# theben

**EN** Astronomical time switch

## SELEKTA 171 top2 RC 24 V
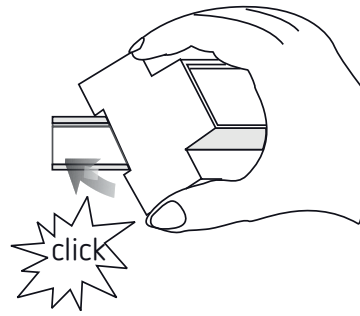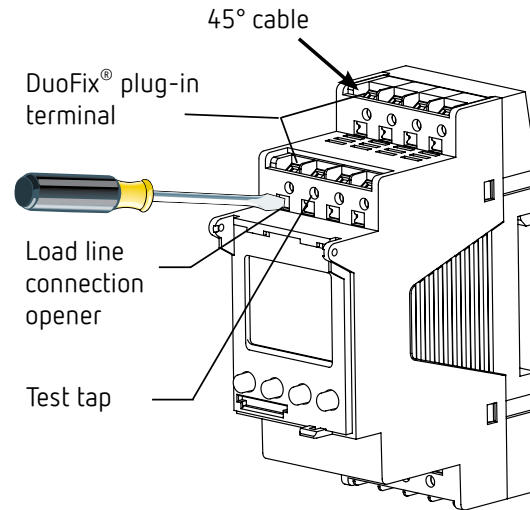1714100
## SELEKTA 172 top2 24 V
1724100

## 1. Basic safety information

> ⚠ **WARNING**
>
> **Danger of death through electric shock or fire!**
> ➢ Installation should only be carried out by a qualified electrician!

- The device is designed for installation on DIN top hat rails (in accordance with EN 60715)
- Power reserve (10 years) is reduced if memory card is inserted (using battery power)
- The device corresponds to type 1 BSTU in accordance with IEC / EN 60730-2-7
- 3 special programs with date function per channel
- Time synchronisation via connection of an external DCF antenna (SELEKTA 171 top2 RC 24 V)

⚠ OBELISK top2 memory card: Avoid mechanical stress or contamination during storage / transportation

## 2. Proper use

- The astronomical time switch is used, for instance, for lighting equipment (roads, external staircases, display windows, entrances etc.)
- Only for use in closed, dry rooms

⚠ Do not use on safety devices, e.g. escape route doors, fire safety equipment etc.

### Disposal

➢ Dispose of device in environmentally sound manner

## 3. Installation and connection

> ⚠ **WARNING**
>
> **Danger of death through electric shock or fire!**
> ➢ Installation should only be carried out by a qualified electrician!

## Mounting the time switch



click



45° cable

DuoFix® plug-in terminal

Load line connection opener

Test tap

➤ Mount on DIN top hat rail (as defined in EN 60715)
➤ Disconnect power source
➤ Ensure device cannot be switched on
➤ Check absence of voltage
➤ Earth and bypass
➤ Cover or shield any adjacent live components

## Connecting the cable

⚠

SELEKTA 171 top2 RC 24 V

SELEKTA 172 top2 24 V
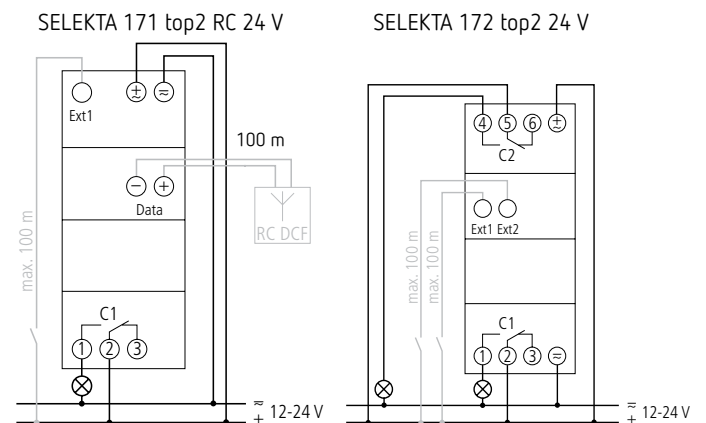
- ➤ Strip cable to 8 mm (max. 9)
- ➤ Insert cable at 45° in the open DuoFix® plug-in terminal (2 cables per terminal possible)
- ➤ Only with flexible wires: To open the DuoFix® plug-in terminal, press screwdriver downwards

