

RESIDUAL CURRENT CIRCUIT BREAKER



IS: 8828

**RoHS**
Compliant

Благодаря высокому быстродействию, немецкие дифференциальные автоматы VMtec обеспечивают эффективную защиту человека от поражения электрическим током в случае его прикосновения к токоведущим частям или оказавшимся под напряжением в результате повреждения изоляции нетокведущих частей.

Дифференциальный автомат срабатывает в обоих случаях - как при утечке тока на землю, так и при коротких замыканиях и перегрузке. Подобно устройствам УЗО, дифференциальные автоматы VMtec выпускаются рассчитанными на разный рабочий ток и на разный ток утечки.

Технические характеристики

Standards		EN/IEC 6108-1	
Residual tripping characteristics			AC
Tripping time at $I_{\Delta n}$	Instantaneous	ms	<40
	Selective	ms	>150
Rated current		A	25, 40, 63
Rated residual current $I_{\Delta n}$		mA	30, 100, 300
Calibration temperature		°C	30
Number of poles versus modules			1
Rated voltage U_n	2P AC	V	240
	4P AC	V	415
Frequency		Hz	50/60
Maximum service voltage U_{bmax}		V	2P=265 / 4P=455
Minimum service voltage U_{bmin}		V	2P=100 / 4P=190
Power supply			Top / Bottom
Rated making and breaking capacity (Im)		A	500 (or 10xIn)
Residual making and breaking capacity (I Δ m)		A	500 (or 10xIn)
Conditional short-circuit capacity (Inc)		A	10000 fuse 100A gLgG
Conditional residual short-circuit capacity (I Δ c)		A	10000 fuse 100A gLgG
Grid distance (safety distance between two devices)		mm	35
Isolator application			yes
Insulation degree	Insulation voltage	V (DC)	440
	Shock voltage (1.2/50 μ s)	kV	6
	Insulation resistance	m Ω	1000
	Dielectric strength	V	2500
Shock resistance (in x, y, z direction) (EN / IEC 60077/16.3)		40g, 18 shocks 5 ms	
Vibration resistance (in x, y, z direction; EN / IEC 60068-2-6)		1.5g, 30 min, 0...80Hz	
Endurance	electrical at U_n, I_n		10000
	mechanical at U_n, I_n		20000
Protection degree (outside/inside electrical enclosure) with door			IP20 / IP40
Self extinguish degree (according to UI94)			V2
Tropicalisation (acc. to EN/IEC 60068-2, DIN 40046)		°C/RH	+55 / 95%
Pollution degree (acc. EN/IEC 60947-1)			3
Operating temperature			AC (-5 ... +60)
Storage temperature		°C	-25...+70
Terminals capacity	Rigid cable min/max (top)	mm ²	1.5/35
	Flexible cable min*/max (top)	mm ²	1.5/25
	Rigid cable min/max (bottom)	mm ²	1.5/35
	Flexible cable min*/max (bottom)	mm ²	1.5/25
	(*Flexible cable 0.75/1/1.5 mm ² with cable lug)		
Busbars systems	Pin		yes
	Fork		yes
CE marking			yes
Torque	Top / Bottom	Nm	5/5

IEC61008



Performance



Wiring Diagram



In / I Δ n



Terminal Connection

Type AC



Thermal setting I _n	A	25, 40, 63
Residual current I Δ _n	mA	30, 100, 300
Rated voltage AC U _n	V	2P : 240; 4P : 415
Minimum operating voltage U _{bmin}	V	2P : 100; 4P : 190
Mechanical/electrical endurance		20000 / 10000
Tropicalisation acc.to EN/IEC 60068-2-28/2-30 and DIN 40046		95%RH at 55°C
Terminal capacity Δ exible/rigid cable	mm ²	25/35
Poles		2, 4
Nuisance tripping resistance		250A 8/20us; 200A 0.5us - 100kHz
Ambient temperature	°C	-5 upto 40
Weight	g	2P : 220; 4P : 385

Short-circuit Capacity

Acc. to EN/IEC 61008-1	I _m = 500A
Making and breaking capacity	I _{?m} $\geq$ 500A from 16 upto 40A I _{?m} = 10I _n from 63 upto 100A
Short-circuit capacity	I _{nc} = 10000A at 240/415V fuse 80A gG

