

Monitoring Relays

3-Phase Sequence and Phase Loss

Types DPA51, DPA71

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DPA51



DPA71

- 3-phase monitoring relay for phase sequence and phase loss
- Detects when all phases are present and have the correct sequence
- Measures own power supply
- Power supply range: 208 to 480 VAC ($\pm 15\%$)
- Output: 5 A SPDT relay (DPA51) or 5 A DPDT relay (DPA71) normally energized
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 17.5 mm (DPA51) or 35.5 mm (DPA71) DIN-rail housing (DIN 43880)
- LED indication for relay and power supply ON

Product Description

3-Phase relay for detection of incorrect phase sequence, total and partial phase loss. Supply range from 208 to 480 VAC covered by three multi-voltage relay. For mounting on DIN-rail. Housing 17.5 mm wide for SPDT version and

35.5 mm for DPDT version, suitable both for back and front panel mounting. The device detects regenerated voltage up to 85% of the nominal voltage (phase-phase).

Ordering Key

DPA 51 C M44

Housing _____
 Function _____
 Type _____
 Item number _____
 Output _____
 Power supply _____

Type Selection

Mounting	Output	Supply: 208 to 480 VAC	Supply: 208 to 240 VAC	Supply: 380 to 480 VAC
DIN-rail	SPDT	DPA 51 C M44	DPA 71 D M23	DPA 71 D M48
DIN-rail	DPDT			

Input Specifications

Input L1, L2, L3	Terminals L1, L2, L3 Measures on own supply
Measuring range 208 to 480 VAC (DPA51CM44) 208 to 240 VAC (DPA71DM23) 380 to 480 VAC (DPA71DM48)	177 to 550 VAC 177 to 275 VAC 323 to 550 VAC
ON-level	> 85% of the phase- phase voltage

Output Specifications

Output	SPDT or DPDT relay, N.E.
Rated insulation voltage	250 VAC
Contact ratings (AgSnO ₂)	μ
DPA51 (SPDT):	
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
DPA71 (DPDT)	
Resistive loads AC 1	5 A @ 250 VAC
Small inductive loads AC 15	3 A @ 250 VAC
DC 13	3 A @ 24 VDC
Mechanical life	$\geq 30 \times 10^6$ operations
Electrical life	$\geq 10^5$ operations (at 5 A, 250 V, $\cos \varphi = 1$)
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	≥ 2 kVAC (rms)
Rated impulse withstand volt.	4 kV (1.2/50 μ s)



Supply Specifications

Power supply Rated operational voltage through terminals: L1, L2, L3 DPA51CM44	Overvoltage cat. II (IEC 60664, IEC 60038) 208 to 480 VAC ± 15%, 45 to 65 Hz
DPA71DM23	208 to 240 VAC ± 15%, 45 to 65 Hz
DPA71DM48	380 to 480 VAC ± 15%, 45 to 65 Hz
Rated operational power DPA51	13 VA @ 400 VAC, 50 Hz Supplied by L2 and L3
DPA71	10 VA @ 400 VAC, 50 Hz 6 VA @ 230 VAC, 50 Hz Supplied by L2 and L3

General Specifications

Reaction time Alarm ON delay Alarm OFF delay	< 100 ms < 300 ms
Accuracy Temperature drift Repeatability	(15 min warm-up time) ± 1000 ppm/°C ± 0.5% on full scale
Indication for Power supply ON Relay ON	LED, green LED, yellow
Environment Degree of protection Pollution degree Operating temperature (DPA51)@ Max. voltage, 50 Hz (DPA51)@ Max. voltage, 60 Hz (DPA71) Storage temperature	IP 20 3 -20 to +60°C, R.H. < 95% -20 to +50°C, R.H. < 95% -20 to +50°C, R.H. < 95% -30 to +80°C, R.H. < 95%
Housing Dimensions Material	DPA51 DPA71 17.5 x 81 x 67.2 mm 35.5 x 81 x 67.2 mm PA66
Weight	Approx. 75 g
Screw terminals Tightening torque	Max. 0.5 Nm acc. to IEC 60947
Approvals	UL, CSA (DPA71 UL only)
CE Marking	Yes
EMC Immunity Emission	Electromagnetic Compatibility According to EN 61000-6-2 According to EN 61000-6-3

