Monitoring Relays
True RMS 3-Phase, 3-Phase+N, Multi-function
Type DPB51

- **TRMS 3-phase over and under voltage, phase sequence and phase loss monitoring relay**
- **Detects when all 3 phases are present and have the correct phase sequence**
- **Detects if all the 3-phase-phase or phase-neutral voltages are within the set limits**
- **Upper and lower limits separately adjustable**
- **Measures its own power supply**
- **Adjustable voltage on relative scale**
- **Adjustable delay function (0.1 to 30 s)**
- **Output: 5 A SPDT relay N.E.**
- **For mounting on DIN-rail in accordance with DIN/EN 50 022**
- **17.5 mm DIN-rail housing**
- **LED indication for relay, alarm and power supply ON**

Product Description

3-phase or 3-phase+neutral line voltage monitoring relay for phase sequence, phase loss, over and under voltage (separately adjustable set points) with built-in time delay function.

Supply ranges from 208 to 480 VAC covered by one multivoltage relay.
17.5 mm wide housing suitable both for back and front panel mounting.

Ordering Key

DPB 51 C M44

- **Housing**
- **Function**
- **Type**
- **Item number**
- **Output**
- **Power supply**

Type Selection

Mounting	Output	Supply: 208 to 480 VAC
DIN-rail	SPDT	**DPB 51 C M44**

Input Specifications

Input	
L1, L2, L3, N	Terminals L1, L2, L3, N Measures its own supply
Note: Connect the neutral only if it is intrinsically at the star centre	
Measuring ranges	
208 to 480 Δ VAC	177 to 550 Δ VAC
Ranges	
Upper level	+2 to +22% of the nominal voltage
Lower level	-22 to -2% of the nominal voltage
Note: The input voltage must not exceed the maximum rated voltage or drop below the minumum rated voltage reported above.	
Hysteresis	
Set points from 2 to 4%	1%
Set points from 4 to 22%	2%

Output Specifications

Output		SPDT relay
Rated insulation voltage		250 VAC
Contact ratings ($AgSnO_2$)		μ
Resistive loads	AC 1	5 A @ 250 VAC
	DC 12	5 A @ 24 VDC
Small inductive loads	AC 15	2.5 A @ 250 VAC
	DC 13	2.5 A @ 24 VDC
Mechanical life		≥ 30 x 10^6 operations
Electrical life		≥ 10^5 operations (at 5 A, 250 V, cos φ = 1)
Operating frequency		≤ 7200 operations/h
Dielectric strength		
Dielectric voltage		2 kVAC (rms)
Rated impulse withstand volt.		4 kV (1.2/50 μs)

Supply Specifications

Power supply	Overvoltage cat. III
Rated operational voltage through terminals:	(IEC 60664, IEC 60038) L1, L2, L3, N
Delta Voltage:	208 to 480 VAC ± 15% 45 to 65 Hz
Star Voltage:	120 to 277 VAC ± 15% 45 to 65 Hz
Rated operational power	13 VA @ 400 ΔVAC, 50 Hz Supplied by L1 and L2

General Specifications

Power ON delay	1 s ± 0.5 s
Reaction time	
Incorrect phase sequence or total phase loss	< 200 ms (input signal variation from -20% to +20% or from +20% to -20% of set value)
Alarm ON delay	< 200 ms (delay < 0.1 s)
Alarm OFF delay	< 200 ms (delay < 0.1 s)
Accuracy	(15 min warm-up time)
Temperature drift	± 1000 ppm/°C
Delay ON alarm	± 10% on set value ± 50 ms
Repeatability	± 0.5% on full-scale

General Specifications (cont.)

Indication for	
Power supply ON	LED, green
Alarm ON	LED, red (flashing 2 Hz during delay time)
Output relay ON	LED, yellow
Environment	
Degree of protection	IP 20
Pollution degree	3
Operating temperature	-20 to 60°C, R.H. < 95%
Storage temperature	-30 to 80°C, R.H. < 95%
Housing	
Dimensions	17.5 x 90 x 67.2 mm
Material	PA66 or Noryl
Weight	Approx. 100 g
Screw terminals	
Tightening torque	
L1, L2, L3, N	Min. 0.5 Nm, Max. 1.1 Nm
15, 16, 18, Z1, Z2	Min. 0.4 Nm, Max. 0.8 Nm
Product standard	EN 60255-1: 2010
Approvals	UL
CE Marking	L.V. Directive 2006/95/EC EMC Directive 2004/108/EC
Immunity	According to EN 60255-26 According to EN 61000-6-2
Emissions	According to EN 60255-26 According to EN 61000-6-3

Mode of Operation

Connected to the 3 phases (and neutral) DPB51 operates when all 3 phases are present at the same time, the phase sequence is correct and the phase-phase (or phase-neutral) voltage levels are within set limits.

If one or more phase-phase or phase-neutral voltages exceeds the upper set level or drops below the lower set level, the red LED starts flashing 2 Hz and the output relay releases after the set time period. If the phase sequence is wrong or one phase is lost, the output relay releases immediately. Only 200 ms delay occurs. The failure is indicated by the red LED flashing 5 Hz during the alarm condition.

Example 1
(mains network monitoring)
The relay monitors over and under voltage, phase loss and correct phase sequence.

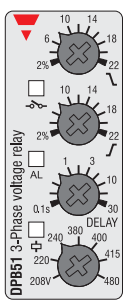
Example 2
(load monitoring)
The relay releases in case of interruption of one or more phases, when one or more voltages drop below the lower set level or exceed the upper set level.

