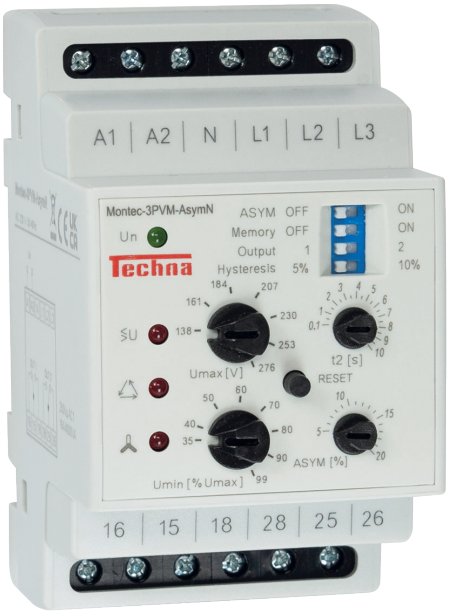
Montec-3PVM-Asym/AsymN

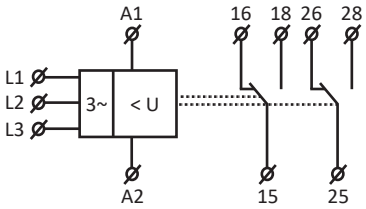
3 Phase Voltage Monitoring Relay with Phase Sequence, Failure and Asymmetry Detection



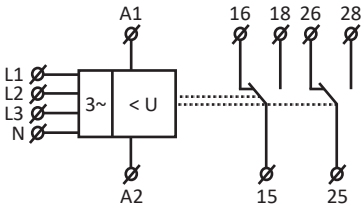
These relays monitor overvoltage, undervoltage, phase sequence, phase failure and phase voltage asymmetry in 3 Phase AC systems. The Montec-3PVM-Asym is for circuits without neutral and the Montec-3PVM-AsymN is for circuits with neutral.

- Voltage in 2 levels (undervoltage and overvoltage) in range 138 - 276V (3x 400V / 230V) or 280 - 480V (3x 400V)
- Phase Asymmetry (can be switched off), Phase Sequence and Phase Failure
- Adjustable "MEMORY" function
- Selectable function of second relay (independent / parallel)
- Adjustable delay for short transients for each level independently
- Galvanically separated supply voltage AC 110V, AC 400V, AC 230V, AC/DC 24V
- Output contact: 2 x changeover 16A / 250V AC1
- Three module width, DIN-Rail mounting

Montec-3PVM-Asym



Montec-3PVM-AsymN



Montec-3PVM-Asym/AsymN Technical Specification

	Montec-3PVM-Asym	Montec-3PVM-AsymN
Supply Terminals	A1 - A2	
Supply Voltage	110Vac, 230Vac, 400Vac, 24Vac/dc (AC 50 - 60Hz)	
Consumption max.	5VA / 2.5W (110Vac, 230Vac, 400Vac), 2VA / 1.4W (24Vac/dc)	
Max. Dissipated Power (Un + Terminals)	6.5W (110Vac, 230Vac, 400Vac), 5.5W (24Vac/dc)	
Supply Voltage Tolerance	-15%, +10%	
Voltage Set	3x 400V / 50Hz	3x 400/230V / 50Hz
Monitored Terminals	L1, L2, L3	L1, L2, L3, N
Upper Voltage Level	240 - 480Vac	138 - 276Vac
Lower Voltage Level	35 - 99% Umax	
Hysteresis	Adjustable 5% or 10% of Set Value	
Asymmetry	5 -20%	
Changeover Contacts	2 x Changeover / SPDT (AgNi / Silver Alloy)	
Rated Current	16A / AC1	
Switching Capacity	4000VA / AC1, 384W / DC	

