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Modular pulse operated latching relay 16 A

Catalogue number(s): 4 124 04 / 05 / 07 / 08 / 10 / 11 / 12 / 14 / 16 / 20 and 927 00 / 49

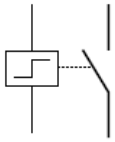


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1. DESCRIPTION - USAGE

Symbol:



Technology:
. Electromagnetic modular pulse operated latching relay (bistable relay)

Use:
. Permits the remote control of a load from several control points using push-buttons

2. RANGE

Conventional thermal current:
. 16 A

Type of contact:
. "NO" type contact on closing

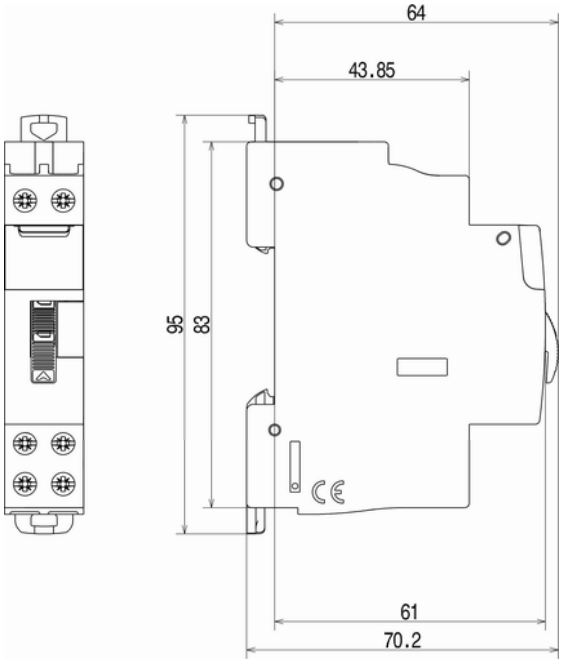
Polarities
. 1 "NO" single-pole in 1 module (17.8 mm)
. 2 "NO" 2-pole in 1 module (17.8 mm)
. 4 "NO" 4-pole in 2 modules (35.6 mm)

Nominal voltage of the control circuit:
. Un = 250/400 V~

Nominal voltage of the power circuit:
. 12 V, 24 V, 48 V and 230 V ~

Nominal frequency of the control and power circuits:
. 50 Hz/60 Hz

3. DIMENSIONS



4. POSITIONING - CONNECTION

Installation software:
. XL PRO

Operating position:
. Vertical, horizontal, flat (all positions)

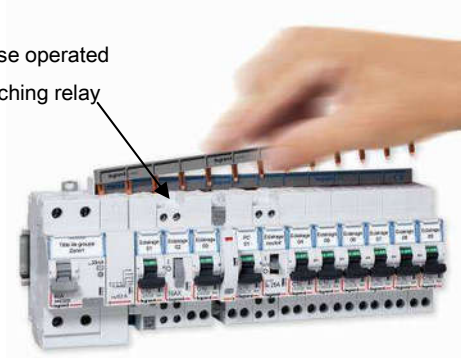
Mounting:
. On symmetrical EN 50-055 rail or DIN 35 rail, using 2 plastic clips.

Recommended tools:
. For the terminal screws: insulated or non-insulated screwdriver, Pozidriv no. 1 or with a 4 mm blade.
. For attaching: screwdriver with blade (5.5 mm max) or PZ1.

