# Phase Failure Relay

## 3-phase sequence, phase loss, undervoltage and voltage unbalance monitoring

# Type DPA53


- **3-phase monitoring relay for phase sequence and phase loss**
- **Detects when all phases are present and have the correct sequence**
- **Knob-adjustable undervoltage detection**
- **Measures its own power supply**
- **Power supply range :200 to 240V and 380 to 480VAC(±15%)**
- **Output: 5A SPDT relay normally energized**
- **For mounting on DIN-rail in accordance with DIN/EN 50 022**
- **17.5mm DIN-rail housing(DIN 43880)**
- **LED indication for relay and power supply ON**

## Rated Voltage Specifications:

200 to 240VAC±15%(Ph-Ph) Type: DPA53CM23
380 to 480VAC±15%(Ph-Ph) Type: DPA51CM48
115 to 138VAC±15%(Ph-N) Type: DPA53AM23N
220 to 277VAC±15%(Ph-N) Type: DPA53AM48N

## Option list(●-yes，○-no):

| Function \ Type | DPA53CM23 | DPA53CM48 | DPA53AM23N | DPA53AM48N |
|---|---|---|---|---|
| Undervoltage Setting range | 160 to 240VAC (Ph-Ph) | 320 to 480VAC (Ph-Ph) | 160 to 240VAC (Ph-Ph) | 320 to 480VAC (Ph-Ph) |
| Output | 1SPDT | 1SPDT | 1SPNO | 1SPNO |
| Phase sequence | ● | ● | ● | ● |
| Phase loss | ● | ● | ● | ● |
| Voltage unbalance | ● | ● | ● | ● |
| Under voltage | ● | ● | ● | ● |
| N-Line protection | ○ | ○ | ● | ● |

# Specifications:

| Function \ Type | DPA53CM23 | DPA53CM48 | DPA53AM23N | DPA53AM48N |
|---|---|---|---|---|
| Input(Ph-Ph) | 160 to 276 VAC | 320 to 552 VAC | 160 to 276VAC | 320 to 552 VAC |
| Input(Ph-N) | — | — | 92~159VAC | 185~277 VAC |
| Operational power(ph-ph) | 7 VA@230V 50Hz | 13VA@400V 50Hz | — | — |
| Voltage proof (ph-ph) | 1800Vdc（2S） | 4000Vdc（2S） | — | — |
| Operational power (ph-N) | — | — | 5VA@130V 50Hz | 9VA@220V 50Hz |
| Voltage proof(ph-N) | — | — | 1800Vdc（2S） | 2000Vdc（2S） |

| | | |
|---|---|---|
| **Situation of certification** | | |
| Product standard | | EN 60947-5-1 |
| Approvals | | UL, CCC<br>(GB14048.5-2008,A037133) |
| CE Marking | | L. V. Directive 2006/95/EC<br>EMC Directive 2004/108/EC |
| EMC | | |
| Immunity | | According to EN 61000-6-2 |
| Emissions | | According to EN 61000-6-3 |
| ROHS Instruction | | 2011/65/EU |
| **Indication for** | | |
| Power supply ON | | LED green ON |
| Relay ON | | LED yellow ON |
| Phase failure and reverse | | LED yellow OFF |
| N-Line broken | | LED all OFF |
| **Input Specifications** | | |
| Range(knob-adjustable) | | 160 to 240VAC |
| | | 320 to 480VAC |
| **Output Specifications** | | |
| Output | | SPDT\SPNO |
| Action principle | | Closed circuit |
| Contact ratings | | AgSnO |
| Rated voltage | | 24VDC，250VAC |
| Rated current | DC12 24V | 5A |
| | AC15 250V | 2.5A |
| | DC13 24V | 2.5A |
| Mechanical life | | ≥ $10^7$ operations |
| Electrical life | | ≥ $10^5$ operations (at 5 A, 250 V, cos ψ = 1) |
| **General Specifications** | | |
| Housing | | |
| Dimensions | | 17.5 x 81x 67.2 mm |
| Material | | PA66 or PC |
| Weight | | Approx. 75g |
| Screw terminals | | |
| Tightening torque | | Max.0.5 Nm(acc. to IEC 60947) |
| Wire section | | 2.5mm2（AWG13）stranded wire |
| Application area | | anywhere |
| Mounting | | DIN-rail(DIN 43880) |
| Degree of protection | | IP20 |
| Pollution degree | | Ⅲ |
| Operating temperature @ Max.voltage,50Hz | | -20…+60℃，R.H. < 95% |
| Storage temperature | | -30…+80℃，R.H. < 95% |
| **Dielectric strength** | | |
| Dielectric voltage | | ≥ 2kVAC (rms) |
| Rated impulse withstand volt. | | 4 kV (1.2/50 μs) |