Function/Range/Level and Time Delay Setting

Selection of monitored voltage:
Connecting the terminals Z1 and Z2:
No connection: phase-phase.
Connected: phase-neutral.

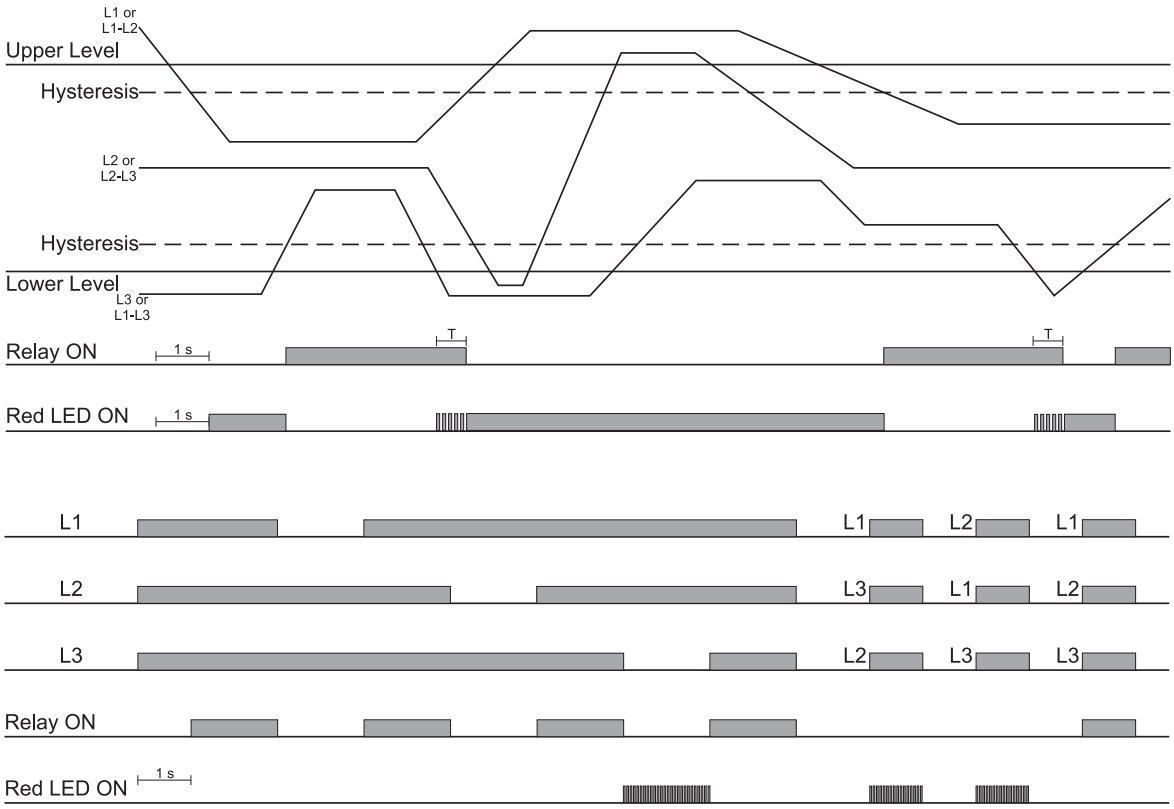
Selection of range, level and time delay:
Upper knob (⌞):
Setting of lower level on relative scale.
Centre top knob (⌟):
Setting of upper level on relative scale.

Centre bottom knob (DELAY):
Setting of delay on alarm time on absolute scale (0.1 to 30 s).
Lower knob (see on the right):
Setting of nominal delta voltage.



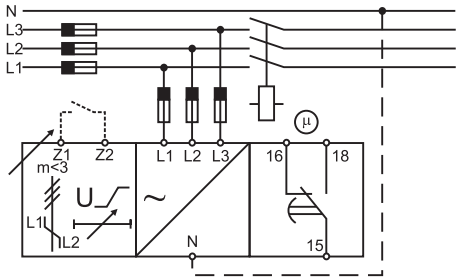
Nominal Ph-Ph voltage (delta connections)	Nominal Ph-N voltage (star connections)
480 VAC	277 VAC
415 VAC	240 VAC
400 VAC	230 VAC
380 VAC	220 VAC
240 VAC	139 VAC
220 VAC	127 VAC
208 VAC	120 VAC

Operation Diagrams

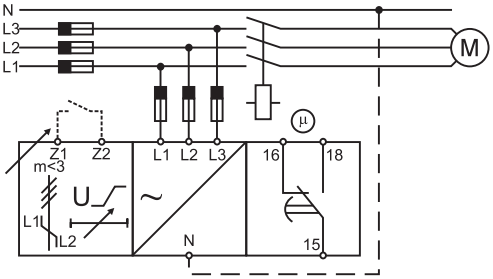


Wiring Diagram

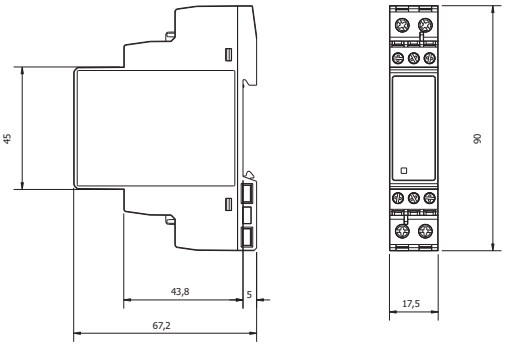
Example 1



Example 2



Dimensions



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Carlo Gavazzi:

DPB51CM44 DPB51CM44B005 DPB51CM44B006 DPB51CM44B006T DPB51CM44T