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EN

360682

Multifunction digital time switch with Wi-Fi connection

Characteristics

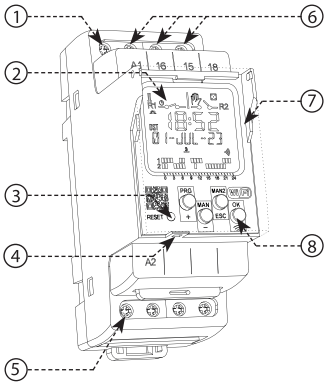
- All programs in one device (daily, weekly, yearly and astronomical).
- UNIversal supply voltage in range of AC/DC 24 – 240 V (AC 50-60 Hz).
- Simple setting after the first start-up.
- User replaceable battery to back up the set time during power outages.
- Built-in web server for setup and control via Wi-Fi connection.
- Time synchronization through NTP server (require internet connection of time switches).
- Possibility of permanent connection to the local network.
- New well-arranged display with white backlight.
- ASTROnomic program: manual entry of coordinates or selecting from one of more then 500 preset cities.
  - selection of days of the week
  - astro interrupt function (night break): controls the sunrise/sunset times and compares them with the set OFF/ON times
  - high position accuracy thanks to two decimal places in latitude/logitude
- One/two channel design (each with an operating hours counter).
- Pulse/cycle output mode.
- Transition of summer/winter time – AUTO or OFF.
- Sealable transparent front panel cover.
- PIN code protection against unauthorized changes.
- Wireless firmware update - **current version 1.64**

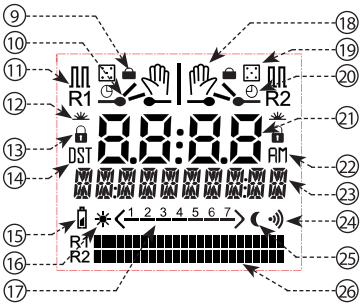
Each channel can be assigned a different program or operating switching mode, this allows control of two independent circuits. In the event of a mains power failure, the device will retain all the set values required for reliable switching after the power is restored. After installation, it does not require any special service or maintenance.

The astronomical program does not need any optical sensors or other external devices to function. Its operating principle is that during the year every day, based on an algorithm and real-time (set in the time switch), automatically controls switching on and off times of e.g. public lighting. This is because the sunrise and sunset times change throughout the year. With the offset (deviation) function, the turning ON and switching OFF times can be corrected within ± 300 minutes. The delay is fixed for each day but can be adjusted for each channel separately.

- Operation modes of switching: (configurable for each channel separately)
  - *TIME PROGRAM* (switches according to set time programs)
  - *HOLIDAYS / TIME PROGRAM* (switches according to set holidays and time programs
  - *ASTRO / TIME PROGRAM* (switches according to the set astronomical and time program)
  - *HOLIDAYS / ASTRO / TIME PROGRAM* (switches according to set holidays, astronomical and time program)
  - *RANDOM PROGRAM* (switches randomly in an interval of 10-120 min)
  - *LOCKED – MANUAL* (fixed output state that cannot be changed other than through settings)
- Possibility to manually control the output contacts at any time (outside the operation mode, *LOCKED – MANUAL*).
- The time switch can work in CLIENT and AP wireless communication mode independently of each other.
- 200 memory locations for time programs (common for both channels).
- Up to 30 memory locations for holidays.
- Programming using buttons can be done under power and in backup mode.
- Optional languages – CZ / EN / SK / HU / PL / ES / DE / BG / RU / UA / HR / SLO / RS / FR / NL
- Selection of summer/winter time transition:
  - AUTO (changes automatically according to the entered time zone)
  - OFF (permanently switched off winter/summer time transition)
- The time switch is backed up by a battery, which enables it to operate in backup mode in the event of a power failure. All settings and programs are saved in memory in the event of a power failure - they can thus be restored even in the event of a power failure and a discharged battery. However, a time correction will need to be made.

Description





1. Supply terminal (A1)
2. Backlight display
3. Reset
4. Sealing spot
5. Supply terminal (A2)
6. Output - 1. channel (16-15-18)
7. Transparent cover
8. Control buttons
9. Holiday program
10. Output indication
11. Pulse/cycle mode
12. Astro program
13. Manual control locked
14. Summer time
15. Battery indication
16. Sunrise indication
17. Days in week
18. Manual control
19. Random program
20. Time program
21. Time
22. AM/PM
23. Text line
24. Wi-Fi connection
25. Sunset indication
26. Bargraph

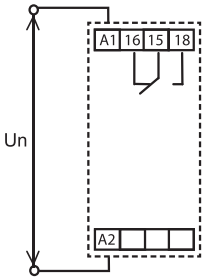
BATTERY POWER BEHAVIOUR

Powered: By default, the display is backlit for 90 seconds from the time of the last press of any button. The display still shows: the date, time, day of the week, state of contacts, and battery or the type of program in progress.

Backup/sleep mode: In the event of a power failure, the display will automatically switch to backup mode for 60 minutes, during which time the display will only flash: date, time, day of the week and battery status. After 60 minutes from the outage, the display switches to sleep mode, when only the text *POWER OFF* and battery status appears on the display. During both of the above modes, it is possible to wake up the timer at any time by pressing the OK button to the standard mode, e.g. to change settings or programs (without Wi-Fi functionality or output contacts) - however, take into account that in this case the battery drawn is significantly increased, which will affect its lifetime.

The time switch cannot be woken up to standard mode if the battery is discharged and its symbol on the display is flashing. Therefore, we recommend that you make changes in the settings primarily after connecting to the power supply, and only enter the standard mode when powered from the battery in an extreme emergency. If no button is pressed in the 20 s period, it will return to backup mode.

