

Mechanical time switches

- Daily time setting \*Weekly time setting \*\*
- Type 12.01 1 Pole 16 A CO (SPDT) 35.8 mm width
- Type 12.11 1 Pole 16 A NO (SPST-NO)
- 17.6 mm width
   Type 12.31-0000 daily -
- 1 Pole 16 A CO (SPDT)
   Type 12.31-0007 weekly -1 Pole 16 A CO (SPDT)
- Minimum time interval setting: 1h (12.31-0007) 30 min (12.01) 15 min (12.11 - 12.31-0000)

12.01



- Mechanical daily time switch
- 1 CO (SPDT)
- 35 mm rail (EN 60715) mount

12.11



- Mechanical daily time switch
- 1 NO (SPST-NO)
- 35 mm rail (EN 60715) mount

12.31



- Mechanical daily or weekly
- 1 CO (SPDT)
- Front panel mounting





(E @





- Same program every day
- \*\* Different program possible for each of the 7 days of the week

/ days of the week					
For outline drawing see page 10					
Contact specification					
Contact configuration		1 CO (SPDT)	1 NO (SPST-NO)	1 CO (SPDT)	
Rated current/Maximum p	eak current A	16/—	16/30	16/—	
Rated voltage/Maximum sv	witching voltage V AC	250/—	250/—	250/—	
Rated load AC1	VA	4,000	4,000	4,000	
Rated load AC15 (230 V	AC) VA	750	420	420	
Nominal lamp rating: inco	indescent (230 V) W	2,000 (NO contact)	2,000	2,	000
compensated flu	orescent (230 V) W	750 (NO contact)	750	7	750
uncompensated flu	orescent (230 V) W	1,000 (NO contact)	1,000	1,	000
	halogen (230 V) W	2,000 (NO contact)	2,000	2,000	
Minimum switching load	mW (V/mA)	1,000 (10/10)	1,000 (10/10)	1,000 (10/10)	
Standard contact material		AgCdO	AgCdO	AgCdO	
Supply specification					
Nominal voltage ( $U_N$ ) V AC (50/60 Hz)		230	230	120 - 230	
	V DC	_	_	_	
Rated power AC/DC	Rated power AC/DC VA (50 Hz)/W		2/—	2/—	
Operating range	AC (50 Hz)	(0.851.1)U <sub>N</sub>	(0.851.1)U <sub>N</sub>	(0.851.1)U <sub>N</sub>	
	DC	_	_	_	
Technical data					
Electrical life at rated load in AC1 cycles		50 · 10³	50 · 10³	50 · 10³	
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 rang	Ambient temperature range °C		-5 <b>+</b> 50	-10+50	
Protection category		IP 20	IP 20	IP 20	
			44.0		

Approvals (according to type)



# 12.51 - Digital (analogue-style) time switch, daily/weekly programming

- 30 minutes interval setting
- Easily configurable for daily or weekly programming

#### 12.81 - Digital astro-switch

- Astro program: calculation of sunrise and sunset times through date, time and location coordinates
- Location coordinates easily settable for most European countries trough post codes
- Offset function: allows programming of switching times offset from the astronomical time (up to +- 90', with 10' steps)
- Summer/winter European time
- 1 CO 16 A output contact
- LCD status indication, set-up and programming
- 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 rail (EN 60715) mount
- Cadmium free contact material







• 1 CO (SPDT)

• 35 mm rail (EN 60715) mount



Astro- time switch

• 1 CO (SPDT)

