



# DPR-02

## VOLTAGE PROTECTION RELAY (LINE TO NEUTRAL)

### DESCRIPTION

DPR-02 relay is a three-phase (line to neutral) voltage protection relay designed to be used for over-voltage, under-voltage and phase rotation protection in distribution substations, generators, motors, transformers and capacitors in compensation systems.

It offers adjustable over / under voltage limits together with adjustable trip and reset delays. The unit has also phase sequence protection.

Both over voltage limit(Max) and under voltage limit(Min) can be adjusted or disabled via trimmers on the front panel of the device. Delay timers are adjusted through related trimmers.

### FEATURES

- DIN Rail mounted***
- Adjustable under voltage limit (L-N)***
- Adjustable over voltage limit (L-N)***
- Adjustable TRIP and RESET Delays***
- Phase sequence protection***
- Phase failure protection***
- Overvoltage protection***
- Insufficient supply protection***
- 6A/277VAC relay output***

### OPERATION

#### VOLTAGE PROTECTION

If any of phase voltages goes over the set MAX limit, the "U>" led turns on and the adjusted Delay timer starts to count. If the fault condition disappears before the Delay timer expires, then the "U>" led turns off. If the fault condition persists until the expiration of the Delay timer, the relay output is deactivated and the "OUT" led turns off.

If any of measured voltages goes below the set MIN limit, the "U<" led turns on and the adjusted Delay timer starts to count. If the fault condition disappears before the Delay timer expires, then the "U<" led turns off. If the fault condition persists until the expiration of the Delay timer, the relay output is deactivated and the "OUT" led turns off.

When the MAX or MIN Voltage trimmer is adjusted to the "OFF" position, the related voltage protection will be disabled.

When all voltages are again within adjusted MIN-MAX limits, "U<" and "U>" leds turn off and the adjusted Reset Delay timer starts to count. When the timer is expired, the relay output is activated and the "OUT" led turns on.

#### PHASE FAILURE PROTECTION

If the voltage of any phase falls below 50% of the nominal value, then "U<" led turns on and immediately the relay output is deactivated and the "OUT" led turns off.

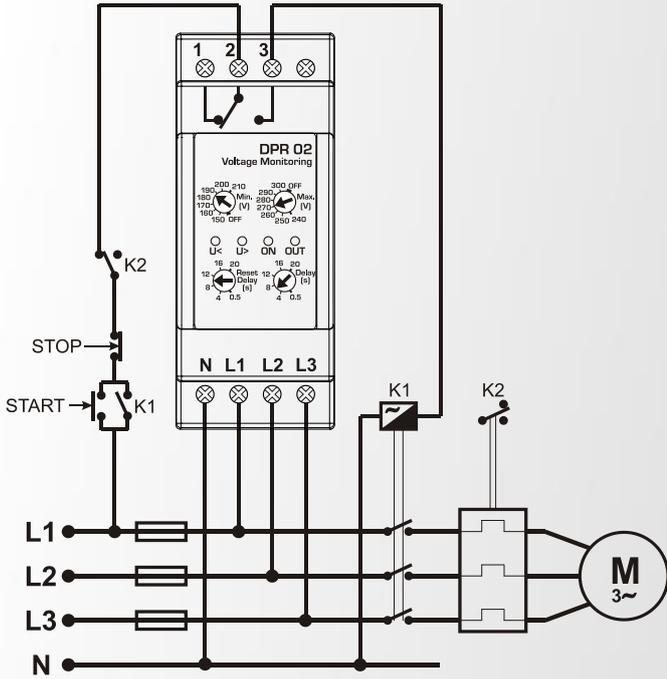
#### OVERVOLTAGE PROTECTION

If the voltage of any phase goes 50% above the nominal value, then "U>" led turns on and immediately the relay output is deactivated and the "OUT" led turns off.

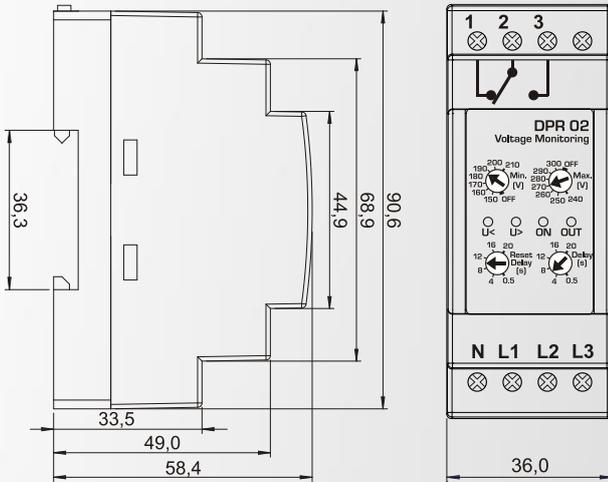
#### PHASE SEQUENCE PROTECTION

If the phase sequence is reversed, both "U<" and "U>" leds flash, the relay output is deactivated and the "OUT" led turns off.

## CONNECTION DIAGRAM



## DIMENSIONS



## INPUTS

**L1-L2-L3** : Phase voltages inputs  
**N** : Neutral voltage input

## OUTPUTS

**1** : Relay output (NC)  
**2** : Relay output (COM)  
**3** : Relay output (NO)

## LED INDICATORS

**ON**: Supply LED (green)  
**OUT**: Relay output LED (yellow)  
**U<**: Under Voltage Warning LED (red)  
**U>**: Over Voltage Warning LED (red)

U<	U>	ON	OUT	DESCRIPTION
		ON	ON	Voltages OK
ON		ON	ON	Under voltage warning
ON		ON		Under voltage trip
	ON	ON	ON	Over voltage warning
	ON	ON		Over voltage trip
FLASH		ON		Phase sequence trip

## TECHNICAL SPECIFICATIONS

**Nominal Supply Voltage:** 230V-AC (L-N)  
**Supply Voltage Range:** 150-300 V-AC (L-N)  
**Supply type:** Capacitive, 3 phase  
**Frequency Range:** 47-63Hz  
**Power Consumption:** 30VA / 2W (max)  
**Measurement method:** True RMS, line to neutral  
**Voltage Adjustment Accuracy:** 3 %  
**Repetition Accuracy:** 0.5 %  
**Over-Voltage Trip:** 240-300 V-AC (L-N) adjustable  
**Under-Voltage Trip:** 150-210V-AC (L-N) adjustable  
**Trip Delay Setup:** 0.5 – 20 sec. adjustable  
**Reset Delay Setup:** 0.5 – 20 sec. adjustable  
**Relay Output:** 6A @ 277V-AC, 1800VA, 300W  
**Terminal wire range:** max 2.5mm<sup>2</sup> (12AWG)  
**Screw-on Force:** 0.4 Nm (3.6 lb.in)  
**Operating temp.:** -30°C (-22°F) to 70 °C (158°F).  
**Storage temp.:** -40°C (-40°F) to 80 °C (176°F).  
**Maximum humidity:** 95% non-condensing.  
**Dimensions:** 36,0x90,6x58,4mm (WxHxD)  
**Weight:** 100 gr(approx.)  
**Installation:** DIN Rail mounted.  
**Case Material:** High Temp. ABS/PC (UL94-V0)  
**IP Protection:** IP30  
**Conformity (EU directives)**  
 -2006/95/EC (low voltage)  
 -2004/108/EC (EMC)  
**Norms of reference:**  
 EN 61010 (safety requirements)  
 EN 60255-6  
 EN 61326 (EMC requirements)