Connection



Prescribed minimum output protection: class B circuit breaker 16A.

Technical parameters

	360682
Supply terminals:	A1-A2
Supply voltage:	AC/DC 24 – 240 V (AC 50-60 Hz)
Consumption (max.):	Wi-Fi "OFF" 0.5 W/2 VA | "ON" 1 W/3 VA
Supply voltage tolerance:	–15 %; +10 %
Output	
Contact type:	1× changeover ($AgSnO_2$)
Current rating:	16 A/AC1*
Breaking capacity:	4000 VA/AC1, 384 W/DC1
Inrush current:	30 A/< 3 s
Switching voltage:	250 V AC/24 V DC
Power dissipation (max.):	1.2 W
Mechanical life:	30.000.000 ops.
Electrical life (AC1):	100.000 ops.
Time circuit	
Accuracy:	max. ±0.5 s/day at 23°C (73.4 °F)**
Min. switching interval:	1 s
Data retention time:	min. 10 years
Set time backup:	up to half a year with 60 outages (CR 2032 - 3V)
Program circuit	
Number of memory locations:	200 - time programs, 30 - holidays
Program type:	daily, weekly, yearly, astro
Displayed data:	LCD display with white backlight
Settings via website:	by Wi-Fi (2.4 GHz)
Other information	
Operating temperature:	–20 .. +55 °C (–4 .. 131 °F)
Storage temperature:	–30 .. +70 °C (–22 .. 158 °F)
Dielectric strength:	
supply – output	AC 4 kV
output 1 – output 2	AC 4 kV
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 front panel / IP20 terminals
Overvoltage category:	III.
Pollution degree:	2
Cross-wire section – solid/ stranded with ferrule (mm^2):	max. 1× 2.5, 2× 1.5/ max. 1× 2.5 (AWG 14)
Dimensions:	90 × 35 × 64 mm (3.5˝ × 1.4˝ × 2.5˝)
Weight:	122 g (4.3 oz)
Standards:	EN 61812-1

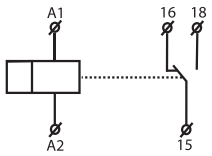
*With a permanent maximum load on the relay contacts of 16 A/AC1 and ambient temperature of +55 °C, the manufacturer recommends using a supply wire with insulation temperature resistance (min.) up to +105 °C.

**If not synchronized through NTP server.

Warning

This device is constructed for connection in 1-phase network AC/DC 24 – 240 V and must be installed according to norms valid in the state of an application. Installation, connection, setting and servicing must be carried out by qualified electrician staff only, which have perfectly understood the instructions and functions of the device. This device contains protection against overvoltage peaks and disturbing impulses in the power supply network. For the correct function of the protection of this device, there must be suitable protections of higher degrees (A,B,C) installed in front of them and according to the standards, interference of switching devices must be securely eliminated (contactors, motors, inductive loads, etc.). Before installation, make sure that the device is de-energized and the main switch is in the "OFF" position. Don't install the device to sources of excessive electromagnetic interference. Ensure correct installation by perfect air circulation so that during continuous operation and a higher ambient temperature, the device does not exceed the maximum allowed operating temperature. For installation and setting use a screwdriver with a width of approx 2 mm. Keep in mind that this is a fully electronic device and approach accordingly with the installation. Non-problematic function of the device is also dependent on the previous method of transportation, storage, and handling. In case of any signs of damage, deformation, malfunction, or missing parts, don't install this device and claim it at the dealer. The product must be treated as electronic waste at the end of its life.

Symbol



Control description

Device differs short and long button press.
In the manual marked as:
○ - short button press (< 1s)
● - long button press (> 1s)

After 120s of inactivity (from the last press of any button) the device will automatically return into the main screen.

DISPLAY BACKLIGHT CONTROL

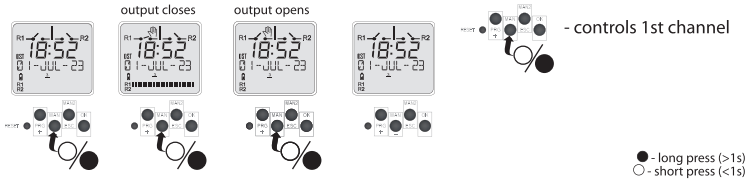
The backlight is permanently switched on/off by long press of MAN1, MAN2, and OK buttons at the same time. When activating / deactivating the permanent backlight, the display will briefly flash twice.

NTP TIME SYNCHRONIZATION

If NTP synchronization or client connection was previously configured through the web server, the NTP synchronization can be launched on 360682 by pressing the PRG and MAN1 buttons long. The display will flash once.

PRG	entrance into programming menu
+ / −	browsing in menu
	setting of values
+ / −	quick shifting during setting of values
OK	entrance into required menu
	confirmation
	Wi-Fi activation/deactivation (on main screen)
ESC	a step back
ESC	back to the main screen

Manual output control



We have two types of manual controls available:

- Permanent - long press (symbol glows)
  The second highest priority of all control modes. The state of the output cannot then be changed other than by manual change (e.g. by switching to temporary manual control or by activating mode LOCKED - MANUAL, which has a higher priority). The last option is to deactivate this control mode.
- Temporary - short press (symbol flashing)
  Temporary manual control has the same priority as the previous, permanent one. However, it can be changed in the future, unlike permanent manual control, by one of the programs with a lower priority (if configured in the time switch). With power supply disconnection or when adding 1st time program, temporary manual control is deactivated.
- For manual control with delay, use the web interface - "Manual control" tab.

