Monitoring Relays
3-Phase Sequence and Phase Loss
Types DPA51, DPA71

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 (±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**		
DIN-rail	DPDT		**DPA 71 D M23**	**DPA 71 D M48**

Input Specifications

Input	
L1, L2, L3	Terminals L1, L2, L3 Measures on own supply
Measuring range	
208 to 480 VAC (DPA51CM44)	177 to 550 VAC
208 to 240 VAC (DPA71DM23)	177 to 275 VAC
380 to 480 VAC (DPA71DM48)	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		≥ 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. II (IEC 60664, IEC 60038)
Rated operational voltage through terminals: L1, L2, L3	
DPA51CM44	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		< 100 ms
Alarm OFF delay		< 300 ms
Accuracy		(15 min warm-up time)
Temperature drift		± 1000 ppm/°C
Repeatability		± 0.5% on full scale
Indication for		
Power supply ON		LED, green
Relay ON		LED, yellow
Environment		
Degree of protection		IP 20
Pollution degree		3
Operating temperature		
(DPA51)@ Max. voltage, 50 Hz		-20 to +60°C, R.H. < 95%
(DPA51)@ Max. voltage, 60 Hz		-20 to +50°C, R.H. < 95%
(DPA71)		-20 to +50°C, R.H. < 95%
Storage temperature		-30 to +80°C, R.H. < 95%
Housing		
Dimensions	DPA51	17.5 x 81 x 67.2 mm
	DPA71	35.5 x 81 x 67.2 mm
Material		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		Electromagnetic Compatibility
Immunity		According to EN 61000-6-2
Emission		According to EN 61000-6-3

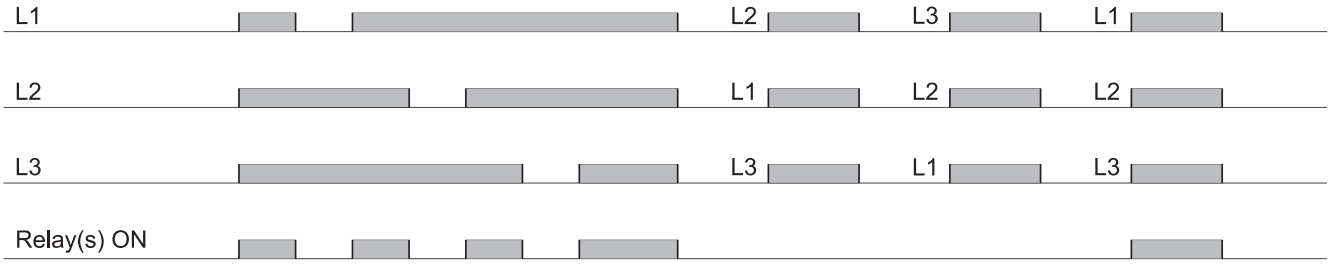
Mode of Operation

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.

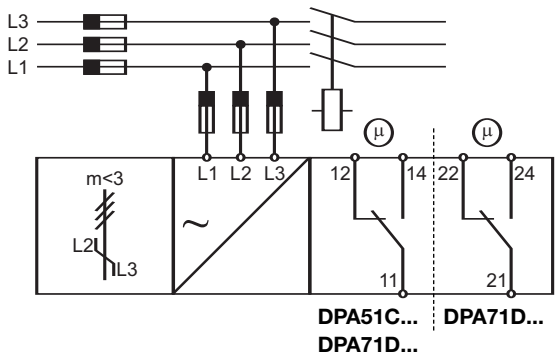
Example 2
The relay releases in case of interruption of one or more phases, provided that the regenerated voltage does not exceed 85% of the phase-phase voltage.

Operation Diagram

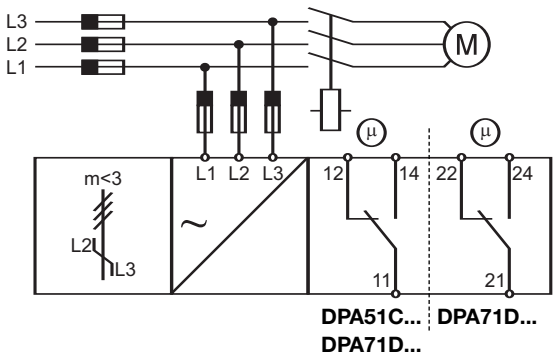


Wiring Diagrams

Example 1

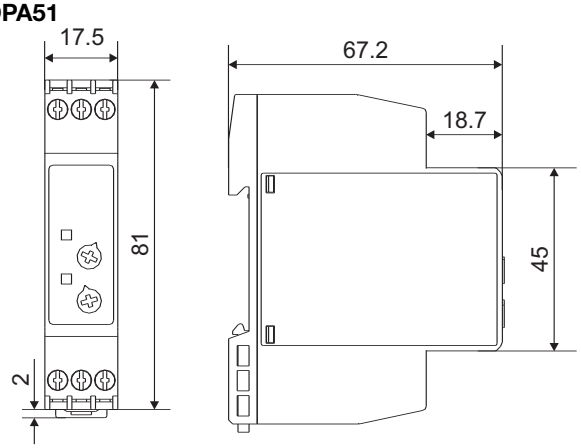


Example 2



Dimensions

DPA51



DPA71