USER MANUAL

ES01A00KNX
KNX time/astronomical master

ES01A00ACC
Additional GPS module

Index

- **Technical features** page 3
- **Safety warnings** page 4
- **Dimensions** page 4
- **Wiring diagrams** page 5
- **Display and keyboard description** page 6
- **Initial operation** page 7
- **Start page (or main)** page 8
- **Menu description** page 9
- **Settings menu** page 10
  - Language setting menu page 11
  - Date setting menu page 12
  - Time setting menu page 13
  - Daylight saving time (DST)/winter time (CET) change setting menu page 14
  - Astronomical coordinates setting menu page 16
  - Random switchings setting menu page 18
  - Protection PIN setting menu page 19
- **Manual operation menu** page 20
- **Program menu** page 22
  - Program menu: new page 27
  - Program menu: new daily timed page 28
  - Program menu: new weekly timed page 29
  - Program menu: new yearly timed (or monthly) page 30
  - Program menu: new holiday timed page 32
  - Program menu: new astro night page 34
  - Program menu: new astro daily page 38
  - Program menu: new astro weekly page 39
  - Program menu: new astro yearly (or monthly) page 40
  - Program menu: new astro holiday page 42
  - Program menu: check page 44
  - Program menu: modify page 46
  - Program menu: copy page 48
  - Program menu: delete page 49
- **Hour couter menu** page 58
- **Reset menu** page 60
- **Firmware menu** page 62
- **Error signals** page 63
- **Battery management** page 64
- **Reference standards** page 64

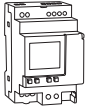
English

USER MANUAL

ES01A00KNX is an electronic digital time switch for the management over time of the electrical devices. It allows time programming (periodicity: daily, weekly or annual) or astronomical programming.
ES01A00KNX can pilot 9 different channels on bus Konnex. The relay on ES01A00KNX replicates the channel 1 programming. Each channel can be associated with a different programming (time or astronomical).
ES01A00KNX also offers the possibility to connect via BUS a GPS module, ES01A00ACC (available as an accessory), that captures the time and the position through the satellite system, ensuring a greater accuracy over time.
The backup battery keeps the settings even in case of power failure and can be replaced through the cover (sealable).

English

Model	Description
ES01A00KNX	Astronomical time switch with bus for connecting GPS modules and remote actuators
ES01A00ACC	GPS module for receiving time and position from satellites



ES01A00KNX

ES01A00ACC

TECHNICAL FEATURES

- Power supply: 115 ÷ 230 Vac (-15% ÷ +10%) 50/60 Hz
- Power consumption: 7 VA (2.6W)
- Lithium backup battery: 3V, CR14250 type (replaceable)
- 9 available channels
- Terminals for:
  - device power supply (terminals 1-2)
  - auxiliary power supply output of 12V dc ±10%, 80mA, 1W (compatible with ES01A00ACC power supply) (terminals 3-4)
  - communication bus for the connection of the ES01A00ACC additional module (terminals 5-6)
  - monostable change-over relay with maximum switchable load of 16A / 250V (terminals 7-8-9)
- Terminal block for cables with maximum cables section of 2.5 mm^2
- Display LCD with backlight (active with AC power supply)
- Storable programs: 450 (900 events) (divisible on 9 channels)
- Actions type: 1B
- Operating temperature: 0 ÷ 50 °C
- Operating humidity: 20 ÷ 90% non condensing
- Storage temperature: -10 ÷ + 70 °C
- Container: 3 DIN modules
- Protection degree: IP20
- Insulation: reinforced between accessible parts (front) and all the other terminals

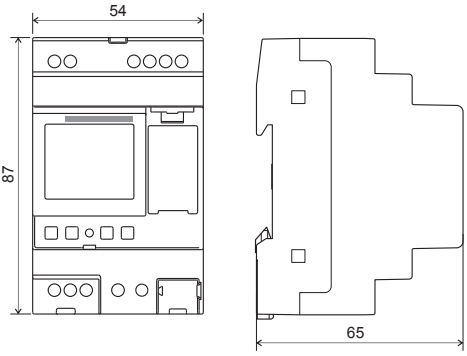
English

SAFETY WARNINGS

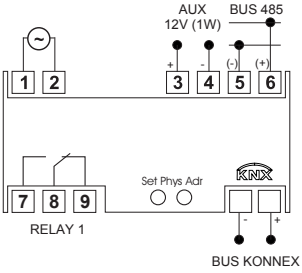
■ ***During product installation and operation it is necessary to observe the following instructions:***

1) The instrument must be installed by a qualified person, strictly in observance of the connection diagrams shown in this manual.
2) After installation inaccessibility to the terminals without using dedicated tools must be guaranteed.
3) Before accessing the connection terminals, make sure that the leads are not live.
4) Do not connect or feed the instrument if any part of it is damaged.
5) The product must be installed and activated in compliance with current electric systems standards.
6) Do not use the instrument for anything other than the indicated purpose.
7) In the electrical system upstream of the instrument must be installed a protection device against the overcurrents
8) The product can be used in environments with Measurement Category III and Pollution degree 2, according to the Standard IEC 60730-1

DIMENSIONS

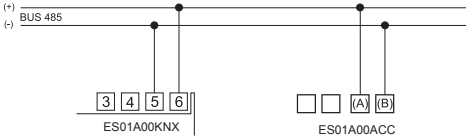


WIRING DIAGRAMS



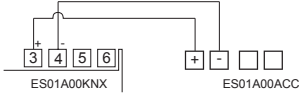
ES01A00KNX can be powered in two ways:
- with voltage 115-230 Vac between the terminals 1 and 2
- via bus Konnex (without connecting power supply between the terminals 1 and 2). In this case, the backlighting of the display remains off, the auxiliary voltage is not available between the terminals 3 and 4 and the relay on board does not switch (relay off)

Connection of the receiver GPS on the BUS 485



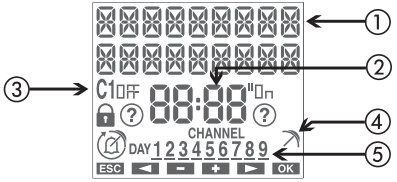
ES01A00ACC power supply

ES01A00ACC must be powered by a DC voltage at 12V. This power supply, if the ES01A00KNX is mains powered supplied, can be obtained from terminals 3-4 of ES01A00KNX (see figure).

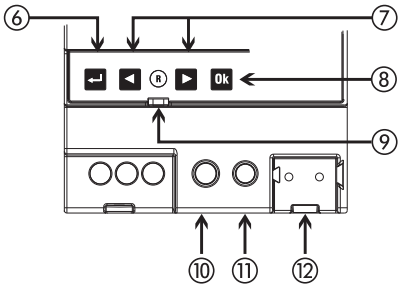


English

DISPLAY AND KEYBOARD DESCRIPTION



① General indications
② Time indication
③ Channel 1 status indication
C1On / C1OFF channel status
blocked switchings
active random switchings
active holiday program
active pulse program
active manual program
④ Data transmission from ES01A00ACC in progress indication
⑤ Channels status indication (CHANNEL) / days of the week (DAY)
2 configured channel (in off status)
2 configured channel (in on status)
2 failed configured channel (no communication)



⑥ Turn on the display
Access the menu
ESC (one level back)
⑦ Increase / decrease value
Scroll through the menu items
⑧ Confirm selection
⑨ Hardware reset
⑩ Programming button
⑪ Programming LED
⑫ BUS Konnex terminals

INITIAL OPERATION

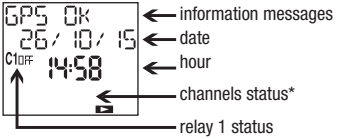
- Extract the ES01A00KNX from the package and press the ↵ key to activate the display
- The set language is Italian. To change it, press the key ↵ for at least 3 seconds. Choose among: Italian, English, Spanish, French or German and confirm with Ok
- The backup battery allows the ES01A00KNX to start up with updated date and time. The factory settings are listed in the table below
- Make connections following the diagrams on page 5 of this manual and power the ES01A00KNX and the additional module ES01A00ACC (if present)
- Putting into operation, the diagnosis and the configuration are handled by ETS (KNX Tool Software).

