

DPR-02 VOLTAGE PROTECTION RELAY (LINE TO NEUTRAL)

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.

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 any phase voltage 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.



SAFETY NOTICE

Failure to follow below instructions will result in death or serious injury

* Electrical equipment should be installed only by qualified specialist. No responsibility is assured by the manufacturer or any of its subsidiaries for any consequences resulting from the non-compliance to these instructions.

* Check the unit for cracks and damages due to transportation. Do not install damaged equipment.

* Do not open the unit. There is no serviceable parts inside.

* Fuses of fast type (FF) with a maximum rating of 6A must be connected to phase voltage inputs, in close proximity of the unit.

* Disconnect all power before working on equipment.

* When the unit is connected to the network do not touch terminals.

* Any electrical parameter applied to the device must be in the range specified in the user manual.

* Do not try to clean the device with solvent or the like. Only clean with a damp cloth.

* Do not allow water to come inside the unit.

* Verify correct terminal connections before applying power.

* Only for DIN rail mounting.

PRE-INSTALLATION

Before installation:

- Read this manual carefully, determine the correct connection diagram.

- Make sure to use adequate fuses.

- Do not subject the unit to water spill.

Below conditions may damage the device:

- Incorrect connections.

- Incorrect power supply voltage.

- Overload or short circuit at relay outputs

- Power supply frequency out of specified limits

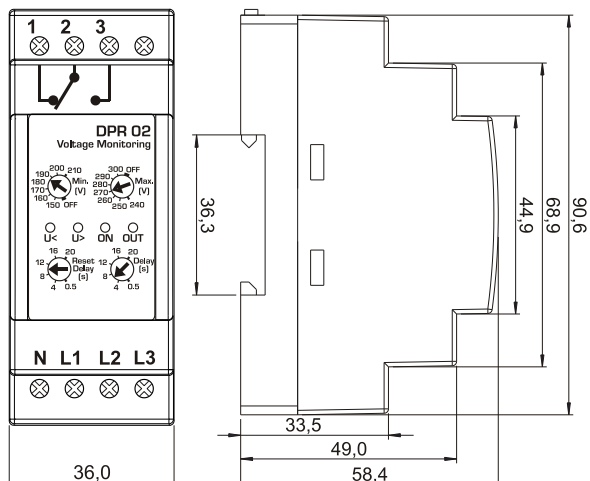
ELECTRICAL INSTALLATION

- Do not install the unit close to high electromagnetic noise emitting devices like contactors, high current busbars, switchmode power supplies and the like. Although the unit is protected against electromagnetic disturbances, excessive disturbance can affect the operation and measurement precision.
- Use adequate cable section, at least 0.75mm² (AWG18).



Do not overload relay outputs. Use extra contactors if required.

DIMENSIONS

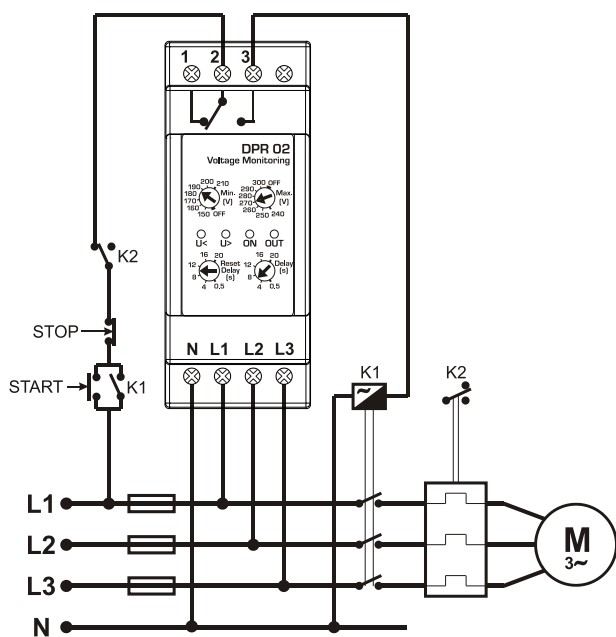


LED INDICATORS

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	MEANING
		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

INSTALLATION DIAGRAM



INPUTS AND OUTPUTS

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

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

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 line
Voltage Adjustment Accuracy: 3 %
Repetition Accuracy: 0.5 %
Over-Voltage Trip: 240-300 V-AC (L-N)
Under-Voltage Trip: 150-210V-AC (L-N)
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 2.5mm² (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)