Modes priority

	symbol	mode/program
highest priority ➤➤➤➤➤		locked - manual control
➤➤➤➤		manual control (temporary | permanent)
➤➤➤		random
➤➤		holidays
lowest priority ➤		time
		astronomic

(symbol flashes on the display)

ASTRO and TIME PROGRAM can work simultaneously on a single channel.

Type of load	AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	AC5b	AC6a	AC7b	AC12
Contact material $AgSnO_2$, 16A	250V / 16A	250V / 5A	250V / 3A	230V / 3A (690VA)	230V / 3A (690VA) to max. input C=14uF	1000W	x	250V / 3A	x
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material $AgSnO_2$, 16A	x	250V / 6A	250V / 6A	24V / 16A	24V / 3A	24V / 2A	24V / 16A	24V / 2A	x

Display indication

time program is active | time program is planned for future	
astro program is active | astro program is planned for future	
random program is active	
holiday is active | holiday is planned for future	
temporary | permanent manual control	

pulse program is active | cycle program is active	
the device is connected via Wi-Fi to the configuration PC/ phone/...	
the device has active Wi-Fi but is not connected to the configuration PC/phone/...	
battery is discharged | 50% of capacity | not inserted	
sunrise | sunset phase of astronomic program	

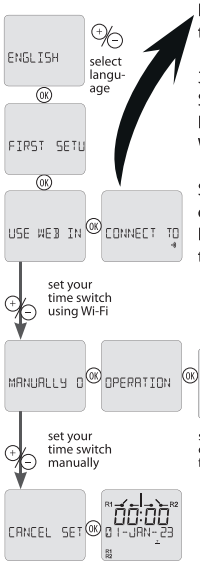
A pictogram with side lines indicates the flashing of the corresponding symbol on the 360682 display.
A pictogram without side lines indicates a constant glow of the symbol.

The indication can be found on the website in the "Overview" and "Manual control" menus.

THE BAR GRAPH reflects only time programs or permanent manual control! If the segment of the given time is lit, it means that there is a scheduled time program for switching the output for at least 1 s at the given hour. If the segment of the given time is not lit, it means that no time program for switching the output is scheduled at the given hour.

First setup

Always insert the module with the battery into the time switch first and then, if necessary, connect it to the circuit together with the product's supply voltage. The setup wizard will guide you through the steps (follow the instructions on the display). To set up the time switch you have two options (including canceling it), please follow the steps below.



Now connect your configuration device (PC/Mobile/Tablet/....) to Wi-Fi (2.4 GHz) of the time switch.

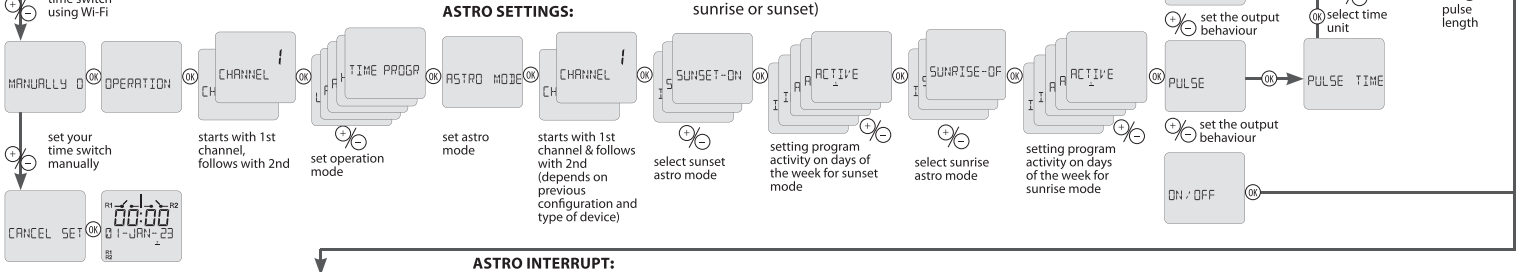
360682 Wi-Fi access data (default):
SSID hostname: RSPRO360682_serial number
Password: rspro2016
Web address for configuration: 192.168.1.1

Setup wizard will guide you through each step after opening configurator (web address).
If you need advice on the individual steps, follow the instructions below in the Wi-Fi connection headline.

ASTRO SETTINGS:

Menus for ASTRO settings (mode, output behaviour, astro interrupt, offset, location) will pop up only if you have selected one of the ASTRO programs as operation mode for 1st or 2nd channel. If you have selected the ASTRO program for both channels you will need to set up the mode, output behaviour, astro interrupt and offset for both since each channel can have a different setup.

ASTRO MODES:
SUNSET-ON (output of the selected channel closes at sunset)
SUNSET-OFF (output of the selected channel opens at sunset)
SUNRISE-ON (output of the selected channel closes at sunrise)
SUNRISE-OFF (output of the selected channel opens at sunrise)
INACTIVE (output of the selected channel does not respond to sunrise or sunset)

