

Monitoring Relays

3-Phase, 3-Phase+N, Multi-function

Type DPB71



- 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 on own power supply
- Selection of measuring range by DIP-switches
- 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
- 35.5 mm DIN-rail housing
- LED indication for relay, alarm and power supply ON

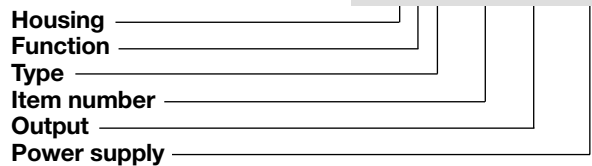
Product Description

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 two multivoltage relays. 35.5 mm wide housing suitable both for back and front panel mounting.

Ordering Key

DPB 71 C M23



Type Selection

Mounting	Output	Supply: 208 to 240 VAC	Supply: 380 to 480 VAC
DIN-rail	SPDT	DPB 71 C M23	DPB 71 C M48

Input Specifications

Input L1, L2, L3, N	Terminals L1, L2, L3, N Measure on own supply
Measuring ranges 208 to 240 Δ VAC 380 to 480 Δ VAC	177 to 275 Δ VAC 323 to 550 Δ VAC
Ranges Upper level Lower level	+2 to +22% of the nominal voltage -22 to -2% of the nominal voltage
Note: The input voltage must not exceed the maximum rated voltage or drop below the minimum rated voltage reported above.	

Output Specifications

Output Rated insulation voltage	SPDT relay 250 VAC
Contact ratings (AgSnO₂) Resistive loads Small inductive loads	μ 5 A @ 250 VAC 5 A @ 24 VDC 2.5 A @ 250 VAC 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 Rated impulse withstand volt.	2 kVAC (rms) 4 kV (1.2/50 μs)



Supply Specifications

Power supply Rated operational voltage through terminals: M23 - Delta Voltage: M48 - Delta Voltage: M48 - Star Voltage:	Overvoltage cat. III (IEC 60664, IEC 60038) L1, L2, L3, N 208 to 240 VAC ± 15% 45 to 65 Hz 380 to 480 VAC ± 15% 45 to 65 Hz 220 to 277 VAC ± 15% 45 to 65 Hz
Rated operational power DPB71CM23 DPB71CM48	13 VA @ 230 ΔVAC, 50 Hz 13 VA @ 400 ΔVAC, 50 Hz Supplied by L1 and L3

Mode of Operation

Connected to the 3 phases (and neutral) DPB71 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.

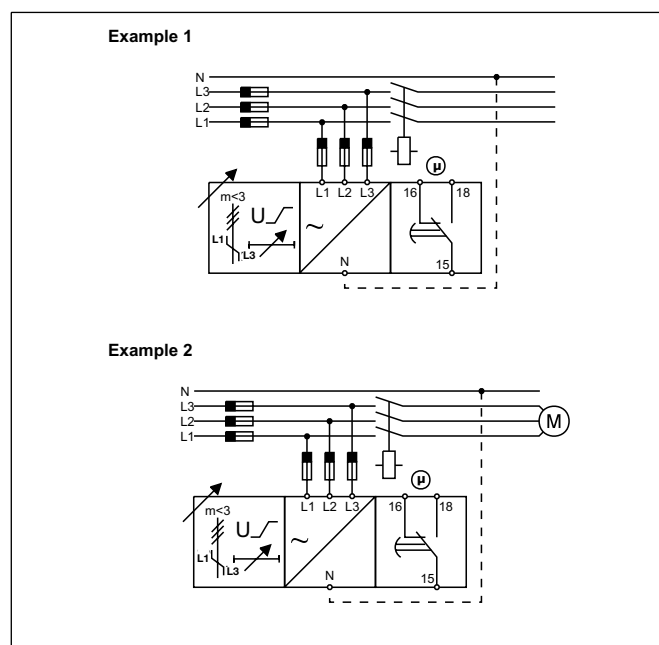
Example 1
(mains network monitoring)
The relay monitors over and under voltage, phase loss and correct phase sequence.

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.

General Specifications

Power ON delay	1 s ± 0.5 s or 6 s ± 0.5 s
Reaction time Incorrect phase sequence or total phase loss Voltage level Alarm ON delay Alarm OFF delay	< 200 ms (input signal variation from -20% to +20% or from +20% to -20% of set value) < 200 ms (delay < 0.1 s) < 200 ms (delay < 0.1 s)
Accuracy Temperature drift Delay ON alarm Repeatability	(15 min warm-up time) ± 1000 ppm/°C ± 10% on set value ± 50 ms ± 0.5% on full-scale
Indication for Power supply ON Alarm ON Output relay ON	LED, green LED, red (flashing 2 Hz during delay time) LED, yellow
Environment Degree of protection Pollution degree Operating temperature Storage temperature	IP 20 3 -20 to 60°C, R.H. < 95% -30 to 80°C, R.H. < 95%
Housing dimensions	35.5 x 81.5 x 67 mm
Weight	Approx. 100 g
Screw terminals Tightening torque	Max. 0.5 Nm according to IEC 60947
Approvals	UL, CSA
CE Marking	Yes
EMC Immunity Emissions	Electromagnetic Compatibility According to EN 61000-6-2 According to EN 50081-1

Wiring Diagrams



Function/Range/Level and Time Delay Setting

Adjust the input range setting the DIP switches 3 and 4 as shown below.

To access the DIP switches open the grey plastic cover as shown below

Selection of level and time delay:

Centre knob:
Setting of upper level on relative scale.

Select the desired function setting the DIP switches 1 and 2 as shown below.

Upper knob:
Setting of lower level on relative scale.

Lower knob:
Setting of delay on alarm time on absolute scale (0.1 to 30 s).

Power ON delay
ON: 6 s ± 0.5 s
OFF: 1 s ± 0.5 s

Monitored voltage
ON: Phase-Neutral
OFF: Phase-Phase

Measuring range

SW3	ON	ON	OFF	OFF
SW4	ON	OFF	ON	OFF
M23 Ph-Ph Voltage	208 VAC	220 VAC	230 VAC	240 VAC
M48 Ph-Ph Voltage	380 VAC	400 VAC	415 VAC	480 VAC
M48 Ph-N Voltage	220 VAC	230 VAC	240 VAC	277 VAC

Operation Diagrams