This manual describes ES01A00KNX operation. Documentation relating to the KNX objects and the relative database can be found at the product page on the site www.eelectron.com

Date	- format: DD/MM/YY - 1st day of the week: Monday
Astronomical coordinates	- country: Italy - city: Agrigento - latitude: North (37° 19' 12") - longitude: East (13° 34' 12")
Daylight Saving time (DST) change: active	- start of daylight saving time (DST): last Sunday of March at 02:00 o'clock - end of daylight saving time (DST): last Sunday of October at 03:00 o'clock
Time correction:	- sunrise: +0:00 - sunset: +0:00
Time zone:	+1:00 UTC
Random switchings:	- minimum: 1 minute - maximum: 5 minutes
PIN protection:	not active (---)
GPS module:	active

English

START PAGE (or main)



English

Information messages
- day of the week
- GPS status (if enabled)
- battery status (only if discharged)
- NO MAINS **
- BUS KNX status (ok, off, error)

* See page 6. In this case there isn't any configured channel (no number turned on)

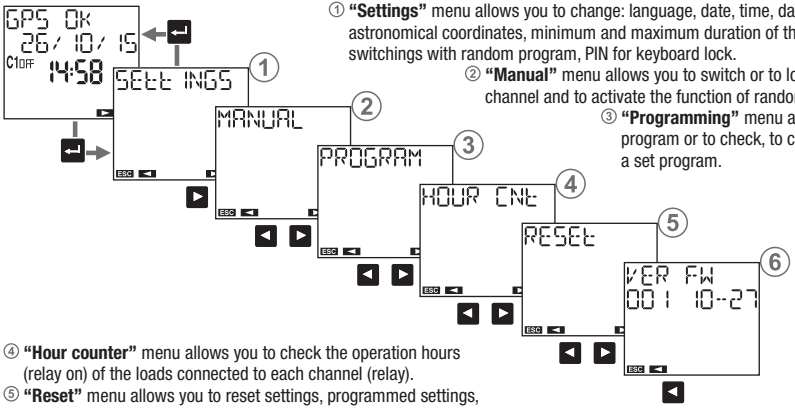
** Only if ES01A00KNX is not powered by mains.

In this condition the backlight is not active.

- Press the key:
  ↵ to access the menu of the instrument
  ◄ and ► to scroll through the messages of ES01A00KNX to
  Ok display the calculated sunrise and sunset times***

*** The displayed times take into account possible entered values of correction (see page 16)
if the display shows _ _ _ _ means that the calculated sunrise time is after the sunset time if the display show _ _ _ _ means that the calculated sunrise time is before 00:00 or that the calculated sunset is at 23:59

MENU DESCRIPTION



① **"Settings"** menu allows you to change: language, date, time, daylight saving time (DST), astronomical coordinates, minimum and maximum duration of the interval between two switchings with random program, PIN for keyboard lock.

② **"Manual"** menu allows you to switch or to lock the status of any channel and to activate the function of random switchings.

③ **"Programming"** menu allows you to set a new program or to check, to copy, to modify or to delete a set program.

④ **"Hour counter"** menu allows you to check the operation hours (relay on) of the loads connected to each channel (relay).

⑤ **"Reset"** menu allows you to reset settings, programmed settings, operating hour counter.

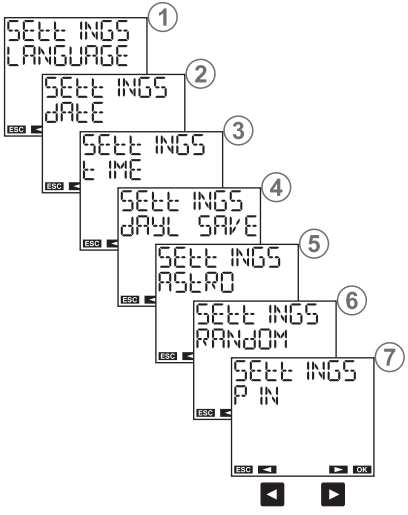
⑥ **"Ver FW"** menu allows you to check the firmware version installed on the device.

English

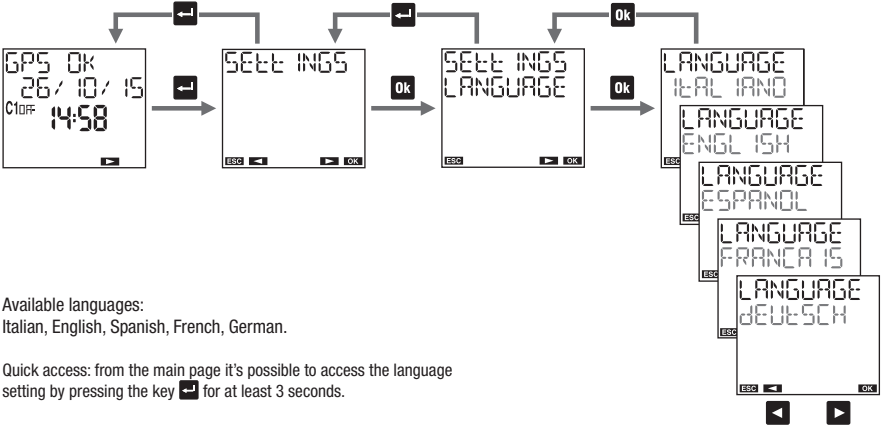
SETTINGS MENU

"Settings" menu allows you to view and eventually to modify the the general operation settings of ES01A00KNX, such as:

① language
② date
③ time
④ automatic daylight saving time (DST) change
⑤ position (astronomical coordinates)
⑥ interval duration between two random switchings
⑦ keys protection by PIN



Language setting menu

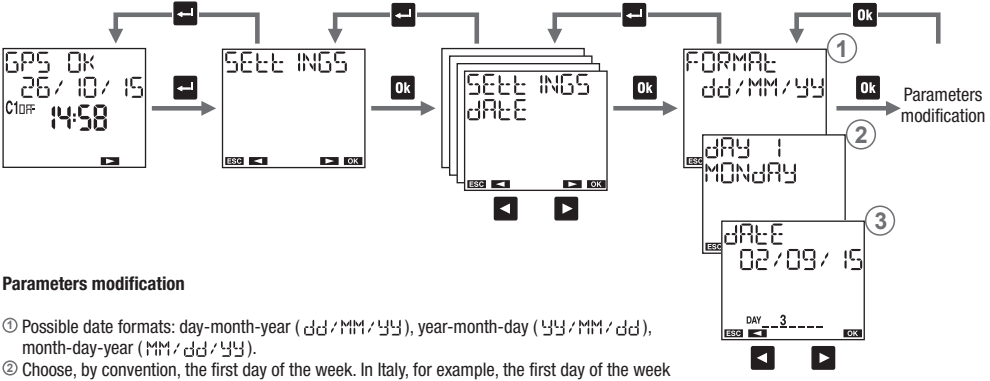


Available languages:
Italian, English, Spanish, French, German.

Quick access: from the main page it's possible to access the language setting by pressing the key ↵ for at least 3 seconds.

English

Date setting menu

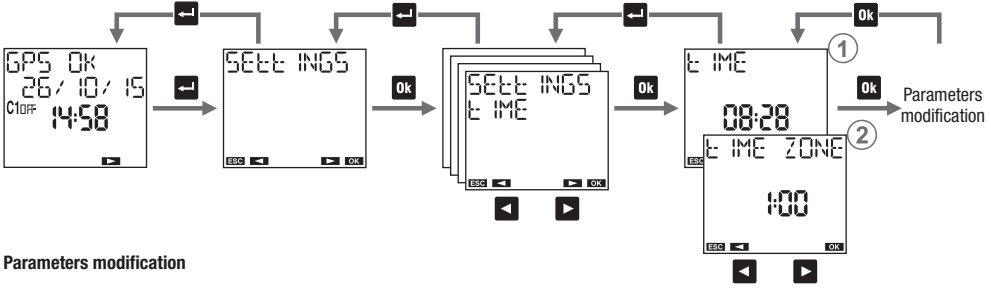


Parameters modification

① Possible date formats: day-month-year (dd/MM/YY), year-month-day (YY/MM/dd), month-day-year (MM/dd/YY).
② Choose, by convention, the first day of the week. In Italy, for example, the first day of the week is Monday, in the UK it's Sunday.
③ Enter the date: day, month, year.

If ES01A00ACC is connected and active, ES01A00KNX synchronizes date, time and coordinates (longitude, latitude) thanks to the received GPS signal. Synchronization occurs automatically every 30 minutes and is indicated by the flashing symbol ↗ (2 times). The data received from GPS signal overwrite possible changes made manually.

Time setting menu



Parameters modification

① Set the time: hours, minutes.
② Set the time zone*. Range: -14:00 ÷ +14:00 (at 15 minutes steps).
For Italy set +1:00.

* The time zone must be set manuallly also with connected ES01A00ACC module.

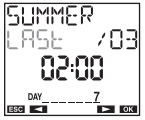
If ES01A00ACC is connected and active, ES01A00KNX synchronizes date, time and coordinates (longitude, latitude) thanks to the received GPS signal. Synchronization occurs automatically every 30 minutes and is indicated by the flashing symbol (2 times). The data received from GPS signal overwrite possible changes made manually.

English

Daylight saving time (DST)/winter time (CET) change setting menu

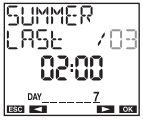
Daylight saving time (DST)/winter time(CET) change and vice versa can occur in an automatic way. In this case, ES01A00KNX:
- increases by an hour in the passage from winter time (CET) to daylight saving time (DST)
- decreases by an hour in the passage from daylight saving time (DST) to winter time (CET)

For every change it's necessary to specify:

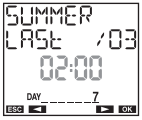


the week of the month during which the time change occurs (first, second, third, fourth, last)

the day of the week (Monday: 1, Tuesday: 2, ...)

