



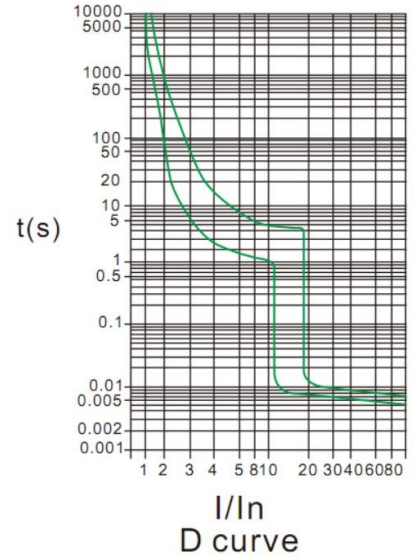
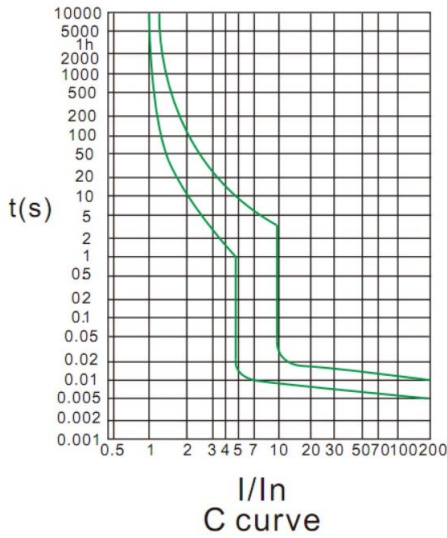
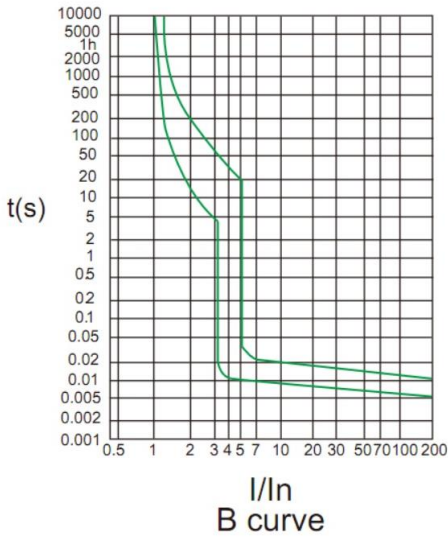
Kawamura Product Specification

- TECHNICAL DESCRIPTION
- MCB : Miniature Circuit Breaker
- RCBO : Residual Current Circuit Breaker with Overload Protection
- RCCB : Residual Current Circuit Breaker



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 ($3\sim 5 \times I_n$). 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 ($5\sim 10 \times I_n$). 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 motor. Instantaneous trip is ten to twenty times the rated current of the Supplementary Protector ($10\sim 12 \times I_n$). The higher instantaneous trip level prevents nuisance tripping, and components being protected can typically withstand higher fault currents without being damaged.



RCCB Technical Description

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

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 healthy 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) are 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 equipments in industries, commerce and in our homes. They can be found in control panels to computers to toys.

As equipments are 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 alternating currents, whether suddenly applied or slowly arising.