• 35 mm rail (EN 60715) mount





For outline drawing see page 10

Contact specification			
Contact configuration		1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum pe	eak current A	16 / 30 (120 A – 5 ms)	16 / 30 (120 A – 5 ms)
Rated voltage/Maximum sw	vitching voltage V AC	250/400	250/400
Rated load AC1	VA	4,000	4,000
Rated load AC15 (230 V A	AC) VA	750	750
Nominal lamp rating: inca	ndescent (230 V) W	2,000	2,000
compensated flu	orescent (230 V) W	750	750
energy saving (C	CFL, LED) (230 V) W	200	200
	halogen (230 V) W	2,000	2,000
Minimum switching load	mW (V/mA)	1,000 (10/10)	1,000 (10/10)
Standard contact material		$AgSnO_2$	$AgSnO_2$
Supply specification			
Nominal voltage $(U_N)$	V AC (50/60 Hz)	230	230
	V DC	_	_
Rated power	VA (50 Hz)/W	6.6/2.9	6.6/2.9
Operating range	AC (50 Hz)	(0.81.1)U <sub>N</sub>	(0.81.1)U <sub>N</sub>
	DC	_	_
Technical data			
Electrical life at rated load	in AC1 cycles	$100 \cdot 10^{3}$	100 · 10³
Switching intervals		48	_
Minimum switching interva	l min	30	_
Accuracy s/day		1	1
Ambient temperature range °C		-20+50	-20+50
Protection category		IP 20	IP 20
Approvals (according to ty	pe)	CE	<b>C</b>



#### Electronic digital time switches

- Weekly time setting
- Type 12.21 1 Pole 16 A CO (SPDT) 35.8 mm width
- Type 12.22 2 Pole 16 A CO (DPDT) 35.8 mm width
- Type 12.71 1 Pole 16 A CO (SPDT) 17.6 mm width
- Available for 230 V AC or 12, 24 V AC/DC supply
- Minimum time interval setting 1 minute
- Internal battery for set-up without supply
- Impulse output function:
- 1s... 59: 59(mm:ss)
- Automatic adjustment for daylight saving
- 35 mm rail (EN 60715) mount

12.21



- Digital weekly time switch
- 1 CO (SPDT)
- 35 mm rail (EN 60715) mount

12.22



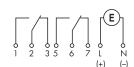
- Digital weekly time switch
- 2 CO (DPDT)
- 35 mm rail (EN 60715) mount

12.71



- Digital weekly time switch
- 1 CO (SPDT)
- 35 mm rail (EN 60715) mount







For outline drawing see page 10, 11								
Contact specification								
Contact configuration		1 CO (SPDT)		2 CO (DPDT)		1 CO (SPDT)		
Rated current/Maximum per	ak current A	16/30		16/30		16/30		
Rated voltage/Maximum swi	tching voltage V AC	250/—		250/—		250/—		
Rated load AC1	VA	4,000		4,000		4,000		
Rated load AC15 (230 V A	.C) VA	750		750		420		
Nominal lamp rating: incan	descent (230 V) W	2,000 (N	O contact)	2,000 (NO contact)		2,000 (NO contact)		
compensated fluor	rescent (230 V) W	420 (NO contact)		420 (NO contact)		750 (NO contact)		
uncompensated fluorescent (230 V) W		1,000 (NO contact)		1,000 (NO contact)		1,000 (NO contact)		
	halogen (230 V) W		2,000 (NO contact)		2,000 (NO contact)		2,000 (NO contact)	
Minimum switching load	Minimum switching load mW (V/mA)		(10/10)	1,000	(10/10)	1,000	10/10)	
Standard contact material	Standard contact material		AgCdO		AgCdO		AgNi	
Supply specification								
Nominal voltage $(U_N)$	V AC (50/60 Hz)	_	120 - 230	_	120 - 230	_	230	
	V AC/DC	12 - 24	_	24	_	24	_	
Rated power AC/DC	VA (50 Hz)/W	1.4/1.4	2/—	1.4/1.4	2/—	1.4/1.4	2/—	
Operating range	AC (50 Hz)	(0.91.1)U <sub>N</sub>	(0.851.1)U <sub>N</sub>	(0.91.1)U <sub>N</sub>	(0.851.1)U <sub>N</sub>	(0.91.1)U <sub>N</sub>	(0.851.1)U <sub>1</sub>	
	DC	(0.91.1)U <sub>N</sub>	_	(0.91.1)U <sub>N</sub>	_	(0.91.1)U <sub>N</sub>	_	
Technical data								

50 · 10³

weekly

30

1

0.5

-30...+55

IP 20

cycles

Electrical life at rated load in AC1

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Type of time switch	
Memory locations for switching times *	
Minimum interval setting	min
Accuracy	s/day
Ambient temperature range	°C
Protection category	