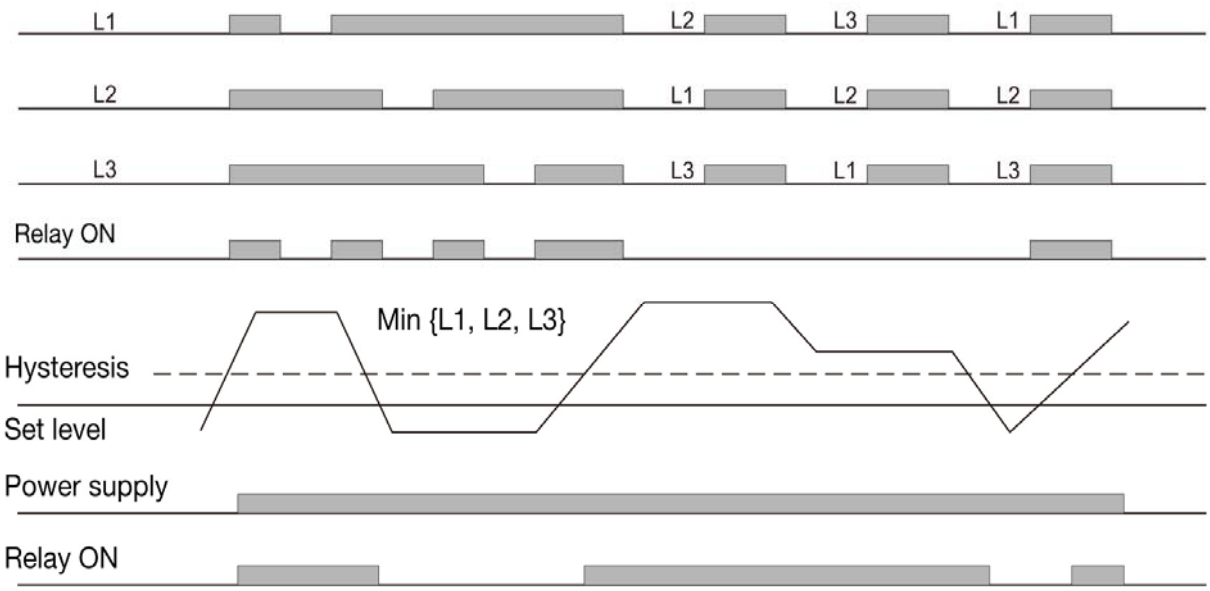
## Mode of operation:

DPA53 series monitors its own 3-phase power supply voltage. The relay operates when all the phases are present, the phase sequence is correct and each phase-phase voltage is above the adjusted setpoint.

The relay releases when one phase-phase voltage drops below the setpoint or when the phase sequence is incorrect.

N-Line protection: DPA53AM23N and DPA5AM48N are suitable for 3-phase 4-line system, the relay is OFF when there is N-Line broken.

## Operation Diagram：

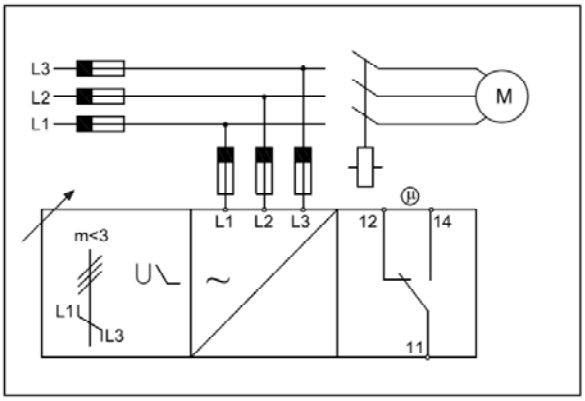



## Level setting：

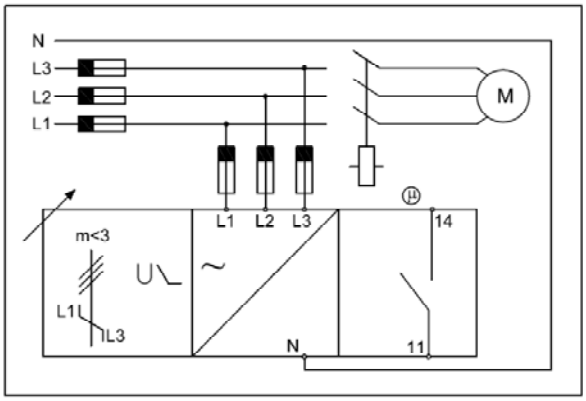
Select the proper undervoltage level using the knob according to the phase-phase voltage and the needed sensitivity.
**Centre knob**: Setting of under level on absolute scale.

## Wiring Diagrams:

The relay monitors that the power supply has the correct phase sequence and that all phases are present.
The relay releases in case of interruption of one or more phases, provided that the regenerated voltage does not exceed the set voltage.




three-phase three-wire system—example 1




three-phase four-wire system—example 2

## Dimensions: