

**TECHNICAL SPECIFICATION:**

Part No.:		VM110-00-00	VM110-00-21	VM110-00-22	
Function		Phase Control	Phase and Voltage Control		
Supply Voltage (≡)		208 to 480 Vac, 3 Phase 3 Wire (-12% to +10% of supply)			
Frequency		47 to 63 Hz			
Power Consumption		4.5 VA (Max.)			
Adjustable Nominal Voltage (≡)		N.A.	208 - 220 - 380 - 400 - 415 - 440 - 480 Vac		
Trip Levels	Under Voltage	N.A.	-5 to -25% of supply		
	Over Voltage	N.A.	5 to 25% of supply		
	Asymmetry	N.A.	10% fixed		
Setting Accuracy		± 5% of full scale			
Setting Accuracy (±10% of full scale)	Power ON Delay	<1.5 s	<1.5 s	5 s fixed	
	Operate Time	<750 ms	<550 ms to 100 s	5 s fixed	
	Release Time	UV, OV and Asymmetry	~ 550 ms	5 s fixed	<0.55 to 100 s
		Phase Reverse	<65 ms		
Phase Loss		For Phase Loss Fault in the absence of Motor load Release Time is <65 ms.			
LED Indications	R/≡	Healthy	R Continuous ON (Green LED)	≡ Continuous ON (Green LED)	
		Ph Reverse	R Flashing	≡ Flashing	
		Asymmetry	N.A.	≡ Continuous ON	
		UV, OV	N.A.	N.A.	
	OV	N.A.	Over Voltage		
	UV	N.A.	Under Voltage		
	AS	N.A.	Asymmetry		
ALL LEDES	OFF	Phase fail or higher cut off (>560 Vac) or lower cut off (<175 Vac) (for VM110-00-00 lower cut off is <138 Vac)			
	Flashing	N.A.	≡ Ref. Pot changed during running conditions		
Relay Output	Contact Rating		1 C/O, 5A (Res.) at 250 Vac / 30 Vdc		
	Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V; Rated Current (Ie): 3.0/1.5 A		
		DC - 13	Rated Voltage (Ue): 24/125/250 V; Rated Current (Ie): 2.0/0.22/0.1 A		
Contact Material		Ag Alloy			
Mechanical Life Expectancy		3 x 10 <sup>6</sup> Operations			
Electrical Life Expectancy		1 x 10 <sup>5</sup> Operations			
Operating Temperature		-15°C to + 60°C			
Storage Temperature		-20°C to + 80 °C			
Humidity (Non-Condensing)		5 to 95 % (Non-Condensing)			
Max. Operating Altitude		2000 m			
Degree of Protection		IP20 for Terminals, IP40 for Housing and IP50 for front fascia			
Pollution Degree		II			
Housing		Flame Retardant UL 94-V0			
Mounting		Base / Din-Rail (35 mm Symmetrical)			
Dimensions in mm (W x H x L)		17.5 X 58.5 X 90			
Weight (Unpacked)		70 g Approx.			
Certifications		UL, CE, RoHS			

**Voltage Monitoring Relay Series-VM110**
**Part No.:**
**VM110-00-00  
VM110-00-21  
VM110-00-22**

**Caution :**

1. Do not touch the terminals while power is being supplied.
2. Tighten terminal screws with the specified torque.
3. Always follow instruction stated in product leaflet.
4. Before installation, check to ensure that specifications agree with intended application.
5. Installation to be done by skilled electrician.
6. Suitable dampers should be provided in the event of excessive vibrations.

**Suitability for use :**

These are products with auto reset and auto switch on, hence never use the products for an application involving significant risk to life without ensuring that the system as a whole has been designed to address the risks and that our products are properly rated and installed for the intended use within the entire system or equipment.

**Notice :**

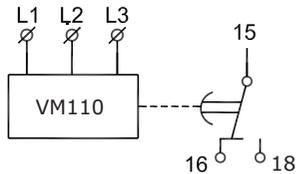
Product innovation being a continuous process, we reserve the right to alter specifications without any prior notice.

## Voltage Monitoring Relay Series-VM110

### MAIN FEATURES :

- Controls own supply voltage.
- Multi-voltage from 3x208 to 3x480 Vac.
- LED status indication.
- SPDT Relay output (5 A Resistive).
- 30 to 40 ms instant tripping for 2<sup>nd</sup> and 3<sup>rd</sup> phase interruption.
- Din-Rail & Base mounting.

### CONNECTION DIAGRAM



### FUNCTIONAL DESCRIPTION:

#### VM110-00-00

Controls:-

1. Correct sequence of three phases.
2. Failure of any of three phases when voltage falls below rated minimum of threshold.