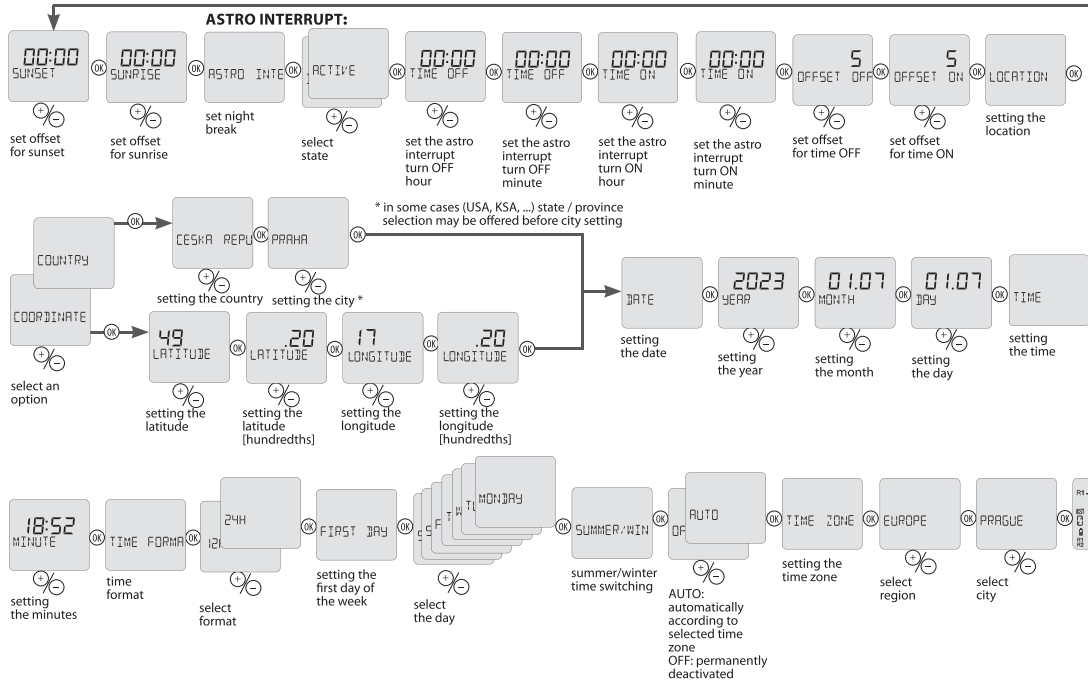


ASTRO INTERRUPT:

It works on a similar principle as a time program with the difference that the set OFF and ON times are compared by an algorithm with sunset and sunrise times. Possible offsets for the sunset and sunrise are counted together with a set offset for time OFF and ON in the astro interrupt submenu. In practice, it can be used e.g. for the so-called night break at set astro mode *SUNSET-ON, SUNRISE-OFF* (e.g. street light control).

With the above configuration, astro interrupt ensures that when the value for set time OFF + its offset is before sunset, the contact did not open. When the value for set time OFF + its offset is after sunset, the contact opened (night break start).

Likewise, astro interrupt takes care if configured like above that when the value for set time ON + its offset is after sunrise, the contact did not close. When the value for set time ON + its offset is before sunrise, the contact closed (night break end).



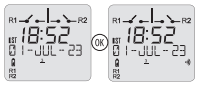
Wi-Fi connection

First, make sure that you have a configuration device (PC/phone/...) with Wi-Fi of 2.4 GHz band that supports a web browser and is close enough to 360682 that you want to connect.
The time switch does not support a 5 GHz band.

It is possible to connect directly to the web server for configuration via the Wi-Fi generated by the 360682 (no router or internet connection required). If the time is to be synchronized, an internet connection via a Wi-Fi router is necessary.

Activating the Wi-Fi of time switch:
After connecting the 360682 to the power supply, it is possible to activate/deactivate Wi-Fi by briefly pressing the OK button. If Wi-Fi is active and the configuration device is not connected, it will automatically turn off after 90 seconds.

NOTE.: Wi-Fi can be activated permanently through the settings, once the setup wizard is complete



active Wi-Fi (AP) is indicated by the symbol on the display

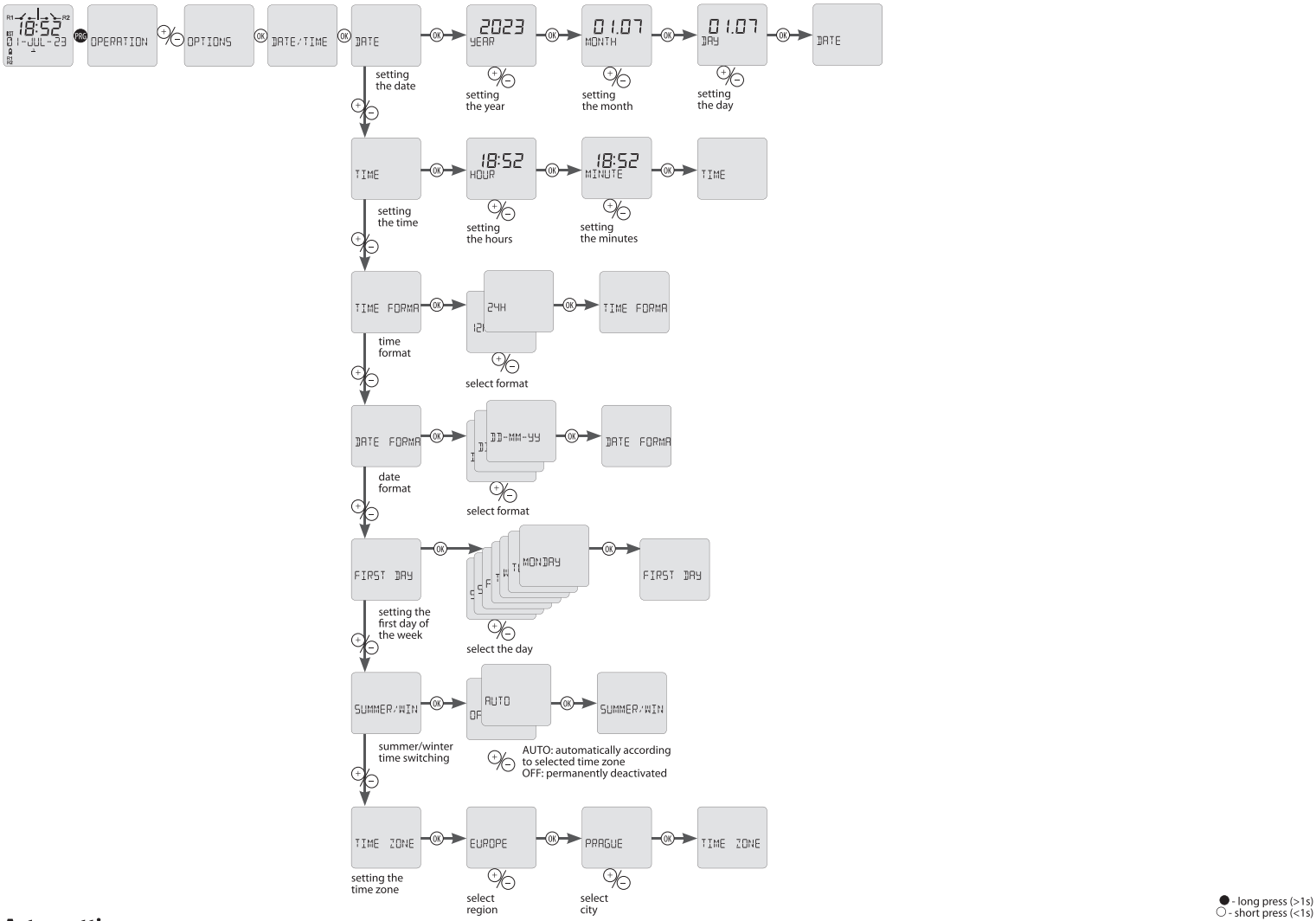
Now connect your configuration device to the Wi-Fi of the time switch (follow the instructions provided by the manufacturer of the configuration device).