Approvals (according to type)

IP 20 CE Œ

50 · 10<sup>3</sup>

weekly

30

1

0.5

-30...+55

50 · 10³

weekly

30

1

0.5

-30...+55

IP 20





Electronic digital time switches - weekly time setting

- Type 12.91...0000 "ZENITH" pole 16 A CO (SPDT) 35.8 mm width
- Type 12.91...0090 "ZENITH" 1 pole 16 A CO (SPDT) 35.8 mm width version for programming via PC by a special
- Key Memory (included)
   Type 12.92 "ZENITH"
  2 Pole 16 A CO (DPDT) 35.8 mm width
- Astro program: calculation of sunrise and sunset times through date, time and location coordinates (longitude and latitude)
- Offset function: allows programming of switching times offset (+ or -) from the astrological time
- Minimum time interval setting 1 minute
- Internal battery for set-up without supply
- Automatic adjustment for daylight saving
- 35 mm rail (EN 60715) mount

12.91...0000



- Digital weekly time switch





- Digital weekly time switch1 CO (SPDT)
- 1 CO (SPDT)
   35 mm rail (EN 60715) mount
   1 CO (SPDT)
   Version for programming via PC by a special key memory
  - 35 mm rail (EN 60715) mount

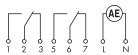
12.92



- Digital weekly time switch
- 2 CO (DPDT)
- 35 mm rail (EN 60715) mount







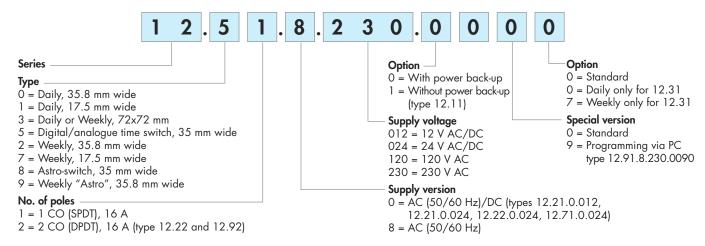
For outline drawing see page 11

For outline drawing see pag	ge 11				
Contact specification					
Contact configuration		1 CO (DPDT)	1 CO (DPDT)	2 CO (DPDT)	
Rated current/Maximum p	eak current A	16/30	16/30	16/30	
Rated voltage/Maximum sv	vitching voltage V AC	250/—	250/—	250/—	
Rated load AC1	VA	4,000	4,000	4,000	
Rated load AC15 (230 V	AC) VA	750	750	750	
Nominal lamp rating: inca	ndescent (230 V) W	2,000 (NO contact)	2,000 (NO contact)	2,000 (NO contact)	
compensated fluc	prescent (230 V) W	420 (NO contact)	420 (NO contact)	420 (NO contact)	
uncompensated fluc	prescent (230 V) W	1,000 (NO contact)	1,000 (NO contact)	1,000 (NO contact)	
	halogen (230 V) W	2,000 (NO contact)	2,000 (NO contact)	2,000 (NO contact)	
Minimum switching load	mW (V/mA)	1,000 (10/10)	1,000 (10/10)	1,000 (10/10)	
Standard contact material		AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	
Supply specification					
Nominal voltage (U <sub>N</sub> )	V AC (50/60 Hz)	230	230	230	
Rated power AC/DC	VA (50 Hz)/W	2/—	2/—	2/-	
Operating range	AC (50 Hz)	(0.851.1)U <sub>N</sub>	(0.851.1)U <sub>N</sub>	(0.851.1)U <sub>N</sub>	
Technical data					
Electrical life at rated load	in AC1 cycles	50 · 10³	50 · 10³	50 · 10³	
Type of time switch		weekly	weekly	weekly	
Memory locations for switc	ching times *	60	60	60	
Minimum interval setting	min	1	1	1	
Accuracy s/day		0.5	0.5	0.5	
Ambient temperature range °C		-30+55	-30+55	-30+55	
Protection category		IP 20	IP 20	IP 20	
Approvals (according to ty	pe)		(€ €		



