

ELKO EP, s.r.o.
 Palackého 493
 769 01 Holešov, Všetuly
 Czech Republic
 Tel.: +420 573 514 211
 e-mail: elko@elkoep.com
 www.elkoep.com

Made in Czech Republic

02-71/2017 Rev.: 2



SHT-1, SHT-1/2, SHT-3, SHT-3/2

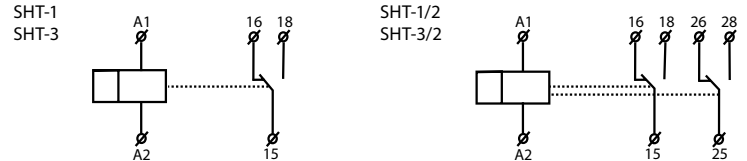
Digital time switch clock



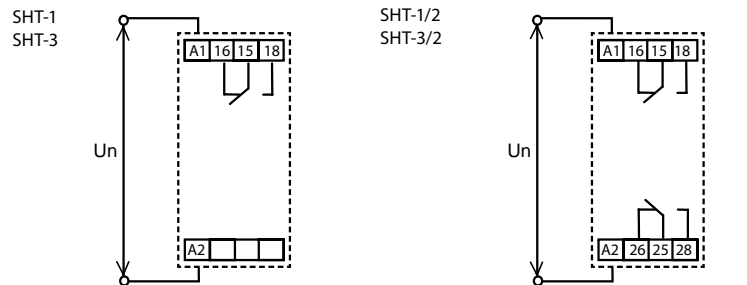
Characteristics

- Serves for controlling of various types of appliances in dependence on real time (automation-switching of heating, pumps, ventilation etc.). Appliances can be operated in concrete periodic time cycles or according a pre-set program (depends on type, see the chart Versions of time switches).
- SHT-1, SHT-3: 1-channel version.
- SHT-1/2, SHT-3/2: 2-channel version (to each channel can be assigned an individual program).
- Possibility to control two independent circuits.
- By SHT-3, SHT-3/2 is not possible to integrate daily and night mode on one channel. By SHT-3/2 is possible to set a different mode on each channel.
- Setting of switching by:
 - program (*PROG*) - switching according programs set in **SET 1**. Possibility to set the repeat every minute or every hour.
 - random (*AUTO*) - random switching in 10-120 min interval.
 - permanently manually .
- Switching modes (*OUT*):
 - *OUT ON* - normal - 2 positions in memory (close /open), shortest time of closing is 1 min.
 - *OUT ON* - cyclic - 2 positions in memory (pulse/delay), range 1-99s.
 - *OUT ON* - pulse - 1 position in memory, range 1-99s.
 - *OUT OFF* - turn off the switching mode.
- Set time of pulse/delay is on one channel the same for all programs (it is not possible to set more pulses with different durations on one channel).
- "Holiday mode - possibility to choose the period, when the device will be not switching according a standard program and will be blocked for the pre-set time.
- 100 memory positions (by SHT-1/2 and SHT-3/2 are those 100 positions common for both channels).
- Programming of device can be realize even under voltage and also even in back-up mode.
- Output relays operates only under voltage.
- Automatic change-over between summer/winter time (setting is for time zone GMT+1:00).
- Back-lighted LCD display.
- Easy and quick setting by 4 control buttons.
- Sealable transparent cover of the front panel.
- Time switch is back-up with in-built lithium element, which saves data during voltage failure. Back-up time reserve - up to 3 years.
- Supply voltage: AC 230V or AC/DC 12-240V.
- 2-Module, DIN rail mounting, saddle terminals.
- Device is delivered with pre-programmed actual time, which is permanently displayed also in back-up mode.