360682 Wi-Fi access data (default):
SSID hostname: RSPRO360682_serial number
Password: rspro2016

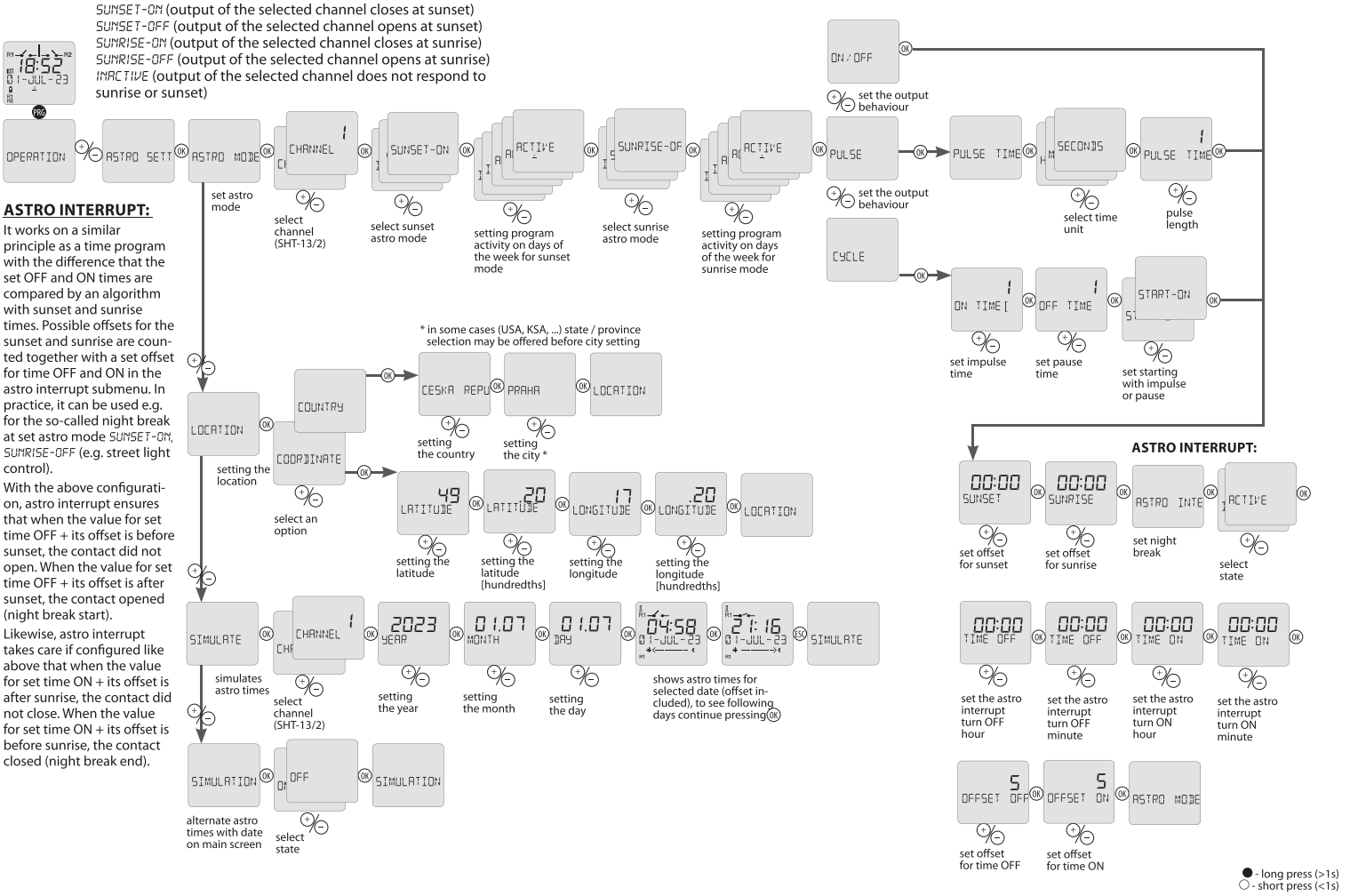
After the connection is established, the Wi-Fi symbol starts flashing on the display.

