ACL
CABLES

CIRCUIT PROTECTION DEVICES

MCB | RCD | ISOLATOR

VENUS SERIES

MCB

TECHNICAL DESCRIPTION

For use in commercial and industrial electrical distribution systems.
Protects against overloads and short circuits, switching and isolation.

TRIP CHARACTERISTICS

TYPE “B” CHARACTERISTICS

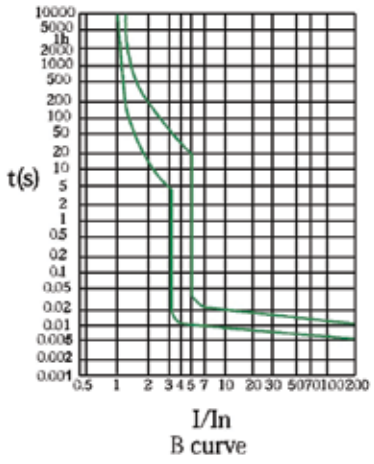
Developed primarily to protect conductors and low level signal devices such as PLCs. Instantaneous trip is three to five times the rated current of the Supplementary Protector (3~5 x In). The fast trip time of these devices minimizes damage to control circuit conductors from low-level faults.

TYPE “C” CHARACTERISTICS

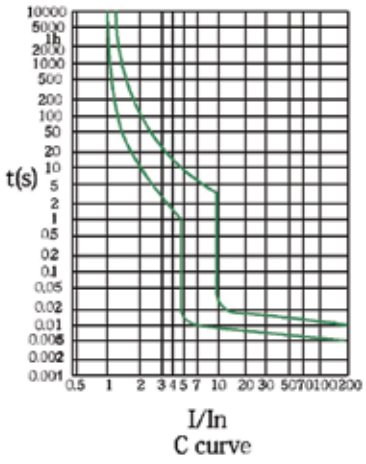
Developed primarily for applications with moderate inrush currents such as lighting, control circuits and appliances. Instantaneous trip is five to ten times the rated current of the Supplementary Protector (5~10 x In). The higher instantaneous trip level prevents nuisance tripping, and components being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

TYPE “D” CHARACTERISTICS

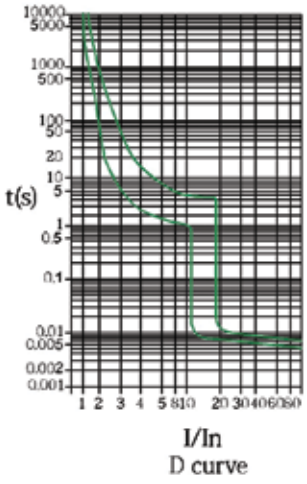
Developed primarily for applications with high inrush currents, i.e., transformers, and motors. Instantaneous trip is ten to twenty times the rated current of the Supplementary Protector (10~20 x In). The high instantaneous trip level prevents nuisance tripping, and components being protected can typically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



B curve



C curve



D curve

DC CIRCUITS USE

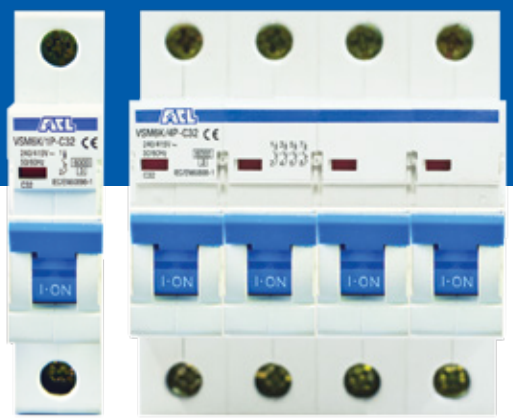
Thermal Characteristics for TECS breakers are unaffected by the current applied, that is either direct current or alternatiting current. The magnetic trip current value increases by 40%. Eg. In the case; a breaker of tripping characteristic B and 10A rated current, its magnetic tripping value will be between 30A and 50A in alternating current. The magetic tripping value for this very same breaker in direct current will be between 42.4A and 70.7A.

