

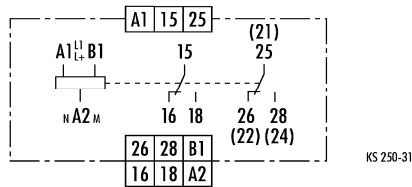


NGM 1600

Multi-function multi-range timer relay

- Multi voltage for AC/DC 24 up to 240 V
- 16 functions
- Setting range from 0.1 s to 300 h divided into 16 selectable time ranges
- 2 change-over contacts or 1 instantaneous change-over contact and 1 timed change-over contact (function-dependent)
- 3 LEDs for function display

Circuit diagram



Time ranges

Setting range from 0.1 s to 300 h divided into:

<0.1 ... 1 s	5 ... 100 s	1.5 ... 30 min	0.5 ... 10 h
0.15 ... 3 s	15 ... 300 s	3 ... 60 min	1.5 ... 30 h
0.5 ... 10 s	50 ... 1000 s	5 ... 100 min	5 ... 100 h
1.5 ... 30 s	0.5 ... 10 min	0.15 ... 3 h	15 ... 300 h

Function

Setting the function

The function is set with the MODE selector switch and displayed by the function code in the window next to it. The code designation for the function can be found in the column "Function diagrams".

Setting the time delay

The time range is set with the RANGE selector switch and displayed in the window next to it. The desired delay time is set with a selecting wheel.

LEDs show the state of the excitation input and the position of the contacts. You can monitor the countdown on a flashing LED.

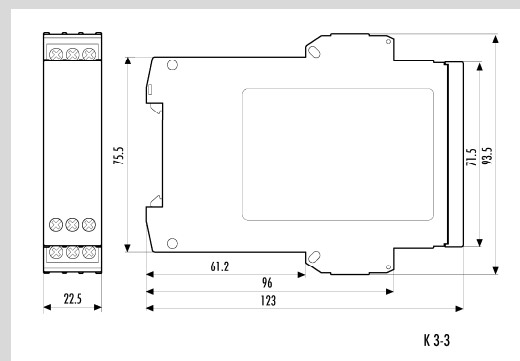
Functions

Mode	Funktion
11	ON-delay
11-ON	ON-delay, with instantaneous contact
11C-ON	ON-delay, with instantaneous contact, accumulative y/n, with auxiliary supply
12	OFF-delay, with auxiliary supply
12-ON	OFF-delay, with instantaneous contact, with auxiliary supply
11-12	ON-delay, OFF-delay, with auxiliary supply
12-22	OFF-delay and interval OFF, 0,5 s fixed interval time, with auxiliary supply
21	interval ON
21-ON	interval ON, with instantaneous contact
21-22	interval ON, interval OFF, with auxiliary supply
22-ON	interval OFF, with instantaneous contact, with auxiliary supply
43-44	clock-generating, 0,5 s fixed ON and OFF time, ON/OFF start, with cycle time setting
51	star-delta switching, interval ON
81-1s-ON	ON-delay, pulse-generating, 1 s fixed ON time
82-ON	pulse-shaping, with instantaneous contact, with auxiliary supply
83-84-1s	pulse-generating, 1 s fixed ON or OFF time

Notes

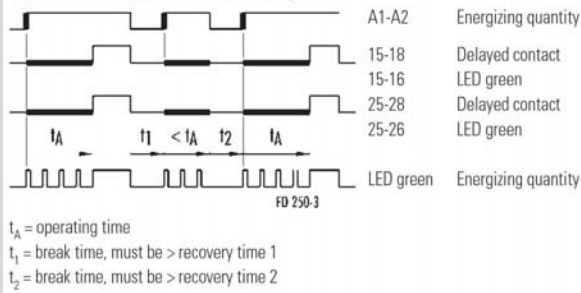
- The device is designed for multi-voltage. Connect phase L1 or L+ to terminal A1 and B1 and neutral N and/or M to terminal A2.
- You can change the function or delay time during operation. The change is effective immediately.