Open the web browser of the configuration device and enter the IP address in the address bar: 192.168.1.1

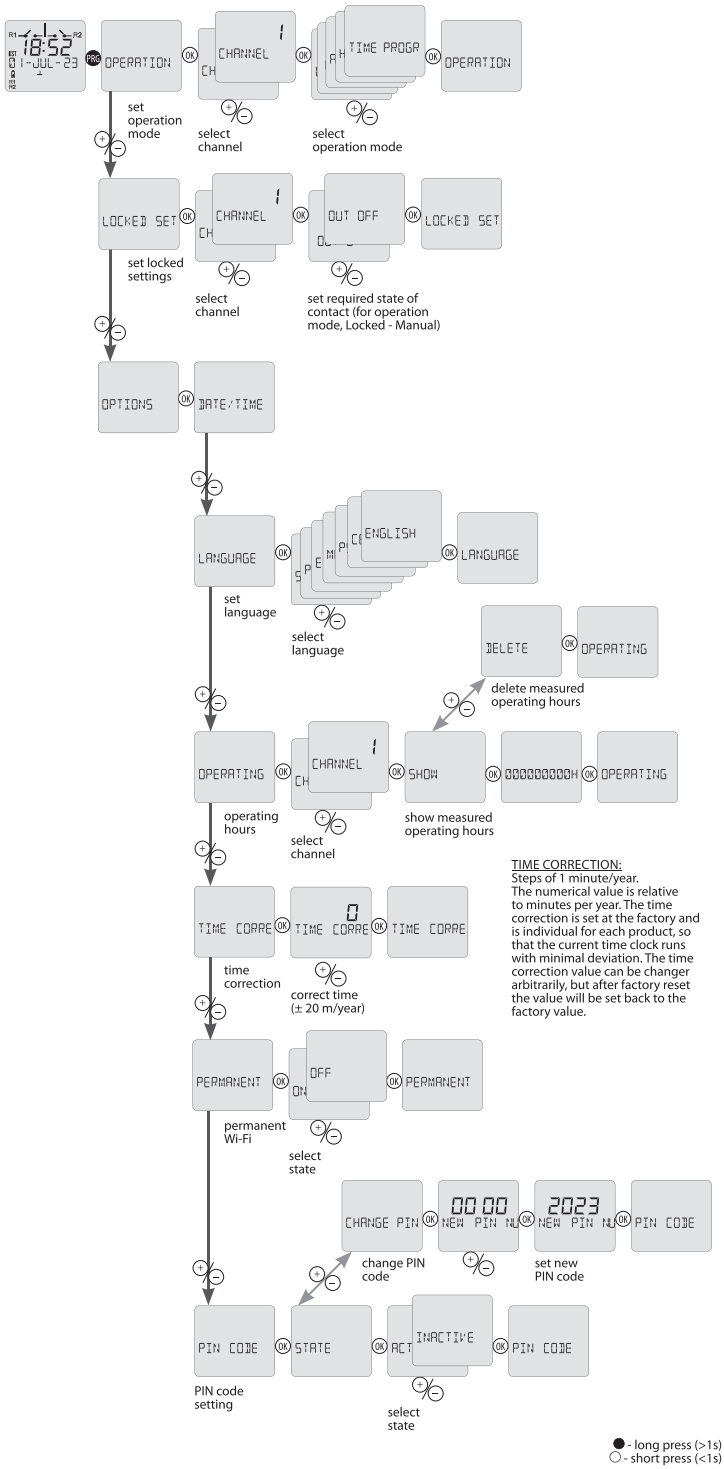
Date and time setting



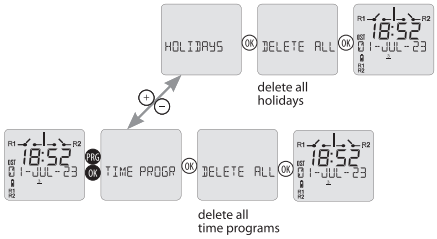
Astro settings



Other settings

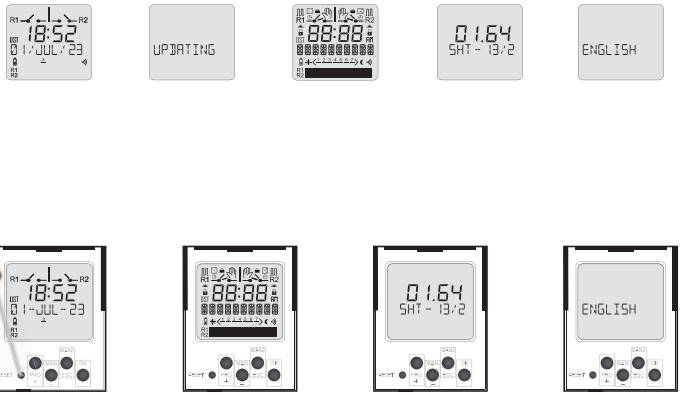


Delete all (programs/holidays)



To delete all time programs/holidays on a time switch simply press and hold the buttons as shown in the pictures above and follow the options.

Firmware update / factory reset / restart



- **Firmware update:**

The web interface itself will guide you through the update process. After connecting to Wi-Fi 360682 and opening the configurator in the browser, go to the Service menu, select the file with the new firmware and click the update button.

Do not disconnect the power supply/Wi-Fi during firmware update!

After FW update in OS Windows, clear your browser cache if it allows it. To do this, you can use the keyboard shortcuts CTRL + F5 when loading the web interface. In case you don't know how to do it, the browser usually deletes it automatically within 5 minutes after loading the web interface. If the power supply/Wi-Fi was disconnected during the firmware update, the device might not work properly and in that case please get in touch with our technical support.