## Disconnecting the cable

- ➤ Use the screwdriver to push the load line connection opener downwards
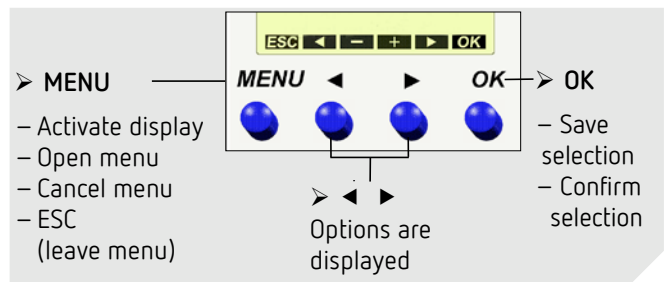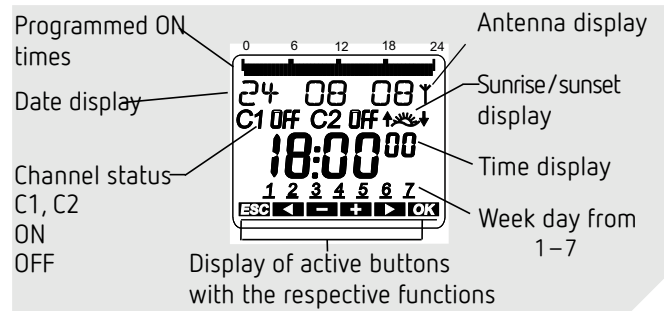
⚠️

With the SELEKTA 172 top2 24 V the type of low voltage must correspond to low voltage type of the supply voltage (SELV = SELV, PELV = PELV, FELV = FELV).

If the switch output is 230 V, the time switch can be operated using low function voltage but not SELV as supply voltage.

- ➤ Lay the control cable separately from the load conductor.

## 4.  Device description

## Display and buttons



Programmed ON times

Date display

Channel status
C1, C2
ON
OFF

Antenna display

Sunrise/sunset display

Time display

Week day from 1–7

Display of active buttons with the respective functions



➤ MENU
– Activate display
– Open menu
– Cancel menu
– ESC (leave menu)

➤ ◄ ►
Options are displayed

➤ OK
– Save selection
– Confirm selection

## Operating instructions
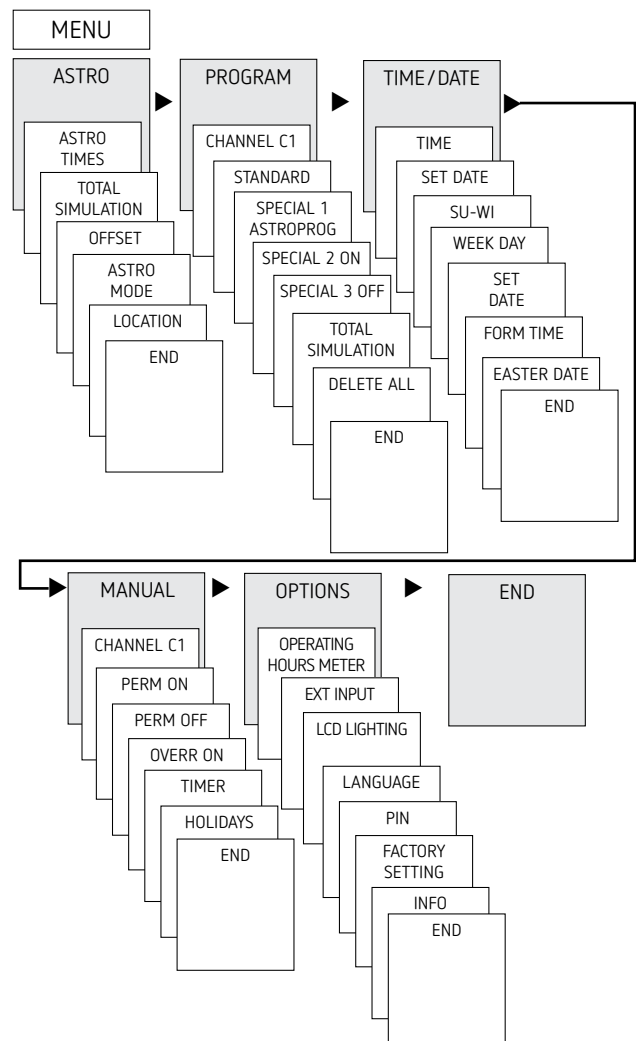
1. Read text lines
   Flashing text/symbol is a prompt