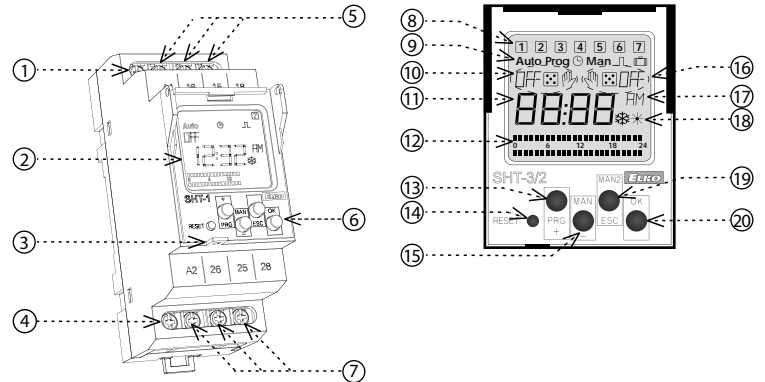
Symbol



Connection



Description



1. Supply voltage terminal (A1)
2. Display with back-light
3. Place for seal
4. Supply voltage terminal (A2)
5. Output - channel 1 (16-15-18)
6. Control buttons
7. Output - channel 2 (26-25-28)
8. Indicates the day in the week
9. Operating modes indication
10. Indication (1st channel)
11. Indication of time/date/setting menu
12. Bargraf
13. Control button PRG / +
14. Reset

15. Control button MAN1 / -
16. Indication (2nd channel)
17. Indicates 12 / 24 mode
18. Indicates summer / winter mode
19. Control button MAN2 / ESC
20. Control button OK

CONTROL OF A DISPLAY WITH BACKLIGHT
 Display is illuminated with a back-light for 10 s from last button press. Permanent on / off is activated by synchronic press of buttons MAN, ESC, OK. After permanent on/off activation, display will flash shortly.

Type of load	$\cos \varphi \geq 0.95$								
Mat. contacts AgSnO ₂ , contact 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									
Mat. contacts AgSnO ₂ , contact 16A	x	250V / 6A	250V / 6A	24V / 10A	24V / 3A	24V / 2A	24V / 6A	24V / 2A	x

Technical parameters

SHT-1 SHT-3 SHT-1/2 SHT-3/2

Supply terminals:	A1 - A2
Supply voltage:	AC/DC 12-240V (AC 50-60Hz)
Consumption:	AC 0.5 - 2VA / DC 0.4 - 2W
Supply voltage:	AC 230V / 50 - 60Hz
Consumption:	AC max. 14VA / 2W
Supply voltage tolerance:	-15 %; +10 %
Real time back-up:	yes
Summer/winter time:	automatic

Output:

Number of contacts:	1 x changeover (AgSnO ₂) 2 x changeover (AgSnO ₂)
Rated current:	16A / AC1
Switching capacity:	4000 VA / AC1, 384W / DC
Peak current:	30A / <3s
Switching voltage:	250V AC1 / 24V DC
Mechanical life:	> 3x10 ⁷
Electrical life (AC1):	> 0.7x10 ⁵

Time circuit

Real time back-up when de-energi.:	up to 3 years
Accuracy:	max. ±1s / day at 23°C
Minimum interval:	1 min.
Data stored for:	min. 10 years
Cyclic output:	1-99s
Pulse output:	1-99s

Program circuit

Number of memory places:	100
Program (SHT-1, SHT-1/2):	daily, weekly
Program (SHT-3, SHT-3/2):	daily, weekly, monthly, yearly (up to year 2095)
Data readout:	LCD display, with back light

Other information

Operating temperature:	-20.. +55 °C
Storage temperature:	-30.. +70 °C
Electrical strength:	4 kV (supply - output)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP10 clips, IP40 from front panel
Overvoltage category:	III.
Pollution degree:	2
Max. cable size (mm ²):	solid wire max. 2x 2.5 or 1x 4 with sleeve max. 1x 2.5 or 2x 1.5
Dimensions:	90 x 35.6 x 64 mm
Weight	
- SHT-1, SHT-3:	(UNI)-130 g, (230)-110 g
- SHT-1/2, SHT-3/2:	(UNI)-143 g, (230)-125 g
Standards:	EN 61812-1, EN 61010-1