The hidden RESET button has two functions depending on the length of the press:

- **Factory reset:**

It is performed by long pressing >5 with a blunt tip of the hidden RESET button (e.g. a pen or a screwdriver with a diameter of max. 2 mm).
The display briefly shows all display segments, then the device type and firmware version. The following is a setup guide - i.e. the same state in which you received the timer from the factory. Settings and all configured programs/holidays are erased by this step.

- **Restart:**

It is done by briefly pressing <1 with the blunt tip of the hidden RESET button. The display briefly shows all display segments, then the device type and firmware version. This is followed by a transition to the main screen - date, time, program activity, contact status, etc. This step will not result in the loss of settings or configured programs/holidays.

Local network connection

- **Go to the "service" tab using the drop-down menu**

Activate the "Active" checkbox in the 360682 Wi-Fi (CLIENT) item and click the "Change" button. You will now be prompted to fill in the access data of your Wi-Fi network to which you want to connect the time switch.
If you understand the given configuration, you can also choose static IP assignment. Otherwise, we recommend choosing the DHCP client option. After filling in the data, click the "Save" button. Now your time switch should be connected to the local network. You can verify this by reloading the given website, when the newly added data should be displayed in this item.
For example: An IP address that you can use within the local network to set up/control the time switch instead of the basic 192.168.1.1, which is used for a direct connection (configuration device > time switch).

Battery change

Safety warning – risk of electric shock:
The battery is galvanically connected to the mains supply potential – contact can lead to electric shock! Due to the possible occurrence of dangerous touch voltage on the battery and all connection terminals of the product, we recommend that the battery be replaced when the power supply is disconnected. Qualified or knowledgeable persons can also replace the battery under voltage in accordance with the principles of safe work under voltage.

When replacing the battery, the following three situations may occur:
a. The timer is connected to the mains supply = proceed according to steps #3 – 6.
b. The timer is not connected to the mains supply (battery supply) = proceed according to steps #1 – 6
c. The timer is connected to the mains supply with a discharged battery = proceed according to steps #2 - 6

1. Wake up the timer from the backup/sleep mode by short press of OK button, the main screen will appear.
2. Press and hold the PRG button on the main screen, use +/- to navigate to *OPTIONS*, short press OK, use +/- to navigate to *BATTERY CHANGE [3DS]*, short press OK to confirm, this will bring you to the *START* option.

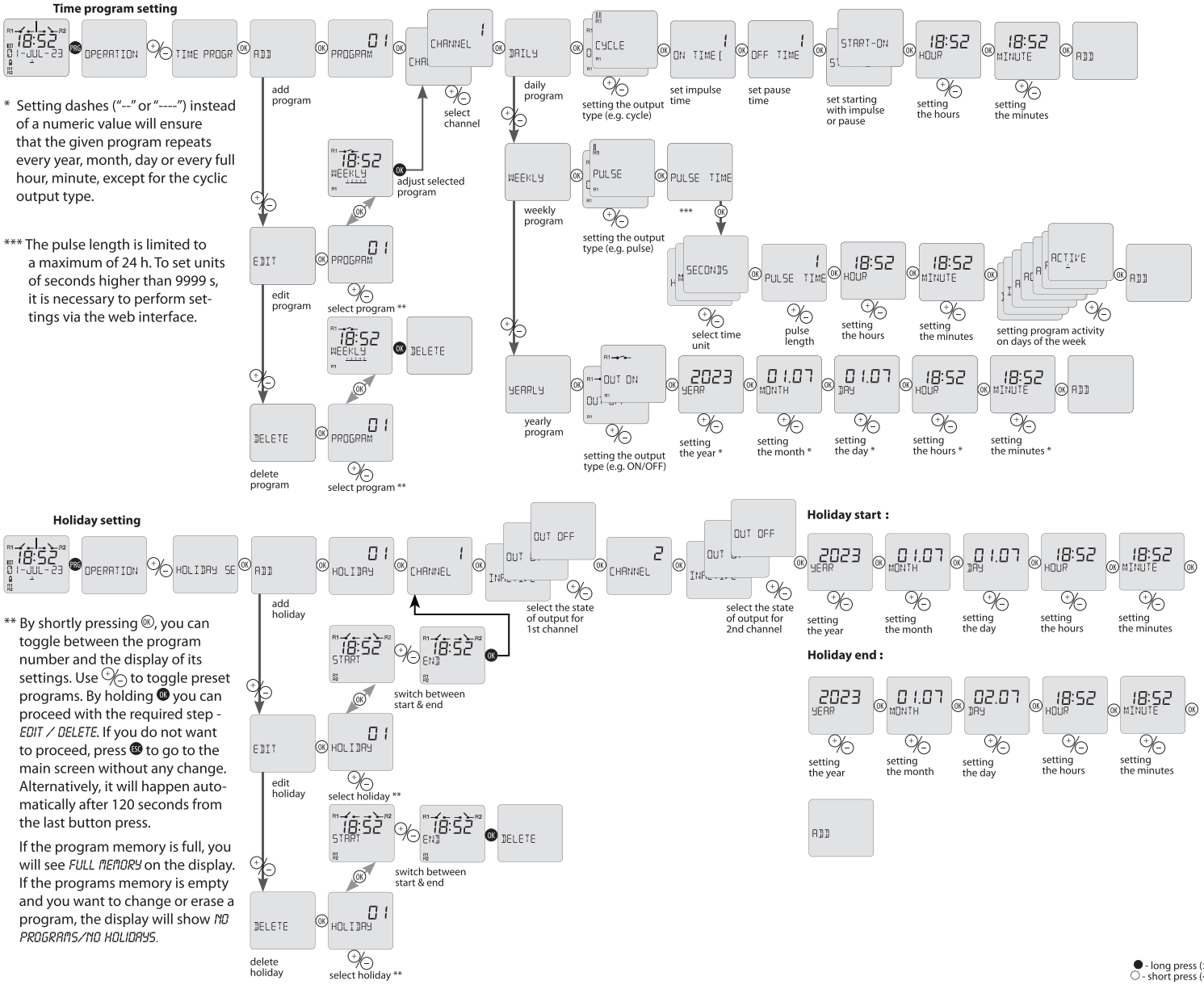
- If you are doing the replacement according to situation b., confirm the above *START* option again with the OK button. The display will show *CHANGE*. Time data has now been saved for the 30 seconds during which you replace the battery, continue with step #3.
- If you are doing the replacement according to situation c., confirm the above *START* option again with the OK button. The display will show *CHANGE*. You can disconnect in the next 2 minutes supply voltage from the mains. When the supply voltage is disconnected, time data are saved for 30 seconds, during which you replace the battery, continue with step #3.