2. Make a decision

YES
Confirmation

press OK

NO
Change/select

press ◄ ►

## Overview of navigation menu



MENU

ASTRO
- ASTRO TIMES
- TOTAL SIMULATION
- OFFSET
- ASTRO MODE
- LOCATION
- END

PROGRAM
- CHANNEL C1
- STANDARD
- SPECIAL 1 ASTROPROG
- SPECIAL 2 ON
- SPECIAL 3 OFF
- TOTAL SIMULATION
- DELETE ALL
- END

TIME/DATE
- TIME
- SET DATE
- SU-WI
- WEEK DAY
- SET DATE
- FORM TIME
- EASTER DATE
- END

MANUAL
- CHANNEL C1
- PERM ON
- PERM OFF
- OVERR ON
- TIMER
- HOLIDAYS
- END

OPTIONS
- OPERATING HOURS METER
- EXT INPUT
- LCD LIGHTING
- LANGUAGE
- PIN
- FACTORY SETTING
- INFO
- END

END

## Initial operation



➤ Set language, country, town/city, date, time as well as summer/winter time (SU-WI)
➤ Press any button and follow instructions on the display (see figure).

## 5. Settings and functions

### ASTRO menu

In the ASTRO menu, astro times, complete simulation, offset, astromode and position (locations) can be queried or changed.

- Astro times
  Display of the astro times (including the offset) for the current day
- Complete simulation
  Display of the switching response with a freely selectable start date (the holiday program is not shown)
- Offset
  The offset (correction value) can be used to shift the calculated astro times by $+/-120$ min. This means that the astro turn-on and turn-off times can be adapted to local conditions (e.g. mountains, high buildings etc.) or to personal requirements.
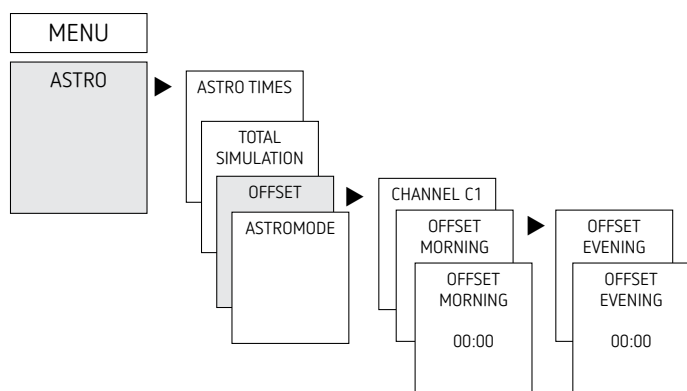
- Astromode
  – Evenings on, mornings off: At sunset it switches on, at sunrise it switches off (example: street lighting)
  – Evenings off, mornings on: At sunset it switches off, at sunrise it switches on (example: terrarium)
  – Astro not active: The astro times are ineffective (only the "fixed switching time" time switch function)
- Location
  – Set the location by selecting a town/city or via coordinates (latitude/longitude, time zone). By using the OBELISK top2 memory card or PC software, up to 10 further towns/cities (= favourites) can be added.

### Changing the astro time/location
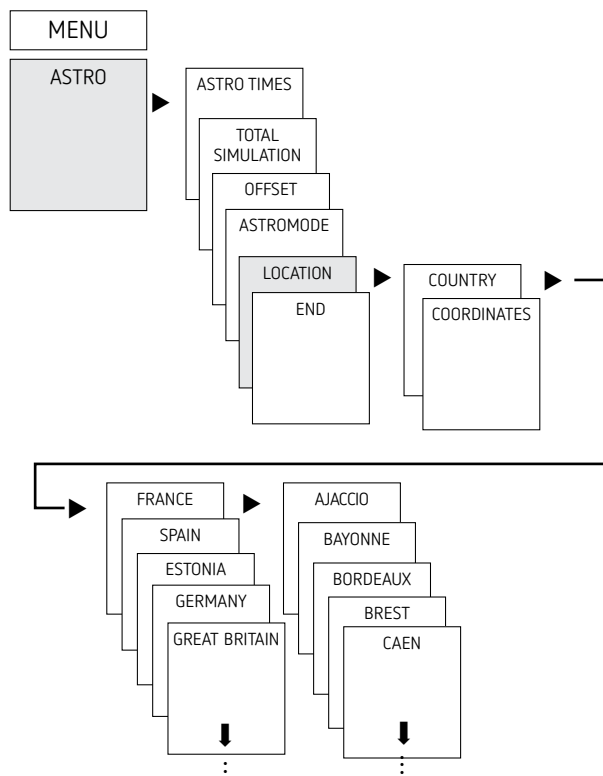


e.g. enter a different country, a different town/city
➤ Press MENU (see picture).