Dimension diagram

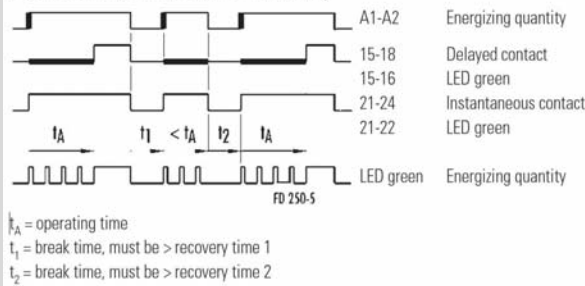


Function diagrams

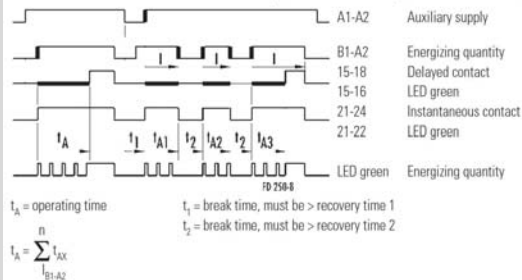
Function code 11 = ON-delay



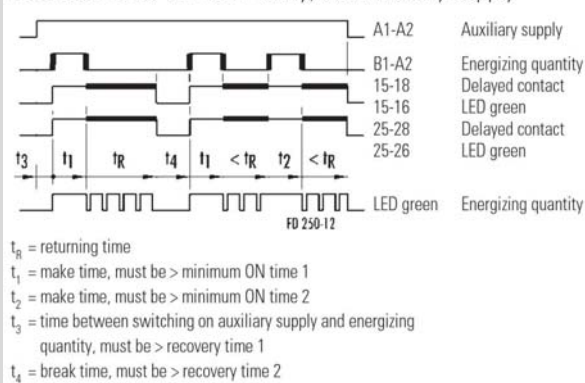
Function code 11-ON = ON-delay



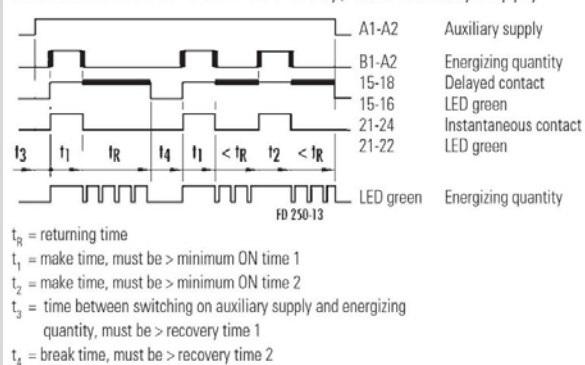
Function code 11C-ON = ON-delay, accumulative y/n, with auxiliary supply



Function code 12 = OFF-delay, with auxiliary supply

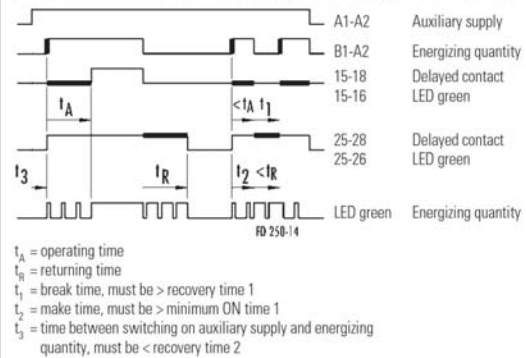


Function code 12-ON = OFF-delay, with auxiliary supply

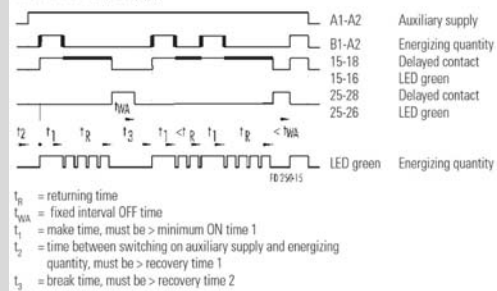


Function diagrams

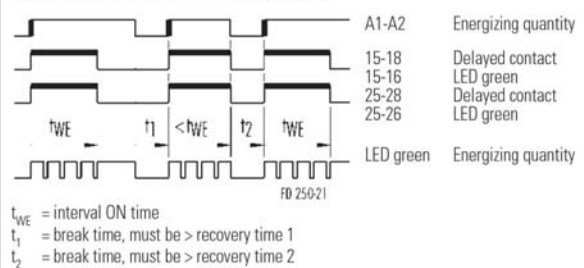
Function code 11-12 = ON-delay, OFF-delay, with auxiliary supply



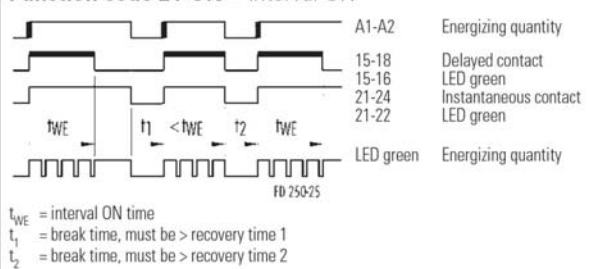
Function code 12-22 = OFF-delay and interval OFF, 0.5 s fixed interval time, with auxiliary supply