4. POSITIONING - CONNECTION (continued)

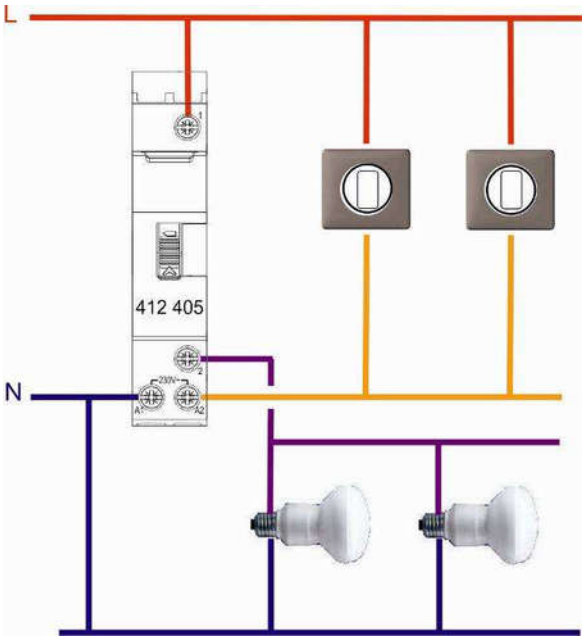
Positioning in a row:

. The product profile and positioning of the terminals allow single-phase and three-phase toothed connection supply busbars to be passed at the top of the product without impairing accessibility of the pulse operated latching relay terminals. This way it is possible to select the position of the pulse operated latching relay freely in the row and to supply the circuit breakers located on the same rail using toothed supply busbars.



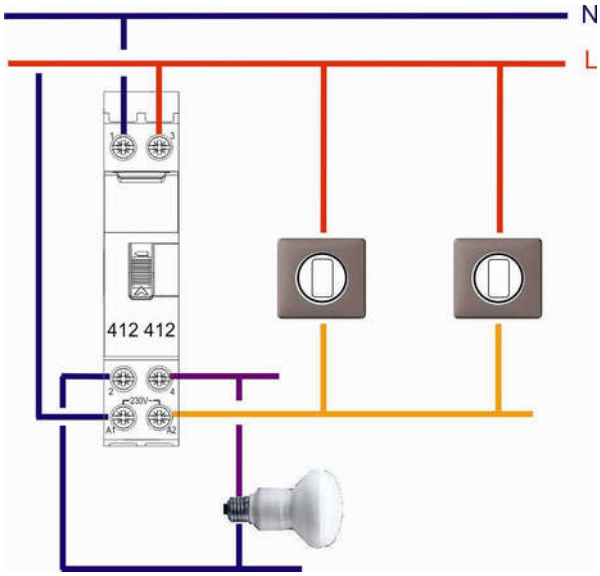
Examples of schematic diagrams:

. 1 "NO" pulse operated latching relay

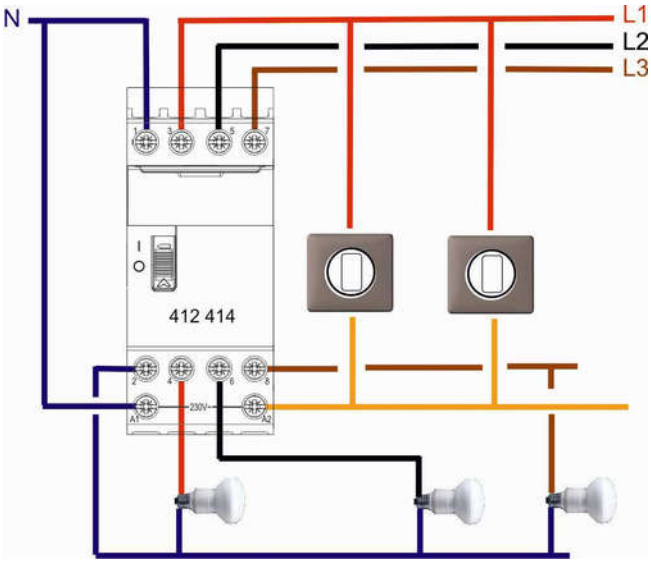


4. POSITIONING - CONNECTION (continued)

. 2 "NO" pulse operated latching relay



. 4 "NO" pulse operated latching relay



Connection:

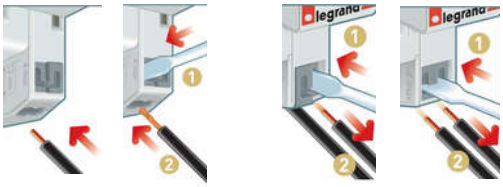
. Screw control and power terminals:
- Type of terminal: caged
- Depth: 12 mm
- Capacity (h x w): 4.7 x 4.7 mm
- Compatible copper conductors

Rigid: 1 x (0.75 to 6 mm²) or 2 x (0.75 to 2.5 mm²)
Flexible without end cap: 1 x (0.75 to 6 mm²) or 2 x (0.75 to 2.5 mm²)
Flexible with single end cap: 1 x (0.75 to 6 mm²)
Flexible with double end cap: 1 x (0.75 to 4 mm²)
- Screw head: Posidriv no. 1, 4 mm blade and mixed
- Screw head: M3.5
- Tightening torque: min. = 0.5 Nm/max. = 1.2 Nm/recommended: 0.8 Nm

4. POSITIONING - CONNECTION (continued)

. Automatic control and power terminals:
- Opened by a push-button that can be operated using a screwdriver
- Compatible with copper conductors

Rigid: 1 x (0.75 to 2.5 mm²) or 2 x (0.75 to 2.5 mm²)
Flexible without end cap: 1 x (0.75 to 2.5 mm²) or 2 x (0.75 to 2.5 mm²)



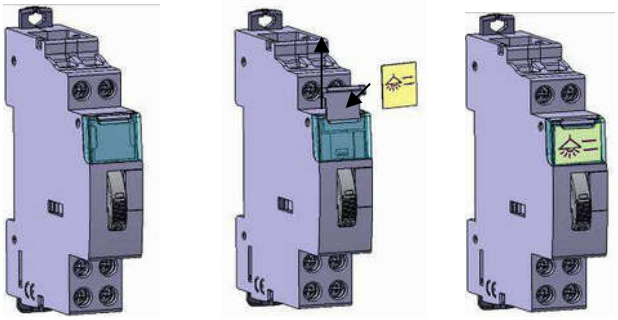
Degree of protection:
. Terminals protected against direct contact: IP2x (wired device)
. Front panel protected against direct contact: IP3XD
. Class II, front side with faceplate
. Protection against impacts: IK04

Resistance to tremors:
. No change in the status of the contacts during the "resistance to tremors" test as defined by standard EN 60898

Device handling:
. Via ergonomic 2-position handle (I – O)

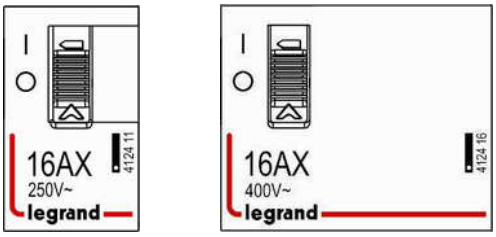
Control status display:
. By the position of the handle:
- Position 1: contacts closed
- Position 0: contacts opened

Labelling :
. The circuits are identified on the front panel using labels inserted in the label holder.



5. GENERAL CHARACTERISTICS

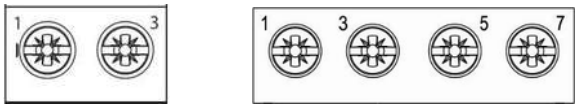
Marking:
By indelible pad printing:
. Front panel



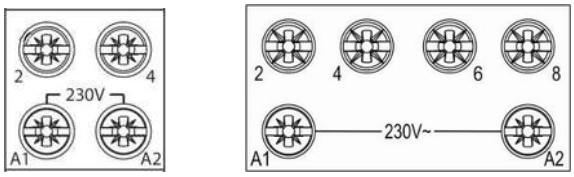
5. GENERAL CHARACTERISTICS (continued)