## Setting the offset function

```
        MENU
┌─────────────┐
│    ASTRO    │ ▶  ┌──────────────┐
│             │    │ ASTRO TIMES  │
│             │    ┌──────────────┐
│             │    │    TOTAL     │
│             │    │  SIMULATION  │
│             │    ┌──────────────┐
│             │    │   OFFSET     │ ▶ ┌──────────────┐
│             │    ┌──────────────┐   │  CHANNEL C1  │
│             │    │  ASTROMODE   │   ┌──────────────┐    ┌──────────────┐
└─────────────┘    └──────────────┘   │   OFFSET     │ ▶  │   OFFSET     │
                                       │   MORNING    │    │   EVENING    │
                                       ┌──────────────┐    ┌──────────────┐
                                       │   OFFSET     │    │   OFFSET     │
                                       │   MORNING    │    │   EVENING    │
                                       │              │    │              │
                                       │    00:00     │    │    00:00     │
                                       └──────────────┘    └──────────────┘
```

➤ Press MENU
➤ Select ASTRO and press OK to confirm
➤ Select OFFSET and press OK to confirm
➤ Select OFFSET MORNING or OFFSET EVENING and press OK to confirm
➤ Set the time and press OK to confirm

## Programming fixed switching time (e.g. in standard program)
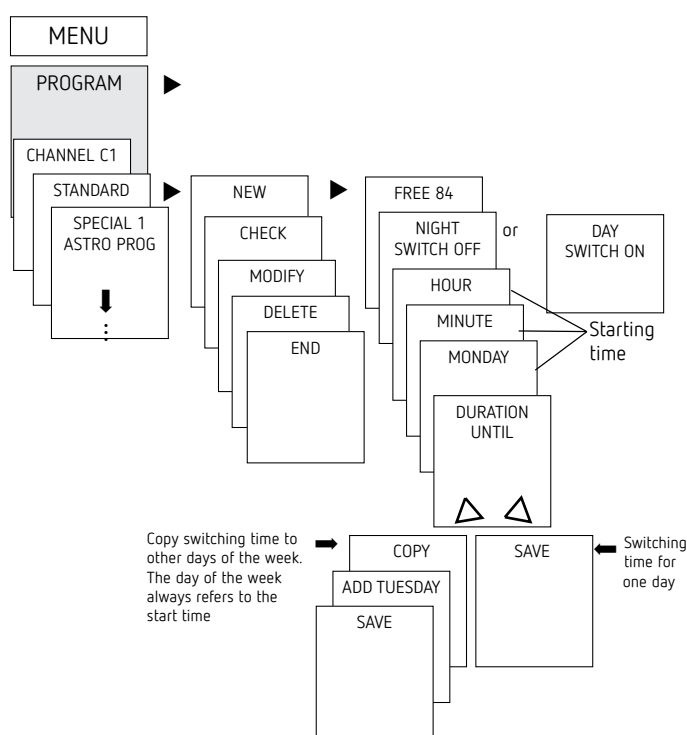


ⓘ A switching time always consists of a start time and an end time (DURATION UNTIL); e.g. night switch-off on Monday 11:00 p.m. – 05:00 a.m.

ⓘ There are 84 memory cells available

➤ Press MENU
➤ Select PROGRAM and press OK to confirm
➤ Select CHANNEL, confirm with OK
➤ Select STANDARD, confirm with OK
➤ Select NEW, confirm with OK
➤ Select NIGHT BREAK or LIGHT ON and press OK to confirm
➤ Set selected switching times (hours, minutes, day) and press OK to confirm
➤ Select COPY or SAVE
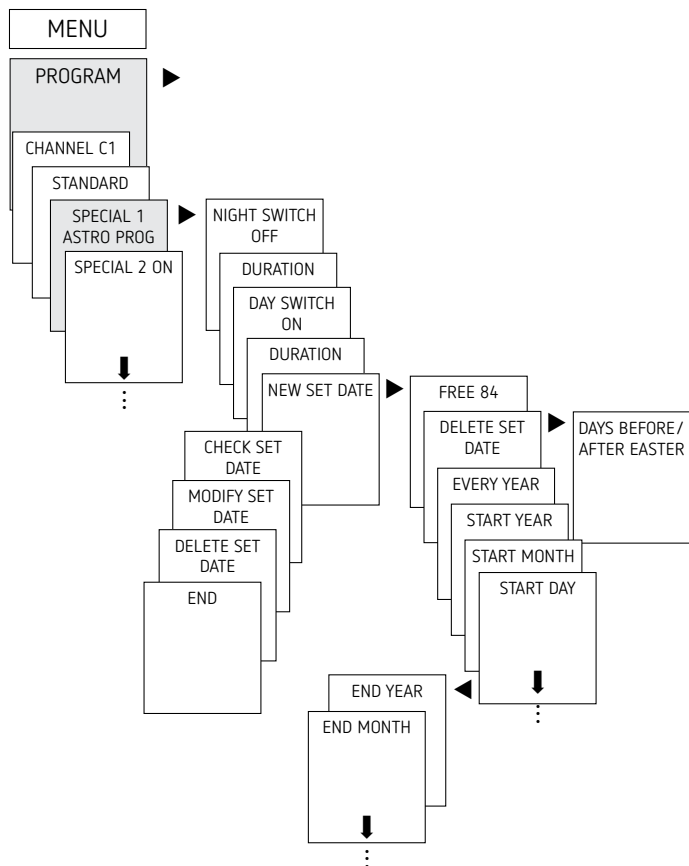➤ To save press ▶ and press OK to confirm
➤ To copy press OK