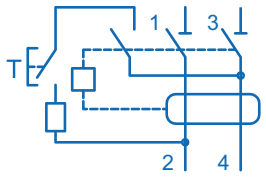
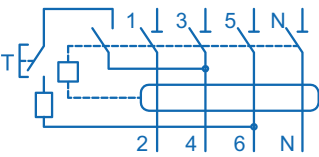
Normal operation and mounting requirement

1. Ambient temperature -5°C ~ +40°C .Altitude above sea level less than 2000 m.
2. Humidity not exceeding 50% at 40°C and not exceeding 90% at 25°C.
3. Installation class II or III.
4. Pollution degree 3.
5. All equipments used should be properly earthed.
6. For right operation should ensure that the neutral conductor on the load side of the VMCB must not be linked to earth. Otherwise tripping may be impaired or nuisance tripping may occur.
7. Installation method DIN Rail mounting type.
8. Product should be installed vertically at the place where there shall be no severe impact and vibration.
9. The product is switched on when the handle is at upper position.

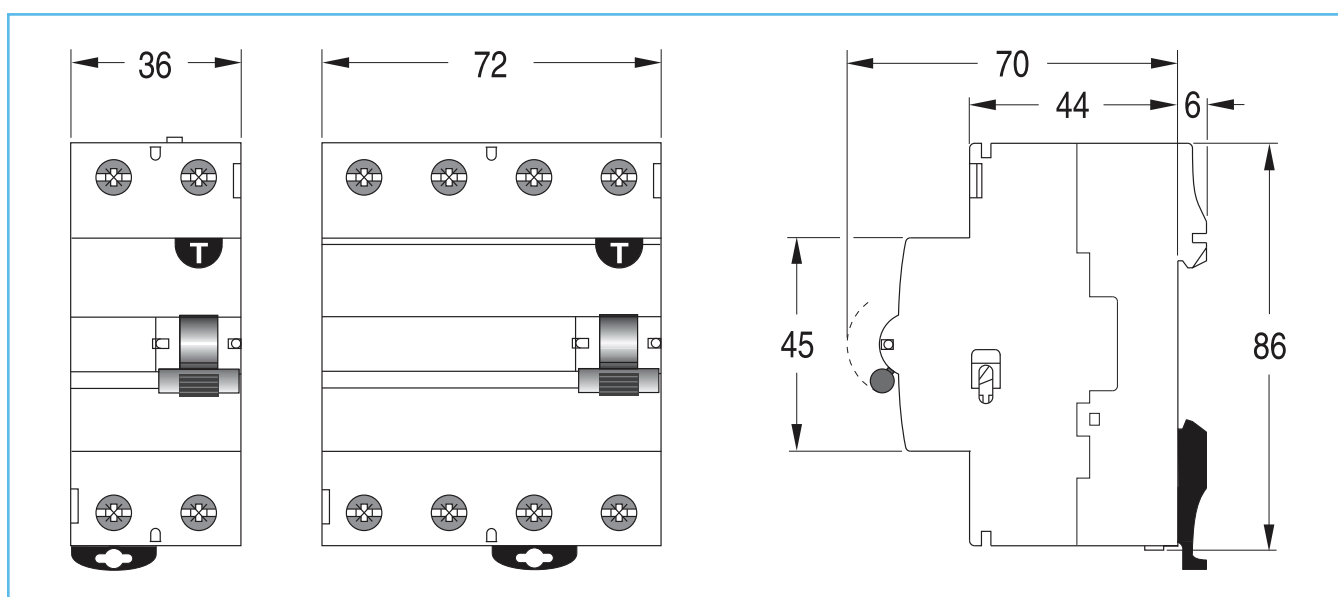
VMCB Tripping Cause Detection & Remedy

1. Switch OFF all the VMBs connected to the circuit downstream the VMCB.
2. Switch ON the VMCB and switch ON the VMBs one by one.
3. During switching ON of a particular circuit VMCB keeps tripping frequently.
4. In this circuit the fault persists.
5. Isolate the faulty circuit, correct the fault. Now the VMCB will not trip.

