

Time switches 16 A

AUTOMATION

APEX



Heating and
cooling

NEON

Shop displays



Lighting for
parks



Streetlights
and car park
lighting



School bells



12
SERIES



12 SERIES

Time switches 16 A

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

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 · 10 ³	50 · 10 ³	50 · 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)


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 astronomical 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

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 · 10 ³	100 · 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)			

NEW 12.51



- Digital time switch
- 1 CO 16 A



NEW 12.81



- Digital Astro-switch
- 1 CO 16 A



12 SERIES

Time switches 16 A

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

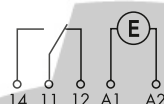
Type 12.62

- 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

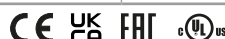
Supply specification

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 · 10 ³		100 · 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)



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
- Offset 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

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 · 10 ³	100 · 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)

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



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



12 SERIES

Time/Astro-Switch 16 A

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
- Offset 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

AgSnO₂

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)



Electronic digital time switches

- 1 Weekly time setting

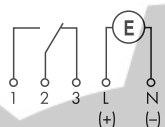
Type 12.71

- 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)

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

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			Option			Option
1 2 . 5			1 . 8 . 2 3 0 . 0 0 0 0			0 = With power back-up 1 = Without power back-up (type 12.11)			0 = Standard 0 = Daily only for 12.31 7 = Weekly only for 12.31
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			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)			Special version 0 = Standard 1 = Standard (12.A4)			
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)						

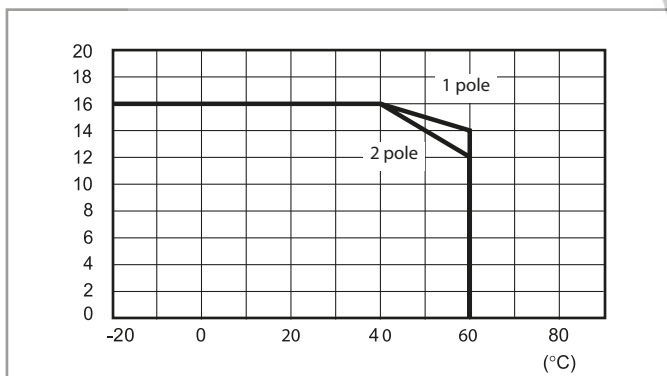
Codes

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

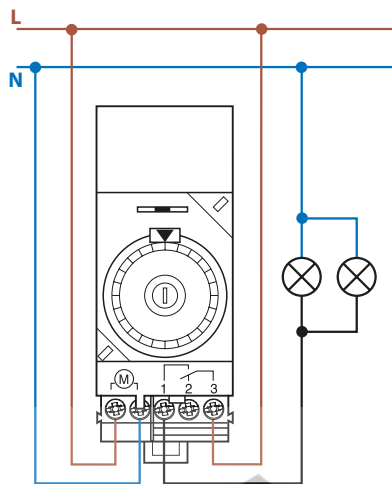
Technical data

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			mm ²	AWG	mm ²	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

