

3 PHASE UNDER VOLTAGE CONTROL RELAY WITH PHASE SEQUENCE DETECTION

Type: PNDA & PNDI (4 wire system)

FEATURES

- * **Accurate under voltage detection of each phase against neutral**
- * **Phase sequence detection inhibit the relay with wrong sequence**
- * **Adjustable sensitivity from -5 to -25% of nominal voltage**
- * **Adjustable differential from -5 to -80% of under voltage offset from nominal. Voltage range 0,25 to 20% of under voltage**
- * **Time delay - on and off - individually adjustable**
- * **One unit for three mains voltages**
- * **6 LEDs indicate the state of input, phase sequence, timing function and relay**

Description:

The 3 phase 4 wire voltage relays are designed for applications where the three phases need to be individually monitored for under voltage against neutral and correct phase sequence. The PNDA and PNDI contain a standard timing function. In addition the PNDI offers a true time delay on drop out even at total power failure. The relay works in "fail safe" mode and need no external power supply.

Operation:

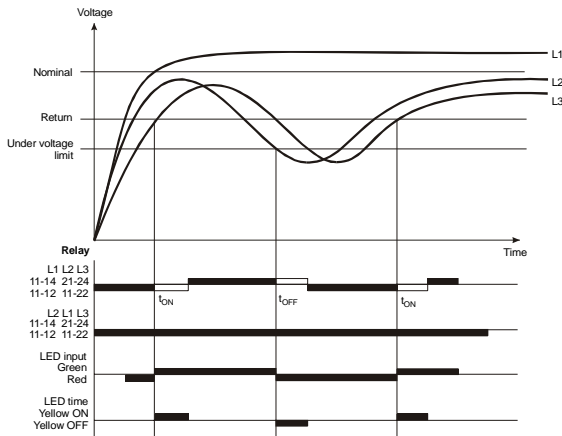
Under normal phase conditions the relay is energized - contacts 11-14 and 21-24 closed - and the green "input" LED and the yellow "relay" LED are switched on.

If one or more phase voltages are below the preset under voltage value, the red "input" LED will be switched on and stay on until all three phase voltages are above the set value plus the preset differential, given by a percentage of the under voltage offset from the nominal value.

If the state of the relay is not corresponding to the input signal, the yellow LED indicating delay "ON" or "OFF" will be on until the relay changes state and corresponds to the input.

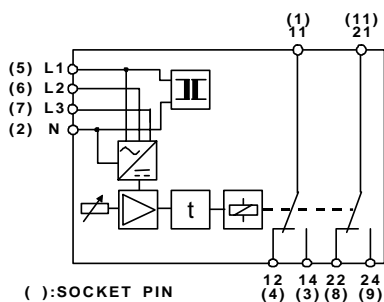
In case of wrong phase sequence the relay will not be energized and the red "inversed phase sequence" LED will be on indicating the fault.

FUNCTION DIAGRAM

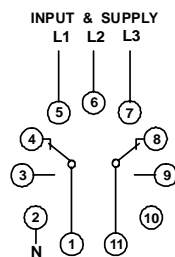


CONNECTION DIAGRAM

Rail mounting



Socket mounting*

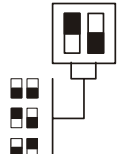


PROGRAMMABLE FEATURES

Nominal Voltage Settings

Type	Type	Type	Type
110 V	230 V	400 V	460 V
100 V	220 V	380 V	440 V
110 V	230 V	400 V	460 V
115 V	240 V	415 V	480 V

Actuator



*CE up to 230V phase to phase voltage

SPECIFICATIONS

INPUT

Phase to phase voltage
Selectable by dipswitch

Type B110: 100, 110 and 115
Type B230: 220, 230 and 240
Type B400: 380, 400 and 415
Type B460: 440, 460 and 480

Input resistance

B110 130 k Ω
B230 280 k Ω
B400 500 k Ω
B460 580 k Ω

Frequency range 45 to 440 Hz

Under voltage, Range - 5 to - 25 %

Differential, Range 5 to 80% of under voltage offset

PERFORMANCE PARAMETERS

TIMING

Response time

Approx. 500 msec. with limited under voltage
Approx. 100 msec. with total phase loss

Time range during run

Separate On and Off delay
0 - 10 sec. adjustable

True time delay

PNDI > 6 sec. at total phase loss

ELECTRICAL

Nominal accuracy all phases \pm 2%
Limit accuracy all phases \pm 2%
Repeat accuracy all phases \pm 0,5%

Temp. dependence Typ. \pm 0.02 % / $^{\circ}$ C
Supply dependence Typ. \pm 0.01 % / Δ U

OUTPUT

Relay, 2 C/O

Contact rating 6 A, 250 VAC, 1250 W
Mechanical life 30 Million operations

SUPPLY

AC voltage internal from N and L1

AC supply range 110 V (From 75 to 127 V)
with transformer 230 V (From 165 to 264 V)
Standard voltage 400 V (From 285 to 457 V)
460 V (From 330 to 528 V)

AC frequency range 45 to 440 Hz
Power consumption 4 VA, 2 W

GENERAL

Temperature range - 25 $^{\circ}$ C to + 55 $^{\circ}$ C ambient
Humidity Up to 90 % RH non-condensing
Dielectric test voltage

Coil to relay contacts	4000 VAC
Pole to pole	2500 VAC

11-12-14 to 21-22-24

Weight 0.22 kg



International Standards

EMC directive 89/336: EN50081 - Emission
EN50082 - Immunity

Low voltage directive 73/23: EN60255 - Electrical Relays

ORDERING INFORMATION

EXAMPLE:

TYPE
3 Phase voltage control relay

SUPPLY
AC with transformer

INPUT AND SUPPLY VOLTAGE

100, 110 and 115
220, 230 and 240
380, 400 and 415
440, 460 and 480

ADJUSTMENT

Trimpot and dipswitch adj.

HOUSING

Rail mounting

SIZE

35 mm.

CODE END

