

# Monitoring Relays

## 3-Phase Sequence and Phase Loss

### Types 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

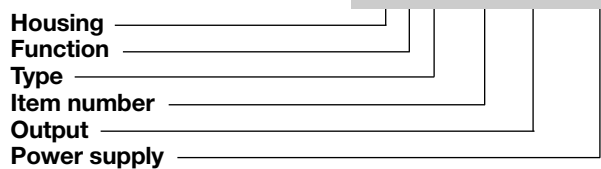
### Product Description

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**



### Type Selection

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

### Input Specifications

<b>Input</b> L1, L2, L3	Terminals L1, L2, L3 Measures on own supply
<b>Measuring range</b> 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
<b>ON-level</b>	> 85% of the phase- phase voltage

### Output Specifications

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



## Supply Specifications

<b>Power supply</b>	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
<b>Rated operational power</b>	
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

<b>Reaction time</b>		
Alarm ON delay		< 100 ms
Alarm OFF delay		< 300 ms
<b>Accuracy</b>		(15 min warm-up time)
Temperature drift		± 1000 ppm/°C
Repeatability		± 0.5% on full scale
<b>Indication for</b>		
Power supply ON		LED, green
Relay ON		LED, yellow
<b>Environment</b>		
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%
<b>Housing</b>		
Dimensions	DPA51	17.5 x 81 x 67.2 mm
	DPA71	35.5 x 81 x 67.2 mm
Material		PA66
<b>Weight</b>		Approx. 75 g
<b>Screw terminals</b>		
Tightening torque		Max. 0.5 Nm acc. to IEC 60947
<b>Approvals</b>		UL, CSA
<b>CE Marking</b>		Yes
<b>EMC</b>		
Immunity		Electromagnetic Compatibility
Emission		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.

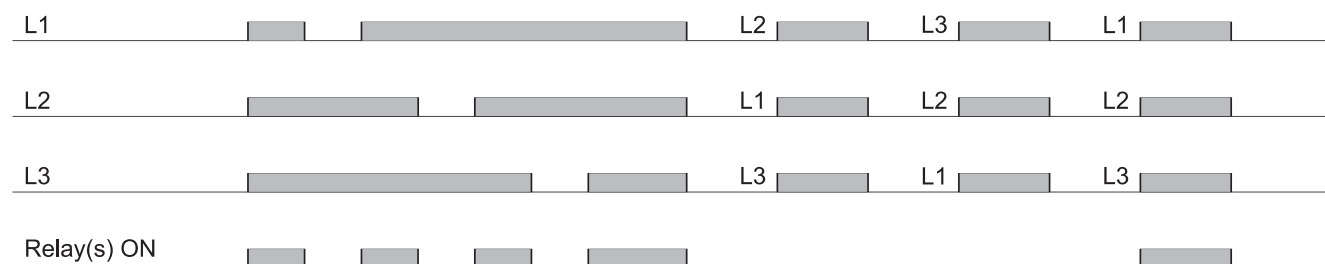
### Example 1

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

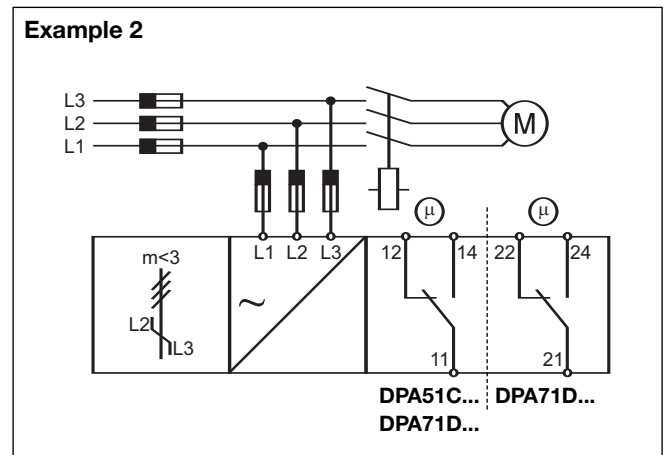
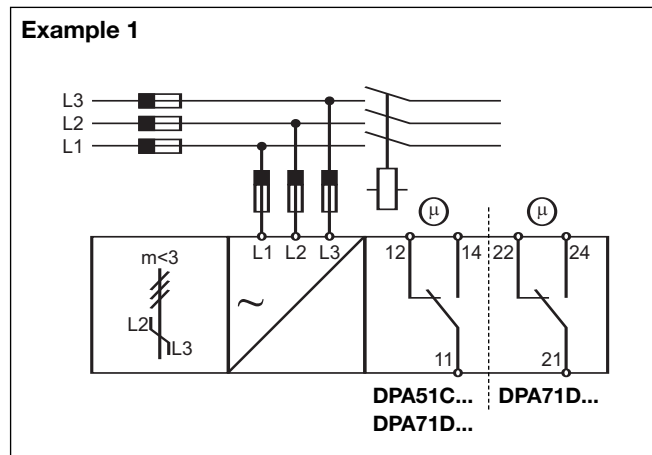
### Example 2

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



## Dimensions

