

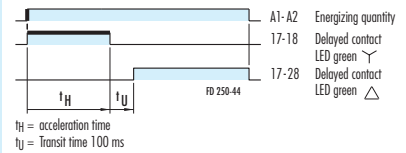
# NGD 31

## Star-Delta Relay

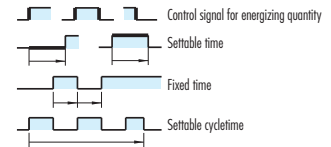
- Multi-voltage for AC/DC 24 to 240 V
- 1 function, star-delta switching
- 3 time ranges available
- 1 changeover contact
- 2 LEDs for function display

## Functions

Function code 51 = Star-delta switching, interval ON



### Legend



## Time ranges

Available time ranges:

- 0.5 to 10 s
- 1.5 to 30 s
- 5 to 100 s

## Features

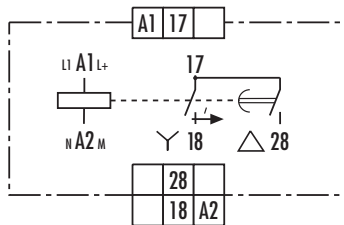
### Setting the time delay

The required delay time is set with a setting wheel. You can adjust it with a screwdriver.

Method of operation: The NGD 31 has two sequentially switching delayed outputs for starting motors in star-delta mode. After expiry of the preselected acceleration time  $t_H$  for star mode and a fixed transit time  $t_U$  the second contact switches to operated condition for delta mode. When the energizing quantity switches off the contact switches to normal condition.

LEDs display the position of the contacts. You can follow the countdown on the LEDs.

## Connection diagram



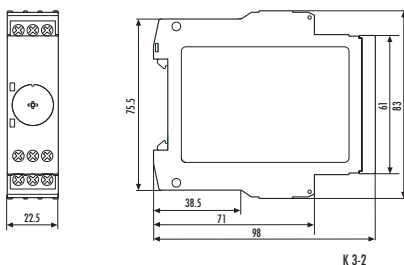
KS 250-21

## Note

The device is designed for multi-voltage. Connect phase L1 or L+ to terminal A1 and neutral N or M to terminal A2.

You can change the delay time during operation. The change is effective immediately.

## Dimensions



K 3-2

## Ordering designation

**NGD 31**

Price code: 54.1

## Technical data

<b>Device type</b>	<b>NGD 31</b>
<b>Product norm</b> (Time relays)	EN 61812-1:1999-08
Relay function according to IEC 60050	445-01-10 + 445-01-08
Function diagram	FD 250-44
Function display	2 LEDs green
Ambient operating temperature range	-25 to +60 °C
<b>Input circuit</b>	
Rated voltage A1 - A2	AC/DC 24 to 240 V
Rated power AC	3.5 VA/1.7 W
Rated power DC	1.6 W
Rated voltage limits	70 to 110 %
Rated frequency $f_n$	50 to 60 Hz $\pm$ 5 %
Release value of input voltage (line capacitance approx. 150 pF/m)	$\geq$ AC/DC 10 V; permissible line capacitance 0.2 $\mu$ F
Parallel load permitted	A1 - A2 yes
Internal one-way rectifier	A1 - A2 no
<b>Time circuit</b>	
Time setting / number of time ranges	analog/1
Setting ranges for time delay	from 0.5 s to 100 s, available in ranges:
	0.5 to 10 s
	1.5 to 30 s
	5.0 to 100 s
Fixed transit time	100 ms $\leq$ $\pm$ 2 %
Setting tolerance	$\leq$ $\pm$ 5 %
Recovery time	$\leq$ 50 ms
Repeatability (to set value)	$\leq$ $\pm$ 0.01 % $\pm$ 10 ms
Influence of temperature (within range)	$\leq$ $\pm$ 0.002 %
Influence of voltage (within range)	$\leq$ $\pm$ 0.002 %
<b>Output circuit</b>	
Contact equipment	1 changeover contact
Contact material	AgNi 90/10
Rated operating voltage	AC/DC 24 to 240 V
Rated value for limiting continuous current $I_{th}$	5 A
Minimum contact load	$\geq$ AC/DC 5 V/ $\geq$ 10 mA
Utilization category according to IEC 60947-5-1	AC-15 U <sub>e</sub> AC 230 V, I <sub>e</sub> 3 A DC-13 U <sub>e</sub> DC 24 V, I <sub>e</sub> 2 A
Permissible switching frequency	$\leq$ 3600 switching cycles/h
Mechanical service life	30 x 10 <sup>6</sup> switching cycles
Electrical service life 20/2 A, AC 250 V, cos $\phi$ = 0.3	0.12 x 10 <sup>6</sup> switching cycles AC-15
Operate time / release time for excitation A1 - A2	40 ms
<b>Other data</b>	
Clearance/creepage distances to IEC 60664-1	
Contamination level	3 outside, 2 inside
Overvoltage category	III
Rated voltage	AC/DC 275 V
Protection class housing / terminals acc. to IEC 60529	IP 40/IP 20
Interference immunity acc. to IEC 61000-4	Test level 3
Dimensions (housing)	K 3-2
Terminal connection diagram	KS 250-21
Connection cross sections single or fine wire	1 x 0,2 to 6 or 2 x 0,2 to 2,5 mm <sup>2</sup>
fine wire with connector sleeve	1 x 0,4 to 4 or 2 x 0,2 to 1,5 mm <sup>2</sup>
Weight	0.11 kg
<b>General Technical Specification</b>	NGG Catalogue