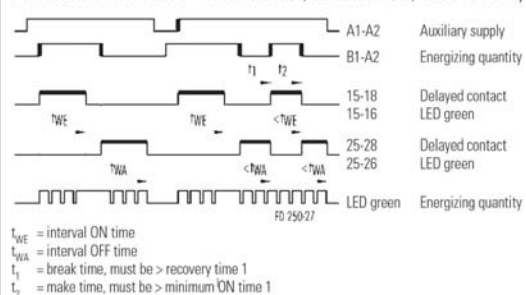
Function code 21 = interval ON



Function code 21-ON = interval ON

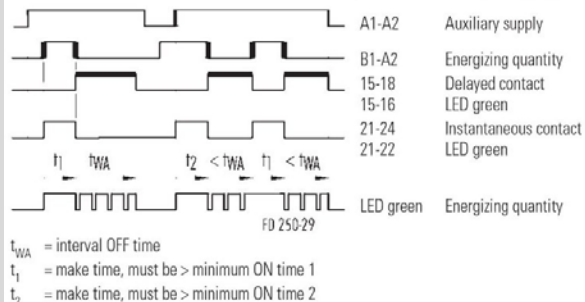


Function code 21-22 = interval ON, interval OFF, with auxiliary supply

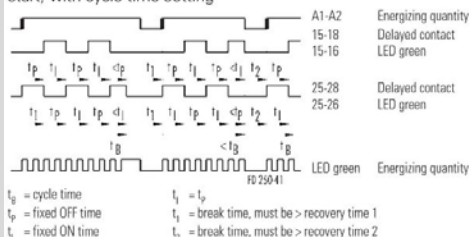


Function diagrams

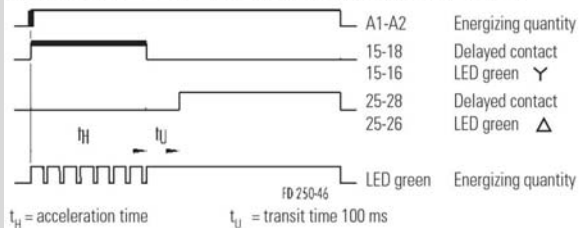
Function code 22-ON = interval OFF, with auxiliary supply



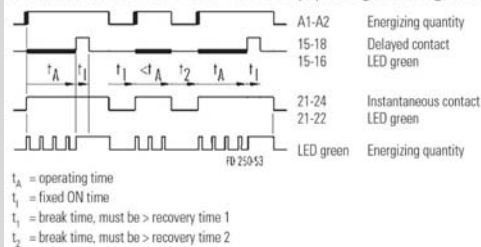
Function code 43-44 = clock-generating, 0.5 s fixed OFF and ON time, OFF/ON start, with cycle time setting



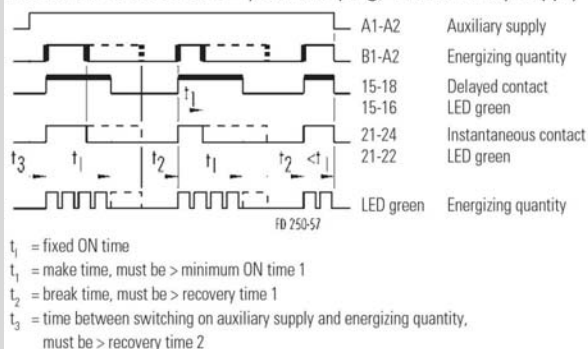
Function code 51 = star-delta switching, interval ON



