



Voltage and frequency control relay PMVF10



moduLo

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Voltage and frequency monitoring relay



PMVF10

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Order code	Rated voltage to be controlled Ue	Qty per pkg	Weight
	[V]	n°	[kg]

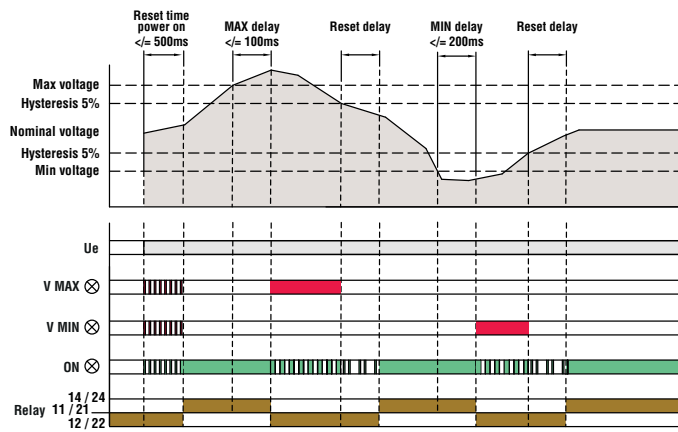
Three-phase low-voltage system, with or without neutral. Compatible for single-phase low-voltage system. Minimum and maximum AC voltage and frequency plus ROCOF.

PMVF10	230/400VAC 50Hz	1	0.254
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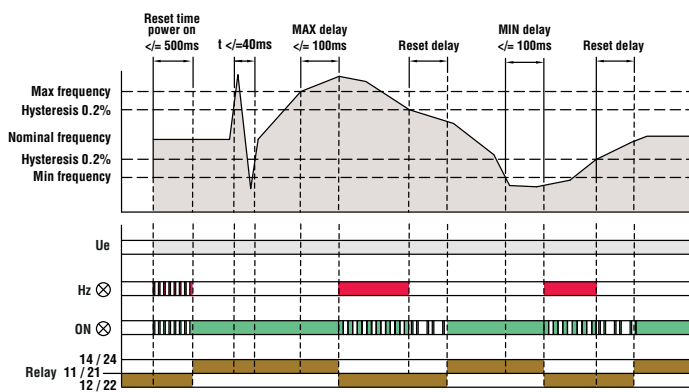
Status indication table

Anomaly	Green LED "ON"	Red LED "Vmin"	Red LED "Vmax"	Red LED "Hz"	Relay output 1 and 2
None	Constantly lighted	Switched off	Switched off	Switched off	Energised
Min/max frequency or ROCOF	Flashing	Switched off	Switched off	Constantly lighted	De-energised
Voltage <Vmin	Flashing	Constantly lighted	Switched off	Switched off	De-energised
Voltage >Vmax	Flashing	Switched off	Constantly lighted	Switched off	De-energised

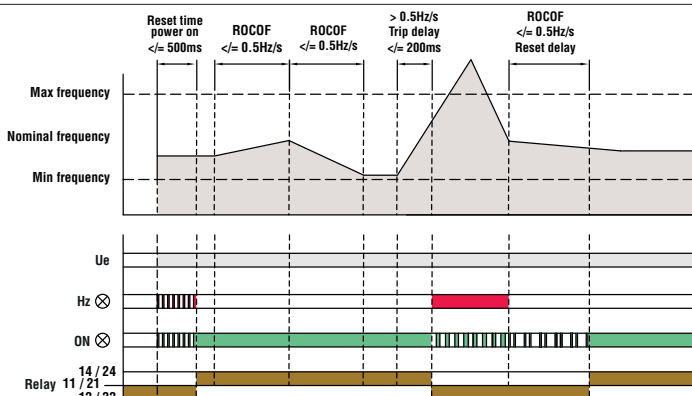
Function diagram of voltage tripping



Function diagram of frequency tripping



Function diagram of ROCOF tripping



General characteristics

The monitoring relay PMVF10 is designed and developed to satisfy requirements of the local power authority (ENEL guide edition 2.1 of 12/2010). The authority imposes that the following automatic controls be done whenever an independent power source (e.g. wind turbine or photovoltaic systems, diesel generating set, etc.) is connected in parallel with the electrical grid (local low-voltage utility):

- Limits of minimum and maximum voltage values
- Limits of minimum and maximum frequency values
- Limit of the Rate Of Change Of Frequency (ROCOF).

When at least one of these limits are not respected, abnormal conditions need to be signalled using a contact.

Typically, the contact is used to isolate the independent power source from the electrical grid.

The following protections are available:

- Maximum voltage
- Minimum voltage
- Maximum frequency
- Minimum frequency
- ROCOF.

TRMS (True-rms) measurements of this relay allow to obtain a correct operation even in presence of harmonic voltages.

The device has fixed tripping thresholds for minimum and maximum voltage while those for frequency can be selected between two predefined values using a rotary switch. A reset delay is adjustable by potentiometer.

Operational characteristics

- Self powered by the system to control
- Compatible for:
 - Three-phase systems (400VAC 50Hz), with or without neutral
 - Single-phase systems (230VAC 50Hz)
- TRMS measurements
- 2 relay outputs, each with one changeover contact, rated 8A 250VAC in AC1
- Modular DIN 43880 housing (3 module)
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

PROTECTIONS

Protection for maximum voltage:

- Threshold $\ge 1.13U_e$ (fixed)
- Tripping time $\le 0.1s$ (fixed).