Marking:
. Terminal marking
Power: from 1 to 8 Control: A1 and A2

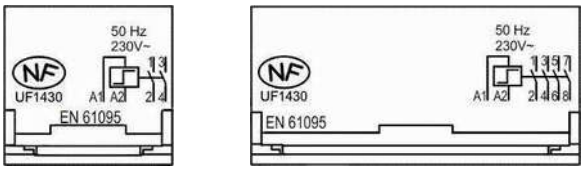
Upper terminals



Lower terminals



By laser marking
. upper panel: approval logos, circuit diagram



Isolation distance:
. > 3 mm in compliance with standard NF EN 60669-2-2 (section 23)

Rated insulation voltage (Ui):
. 1-pole/2-pole: 250 V~
. 4-pole: 400 V~

Insulation voltage between the control circuit and the power circuit:
. 4,000 V.

Rated impulse withstand voltage:
. U imp = 4 kV

Dielectric strength:
. 2000 V

Impact of height:
. No impact up to 4,000 m

DC operation:
. The pulse operated latching relays are not suitable for DC operation.

Operating force using the handle:
. 1-pole and 2-pole: 200 g for closing and opening
. 4-pole: 500 g for closing and opening

Minimum electrical control pulse duration:
. Minimum: 0.150 sec

Control consumption:

Type of contact	Control voltage	Frequency	Consumption at Un	
			Holding	Inrush
1 "NO"	12 V	50 Hz	670 mA	2,500 mA
1 "NO"	24 V	50 Hz	280 mA	1,200 mA
2 "NO"	24 V	50 Hz	280 mA	1,200 mA
4 "NO"	24 V	50 Hz	570 mA	2,500 mA
2 "NO"	48 V	50 Hz	170 mA	700 mA
1 "NO"	230 V	50 Hz	30 mA	130 mA
2 "NO"	230 V	50 Hz	30 mA	130 mA
4 "NO"	230 V	50 Hz	50 mA	250 mA

5. GENERAL CHARACTERISTICS *(continued)*

Maximum length of control lines:

. The length of the control lines is limited on account of their resistive and capacitive effects.

. Maximum length in metres for a 1.5 mm² cross-section cable

Control voltage	12 V	24 V	48 V	230 V
1NO / 2NO	60 m	260 m	980 m	325 m
4NO	-	110 m	-	625 m

. The maximum distance between the push-button and the pulse operated latching relay will therefore be half of the values stated in this table

. For other cable cross-sections the maximum length is inversely proportional to the cable cross-section

Maximum number of illuminated push-buttons without operating hazards:

. For a pulse operated latching relay, 230 V control:
Control possible via illuminated push-buttons if consumption is less than 3 mA for a 1-pole or 2-pole pulse operated latching relay and less than 6 mA for a 4-pole pulse operated latching relay.
Connect a compensator Cat. No. 412 439, if consumption is greater than these values.
Connect two compensators Cat. No. 4 124 39 if the control consumption is greater than 6 mA for a 1-pole or 2-pole pulse operated latching relay (from example from 12 illuminated push-buttons with 0.55 mA consumption) and 10 mA for a 4-pole pulse operated latching relay.

. For 12V control:
Control possible via illuminated push-buttons if consumption is less than 55 mA for a 1-pole pulse operated latching relay.

. For 24V control:
Control possible via illuminated push-buttons if consumption is less than 35 mA for a 2-pole pulse operated latching relay and 80 mA for a 4-pole pulse operated latching relay.

. For 48V control:
Control possible via illuminated push-buttons if consumption is less than 15 mA for a 2-pole pulse operated latching relay.
This maximum number of illuminated push-buttons does not change if an association is made with a centralised control auxiliary Cat. No. 4 124 33 or 4 124 34.