## Special programs

• The devices SELEKTA 171 top2 RC 24 V and SELEKTA 172 top2 24 V feature 3 special programs, which can be used for calendar-dependent switching.
• Each special program can be activated over one or several date areas.
• There are 3 types of date areas:
  – Fixed date area:
    e.g. starting time on 2015-04-02 at 04:00 p.m end time on 2015-04-24 at 10:00 a.m.
  – Yearly repeating date area:
    e.g. Christmas:
    starting time on 24-12 at 06:00 p.m every year end time on 26-12 at 11:00 a.m. every year
  – Date area depending on Easter:
    e.g. Whit Sunday and Whit Monday:
    starting time 49 days after Easter at 00:00 a.m every year end time: 51 days after Easter at 00:00 a.m., every year
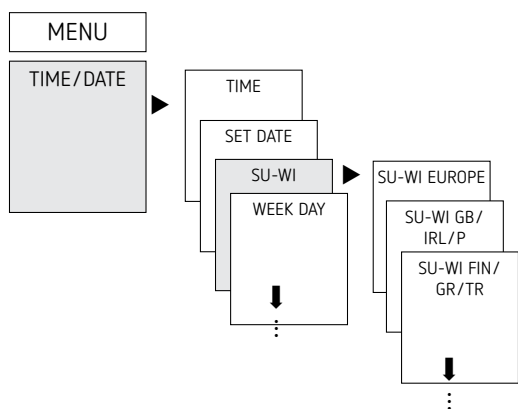
ⓘ 12:00 a.m. is programmed as 00:00 a.m. of the following day.

| Holidays depending on Easter in Germany | |
|---|---|
| **Holiday** | **days before/after Easter Sunday** |
| Carnival Monday | – 48 |
| Good Friday | – 2 |
| Easter Monday | + 1 |
| Ascension | + 39 |
| Whit Monday | + 50 |
| Corpus Christi | + 60 |

• Special program 1
  – **Astro times active**
  – Optional 1x night interruption
  – Optional 1x daytime switch on
  – Active in the programmed date areas
    **Example:** The standard program switches on street lighting depending on Astro times.
    A night interruption is programmed from 11:00 p.m. to 04:00 a.m. Special program 1 is active within the date area from April 30 , 12:00 p.m. until May 1, 12:00 p.m. Since no night interruption is programmed, the street lighting will remain on all night.
• Special program 2
  – **Perm ON**
  – Always on during the programmed date areas
    **Example:** The standard program switches on lighting of a neon advertising sign only at night. The special program switches on the neon advertising sign permanently during a promotion week from 2015-04-17, 9:00 a.m. until 2015-04-24, 6:00 p.m.
• Special program 3
  – **Perm OFF**
  – Always off during the programmed date areas
    **Example:** The standard program switches on the car park lighting in dependence of the astro times. The special program does not switch on the car park lighting on July 14 from 12:00 q.m. to July 15, 04:00 a.m.
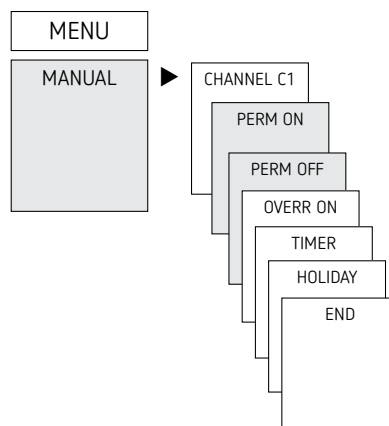
## MENU