Montec-3PVM-Asym/AsymN Ordering Scheme

Montec — 3PVM — Asym

Supply Terminals:
Asym = L1, L2, L3
AsymN = L1, L2, L3, N

Techna MONITORING RELAYS

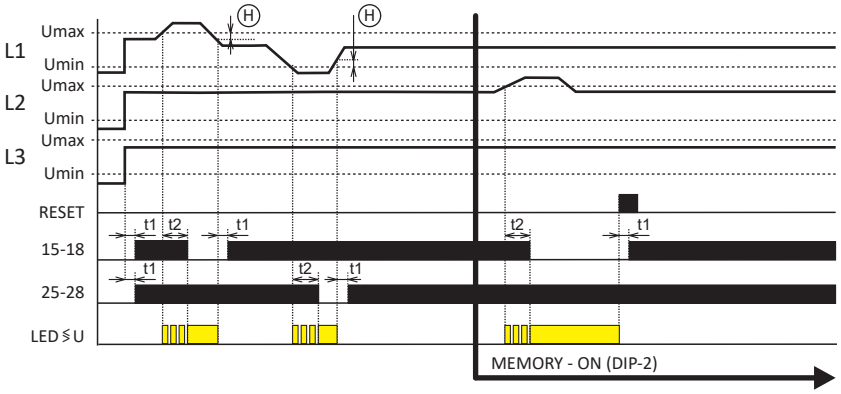
Montec-3PVM-Asym/AsymN Technical Specification

	Montec-3PVM-Asym	Montec-3PVM-AsymN
Inrush Current	30A / < 3s	
Switching Voltage	250Vac / 24Vdc	
Mechanical Life	15,000,000 Cycles	
Electrical Life (AC1)	35,000 Cycles	
Max. Permanent Voltage Overload	3x 480V	
Peak Voltage Overload < 1ms	600V < 1ms	350V < 1ms
Time Delay T1	Fixed, 200ms max.	
Time Delay T2	Adjustable, 0.1 - 10s	
Setting Accuracy (Mechanical)	5%	
Repeat Accuracy	< 1%	
Dependance on Temperature	< 0.1% / °C	
Tolerance of Limit Values	5%	
Operating Temperature	-20°C to +55°C	
Storage Temperature	-30°C to +70°C	
Electrical Strength	4kV (Supply Output)	
Operating Position	Any	
Mounting	DIN-Rail EN 60715	
Protection Degree	IP40 from Front Panel / IP20 Terminals	
Overvoltage Category	III	
Pollution Degree	2	
Max. Cable Size (mm^2)	Solid Wire max. 1x 2.5 or 2x 1.5 / Stranded Wire with Ferrule max. 1x 1.5 (AWG 12)	
Dimensions	90 x 52 x 65mm	
Weight	248g (110Vac, 230Vac, 400Vac), 146g (24Vac/dc)	
Standards	EN 60255-6, EN 61010-1	

Montec-3PVM-Asym/AsymN Functions

The relay monitors 3 phase ac supplies. The Montec-3PVM-Asym monitors voltage between phases and the Montec-3PVM-AsymN monitors voltage against neutral. The relay can monitor overvoltage, undervoltage, phase asymmetry, phase sequence and phase failure. Each fault state is indicated by an individual LED. Setting of the DIP switches allow selection of various relay functions. The 2nd output relay can be set for independent function (1 relay for overvoltage, 1 relay for undervoltage) or for operation in parallel (both relays for overvoltage/undervoltage together). Time delay T1 (fixed) occurs when changing from fault to normal state or when de-energised at start up. Time delay T2 (adjustable) occurs when changing from normal to fault state. These delays prevent reaction due to short voltage transients.