### **Ordering information**

Example: 12 series digital/analogue time switch, 1 CO 16 A contact, 230 V AC supply





# Technical data

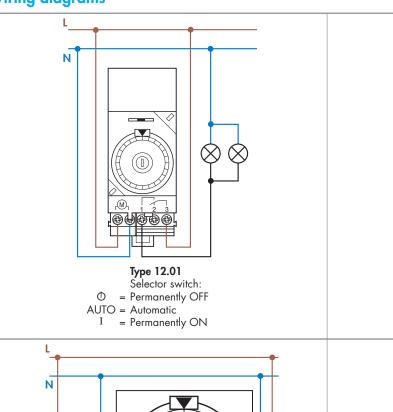
Insulation		12.01, 12.11, 12.31		12.21, 12.22, 12.71, 12.91, 12.92		
Dielectric strength between open contacts V AC		1,000		1,000		
Other data		12.01, 12.11, 12.31		12.21, 12.22, 12.71, 12.91, 12.92		
Power back-up		100 h (following 80 h continuous energisation)		6 years		
Power lost to the environment						
	without contact curre	ent W	1.5		2	
	with rated current	W	2.5		3 (for 1 pole)	4 (for 2 pole)
Screw torque		Nm	1.2		1.2	
Max. wire size			solid cable	stranded cable	solid cable	stranded cable
		mm <sup>2</sup>	1x6 / 2x4	1x6 / 2x2.5	1x6 / 2x4	1x6 / 2x2.5
		AWG	1x10 / 2x12	1x10 / 2x14	1x10 / 2x12	1x10 / 2x14

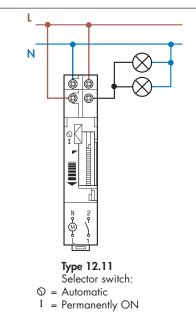
# Technical data type 12.51 and 12.81

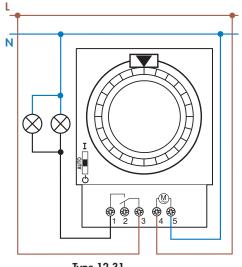
Insulation		Dielectric strength	Impulse (1.2/50 µs)		
be	etween supply and contacts	4,000 V AC	6 kV		
	between open contacts	1,000 V AC	1.5 kV		
EMC specifications			'		
Type of test		Reference standard			
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV		
	air discharge	EN 61000-4-2	8 kV		
Radiated electromagnetic field (80	1,000 MHz)	EN 61000-4-3	10 V/m		
Fast transients (burst 5/50 ns, 5 and	d 100 kHz)	EN 61000-4-4	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	4 kV		
Radiofrequency common mode volta	age (0.1580 MHz)	EN 61000-4-6	10 V		
Voltage dips	70 % U <sub>N</sub> , 40 % U <sub>N</sub>	EN 61000-4-11	10 cycles		
Short interruptions		EN 61000-4-11	10 cycles		
Radio frequency conducted emission	ns 0.1530 MHz	EN 55014	class B		
Radiated emissions	301,000 MHz	EN 55014	class B		
Terminals					
Screw torque		0.8 Nm			
Max. wire size	solid cable	1 x 6 / 2 x 4 mm <sup>2</sup>	1 x 10 / 2 x 12 AWG		
	stranded cable	1 x 4 / 2 x 2.5 mm <sup>2</sup>	1 x 12 / 2 x 14 AWG		
Wire strip length		9 mm			
Other data					
Power back-up (Battery life)		6 years			
Battery type		CR 2032, 3 V, 230 mAh			
Power lost to the environment					
	in stand-by	1.4 W			
	without contact current	2.9 W			
	with rated current	3.5 W			



