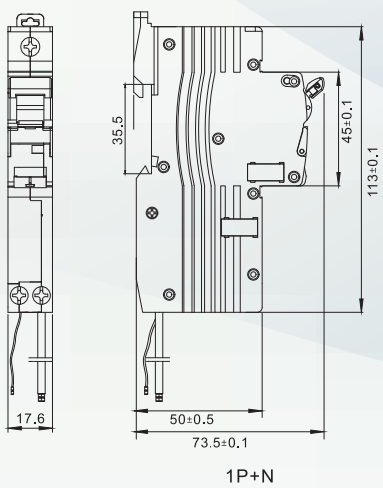
Wiring Capacity

Rigid Conductor	35mm² Maximum
Flexible Conductor	25mm² Maximum

Dimension

KEPL2 Series

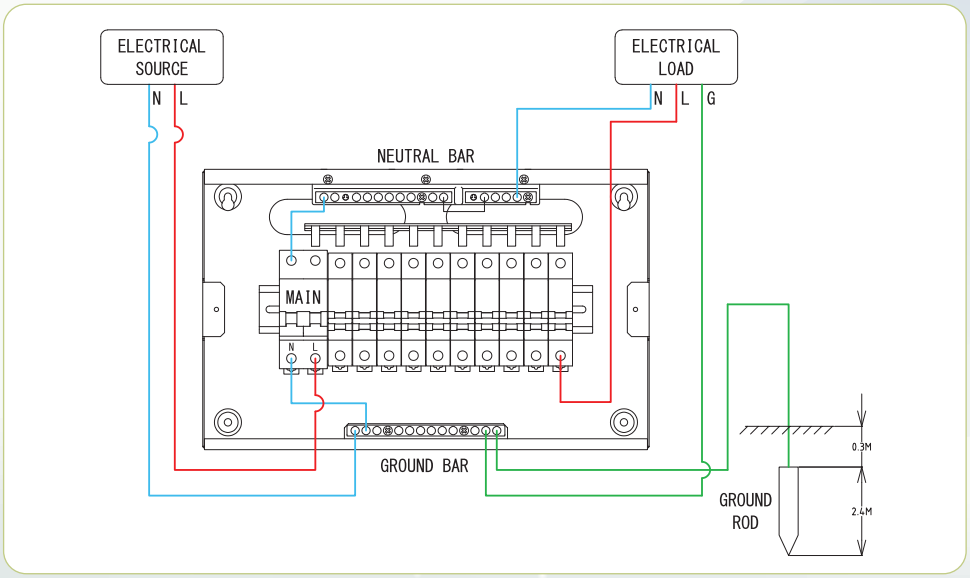




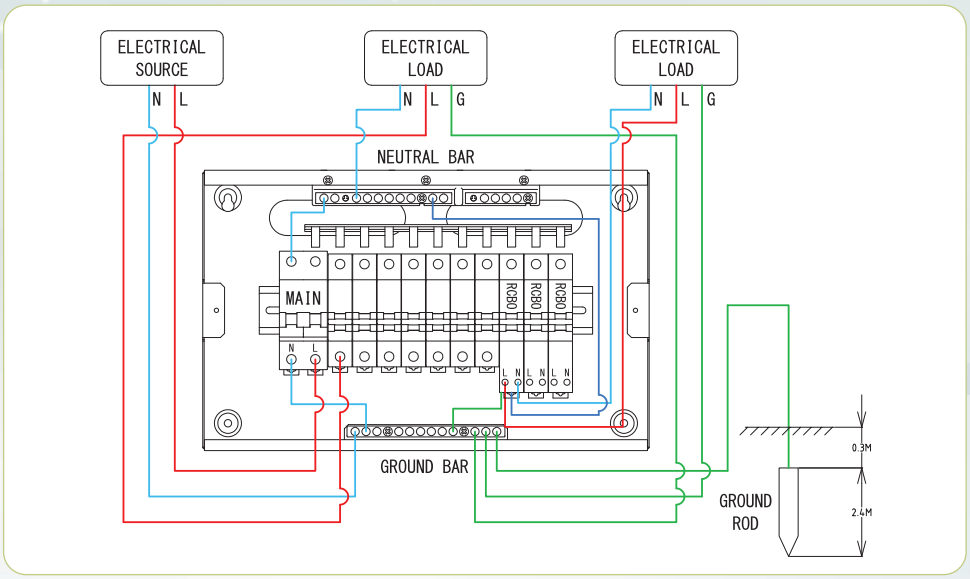
KEPL1 Series

WIRING DIAGRAM

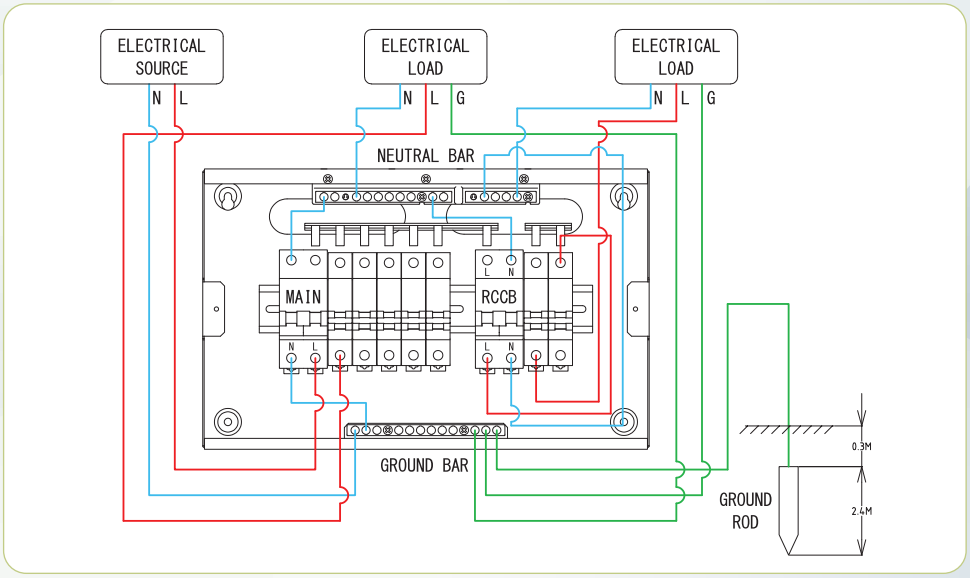
- **Wiring Diagram Main MCB 1 Phase Electrical System**



- **Wiring of 1 phase electrical system with separate sub-circuits Wiring Diagram Main MCB+Main RCBO**



- **Wiring of 1-phase electrical system with fire protection device to control sub-circuit groups Wiring Diagram Main MCB+Main RCCB**



Installation Guide

Guidelines for Selecting Wire Sizes and Breaker Sizes

- **Maximum Ratings of Overcurrent Protection Devices and Maximum Load According to the Size of the Electric Meter**

Electric meter sizes (Amps)	Maximum Rating of Main Circuit Breaker (Amps)	Maximum Load (Amps)		Minimum main wire size for air installation (copper/sq.mm) (PEA)
		MEA	PEA	
5 (15)	16	10	12	4
15 (45)	50	30	36	10
30 (100)	100	75	80	35

- **Maximum Ratings of Overcurrent Protection Devices and Maximum Load According to the Size of the Electric Meter**

Air Conditioner Size (1 Phase)	Sub-Circuit Breaker Size (Amps)	Wire Size (sq.mm) for Wall Installation	Wire Size (sq.mm) for PVC Conduit Wall Installation