Function code 81-1 s-ON = ON-delay, pulse-generating, 1 s fixed ON time

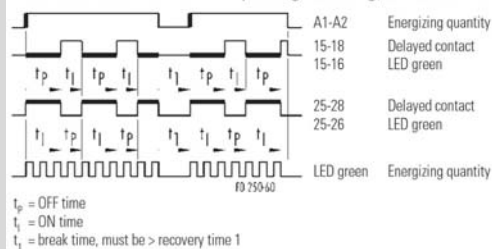


Function code 82-ON = pulse-shaping, with auxiliary supply

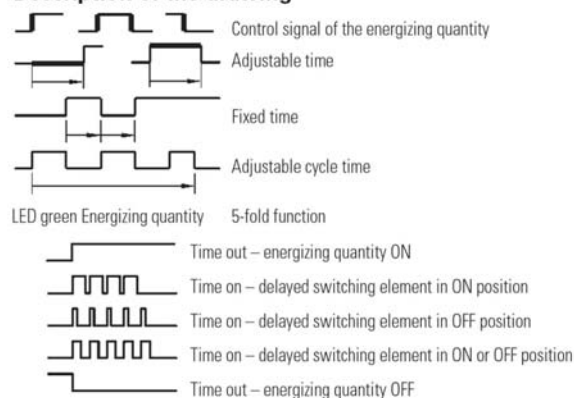


Function diagrams

Function code 83-84-1 s = pulse-generating, 1 s fixed ON or OFF time



Description of the drawing



Function codes / times

Function - code	Function - diagram	Recovery time (ms)			Minimum ON time (ms)	
		1	2	3	1	2
11	250-3	≤ 50	≤ 50	–	–	–
11-ON	250-5	≤ 50	≤ 50	–	–	–
11C-ON	250-8	≤ 50	≤ 50	–	–	–
12	250-12	0	0	–	≤ 25	≤ 25
12-ON	205-13	0	0	–	≤ 25	≤ 25
11-12	250-14	≤ 25	0	–	≤ 25	–
12-22	250-15	0	$t_{WA}+0$	–	≤ 25	–
21	250-21	≤ 50	≤ 50	–	–	–
21-ON	250-25	≤ 50	≤ 50	–	–	–
21-22	250-27	≤ 25	–	–	≤ 25	–
22-ON	250-29	≤ 50	≤ 50	–	–	–
43-44	250-41	≤ 50	≤ 50	–	–	–
51	250-46			–	–	–
81-1s-ON	250-53	≤ 50	≤ 50	–	–	–
82-ON	250-57	0	0	–	≤ 25	–
83-84-1s	250-60	≤ 50	–	–	–	–

Technical data		NGM 1600	
Product standard (timer relays)		EN 61812-1:1999-08	
Relay function according to IEC 60050 (445)		Multi-function relay with multi-time range	
Function display		3 LEDs green	
Function diagrams		See column "Function diagrams"	
Input circuit			
Rated voltage A1-A2		AC/DC 24 – 240 V	
Rated consumption AC		3.5 VA / 1.7 W	
Rated consumption DC		1.6 W	
Rated voltage limits		70 – 110 %	
Rated frequency f_n		50 – 60 Hz $\pm$ 5 %	
Release value of the input voltage (power capacity approx. 150 pF/m)		$\geq$ AC/DC 10 V; permissible line capacity 0.2 μ F	
Rated current on control connection (B1-A2)		1 mA	
Rated consumption on control connection (B1-A2)		< 0.25 W	
Parallel loads permissible		A1-A2 yes / B1-A2 yes	
Internal half-wave rectification		A1-A2 no / B1-A2 yes	
Time circuit			
Time setting / number of time ranges		analogous/ 16	
Setting ranges for time delay		See table "Time ranges"	
Recovery time 1/2/3		See table "Function codes / times"	
Minimum ON time 1/2		See table "Function codes / times"	
Setting tolerance		$\leq \pm$ 5 %	
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 %	
Output circuit			
Contact assignment		2 change-over contacts	
Contact material		AgNi 90/10	
Rated operating voltage		AC/DC 24 – 240 V	
Rated value for limiting continuous current I_{th}		5 A	
Minimum contact load		$\geq$ AC/DC 5 V / $\geq$ 10 mA	
Application category according to IEC 60947-5-1		AC-15 U _e AC 230 V, I _e 3 A DC-13 U _e DC 24 V, I _e 2 A	
Permissible switching frequency		$\leq$ 3600 switching cycles/h	
Mechanical life		30 x 10 ⁶ switching cycles	
Electrical life 20/2 A, AC 250 V, cos φ = 0.3		0.12 x 10 ⁶ switching cycles AC-15	
Response time / release time at excitation of A1-A2		40 ms	
Response time / release time at excitation of B1-A2		20 ms	
Other data			
Creepage distances and clearances		according to IEC 60664-1	
Degree of pollution		3 outside, 2 inside	
Overvoltage category		III	
Rated voltage		AC/DC 275 V	
Degree of protection according to IEC 60529 housing/terminals		IP 40 / IP 20	
Noise immunity according to IEC 61000-4		Test severity 3	
Ambient temperature, operating range		–25 to +60 °C	
Dimension diagram (housing)		K 3-3	
Circuit diagram of the terminals		KS 250-31	
Wire ranges		1 x 0.2 – 6 or 2 x 0.2 to 2.5 mm ²	
stranded or solid		1 x 0.4 – 4 or 2 x 0.2 to 1.5 mm ²	
stranded with ferrules			
Weight		0.13 kg	
Accessories		–	

Overview of devices / Part numbers

Type	Rated voltage	ON-delay time	Part No.
NGM 1600	AC/DC 24-240 V 50-60 Hz	See table "Time ranges"	R2.065.0049.0