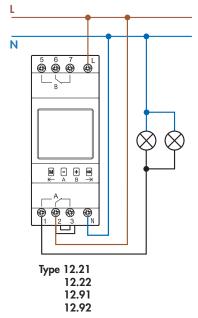
# Wiring diagrams

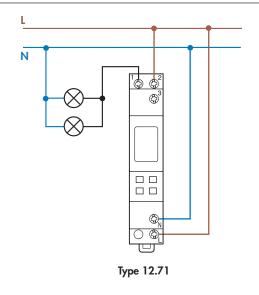


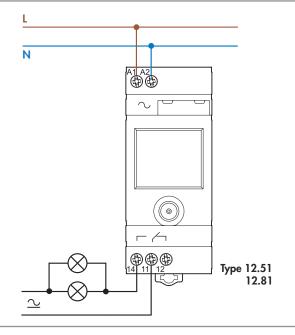














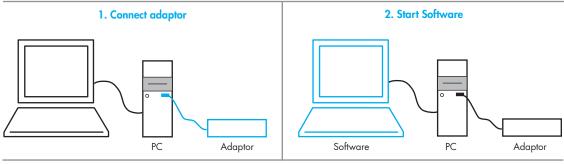
# Accessories for type 12.71 and 12.91



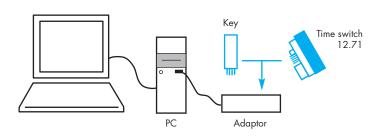
#### PC programming kit for type 12.71, 12.91.8.230.0090

This special PC programming kit, permits fast and easy programming of the Time Switch with a PC or Laptop. The program transfer can be done by the special Key Memory (supplied with the 12.91.8.230.0090) or directly by the Time switch 12.71.

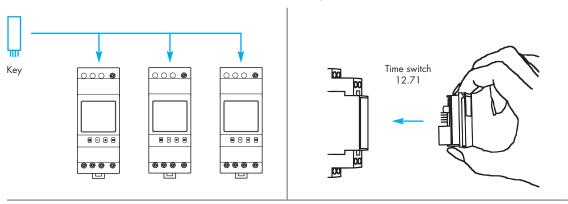
Contents: Programming adaptor, USB cable (1.8 meter length), Software.



#### 3. Connect time switch

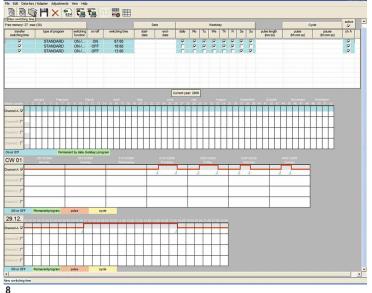


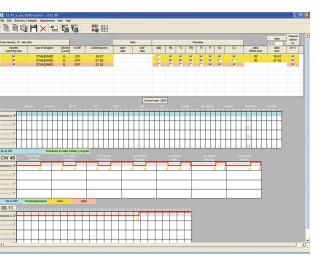
#### 4. Transfer the Program



#### **PC Programming software**

Easy and intuitive software to create programs for the Time Switch, in a few fast steps. For Windows 2000/XP/Vista.





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011.01



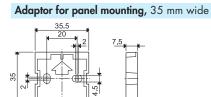
# Battery replacement type 12.51 and 12.81