9,000 BTU	10	1	1.5
12,000 BTU	16	1.5	2.5
18,000 BTU	20	2.5	4
24,000 BTU	25	4	6
30,000 BTU	32	6	10
36,000 BTU	40	10	10
50,000 BTU	50	10	16
60,000 BTU	63	16	25

- **Recommended Table for Selecting Sub-Circuit Breakers to Control Water Heaters**

Water Heater Size (1 Phase)	Sub-Circuit Breaker Size (Amps)	Wire Size (sq.mm) for Wall Installation	Wire Size (sq.mm) for PVC Conduit Wall Installation
1,800 Watt	10	1.5	2.5
2,500 Watt	16	1.5	2.5
3,500 Watt	20	2.5	4
4,000 Watt	25	4	6
6,000 Watt	32	6	10
9,000 Watt	50	10	16

- **Recommended Table for Selecting Sub-Circuit Breakers to Control Lighting and Electrical Outlets**

Sub-Circuit Breaker Size (Amps)	Wire Size (sq.mm) for Wall Installation	Wire Size (sq.mm) for PVC Conduit Wall Installation	Application
10	1.5	1.5	Lighting
16	1.5	1.5	Lighting
16	2.5	2.5	Electrical Outlet
20	2.5	4	Electrical Outlet

- The size of the circuit breaker for controlling lighting and electrical outlets depends on the suitability of electricity usage in each house. The total current usage in each circuit must not exceed the rated size of the sub-circuit breaker used to control that circuit.

MEMO

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