PROGRAM ▶

CHANNEL C1
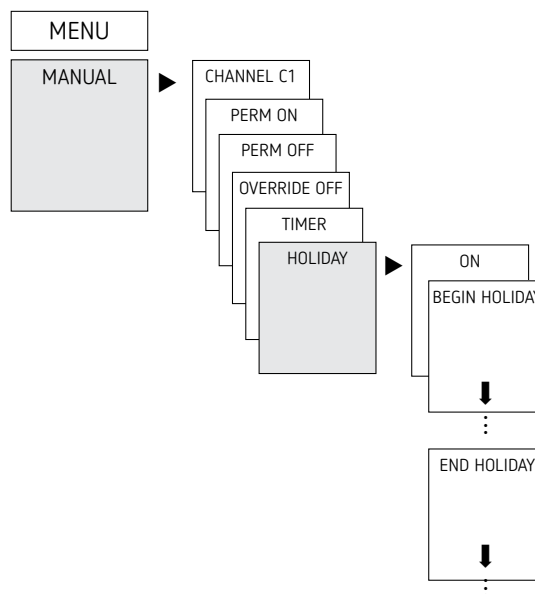
STANDARD

SPECIAL 1
ASTRO PROG ▶

SPECIAL 2 ON

⬇
⋮

NIGHT SWITCH
OFF

DURATION

DAY SWITCH
ON

DURATION

NEW SET DATE

FREE 84

DELETE SET
DATE ▶

EVERY YEAR

START YEAR

START MONTH

START DAY

⬇
⋮

DAYS BEFORE/
AFTER EASTER

CHECK SET
DATE

MODIFY SET
DATE

DELETE SET
DATE

END

END YEAR ◀

END MONTH

⬇
⋮

## Setting summer/winter time

### MENU

TIME/DATE ▶

TIME

SET DATE

SU-WI ▶

WEEK DAY

⬇
⋮

SU-WI EUROPE

SU-WI GB/
IRL/P

SU-WI FIN/
GR/TR

⬇
⋮

➤ Press MENU
➤ Select TIME/DATE and press OK to confirm
➤ Select SU-WI and press OK to confirm
➤ Select region for the SU-WI time and press OK to confirm

ⓘ If a DCF antenna is used, the SU/WI change over has still to be activated.

## Switching perm ON / OFF

### MENU

MANUAL ▶

CHANNEL C1

PERM ON

PERM OFF

OVERR ON

TIMER

HOLIDAY

END

➤ Press MENU
➤ Select MANUAL and press OK to confirm
➤ Select CHANNEL, confirm with OK
➤ Select PERM ON or PERM OFF and press OK to confirm

## Setting holiday function

### MENU

MANUAL ▶

CHANNEL C1

PERM ON

PERM OFF

OVERRIDE OFF

TIMER

HOLIDAY ▶

ON
BEGIN HOLIDAY

⬇
⋮

END HOLIDAY

⬇
⋮

➤ Press MENU
➤ Select MANUAL and press OK to confirm
➤ Select CHANNEL, confirm with OK
➤ Select HOLIDAY and press OK to confirm
➤ Select ON and press OK to confirm
➤ Select BEGIN HOLIDAY and press OK to confirm
➤ Enter YEAR, MONTH, DAY, HOUR and press OK to confirm
➤ Select END HOLIDAY and press OK to confirm
➤ Enter YEAR, MONTH, DAY, HOUR and press OK to confirm

## Setting external input

For the channel, an EXT INPUT (see figure) can be set with different functions.
3 sub-menus can be selected: not active button (function), switch (function)

- NOT ACTIVE: The external input has no function
- BUTTON: Manual (manual control), Timer (countdown timer), and staircase light timer switch are selectable

5

• SWITCH: Perm on, perm off and Astro only, Astro program are selectable

ⓘ If a function is activated via an external push button or switch, EXTERNAL is displayed.