# Accessories type 12.51 and 12.81



011.01

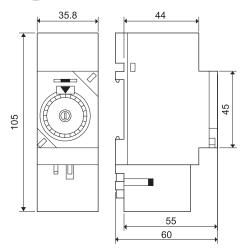




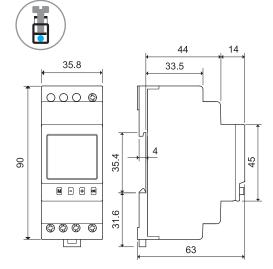
# **Outline drawings**

12.01 Screw terminal

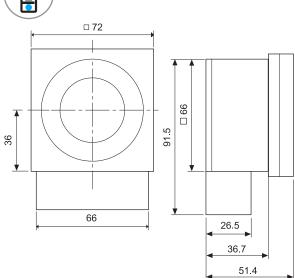




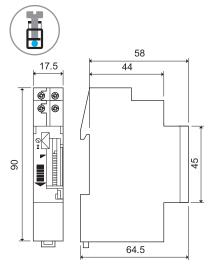
12.21 Screw terminal



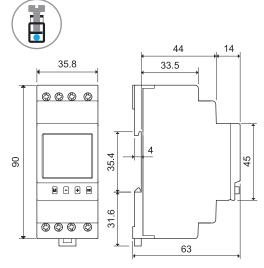
12.31 Screw terminal



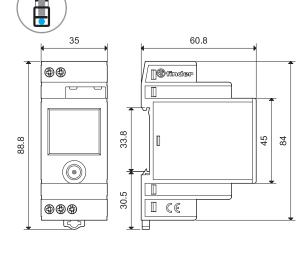
12.11 Screw terminal



12.22 Screw terminal



12.51/12.81 Screw terminal

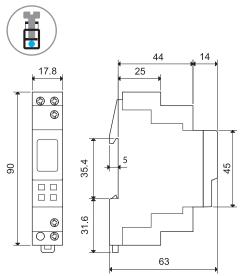


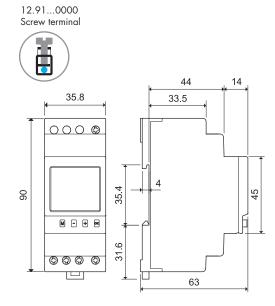
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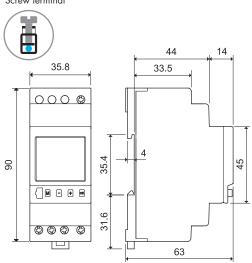
# **Outline drawings**

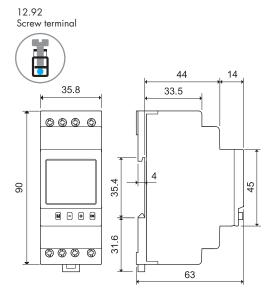
12.71 Screw terminal





12.91...0090 Screw terminal







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 (hours and minutes)
- the status (ON/OFF and symbol of contact open/closed) of the 11-14 output contact
- the program for the current day (each solid segment represents an half-hour interval set to ON)

From **Display mode** it is possible to enter in **Program mode** or **Setup mode** respectively with a short or long (> 2") press to the joystick centre (a).

# 21 0 3 6

#### Hand mode

From **Display mode** it is also possible to enter in **Hand mode**, where (independently from the program) the 11-14 output contact is forced to the ON or OFF position with a long (> 2") press to the joystick or directions, respectively. The "hand" symbol is then displayed.

A long press in the opposite direction will exit the hand mode.



#### Setup mode

In this mode it is possible to set (in the following order):

- daily/weekly function
- current year
- current day
- current month
- current hour
- current minute
- enable/disable european summer time.

With a short press of the joystick or or , it is possible to pass from one setup step to another (confirming the set values); in any step it is possible to modify the set values with a short press to the joystick or or . A sustained (> 1") press results in the fast increasing (or decreasing) of values.

A short press to the joystick centre ( ) will restore the Display mode.

Note: the product is supplied factory set to Central Europe time with european summer time enabled.











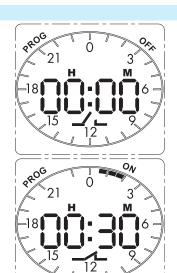
#### Program mode (daily)

In this mode it is possible to set the "pattern" of time segments, which define the ON time of the 11-14 output contact. This "pattern" will be the same for all days of the week (daily).

Entering Programming mode (from Display mode) with a short press to takes the digital time to 00:00 (and any previously programmed segment pattern is displayed). Stepping backwards or forwards in time displays the appropriate segment time and the appropriate open or closed contact status for that time segment.

At any step it is possible to change the segment status with a short press to the joystick (for ON) or (for OFF) as appropriate, and this also automatically advances the time to the next segment, and always in a clockwise direction. If the joystick is pressed several times in, say, the direction then each successive segment will assume the ON status. If it is then pressed several times in the direction then each successive segment will assume the OFF status. This allows the rapid setting of many consecutive segments with the same status.

A short press to the joystick centre ( will restore the display to the Display mode.



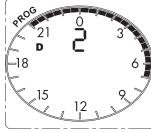
#### Program mode (weekly)

In this mode it is possible to set a different "pattern" of time segments for each day of the week (weekly).

Entering Programming mode (from Display mode) with a short press to (a) takes the display to the programming mode, for the current day. With a subsequent short press to (a) or (b) it is possible to pass from one day to another (Monday is day 1).