For DC service, the MCBs full rated breaking capacity can be achieved without any reduction in performance by connecting protected poles in series. For values up to 48V=, 1 protected pole can be used unimpaired of the breaking capacity value. Between 48 and 100V=, 2 protected poles series connected can be used without reduction in the breaking capacity.

MCB - VENUS SERIES (VS)

MINIATURE CIRCUIT BREAKERS FOR 6-63A

SPECIFICATION



Functions

Protection against overloads and short circuits, switching and isolation.

Application

For use in commercial and industrial electrical distribution systems.

Standards and Certificates

IEC 60898-1, KEMA, SEMKO, CE

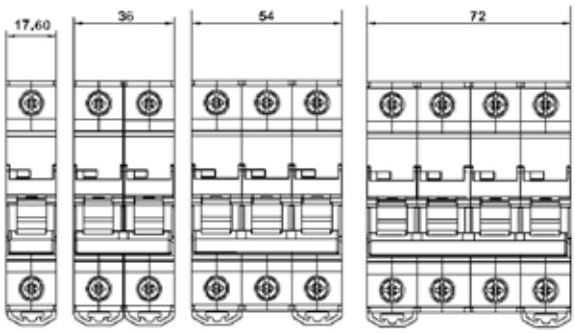
Wiring Capacity

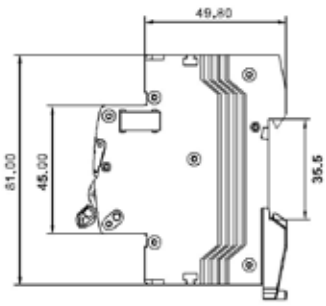
Rigid Conductor	35mm² Maximum
Flexible Conductor	25mm² Maximum

Available Range (Product Code / Model)

VSM6K/1P-C6	VSM6K/2P-C6	VSM6K/3P-C6	VSM6K/4P-C6
VSM6K/1P-C10	VSM6K/2P-C10	VSM6K/3P-C10	VSM6K/4P-C10
VSM6K/1P-C16	VSM6K/2P-C16	VSM6K/3P-C16	VSM6K/4P-C16
VSM6K/1P-C20	VSM6K/2P-C20	VSM6K/3P-C20	VSM6K/4P-C20
VSM6K/1P-C32	VSM6K/2P-C32	VSM6K/3P-C32	VSM6K/4P-C32
	VSM6K/2P-C40	VSM6K/3P-C40	VSM6K/4P-C40
	VSM6K/2P-C63	VSM6K/3P-C63	VSM6K/4P-C63

Rated Voltage	Phase to Neutral 230V/240V / Phase to Phase 400V/415V~
Characteristics	B Curve (3~5In) / C Curve (5~10In) / D Curve (10~20In)
Capacity	6kA
Poles	1P / 2P / 3P / 4P
Ampere	6 / 10 / 16 / 20 / 32 / 40 / 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	1P = 103g / 2p = 207g / 3P = 311g / 4P = 415g



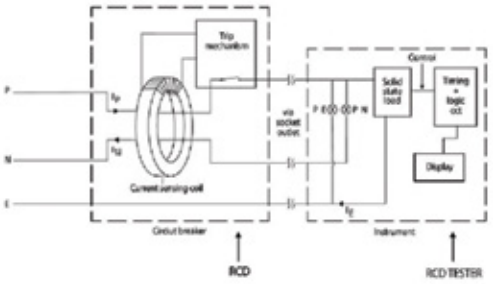


RCD

TECHNICAL DESCRIPTION

Providing protection against overload and short-circuit currents and protects people against earth fault currents: 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

010mA	Suitable for use in special applications where additional protection against contact is essential
030mA	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 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.

RCD - VENUS SERIES (VS)

SPECIFICATION

Functions

Detection and interruption of earth leakage current.

Application

Protect a circuit or an installation against dangerous residual current.