NOTE: It is good to physically insert a new battery when the 30 second replacement interval is running out, in order to minimize the deviation of the set time.

3. slide out the *plug-in module* with the battery
4. remove the original battery
5. insert the new battery into the plug-in module from above so that it is firmly seated, the polarity of the battery (-) will slightly protrude over the edge
6. insert the plug-in module into the device as far as it will go – pay attention to the polarity (- upwards)

If you did it right, the battery symbol on the display will go out after the replacement (if the battery is fully charged) and there will be no or only a minimal deviation in the time data. To achieve repeatable and long-term running accuracy, use time synchronization via Wi-Fi connection using the web interface in the Options tab.

Time program/holiday setting



* Setting dashes ("--" or "----") instead of a numeric value will ensure that the given program repeats every year, month, day or every full hour, minute, except for the cyclic output type.

*** The pulse length is limited to a maximum of 24 h. To set units of seconds higher than 9999 s, it is necessary to perform settings via the web interface.

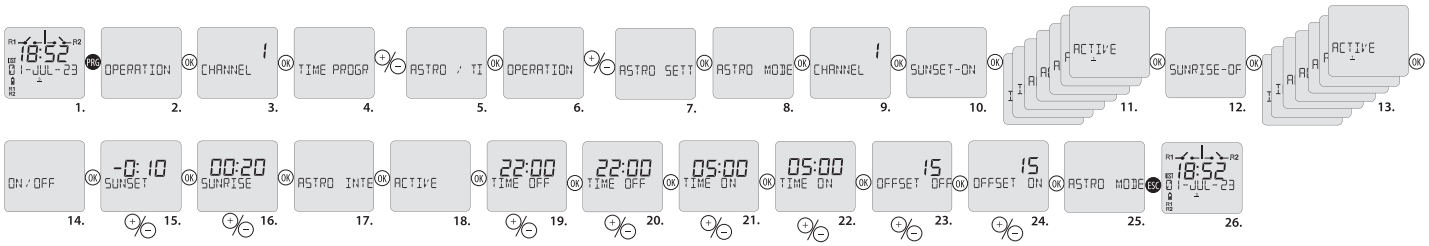
** By shortly pressing OK, you can toggle between the program number and the display of its settings. Use +/- to toggle preset programs. By holding OK you can proceed with the required step - *EDIT / DELETE*. If you do not want to proceed, press ESC to go to the main screen without any change. Alternatively, it will happen automatically after 120 seconds from the last button press.

If the program memory is full, you will see *FULL MEMORY* on the display. If the programs memory is empty and you want to change or erase a program, the display will show *NO PROGRAMS/NO HOLIDAYS*.

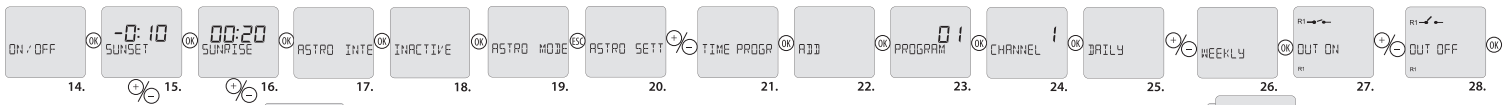
● - long press (>1s)
○ - short press (<1s)

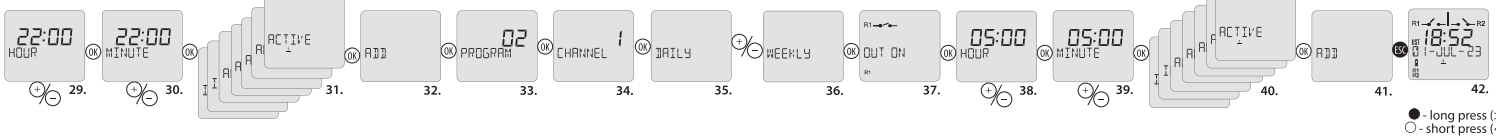
360682 programming example

Setting the 1st channel to switch ON from sunset to sunrise with an offset (deviation) of -10 min for sunset and +20 min for sunrise with night break using astro interrupt from 22:00 to 5:00 every MONDAY - FRIDAY with a 15 min offset of astro interrupt for sunset/sunrise.
<u>This configuration respects the sunrise and sunset times</u> which in this particular example setup will not allow the contact to open/close if the sunset/sunrise time has not yet occurred, while the astro interrupt offset is also respected.



Setting the 1st channel to switch ON from sunset to sunrise with an offset (deviation) of -10 min for sunset and +20 min for sunrise with night break using time programs from 22:00 to 5:00 every MONDAY - FRIDAY.
<u>This configuration does not respect the sunrise and sunset times</u>, which can cause the contact to close even when it may no longer be desirable (e.g. after sunrise).





● - long press (>1s)
○ - short press (<1s)