A) Overvoltage / Undervoltage

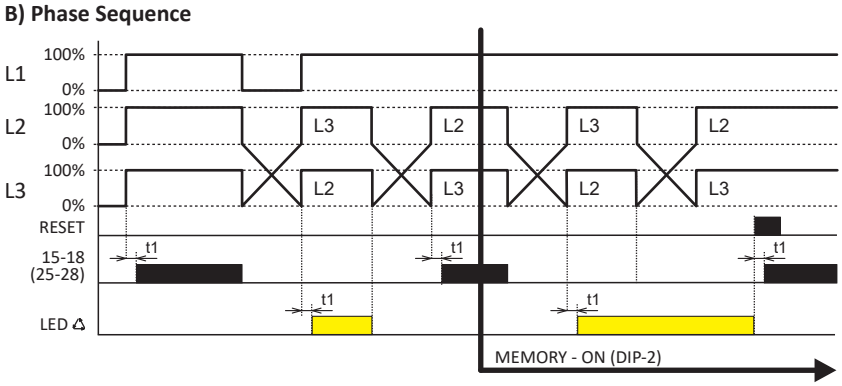


A) Overvoltage / Undervoltage:

Selection of 2nd relay function: In order to monitor 2 levels of voltage, it is possible to select if the output relays respond to each level individually (see the diagram) or both relays switch together in parallel (see diagram “phase sequence”). Selectable via DIP switch “Output“.

Montec-3PVM-Asym/AsymN Functions

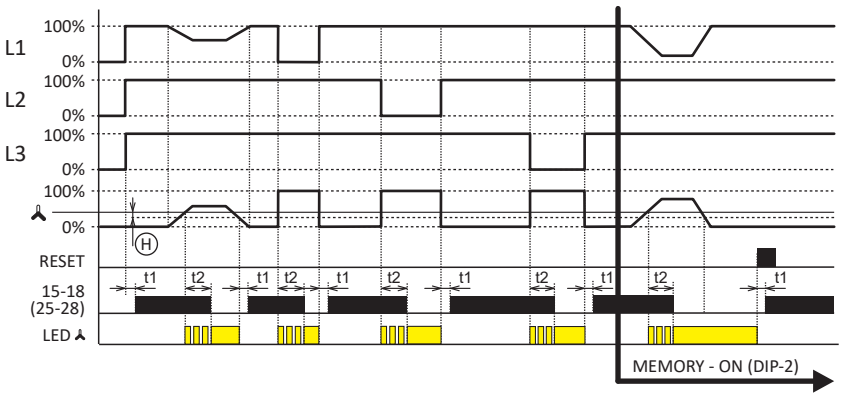
B) Phase Sequence



B) Phase Sequence:

Selection of 2nd relay function: There is no second function when monitoring phase sequence, both relays are switched together. The DIP switch "Output" is ignored.

C) Asymmetry - Phase Failure



C) Asymmetry - Phase Failure:

Selection of 2nd relay function: There is no second function when monitoring asymmetry and phase failure, both relays are switched together. The DIP switch "Output" is ignored.

Voltage Control

Set upper level Umax in range 138-276 V (or 240-480 V for Montec-3PVM-Asym) and lower level Umin in range 35-99% Umax. If these ranges are exceeded, after delay T2, the relay output opens. The relay closes again after returning back to within the monitored voltage range and exceeding the fixed hysteresis (which is adjustable by the DIP switches). In case of failure of two or three phases, the relay is deactivated immediately regardless of the set delay T2.

Phase Sequence

Monitors correctness of phase sequence. In case of a change in phase sequence the output relay opens.

Asymmetry

Rate of voltage asymmetry between individual phases is settable in a range of 5-20%. In case the set asymmetry is exceeded, the output relay opens and the LED indicating asymmetry illuminates. Delays t1, t2 and hysteresis are applicable when returning to the normal state. Monitoring of asymmetry can be switched off by the DIP switch ASYM.

Graph Legend:

L1, L2, L3 - 3-phase voltage
RESET - Press of the button on front panel
t1 - Time delay, fixed
t2 - Time delay, adjustable
15-18 - Output relay 1
25-28 - Output relay 2
ASYM (%) - Adjustable asymmetry
LED ≷ U - Illuminates on overvoltage / undervoltage
LED - Illuminates on incorrect phase sequence
LED - Illuminates on phase voltage asymmetry
(H) - Hysteresis
MEMORY - ON/OFF