Mode of Operation

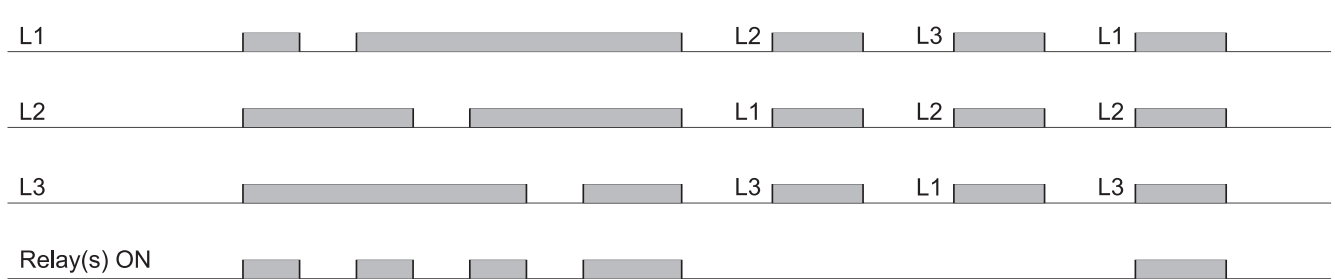
DPA51 and DPA71 monitor their own 3-phase power supply voltage. The relays operate when all the phases are present and the phase sequence is correct. The relays release when one

phase-phase voltage drops below 85% of the other phase-phase voltages or when the phase sequence is wrong.

Example 1
The relay monitors that the power supply has the correct phase sequence and that all phases are present.

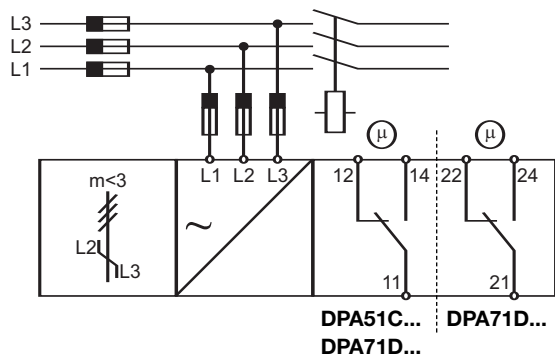
Example 2
The relay releases in case of interruption of one or more phases, provided that the regenerated voltage does not exceed 85% of the phase-phase voltage.

Operation Diagram

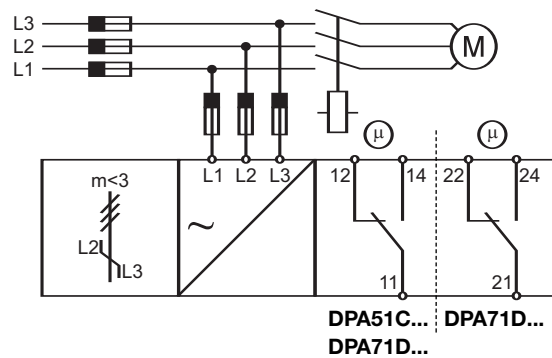


Wiring Diagrams

Example 1

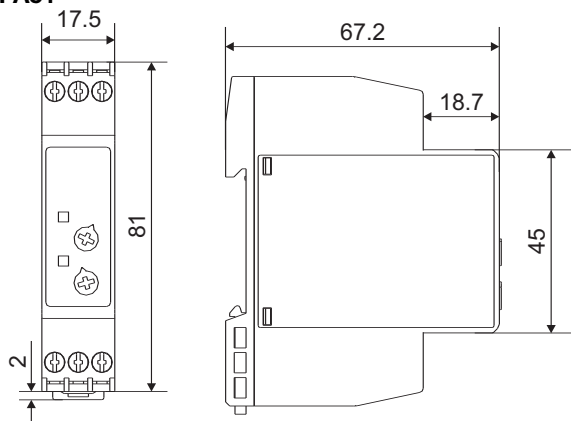


Example 2



Dimensions

DPA51



DPA71