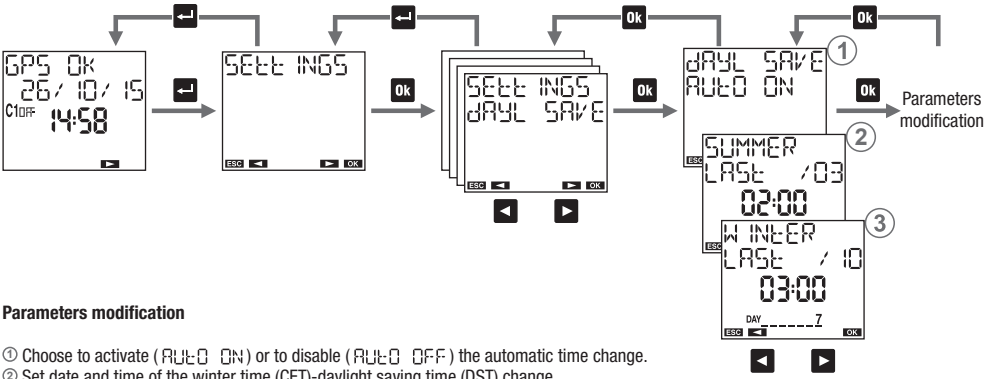


the month



the hour

In Italy,for example, daylight saving time (DST) begins occurs the last (LAST) Sunday (**7**) of March (03) at 02:00 o'clock, and ends the last (LAST) Sunday (**7**) of October (10) at 03:00 o'clock.



Parameters modification

① Choose to activate (AUtO ON) or to disable (AUtO OFF) the automatic time change.
② Set date and time of the winter time (CET)-daylight saving time (DST) change.
③ Set date and time of the daylight saving time (DST)-winter time (CET) change.

English

Astronomical coordinates setting menu

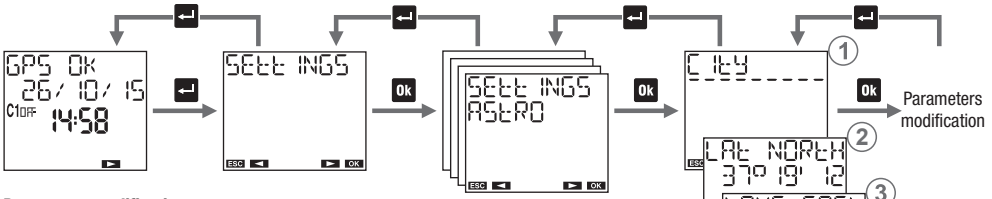
The setting of the geographical coordinates of the installation place allows ES01A00KNX to calculate, for each day of the year, sunrise and sunset times.
To simplify the procedure, in the ES01A00KNX are stored the coordinates of the locations listed below; if your location is among them you can select it from the menu ①, otherwise it's necessary to enter the coordinates of latitude and longitude (menu ② ③).

Note: the display on point ① shows "---------" if the coordinates have been entered manually or captured via GPS.

Location stored in ES01A00KNX:- Italy: all provinces
- United Kingdom: Cardiff, Belfast, Edinburgh, London
- Spain: Barcelona, Madrid, Seville, Valencia
- France: Lyon, Marseille, Paris, Toulouse
- Germany: Berlin, Hamburg, Cologne, Monaco

The correction of sunrise and sunset times is useful for applications that require the turning on of lights in particular localities. It's possible, in fact, that the presence of disturbing elements, such as the mountains, can influence actual times of sunrise and sunset, making it necessary to advance or delay of a few minutes the calculated times.

The twilight is the time interval before sunrise, or after sunset, characterized by the permanence of the light due to the spread by the atmosphere of the Sun light. During these time intervals it's possible to distinguish clearly objects and conduct outdoor activities without using additional lighting. Therefore, in some applications it is more interesting to take as times of switching on and off the twilight (civil) in place of sunrise and sunset. With ES01A00KNX it's possible to choose to turn on/off the loads depending on the times of sunrise and sunset or the civil twilight. The calculated time correction also applies to the times of twilight. To view the calculated switching on time (sunset) and switching off time (sunrise), from the main page press the key ok (see page 8).



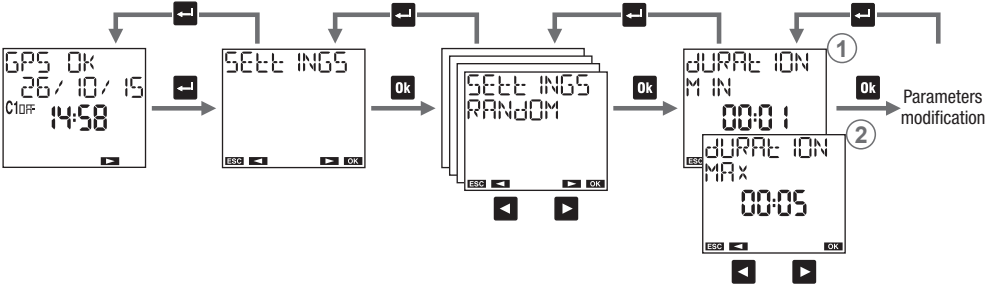
Parameters modification

① Choose the installation location. If it's not present, proceed with steps ② and ③.
② Set the latitude of installation place.
③ Set the longitude of installation location.
④ Set a possible correction of the calculated sunrise time. Positive values to delay, negative values to anticipate.
⑤ Set a possible correction of the calculated sunset time. Positive values to delay, negative values to anticipate.
⑥ Choose as switching times the civil twilight (C IV IL S) in place of sunrise and sunset (C IV IL N) times.

If ES01A00ACC is connected and active, ES01A00KNX synchronizes date, time and coordinates (longitude, latitude) thanks to the received GPS signal. Synchronization occurs automatically every 30 minutes and is indicated by the flashing symbol (2 times).
The data received from GPS signal overwrite possible changes made manually.

English

Random switchings setting menu

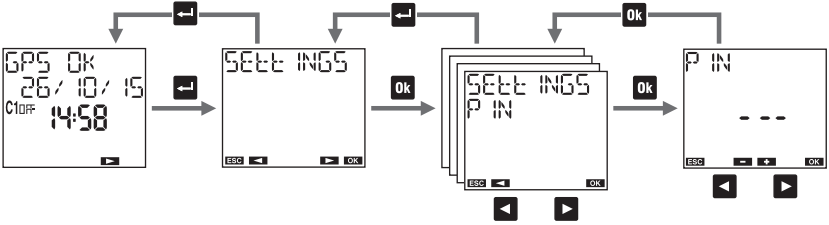


The “random switching ⑦” function (manual menu → random manual) allows you to automatically switch and at random time intervals any channel among the 9 available.
In this menu it’s possible to define the minimum and maximum duration of the time interval between two random switchings. Default minimum duration is 1 minute, maximum duration is 5 minutes.

Parameters modification

① Set the minimum duration. It’s possible to set values between 1 minute and the *maximum duration.*
② Set the maximum duration. It’s possible to set values between the *minimum duration* and 23:59.
Note: setting the minimum duration equal to the maximum, the switchings will occur at fixed time intervals.

Protection PIN setting menu



The protection code (PIN) is used to lock the keyboard and prevent changes by unauthorized persons. With active PIN protection, pressing any key, it's necessary to enter the PIN: if PIN is correct the keyboard unlocks; after 3 minutes without pressing a key, the keyboard will lock automatically.

To activate PIN protection:
- set a value between 000 and 999

To disable PIN protection:
- set "**---**" (located before 000 or after 999)

Note: If you have forgotten your PIN code to unlock ES01A00KNX it's necessary to carry out a hardware reset (see page 52).

MANUAL OPERATION MENU

"Manual" menu allows you to manually take action on the channels of ES01A00KNX and to check their status (on, off, or "------" if the channel is not configured).

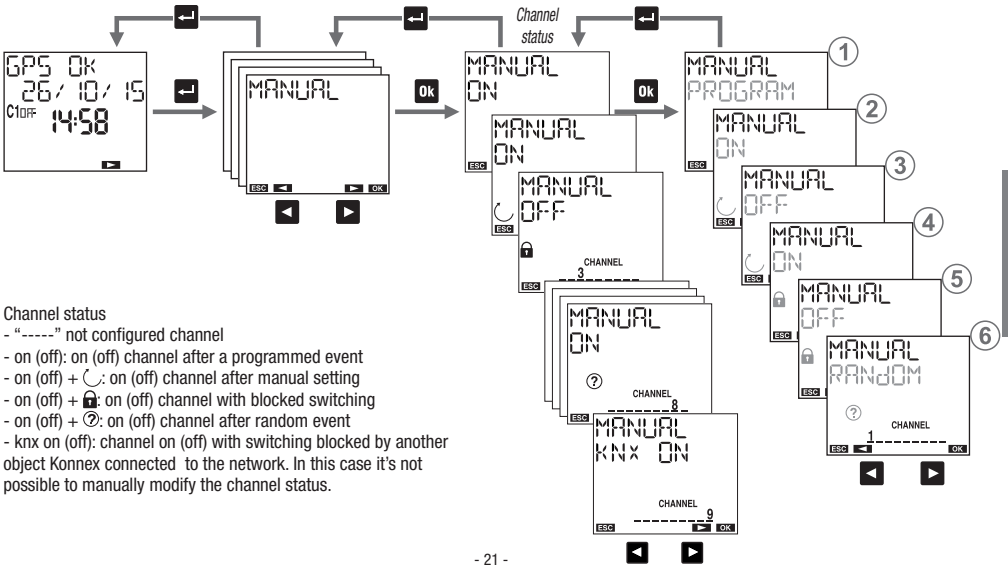
Possible operations:

① **program:** the selected channel follows the set programming
② **temporary on ◡ :** the selected channel is set on until the next programmed off event
③ **temporary off ◡ :** the selected channel is set off until the next programmed on event
④ **permanent on 🔒 :** the selected channel is locked in on position until the manual unlocking (to unlock, access this menu and set a different operation)
⑤ **permanent off 🔒 :** the selected channel is locked in off position until the manual unlocking (to unlock, access this menu and set a different operation)
⑥ **random ? :** the selected channel is set on and then will take place switching on / off at random intervals (the minimum and maximum interval can be set from "Settings → random" menu)

Shortcut keys (only for channel 1)

For channel aboard the ES01A00KNX (channel 1) it's possible to set the operations described above through a combination of key contemporary on/off: press the key ◄. If on becomes off and vice versa.