Standards and Certificates

IEC 61008-1, KEMA, SEMKO, CE

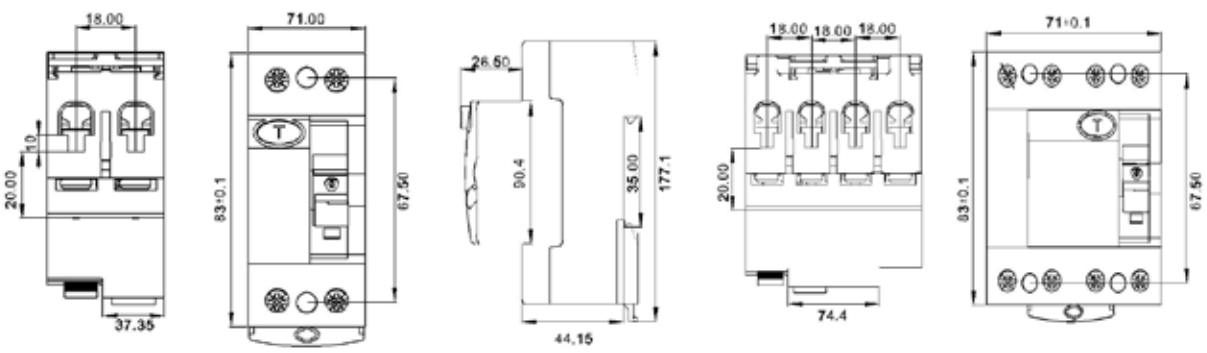
Wiring Capacity

Rigid Conductor	25mm² Maximum
Flexible Conductor	16mm² Maximum

Available Range (Product Code / Model)

VSR/2P/40-30	VSR/4P/40-30	VSR/4P/63-30

Rated Voltage	Phase to Neutral 240V / Phase to Phase 415V
Capacity	6kA
Poles	2P / 4P
Ampere	40 / 63A
Rated Residual Operating Current	30mA
Residual Current Characteristics	A / AC
Frequency	50/60Hz
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	2p = 206g / 4P = 412g



ISOLATOR - VENUS SERIES (VS)

SPECIFICATION

Functions

Switching and isolation of circuits.

Application

Control systems, distribution systems.

Standards and Certificates

IEC 60947-3

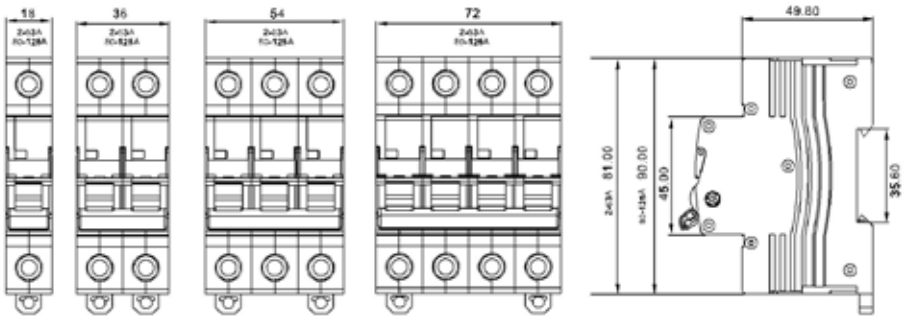
Wiring Capacity

	2-63A
Rigid Conductor	35mm² Maximum
Flexible Conductor	25mm² Maximum

Available Range (Product Code / Model)

VSI/2P/40	VSI/4P/40	VSI/4P/63

Rated Voltage	Phase to Neutral 230/240V / Phase to Phase 400/415V~
Capacity	6kA
Poles	2P / 4P
Ampere	40 / 63A
Frequency	50/60Hz
Calibration Temperature	30˚C
Operating Temperature	-25˚C to +55˚C
Protection Degree	IP20
Electrical Endurance	>10,000 Cycles
Mechanical Endurance	>20,000 Cycles
Weight	2P = 190g / 4P = 381g (2-63A)



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