Protection for minimum voltage:

- Threshold $\le 0.825U_e$ (fixed)
- Tripping time $\le 0.2s$ (fixed).

ADJUSTMENTS

"Mode"

Multifunction rotary switch:

- Control of phase or phase-to-phase voltage values
- Frequency threshold ± 0.3 or $\pm 1Hz$
- ROCOF ($>0.5Hz/s$) ON-OFF.

"Reset delay"

Resetting time 0.1-30s.

STATUS INDICATIONS

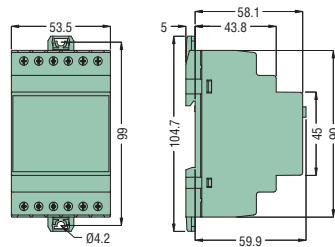
- 1 green LED for system within limits (flashing when out of limits)
- 3 red LEDs for minimum and maximum voltage, minimum and maximum frequency and ROCOF.

Certifications and compliance

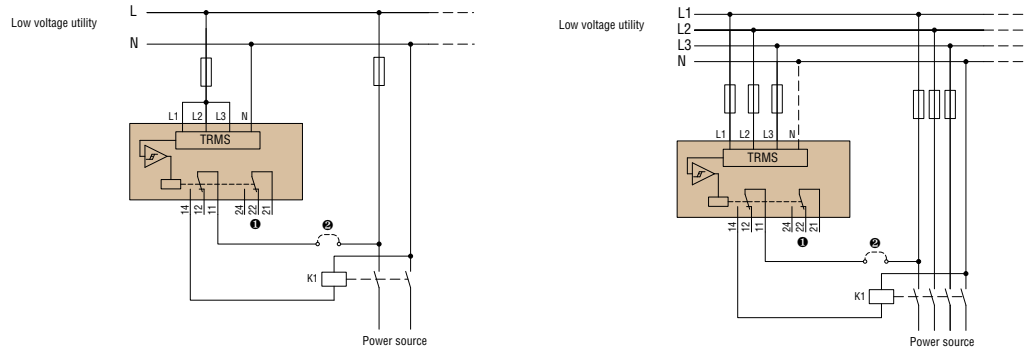
Certifications obtained: local power authority (ENEL Guide, edition 2.1 10/2010).

Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 610006-3.

Dimensions [mm]



Wiring diagrams



- ❶ Contact available for signalling, contactor relay or inverter stop.
- ❷ Remote disconnection device.

Technical characteristics

TYPE	PMVF10
TRIPPING THRESHOLDS FOR VOLTAGE	
Tripping for maximum voltage	113% of rated voltage U_e
Tripping for minimum voltage	82.5% of rated voltage U_e
Voltage threshold hysteresis	5%
Tripping delay for maximum voltage	≤ 0.1 s
Tripping delay for minimum voltage	≤ 0.2 s
TRIPPING THRESHOLDS FOR FREQUENCY	
Frequency threshold tripping	± 0.3 Hz or ± 1 Hz configurable
Frequency threshold hysteresis	0.2%
Tripping delay	≤ 100 ms
Transient immunity time	≥ 40 ms
ROCOF threshold	≥ 0.5 Hz/s
ROCOF hysteresis	25 mHz/s
ROCOF tripping delay	≤ 200 ms
ADJUSTABLE DELAYS	
Reset delay	0.1-30 s
AUXILIARY SUPPLY	
Rated supply voltage (U_s)	230VAC / 400VAC
Operating range	0.7-1.3 U_e
Rated frequency	50 Hz
Power consumption/dissipation max	27VA / 1.9W
Resetting	Automatic
Reset time at power up	≤ 500 ms
RELAY OUTPUTS	
Number of relays	2
Contact arrangement	1 changeover each
Rated operational voltage	250VAC
Maximum switching voltage	400VAC
Conventional free air thermal current (I_{th})	8A
Designation per IEC/EN 60947-5-1	B300
Electrical life (with rated load)	10^5 cycles
Mechanical life	30×10^6 cycles
CONNECTIONS	
Maximum tightening torque	0.8 Nm (7 lbin)
Conductor cross section min...max	0.2...4.0 mm ² (24...12 AWG)
INSULATION (input-output)	
Rated insulation voltage	400V
AMBIENT CONDITIONS	
Operating temperature	-20...+60°C
Storage temperature	-30...+80°C
HOUSING	
Material	Self-extinguishing polyamide



2011



Fuse holders
1000 VDC



DC fuses 10x38



Modular digital multimeters



Flush mount digital multimeters
and power analyzers



Energy meters



Switching battery chargers





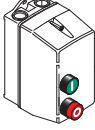





















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Planet Switch

Planet Din

Planet Logic

-  Motor protection circuit breakers
-  Switch disconnectors
-  Contactors
-  Motor protection relays
-  Electromechanical starters
-  Control and signalling units
-  Limit, micro and foot switches
-  Rotary cam switches
-  Modular contactors
-  Time relays
-  Protection relays
-  Level control relays
-  Earth leakage relays
-  Fuse holders
-  Metering instruments and current transformers
-  Soft starters
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-  Automatic power factor controllers
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