- permanent on/off: press for a long time (for 3 seconds at least) the key ◄. The current state is locked until the unlocking (press again for a long time the key ◄).
- random: press contemporary and for a long time (for 3 seconds at least) the keys ◄ and Ok. Press again simultaneously and for a long time the keys ◄ and Ok to disable the function.

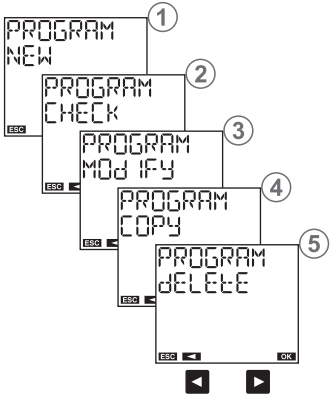


Channel status
- "-----" not configured channel
- on (off): on (off) channel after a programmed event
- on (off) + : on (off) channel after manual setting
- on (off) + : on (off) channel with blocked switching
- on (off) + : on (off) channel after random event
- knx on (off): channel on (off) with switching blocked by another object Konnex connected to the network. In this case it's not possible to manually modify the channel status.

English

PROGRAM MENU

The menu “program” allows you to:
① create a new program
② check created programs
③ change or delete a created program
④ copy all created programs on a channel in another channel
⑤ delete all programs of a channel

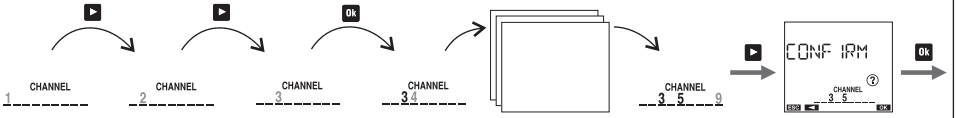


English

Channels selection

scroll through the channels from 1 to 9:

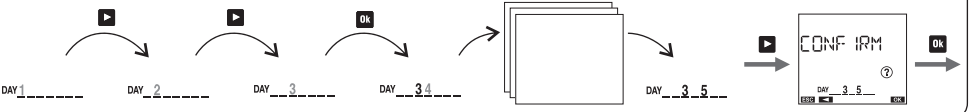
- by pressing the key ▶ to move to the next channel without selecting the current channel
- by pressing the key Ok to select/deselect the current channel and move to the next



Select days

scroll through the days of the week from 1 to 7:

- by pressing the key ▶ to move to the next day without selecting the current day
- by pressing the key Ok to select/deselect the current day and move to the next



English

Programs types

- Program ON/OFF: it is composed of a switching of the ON relay and of a subsequent switching of the OFF relay. It can have a daily period (everyday with the same modes), weekly (every week with the same modes), annual (every year with the same modes)*.
- PULSE ON Program: is an ON relay switching for a maximum duration of 59 seconds. It can have a daily period (everyday with the same modes), weekly (every week with the same modes), annual (every year with the same modes)*.
- PULSE OFF program: is a relay switching OFF for a maximum duration of 59 seconds. It can have daily period (everyday with the same modes), weekly (every week with the same modes), annual (every year with the same modes)*.
- HOLIDAY program: is a period of time defined by a start time and an end time within which all programmed switchings (of that channel) are disabled. The relay is in OFF position (OFF holiday) or in ON position (ON holiday).

* In the annual program, it's possible to specify the month. In this case, the period is monthly (every month with the same modes). It's also possible to specify a definite date (the program carried out only once).

Channel types

- TIME channel: carries out programs of time type: ON / OFF, ON pulse, OFF pulse, holiday
- ASTRO channel: carries out programs of astronomical type, i.e. in the interval delimited by sunrise and sunset**: ON/OFF, ON pulse, OFF pulse, holiday, night programs (see pages 36-37). ON switchings set before sunset are carried out at sunset, OFF switchings set after sunrise are carried out at sunrise (except for some night programs that can have switching on or switching off during the day. See on page 36).

** times of sunrise and sunset are automatically calculated by ES01A00KNX according to geographic coordinates set during installation. In place of sunrise and sunset times it's possible to use the times of civil twilight (see page 16).

English

⚠ **Important:** on the same channel can't coexist ON pulses and OFF pulses (if an ON pulse is already present, it's not possible to save a holiday OFF program and vice versa).

⚠ **Important:** on the same channel can't coexist holiday ON programs and holiday OFF programs (if a holiday ON program is already present, it's not possible to save a holiday OFF program and vice versa).

⚠ **Important:** a channel may be either of clockwise or of astronomical type, but it can't be of both types simultaneously. It's not possible to save programs of astronomical type on a channel where are stored programs of time type (and vice versa). Messages of ERROR 011 (astro program on channel astro) and ERROR 012 (time program on astro channel).
In this case to proceed it's necessary to delete the saved programs on that channel (see page 49).

Programs priority

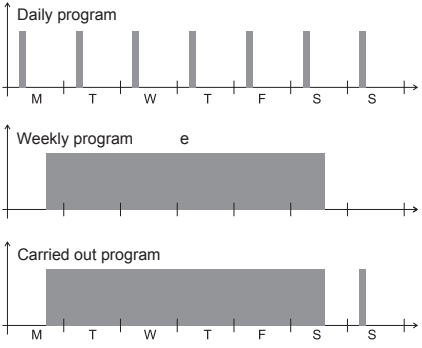
The priority programs defines how ES01A00KNX manages the case in which programs with different period are running at the same time (1 indicates higher priority).

Program	Date*	Annual	Monthly	Weekly	Daily
Holiday	1				
Night	2				
Pulse	3				
On/Off	4	5	6	7	8

* Date: select day, month, year (program carried "only once in the life of the product"). If the month is not specified, the program is carried out all days *xx* of all months of the specified year.

Priority list on/off

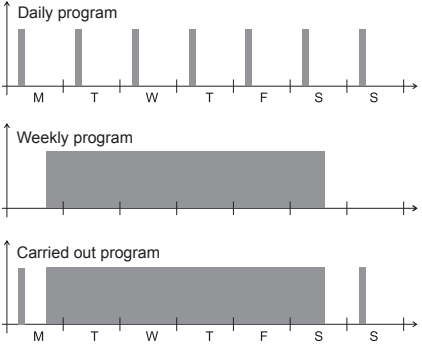
In case in which, on the same channel, on/off programs are provided with different period (daily, weekly, ...) to carry out in the same day, only the program with the highest priority is executed.



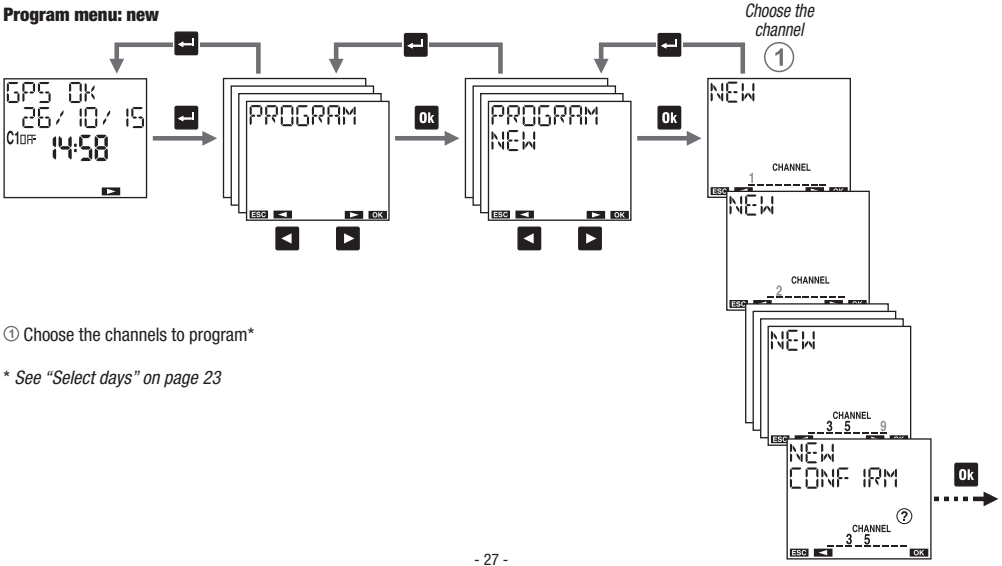
From this example it's possible to see that the daily event on Monday is not carried out because in the same day it is provided the beginning of the week program (even if the daily program of Monday begins and ends before the beginning of the weekly program). Instead, the daily program of Sunday is carried out because it's the only one running for that day.

Holiday program

The holiday program just begins and ends exactly at the specified times.



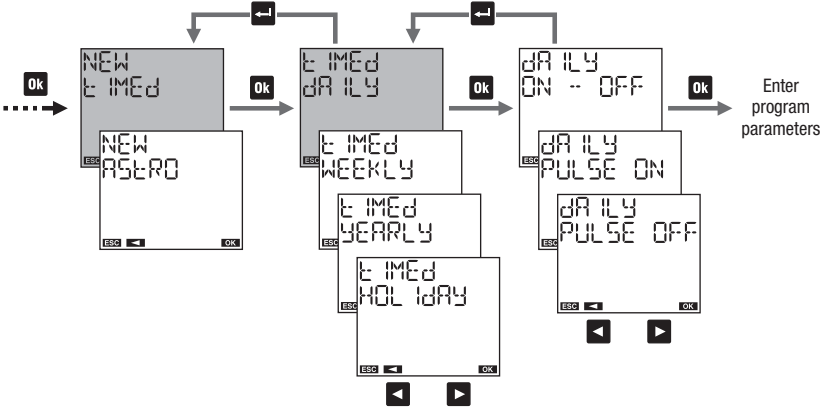
Program menu: new



① Choose the channels to program*

** See "Select days" on page 23*

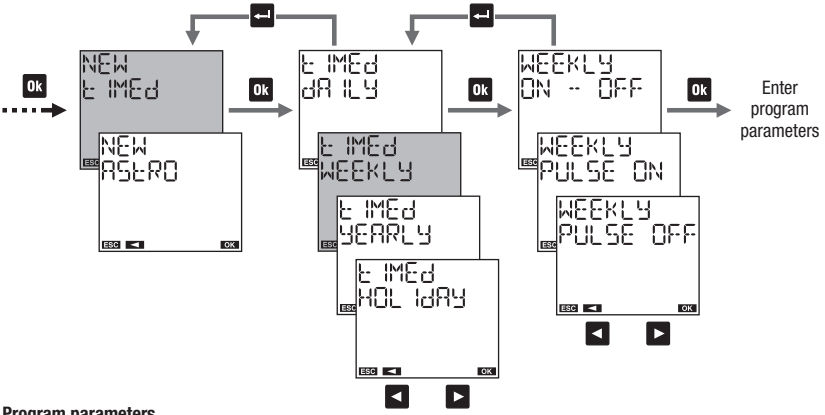
Program menu: new daily timed



Program parameters

- on/off: on time and off time
- on pulse: time and pulse duration (max 59 seconds)
- off pulse: time and pulse duration (max 59 seconds)

Program menu: new weekly timed

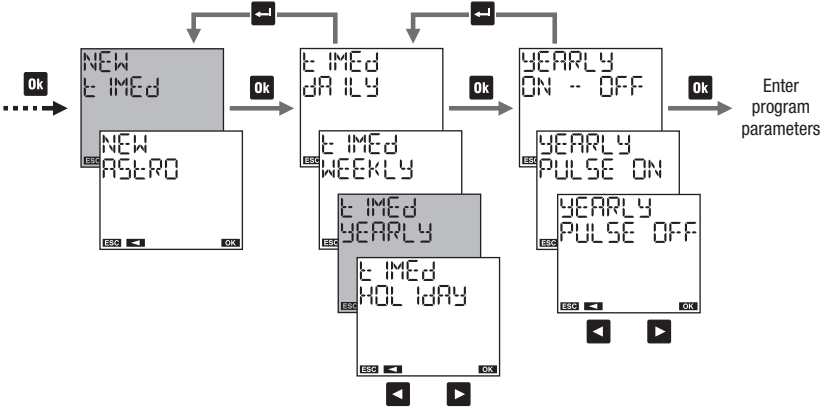


Program parameters

- on/off: day (or days)* and on time, day (or days) and off time
- on pulse: day (or days)* and pulse time, pulse duration (max 59 seconds)
- off pulse: day (or days)* and pulse time, pulse duration (max 59 seconds)

* *See "Select days" on page 23*

Program menu: new yearly timed (or monthly)



Program parameters

- on/off: day (or days) and on time, day (or days) and off time
- on pulse: day (or days) and pulse time, pulse duration (max 59 seconds)
- off pulse: day (or days) and pulse time, pulse duration (max 59 seconds)

How to choose the day (or days) in an annual program (or monthly)

(1) to set the program:

in the first, second, third, fourth or last week of the month
in / the day/s (Monday, ...) of the week just specified
the specified month (MM for all months)
the given year (YY for all years)

Note: only for the case 1, the on event must correspond to the off in the same day. For example, if the program includes two events on Monday and on Wednesday, then there will be two off events on Monday and on Wednesday. Otherwise ERROR 0 10 is signaled.

(2) to set the program on the last day:

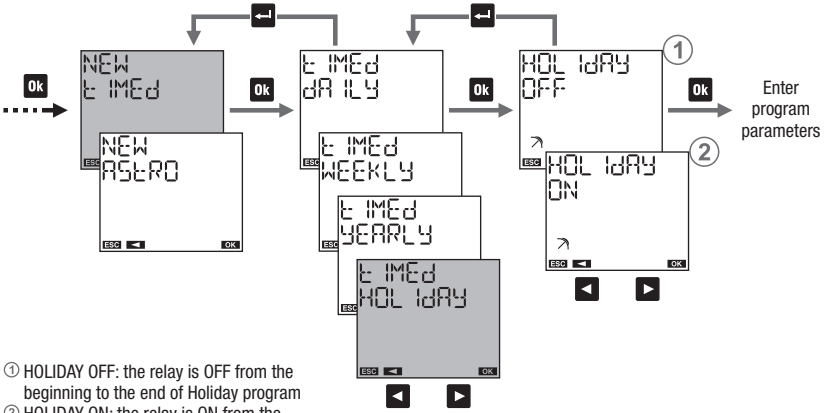
---/MM/YY of all months of all years
---/WW/YY of the specified WW month of all years
---/MM/ZZ of all months of the specified ZZ year
---/WW/ZZ of the specified WW month of the specified ZZ year

(3) to set the program on the day XX (1,2,3...):

XX/MM/YY of all months of all years
XX/WW/YY of the specified WW month of all years
XX/MM/ZZ of all months of the specified ZZ year
XX/WW/ZZ of the specified WW month of the specified ZZ year

English

Program menu: new holiday timed



① HOLIDAY OFF: the relay is OFF from the beginning to the end of Holiday program
② HOLIDAY ON: the relay is ON from the beginning to the end of Holiday program

Program parameters

- beginning of the program
- end of the program

How to choose the day (or days) in a holiday program

(1) to set the program:

in the first, second, third, fourth or last week of the month
in / the day/s (Monday, ...) of the week just specified
the specified month (MM for all months)
the given year (YY for all years)

Nota: in this case, the holiday program must begin and end in the same day. Otherwise ERROR 010 is signaled.

(2) to set the program on the last day:

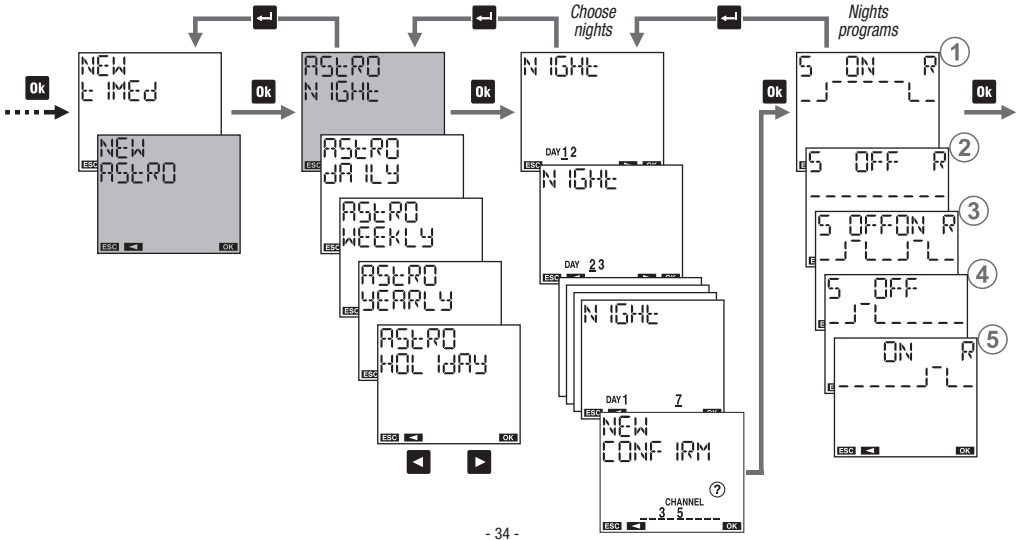
---/MM/YY of all months of all years
---/VV/YY of the specified VV month of all years
---/MM/ZZ of all months of the specified ZZ year
---/VV/ZZ of the specified VV month of the specified ZZ year

(3) to set the program on the day XX (1,2,3...):

xx/MM/YY of all months of all years
xx/VV/YY of the specified VV month of all years
xx/MM/ZZ of all months of the specified ZZ year
xx/VV/ZZ of the specified VV month of the specified ZZ year

English

Program menu: new astro night



English

How to select nights

scroll through the nights of the week from the first (1-2) to the last (7-1):

- by pressing the key ▶ key to move to the next night without selecting the current night
- by pressing the key OK to select/deselect the current night and move to the next

How to interpret the selection

If the night between the days of A and B is selected, the day A is on and underlined while B is on (not underlined).

Examples of selection:

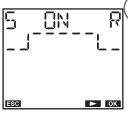
DAY 1 2 3 4 5 Selected nights: between day 1 and 2, between day 2 and 3, between day 3 and 4, between day 4 and 5

DAY 1 2 3 4 5 Selected nights: between day 1 and 2, between day 2 and 3, between day 4 and 5

DAY 1 2 3 4 7 Selected nights: between day 1 and 2, between day 3 and 4, between day 7 and 1

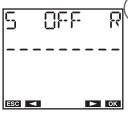
English

Night programs



1

Turning on at sunset, turning off at sunrise.
No parameter required.



2

Off from sunset to sunrise.
No parameter required.

3

Turning on at sunset, turning off during the night. Turning on during the night, turning off at sunrise.
Choose one of the three following cases:

Ok

Turning on at sunset, turning off at a settable time.
Turning on at a settable time, turning off at sunrise. (*)

Turning on at sunset, turning off after a settable time interval.
Turning on before sunrise of a settable time interval, turning off at sunrise.

Turning on at sunset for a settable short duration (pulse, max 59 seconds).
Turning on at sunrise for a short settable duration (pulse, max 59 seconds).

* If off time is before sunset switching is not carried out. If on time is after sunrise switching is not carried out.

** Switching on continues for the entire set time interval (also if off time is after sunrise).

*** Switching on occurs before sunrise of the entire set time interval (also if on time is before sunset).

4 Turning on at sunset, turning off during the night.
Choose one of the three following cases:

Ok

Turning on at sunset, turning off at a settable time. (*)(**)

Turning on at sunset, turning off after a settable time interval. (**)

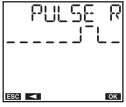
Turning on at sunset for a settable short duration (pulse, max 59 seconds).

5 Turning on during the night, turning off at sunrise.
Choose one of the three following cases:

Ok

Turning on at a settable time, turning off at sunrise. (*)(***)

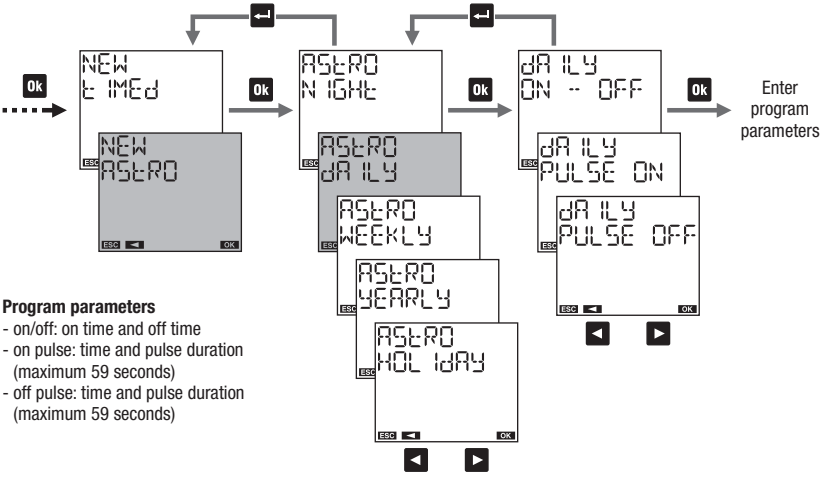
Turning on before sunrise of a settable time interval, turning off at sunrise. (***)



Turning on at sunrise for a settable short duration (pulse, max 59 seconds).

English

Program menu: new astro daily

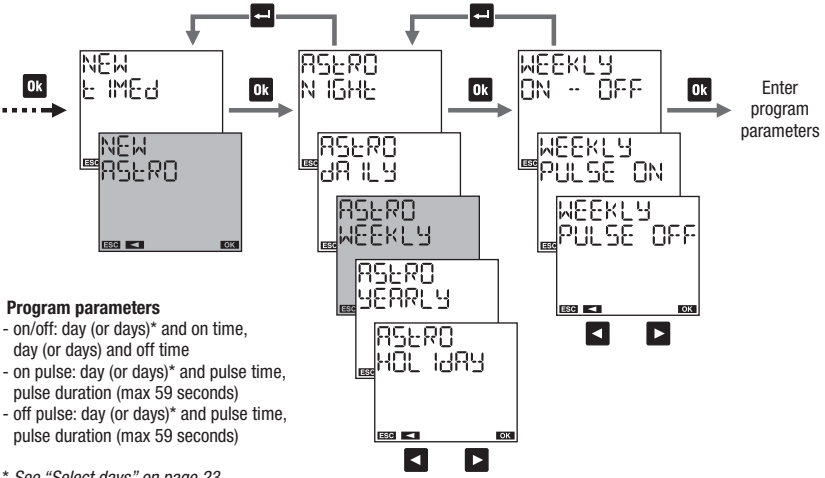


Program parameters

- on/off: on time and off time
- on pulse: time and pulse duration (maximum 59 seconds)
- off pulse: time and pulse duration (maximum 59 seconds)

English

Program menu: new astro weekly



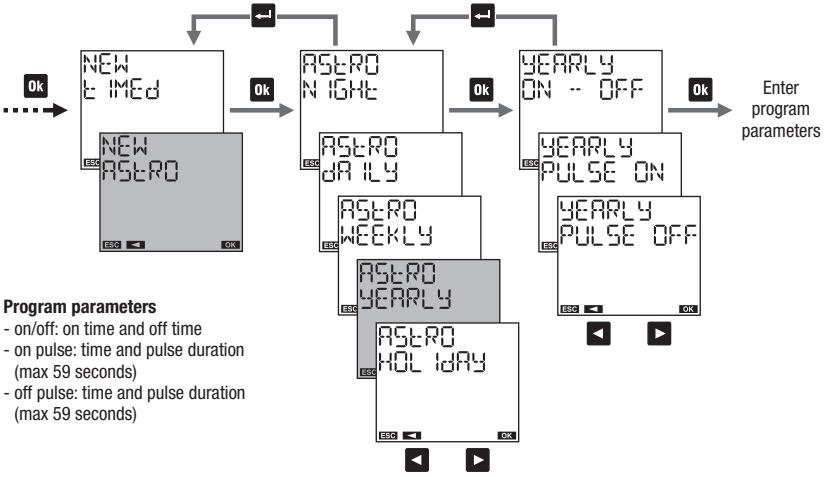
Program parameters

- on/off: day (or days)* and on time, day (or days) and off time
- on pulse: day (or days)* and pulse time, pulse duration (max 59 seconds)
- off pulse: day (or days)* and pulse time, pulse duration (max 59 seconds)

** See "Select days" on page 23*

English

Program menu: new astro yearly (or monthly)



Program parameters

- on/off: on time and off time
- on pulse: time and pulse duration (max 59 seconds)
- off pulse: time and pulse duration (max 59 seconds)

English

How to choose the day (or days) in an astro annual program (or monthly)

(1) to set the program:

in the first, second, third, fourth or last week of the month
in / the day/s (Monday, ...) of the week just specified
the specified month (MM for all months)
the given year (YY for all years)

Note: the on event must correspond to the off in the same day. For example, if the program includes two events on Monday and on Wednesday, then there will be two off events on Monday and on Wednesday. Otherwise ERROR 0 10 is signaled.