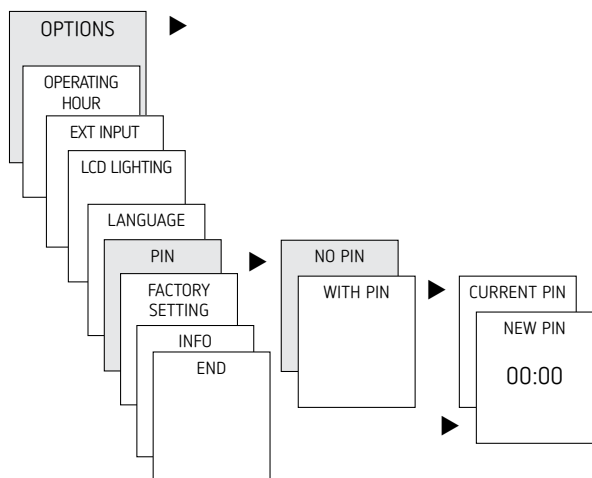➤ Press MENU, with ▶ select EXT INPUT and follow the indications on the display
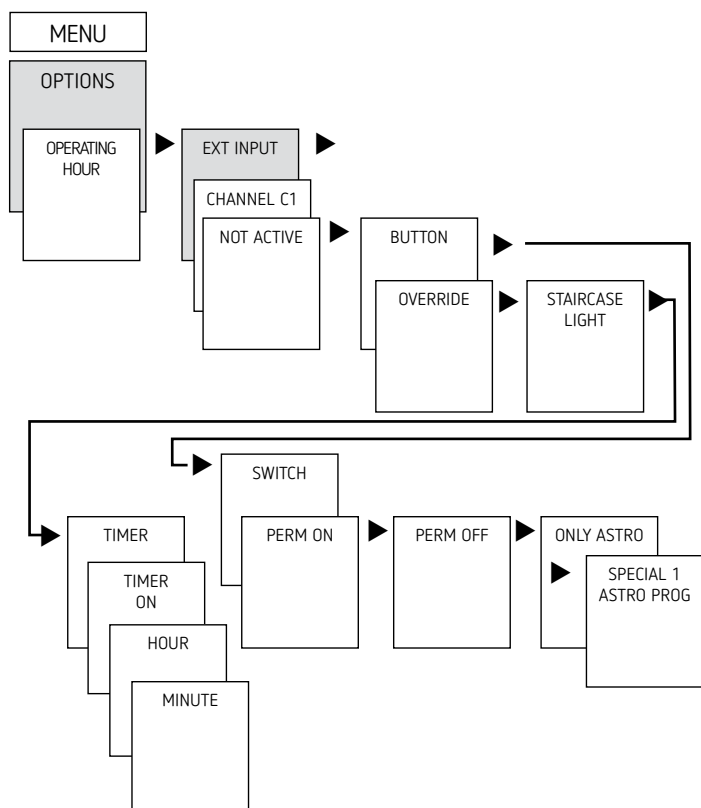


## Activating PIN code

The PIN code is set in OPTIONS via the menu.

ⓘ If you have forgotten your PIN, please call the Theben Hotline.

ⓘ Have the serial number of the device ready.



## Setting manual or permanent switching

Manual or permanent switching can be set via the menu in MANUAL or (in the automatic screen) by button combination (see picture).

• Manual control
Reversing the channel status to the next automatic or programmed switching.
• Permanent switching
As long as a permanent switching (on or off) is activated, the programmed switching times are ineffective
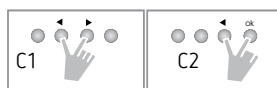


### Activating manual control
➤ Briefly press both buttons simultaneously

### Activating permanent switching
➤ Press both buttons simultaneously for 2 seconds

### Cancelling manual/permanent switching
➤ Press both buttons simultaneously

## Hour counter

The operating hours of the channel (relay) are displayed and deleted in the OPTIONS menu. If the number of operating hours exceeds the value set in the Service menu, SERVICE will appear in the display.

Example: Replacing a lamp after 5,000 h.
➤ Delete operating hours or set a higher value in Service (e.g. to 10,000 h)

## Receiving the time signal with appropriate top2 RC antenna (only with SELEKTA 171 top2 RC 24V)

ⓘ The top2 RC-DCF antenna (9070410) can be connected to the SELEKTA 171 top2 RC 24 V time switch.

ⓘ Follow the advice in the top2 RC-DCF antenna operating instructions.

ⓘ Connection to the top2 RC-DCF antenna allows the time switch to be automatically synchronised via DCF signal.

ⓘ After connecting to the power supply or resetting, the automatic display is changed to as soon as the DCF transmission signal has been received.

### Adjusting time zones

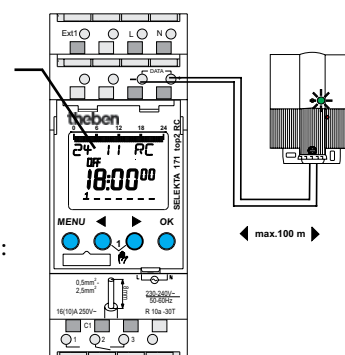After successful synchronisation, the time zone can be altered in the TIME/DATE menu.
➤ In the TIME menu (display: MODIFY HOUR) correct the applicable local time (time zone).