Dissipated power:

. 0.8 W per contact at In

Power consumption:

. 0.24 kWh per pole and per year with "normal" usage

5. GENERAL CHARACTERISTICS *(continued)*

Endurance:

. Number of changes of position with no load:
- Via the handle: 500
- Via the electric control: 1 000 000

. Number of changes of position with a load:
- 200,000 at 16 A cosΦ 0.6 for 1-pole and 2-pole
- 100,000 at 16 A cosΦ 0.6 for 4-pole
- 100,000 with bulbs applying the derating stated in the tables below
- 5,000 with a fluorescent load of 16 A (in compliance with the standard NF EN 60669-2-2)

Operating temperature:

. A standard pulse operated latching relay is set to function with its nominal current at an ambient temperature of + 30°C

. Usage temperature: Between - 25°C and + 60°C without derating

Storage temperature:

- between - 40°C and + 70°C

Enclosure material:

. Polyamide

Plastic material characteristics:

. Compliance with the resistance to incandescent wire for 30 seconds in accordance with IEC 60669-2-2 (sec 24.1):
- Handle: 650°C/Other parts: 850°C

Weight:

. Average 0.120 kg per 1-pole and 2-pole device
Average 0.230 kg per 4-pole device

Packaged volume:

. 0.2 dm^3 for the 1-pole and 2-pole devices packaged in units

. 1.6 dm^3 for the 1-pole and 2-pole devices packaged in packs of 10

. 0.4 dm^3 for the 4-pole devices packaged in units

5. GENERAL CHARACTERISTICS *(continued)*

Pulse operated latching relay selection chart:

. Lighting

Maximum number of bulbs per contact of the pulse operated latching relay in 230 V~ single-phase and 400 V~ three-phase + neutral networks (in 230 V~ three-phase network without neutral, the values stated in these tables have to be divided by √3).

- Incandescent lamps

Low-voltage tungsten 230 V~ and halogen filaments				
Unit power	40 W	60 W	75 W	100 W
16 A	45	30	24	18

Low-voltage tungsten 230 V~ and halogen filaments (continued)				
Unit power	150 W	200 W	500 W	1000 W
16 A	12	9	3	1

ELV halogen bulbs with ferromagnetic ballast						
Unit power	20 W	35 W	50 W	75 W	100 W	150 W
16 A	32	20	15	10	8	5

ELV halogen bulbs with electronic ballast						
Unit power	20 W	35 W	50 W	75 W	100 W	150 W
16 A	70	40	28	18	14	9

- Fluorescent tubes with ferromagnetic ballast

Non-compensated single fluorescent tubes					
Unit power	18 W	20 W	36 W	58 W	115 W
16 A	30	25	20	13	7

Single parallel compensated fluorescent tubes					
Unit power	18 W	20 W	36 W	58 W	115 W
16 A	24	20	16	11	5

Double series compensated fluorescent tubes					
Unit power	2 x 20 W	2 x 36 W	2 x 40 W	2 x 58 W	2 x 140
16 A	30	24	22	15	6

Quadruple series compensated fluorescent tubes	
Unit power	4 x 18 W
16 A	16

5. GENERAL CHARACTERISTICS *(continued)*

- Fluorescent tubes with electronic ballast

Single fluorescent tubes				
Unit power	18 W	30 W	36 W	58 W
16 A	72	42	36	22

Double fluorescent tubes			
Unit power	2 x 18 W	2 x 36 W	2 x 58 W
16 A	36	20	12

Triple fluorescent tubes		
Unit power	3 x 14 W	3 x 18 W
16 A	34	26

Quadruple fluorescent tubes		
Unit power	4 x 14 W	4 x 18 W
16 A	26	20

Compact fluorescent tubes with built-in electronic power supply					
Unit power	7 W	11 W	15 W	20 W	23 W
16 A	120	80	64	50	42

Compact fluorescent tubes for electronic supply					
Unit power	11 W	18 W	32 W	57 W	70 W
16 A	80	54	30	17	14