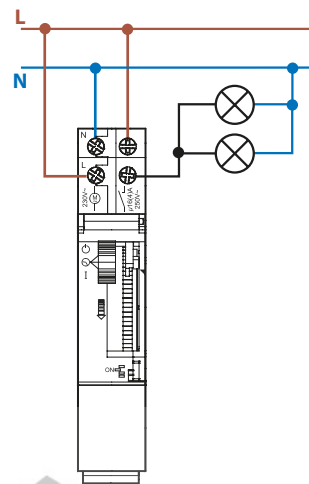


Wiring diagrams

**Type 12.01**

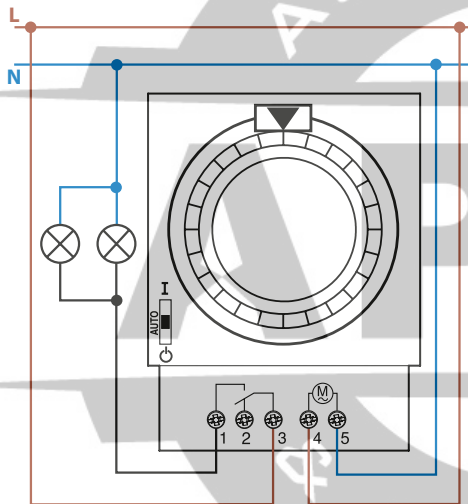
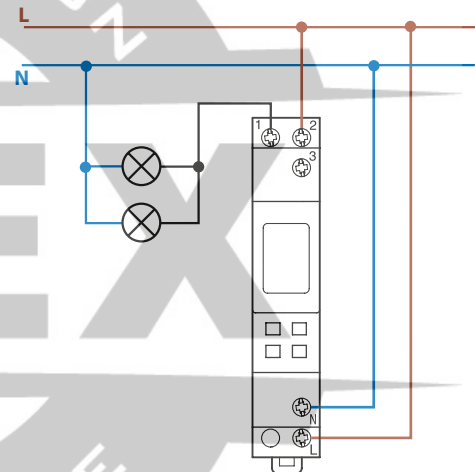
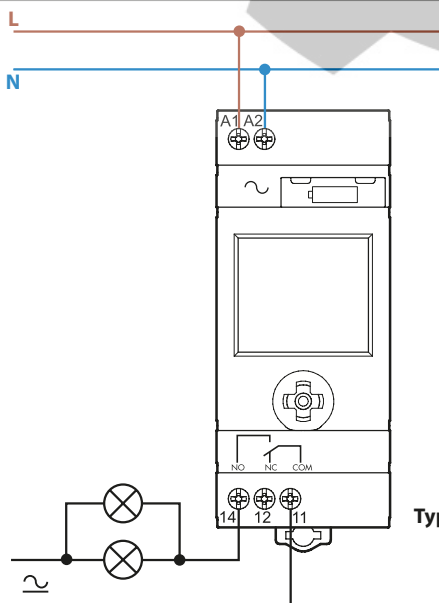
Selector switch:

- ⏻ = Permanently OFF
 AUTO = Automatic
 I = Permanently ON

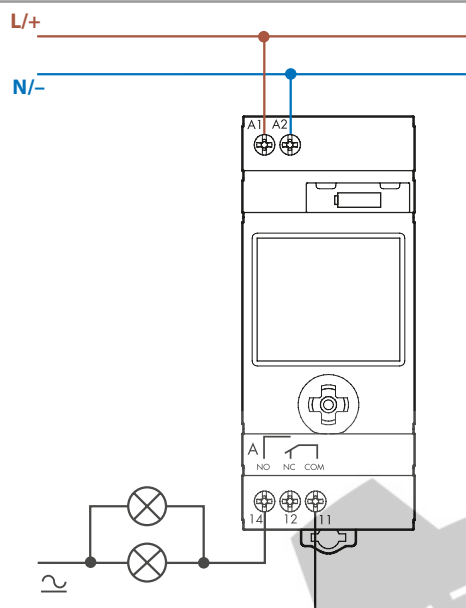
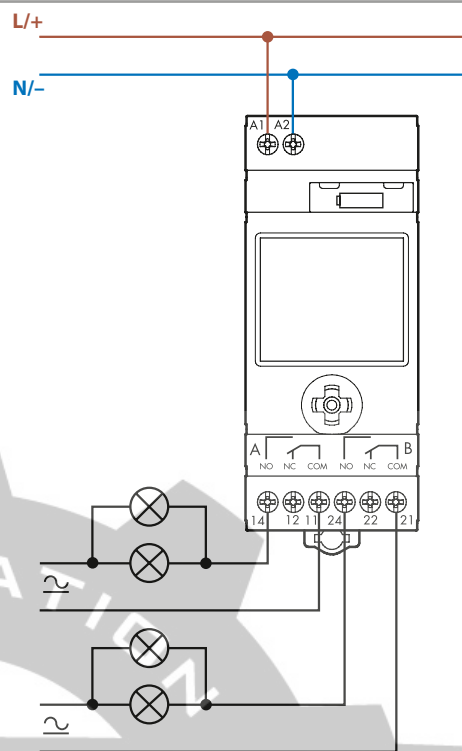
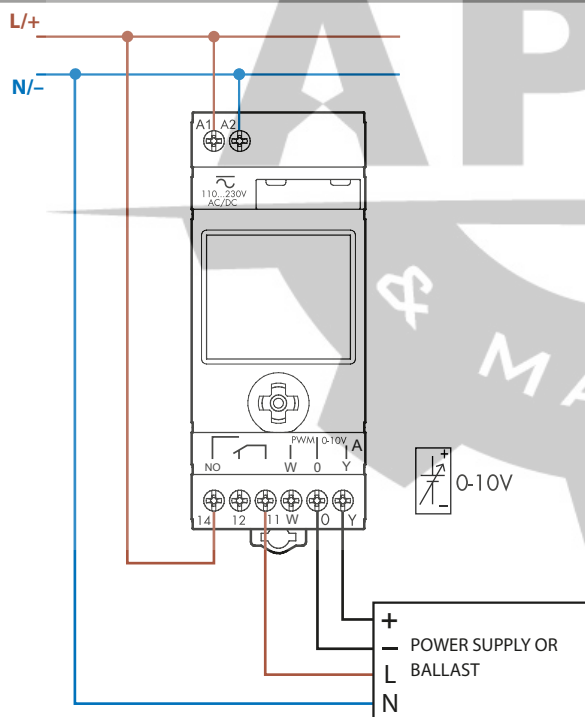
**Type 12.11**

Selector switch:

- ⏻ = Permanently OFF
 ⊗ = Automatic
 I = Permanently ON

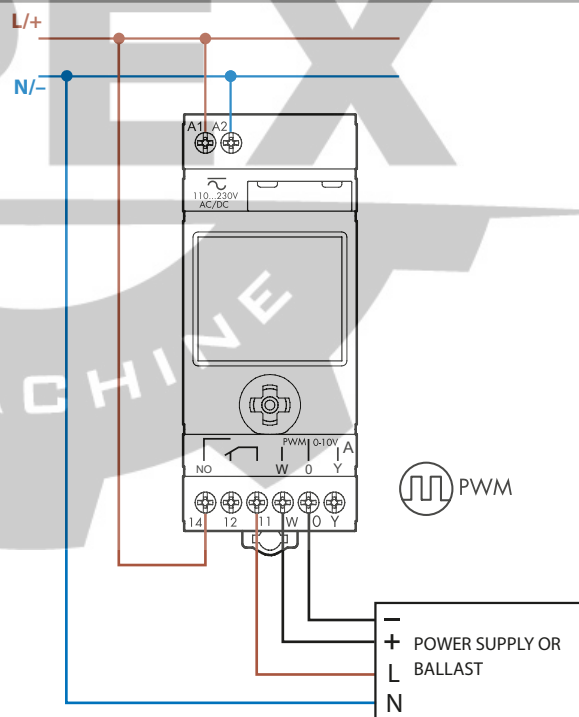
**Type 12.31****Type 12.71****Types 12.51
12.81**

Wiring diagrams

Types 12.61
12.A1Types 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"

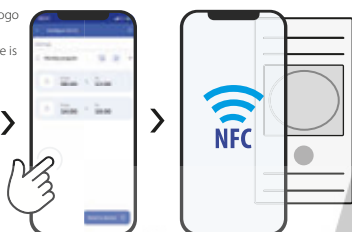
Mode via smartphones with NFC communication using Finder toolbox Android App.



"Classic"

Mode via the joystick

Android, Google Play and the Google Play logo are trademarks of Google Inc.
Apple is a trademark of Apple Inc. App Store is a service mark of Apple Inc.



Finder Toolbox for programming

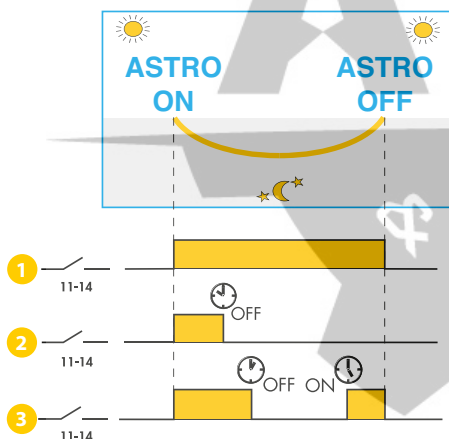
Once the App FINDER Toolbox is downloaded and installed, you can read an existing program, or program your device with maximum flexibility, changing the smallest details and saving your program directly to your smartphone.

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



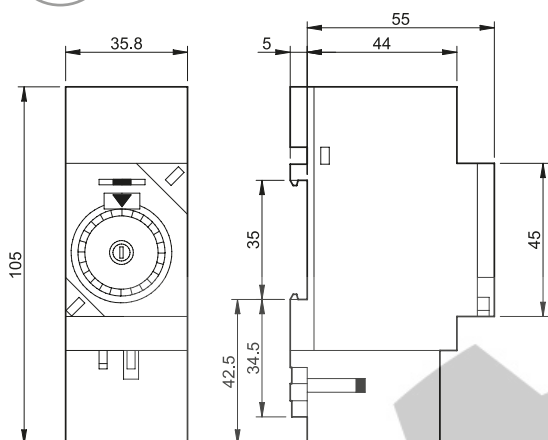
The Override feature permits the 12.81 three different ways of functioning:

- 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 according 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**.*

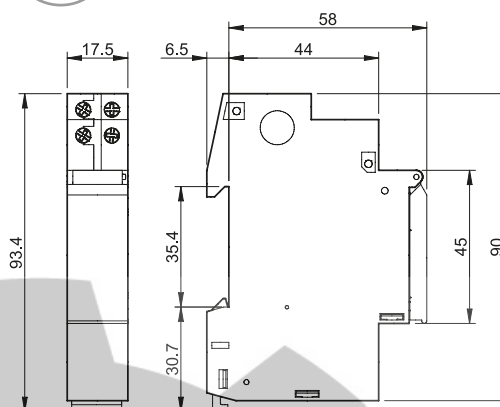
* Depending on the time of year (summer specifically) it may be that the override ON time will fall after the AstroOFF time. In this case, the output switches off at the AstroOFF time and the override ON time is ignored.

Outline drawings

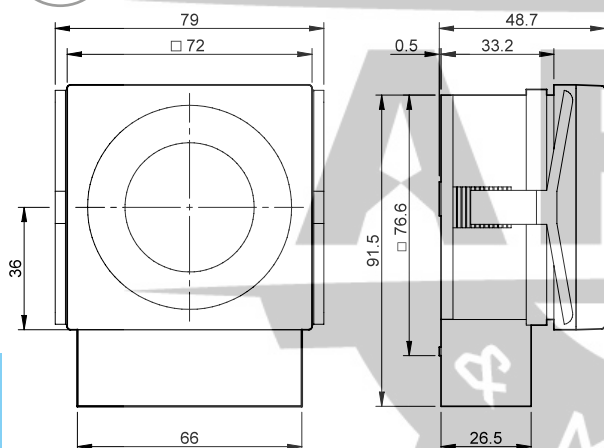
Type 12.01
Screw terminal



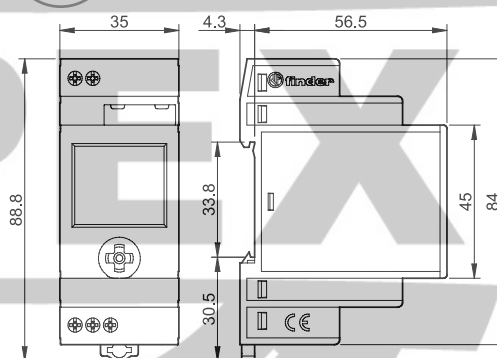
Type 12.11
Screw terminal



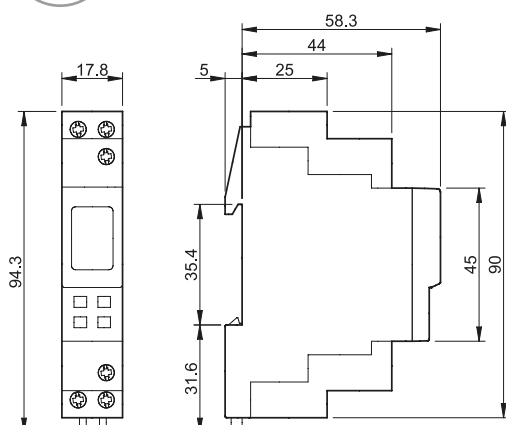
Type 12.31
Screw terminal



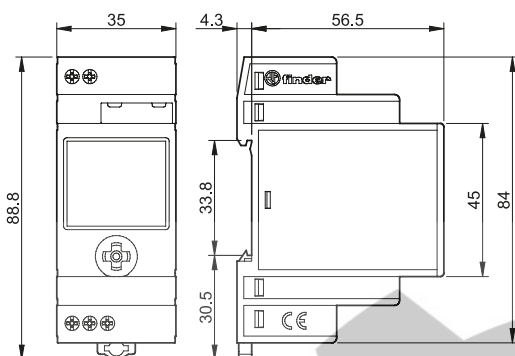
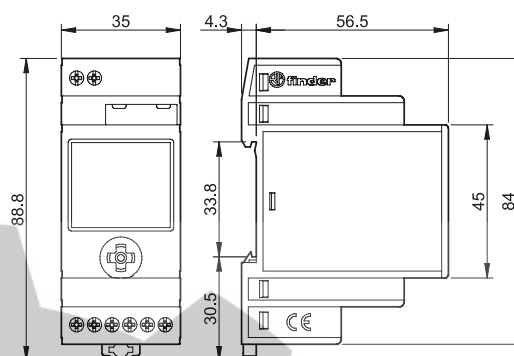
Types 12.51/12.81
Screw terminal



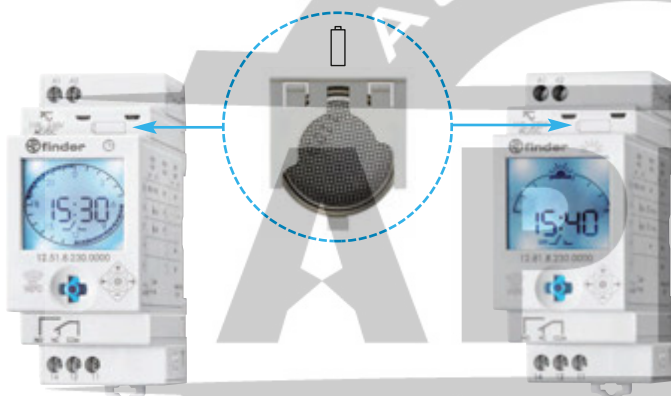
Type 12.71
Screw terminal



Outline drawings

Types 12.61 / 12.A1
Screw terminalTypes 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