Selection

Description		Rated Current	Sensitivity	Reference
Double Pole		25	30mA 100mA 300mA	VMRB2P25A30 VMRB2P25A100 VMRB2P25A300
		40	30mA 100mA 300mA	VMRB4P25A30 VMRB4P25A100 VMRB4P25A300
		63	30mA 100mA 300mA	VMRB2P40A30 VMRB2P40A100 VMRB2P40A300
Four Pole		25	30mA 100mA 300mA	VMRB4P40A30 VMRB4P40A100 VMRB4P40A300
		40	30mA 100mA 300mA	VMRB2P63A30 VMRB2P63A100 VMRB2P63A300
		63	30mA 100mA 300mA	VMRB4P63A30 VMRB4P63A100 VMRB4P63A300

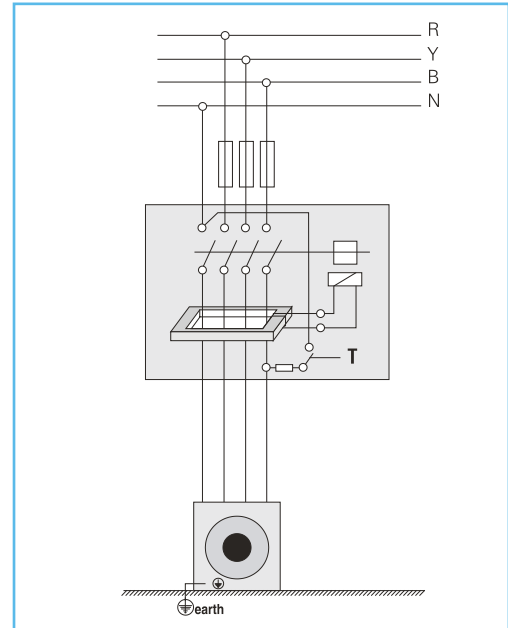
Dimensional Drawing



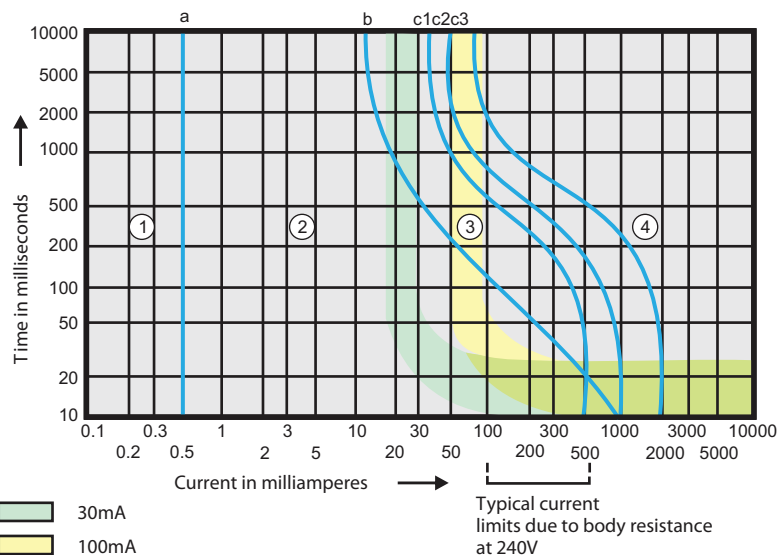
Working Principle

The VMCB works on the current balance principle. The supply conductors are passed through a torroid and form the primary windings of a current transformer. Its secondary winding is connected to a highly sensitive electromagnetic trip relay, which operates the trip mechanism.

In a healthy circuit, sum of the current in phases, is equal to the current in the neutral and the vector sum of all current is equal to zero. If there is any insulation fault in the current and leakage current flows to earth, the current do not balance and their vector sum is not equal to zero. This imbalance is detected by the core balanced current transformer, the VMCB is tripped and supply to load is interrupted.



Sensitivity Selection Criteria



Sensitivity

Application

30mA	Designed for additional protection against direct contact. The 30 mA VMCB protects against leakage currents and indirect contact with earth loop impedance up to 1667 Ohms.
100mA	Is suitable for protection against indirect contact and leakage current for larger installations. The 100 mA VMCB's operate within 30 ms, but do not provide the same level of personal protection as the 30 mA units. The 100 mA VMCB protects against leakage currents and indirect contact with earth loop impedance up to 500 ohms.
300mA	A less sensitive protection device suitable for large installations having high levels of leakage current. 300 mA VMCB's protect against leakage current and indirect contact up to 167 ohms earth loop impedance.