Compact fluorescent tubes with integrated starter for ferromagnetic supply					
Unit power	7 W	10 W	18 W	26 W	
16 A	50	40	28	19	

- Discharge lamps

Metal halogenide with compensation						
Unit power	35 W	70 W	100 W	150 W	250 W	400 W
16 A	10	6	5	3	2	1

Low pressure sodium vapour with compensation						
Unit power	18 W	35 W	55 W	90 W	135 W	180 W
16 A	12	6	5	3	2	2

High pressure sodium vapour with compensation					
Unit power	70 W	150 W	250 W	400 W	1000 W
16 A	8	7	5	3	1

High pressure mercury vapour with compensation					
Unit power	50 W	80 W	125 W	250 W	400 W
16 A	11	8	6	3	2

High pressure mixed				
Unit power	100 W	160 W	250 W	400 W
16 A	11	7	5	3

6. EQUIPMENT AND ACCESSORIES

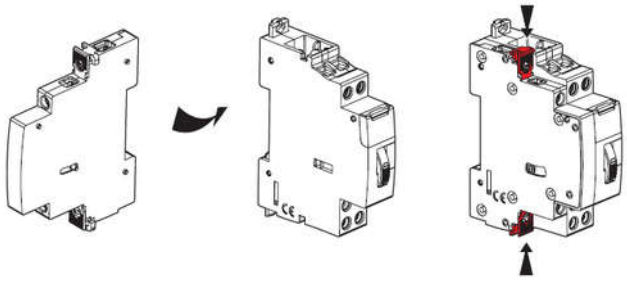
Auxiliaries:

. NO+NC changeover contact signalling auxiliary: Cat. No. 4 124 29
. Auxiliaries for pulse operated latching relay centralised control:
- Cat. No 4 124 33 for pulse operated latching relays with control voltage 24/48 V ~
- Cat. No 4 124 34 for pulse operated latching relays with control voltage 230 V ~

. Auxiliaries for centralised control of groups of pulse operated latching relays: Cat. No 4 124 36 for groups of pulse operated latching relays with control voltage 230 V~
. 230 V~ compensator: Cat. No. 4 124 39
. Control by maintained contact: Cat. No. 4 124 37

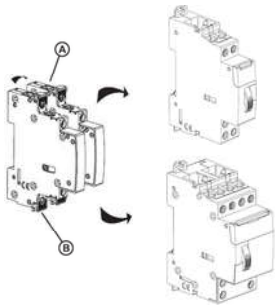
Attaching auxiliaries:

. Auxiliaries are installed to the left of the pulse operated latching relays



. Option of adding two auxiliaries per pulse operated latching relay, either two auxiliary contacts or one auxiliary contact and one centralised control auxiliary

A	B
412 429 412 433 412 434 412 437	
412 429 412 433 412 434 412 437	412 429



7. COMPLIANCE AND APPROVALS

Compliance with standards:

. NF EN 60669-2-2

Classification in accordance with Appendix Q: (standard IEC/EN 60947-1)

. Category F

Inter alia: temperature test range -25°C/+70°C, vibration test 2 Hz to 13.2 Hz with ±1mm movement, 13.2 Hz to 100 Hz acceleration ±0.7 g, salt spray in accordance with IEC 60068-2-52

Respect for the environment – Compliance with European Union Directives:

. Compliance with Directive 2002/95/EC of 27/01/03 known as "RoHS" which provides for a restriction on the use of dangerous substances such as lead, mercury, cadmium, hexavalent chromium and polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) brominated flame retardants from 1st July 2006
. Compliance with the Directive 91/338/EEC of 18/06/91 and decree 94-647 of 27/07/04

Plastic materials:

. Zero halogen plastic materials.
. Labelling of parts compliant with ISO 11469 and ISO 1043.

Packaging:

. Design and manufacture of packaging compliant with decree 98-638 of 20/07/98 and Directive 94/62/EC

Approvals obtained:

. France: NF