**DCF transmission signal reception:**
**Display:** Day + Month + RC (Radio Control)

**No reception of the DCF transmission signal**
**Display:** e.g. 24 11 07

**No connection to antenna:**
**Display:** e.g. 24 11 07

## Using the OBELISK top2 memory card

ⓘ The OBELISK top2 memory card is not included in the scope of supply of the device, but can be ordered as an accessory (9070404).

All functions can also be set on the PC using the OBELISK software and transferred to the device via the memory card.
➤ Insert memory card in the time switch
➤ Read in/out saved switching times and device setups in the time switch or start Obelisk program
➤ Remove memory card after copying etc.

⚠ Avoid mechanical overload and contamination during storage/transport
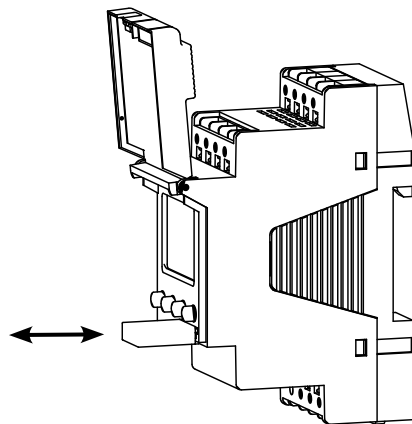


### Copying OBELISK → Time switch

This copies the switch programme and optionally all time switch settings (e.g. form time etc.) from the memory card to the time switch.
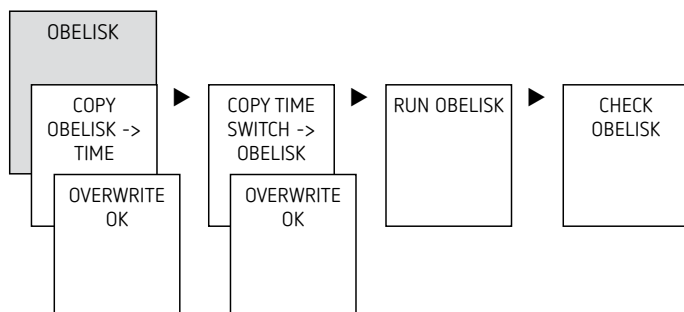
### Copying Time switch → OBELISK

Copies all switch programmes and settings from the time switch to the memory card.

### Starting OBELISK program

Takes over the switching times that are programmed on the memory card.
As soon as the memory card is removed, the switching times of the time switch are re-activated.



ⓘ The current OBELISK top2 PC software is available at www.theben.de.

## Resetting the time switch

➤ Press the 4 buttons simultaneously
 → You can choose between RETAIN PROGRAMS and DELETE PROGRAMS

## 6. Technical data

| | |
|---|---|
| Operating voltage | 12 – 24 V, 50 – 60 Hz, +10 % / − 15 %, 12 – 24 V DC, +10 % / −15 % |
| Standby | 0.9 W (1714100) 0.2 W (1724100) |
| Switching capacity max. | 16 A (at 250 V AC, cos φ = 1) |
| Switching capacity | 2 A (at 250 V AC, cos φ = 0.6) |
| Switching capacity min. | 10 mA/230 V AC 100 mA/12 V AC/DC |
| Protection rating | IP 20 in accordance with EN 60529 |
| Protection class | Protection class: II in accordance with EN 60730-1 subject to correct installation for supply with FELV and/ or mains switching |
| Protection class | III for supply with SELV and switching of SELV |
| Operating temperature | −30 °C ... +55 °C |
| Shortest switching time | 1 min. |
| Power reserve | 10 years at +20 °C |
| Time accuracy (typical) | ± 0.25 s/day (25 °C) |
| Rated impulse voltage | 4 kV |
| Pollution degree | 2 |
| Contact | Changeover contact, µ contact |
| Max. switching cycles with 16 A resistive load | 50 000 |
| Incandescent lamp load | 1000 W |
| Halogen lamp load (230 V) | 1000 W |
| Fluorescent lamps (LLB low-loss ballasts): uncompensated (230 V) series compensated (230 V) parallel compensated (230 V) | 1000 VA 1000 VA 80 W (max. 12 µF) |
| Fluorescent lamps (EB − Electronic Ballasts) (230 V) | 120 W |
| Compact fluorescent lamps (EB) | 30 W |
| LED lamps (< 2 W) | 6 W |
| LED lamps (2 W − 8 W) | 20 W |
| LED lamps (> 8 W) | 25 W |
| Corresponds to type 1 BSTU in accordance with IEC/EN 60730-2-7 or IEC/EN 60730-1 | |
| Switching of any external conductor is permitted. | |
| Approved for switching SELV and mains voltage | |

## 7. Contact