Type A

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





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

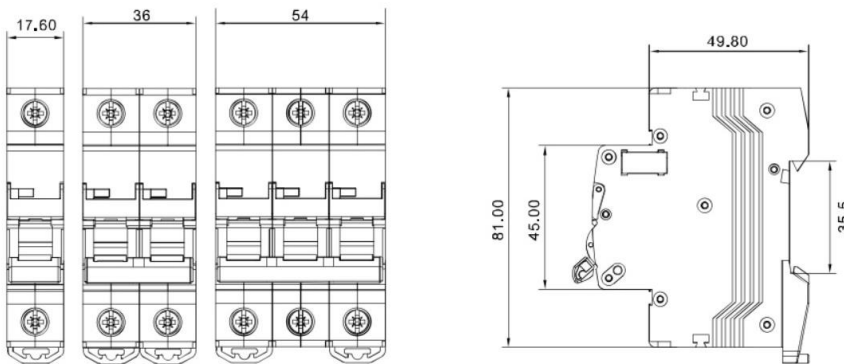
Rated Voltage	Phase to Neutral 230/240V / Phase to Phase 400/415V ~
Characteristics	B Curve (3~5In) / C Curve (5~10In) / D Curve (10~20In)
Capacity	6kA, 10kA
Poles	1P, 2P, 3P
Ampere	10, 16, 20, 25, 32, 40, 50, 63A
Frequency	50/60Hz
Calibration Temperature	30 °C
Operating Temperature	-25°C to +45°C
Protection 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 35mm² Maximum (6kA) / 35mm² Maximum (10kA)

Flexible Conductor 25mm² Maximum (6kA) / 25mm² 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)



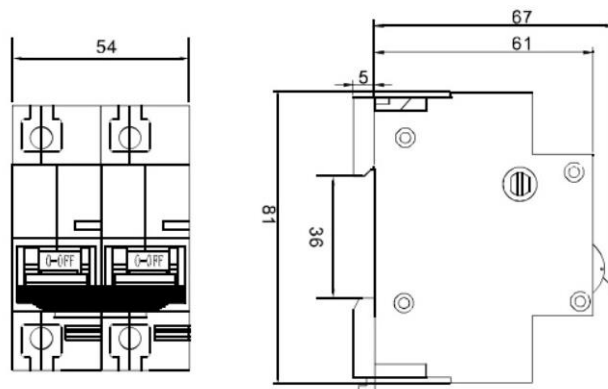
Specifications

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





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

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 10, 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)



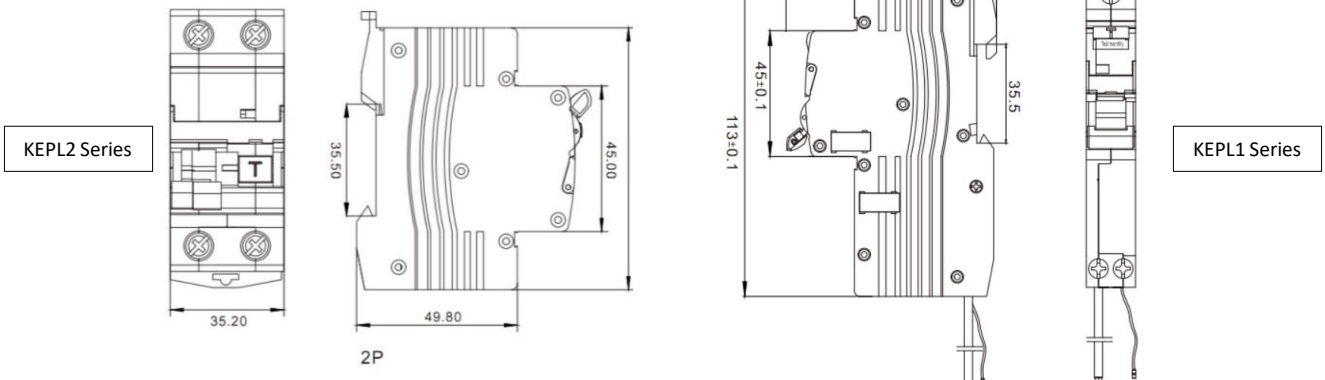
KEPL2 Series

KEPL1 Series

Wiring Capacity

Rigid Conductor	35mm ² Maximum
Flexible Conductor	25mm ² Maximum

Dimension





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 Phase 415V ~
Characteristics	B Curve (3~5I _n) / C Curve (5~10I _n)
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 25mm² Maximum
 Flexible Conductor 16mm² Maximum

Dimension