(2) to set the program on the last day:

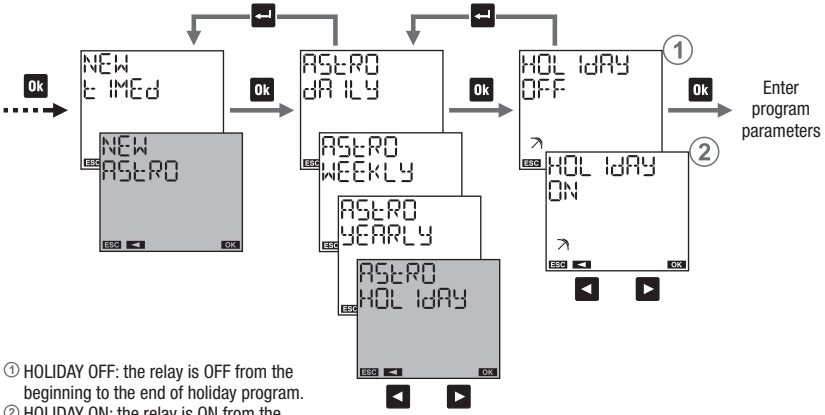
---/MM/YY of all months of all years
---/VV/YY of the specified VV month of all years
---/MM/ZZ of all months of the specified ZZ year
---/VV/ZZ of the specified VV month of the specified ZZ year

(3) to set the program on the day XX (1,2,3...):

XX/MM/YY of all months of all years
XX/VV/YY of the specified VV month of all years
XX/MM/ZZ of all months of the specified ZZ year
XX/VV/ZZ of the specified VV month of the specified ZZ year

English

Program menu: new astro holiday



① HOLIDAY OFF: the relay is OFF from the beginning to the end of holiday program.
② HOLIDAY ON: the relay is ON from the beginning to the end of holiday program.

Program parameters

- beginning of the program
- end of the program

How to choose the day (or days) in a holiday astro program

(1) to set the program:

in the first, second, third, fourth or last week of the month
in / the day/s (Monday, ...) of the week just specified
the specified month (MM for all months)
the given year (YY for all years)

Note: in this case, the holiday program must begin and end in the same day. Otherwise ERROR 0 10 is signaled.

(2) to set the program on the last day:

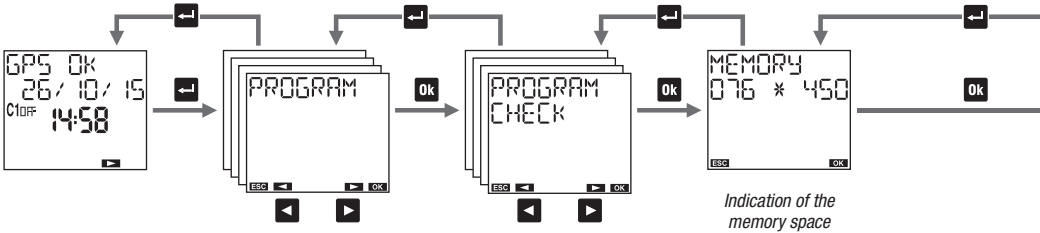
---/MM/YY of all months of all years
---/WW/YY of the specified WW month of all years
---/MM/ZZ of all months of the specified ZZ year
---/WW/ZZ of the specified WW month of the specified ZZ year

(3) to set the program on the day XX (1,2,3...):

xx/MM/YY of all months of all years
xx/WW/YY of the specified WW month of all years
xx/MM/ZZ of all months of the specified ZZ year
xx/WW/ZZ of the specified WW month of the specified ZZ year

English

Program menu: check

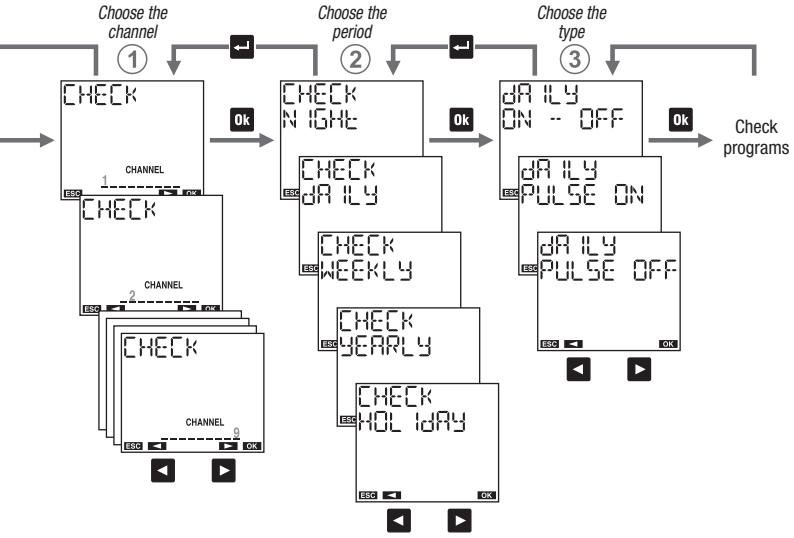


Indication of the memory space (76 of 450)

How to check a program

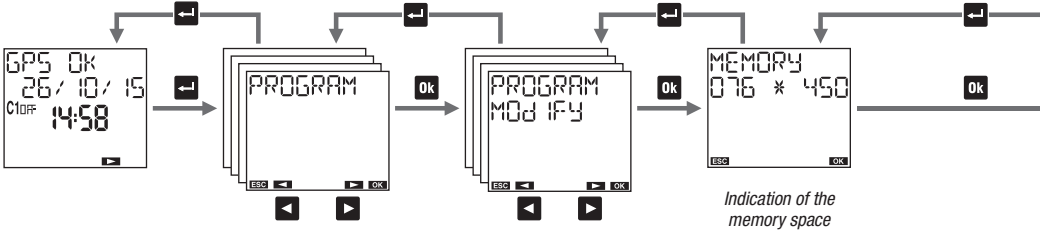
① choose the channel: 1 ... 9
② choose the period: daily, weekly, annual, holiday or night (when it is a channel of astronomical type)
③ choose the type: on/off, on pulse, off pulse or a night program (only if it is a channel of astronomical type)

Note: a program requires more screens to be displayed:
- press the key Ok to move from the first to the second part of the same program
- press the keys ◄ and ► to switch from one program to another


Choose the channel
1
Choose the period
2
Choose the type
3
CHECK
CHANNEL
1
ESC
OK
CHECK
CHANNEL
2
CHECK
CHANNEL
9
Ok
CHECK
NIGHt
CHECK
DAILY
CHECK
WEEKLY
CHECK
YEARLY
CHECK
HOLIdAY
dAILY
ON - OFF
dAILY
PULSE ON
dAILY
PULSE OFF
Check programs

English

Program menu: modify



Indication of the memory space (76 of 450)

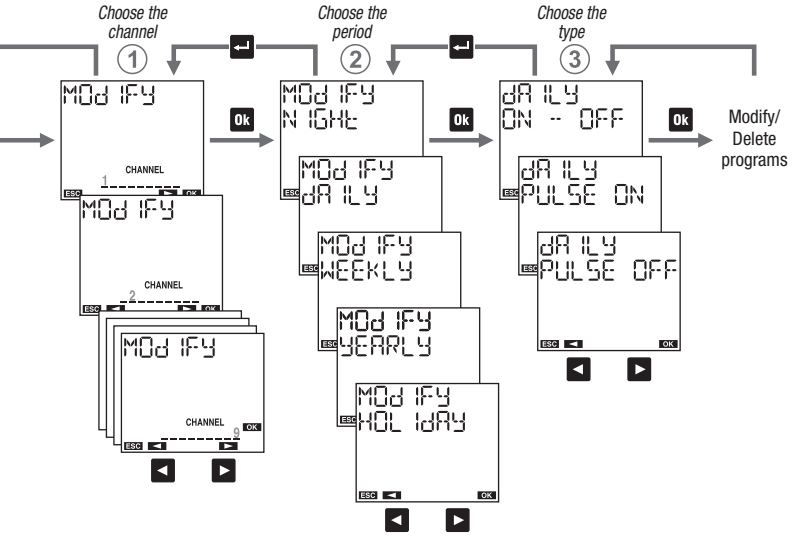
How to modify or to delete a program

① choose the channel: 1 ... 9
② choose the period: daily, weekly, annual, holiday or night (only if it's an astronomical channel)
③ choose the type: on/off, on pulse, off pulse or a night program (only if it's an astronomical channel)

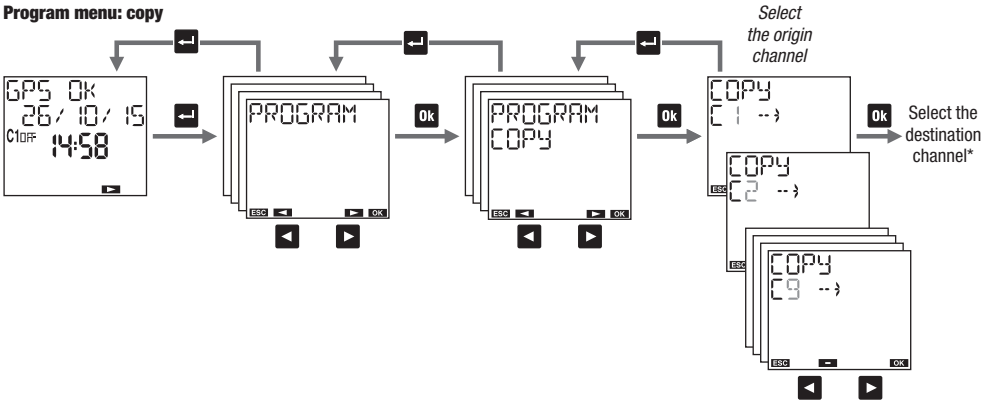
Note: a program requires more screens to be displayed:
- press the key Ok to move from the first to the second part of the same program
- press the keys ◄ and ► key to switch from one program to another

To modify: press for a long time (at least 3 seconds) the key Ok
To delete: press for a long time and simultaneously the keys Ok and ↵

English


Choose the channel
Choose the period
Choose the type
MOd IFY
CHANNEL
Ok
MOd IFY
NIGHt
MOd IFY
dA ILY
MOd IFY
WEEKLY
MOd IFY
YEARLY
MOd IFY
HOL IdAY
dA ILY
ON - OFF
dA ILY
PULSE ON
dA ILY
PULSE OFF
Modify/ Delete programs

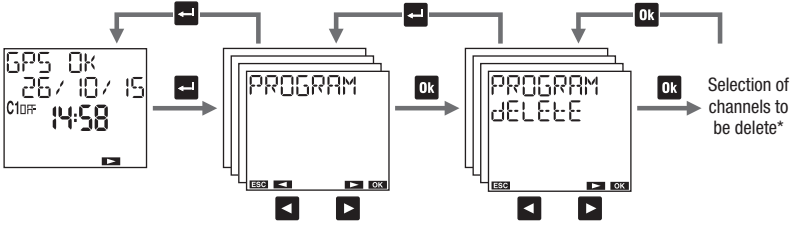
Program menu: copy



"Copy" menu allows copying the programs of a channel (origin channel) on one or more channels (channels destination).
Note: the programs previously stored on the destination channels will be deleted.