With the desired day selected it is possible to enter the programming mode for that day by pressing \_\_\_\_. Program the segments for that day by following the same procedure as described above for daily mode. When all 48 segments have been set, accept with a short press to <a> ©</a>. Then progress to the next day by pressing the joystick in the <a> or <a> or

At any time return to the Display mode with a short press to the joystick centre 📵 .







#### **COPY FUNCTION**

View the particular day to be copied (using or as described above) and copy with a short press to the "copy icon" will then appear).

Then select another day, using or or, and paste the copied program with a short press to . This can be repeated for other days.

A short press to the joystick centre ( ), or , will exit the copy function.

#### 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.





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 (hours and minutes)
- the status (ON/OFF and symbol of contact open/closed) of the 11-14 output contact

From **Display mode** it is possible to enter in **Program mode** or **Setup mode** respectively with a short or long (> 2") press to the joystick centre (a).

# 15:07 OFF\_/\_

#### Hand mode

From **Display mode** it is also possible to enter in **Hand mode**, where (independently from the program) the 11-14 output contact is forced to the ON or OFF position with a long (> 2") press to the joystick or directions, respectively. The "hand" symbol is then displayed.

A long press in the opposite direction will exit the hand mode.



#### Setup mode

In this mode it is possible to set (in the following order):

- country (using Internet websites extension, e.g. IT, DE, FR..)
- post-code (CP, setting only the first 2 digits, 00 to 99),
- current year
- current day
- current month
- current hour
- current minute
- enable/disable european summer time.

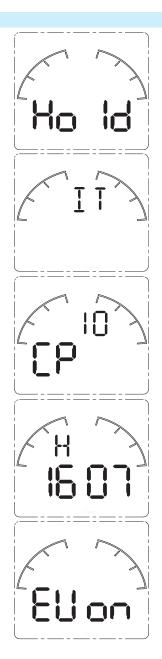
With a short press of the joystick or , it is possible to pass from one setup step to another (confirming the set values); in any step it is possible to modify the set values with a short press to the joystick or . A sustained (> 1") press results in the fast increasing (or decreasing) of values.

A short press to the joystick centre ( ) will restore the Display mode.

When the post-code is set to - (between 99 and 00), the manual setting of geographic coordinates is possible: moving right side the joystick, it is visualized the latitude (settable between 30 and 64°North), then the longitude (settable between 16°West and 50°East), finally the Time Zone (Gmt, settable to 00-Greenwich time, 01-Central Europe time, 02-Eastern Europe time or 03-European Russia time); then year and the other setting follows.

Note: the product is supplied with the following factory settings:

- Central Europe time,
- european summer time enabled,
- country Italy,
- post-code 00 (the capital city Rome).





#### Program mode (anticipate/delay setting)

In this mode it is possible to set independently:

- the anticipate (or the delay) of the light turn-off time in the morning with respect to the "astronomic" sunrise time, depending on the area (post-code or geographical coordinates) set and on the actual day;
- the anticipate (or the delay) of the light turn-on time in the evening with respect to the "astronomic" sunset time.

After entering in Program mode, it is displayed the "astronomic" sunrise time (indicated by the rising sun following the moon, the OFF and the open contact symbols); with a short pressure of the joystick respectively or , it is possible to delay/anticipate, with 10 minutes step, the light turn-off time. This setting will be obviously valid all days, that is the light will always turn-off, for example, 30 minutes after the "astronomic" sunrise.

A short pressure of the joystick + or = side will show the "astronomic" sunset time (indicated by the falling sun preceding the moon, the ON and the closed contact symbols); with a short pressure of the joystick respectively + or +, it is possible to delay/anticipate, with 10 minutes step, the light turn-on time. This setting will be obviously valid all days, that is the light will always turn-on, for example, 30 minutes before the "astronomic" sunset.

A short pressure of the joystick  $\uparrow$  or  $\frown$  side will continue to alternate the display/setting of turn-off time (sunrise) with the turn-on time (sunset).

A short press to the joystick centre ( ) will restore the display to the Display mode.









#### 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.