#### VM110-00-21/VM110-00-22

Controls:-

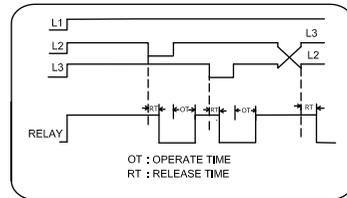
1. Correct sequence of the three phases.
2. Failure of any of the three phases.
3. Under-voltage and Over-voltage adjustable from 5 to 25% of Un

- (Up to - 12% across 3x208 Vac Range;
- Up to - 16% across 3x220 Vac Range;
- Up to +20% across 3x440 Vac Range;
- Up to +10% across 3x480 Vac Range)

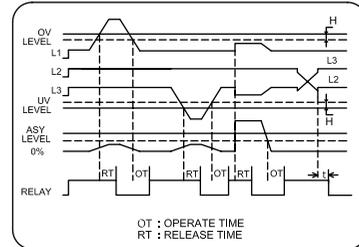
4. Failure due to asymmetry fixed at 10%.

### FUNCTION DIAGRAM

#### VM110-00-00



#### VM110-00-21/VM110-00-22



### Note:

1. In case of VM110-00-00, phase imbalance levels are fixed. So for large motors with excessive back e.m.f. relay suitability to be checked by the user.
2. Minimum threshold supply voltage of tripping is 140 Vac for VM110-00-00.

### Terminal Details :

	0.5 Nm (4.4lb.in) to 0.7 Nm (6.2lb.in)
	2 x 2.5 mm <sup>2</sup> Solid / Standard Wire
AWG	20 to 12

### CERTIFICATION :

#### EMI/EMC :

Harmonic Current Emissions	IEC 61000-3-2	Class A
ESD	IEC 61000-4-2	Level II
Radiated Susceptibility	IEC 61000-4-3	Level III
Electrical Fast Transient	IEC 61000-4-4	Level IV
Surge	IEC 61000-4-5	Level III
Conducted Susceptibility	IEC 61000-4-6	Level III
Voltage Dips & Interruptions(AC)	IEC 61000-4-11	

Radiated Emission	CISPR 11	Class A
Conducted Emission	CISPR 11	Class A

#### Safety:

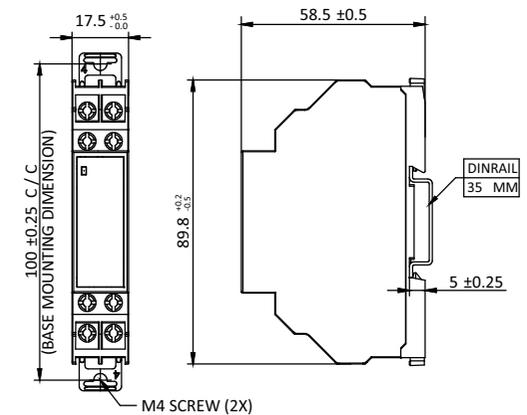
Test Voltage Between I/P & O/P	IEC 60947-5-1	2 kV
Impulse Voltage Between I/P & O/P	IEC 60947-5-1	4 kV
Single Fault	IEC 61010-01	Level IV
Insulation Resistance	UL 508	>50 kΩ
Leakage Current	UL 508	<3.5 mA

#### Environmental:

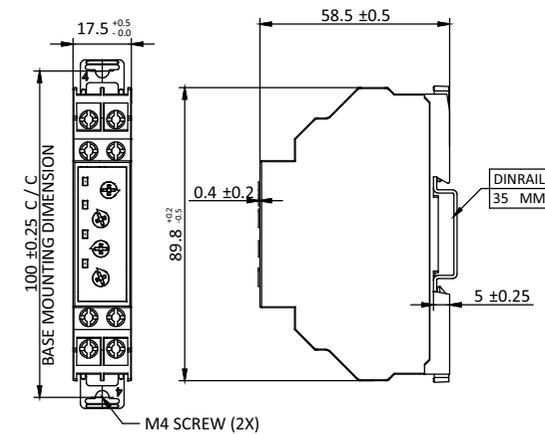
Cold Heat	IEC 60068-2-1	
Dry Heat	IEC 60068-2-2	
Vibration	IEC 60068-2-6	10 Hz - 55 Hz
Repetitive Shock	IEC 60068-2-27	40 g, 6 ms
Non-repetitive Shock	IEC 60068-2-27	30 g, 15 ms

### OVERALL MOUNTING DIMENSIONS (in mm)

#### VM110-00-00



#### VM110-00-21, VM110-00-22



### E-Waste Regulatory notice:



Kindly treat, recycle or dispose of this equipment in an environmentally sound manner after end of life, as per WEEE (Waste Electrical and Electronic Equipment) regulations or as per local norms; or hand it over to Littelfuse, Inc. through website [www.littelfuse.com](http://www.littelfuse.com).