** See "Select days" on page 23*

Program menu: delete



"Delete" menu is used to delete all stored programs on one or more channels.
Note: to delete one single program to see "modify" mode (see page 46).

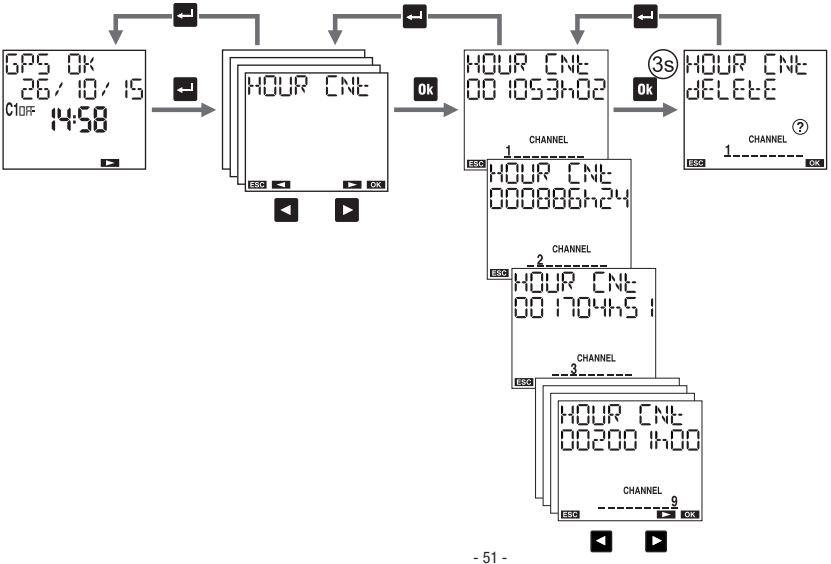
** See "Select days" on page 23*

HOUR COUNTER MENU

"Hour counter" menu allows you to display the hours of use (relay on) of connected loads. The device has 9 counters, one for each channel.
The maximum value of the counters is 999999h59 (minutes); reached the maximum limit, the counter resets automatically.
The resolution of the counters is 1 minute.

To reset a counter:
1. select the desired channel
2. press the key Ok for 3 seconds until the display shows "HOUR CNt dELEtE ⓘ"
3. confirm by pressing Ok (press ↵ to exit without zeroing)

Note: it's possible to reset all counters contemporary from the "Reset" menu (see page 52).


GPS OK
26/ 10/ 15
C1OFF 14:58
HOUR CNT
Ok
HOUR CNT
00 1053h02
CHANNEL
1
3s
Ok
HOUR CNT
dELEtE
CHANNEL
1
ESC
OK
HOUR CNT
000886h24
CHANNEL
2
HOUR CNT
00 1704h51
CHANNEL
3
HOUR CNT
00200 1h00
CHANNEL
9

English

RESET MENU

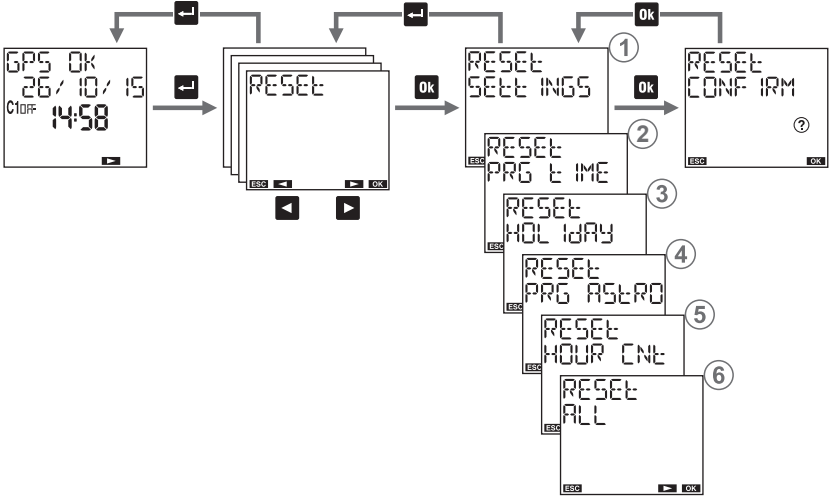
"Reset" menu allows you to restore the initial state of the device.

Available resets:
① Settings reset: deletes all the carried out settings (except the language and protection PIN))
② Time programs reset: deletes all saved time programs
③ Holiday programs reset: deletes all saved holiday programs
④ Astro programs reset: deletes all saved astronomical programs
⑤ Counter reset: resets the counters of all channels
⑥ All reset: carries out all the above described resets and deletes the language setting and protection PIN

There is also another reset, of hardware type, which allows you to reset the device in case it responds to the pressing of the keys so unexpectedly, without losing the carried out settings/programs (only the date and the time are lost).

To carry out a hardware reset:
1. press the key "R" with a sharp object

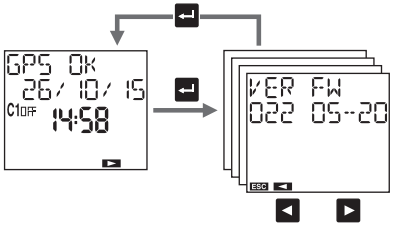
The hardware reset is also useful when you forget PIN protection. Reset, in fact, unlocks the keyboard for 3 minutes, the necessary time to access the appropriate menu and check/disable PIN.


GPS OK
26/10/15
C1OFF 14:58
RESET
RESET
SETTINGS
RESET
CONF IRM
RESET
PRG TIME
RESET
HOL IDAY
RESET
PRG ASTRO
RESET
HOUR CNT
RESET
ALL
Ok
ESC
OK
1
2
3
4
5
6

English

FIRMWARE MENU

This menu shows the firmware installed in the device, where:
022 is the revision index
05 is the month
20 is the day



ERROR SIGNALS

When setting up programs, in case of a discrepancy, the following error messages can occur:

- ERROR 001 On and off events with different frequency (each on event must have an off event)
- ERROR 002 On and off concomitant events of the same program
- ERROR 003 Two or more consecutive on events of the same program / Two or more consecutive off events of the same program
- ERROR 004 Invalid date
- ERROR 005 Insufficient memory
- ERROR 006 Attempt to set an on pulse on a channel where is already stored an off pulse (see page 25)
- ERROR 007 Attempt to set an off pulse on a channel where is already stored an on impulse (see page 25)
- ERROR 008 Attempt to set an on holiday program on a channel where is already stored an off holiday program (see page 25)
- ERROR 009 Attempt to set a holiday off program on a channel where a holiday on program is already stored (see page 25)
- ERROR 010 Attempt to set an annual program of on and off events on different days of the week (see pages 31 and 33)
- ERROR 011 Attempt to set an astro program on a channel of time (see page 25)
- ERROR 012 Attempt to set a time program on a channel of time type (see page 25)
- ERROR 030 Error accessing memory *

* In this case, carry out a hardware reset (see page 52). If the error persists, contact Technical support .

English

BATTERY MANAGEMENT

When the battery is close to empty, on the first line of the display appears BATTERY. In this case, the battery must be replaced as soon as possible.

To replace the battery:
- remove the cover of battery compartment
- replace the battery with one of 3V CR14250 type and put the cover

In order not to lose the programming steps and carried out settings, it is necessary to ensure that the time for the battery replacement doesn't exceed 60 seconds (in absence of power by means).

Dispose of the used batteries observing the laws in force in relation to the disposal of hazardous waste.

REFERENCE STANDARDS

Compliance with EU directives
2014/35/EU (LVD)
2014/30/EU (EMCD)
It is declared with reference to the following standards:
- EN 60730-2-7

Eelectron SpA - Via Monteverdi 6
20025 Legnano - Milano Italy
Tel. +30 0331500802
info@eelectron.com
www.eelectron.com