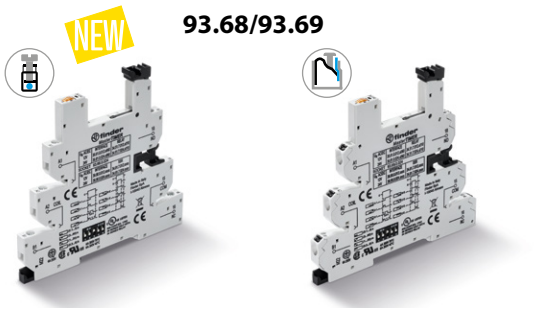
Slim timed sockets for 34 series, 6.2 mm wide

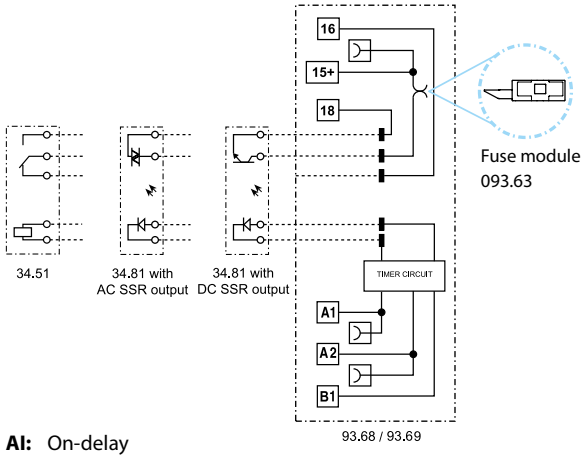
- Timer adjustment via top mounted rotary knob accessible after assembly
- Control signal terminal
- DIP-switch for selection of 4 time scales and 8 functions
- Output with fuse module option
- EMR and SSR: 12 to 24 V AC/DC supply
- Screw terminal and push-in terminal

93.68
Screw terminals

93.69
Push-in terminal



- Time scale: from 0.1 s to 6 h
- Multi-function
- For use with 34.51 (EMR) and 34.81 (SSR) relays
- Screw terminal and push-in terminal



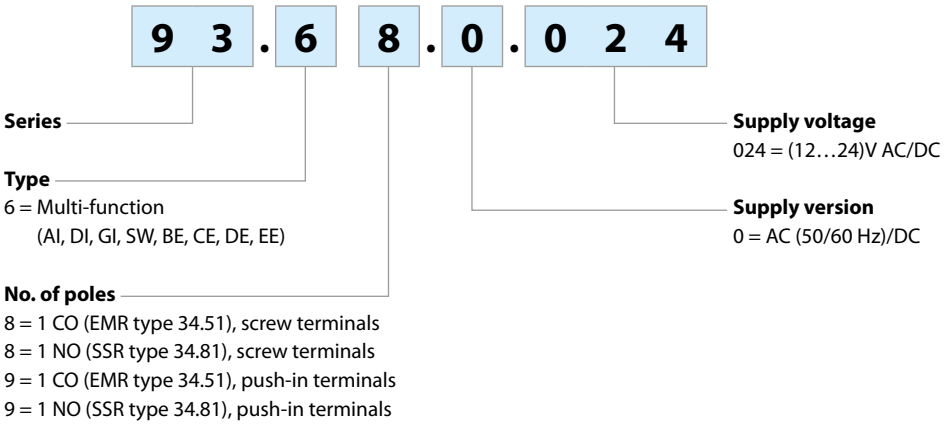
AI: On-delay
DI: Interval
GI: Pulse (0.5 s) delayed
SW: Symmetrical flasher (starting pulse on)
BE: Off-delay with control signal
CE: On- and off-delay with control signal
DE: Interval with control signal on
EE: Interval with control signal off

For outline drawing see page 5

Contact specification		
Contact configuration		See 34.51 and 34.81 relays
Rated current/Maximum peak current	A	
Rated voltage/ Maximum switching voltage	V AC	
Rated load AC1	VA	
Rated load AC15 (230 V AC)	VA	
Single phase motor rating (230 V AC)	kW	
Breaking capacity DC1: 30/110/220 V	A	
Minimum switching load	mW (V/mA)	
Standard contact material		
Supply specification		
Nominal voltage (U_N)	V AC (50/60 Hz)/DC	12…24
Rated power AC/DC	VA/W	See coils specifications page 4
Operating range	V AC (50/60 Hz)/DC	9.6…26.4
Technical data		
Specified time range		(0.1…3)s, (3…60)s, (1…20)min, (0.3…6)h
Repeatability	%	± 1
Recovery time	ms	≤ 50
Setting accuracy - full range	%	5
Electrical life at rated load in AC1	cycles	See 34.51 (EMR) and 34.81 (SSR) relays
Ambient temperature range	°C	–20…+50
Protection category		IP 20
Approvals (according to type)		

Ordering information

Example: type 93.68 multi-function timer module for 34 series relay, screw terminals, (12…24)V AC/DC supply voltage.



Combinations

Output	Supply voltage	Type of relay	Type of socket, screw terminals
1 pole 6 A, electromechanical relay	12 V AC/DC	34.51.7.012.0010	93.68.0.024
1 pole 6 A, electromechanical relay	24 V AC/DC	34.51.7.024.0010	93.68.0.024
1 output 6 A/24 V DC, solid state relay	12 V AC/DC	34.81.7.012.9024	93.68.0.024
1 output 2 A/240 V AC, solid state relay	12 V AC/DC	34.81.7.012.8240	93.68.0.024
1 output 6 A/24 V DC, solid state relay	24 V AC/DC	34.81.7.024.9024	93.68.0.024
1 output 2 A/240 V AC, solid state relay	24 V AC/DC	34.81.7.024.8240	93.68.0.024
Output	**Supply voltage**	**Type of relay**	**Type of socket, push-in terminals**
1 pole 6 A, electromechanical relay	12 V AC/DC	34.51.7.012.0010	93.69.0.024
1 pole 6 A, electromechanical relay	24 V AC/DC	34.51.7.024.0010	93.69.0.024
1 output 6 A 24 V DC, solid state relay	12 V AC/DC	34.81.7.012.9024	93.69.0.024
1 output 2 A 240 V AC, solid state relay	12 V AC/DC	34.81.7.012.8240	93.69.0.024
1 output 6 A 24 V DC, solid state relay	24 V AC/DC	34.81.7.024.9024	93.69.0.024
1 output 2 A 240 V AC, solid state relay	24 V AC/DC	34.81.7.024.8240	93.69.0.024

Note: Although the timer socket covers both 12 and 24 V supplies, it must be combined with the appropriate 12 V or 24 V relay; resulting in a combination suitable for just a single supply voltage.

H

Technical data

EMC specifications			
Type of test		**Reference standard**	
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV
	air discharge	EN 61000-4-2	8 kV
Radio-frequency electromagnetic field	(80 ÷ 1000 MHz)	EN 61000-4-3	10 V/m
	(1400 ÷ 2700 MHz)	EN 61000-4-3	10 V/m
Fast transients (burst) (5-50 ns, 5 and 100 kHz)	on Supply terminals	EN 61000-4-4	4 kV
	on control signal terminals	EN 61000-4-4	4 kV
Surges (1.2/50 µs) on supply and control signal terminals	common mode	EN 61000-4-5	2 kV
	differential mode	EN 61000-4-5	0.8 kV
Radio-frequency common mode (0.15 ÷ 80 MHz)	on Supply terminals	EN 61000-4-6	10 V
	on control signal terminals	EN 61000-4-6	3 V
Radiated and conducted emission		EN 55022	class B
Other data			
Current absorption on signal control (B1)	mA	< 1.7 (12 V) - < 3.5 (24 V)	
Bounce time (EMR) : NO/NC	ms	1/6	
Vibration resistance (EMR, 10…55 Hz): NO/NC	g	10/5	
Power lost to the environment	without contact current W	0.3	
	with rated current W	0.8	
Terminals		**Solid and stranded cable**	
		Screw terminals	**Push-in terminals**
Wire strip length	mm	10	8
Screw torque	Nm	0.5	—
Max. wire size	mm^2	1 x 2.5 / 2 x 1.5	1 x 2.5
	AWG	1 x 14 / 2 x 16	1 x 14
Min. wire size	mm^2	1 x 0.5	1 x 0.5
	AWG	1 x 21	1 x 21

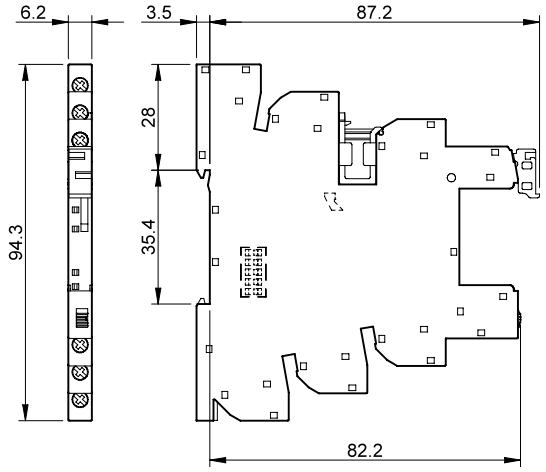
Input specifications

Input data AC/DC timer

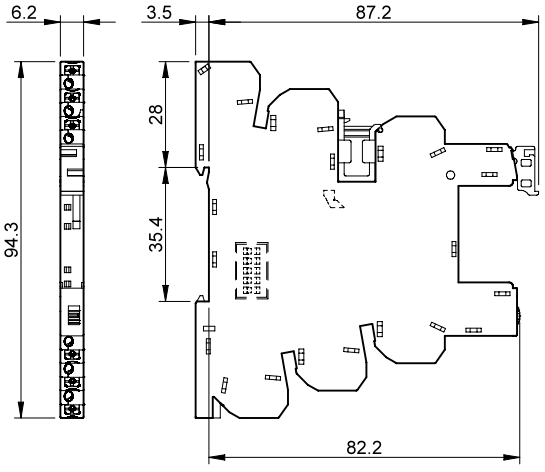
Nominal voltage	Operating range (AC/DC)		Must drop-out voltage	Rated input current at U_N		Rated power at U_N	
U_N	U_{min}	U_{max}	U_r	DC	AC	DC	AC
V	V	V	V	mA	mA	mA	mA
12	9.6	13.2	1.2	15	23	0.2	0.3/0.2
24	19.2	26.4	2.4	11	19	0.25	0.4/0.3

Outline drawing

Type 93.68
Screw terminals



Type 93.69
Push-in terminal



H

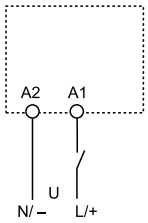
Times scales

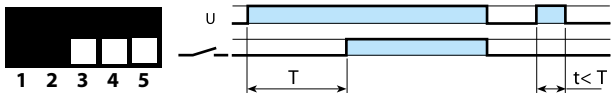
(0.1…3)s | (3…60)s | (1…20)min | (0.3…6)h

Functions

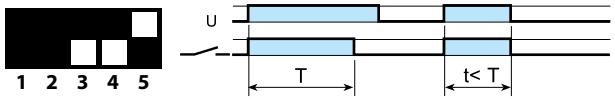
LED	Supply voltage	NO contact/output
	OFF	Open
	ON	Open
	ON	Open (timing to close in progress)
	ON	Closed

Wiring diagram **U** = Supply voltage **S** = Signal switch — = Output Contact

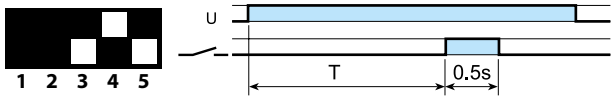




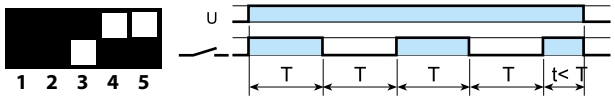
(AI) On-delay.
Apply power to timer.
Output contacts transfer after preset time has elapsed.
Reset occurs when power is removed.



(DI) Interval.
Apply power to timer.
Output contacts transfer immediately.
After the preset time has elapsed, contacts reset.



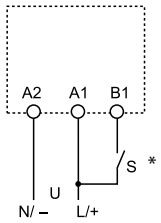
(GI) Pulse (0.5 s) delayed.
Apply power to timer.
Output contacts transfer after preset time has elapsed.
Reset occurs after a fixed time of 0.5 s.



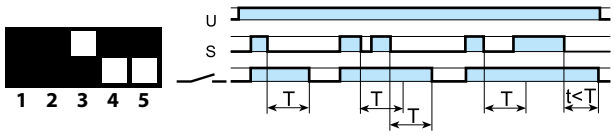
(SW) Symmetrical flasher (starting pulse on).
Apply power to timer.
Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied.
The ratio is 1:1 (time on = time off).

H

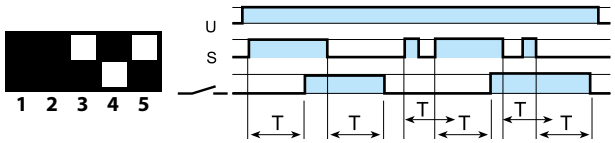
With control signal



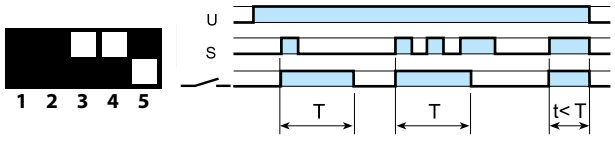
* With DC supply, positive polarity has to be conneted to B1 terminal (according to EN 60204-1).



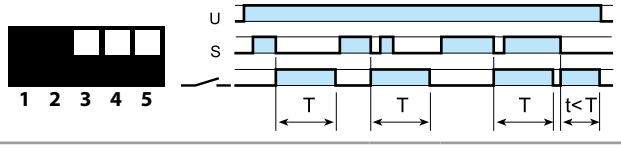
(BE) Off-delay with control signal.
Power is permanently applied to the timer. The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.



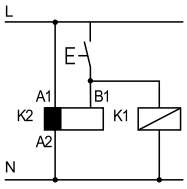
(CE) On- and off-delay with control signal.
Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which time the output contacts transfer. Opening the Signal switch initiates the same preset delay, after which time the output contacts reset.



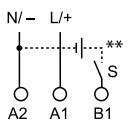
(DE) Interval with control signal on.
Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.



(EE) Interval with control signal off.
Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.

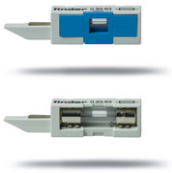


- Possible to control an external load, such as another relay coil or timer, connected to the control signal terminal B1.



** A voltage other than the supply voltage can be applied to the command Start (B1), example:
A1 - A2 = 24 V AC
B1 - A2 = 12 V DC

Accessories



093.63

Approvals (according to type):

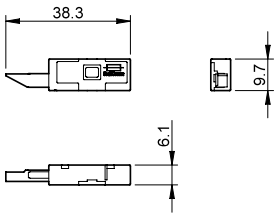
Output fuse module	093.63

- For 5 x 20 mm fuses up to 6 A, 250 V
- Easy visibility of the fuse condition through the window
- Quick connection to socket

Notes

Safety: Because the output circuit can be reinstated, even with the fuse removed, it is important not to consider the removal of the fuse as a "safety disconnect". Always isolate elsewhere before working on the circuit.

UL: According to UL508A, the fuse module cannot be installed in power circuits (in which it is mandatory that a fuse certified according to UL category JDDZ be fitted). However, where the MasterInterface is connected as an output interface to a PLC no such restrictions apply, and the fuse module can be usefully employed.



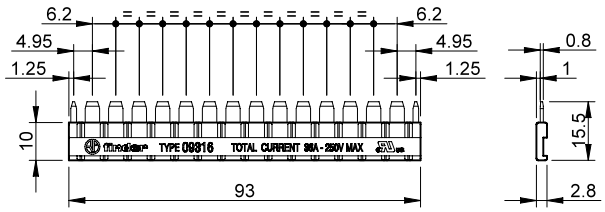
093.16

093.16.0

093.16.1

Approvals (according to type):

16-way jumper link	093.16 (blue)	093.16.0 (black)	093.16.1 (red)
Rated values	6 A - 250 V		
Possibility of multiple connection, side by side			

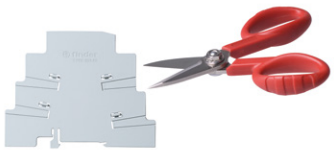


093.60

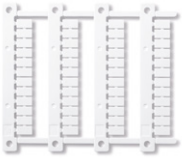
Dual-purpose plastic separator (1.8 mm or 6.2 mm separation)	093.60

1. By breaking off the protruding ribs (by hand), the separator becomes only 1.8 mm thick; useful for the visual separation of different groups of interfaces, or necessary for the protective separation of different voltages of neighbouring interfaces, or for the protection of cut ends of jumper links.

2. Leaving the ribs in place provides 6.2 mm separation. Simply cutting (with scissors) the relevant segment(s) permits the interconnection across the separator of 2 different groups of interface relays, using the standard jumper link.



Sheet of marker tags, plastic, 48 tags, 6 x 12 mm, for CEMBRE thermal transfer printers	060.48



060.48

Accessories

093.62

Terminal doubler (for socket Push-in only)		093.62
Total load		6 A - 300 V
Max. wire size		**Solid and stranded cable**
	mm²	2 x 1.5
	AWG	2 x 16

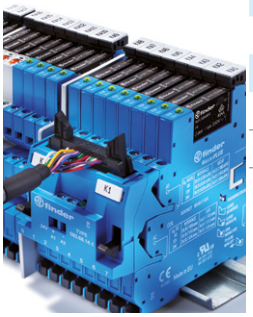
093.68.14.1

Approvals
(according to type):

*Master**ADAPTER***		093.68.14.1

The *Master**ADAPTER*** permits the easy connection of A1/A2 terminals of up to *Master**INTERFACE*** modules to PLC outputs via a 14-Pole ribbon cable, plus simple 2-wire power supply connection.

Technical data		
Rated current (per signal path)	A	1
Minimum required supply power	W	3
Nominal voltage (U_N)	V DC	24
Operating range		$(0.8…1.1)U_N$
Control logic		Positive switching (to A1)
Power supply status indication		Green LED
Ambient temperature range	°C	–40…+70
Terminals for 24 V control logic		
Type of connector		14 pole, according to IEC 60603-13
Terminals for 24 V power supply		
Wire strip length	mm	9.5
Screw torque	Nm	0.5
Max. wire size		
solid wire	mm²	1 x 4 / 2 x 1.5
	AWG	1 x 12 / 2 x 16
stranded wire	mm²	1 x 2.5 / 2 x 1.5
	AWG	1 x 14 / 2 x 16



Connected
*Master**ADAPTER***

H

finder
SWITCH TO THE FUTURE

Light dependent relays 12 - 16 A

- Garden and night lighting
- Shop displays
- Lighting for parks
- Streetlights and car park lighting

10 SERIES

Relays for automatic control of lighting according to the ambient light level

Integral light sensor

For pole or wall mounting

10.32 - 2 NO 16 A output contacts
10.41 - 1 NO 16 A output contact

- Double pole Live and Neutral switching possible with the 10.32
- Sensitivity adjustment from 1 to 80 lux
- Cadmium free contact material
- Cadmium free light sensor (IC photo diode)
- Electronic circuit - transformer isolated
- Italian Patent "light feedback compensation" innovative principle
  Compatible with slow starting gas discharge lamps (up to 10 minutes)
- For the first 3 working cycles the delay time (On and Off) is reduced to zero in order to aid installation
- Available for supply 230 and 120 V AC (50/60 Hz)

10.32

- Double pole switching - 2 NO 16 A for Live and Neutral switching

10.41

- Single pole switching - 1 NO 16 A for Live switching

For outline drawing see page 8

Contact specification					
Contact configuration		2 NO (DPST-NO)		1 NO (SPST-NO)	
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)		16/30 (120 A - 5 ms)	
Rated voltage/ Maximum switching voltage	V AC	120/—	230/—	120/—	230/—
Rated load AC1	VA	1900	3700	1900	3700
Rated load AC15	VA	400	750	400	750
Rated current AC5a	A	—	5	—	5
Nominal lamp rating:					
230 V incandescent/halogen	W	—	2300	—	2000
fluorescent tubes with electronic ballast	W	600	1200	500	1000
fluorescent tubes with electromagnetic ballast	W	450	850	400	750
CFL	W	250	500	200	400
230 V LED	W	—	500	—	400
LV halogen or LED with electronic ballast	W	250	500	200	400
LV halogen or LED with electromagnetic ballast	W	500	1000	400	800
Minimum switching load	mW (V/mA)	1000 (10/10)		1000 (10/10)	
Standard contact material		$AgSnO_2$		$AgSnO_2$	
Supply specification					
Nominal voltage (U_N)	V AC (50/60 Hz)	120	230	120	230
	V DC	—		—	
Rated power AC/DC	VA (50 Hz)/W	2/—		2/—	
Operating range	AC (50 Hz)	$(0.8…1.1)U_N$		$(0.8…1.1)U_N$	
	DC	—		—	
Technical data					
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$		$100 \cdot 10^3$	
Threshold setting	lx	1…80		1…80	
Preset threshold	lx	10		10	
Delay time: switching ON/OFF	s	15/30		15/30	
Ambient temperature range	°C	–30…+70		–30…+70	
Protection category		IP 54		IP 54	
Approvals (according to type)		CE EAC			

10 SERIES
Light dependent relays 12 - 16 A

Relays for automatic control of lighting according to the ambient light level

Integral light sensor
For pole or wall mounting
10.42 - Two independent 16 A outputs with individual lux setting
10.51 - Miniature single 12 A 1 NO output
10.61 - Mounting on street light body

- Sensitivity adjustment from 1 to 80 lux
- Fixed sensivity 10 lux (± 20%) - (10.61 type)
- Cadmium free contact material
- Cadmium free light sensor (IC photo diode)
- Electronic circuit - transformer isolated (10.42 type)
- Italian Patent "light feedback compensation" innovative principle (10.51 type)
- For the first 3 working cycles the delay time (On and Off) is reduced to zero in order to aid installation
- Available for supply 230 and 120 V AC (50/60 Hz)
- Prewired with silicone wire, 500 mm length (10.61 type)

10.42

- Two independent outputs - 2 NO 16 A

10.51

- Single pole switching - 1 NO 12 A
- Miniature size

10.61

- Single pole switching - 1 NO 16 A

For outline drawing see page 8

Contact specification						
Contact configuration		2 NO (DPST-NO)		1 NO (SPST-NO)		1 NO (SPST-NO)
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)		12/25 (80 A - 5 ms)		16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage	V AC	120/—	230/—	120/—	230/—	230/—
Rated load AC1	VA	1900	3700	1400	2760	3700
Rated load AC15	VA	400	750	300	600	750
Rated current AC5a	A	—	5	—	—	5
Nominal lamp rating:						
230 V incandescent/halogen	W	—	2000	—	1200	2000
fluorescent tubes with electronic ballast	W	500	1000	300	600	1000
fluorescent tubes with electromagnetic ballast	W	400	750	200	400	750
CFL	W	200	400	200	350	400
230 V LED	W	—	400	—	350	400
LV halogen or LED with electronic ballast	W	200	400	200	350	400
LV halogen or LED with electromagnetic ballast	W	400	800	300	600	800
Minimum switching load	mW (V/mA)	1000 (10/10)		1000 (10/10)		1000 (10/10)
Standard contact material		$AgSnO_2$		$AgSnO_2$		$AgSnO_2$
Supply specification						
Nominal voltage (U_N)	V AC (50/60 Hz)	120	230	120	230	230
	V DC	—		—		—
Rated power AC/DC	VA (50 Hz)/W	2/—		1.5/—		2.5/—
Operating range	AC (50 Hz)	$(0.8…1.1)U_N$		$(0.8…1.1)U_N$		$(0.8…1.1)U_N$
	DC	—		—		—
Technical data						
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$		$100 \cdot 10^3$		$100 \cdot 10^3$
Threshold setting	lx	1…80		1…80		10
Preset threshold	lx	10		10		10
Delay time: switching ON/OFF	s	15/30		15/30		15/30
Ambient temperature range	°C	–30…+70		–30…+70		–30…+70
Protection category		IP 54		IP 54		IP 54
Approvals (according to type)		CE EAC				CE EAC

Ordering information

Example: 10 series light dependent relay, 2 NO (DPST-NO) 16 A contact, screw terminal connections, 230 V AC supply.

1 0	.	3	2	.	8	.	2 3 0	.	0	0	0	0

Series

Type

32 = Double output - 2 NO 16 A
41 = Single output - 1 NO 16 A
42 = Two independent outputs - 2 NO 16 A
51 = Single output - 1 NO 12 A
61 = Mounting on street light body - 1 NO 16 A

Supply voltage

120 = 120 V
230 = 230 V

Supply version

8 = AC (50/60 Hz)

Technical data

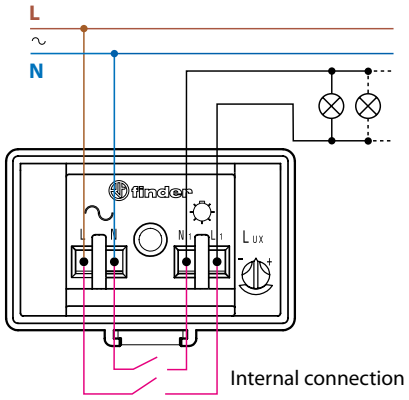
Insulation		**10.32 / 41 / 42**		**10.51**		**10.61**
Dielectric strength between open contacts	V AC	1000		1000		1000
Conducted disturbance immunity						
Surge (1.2/50 µs) on L and N (differential mode)	kV	4		4		6
Other data						
Cable grip	Ø mm	(8.9…12)		(7.5…9)		—
Screw torque	Nm	0.8		0.8		—
Max. wire size		solid cable	stranded cable	solid cable	stranded cable	—
	mm^2	1 x 6 / 2 x 4	1 x 6 / 2 x 2.5	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5	—
	AWG	1 x 10 / 2 x 12	1 x 10 / 2 x 14	1 x 10 / 2 x 12	1 x 12 / 2 x 14	—
Output wires						
Material		—		—		Silicone rubber UV resistant
Size	mm^2	—		—		1.5
Length	mm	—		—		500, ends-ferruled
Rated insulation voltage	kV	—		—		0.6/1
Max temperature	°C	—		—		120

Functions

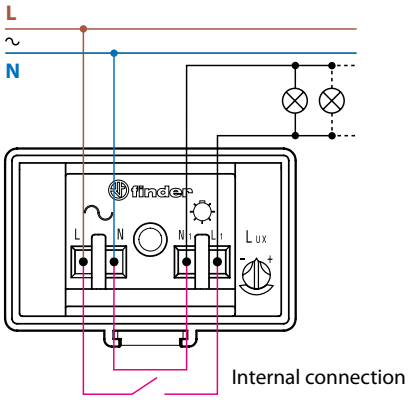
LED*	**10.32 / 10.41 / 10.42**		**10.51**	
	Supply voltage	NO output contact	Supply voltage	NO output contact
	OFF	Open	OFF or ON	Open
	ON	Open	ON	Closed
	ON	Open (Timing in Progress)	ON	Open (Timing in Progress)
	ON	Closed	—	—

* The LED is located under the terminal cover, close to the Lux adjustment knob. It indicates the contact status and assists in the test and setting of the correct light threshold level.

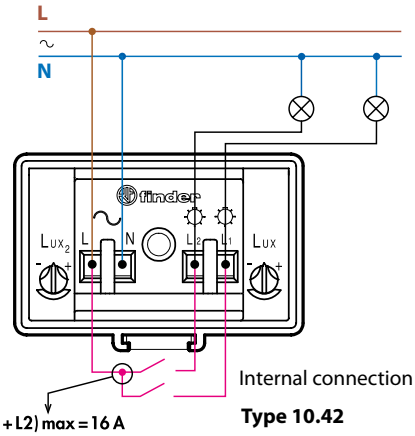
Wiring diagrams



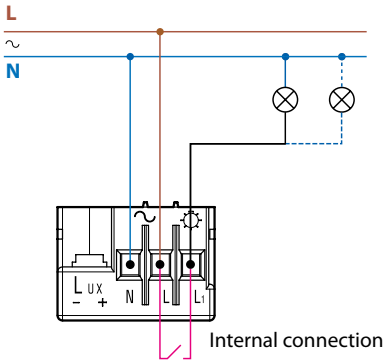
Type 10.32



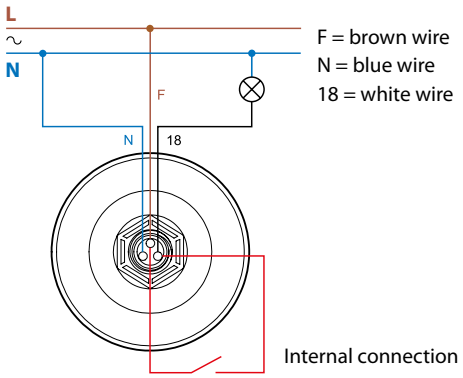
Type 10.41



Type 10.42



Type 10.51



Type 10.61

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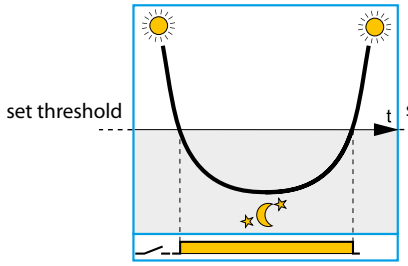
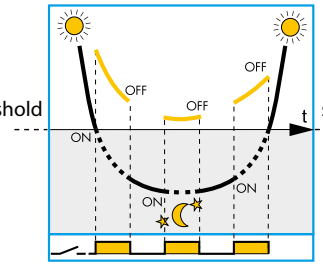
Advantage of the "light feedback compensation" principle

Light dependent relay where the lighting being controlled does not influence the light level seen by the light sensor



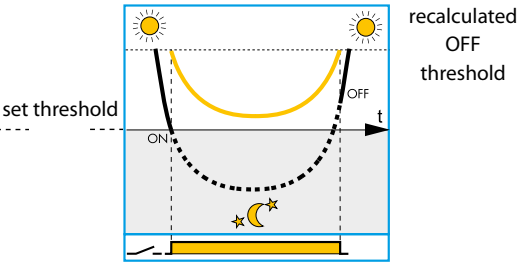
Correct functioning - provided the sensor can be shielded from the effects of the controlled lighting switching On and Off

Traditional light dependent relay where the lighting being controlled influences the light level seen by the light sensor



Incorrect functioning where the lamps cycle between On and Off, because their effect is being detected by the light sensor

Type 10.32, 10.41 and 10.51 light dependent relay with "light feedback compensation"



The innovative principle of "light feedback compensation" avoids the annoying and damaging effects of the lamps repeatedly "hunting" between On and Off, due to poor installation

Ambient light level as measured by the light dependent relay's integral light sensor.

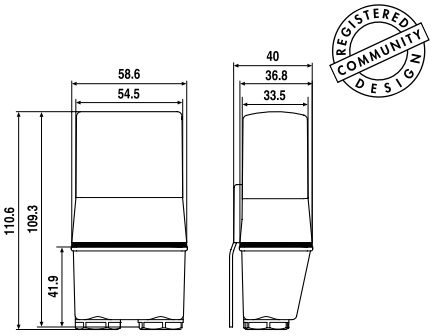
Ambient light + controlled light level as measured by the light dependent relay's integral light sensor.

Notes

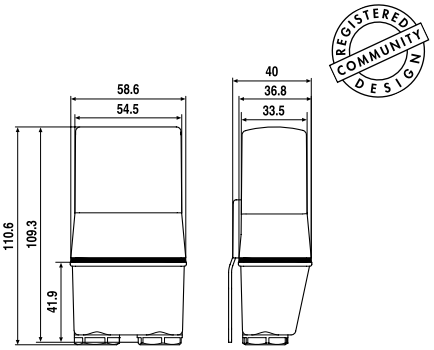
1. It is good practice to try to achieve a correct installation where the light emitted from the lamp(s) does not influence the light level seen by the sensor, although the "light feedback compensation" principle will help when this is not fully achievable. In this case it should be appreciated that the "light feedback compensation" principle may delay slightly the time of Switch Off - beyond the ideal.
2. The compensation principle is not effective where the combined effect of the ambient light and the controlled lighting exceeds 120 lux.
3. The 10.32 and 10.41 types are compatible with gas discharge lamps that attain full output within 10 minutes, since the electronic circuit monitors lamps' light output over a 10 minutes period to achieve a true assessment of its contribution to the overall lighting level.

Outline drawings

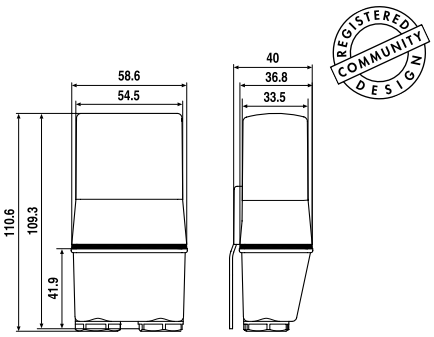
Type 10.32



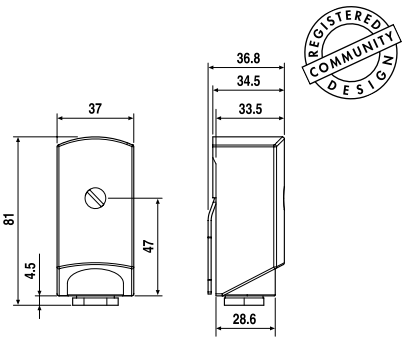
Type 10.41



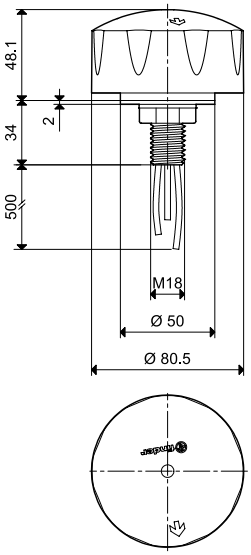
Type 10.42



Type 10.51



Type 10.61



Please see general technical information

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finder
SWITCH TO THE FUTURE

Light dependent relays 12 - 16 A

- Garden and night lighting
- Shop displays
- Lighting for parks
- Streetlights and car park lighting

11
SERIES

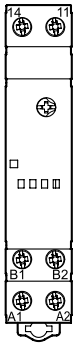
Relays for automatic control of lighting according to ambient light level - with separate light sensor

11.31 - 1 NO 16 A output contact
- Sensitivity adjustment from 1 to 100 lux
- One module, 17.5 mm wide
- Low energy consumption
- 24 V DC/AC supply version available

11.41 - 1 CO 16 A output contact
- European patent "zero hysteresis" for energy saving
- Italian patent "Light feedback compensation" principle
- Selector with 4 positions:
  - Standard range (threshold setting 1…80 lx)
  - High range (threshold setting 30…1000 lx)
  - continuous light (helpful during installation and initial testing and for maintenance purposes)
  - light off (useful for vacations)
- For the first 3 working cycles the delay time (On and Off) is reduced to zero in order to aid installation
- LED status indication
- SELV separation between contact and supply circuit
- Double insulation between supply and light sensor
- 35 mm rail (EN 60715) mount
- Cadmium free contact material
- Cadmium free light sensor (IC photo diode)

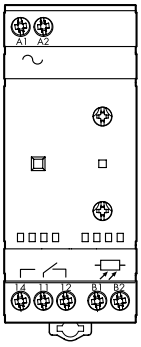
11.31

- 1 pole
- 17.5 mm wide



11.41

- 1 pole
- "zero hysteresis"
- 4 position selector



For outline drawing see page 10

Contact specification				
Contact configuration		1 NO (SPST-NO)		1 CO (SPDT)
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)		16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage	V AC	250/400		250/400
Rated load AC1	VA	4000		4000
Rated load AC15 (230 V AC)	VA	750		750
Nominal lamp rating:				
230 V incandescent/halogen	W	2000		2000
fluorescent tubes with electronic ballast	W	1000		1000
fluorescent tubes with electromagnetic ballast	W	750		750
CFL	W	400		400
230 V LED	W	400		400
LV halogen or LED with electronic ballast	W	400		400
LV halogen or LED with electromagnetic ballast	W	800		800
Minimum switching load	mW (V/mA)	1000 (10/10)		1000 (10/10)
Standard contact material		$AgSnO_2$		$AgSnO_2$
Supply specification				
Nominal voltage (U_N)	V AC (50/60 Hz)	12…24	110…230	230
	DC	12…24	—	—
Rated power	VA (50 Hz)/W	2.5/0.9		5.2/2
Operating range	V AC (50 Hz)	10.2…28.8	90…265	(0.8…1.1)U_N
	DC	10.2…32	—	—
Technical data				
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$		$100 \cdot 10^3$
Threshold setting:	Standard range lx	1…100		1…80
	High range lx	—		30…1000
Hysteresis (switching Off/On ratio)		1.25		1
Delay time: switching On/Off	s	15/30		15/30
Ambient temperature range	°C	–20…+50		–20…+50
Protection category: light dependent relay/light sensor		IP 20/IP 54		IP 20/IP 54
Approvals (according to type)				

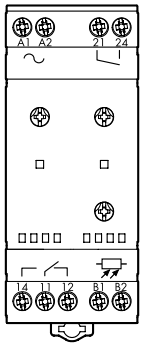
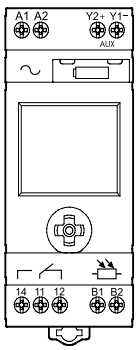
11 SERIES
Light dependent relays 12 - 16 A

Relays for automatic control of lighting according to ambient light level - with separate light sensor

11.42 - 1 CO + 1 NO 12 A output contacts
- Two independent outputs with individual lux setting
- Selector with 4 positions:
  - Standard range (threshold setting 1…80 x)
  - High range (threshold setting 20…1000 lx)
  - continuous light (helpful during installation and initial testing and for maintenance purposes)
  - light off (useful for vacations)
- For the first 6 working cycles (in total for channels 1 & 2) the delay time (On and Off) is reduced to zero in order to aid installation
- LED status indication

11.91 -1 CO 16 A output contact (+ auxiliary output for Power Module)
- Daily time switch function - programmable to inhibit main output (for energy saving)
- Auxiliary output - directly driven by the photosensor
- Italian patent "Light feedback compensation" principle
- Sensitivity adjustment from 1 to 150 lux
- LCD status indication, set-up and programming
- Internal battery for set-up/programming without supply and for time/program back-up in case of power failure (5 years)
- Low stand-by power consumption
- SELV separation between contact and supply circuit
- Double insulation between supply and light sensor
- 35 mm rail (EN 60715) mount
- Cadmium free contact material
- Cadmium free light sensor (IC photo diode)

For outline drawing see page 10

	11.42	11.91
		
	• 2 independent outputs • 2 individual lux settings • 4 position selector	• Light dependent relay + time switch • Auxiliary output (light dependent) with 19.91 power module available
		
Contact specification		
Contact configuration	1 CO (SPDT) + 1 NO (SPST-NO)	1 CO (SPDT) + 1 aux output*
Rated current/Maximum peak current A	12/24 (120 A - 5 ms)	16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage V AC	250/400	250/400
Rated load AC1 VA	3000	4000
Rated load AC15 (230 V AC) VA	750	750
Nominal lamp rating:		
230 V incandescent/halogen W	2000	2000
fluorescent tubes with electronic ballast W	1000	1000
fluorescent tubes with electromagnetic ballast W	750	750
CFL W	400	400
230 V LED W	400	400
LV halogen or LED with electronic ballast W	400	400
LV halogen or LED with electromagnetic ballast W	800	800
Minimum switching load mW (V/mA)	1000 (10/10)	1000 (10/10)
Standard contact material	$AgSnO_2$	$AgSnO_2$
Supply specification		
Nominal voltage (U_N) V AC (50/60 Hz)	230	110…230
DC	—	110…230
Rated power VA (50 Hz)/W	7.4/2.8	5/2.1
Operating range V AC (50 Hz)	(0.8…1.1)U_N	(0.8…1.1)U_N
DC	—	(0.8…1.1)U_N
Technical data		
Electrical life at rated load in AC1 cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Threshold setting: Standard range lx	1…80	1…150
High range lx	20…1000	—
Hysteresis (switching Off/On ratio)	1.25	Δ = 3 lx
Delay time: switching On / Off s	15/30	25/50
Ambient temperature range °C	–20…+50	–20…+50
Protection category: light dependent relay/light sensor	IP 20/IP 54	IP 20/IP 54
Approvals (according to type)	CE EAC	

* 11.91 auxiliary output: 12 V DC, 1 W max

Ordering information

Example: 11 series light dependent relay with time switch, 1 CO (SPDT) 16 A contact, 230 V AC supply.

1 1 . 9 1 . 8 . 2 3 0 . 0 0 0 0

Series

Type
3 = 17.5 mm wide
4 = 35 mm wide
9 = 35 mm wide, with time switch

No. of poles
1 = 1 pole, 16 A
2 = 2 pole, 12 A

Supply version
0 = AC (50/60 Hz)/DC (11.31 only)
8 = AC (50/60 Hz)
8 = AC (50/60 Hz)/DC (11.91 only)

Supply voltage
024 = 12…24 V (11.31 only)
230 = 230 V
230 = 110…230 V (11.31 only)
230 = 110…230 V AC/DC (11.91 only)

Options
0000 = Standard

Codes
11.31.0.024.0000
11.31.8.230.0000
11.41.8.230.0000
11.42.8.230.0000
11.91.8.230.0000
19.91.9.012.4000
(power module for 11.91 type)

Technical data

Insulation		**Dielectric strength**	**Impulse (1.2/50 µs)**
	between supply and contacts	4000 V AC	6 kV
	between supply and light sensor	2000 V AC	4 kV
	between open contacts	1000 V AC	1.5 kV

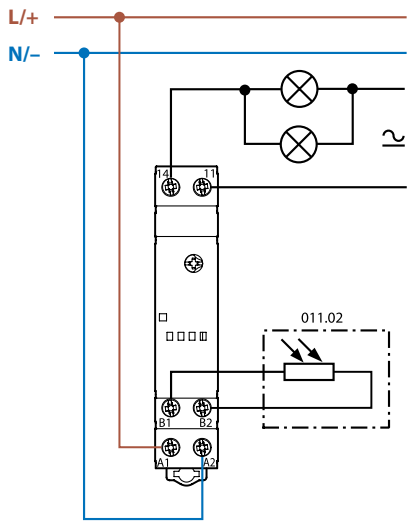
EMC specifications				
Type of test		**Reference standard**	**11.31**	**11.41 / 42 / 91**
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV	
	air discharge	EN 61000-4-2	8 kV	
Radiated electromagnetic field (80…1000 MHz)		EN 61000-4-3	10 V/m	
Fast transients	on supply terminals	EN 61000-4-4	3 kV	4 kV
(burst 5/50 ns, 5 and 100 kHz)	on light sensor connection	EN 61000-4-4	3 kV	4 kV
Voltage pulses on supply terminals	common mode	EN 61000-4-5	4 kV	
(surge 1.2/50 µs)	differential mode	EN 61000-4-5	3 kV	4 kV
Radiofrequency common mode voltage	on supply terminals	EN 61000-4-6	10 V	
(0.15…80 MHz)	on light sensor	EN 61000-4-6	3 V	
Voltage dips	70% U_N, 40% U_N	EN 61000-4-11	10 cycles	
Short interruptions		EN 61000-4-11	10 cycles	
Radio frequency conducted emissions	0.15…30 MHz	EN 55014	class B	
Radiated emissions	30…1000 MHz	EN 55014	class B	

Terminals			
Screw torque	Nm	0.8	
Max. wire size	solid cable	1 x 6 / 2 x 4 mm²	1 x 10 / 2 x 12 AWG
	stranded cable	1 x 4 / 2 x 2.5 mm²	1 x 12 / 2 x 14 AWG
Wire strip length	mm	9	

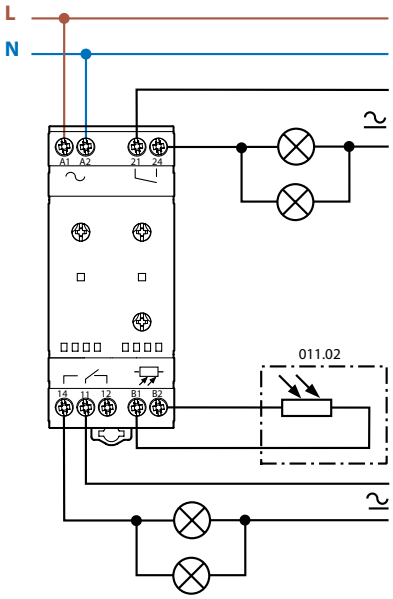
Other data					
Cable grip of light sensor	mm	7.5…9			
Maximum cable length relay to light sensor	m	50 (2 x 1.5 mm²)			
Preset threshold	lx	10			
Power lost to the environment		**11.31**	**11.41**	**11.42**	**11.91**
	in stand-by W	0.3	1.3	1.4	0.5
	without contact current W	0.9	2.0	2.8	2.1
	with rated current W	1.7	2.6	3.8	2.7

Wiring diagrams

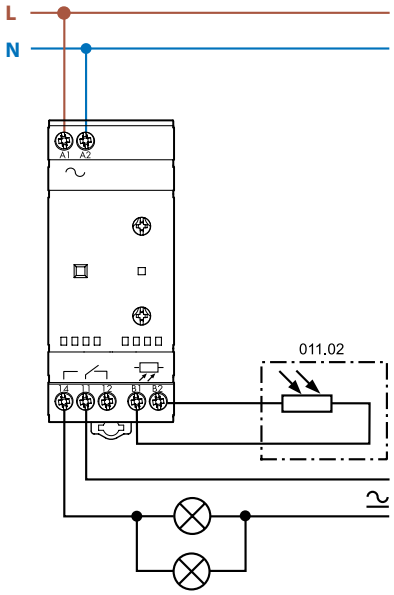
Type 11.31



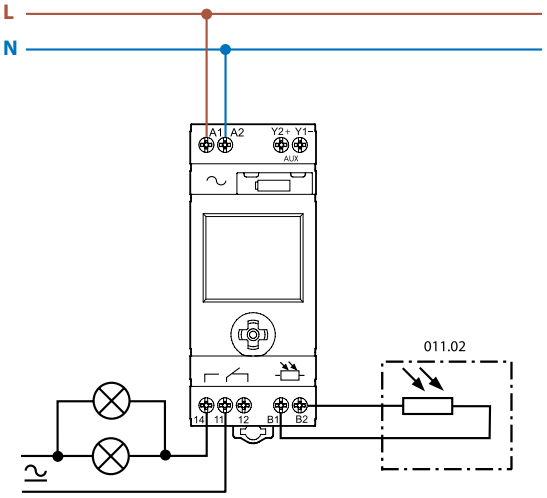
Type 11.42



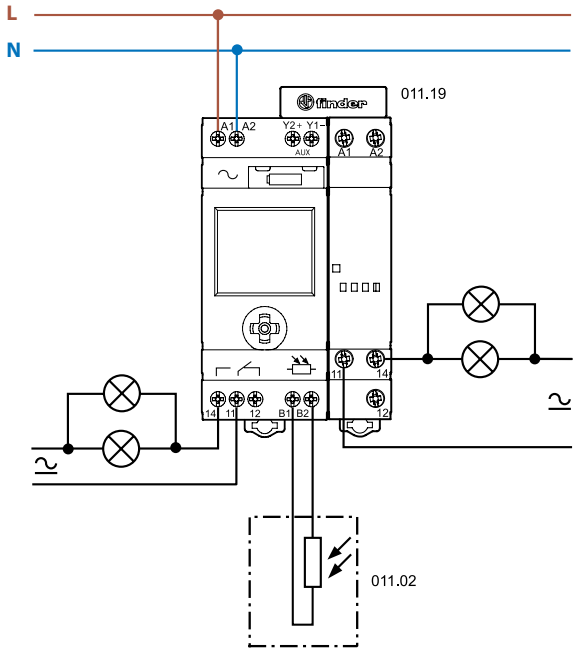
Type 11.41



Type 11.91



Type 11.91 + 19.91



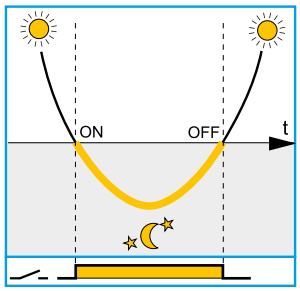
Advantage of the "zero hysteresis" patented circuit:

ensures reliable switching without wasting energy

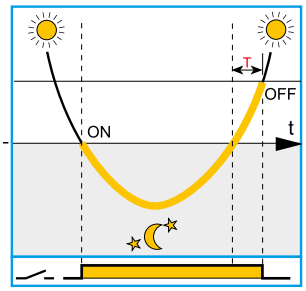
TYPE 11.41 "ZERO HYSTERESIS" LIGHT DEPENDENT RELAYS

TRADITIONAL LIGHT DEPENDENT RELAYS

ON/OFF threshold



set threshold



OFF threshold

ON threshold

Switch OFF level = Switch ON level. Patented "zero hyseresis" circuitry ensures reliable switching without wasting energy.

"Traditional" light dependent relays incorporate switching hysteresis to prevent malfunctioning or tripping. This results in an unnecessary delay in switching off, and a resulting waste of energy (over period T).

Brightness of the natural light

The NO of the light dependent relay is closed (light is switched on)

Advantage of the "light feedback compensation" principle:

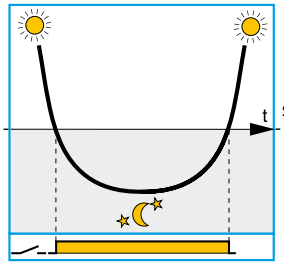
avoids the effect of the lamps repeatedly "hunting" between On and Off, due to poor installation

Light dependent relay where the lighting being controlled does not influence the light level seen by the light sensor

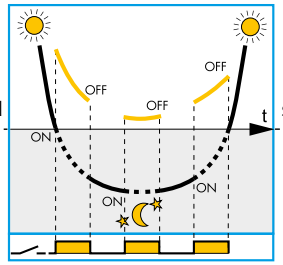
Traditional light dependent relay where the lighting being controlled influences the light level seen by the light sensor

Type 11.41 and 11.91 light dependent relay with "light feedback compensation"

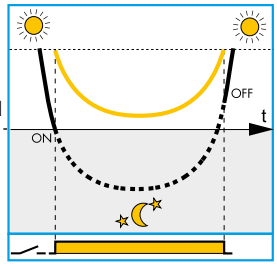
set threshold



set threshold



set threshold



recalculated OFF threshold

Correct functioning - provided the light sensor can be shielded from the effects of the controlled lighting switching On and Off

Incorrect functioning where the lamps cycle between On and Off, because their effect is being detected by the light sensor

The innovative principle of "light feedback compensation" avoids the annoying and damaging effects of the lamps repeatedly "hunting" between On and Off, due to poor installation

Ambient light level as measured by the light dependent relay's light sensor.

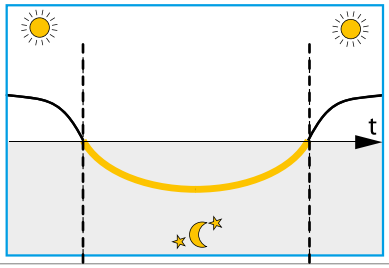
Ambient light + controlled light level as measured by the light dependent relay's light sensor.

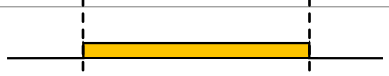
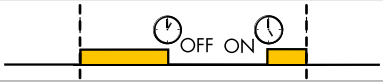
Notes

1. It is good practice to try to achieve a correct installation where the light emitted from the lamp(s) does not influence the light level seen by the light sensor, although the "light feedback compensation" principle will help when this is not fully achievable. In this case it should be appreciated that the "light feedback compensation" principle may delay slightly the time of Switch Off - beyond the ideal.
2. The compensation principle is not effective where the combined effect of the ambient light and the controlled lighting exceeds a maximum value (200 lux for the 11.91, 160/2000 lux for standard/high range of the 11.41).
3. The 11.41 and 11.91 types are compatible with gas discharge lamps that attain full output within 10 minutes, since the electronic circuit monitors lamps' light output over a 10 minute period to achieve a true assessment of its contribution to the overall lighting level.

II-2018, www.findernet.com

Functions 11.91



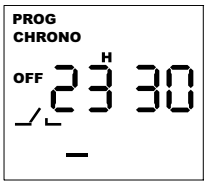
	Switch-OFF time	Switch-ON time		Application examples
11 14	NO	NO		Working as a standard light-dependent relay
11 14	YES	NO		Working where lighting is not required from 10 PM onwards
11 14	YES	YES		Working where lighting is not required between 1 AM and 5 AM
AUX Y1 Y2				Additional output - light dependent without time switch intervention

All the functions and the values can be set through the front joystick and are displayed on the front LCD.

Display mode

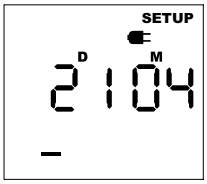
During normal operation, with AC supply connected, the following is displayed:
- the current time
- the current lux level (upper bars)
- the set lux threshold (lower bars)
- the status (open/closed) of the 11-14 output contact
- the "moon" symbol (only if the current lux level is lower than the set threshold). It also indicates that the Auxiliary output is On, although the main output contact 11-14 may be On, depending on the chrono program.
- the "chrono" symbol (only if a switch-off time is enabled).

From **Display mode** it is possible to enter **Program mode** or **Set-up mode** with a short or long (> 2 s) press respectively, to the joystick centre. From **Display mode** it is also possible to enter **Hand mode**, where (independently of the lux level and the Chrono program) the 11-14 output contact is forced into the On or Off position with a long (> 2 s) press of the joystick upper or lower quadrants, respectively. The "hand" symbol is then displayed. A long press to the opposite quadrant will reset the hand mode.



Program mode

In this mode it is possible to set the lux threshold level, to enable and to set the switch-off time, to enable and to set the switch-on time. With a short press to the joystick right or left quadrant it is possible to progress from one program step to another (accepting the values set). At any program step it is possible to modify the set values with a short press to the joystick upper or lower quadrant. A long (> 1 s) press allows the fast increment (or decrement) of values. A short press to the joystick centre will resume the display mode.



Set-up mode

In this mode it is possible to set the current year, month, day, hour and minute (in this order) and to enable european "Daylight saving".
With a short press to the joystick right or left quadrant it is possible to progress from one set-up step to another (accepting the values set); in any step it is possible to modify the set values with a short press to the joystick upper or lower quadrant.
A long (> 1 s) press allows the fast increment (or decrement) of values.
A short press to the joystick centre will resume the display mode.
Note: the product is supplied with central european time factory set and "Daylight saving" enabled.

Power-off mode

If the 230 V AC supply is not connected, the relay enters power-off mode and to ensure the long life of the built-in back-up battery only the clock is maintained active. The display turns off and no other operation (including light measurement) is performed.
With a press to the joystick during power-off mode it is possible to "awaken" the device and to enter program or set-up mode (the"electrical plug" symbol is displayed); after about 1 minute inactivity the power-off mode is resumed.
Note: with the supply not connected, the program or set-up modes absorb a higher current than the power-off mode, thus influencing the battery life.

Auxiliary output

A solid state output at terminals Y1-Y2 is provided (rated 12 V DC, 80 mA/1 W max.): this can be used with the power module **19.91.9.012.4000** connected by the dedicated **011.19** connector. Or, it is possible to connect a suitable relay (for example, 38-48-49-4C-58-59 interface module) provided the coil is within the rating, and the wiring does not exceed 40 cm length. The auxiliary output is driven exclusively by the light sensor of the device, and is consequently independent of the time switch. With the main contact, this permits a flexible lighting system controlled by the ambient light, both with and without the influence of the time switch function.

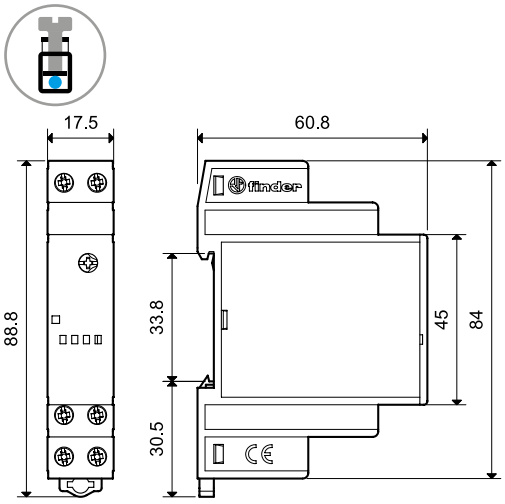
19.91 power module specification		
Contact configuration		1 CO (SPDT)
Rated current/Maximum peak current (I_N/I_{max})	A	16/30 (120 A – 5 ms)
Rated voltage/Maximum switching voltage (U_N/U_{max})	V AC	250/400
Rated load AC15 (230 V AC)	VA	750
Nominal lamp rating:		
230 V incandescent/halogen	W	2000
fluorescent tubes with electronic ballast	W	1000
fluorescent tubes with electromagnetic ballast	W	750
CFL	W	400
230 V LED	W	400
LV halogen or LED with electronic ballast	W	400
LV halogen or LED with electromagnetic ballast	W	800
Nominal supply voltage (U_N)	V DC	12
Ambient temperature range	°C	–20…+50
Protection category		IP 20

Type 11.31/41/42

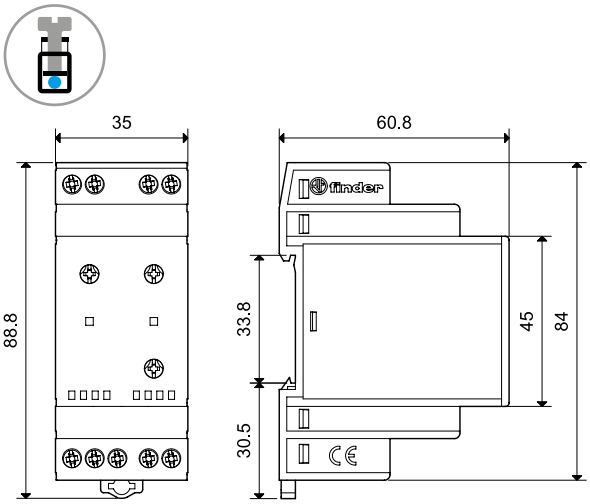
LED	Supply voltage	NO output contact	
		11.41/11.42	11.31
	OFF	Open	Open
	ON	Open	Open
	ON	Open (timing to close in progress)	Open (timing to close in progress)
	ON	Closed	Closed
	ON	Closed (timing to open in progress)	Closed (timing to open in progress)
	ON	Fixed position (On or Off on selector)	—

Outline drawings

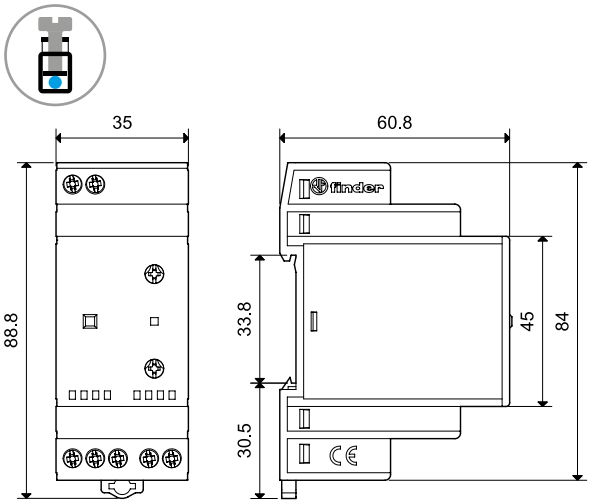
Type 11.31
Screw terminal



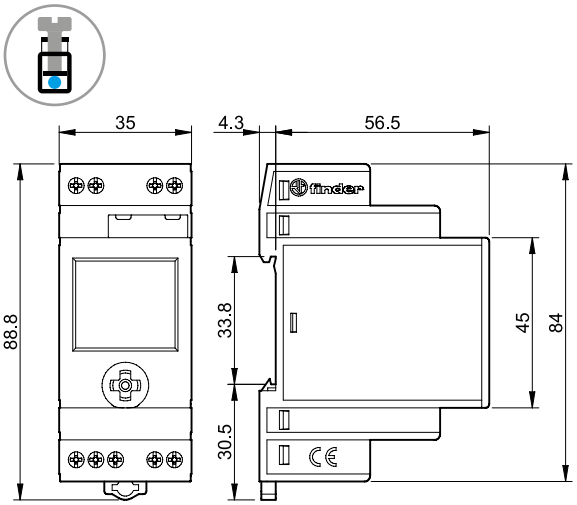
Type 11.42
Screw terminal



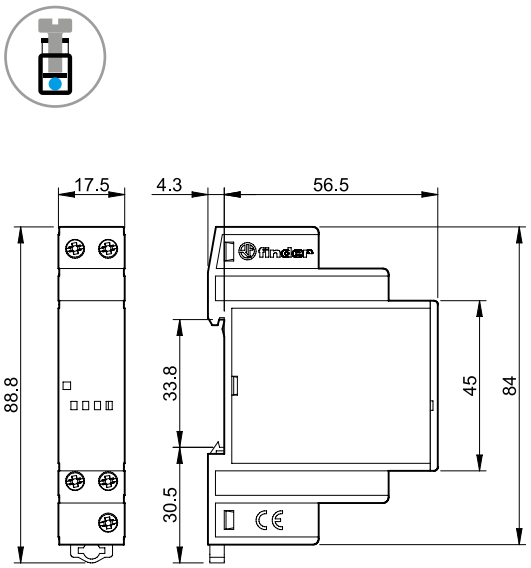
Type 11.41
Screw terminal



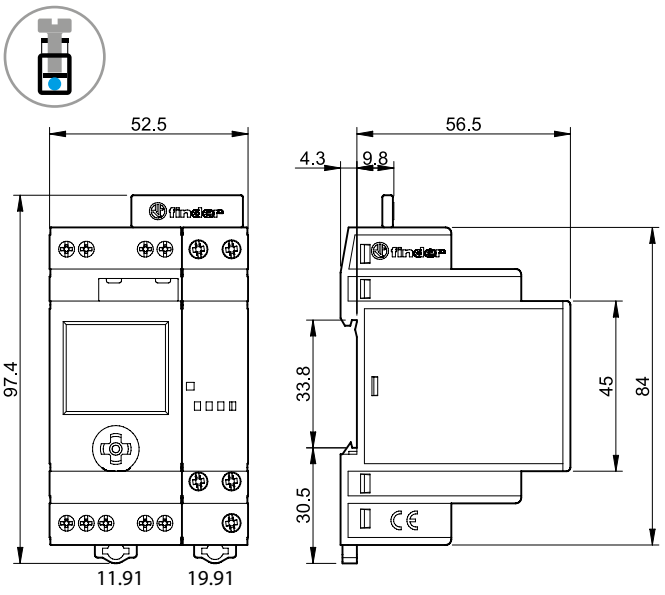
Type 11.91
Screw terminal



Type 19.91 (power module for 11.91)
Screw terminal



Types 11.91 + 19.91 power module
Screw terminal



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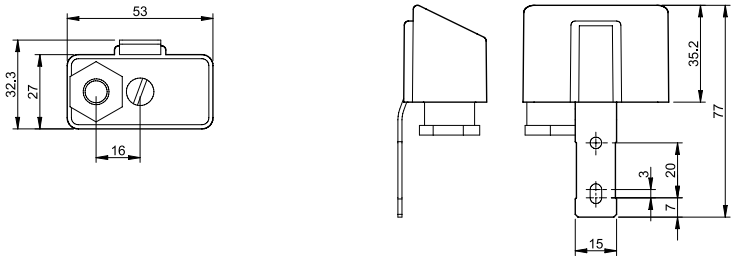
Accessories

011.02

Light sensor (supplied with light dependent relay)	011.02

- Ambient temperature range: –40…+70 °C
- Cadmium free
- Non polarized
- Double insulated with respect to light dependent relay supply
- Not compatible with old 11.01 and 11.71 light dependent relay (to be used with 011.00 photosensor)

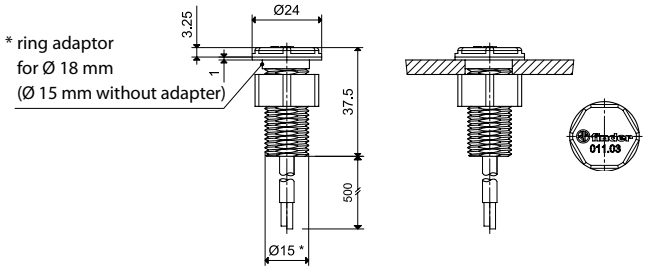


011.03

Flush-mounted light sensor (protection category: IP66/67)	011.03

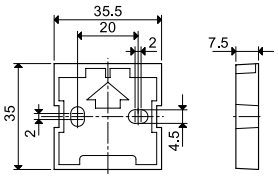
- Ambient temperature range: –40…+70 °C
- Cadmium free
- Non polarized
- Double insulated with respect to light dependent relay supply
- Not compatible with old 11.01 and 11.71 light dependent relay
- Supplied with light dependent relay (packaging code POA)

Connection cable		
Material		PVC, flame retardant
Conductor size	mm^2	0.5
Cable length	mm	500
Cable diameter	mm	5.0
Working voltage	V	300/500
Test voltage, cable	kV	2.5
Max. temperature	°C	+90



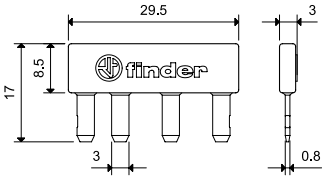
011.01

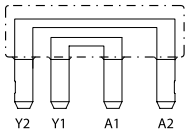
Adaptor for panel mounting (supplied with light dependent relay), 35 mm wide	011.01



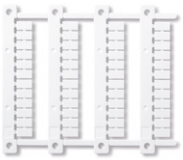
011.19

2-pole connector (for type 11.91 and 19.91 power module)	011.19



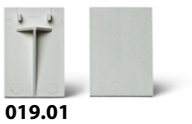


For direct connection of 11.91 auxiliary output (Y1-Y2) to 19.91 supply (A1-A2)



060.48

Sheet of marker tags, for types 11.31, 11.41, 11.42, 19.91, plastic, 48 tags, 6 x 12 mm, for CEMBRE thermal transfer printers	060.48



019.01

Identification tag, for types 11.41 and 11.42, plastic, 1 tag, 17 x 25.5 mm	019.01

finder
SWITCH TO THE FUTURE

Time switches 16 A

- Heating and cooling
- Shop displays
- Lighting for parks
- Streetlights and car park lighting
- School bells

12 SERIES

Mechanical time switches
- Daily time setting*
- Weekly time setting**

Type 12.01
- Daily
- 1 CO 16 A
- 35.8 mm wide
- 35 mm rail mount

Type 12.11
- Daily
- 1 NO 16 A
- 17.5 mm wide
- 35 mm rail mount

Type 12.31-0000
- Daily
- 1 CO 16 A
- 72 x 72 mm
- Front panel mount

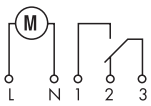
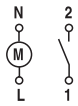
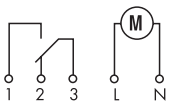
Type 12.31-0007
- Weekly
- 1 CO 16 A
- 72 x 72 mm
- Front panel mount

• Minimum time interval setting:
1 h (12.31-0007)
30 min (12.01)
15 min (12.11 - 12.31-0000)

* Same program every day

** Different program possible for each of the 7 days of the week

For outline drawing see page 14

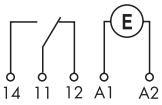
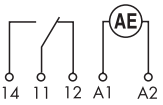
	12.01	12.11	12.31	
				
	• Mechanical daily time switch • 1 CO 16 A • 35 mm rail (EN 60715) mount	• Mechanical daily time switch • 1 NO 16 A • 35 mm rail (EN 60715) mount	• Mechanical daily or weekly • 1 CO 16 A • Front panel mounting	
				
Contact specification				
Contact configuration	1 CO (SPDT)	1 NO (SPST-NO)	1 CO (SPDT)	
Rated current/Maximum peak current A	16/—	16/30	16/—	
Rated voltage/ Maximum switching voltage V AC	250/—	250/—	250/—	
Rated load AC1 VA	4000	4000	4000	
Rated load AC15 (230 V AC) VA	750	420	420	
Nominal lamp rating:				
incandescent (230 V) W	2000 (NO contact)	2000	2000	
compensated fluorescent (230 V) W	750 (NO contact)	750	750	
uncompensated fluorescent (230 V) W	1000 (NO contact)	1000	1000	
halogen (230 V) W	2000 (NO contact)	2000	2000	
Minimum switching load mW (V/mA)	1000 (10/10)	1000 (10/10)	1000 (10/10)	
Standard contact material	$AgSnO_2$	$AgSnO_2$	AgCdO	
Supply specification				
Nominal voltage (U_N) V AC (50/60 Hz)	230	230	120 - 230	
V DC	—	—	—	
Rated power AC/DC VA (50 Hz)/W	2/—	2/—	2/—	
Operating range AC (50 Hz)	(0.85…1.1)U_N	(0.85…1.1)U_N	(0.85…1.1)U_N	
DC	—	—	—	
Technical data				
Electrical life at rated load in AC1 cycles	$50 \cdot 10^3$	$50 \cdot 10^3$	$50 \cdot 10^3$	
Type of time switch	daily	daily	daily	weekly
Switching intervals /day	48	96	96	24 (168/week)
Minimum switching interval min	30	15	15	60
Accuracy s/day	1.5	1.5	1.5	
Ambient temperature range °C	–5…+50	–5…+50	–10…+50	
Protection category	IP 20	IP 20	IP 20	
Approvals (according to type)	CE EAC			

Type 12.51
Digital (analogue-style) time switch, daily/weekly programming
- **Can be programmed in "Classic" mode via the joystick, or "Smart" mode via smartphones with NFC communication**
- Minimum time interval setting - 30 minutes
- Easily configurable for daily or weekly programming

Type 12.81
Digital Astro-switch
- **Can be programmed in "Classic" mode via the joystick, or "Smart" mode via smartphones with NFC communication**
- Astro program: calculation of sunrise and sunset times through date, time and location coordinates
- Option for Astro ON period override, by timeswitch
- Location coordinates easily settable for most European countries through post codes
- Offset function: allows programming of switching times offset from the astronomic time (by up to 90 min, in 10 min steps)

- Summer/Winter European, Australian, Brazilian time
- 1 CO 16 A output contact
- LCD status indication, set-up and programming
- Lock with a 4-digit PIN
- Back-light display
- Internal battery for set-up and programming without supply, easily replaceable from the front
- Protective separation between supply and contacts
- 35 mm wide
- 35 mm rail (EN 60715) mount
- Cadmium free contact material

For outline drawing see page 14

	12.51	12.81
		
	• Digital time switch • 1 CO 16 A	• Digital Astro-switch • 1 CO 16 A
		
Contact specification		
Contact configuration	1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current A	16/30 (120 A - 5 ms)	16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage V AC	250/400	250/400
Rated load AC1 VA	4000	4000
Rated load AC15 (230 V AC) VA	750	750
Nominal lamp rating:		
230 V incandescent/halogen W	2000	2000
fluorescent tubes with electronic ballast W	1000	1000
fluorescent tubes with electromagnetic ballast W	750	750
CFL W	400	400
230 V LED W	400	400
LV halogen or LED with electronic ballast W	400	400
LV halogen or LED with electromagnetic ballast W	800	800
Minimum switching load mW (V/mA)	1000 (10/10)	1000 (10/10)
Standard contact material	$AgSnO_2$	$AgSnO_2$
Supply specification		
Nominal voltage (U_N) V AC (50/60 Hz)	110…230	110…230
V DC	110…230	110…230
Rated power AC/DC VA (50 Hz)/W	2.8/0.9	2.8/0.9
Operating range V AC (50 Hz)	88…264	88…264
V DC	88…264	88…264
Technical data		
Electrical life at rated load in AC1 cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Switching intervals	48	—
Minimum switching interval min	30	—
Accuracy s/day	1	1
Ambient temperature range °C	–20…+50 (see page 10, diagram L12)	–20…+50 (see page 10, diagram L12)
Protection category	IP 20	IP 20
Approvals (according to type)	CE EAC	

II-2021, www.findernet.com

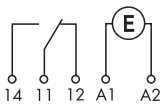
Digital time switch, weekly programming
- **Can be programmed in "Classic" mode via the joystick, or "Smart" mode via smartphones with NFC communication**

Type 12.61
- 1 CO 16 A

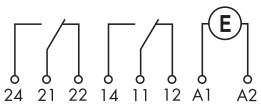
Type 12.62
- 2 CO 16 A

- Functions:
  Switch ON, Switch OFF
  Pulse: 1s…59 min
- Minimum time interval setting - 1 minute
- Summer/Winter European, Australian, Brazilian time
- LCD status indication, set-up and programming
- Lock with a 4-digit PIN
- Back-light display
- Internal battery for set-up and programming without supply, easily replaceable from the front
- Protective separation between supply and contacts
- 35 mm wide
- 35 mm rail (EN 60715) mount
- Cadmium free contact material

- Weekly programming
- 1 CO 16 A
- Switch ON, Switch OFF, Pulse



- Weekly programming
- 2 CO 16 A
- Switch ON, Switch OFF, Pulse



For outline drawing see page 15

Contact specification				
Contact configuration		1 CO (SPDT)		2 CO (DPDT)
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)		16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage	V AC	250/400		250/400
Rated load AC1	VA	4000		4000
Rated load AC15 (230 V AC)	VA	750		750
Nominal lamp rating:				
230 V incandescent/halogen	W	2000		2000
fluorescent tubes with electronic ballast	W	1000		1000
fluorescent tubes with electromagnetic ballast	W	750		750
CFL	W	400		400
230 V LED	W	400		400
LV halogen or LED with electronic ballast	W	400		400
LV halogen or LED with electromagnetic ballast	W	800		800
Minimum switching load	mW (V/mA)	1000 (10/10)		1000 (10/10)
Standard contact material		$AgSnO_2$		$AgSnO_2$
Supply specification				
Nominal voltage (U_N)	V AC (50/60 Hz)	12…24	110…230	110…230
	V DC	12…24	110…230	110…230
Rated power AC/DC	VA (50 Hz)/W	2.8/0.9		2.8/0.9
Operating range	V AC (50 Hz)	10…30	88…253	88…253
	V DC	10…30	88…253	88…253
Technical data				
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$		$100 \cdot 10^3$
Type of time switch		Weekly		Weekly
Memory locations for switching times		50		50
Minimum internal setting	min	1		1
Accuracy	s/day	1		1
Ambient temperature range	°C	–20…+50 (see page 10, diagram L12)		–20…+50 (see page 10, diagram L12)
Protection category		IP 20		IP 20
Approvals (according to type)		CE EAC		

Weekly Astro time switch
- **Can be programmed in "Classic" mode via the joystick, or "Smart" mode via smartphones with NFC communication**
- **"Astro" program: calculation of sunrise and sunset times through date, time and location coordinates**

Type 12.A1
- 1 CO 16 A

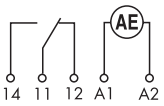
Type 12.A2
- 2 CO 16 A

- Functions:
  "Astro" ON, "Astro" OFF
  Switch ON, Switch OFF
  Pulse: 1s…59 min
- Location coordinates easily settable for most European countries through Post codes
- Offest function: allows programming of switching times offset from the astronomic time (by up to 90 min, in 1 min step)
- Minimum time interval setting - 1 minute
- Summer/Winter European, Australian, Brazilian time
- LCD status indication, set-up and programming
- Lock with a 4-digit PIN
- Back-light display
- Internal battery for set-up and programming without supply, easily replaceable from the front
- Protective separation between supply and contacts
- 35 mm wide
- 35 mm rail (EN 60715) mount
- Cadmium free contact material

For outline drawing see page 15

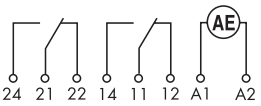
NEW 12.A1

- Weekly programming
- 1 CO 16 A
- Switch ON, Switch OFF, Pulse



NEW 12.A2

- Weekly programming
- 2 CO 16 A
- Switch ON, Switch OFF, Pulse



Contact specification				
Contact configuration		1 CO (SPDT)	2 CO (DPDT)	
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)	16/30 (120 A - 5 ms)	
Rated voltage/ Maximum switching voltage	V AC	250/400	250/400	
Rated load AC1	VA	4000	4000	
Rated load AC15 (230 V AC)	VA	750	750	
Nominal lamp rating:				
230 V incandescent/halogen	W	2000	2000	
fluorescent tubes with electronic ballast	W	1000	1000	
fluorescent tubes with electromagnetic ballast	W	750	750	
CFL	W	400	400	
230 V LED	W	400	400	
LV halogen or LED with electronic ballast	W	400	400	
LV halogen or LED with electromagnetic ballast	W	800	800	
Minimum switching load	mW (V/mA)	1000 (10/10)	1000 (10/10)	
Standard contact material		$AgSnO_2$	$AgSnO_2$	
Supply specification				
Nominal voltage (U_N)	V AC (50/60 Hz)	110…230	12…24	110…230
	V DC	110…230	12…24	110…230
Rated power AC/DC	VA (50 Hz)/W	2.8/0.9	2.8/0.9	
Operating range	V AC (50 Hz)	88…253	10…30	88…253
	V DC	88…253	10…30	88…253
Technical data				
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$	
Type of time switch		Weekly	Weekly	
Memory locations for switching times		50	50	
Minimum internal setting	min	1	1	
Accuracy	s/day	1	1	
Ambient temperature range	°C	–20…+50 (see page 10, diagram L12)	–20…+50 (see page 10, diagram L12)	
Protection category		IP 20	IP 20	
Approvals (according to type)		CE EAC		

Weekly Astro time switch
- **Suitable for applications where a variable light level is required - programmable via smartphone with NFC communications**
- **Compatible with power supply/ballasts with 0-10V or PWM inputs**

Type 12.A4
- 1 analog output: 0-10V or PWM

- Functions: "Astro" ON, "Astro" OFF, ON/OFF
- Location coordinates easily settable for most European countries through Post codes
- Offest function: allows programming of switching times offset from the astronomic time (by up to 90 min, in 1 min step)
- Minimum time interval setting - 1 minute
- 50 storable programs
- Summer/Winter European, Australian, Brazilian time
- LCD status indication, set-up and programming
- Lock with a 4-digit PIN
- Back-light display
- Internal battery for set-up and programming without supply, easily replaceable from the front
- Protective separation between supply and contacts
- 35 mm wide
- 35 mm rail (EN 60715) mount
- Cadmium free contact material

NEW

12.A4

- Weekly programming
- 1 analog output: 0-10V or PWM

For outline drawing see page 15

Analogue output characteristics		
Output signal		0-10 V, 10mA max
Output signal		PWM 30 V, 20 mA max
Contact output characteristics		
Contact configuration		1 CO (SPST)
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage	V AC	250/400
Rated load AC1	VA	4000
Rated load AC15 (230 V AC)	VA	750
Minimum switching load	mW (V/mA)	1000 (10/10)
Standard contact material		$AgSnO_2$
Supply specification		
Nominal voltage (U_N)	V AC (50/60 Hz)	110…230
	V DC	110…230
Rated power AC/DC	VA (50 Hz)/W	2.8/0.9
Operating range	V AC (50 Hz)	90…264
	V DC	90…264
Technical data		
Type of time switch		Weekly
Memory locations for switching times		50
Minimum switching interval	min	1
Accuracy	s/day	1
Ambient temperature range	°C	–20…+50
Protection category		IP 20
Approvals (according to type)		CE EAC

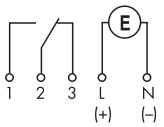
Electronic digital time switches
- 1 Weekly time setting

Type 12.71
- 1 CO 16 A
- 17.8 mm wide

- Minimum time interval setting - 1 minute
- Internal battery for set-up without supply
- Pulse output function:
  1 s…59:59(mm:ss)
- Automatic adjustment for daylight saving
- 35 mm rail (EN 60715) mount

12.71

- Digital weekly time switch
- 1 CO 16 A
- 17.8 mm wide



For outline drawing see page 14

Contact specification			
Contact configuration		1 CO (SPDT)	
Rated current/Maximum peak current	A	16/30	
Rated voltage/ Maximum switching voltage	V AC	250/—	
Rated load AC1	VA	4000	
Rated load AC15 (230 V AC)	VA	420	
Nominal lamp rating:			
230 V incandescent/halogen	W	400	
fluorescent tubes with electronic ballast	W	100	
fluorescent tubes with electromagnetic ballast	W	100	
CFL	W	50	
230 V LED	W	50	
LV halogen or LED with electronic ballast	W	50	
LV halogen or LED with electromagnetic ballast	W	100	
Minimum switching load	mW (V/mA)	1000 (10/10)	
Standard contact material		AgNi	
Supply specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	—	230
	V AC/DC	24	—
Rated power AC/DC	VA (50 Hz)/W	1.4/1.4	2/—
Operating range	AC (50 Hz)	$(0.9…1.1)U_N$	$(0.85…1.1)U_N$
	DC	$(0.9…1.1)U_N$	—
Technical data			
Electrical life at rated load in AC1	cycles	$50 \cdot 10^3$	
Type of time switch		weekly	
Memory locations for switching times*		30	
Minimum switching interval	min	1	
Accuracy	s/day	0.5	
Ambient temperature range	°C	–30…+55	
Protection category		IP 20	
Approvals (according to type)		CE EAC	

* Switching times in memory may be used more than once i.e. when selected for different days.

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Ordering information

Example: 12 series digital (analogue style) time switch, 1 CO 16 A contact, (110…230)V AC/DC supply

1 2 . 5 1 . 8 . 2 3 0 . 0 0 0 0

Series

Type
0 = Daily, 35.8 mm wide
1 = Daily, 17.5 mm wide
3 = Daily or Weekly, 72 x 72 mm
5 = Digital (analogue style), NFC programming, 35 mm wide
6 = Weekly, NFC programming, 35 mm wide
7 = Weekly, 17.5 mm wide
8 = Astro-switch, NFC programming, 35 mm wide
A = Weekly "Astro", NFC programming, 35 mm wide

No. of poles
1 = 1 CO (SPDT), 16 A
1 = 1 NO (SPST-NO), 16 A
2 = 2 CO (DPDT), 16 A
4 = Analog output: 0-10V or PWM

Supply version
0 = AC (50/60 Hz)/DC (types 12.61.0.024, 12.A2.0.024, 12.71.0.024)
8 = AC (50/60 Hz)
8 = AC (50/60 Hz)/DC (types 12.51, 12.81, 12.61, 12.62, 12.A1, 12.A2, 12.A4)

Supply voltage
024 = 24 V AC/DC (type 12.71)
024 = 12…24 V AC/DC (types 12.61, 12.A2)
120 = 120 V AC
230 = 230 V AC
230 = (110…230)V AC/DC (types 12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2)

Option
0 = With power back-up
1 = Without power back-up (type 12.11)

Special version
0 = Standard
1 = Standard (12.A4)

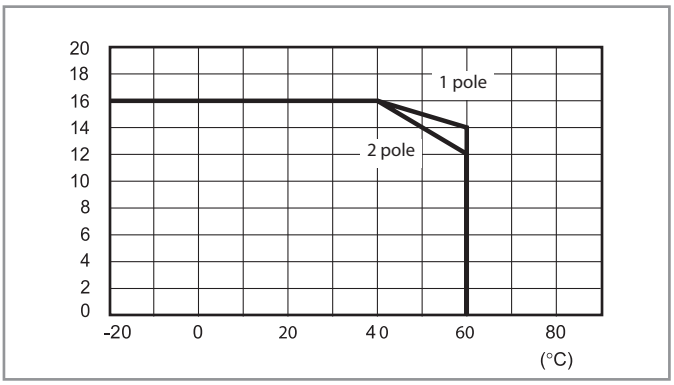
Option
0 = Standard
0 = Daily only for 12.31
7 = Weekly only for 12.31

Codes
12.01.8.230.0000
12.11.8.230.0000
12.11.8.230.1000
12.31.8.230.0000
12.31.8.230.0007
12.51.8.230.0000
12.71.0.024.0000
12.71.8.230.0000
12.81.8.230.0000
12.61.0.024.0000
12.61.8.230.0000
12.62.8.230.0000
12.A1.8.230.0000
12.A2.0.024.0000
12.A2.8.230.0000
12.A4.8.230.0010

Technical data

Insulation			12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2, 12.A4		12.01, 12.11, 12.31, 12.71	
Dielectric strength between supply and contacts		V AC	4000		4000	
Dielectric strength between open contacts		V AC	1000		1000	
Rated impulse voltage (between supply and contacts)		kV/(1.2/50)µs	6		6	
Rated impulse voltage (between open contacts)		kV/(1.2/50)µs	1.5		1.5	
EMC specifications						
Type of test		**Reference standard**				
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV		6 kV	
	air discharge	EN 61000-4-2	8 kV		8 kV	
Radiated electromagnetic field (80…1000 MHz)		EN 61000-4-3	10 V/m		10 V/m	
Fast transients (burst 5/50 ns, 5 and 100 kHz)		EN 61000-4-4	4 kV		4 kV	
Voltage pulses on supply terminals (surge 1.2/50 µs)	common mode	EN 61000-4-5	4 kV		2 kV	
	differential mode	EN 61000-4-5	4 kV		2 kV	
Radiofrequency common mode voltage (0.15…80 MHz)		EN 61000-4-6	10 V		10 V	
Voltage dips	70% U_N , 40% U_N	EN 61000-4-11	10 cycles		10 cycles	
Short interruptions		EN 61000-4-11	10 cycles		10 cycles	
Radio frequency conducted emissions	0.15…30 MHz	EN 55014	class B		class B	
Radiated emissions	30…1000 MHz	EN 55014	class B		class B	
Terminals						
Screw torque		Nm	0.8		1.2	
Max. wire size			mm²	AWG	mm²	AWG
		solid cable	1 x 6 / 2 x 4	1 x 10 / 2 x 12	1 x 6 / 2 x 4	1 x 10 / 2 x 12
		stranded cable	1 x 4 / 2 x 2.5	1 x 12 / 2 x 14	1 x 6 / 2 x 2.5	1 x 10 / 2 x 14
Wire strip length		mm	9			
Other data						
Power back-up (Battery life)			6 years (12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2, 12.A4, 12.71)			
Battery type			CR 2032, 3 V, 230 mAh (12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2, 12.A4)			
Power back-up			100 h (12.01, 12.11, 12.31 - following 80 h continuous energisation)			
Power lost to the environment			**12.51, 12.61, 12.81, 12.A1**	**12.62, 12.A2, 12.A4**	**12.01, 12.11, 12.31**	**12.71**
		in stand-by W	0.2	0.2	—	—
		without contact current W	0.9	0.9	1.5	2
		with rated current W	1.5	2.1	2.5	3 (for 1 pole)

L 12 - Rated current v ambient temperature



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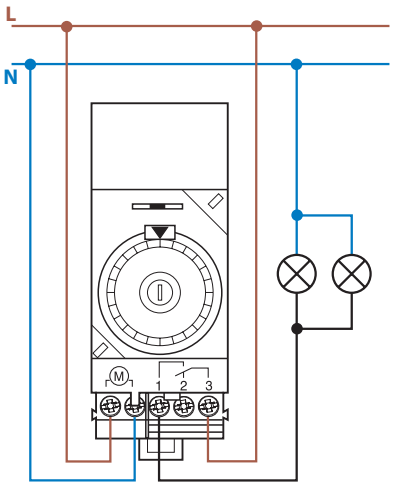
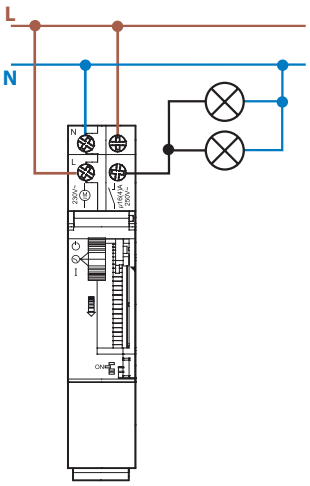
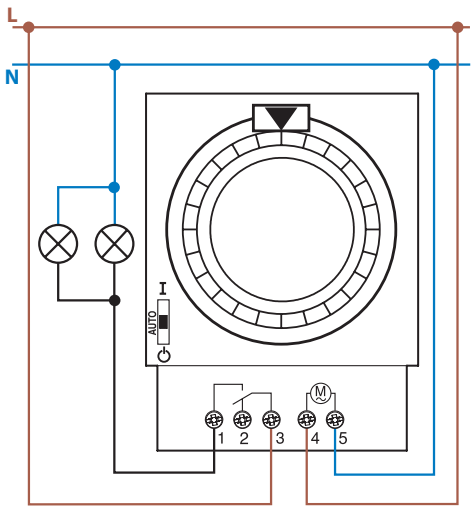
Wiring diagrams



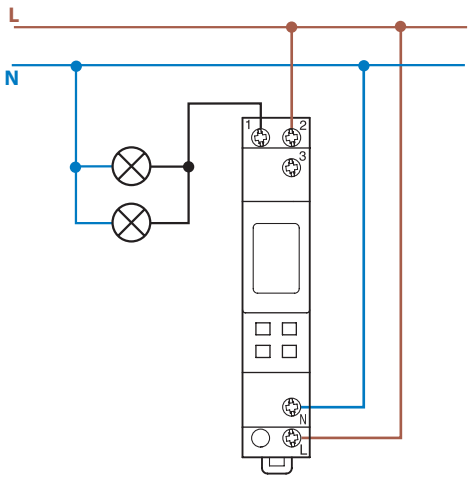
Type 12.01
Selector switch:
⏻ = Permanently OFF
AUTO = Automatic
I = Permanently ON



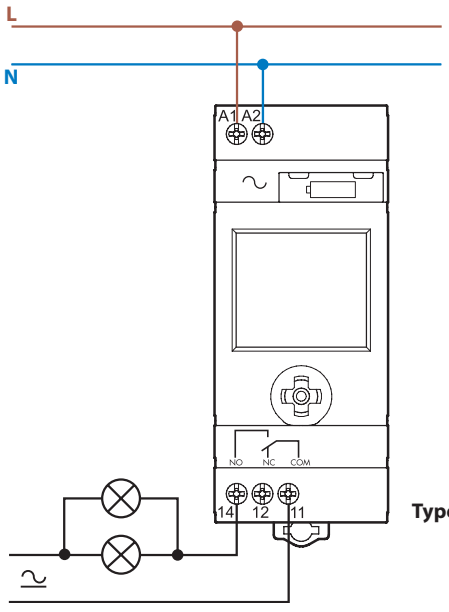
Type 12.11
Selector switch:
⏻ = Permanently OFF
⏲ = Automatic
I = Permanently ON



Type 12.31

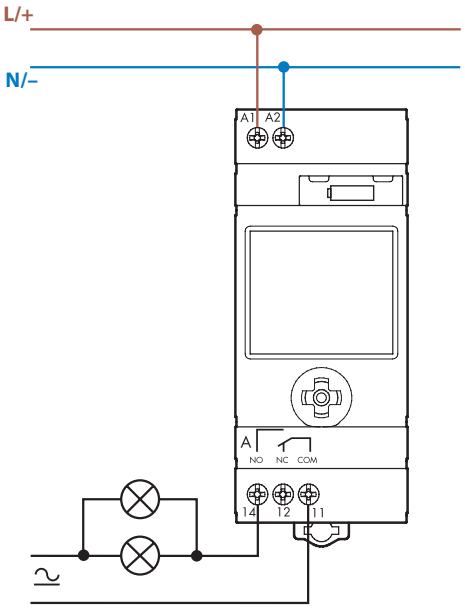


Type 12.71

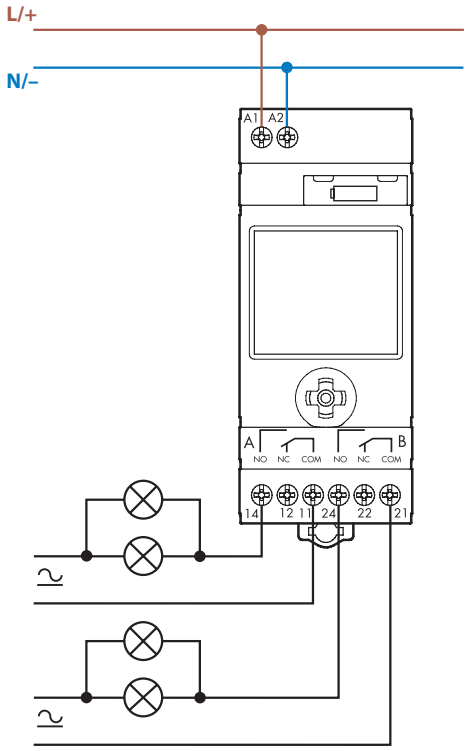


Types 12.51
12.81

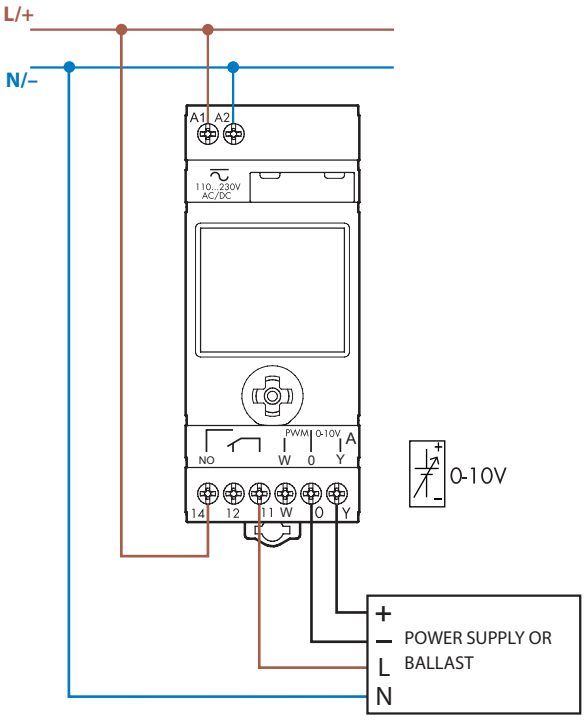
Wiring diagrams

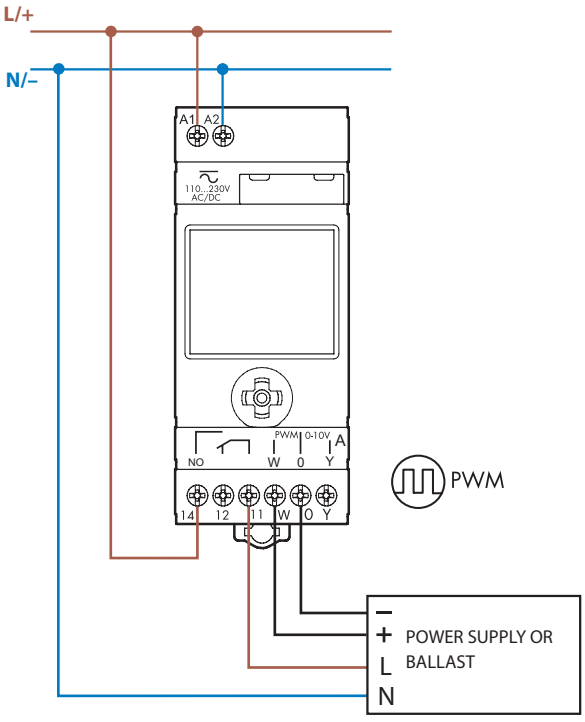


Types 12.61
12.A1



Types 12.62
12.A2





Type 12.A4
NB: All the outputs follow the same programming.

Two programming modes for type 12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2, 12.A4

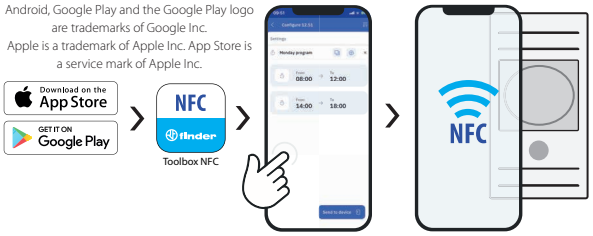
"Smart"

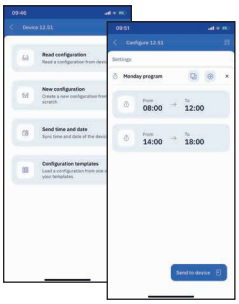
Mode via smartphones with NFC communication using Finder toolbox Android App.

NFC

"Classic"

Mode via the joystick

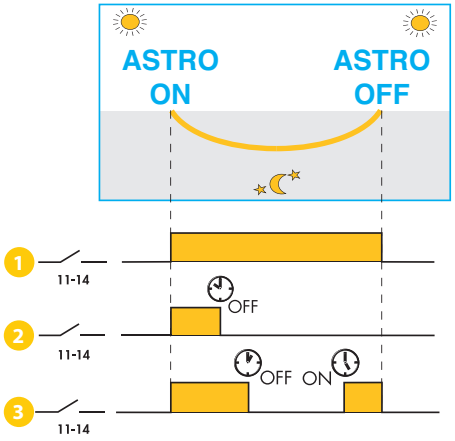




Finder Toolbox for programming
Once the App FINDER Toolbox is downloaded and installed, you can read an existing program, or program your device with maximum flexibility, changing the smallest details and saving your program directly to your smartphone.
At this point you simply touch the time switch with the smartphone to transfer the data.

Finder Toolbox for reference
Finder Toolbox provides all technical data sheets and news from Finder.

Functions type 12.81



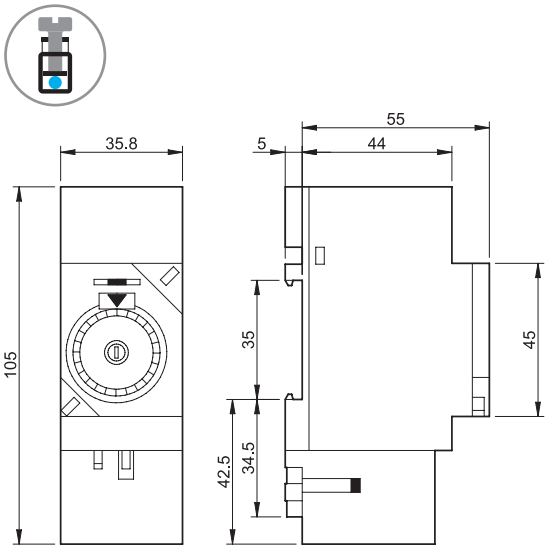
The Override feature permits the 12.81 three different ways of functioning:

1. Classic function where the **AstroON** and **AstroOFF** times are determined by the geographic coordinates. These times vary every day.
2. Functions such that the output turns on according to the **AstroON** time and turns off according to the clock off-time $_{OFF}$. Application example: shop window lighting on by **AstroON** at sunset and off $_{OFF}$ at 00:30 .
3. Functions such that the output turns on according to the **AstroON** time and turns off a ccording to the clock off-time $_{OFF}$, and then turns back on at the clock on-time $_{ON}$ (for the remainder of the ASTRO time period). Application example: company car park lighting, on by **AstroON** at sunset, off end of the evening shift at 23:00 $_{OFF}$.
   On again at the beginning of the morning shift at 5:00 $_{ON}$ and off automatically by **AstroOFF***.

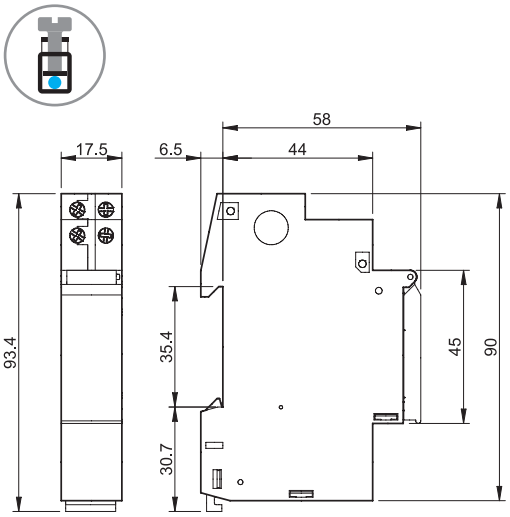
* Depending on the time of year (summer specifically) it may be that the override ON time will fall after the AstroOFF time. In this case, the output switches off at the AstroOFF time and the override ON time is ignored.

Outline drawings

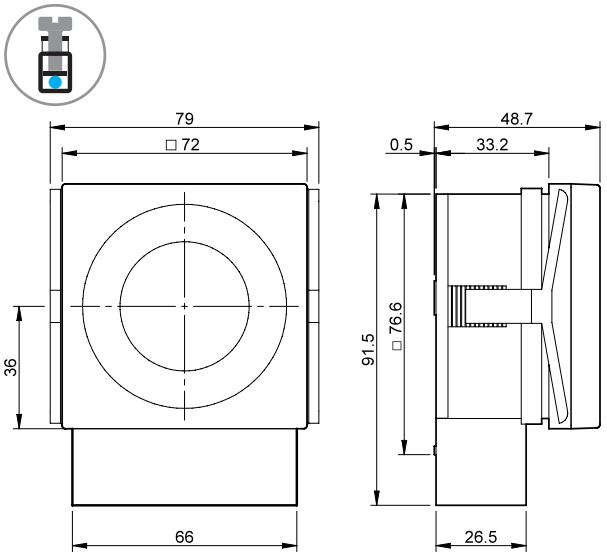
Type 12.01
Screw terminal



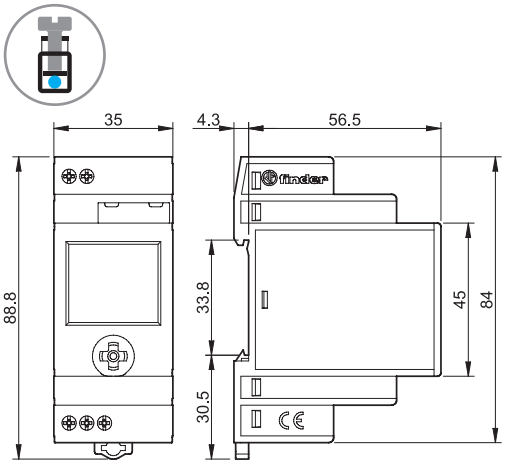
Type 12.11
Screw terminal



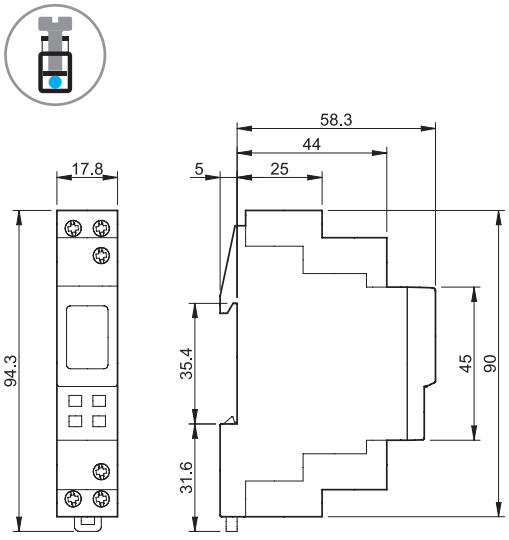
Type 12.31
Screw terminal



Types 12.51/12.81
Screw terminal



Type 12.71
Screw terminal



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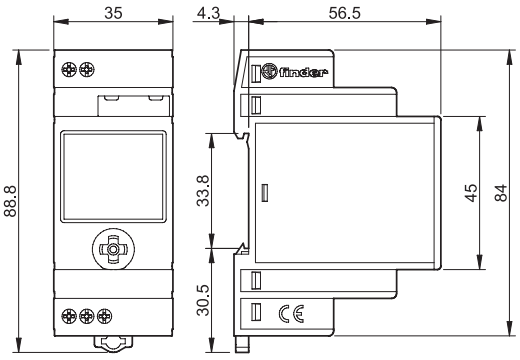
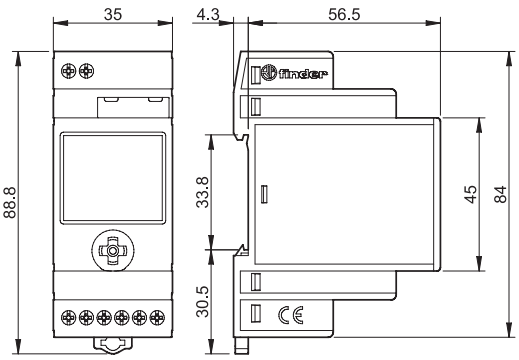
Outline drawings

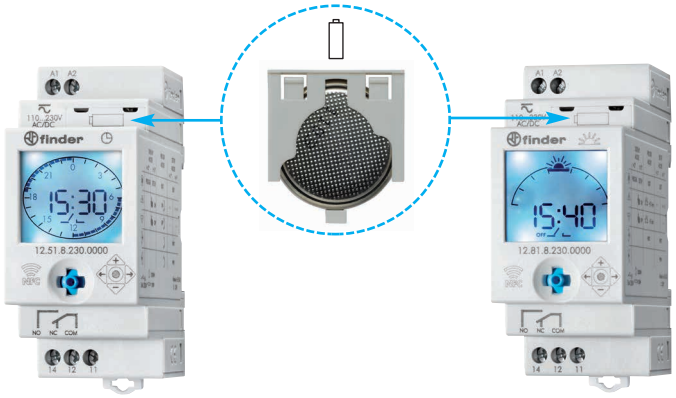
Types 12.61 / 12.A1
Screw terminal



Types 12.62 / 12.A2 / 12.A4
Screw terminal

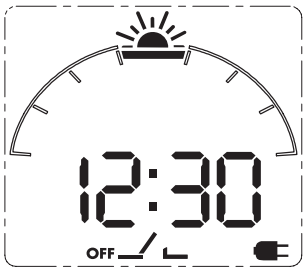


Battery replacement type 12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2, 12.A4



Power-save mode

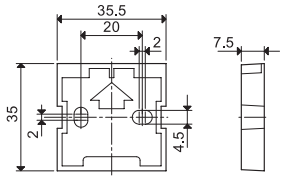
If the 230 V AC supply is not connected, the time switch enters power-save mode: only the clock is maintained active whilst the display turns off so as to guarantee a long life for the built-in back-up battery.
With a press to the joystick it is possible to "awake" the device and enter Display mode (with the "plug" symbol displayed). A further press to ◎ will enter the program or set-up mode as explained in the Display mode section above.
After about 1 minute of inactivity the power-save mode will start again. During program or set-up the current absorption is higher than in power-save mode, thus influencing the battery life.
In this mode the display back-light is not active. It is activated following a press to the joystick only with the 230 V AC supply connected, but after about 1 minute of inactivity the display back-light will turn off, and to activate it again it is necessary to press the joystick again.
Note: the output relay only functions if the power supply is connected.



Accessories type 12.51, 12.61, 12.62, 12.81, 12.A1, 12.A2, 12.A4

011.01

Adaptor for panel mounting, 35 mm wide	011.01



finder
SWITCH TO THE FUTURE

Electronic staircase timers 16 A

Staircase light control

14 SERIES

Multi-function electronic staircase timers
1 NO 16 A 17.5 mm wide

Type 14.01
- 8 functions
- Switch-off "early warning" options

Type 14.11
- 4 functions
- Terminal for reset (centralised switch off)

Type 14.71
- 3 functions

- Time setting from 30 seconds to 20 minutes
- "Zero crossing" load switching
- Suitable for 3 or 4 wire systems, with automatic recognition
- Compatible with movement detectors (18 series)
- LED status indicators
- Cadmium free contact material
- Can be used with illuminated push - buttons
- "Blade + cross" - both flat blade and cross head screw drivers can be used to adjust the function selector, the timing trimmer, and to disengage the 35 mm rail mounting clip
- 35 mm rail (EN 60715) mount
- European Patent

14.01/11/71
Screw terminal

For outline drawing see page 11

	14.01	NEW 14.11	14.71
			
	• 8 functions: - Staircase timer - Staircase timer + maintenance function - Staircase timer with early warning - Staircase timer with early warning + maintenance function - Timing step relay - Timing step relay with early warning - Step relay - Light ON	• Reset for centralised switch off • 4 functions: - Step relay - Timing Step relay - Staircase timer - Light ON	• 3 functions: - Staircase timer - Staircase timer + maintenance function - Light ON
Contact specification			
Contact configuration	1 NO (SPST-NO)	1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/Maximum peak current A	16/30 (120 A - 5 ms)	16/30 (120 A - 5 ms)	16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage V AC	230/—	250/400	230/—
Rated load AC1 VA	3700	4000	3700
Rated load AC15 (230 V AC) VA	750	750	750
Nominal lamp rating:			
230 V incandescent/halogen W	3000	3000	3000
fluorescent tubes with electronic ballast W	1500	1500	1500
fluorescent tubes with electromagnetic ballast W	1000	1000	1000
CFL W	600	600	600
230 V LED W	600	600	600
LV halogen or LED with electronic ballast W	600	600	600
LV halogen or LED with electromagnetic ballast W	1500	1500	1500
Minimum switching load mW (V/mA)	1000 (10/10)	1000 (10/10)	1000 (10/10)
Standard contact material	$AgSnO_2$	$AgSnO_2$	$AgSnO_2$
Supply specification			
Nominal voltage (U_N) V AC (50/60 Hz)	230	110…240	230
V DC	—	—	—
Rated power VA (50 Hz)/W	3/1.2	3.2/1	3/1.2
Operating range AC (50 Hz)	(0.8…1.1)U_N	(90…264)U_N	(0.8…1.1)U_N
DC	—	—	—
Reset time (s)	—	3	—
Technical data			
Electrical life at rated load in AC1 cycles	$100 \cdot 10^3$	$100 \cdot 10^3$	$100 \cdot 10^3$
Delay setting min	0.5…20	0.5…20	0.5…20
Max no. of illuminated push-button (≤ 1 mA)	30	30	30
Maximum impulse duration	continuous	continuous	continuous
Dielectric strength between: open contacts V AC	1000	1000	1000
supply - contacts V AC	—	2000	—
Ambient temperature range °C	–10…+60	–10…+60	–10…+60
Protection category	IP 20	IP 20	IP 20
Approvals (according to type)	CE EAC	CE EAC	CE EAC

Mono-function electronic staircase timers
1 NO 16 A 17.5 mm wide

Type 14.81
- Staircase timer + maintenance function

Type 14.91
- Signal ON pulse timer

- Time setting from 30 seconds to 20 minutes
- "Zero crossing" load switching
- Wiring compatible with mechanical versions and with old type (low emission) illuminated pushbuttons
- Suitable for 3 or 4 wire systems, via "pushbutton configuration"
- 110…125 V AC supply version available (14.81)
- Cadmium free contact material
- Can be used with illuminated push - buttons
- "Blade + cross" - both flat blade and cross head screw drivers can be used to adjust the function selector, the timing trimmer, and to disengage the 35 mm rail mounting clip
- 35 mm rail (EN 60715) mount

14.81/91
Screw terminal

For outline drawing see page 11

14.81

- Mono-function:
  - Staircase timer + maintenance function
- All 4 terminal on same side

14.91

- Mono-function:
  - Signal ON pulse timer
- All 3 terminal on same side

Contact specification			
Contact configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/Maximum peak current	A	16/30 (120 A - 5 ms)	16/30 (120 A - 5 ms)
Rated voltage/ Maximum switching voltage	V AC	230/—	230/—
Rated load AC1	VA	3700	3700
Rated load AC15 (230 V AC)	VA	750	750
Nominal lamp rating:			
230 V incandescent/halogen	W	3000	3000
fluorescent tubes with electronic ballast	W	1500	1500
fluorescent tubes with electromagnetic ballast	W	1000	1000
CFL	W	600	600
230 V LED	W	600	600
LV halogen or LED with electronic ballast	W	600	600
LV halogen or LED with electromagnetic ballast	W	1500	1500
Minimum switching load	mW (V/mA)	1000 (10/10)	1000 (10/10)
Standard contact material		$AgSnO_2$	$AgSnO_2$
Supply specification			
Nominal voltage (U_N)	V AC (50/60 Hz)	110…125/230	230
	V DC	—	—
Rated power	VA (50 Hz)/W	3/1.2	3/1.2
Operating range	AC (50 Hz)	$(0.8…1.1)U_N$	$(0.8…1.1)U_N$
	DC	—	—
Technical data			
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Delay setting	min	0.5…20	0.5…20
Max no. of illuminated push-button (≤ 1 mA)		25	25
Maximum impulse duration		continuous	continuous
Ambient temperature range	°C	–10…+60	–10…+60
Protection category		IP 20	IP 20
Approvals (according to type)		CE EAC	CE EAC

Ordering information

Example: 14 series multi-function timer, 1 NO (SPDT-NO) 16 A contact, supply rated at 230 V AC.

1 4	.	0	1	.	8	.	2 3 0	.	0	0	0	0

Series

Type
0 = 35 mm rail (EN 60715) mount, 8 functions
1 = 35 mm rail (EN 60715) mount, with reset, 4 functions
7 = 35 mm rail (EN 60715) mount, 3 functions
8 = 35 mm rail (EN 60715) mount, mono-function, all terminals on same side
9 = 35 mm rail (EN 60715) mount, mono-function, 3 terminals

No. of poles
1 = 1 NO (SPST-NO) 16 A contact

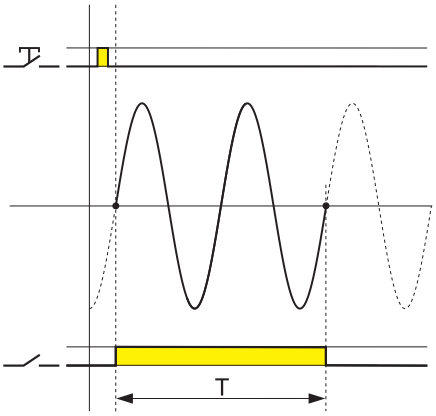
Supply version
8 = AC (50/60 Hz)

Supply voltage
120 = 110…125 V AC (14.81 only)
230 = 230 V

Technical data

Insulation				
Dielectric strength between open contacts		V AC	1000	
Other data				
Power lost to the environment				
	without contact current	W	1.2	
	with rated current	W	2	
Maximum cable length for push-button connection		m	200	
Screw torque		Nm	0.8	
Max. wire size			solid cable	stranded cable
		mm^2	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5
		AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14

Zero crossing switching



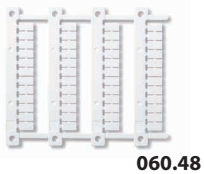
1 - Lower inrush current protects and increases lamp life
2 - Lower inrush current reduces the possibility of contact welding
3 - The current at switch-off is also lower, reducing stress and wear on the contacts

Note
Using the type 14.91, the lamps are switched on directly by the push-button

Accessories


020.01

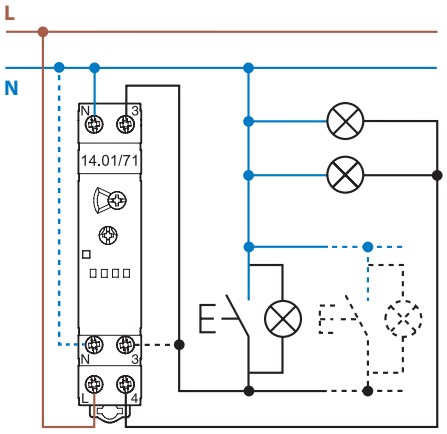
Adaptor for panel mounting, 17.5 mm wide	020.01


060.48

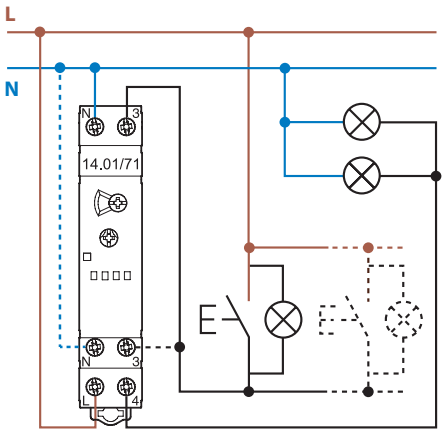
Sheet of marker tags (CEMBRE Thermal transfer printers), plastic, 48 tags, 6 x 12 mm	060.48

Wiring diagrams

Type 14.01 / 14.71
Red LED indication:
Continuous = relay ON
Blinking = relay OFF

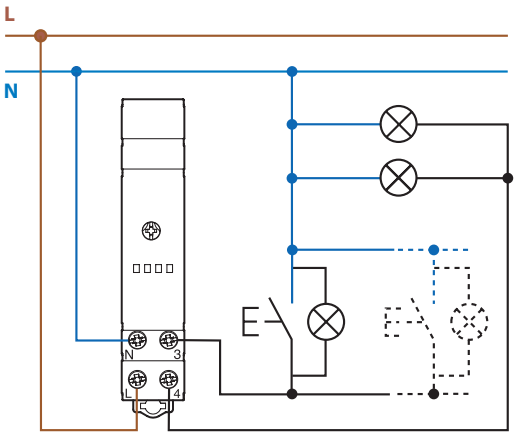


3 wire connection

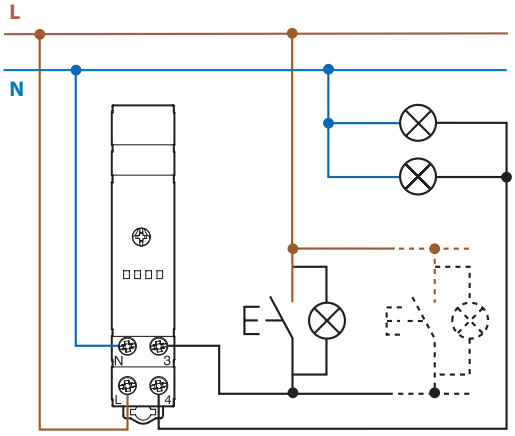


4 wire connection

Type 14.81 (push-button configuration procedure, as per the Installation manual)

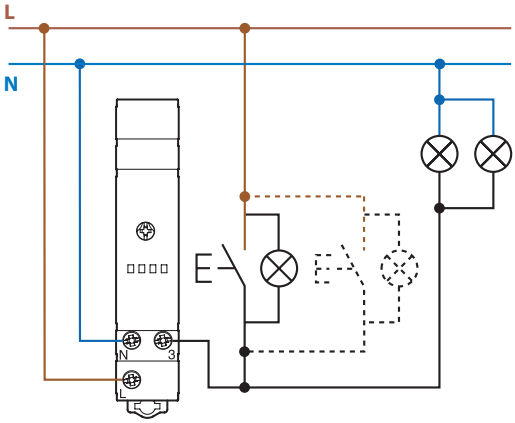


3 wire connection

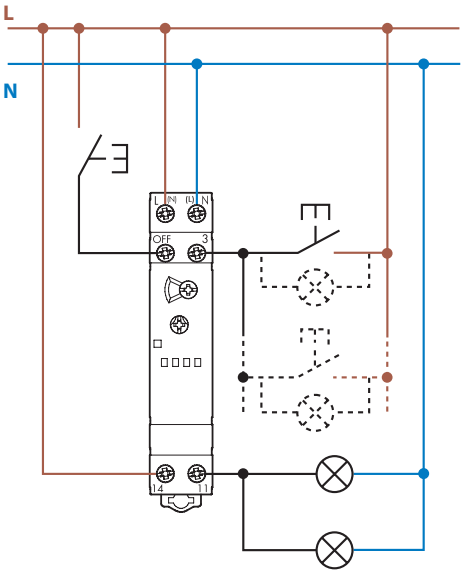


4 wire connection

Type 14.91 (the push-buttons must be rated for the load current)



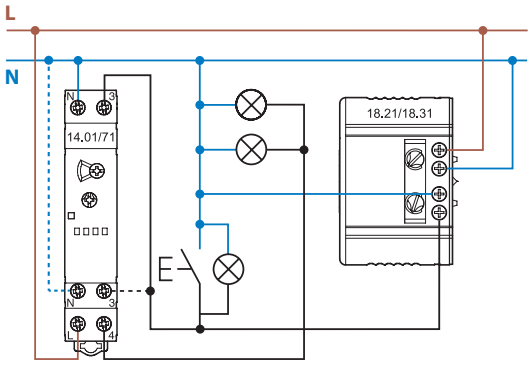
Type 14.11 Reset T≥3 sec



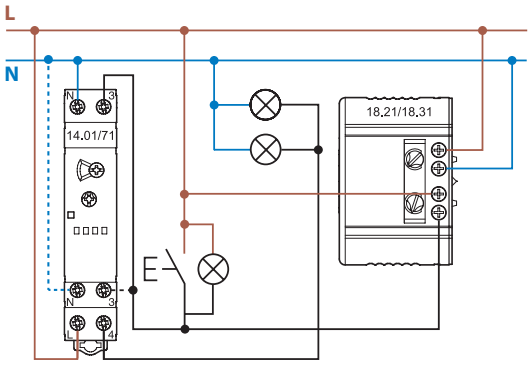
Note: If the load is powered by a phase other than the one that powers staircase light 14.11, a 50% reduction in the nominal lamp load must be applied.

Wiring diagrams - 14.01 or 14.71 without Staircase maintenance function, triggered by PIR movement detector (18 series).

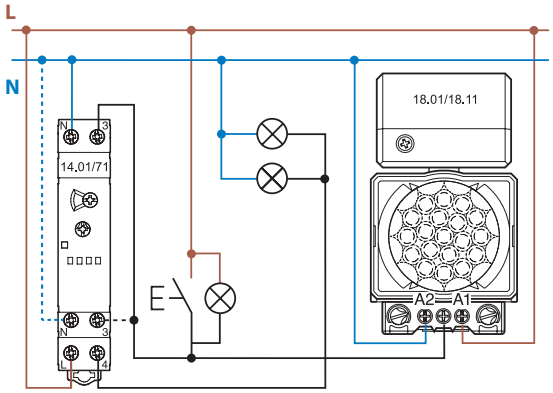
3 wire connection (with 18.21.8.230.0300 or 18.31.8.230.0300 only)



4 wire connection (with 18.21.8.230.0300 or 18.31.8.230.0300 only)



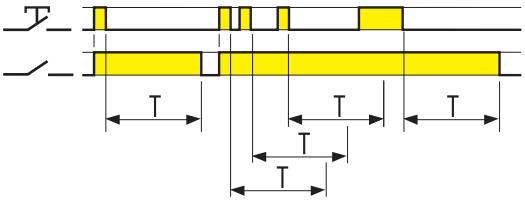
4 wire connection (with 18.01.8.230.0000 or 18.11.8.230.0000 only)



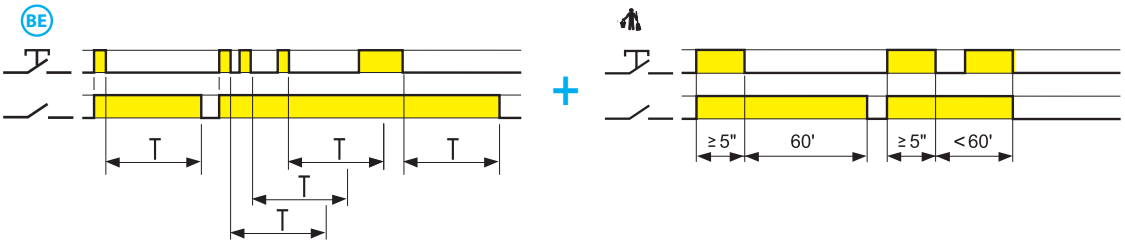
I

Functions

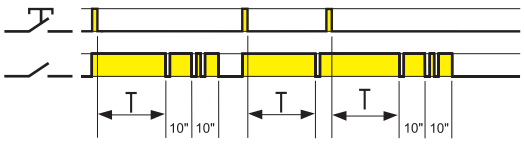
Type 14.01 Functions selectable with front rotary selector



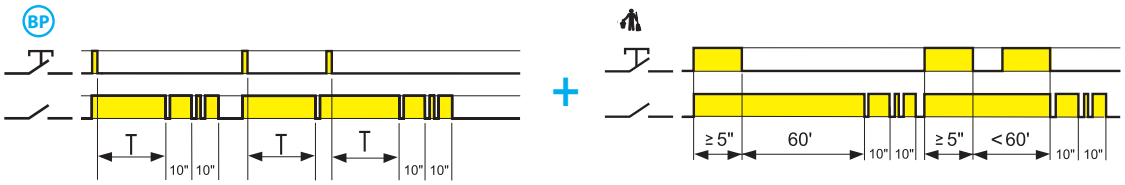
(BE) Staircase timer
On initial impulse the output contact closes and timing starts for the pre-set duration; subsequent impulses during the timing period will extend the timing period by the full pre-set value.
On expiry of the time delay, the output contact opens.



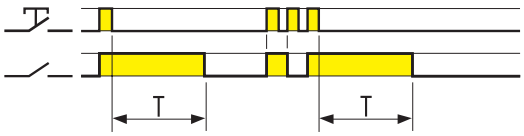
(ME) Staircase timer + Staircase maintenance
In addition to the Staircase timer function (BE), an impulse of ≥ 5 seconds will close the output contact for 60 minutes, after which time the contact will open. Ideal for maintenance or cleaning activities. The 60 minute timing can be interrupted by a further impulse of ≥ 5 seconds, and the output contact then opens



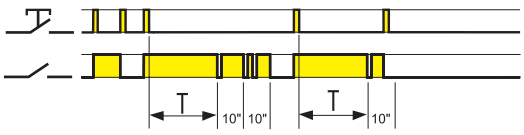
(BP) Staircase timer with early warning
On initial impulse the output contact closes and the timing starts for the pre-set duration.
After the timing period, the output contact blinks off once; 10secs later the contact blinks off twice, and after a further 10secs the contact opens.
During the pre-set and 20 second warning time, it is possible, by a further impulse, to extend the time by the full pre-set value.



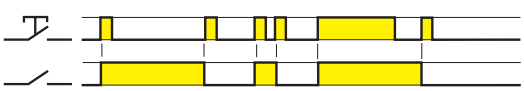
(MP) Staircase timer with early warning + Staircase maintenance
In addition to the Staircase timer function (BP), an impulse of ≥ 5 seconds will close the output contact for 60 minutes, after which time the contact will open. Ideal for maintenance or cleaning activities. The 60 minute timing can be interrupted by a further impulse of ≥ 5 seconds, and the output contact then opens



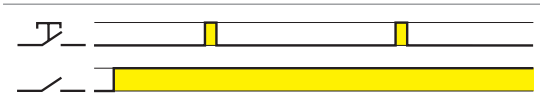
(IT) Timing step relay
On initial impulse the output contact closes and timing starts for the pre-set duration;
On expiry of the time delay, the output contact opens.
During the timing period it is possible to immediately open the contact with a further impulse.



(IP) Timing step relay with early warning
On initial impulse the output contact closes and timing starts for the pre-set duration;
After the timing period, the output contact blinks off once; 10 secs later the contact blinks off twice, and after a further 10 secs the contact opens.
During the pre-set and 20 second warning time, it is possible to immediately open the output contact by a further impulse.



(RI) Step relay
After every impulse, the output contact changes state - alternately switching from open to closed and vice versa.

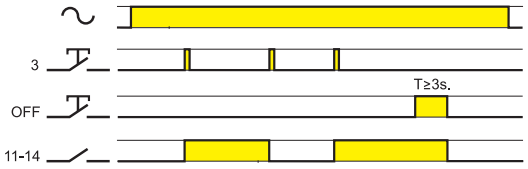


Light ON
With this function set - the output contact stays permanently closed.

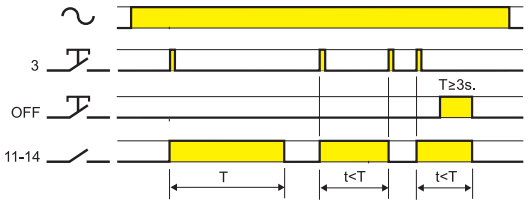
NOTE: The blinking within the Early Warning functions (BP and IP) could cause re-start problems for fluorescent lamps with electromagnetic chokes (both conventional and compact types); We consequently suggest not to use such lamps with these functions.

Functions

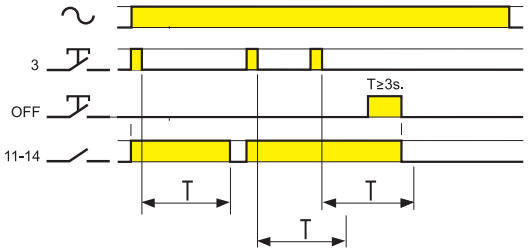
Type 14.11 Functions selectable with front rotary selector



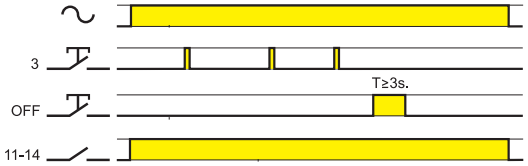
(RI) Step relay
The device works like a classic step relay: the output changes state each time pushbutton (3) is pressed. Pressing OFF for more than 3 seconds forces the output to the off state.



(IT) Timing step relay
On initial impulse the output contact closes and timing starts for the pre-set duration;
On expiry of the time delay, the output contact opens.
During the timing period it is possible to immediately open the contact with a further impulse.
Pressing OFF for more than 3 seconds forces the output to the off state.



(BE) Staircase timer
On initial impulse the output contact closes and timing starts for the pre-set duration; subsequent impulses during the timing period will extend the timing period by the full pre-set value.
On expiry of the time delay, the output contact opens.
Pressing OFF for more than 3 seconds forces the output to the off state.

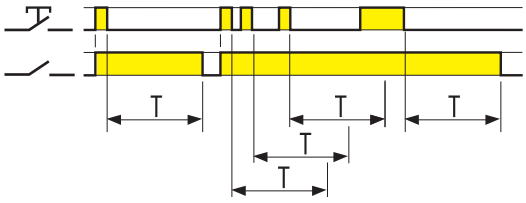


Light ON
With this function set - the output contact stays permanently closed.

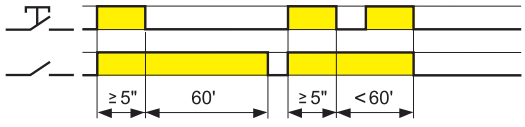
Type 14.71 Functions selectable with front selector

3-function front selector

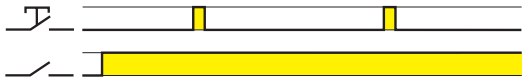
	Staircase timer + Staircase maintenance
	Light ON
	Staircase timer (compatible with 18 series movement detectors)



Staircase timer
On initial impulse the output contact closes and timing starts for the pre-set duration; subsequent impulses during the timing period will extend the timing period by the full pre-set value.
On expiry of the time delay, the output contact opens.



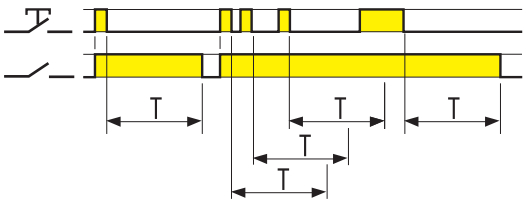
Staircase maintenance
An impulse of ≥ 5 seconds will close the output contact for 60 minutes, after which time the contact will open. Ideal for maintenance or cleaning activities.
The 60' timing can be interrupted by a further impulse of ≥ 5 seconds, the output contact opens.



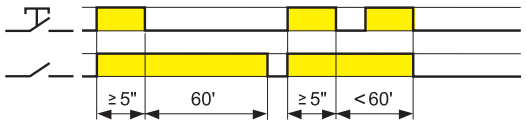
Light ON
With this function set - the output contact stays permanently closed.

Functions

Type 14.81

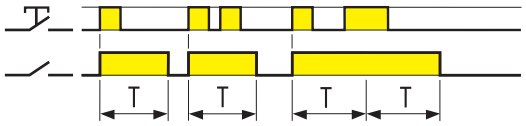


Staircase timer
On initial impulse the output contact closes and timing starts for the pre-set duration; subsequent impulses during the timing period will extend the timing period by the full pre-set value.
On expiry of the time delay, the output contact opens.



"Staircase maintenance" function
An impulse of ≥ 5 seconds will close the output contact for 60 minutes, after which time the contact will open. Ideal for maintenance or cleaning activities. The 60' timing can be interrupted by a further impulse of ≥ 5 seconds, which will re-establish the staircase timer function; so on expiry of the staircase time delay, the output contact opens.

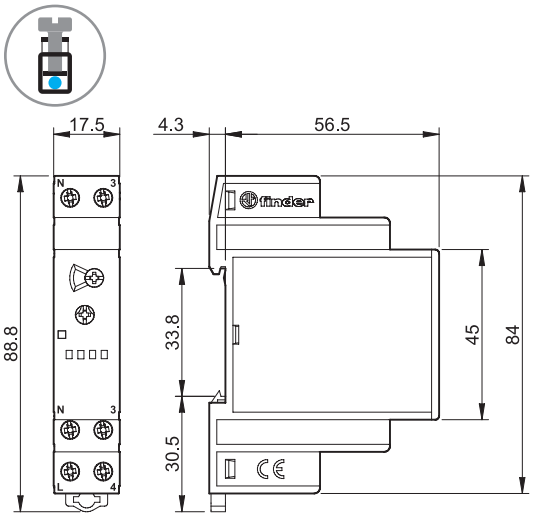
Type 14.91



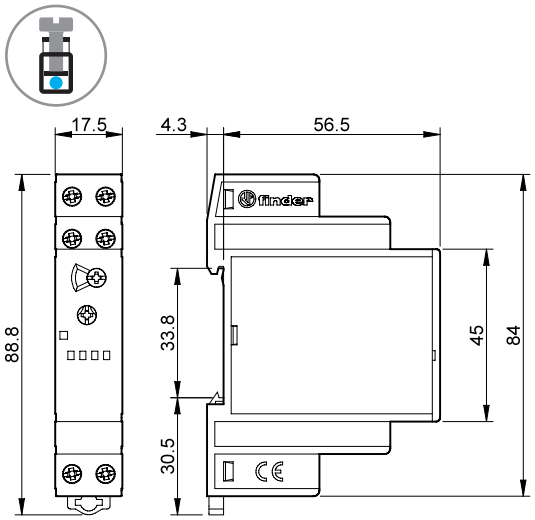
Signal ON pulse
On initial impulse the output contact closes, and remain so for the duration of the preset delay. On expiry of the time delay, the output contact opens.

Outline drawings

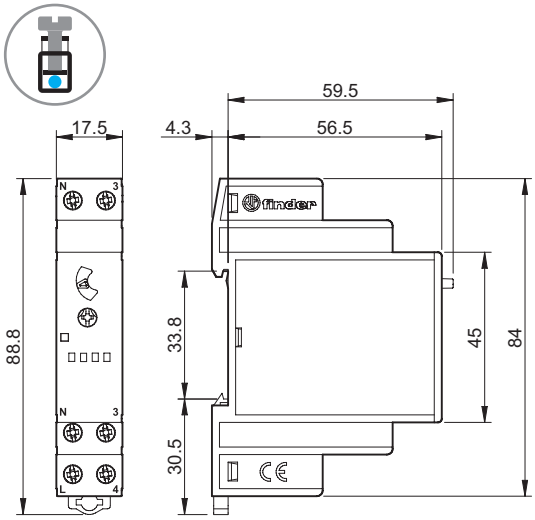
Type 14.01
Screw terminal



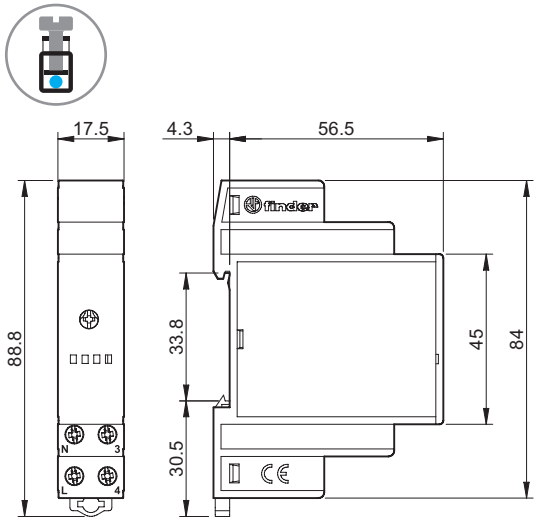
Type 14.11
Screw terminal



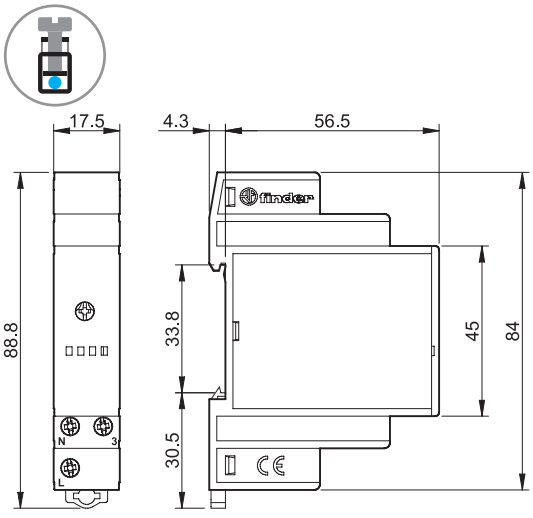
Type 14.71
Screw terminal



Type 14.81
Screw terminal



Type 14.91
Screw terminal



finder
SWITCH TO THE FUTURE

Dimmers

- Kitchen light control
- Bedroom light control
- Living room light control
- Lighting control in corridors (for hotels, offices and hospitals)

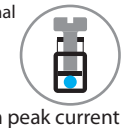
15 SERIES

"Master + Slave" system for dimming multiple lighting loads of either single or mixed lamp technologies

Type 15.10 "Master" - accepts input from a controlling push-button and outputs a dimming signal to a maximum of 32 x 15.11 slave dimmers, or other drivers or luminaires accepting a standardised 0-10 V/1-10 V signal
- Use with 4 wire connection
- "Soft" On and Off transitions
- Linear dimming
- Selectable operating modes with or without previous light level memory
- Staircase timer function

Type 15.11 "Slave" - accepts 1-10 V input from a 15.10 or other 0-10 V/1-10 V output device to dim a wide variety of lamps of different technology
- Selector switch for incandescent and halogen lighting loads (with or without transformer or electronic driver)
- Compatible with energy saving dimmable CFL or LED lamps and with all types of electromagnetic transformers
- Thermal protection against overload, thermo-fuse for extreme or short-circuit protection

Screw terminal



* Maximum peak current of the contact 30 A 230 V AC. Use a contactor or power relay to switch loads exceeding this value

For outline drawing see page 18

	15.10	15.11
		
	"Master" dimmer • 0-10 V/1-10 V output to drive up to 32 x 15.11 slave dimmers or other similar devices • Multi-function (with or without memory, including special "CFL with memory" function) • Linear dimming • Dimming speed setting • Staircase timer function, with switch-off "early warning" signalled by lamps dimming • 230 V AC supply, 50/60 Hz with automatic adjustment for frequency • 6 A output relay contact* • 17.5 mm wide, modular, 35 mm rail mount	**"Slave" dimmer** • 1-10 V input, driven by 15.10 or by other 0-10 V/1-10 V output devices • Maximum lamp load 400 W • 100 W load with energy saving dimmable lamps (LED and CFL) • Leading and trailing edge dimming methods • "Transformer" function (for use with electromagnetic transformers) • Minimum dimming level setting • 17.5 mm wide, modular, 35 mm rail mount
"Master Dimmer" output specifications		
Driving signal (Output mode automatically configures to match input mode of the connected Driver)	0-10 V, +35 mA max (Active current sourcing mode)	—
	1-10 V, –35 mA max (Passive current sinking mode)	—
Contact configuration A	1 NO (6 A/230 V AC)*	—
"Slave Dimmer" output specifications		
Power max. W	—	400
Power min. W	—	3
Nominal lamp ratings:		
230 V incandescent or halogen W	—	400 (1)
Toroidal electromagnetic transformers for LV halogen W	—	400 (2)
E-core electromagnetic transformers for LV halogen W	—	400 (2)
Electronic transformers (or ballasts) for LV halogen W	—	400 (1)
Dimmable compact fluorescent (CFL) W	—	100 (3)
Dimmable 230 V LED W	—	100 (3) or (1)
Dimmable electronic transformers for LV LED W	—	100 (1)
Supply specification		
Nominal voltage (U_N) V AC (50/60 Hz)	110…230	230
Operating range	(0.8…1.1) U_N	(0.8…1.1) U_N
Stand-by power consumption W	0.5	0.5
Dimming operating modes	—	Trailing edge (☼) Leading edge (▯⊗) and (⊗)
Technical data		
Dimming speed (total dimming time) s	1.5…10	—
Delay setting (staircase function) min	0.5…20	—
Max no. of illuminated push-button (≤ 1 mA)	15	—
Ambient temperature range °C	–10…+50	–10…+50 (4)
Protection category	IP 20	IP 20
Approvals (according to type)	CE	

Note
(1) Select "trailing edge" (☼) position on the front selector.
(2) Select "transformer" (▯⊗) position on the front selector. Preferably, no more than 2 transformers.
(3) Select "leading edge" (⊗) position on the front selector, and set the appropriate minimum dimming value (dependent on lamp type).
(4) With lamp load > 300 W (> 75 W for CFL or LED lamps), adequate ventilation must be provided - a gap of 9 mm on both side of the dimmer is suggested. Use the plastic separator type 022.09.

Electronic dimmers for lamps of various technologies. All compatible with the direct drive of Incandescent/halogen lamps and 230 V dimmable LED lamps
(Other lamps/drivers according to Type)

Type 15.91
- Mountable in wall box
- Leading edge dimming
- Linear dimming
- Automatically adjusts for supply frequency

Type 15.51
- Wall box or panel mount
- Trailing edge dimming
- Step or linear dimming
- Separate models for 50 and 60 Hz

Type 15.81
- 35 mm rail mount
- Leading or trailing edge dimming
- Also compatible with energy saving (CFL or LED) dimmable lamps and with most types of transformer/ballast drivers
- Linear dimming
- Automatically adjusts for supply frequency
- Thermo-fuse for extreme protection

- All Types suitable for incandescent and halogen lighting loads
- Use with 3 or 4 wire connection
- "Soft" On and Off transitions
- Two selectable operating modes: with or without previous light level memory
- Thermal protection against overload

Screw terminal

For outline drawing see page 18

	15.91	15.51	15.81
			
	• Suitable for residential wall box mounting • Maximum lamp load 100 W • Leading edge dimming • 2 modes - with or without memory • 230 V AC supply, 50/60 Hz (with automatic adjustment for frequency) • Linear dimming	• Suitable for wall box or panel mounting • Maximum lamp load 400 W • Trailing edge dimming • Step or Linear dimming • 2 modes - with or without memory • 230 V AC supply (separate models for 50 and 60 Hz)	• 17.5 mm modular, 35 mm rail mount • Maximum lamp load 500 W • Multi-function • Leading and trailing edge dimming methods (depending on the function) • Compatible with energy saving (CFL or LED) dimmable lamps and most types of transformer/ballast drivers • 230 V AC supply, 50/60 Hz (with automatic adjustment for frequency)
Output data			
Rated voltage V AC	230	230	230
Power max. W	100	400	500
Power min. W	3	10	3
Nominal lamp ratings:			
230 V incandescent or halogen W	100	400	500 (1)
Toroidal electromagnetic transformers for LV halogen W	—	300 (2)	500 (3)
E-core electromagnetic transformers for LV halogen W	—	—	500 (3)
Electronic transformers (or ballasts) for LV halogen W	—	400 (4)	500 (1)
Dimmable compact fluorescent (CFL) W	—	—	100 (5)
Dimmable 230 V LED W	50 (6)	50 (7)	100 (5)
Dimmable electronic transformers for LV LED W	50 (6)	50 (7)	100 (1)
Supply specification			
Nominal voltage (U_N) V AC (50/60 Hz)	230	230 (8)	230
Operating range	(0.8…1.1)U_N	(0.8…1.1)U_N	(0.8…1.1)U_N
Stand-by power consumption W	0.4	0.7	0.5
Dimming operating mode	Leading edge	Trailing edge	Trailing edge (☼) Leading edge (▯◫⊗) and (⊗)
Technical data			
Ambient temperature range °C	–10…+50 (9)	–10…+50 (9)	–10…+50 (10)
Protection category	IP 20	IP 20	IP 20
Approvals (according to type)	CE EAC	CE EAC	CE EAC

Note
(1) Select "incandescent lamp" (☼) position on the front selector.
(2) One transformer only. Power-up only with the lamp load connected.
(3) Select "transformer" (▯◫⊗) position on the front selector. Preferably, no more than 2 transformers.
(4) One transformer only.
(5) Select "CFL" (⊗) position on the front selector, and set the appropriate minimum dimming value (dependent on lamp type).
(6) Only if lamps or electronic transformers are compatible with leading edge method.
(7) Only if lamps or electronic transformers are compatible with trailing edge method.
(8) Specific 60 Hz version available (see ordering information).
(9) It is not recommended to mount more than one dimmer in the same wall box, unless adequate ventilation is provided or the lamp load is less than 100 W (15.51) or 50 W (15.91).
(10) With lamp load > 300 W (> 75 W for CFL or LED lamps), adequate ventilation must be provided - a gap of 9 mm on both side of the dimmer is suggested. Use the plastic separator type 022.09.
Not compatible with illuminated push-buttons.

YESLY Bluetooth Dimmers 230 V

Type 15.21.8.230.B300
- Round wall box (ie: Ø 60mm) mounting

Type 15.71
- Wall mounting, compatible with most common Italian residential switch boxes: AVE, BTicino, Gewiss, Simon-Urmet, Vimar

- 7 functions, dependent on the load type
- Functions with or without memory
- Dimming operating mode Trailing edge or Leading edge
- Linear/exponential regulation
- Suitable for dimmable LED lamps, dimmable CFL lamps, halogen lamps, transformers or electronic power supplies
- Transmission range: approximately 10 m in free space and without obstacles
- "Soft" switching ON/OFF
- Over-temperature and short-circuit protection

Universal electronic dimmer 230 V

Type 15.21.8.230.0200
- Round wall box (ie: Ø 60mm) mounting
- Dimming operating mode Trailing edge or Leading edge
- "Soft" switching ON/OFF
- Over-temperature and short-circuit protection

Screw terminal

NEW **15.21.8.230.B300**

YESLY

- Transmission protocol Bluetooth Low Energy (BLE)
- 128 bit encrypted connection
- Configurable via Finder TOOLBOX App - compatible with iOS and Android operating systems
- Can be controlled through standard pushbuttons, BEYON or 013.B9 wireless pushbuttons
- Maximum dimmable power 300 W
- Status LED

NEW **15.21.8.230.0200**

- Dimming operating mode Trailing edge or Leading edge
- No BLE interface
- Suitable for LED loads
- Maximum dimmable power 200 W LED
- Without memory

NEW **15.71**

YESLY

- Transmission protocol Bluetooth Low Energy (BLE)
- 128 bit encrypted connection
- Configurable via Finder TOOLBOX App - compatible with iOS and Android operating systems
- Can be controlled through standard pushbuttons, BEYON or 013.B9 wireless pushbuttons
- Maximum dimmable power 200 W
- Status LED

For outline drawing see page 18

Output data				
Rated voltage	V AC	230	230	230
Power max.	W	300	200	200
Power min.	W	3	3	3
Nominal lamp ratings:				
230 V incandescent or halogen	W	300	200	200
Toroidal electromagnetic transformers for LV halogen	W	300	—	200
E-core electromagnetic transformers for LV halogen	W	300	—	200
Electronic transformers (or ballasts) for LV halogen	W	300	200	200
Dimmable compact fluorescent (CFL)	W	150	—	100
Dimmable 230 V LED	W	150	200	100
Dimmable electronic transformers for LV LED	W	300	200	200
Supply specification				
Nominal voltage (U_N)	V AC	230	230	230
Operating range		(0.8…1.1) U_N	(0.8…1.1) U_N	(0.8…1.1) U_N
Stand-by power consumption	W	0.4	0.4	0.4
Technical data				
Dimming operating mode		Trailing edge / Leading edge	Trailing edge / Leading edge	Trailing edge / Leading edge
Ambient temperature range	°C	–10…+50	–10…+45	–10…+50
Protection category		IP 20	IP 20	IP 20
Approvals (according to type)		CE	CE	CE

PWM Dimmer for LED strip Bluetooth YESLY

Type 15.21.9.024.B200

- Round wall box (ie: Ø 60mm) mounting
- LED strip
- "Soft" switching ON/OFF
- Protected against short-circuit, overload and reverse polarity
- Three PWM operating frequencies (selectable) - to counter "strobe" effect with camera

Screw terminal

NEW **15.21.9.024.B200**

YESLY

- Transmission protocol Bluetooth Low Energy (BLE)
- 128 bit encrypted connection
- Configurable via Finder TOOLBOX App - compatible with iOS and Android operating systems
- Can be controlled through standard pushbuttons, BEYON or 013.B9 wireless pushbuttons
- Maximum dimmable power 192 W
- Three PWM operating frequencies (selectable) - to counter "strobe" effect with camera

For outline drawing see page 18

Output data		
Rated voltage	V DC	12…24
Maximum current	A	8
LED strip:		
	24 V W	192
	12 V W	96
Supply specification		
Nominal voltage (U_N)	V DC	12…24
Operating range		—
Stand-by power consumption	W	—
Technical data		
Dimming operating mode		PWM
Ambient temperature range	°C	–10…+50
Protection category		IP 20
Approvals (according to type)		CE

KNX Universal Dimmer with 2 channels

- 2 x 400W channels
- LED indicators for each channel
- Thermal protection and short-circuit protection
- Manual override through front panel
- Scenario Management
- Power supply via KNX bus
- 35 mm rail (EN 60715) mounting
- Suitable for ETS 4 (or latest versions)

Screw terminal

NEW **15.2K.8.230.0400**

- Dimming operating modes: Leading Edge or Trailing Edge, ETS configurable
- Suitable for many kind of loads: LED lamps, halogen, CFL, electronic and electromagnetic transformers

For outline drawing see page 14

Output data		
Rated voltage	V	230
Power max.	W	400
Power min.	W	2
Nominal lamp ratings 230 V:		
230 V incandescent or halogen	W	400
Toroidal electromagnetic transformers for LV halogen	W	400
E-core electromagnetic transformers for LV halogen	W	400
Electronic transformers (or ballasts) for LV halogen	W	400
Dimmable compact fluorescent (CFL)	W	100
Dimmable 230 V LED	W	100
Dimmable electronic transformers for LV LED	W	100
Dimming operating modes		Leading Edge / Trailing Edge
Supply specification		
Type of BUS		KNX
Supply voltage	V DC	30
Rated consumption	mA	7
Technical data		
Ambient temperature range	°C	–5…+45
Protection category		IP 20
Approvals (according to type)		CE

Ordering information

Example: type 15.71, YESLY Bluetooth dimmer, 230 V AC.

1 5 . 7 1 . 8 . 2 3 0 . B 2 0 0

Series

Type
1 = Master / slave, 35 mm rail (EN 60715) mount, 17.5 mm wide
2 = Round wall box mounting
2 = Mounting on 35 mm rail (EN 60715), with 2 outputs (15.2K)
5 = Panel or wall box mount
7 = YESLY - wall mounting residential switch boxes like AVE, Bticino, Gewiss, Simon-Urmet, Vimar
8 = 35 mm rail (EN 60715) mount, 17.5 mm wide, for energy saving lamps
9 = Wall box mount, for LED lamps

No. of poles
0 = 0-10 V output (only for 15.10)
1 = 1 output
K = KNX interface dimmer

Supply version
8 = AC

Supply voltage
230 = 230 V
230 = 110…230 V (only for 15.10)
024 = 12…24 V

Transmission protocol
B = Bluetooth Low Energy (BLE)
0 = Standard

Output power
0 = 100 W (15.91)
2 = 200 W (115.21, 5.71)
3 = 300 W (15.21)
4 = 400 W (15.51,15.11, 15.2K)
5 = 500 W (15.81)

AC input frequency
0 = 50 Hz (15.51)
50/60 Hz (15.11/21/71/81/91)
DC (15.21.9.024.B200)
1 = 50/60 Hz (15.10)
6 = 60 Hz (15.51)

0 = Standard
0 = Type 15.71 white
2 = Type 15.71 anthracite gray
4 = Only for 15.51 linear dimming

Available Codes
15.10.8.230.0010 master dimmer, 50/60 Hz
15.11.8.230.0400 slave dimmer, 50/60 Hz
15.21.8.230.B300 YESLY BLE Dimmer - 300 W, White
15.21.8.230.0200 Universal Dimmer
15.21.9.024.B200 YESLY BLE Dimmer PWM
15.51.8.230.0400 step dimming, 50 Hz
15.51.8.230.0404 linear dimming, 50 Hz
15.51.8.230.0460 step dimming, 60 Hz
15.71.8.230.B200 YESLY BLE Dimmer - 200 W, White
15.71.8.230.B202 YESLY BLE Dimmer - 200 W, Anthracite
15.81.8.230.0500 linear dimming, 50/60 Hz
15.91.8.230.0000 linear dimming, 50/60 Hz
15.2K.8.230.0400 KNX universal Dimmer

Technical data

EMC specifications							
Type of test		**Reference standard**	**15.51/15.91**	**15.10/11/81**	**15.21.8.230.0200**	**15.2K**	
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV		4 kV	4 kV	
	air discharge	EN 61000-4-2	8 kV		8 kV	8 kV	
Radiated electromagnetic field	(80…1000 MHz)	EN 61000-4-3	3 V/m	10 V/m	10 V/m	3 V/m	
Fast transients (burst)	on supply terminals	EN 61000-4-4	4 kV		4 kV	4 kV	
(5-50 ns, 5 and 100 kHz)	on pushbutton connection	EN 61000-4-4	4 kV		4 kV	—	
Voltage pulses on supply terminals (surge 1.2/50 µs)	differential mode	EN 61000-4-5	2 kV		2 kV	2.5 kV	
Radiofrequency common	on supply terminals	EN 61000-4-6	3 V		10 V	3 V	
mode voltage (0.15…80 MHz)	on pushbutton connection	EN 61000-4-6	3 V		10 V	—	
Voltage dips	70% U_N, 40% U_N	EN 61000-4-11	10 cycles		10 cycles	10 cycles	
Short interruptions		EN 61000-4-11	10 cycles		10 cycles	10 cycles	
Radiofrequency conducted emissions	0.15…30 MHz	EN 55015	class B		class B	class B	
Radiated emissions	30…1000 MHz	EN 55015	class B		class B	class B	

EMC specifications YESLY				
			15.21.8.230.B300/15.71	**15.21.9.024.B200**
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV	4 kV
	air discharge	EN 61000-4-2	8 kV	8 kV
Radiated electromagnetic field	(80…1000 MHz)	EN 61000-4-3	10 V/m	10 V/m
Fast transients (burst)	on supply terminals	EN 61000-4-4	2 kV	2 kV
(5-50 ns, 5 and 100 kHz)	on pushbutton connection	EN 61000-4-4	4 kV	1 kV
Voltage pulses on supply terminals (surge 1.2/50 µs)	differential mode	EN 61000-4-5	2 kV	1 kV
Radiofrequency common	on supply terminals	EN 61000-4-6	10 V	10 V
mode voltage (0.15…80 MHz)	on pushbutton connection	EN 61000-4-6	10 V	10 V
Voltage dips	70% U_N, 40% U_N	EN 61000-4-11	10 cycles	10 cycles
Short interruptions		EN 61000-4-11	10 cycles	10 cycles
Radiofrequency conducted emissions	0.15…30 MHz	EN 55015 / ETSI EN 301489-1/ ETSI EN 301489-17	class B	class B
Radiated emissions	30…6000 MHz	EN 55015 / ETSI EN 301489-1/ ETSI EN 301489-17	class B	class B

Terminals		**15.10/15.11/15.51/15.71/ 15.81/15.91**		**15.21**		**15.2K**	
Max. wire size		solid cable	stranded cable	solid cable	stranded cable	solid cable	stranded cable
	mm^2	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5	1 x 2.5 / 2 x 1.5	1 x 2.5 / 2 x 1	1 x 6 / 2 x 2.5	1 x 4 / 2 x 1.5
	AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14	1 x 14 / 2 x 16	1 x 14 / 2 x 16	1 x 10 / 2 x 14	1 x 12 / 2 x 16
Screw torque	Nm	0.8		0.5		0.5	
Wire strip length	mm	9				7	

Other data			**15.10**	**15.11**	**15.21**	**15.51**	**15.71**	**15.81**	**15.91**	**15.2K**
Power lost to the environment	without load	W	0.5	0.5	0.4	0.7	0.4	0.5	0.4	—
	with rated load	W	1.7	2.5	2.5	2.2	2	2.6	1.2	—
Max cable length for push-button connection		m	100	100	100	100	100	100	100	—
Max cable length for Master and Slaves connection		m	100 (keep separate from power cables)							

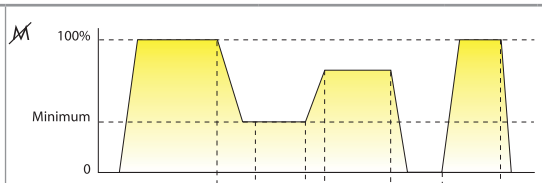
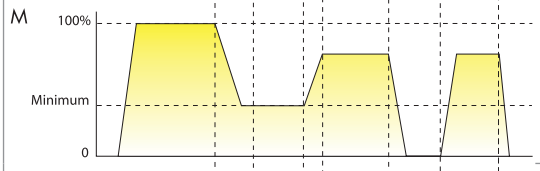
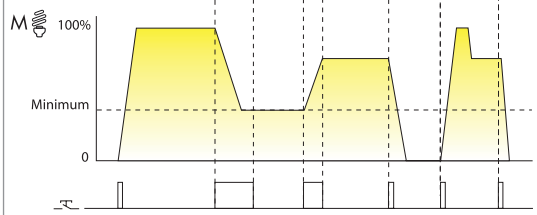
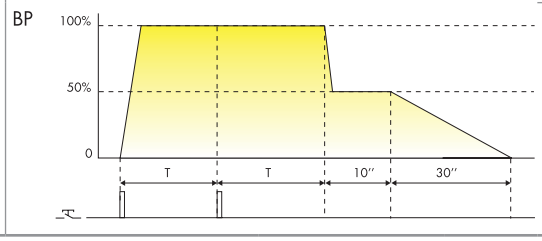
Types 15.10 and 15.11

Signaling

LED (15.10 only)	Condition
	Stand-by, output voltage < 1 V
	Active, output voltage ≥ 1 V
	Timing, staircase function

LED (15.11 only)	Condition
	Stand-by, input voltage < 1 V
	Active, input voltage ≥ 1 V
	Short circuit or overload, output disabled
	Overtemperature, output disabled

Functions

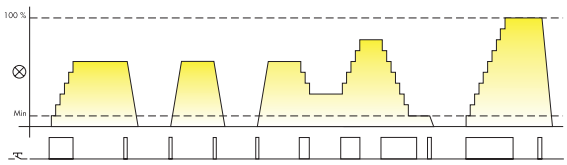
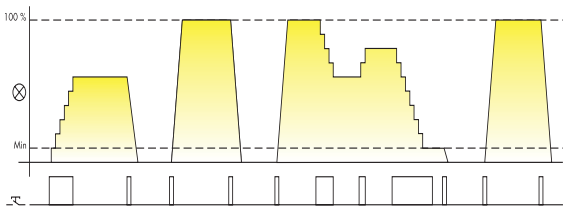
Type	Linear dimming	
15.10		**Operating mode without memory:** at switch-off, the light level is not memorized. **Long control pulse:** The light level is progressively raised or lowered in linear way. The lowest value depending on the "minimum dimming level" regulator setting (on 15.11). **Short control pulse:** Alternately switches between On and Off (maximum light level and the off state).
		**Operating mode with memory:** the previous light level is memorized. **Long control pulse:** The light level is progressively raised or lowered in linear way. The lowest value dependent on the "minimum dimming level" regulator setting (on 15.11). **Short control pulse:** Alternately switches between On and Off. When switching On, the light level assumes the value set during the previous On state.
		**Operating mode with memory:** the previous light level is memorized, specific for CFL Lamp. **Long control pulse:** The light level is progressively raised or lowered in linear way. The lowest value dependent on the "minimum dimming level" regulator setting (on 15.11). **Short control pulse:** Alternately switches between On and Off. When switching On, the light level reach the full value for a very short time (in order to guarantee the correct lamp turn-on), then immediately assumes the value set during the previous On state.
		**Staircase relay with early warning** On initial impulse the output closes and the timing starts for the pre-set duration. After the timing period (T), the output power is reduced to 50% for 10 seconds; then in the last 30 seconds it will be further reduced to the final shutdown. During the pre-set and 40 seconds warning time, it is possible, by a further impulse, to extend the time by the full pre-set value.

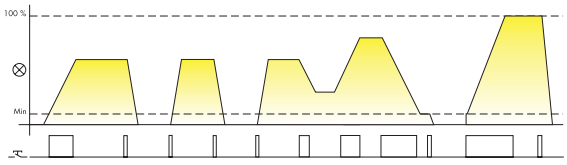
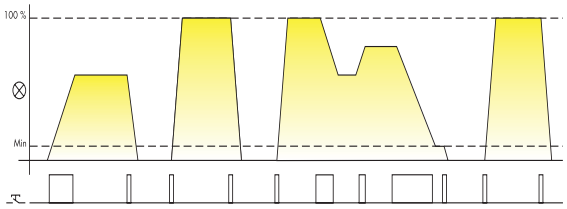
Type of load - Type 15.11

Type of load	Selector setting	Regulator setting
• Incandescent lamps • 230 V halogen lamps • 12/24 V halogen and LED lamps with electronic transformer/ballast	 (Trailing Edge)	It is suggested to set the "minimum dimming level" at the lowest value, so that the complete dimming range is available. But if it is necessary to avoid too low a level of illumination, a higher value can be set. 
• Dimmable compact fluorescent lamps (CFL) • Dimmable LED lamps	 (Leading Edge)	It is suggested to initially set the "minimum dimming level" at an intermediate value and then if necessary, readjust for a level found to be compatible with the lamp being used. 
• 12/24 V halogen lamps with toroidal or E-core electromagnetic transformer	 (Leading Edge)	It is suggested to set the "minimum dimming level" at the lowest value, so that the complete dimming range is available. But if it is necessary to avoid too low a level of illumination, a higher value can be set. 

Type 15.51 and 15.91

Functions

Type	Step dimming
15.51…0400	**Operating mode 1 (with memory):** the previous light level is memorized.  **Long control pulse:** The light level is progressively raised or lowered through a maximum of 10 incremental steps. **Short control pulse:** Alternately switches between On and Off. When switching On, the light level assumes the value set during the previous On state.
	Operating mode 2 (without memory): on switch off, the light level is not memorized.  **Long control pulse:** The light level is progressively raised or lowered through a maximum of 10 incremental steps. **Short control pulse:** Alternately switches On or Off between the maximum light level and the off state.

Type	Linear dimming
15.51…0404 **15.91…0000**	**Operating mode 3 (with memory):** the previous light level is memorized.  **Long control pulse:** The light level is progressively raised or lowered. **Short control pulse:** Alternately switches between On and Off. When switching On, the light level assumes the value set during the previous On state.
	Operating mode 4 (without memory): on switch off, the light level is not memorized.  **Long control pulse:** The light level is progressively raised or Lowered. **Short control pulse:** Alternately switches On or Off between the maximum light level and the off state.

Operating mode setup

Type 15.51

On 15.51 operating mode 1 or 3 (with memory) is preset, but it is possible to change it using the following sequence:
a) remove the supply voltage;
b) press the control button;
c) apply the supply to the relay, keeping the button closed for 3 second;
d) on button release, the light will flash twice to indicate the selection of operating mode 2 or 4, or flash once for operating mode 1 or 3.
Repeating the above steps will alternately change between operating modes.

Type 15.91

On 15.91 operating mode 4 (without memory) is preset, but it is possible to change it using the following sequence:
a) remove the supply voltage;
b) press the control button;
c) apply the supply to the relay, keeping the button closed for 3 second;
d) on button release, the light will flash twice to indicate the selection of operating mode 3, or flash once for operating mode 4.
Repeating the above steps will alternately change between operating modes.

Type 15.21.8.230.0200

The dimmer is pre-set for "Trailing edge" dimming, but it is possible to set "Leading edge" using the following sequence:
a) disconnect the power supply;
b) press and hold down a push-button;
c) restore power while holding down the button until the lamp produces.
one or two flashes and, at this point, release the button. If 2 flashes are emitted the new set method will be Leading Edge, if only one flash is emitted the method will be Trailing Edge

Type 15.81

Thermal protection and signaling

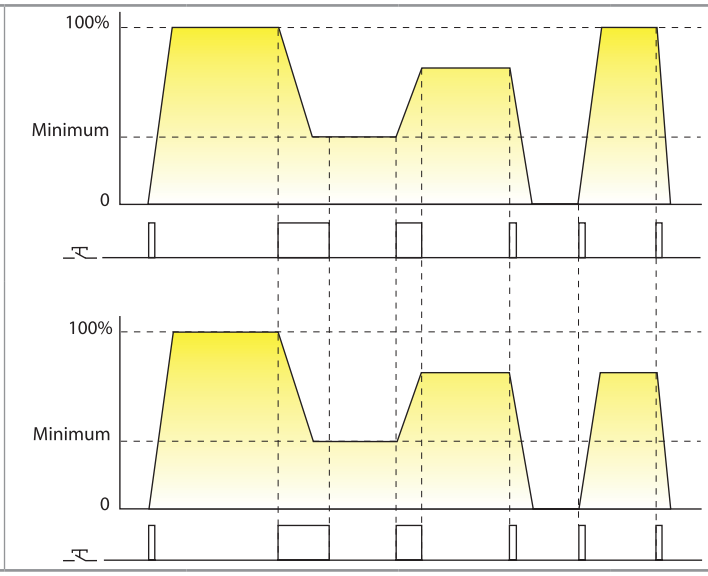
LED (15.81 type only)	Supply voltage	Thermal protection
———	OFF	—
▮ ▮ ▮ ▮ ▮	ON	—
▮▮▮▮▮▮▮▮▮	ON	ALARM

ALARM
The internal thermal protection (active on all dimmer types) will detect an unsafe temperature, due to overload or incorrect installation, and will turn the dimmer output off.
It is possible to turn the dimmer on, by push button, only when the temperature reduces to a safe level (after 1 to 10 minutes, depending on installation conditions) and after removing the cause of the overload.

Functions

Type **Linear dimming**

15.81...0500



Operating mode without memory: at switch-off, the light level is not memorized.

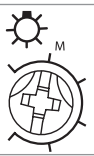
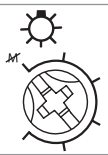
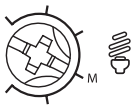
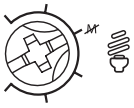
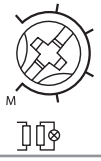
Long control pulse: The light level is progressively raised or lowered in linear way. The lowest value depend on the "minimum dimming level" regulator setting.

Short control pulse: Alternately switches between On and Off between the maximum light level and the off state.

Operating mode with memory: the previous light level is memorized.

Long control pulse: The light level is progressively raised or lowered in linear way. The lowest value dependent on the "minimum dimming level" regulator setting.

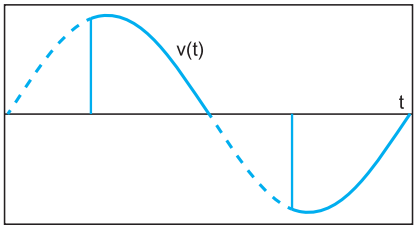
Short control pulse: Alternately switches between On and Off. When switching On, the light level assumes the value set during the previous On state.

Type of load	Selector setting		Regulator setting
	With memory (M)	Without memory (~~M~~)	
• Incandescent lamps • 230 V halogen lamps • 12/24 V halogen lamps with electronic transformer/ballast			It is suggested to set the "minimum dimming level" at the lowest value, so that the complete dimming range is available. But if it is necessary to avoid too low a level of illumination, a higher value can be set. 
• Dimmable compact fluorescent lamps (CFL) • Dimmable LED lamps			It is suggested to initially set the "minimum dimming level" at an intermediate value and then if necessary, readjust for a level found to be compatible with the lamp being used. 
• 12/24 V halogen lamps with toroidal or E-core electromagnetic transformer			It is suggested to set the "minimum dimming level" at the lowest value, so that the complete dimming range is available. But if it is necessary to avoid too low a level of illumination, a higher value can be set. 

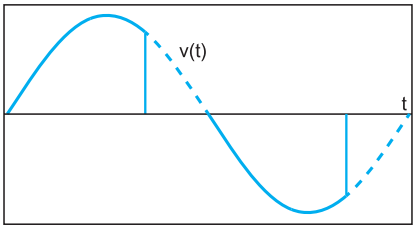
Dimming methods

Phase cutting:

Leading edge dimming



Trailing edge dimming

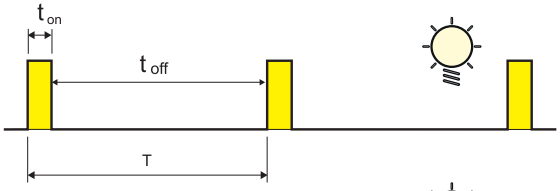


Light dimming is realized with "phase cutting technology", which works by "cutting off" part of the mains voltage waveform in order to reduce the RMS voltage fed to the lamp. When the "cut off" part is at the beginning of each half cycle the dimming method is called Leading Edge. When it is towards the end of each half cycle, it is called Trailing Edge. These 2 methods are suitable for dimming different lamp types: Trailing Edge is, in general, more suitable for electronic transformers for low voltage lamps (halogen or LED). Leading Edge is better suited for electromagnetic transformers for LV lamps, 230 V CFL and 230 V LED lamps. Both methods are, however, suitable for dimming 230 V halogen and incandescent lamps.
In consideration of the different lamp types actually available on the market, it is suggested to refer to the technical specification indicated in page 3 and, if given, to the lamp manufacturer's recommendation.

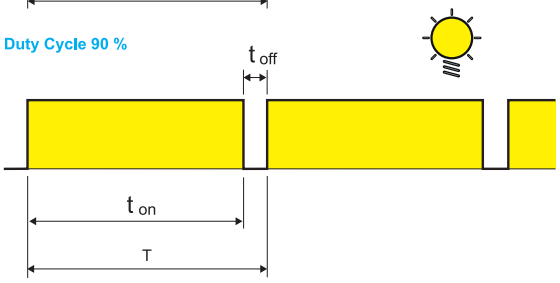
PWM:

"Pulse Width Modulation" regulates electrical power by modulating the width of the ON time relative to the OFF time. The higher the duty cycle, the greater the power applied to the load. PWM is exclusively for direct current and is used particularly for the dimming of DC LED strips. In this case, the dimmer is positioned downstream of the power supply.

Duty Cycle 10 %



Duty Cycle 90 %



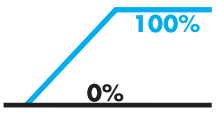
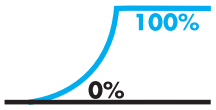
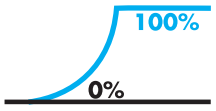
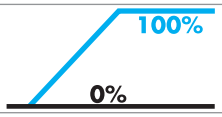
Types 15.21 and 15.71 (BLE only)

Dimmer setting

The dimming function can be set via Finder TOOLBOX App, available for iOS and Adroid systems.
This product is ready-to-use with the factory setting: 1 – LEDRC1; Trailing edge linear control curve.

Functions

Settable via App.

Load type	Function	Driving method	Control curve
LED lamps, Halogen, electronic transformers **LED**	**1**	**TE** Trailing Edge	Linear 
	2	**LE** Leading Edge	
LED **LED**	**3**	**TE** Trailing Edge	Exponential 
	4	**LE** Leading Edge	
CFL lamps	**5**	**TE** Trailing Edge	Exponential 
	6	**LE** Leading Edge	
Electromechanical transformers	**7**	**LE** Leading Edge	Linear 
AUTO	**AUTOMATIC**		

AUTO: the automatic function verifies with a special algorithm the driving method (Trailing edge or Leading edge) best suited to the applied load. If the AUTO function is selected, the dimmer carries out a check switching on the load with two working cycles each time the dimmer is powered from the L & N (even after a blackout). These cycles allow the dimmer to set the right driving method.
Control curve: the Linear or Exponential control curve is useful in achieving the most visually appealing change in light intensity - according to the type of load being used.

Parameters

Settable via Finder TOOLBOX App.
Minimum light value: Minimum value of load intensity.
Switch time: Switching ON/OFF time.
Regulation time: Time to reach the highest or lower light value.
Scene time: Reaching the value recalled by a scenario.
Memory: Remembers the brightness value before power off.
Restore after blackout: Restoring the light intensity to the value prior to a loss of power.

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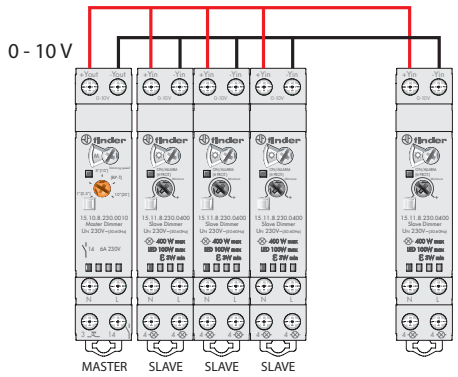
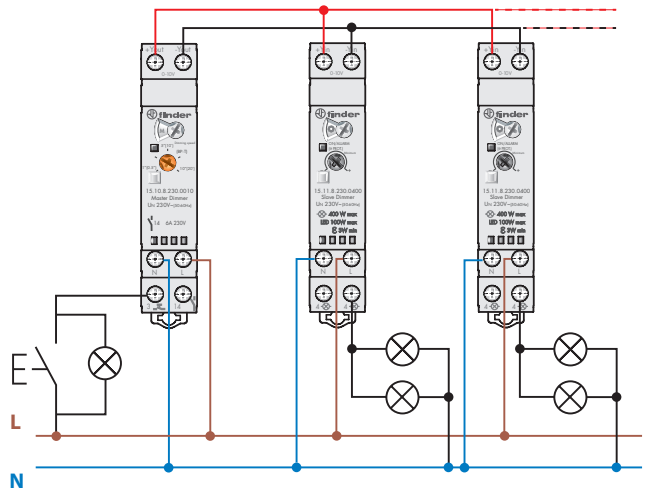
Wiring diagrams - Types 15.10 and 15.11

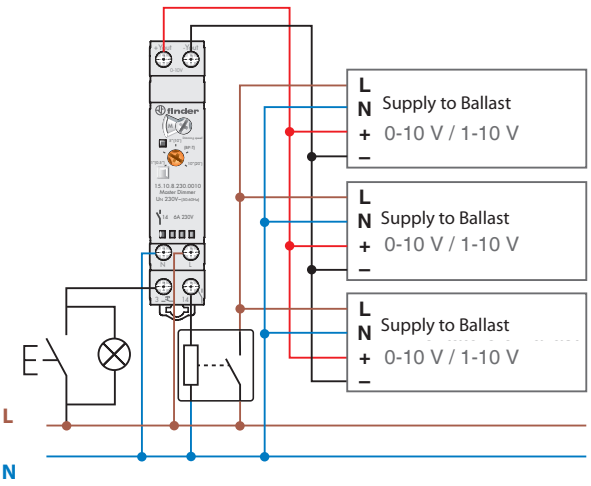


This new system is modular, adaptable to every need and allows control of multiple lamps through a single control device called the "Master Dimmer" Type 15.10.8.230.0010.
The Master Dimmer, produces a 0 - 10 V signal proportional to the dimming value needed:
0 V corresponds to 0% (light off); 5 V equals 50%, 10 V corresponds to the maximum brightness (100% on).
The 0 - 10 V output signal terminals Yout + / Yout of the "Master Dimmer" must be connected to terminals + Yin / Yin of one or more 15.11.8.230.0400, called the "Slave Dimmers", which have the task of changing the voltage applied to the lamps and therefore their brightness.

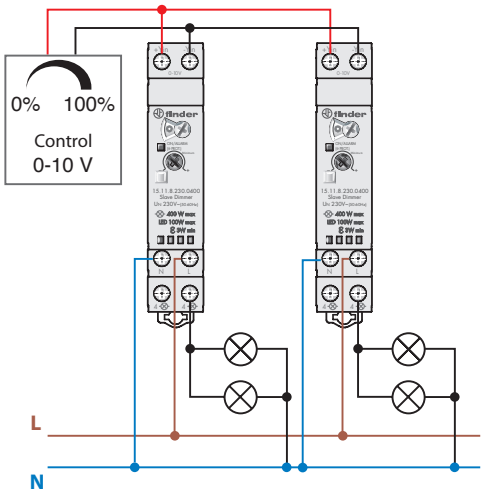
The result is a flexible system that offers a range of solutions from the minimum configuration of a Master Dimmer and a Slave Dimmer, up to the maximum configuration of a Master Dimmer and 32 Slave Dimmers.
Each slave can drive a different lamp type, depending on the appropriate methodology, "Leading Edge" or "Trailing Edge". It can regulate halogen lamps, dimmable LED lamps, dimmable CFL lamps, electronic transformers, and electromagnetic transformers.
For example, one Master Dimmer can control a Slave Dimmer with LED lamps and at the same time a second Slave Dimmer with halogen lamps, and a third with electronic transformers.



MASTER DIMMER TYPE 15.10 AND SLAVE DIMMER TYPE 15.11
It is recommended that the Master controls from one to a maximum of 32 Slave units.
The push-buttons (including illuminated push-buttons Max. 15) serve as the ON / OFF (momentary push), or when pressed for a longer time they adjust the brightness level.
Each Slave can drive a different load type.



MASTER DIMMER + 0 - 10 V ELECTRONIC TRANSFORMER OR BALLAST
Using only the Master Dimmer it is possible to control electronic transformers or ballasts with a 0 - 10 V / 1 - 10 V input (observing correct polarity).
For 1 - 10 V applications it is suggested to supply the Ballast Live from terminal 14. This will ensure that the supply to the Ballast is cut-off for a signal < 1 V.
Note: Check that the maximum Peak Current of the Ballast does not exceed the 30 A 230 V AC rating of terminal 14. Use a contactor or power relay to switch loads exceeding this value.

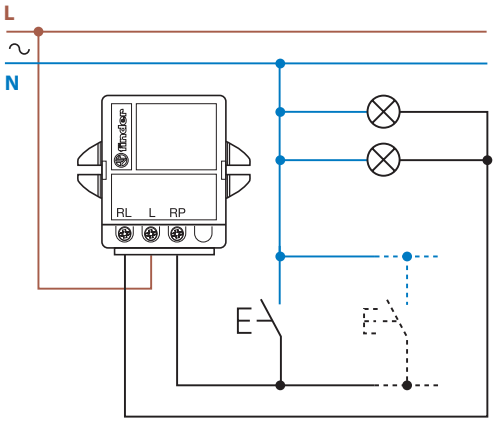


BMS 0 - 10 V OUTPUTS + SLAVE DIMMERS
In the case of Home Automation or Building Automation systems you can use just the Slave Dimmer Type 15.11 directly controlled by the 0 - 10 V output of the building management system (BMS), or by 0 - 10 V rotary regulators.

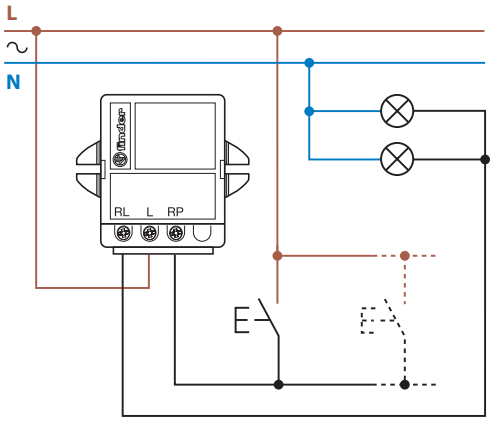
Wiring diagrams - Types 15.51, 15.71, 15.81 and 15.91

Note: remember to maintain a ground/earth connection for class 1 light fittings.

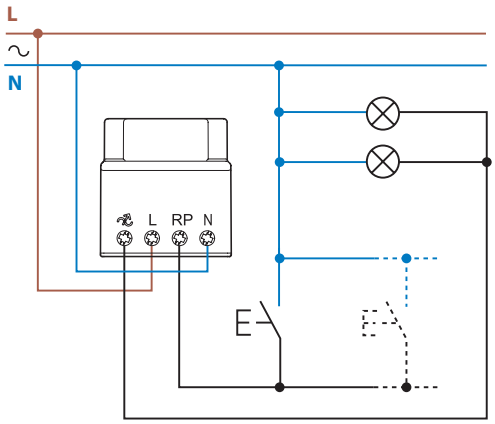
Type 15.51 - 3 wire connection



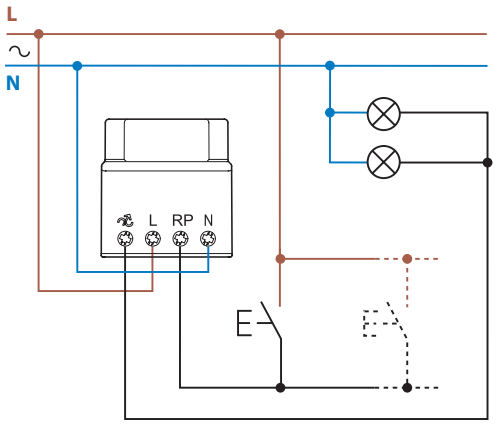
Type 15.51 - 4 wire connection



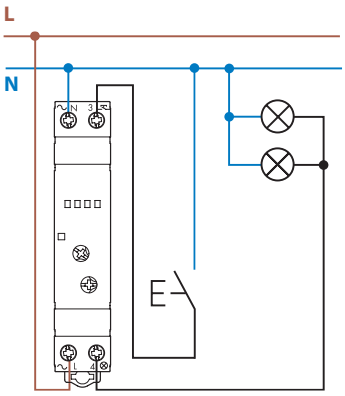
Type 15.91 - 3 wire connection



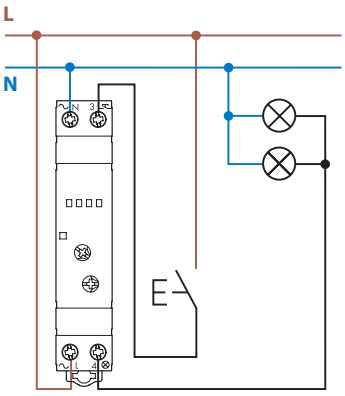
Type 15.91 - 4 wire connection



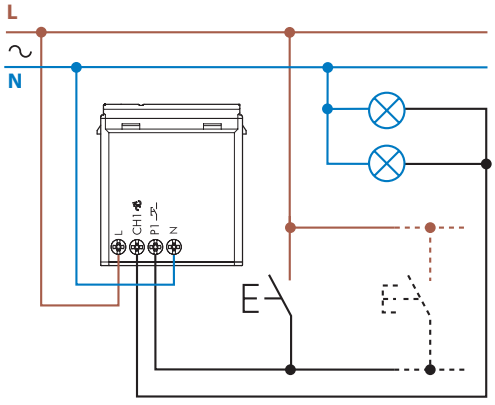
Type 15.81 - 3 wire connection



Type 15.81 - 4 wire connection



Type 15.71 - 4 wire connection



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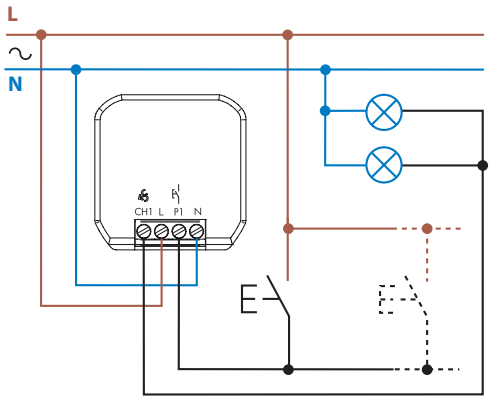
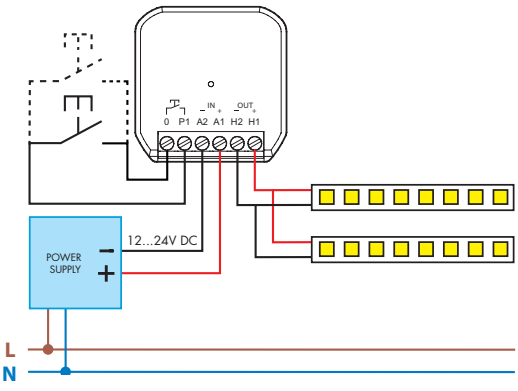
Wiring diagram - Type 15.21

Type 15.21.8.230.xxxx - 4 wire connection

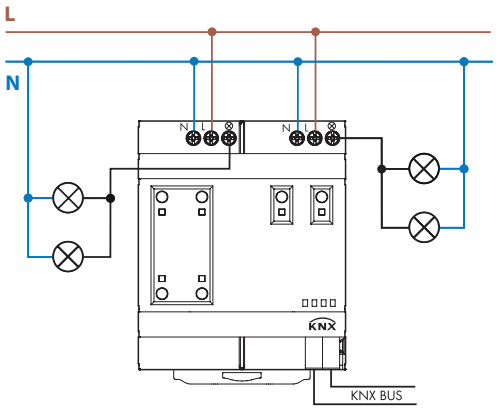


Type 15.21.9.024.B200



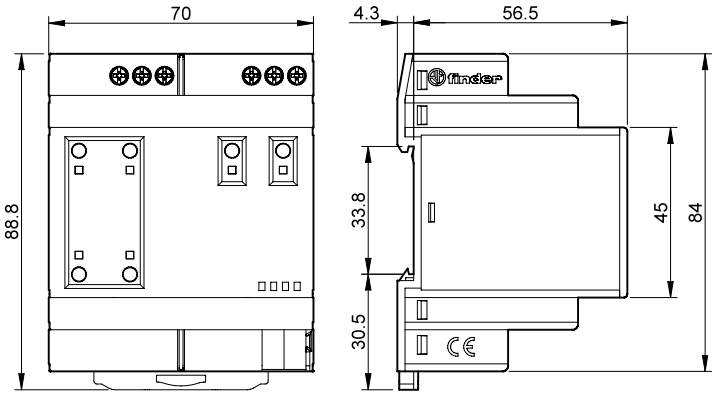
Wiring diagram - Type 15.2K

Type 15.2K



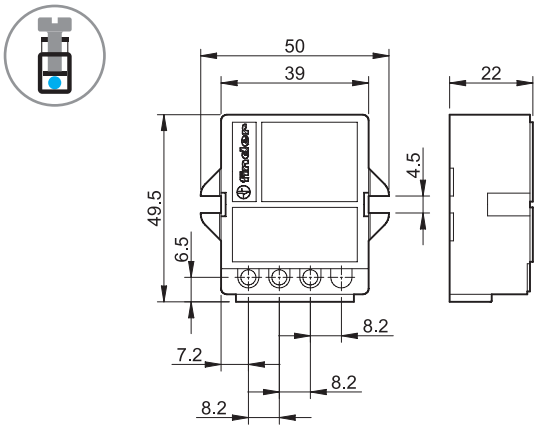
Outline drawings

Type 15.2K
Screw terminal

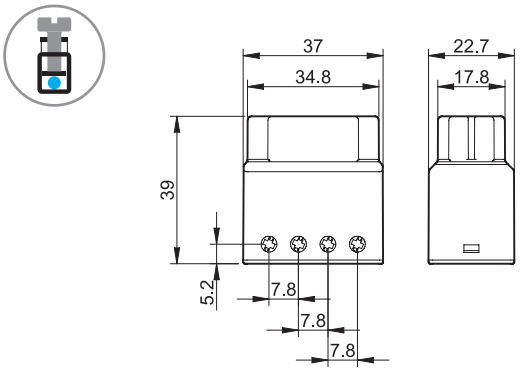


Outline drawings

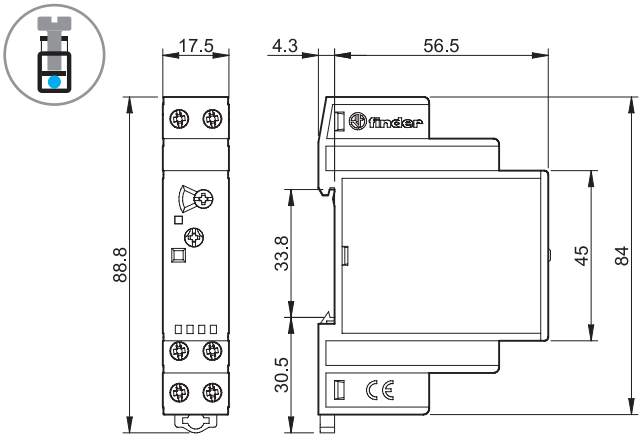
Type 15.51
Screw terminal



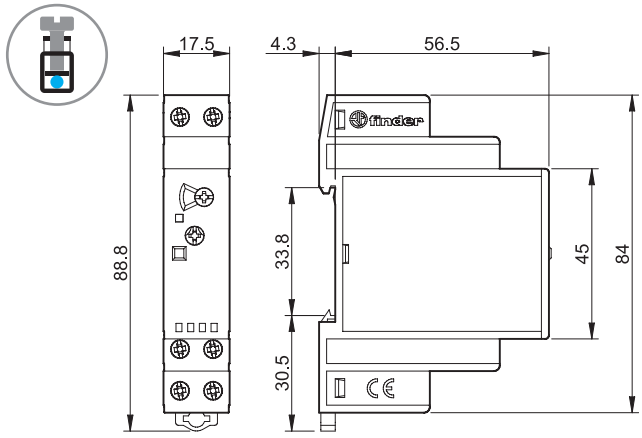
Type 15.91
Screw terminal



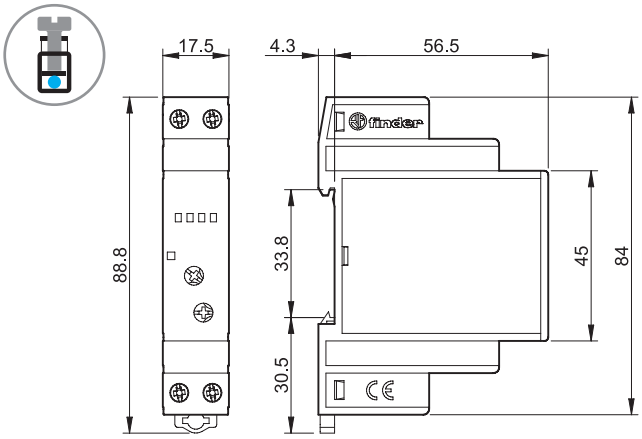
Type 15.10
Screw terminal



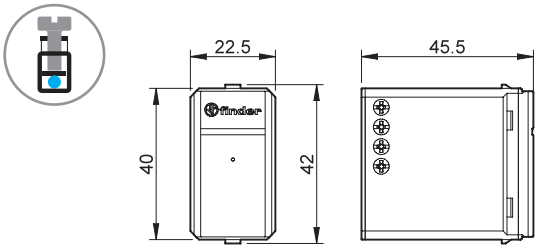
Type 15.11
Screw terminal



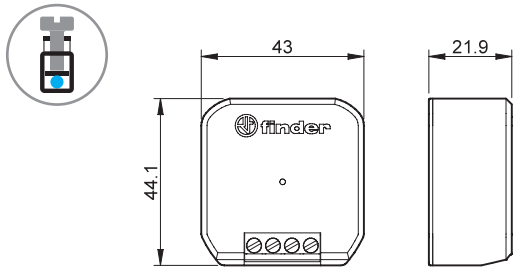
Type 15.81
Screw terminal



Type 15.71 - YESLY
Screw terminal



Type 15.21
Screw terminal



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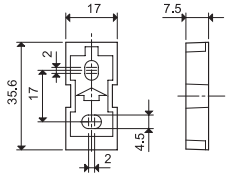
Accessories

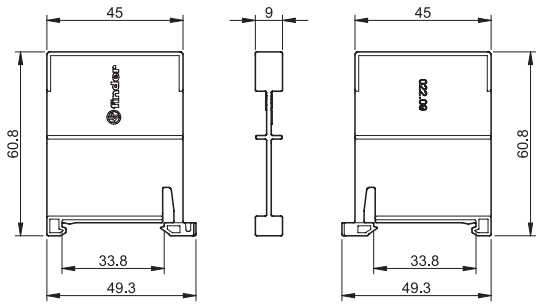
020.01

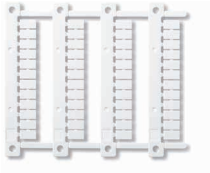
Adaptor for panel mounting for types 15.10, 15.11 and 15.81, plastic, 17.5 mm wide	020.01



022.09

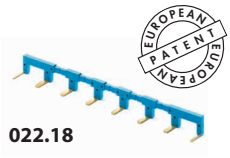
Separator for rail mounting, plastic, 9 mm wide for types 15.10, 15.11 and 15.81	022.09





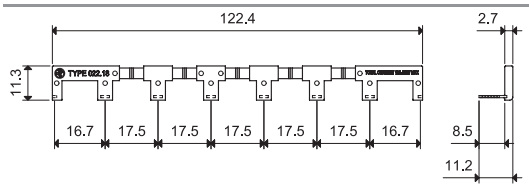
060.48

Sheet of marker tags for types 15.10, 15.11 and 15.81, plastic, 48 tags, 6 x 12 mm	060.48



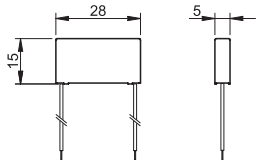
022.18

8-way jumper link for type 15.10 and 15.11 connection, 17.5 mm wide	022.18 (blue)
Rated values	10 A - 250 V

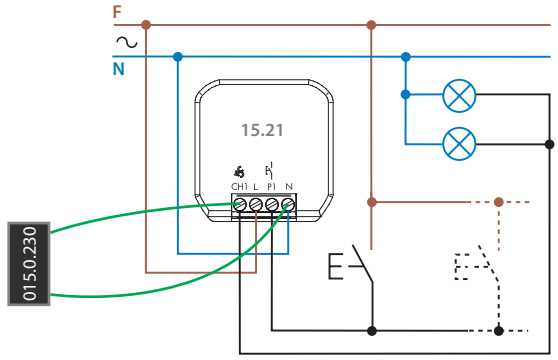


015.0.230

Leakage current suppression module. It absorbs the leakage current on the LED lamps, when, with the Dimmer off, the lamps do not turn off completely but remain on at minimum.	015.0.230



Connection example - Type 15.21



finder
SWITCH TO THE FUTURE

LED emergency light “LUMOS”

Emergency lighting

1L
SERIES

LED emergency light "LUMOS"

Type 1L.10
- Wall mount installation

- Complies with CEI 64-8
- Nominal voltage: 230 V AC (50/60)Hz
- Rechargeable battery
- Battery run time 2.5 hours
- Modern design
- Wall mounting compatible with 3 module housing, complete with adaptor for following frames:
  - Ave series S44
  - BTicino series Axolute
  - BTicino series Living
  - BTicino series Living Light
  - BTicino series Living Light Air
  - BTicino series Matix
  - Gewiss series Chorus
  - Gewiss series System
  - Simon Urmet Nea
  - Vimar series Eikon
  - Vimar series Idea
  - Vimar series Arkè
  - Vimar Plana
- White or black color version

1L.10
Screw terminal

For outline drawing see page 4

1L.10

- This emergency lighting module activates in the event of a failure of the lighting supply

Technical data		
Luminous flux	Lumens	14
Efficiency	Lumens/Watt	67
Time to fully charge the battery	h	72
Maximum illumination time (assuming fully charged battery)	h	2.5
Color temperature	k	5700
Supply specification		
Nominal voltage (U_N)	V AC (50/60 Hz)	110…230
Operating range	V AC (50/60 Hz)	88…264
Power consumption	W	0.2
Technical data		
Ambient temperature range	°C	–10…+50
Protection category		IP 20
Approvals (according to type)		CE

Ordering information

Example: 1L series, LED emergency light, 230 V AC supply.

1 L	. 1	0	. 8	. 2 3 0	. 0	0	0	0

Series

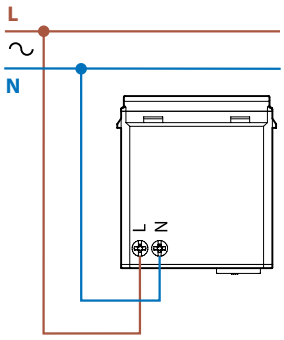
Type
10 = LED emergency light

Supply voltage
230 = 110…230 V

Supply version
8 = AC (50/60 Hz)

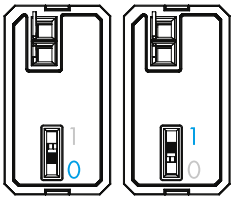
Color
0 = White
2 = Anthracite gray

Wiring diagrams

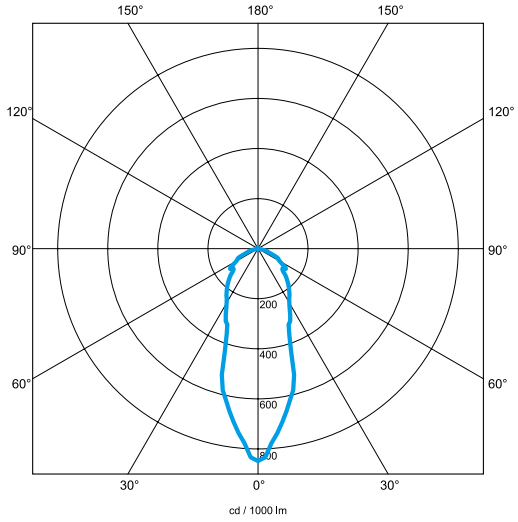


PUTTING INTO SERVICE

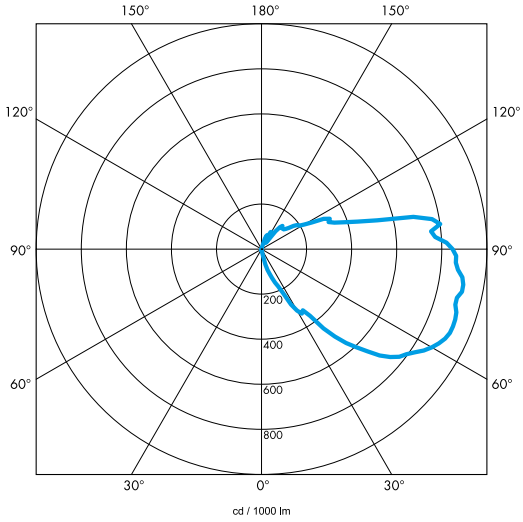
After carrying out the connection and before proceeding with closure of the wall box move the selector from position 0 to 1.
With this setting the Lamp will turn on when power is OFF and will turn off with the power supply present.



Polar diagram

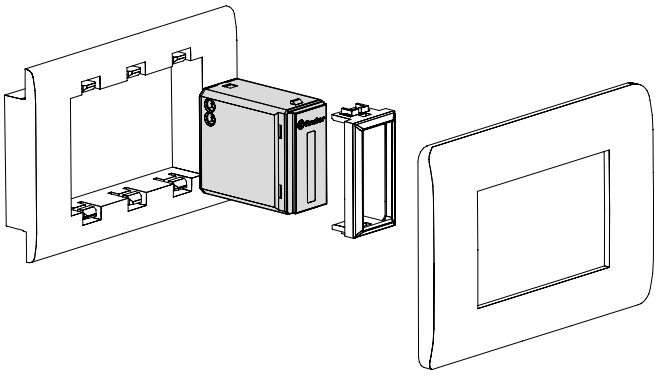


Horizontal

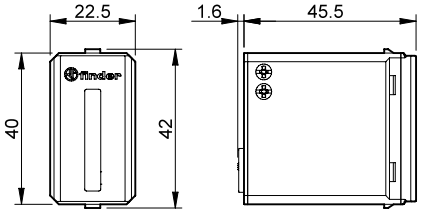


Vertical

Adaptor



Outline drawings



Please see general technical information

finder
SWITCH TO THE FUTURE

PIR movement and presence detectors 10 A

- Hotel room energy management systems
- Offices, swimming baths and schools
- Staircase light control
- Lighting control in corridors (for hotels, offices and hospitals)

18
SERIES

PIR movement detectors for internal or external installations - wall mounting

Type 18.01
- Internal installation
- Surface mounting

Type 18.11
- External installation (IP54)
- Surface mounting

Type 18.A1
- External mounting (IP55)
- Terminal for PE connection
- Push-in terminals

- Output contact connected to supply live
- Small size
- Adjustable ambient light intervention threshold
- Adjustable Light ON Time
- Universal mounting position - permits the selection of any area for survey
- Wide angle of survey

18.01/18.11
Screw terminal

18.A1
Push-in terminal

NOTE: with 110…125 V AC supply, the Ratings (AC1, AC15 and lamp loads) must be reduced by 50 % (e.g. 500 W instead of 1000 W)

For outline drawings see page 17

	18.01	**18.11**	NEW **18.A1**
			
	• 1 NO 10 A • Internal installations	• 1 NO 10 A • External installations • Protection category IP 54	• 1 NO 10 A • External installations • Protection category IP 55 • PE terminal • Push-in terminals
Contact specification			
Number of contacts	1 NO (SPST-NO)	1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/Maximum peak current A	10/20 (100 A - 5 ms)	10/20 (100 A - 5 ms)	10/20 (100 A - 5 ms)
Rated voltage/ Maximum switching voltage V AC	230/230	230/230	230/230
Rated load AC1 VA	2300	2300	2300
Rated load AC15 (230 V) VA	450	450	450
Nominal lamp rating 230 V:			
incandescent/halogen W	1000	1000	1000
fluorescent lamp with electronic ballast W	500	500	500
fluorescent lamp with electromagnetic ballast W	350	350	350
CFL W	300	300	300
LED 230 V W	300	300	300
halogen or LV LED with electronic ballast W	300	300	300
halogen or LV LED with electromagnetic ballast W	500	500	500
Standard contact material	$AgSnO_2$	$AgSnO_2$	$AgSnO_2$
Supply specification			
Coil specification V AC (50/60 Hz)	120…230	120…230	110…230
DC	—	—	—
Rated power AC/DC VA (50 Hz)/W	2.5/—	2.5/—	2/0.8
Operating range V AC (50/60 Hz)	96…253	96…253	96…253
DC	—	—	—
Technical data			
Electrical life at rated load AC1 cycles	$100 \cdot 10^3$	$100 \cdot 10^3$	$100 \cdot 10^3$
Ambient light intervention threshold lx	5…350	5…350	5…1000
Light ON time after last detection	10 s…12 min	10 s…12 min	10 s…20 min
Sensing area	See diagram page 15	See diagram page 15	See diagram page 15
Ambient temperature range °C	–10…+50	–30…+50	–30…+50
Protection category	IP 40	IP 54	IP 55
Approvals (according to type)	CE EAC		CE EAC

J

PIR movement detectors for internal installations - ceiling mount

Type 18.21
- Surface mounting

Type 18.31
- Recess mounting

Type 18.31-0031
- High ceiling type (6 meter max.)
- Surface or recess mounting

- Output contact connected to supply live
- Small size
- Adjustable ambient light intervention threshold
- Adjustable Light ON Time
- Wide angle of survey

18.21/18.31/18.31…0031
Screw terminal

NOTE: with 110…125 V AC supply, the Ratings (AC1, AC15 and lamp loads) must be reduced by 50 % (e.g. 500 W instead of 1000 W)

For outline drawings see page 17

	18.21	**18.31**	**18.31-0031**
			
	• 1 NO 10 A • Surface mounting	• 1 NO 10 A • Recess mounting	• 1 NO 10 A • High ceiling applications (up to 6 meters) • Light ON time after last detection (30 s…35 min)
Contact specification			
Number of contacts	1 NO (SPST-NO)	1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current/Maximum peak current A	10/20 (100 A - 5 ms)	10/20 (100 A - 5 ms)	10/20 (100 A - 5 ms)
Rated voltage/ Maximum switching voltage V AC	230/230	230/230	230/230
Rated load AC1 VA	2300	2300	2300
Rated load AC15 (230 V) VA	450	450	450
Nominal lamp rating 230 V:			
incandescent/halogen W	1000	1000	1000
fluorescent lamp with electronic ballast W	500	500	500
fluorescent lamp with electromagnetic ballast W	350	350	350
CFL W	300	300	300
LED 230 V W	300	300	300
halogen or LV LED with electronic ballast W	300	300	300
halogen or LV LED with electromagnetic ballast W	500	500	500
Standard contact material	$AgSnO_2$	$AgSnO_2$	$AgSnO_2$
Supply specification			
Coil specification V AC (50/60 Hz)	120…230	120…230	120…230
DC	—	—	—
Rated power AC/DC VA (50 Hz)/W	2/1	2/1	2/1
Operating range V AC (50/60 Hz)	96…253	96…253	96…253
DC	—	—	—
Technical data			
Electrical life at rated load AC1 cycles	$100 \cdot 10^3$	$100 \cdot 10^3$	$100 \cdot 10^3$
Ambient light intervention threshold lx	5…350	5…350	5…350
Light ON time after last detection	10 s…12 min	10 s…12 min	30 s…35 min
Sensing area	See diagram page 15	See diagram page 15	See diagram page 15
Ambient temperature range °C	–10…+50	–10…+50	–10…+50
Protection category	IP 40	IP 40	IP 40
Approvals (according to type)	CE EAC		CE EAC