

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 ($\pm 15\%$)
- 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

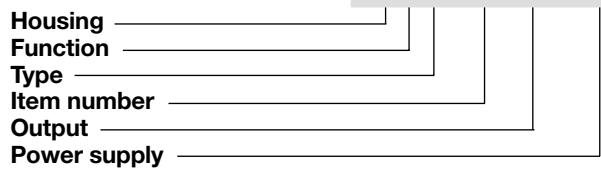
Product Description

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 | 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 (AgSnO₂) | 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 | 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 |
| Weight | Approx. 75 g |
| Screw terminals | |
| Tightening torque | Max. 0.5 Nm acc. to IEC 60947 |
| Approvals | UL, CSA (DPA51 only) |
| CE Marking | Yes |
| EMC | |
| Immunity | Electromagnetic Compatibility |
| Emission | According to EN 61000-6-2 According to EN 61000-6-3 |

Mode of Operation

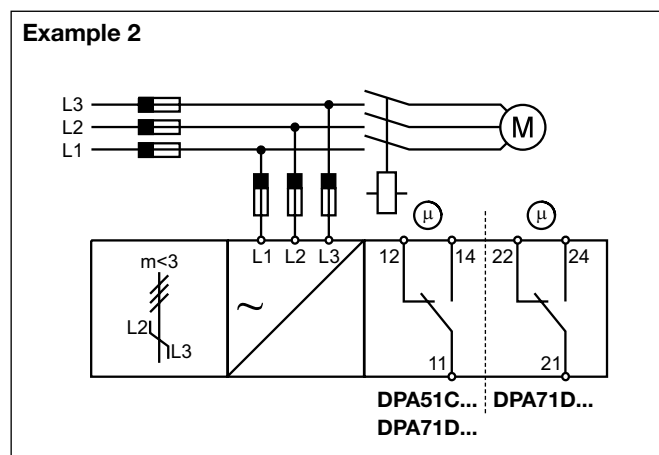
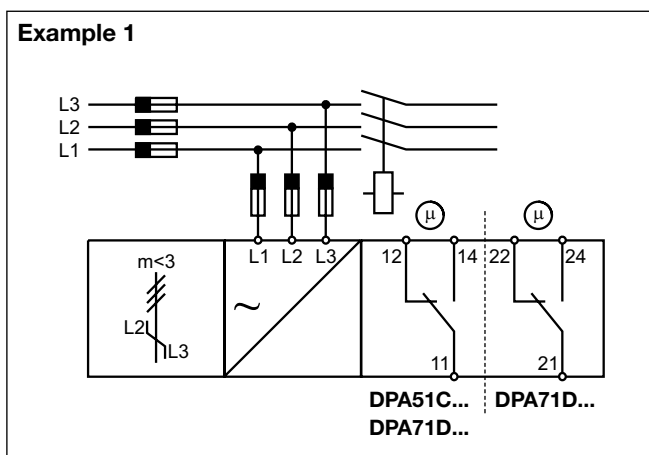
DPA51 and DPA71 monitor their own 3-phase power supply voltage. The relays operate when all the phases are present and the phase sequence is correct. The relays release when one phase-phase voltage drops

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

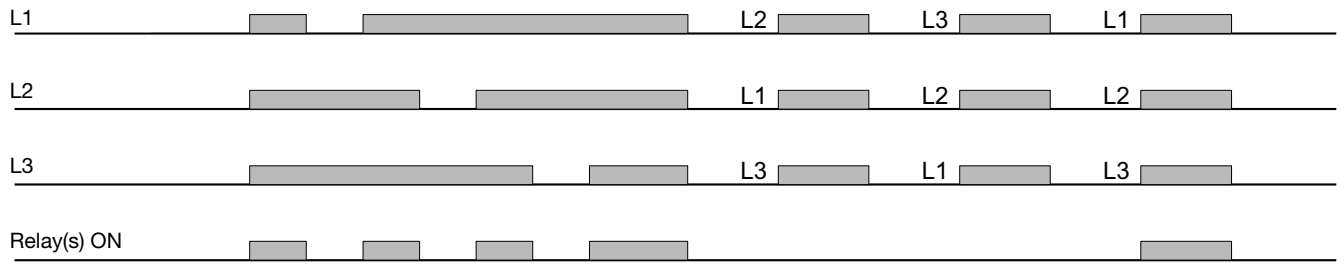
Example 1
The relay monitors that the power supply has the correct phase sequence and that all phases are present.

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.

Wiring Diagrams



Operation Diagram



Dimensions