Warning

Device is constructed for connection in 1-phase main alternating current voltage and must be installed according to norms valid in the state of application. Connection according to the details in this direction. Installation, connection, setting and servicing should be installed by qualified electrician staff only, who has learnt these instruction and functions of the device. This device contains protection against overvoltage peaks and disturbances in supply. For correct function of the protection of this device there must be suitable protections of higher degree (A, B, C) installed in front of them. According to standards elimination of disturbances must be ensured. Before installation the main switch must be in position "OFF" and the device should be de-energized. Don't install the device to sources of excessive electro-magnetic interference. By correct installation ensure ideal air circulation so in case of permanent operation and higher ambient temperature the maximal operating temperature of the device is not exceeded. For installation and setting use screw-driver cca 2 mm. The device is fully-electronic - installation should be carried out according to this fact. Non-problematic function depends also on the way of transportation, storing and handling. In case of any signs of destruction, deformation, non-function or missing part, don't install and claim at your seller it is possible to dismount the device after its lifetime, recycle, or store in protective dump.

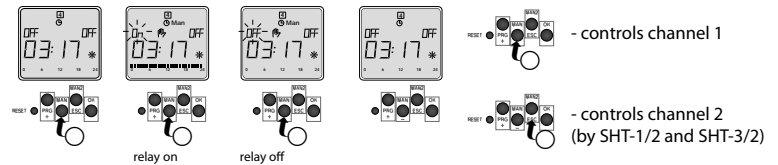
Versions of time switches

Type of product	output		time program			
	1 channel	2 channels	day	week	month	year
SHT-1	•		•	•		
SHT-1/2		•	•	•		
SHT-3	•		•	•	•	•
SHT-3/2		•	•	•	•	•

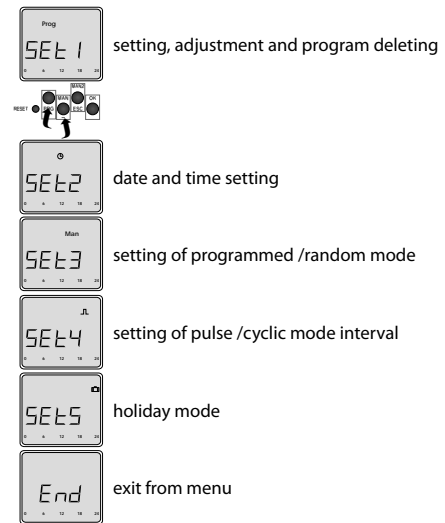
Mode precedence

Precedence of controlling modes	display	output mode
highest priority of controlling mode	▶▶▶▶▶ ON / OFF	manual control
▶▶▶▶▶	ON / OFF	holiday mode
▶▶▶▶	ON / OFF AUTO	random mode for switching
▶▶▶	ON / OFF	pulse-cyclic mode
▶▶	ON / OFF	normal mode Prog
lowest priority of controlling mode	▶ ON / OFF	

Manual output control - is superior to other set modes



Control

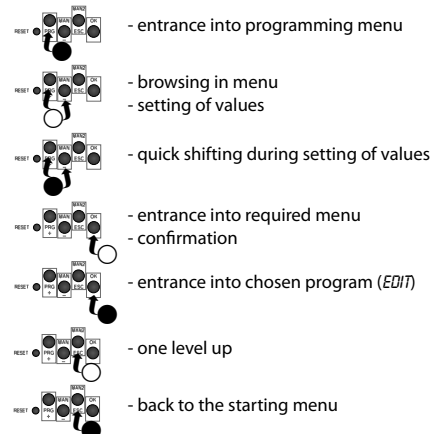


Device differs short and long button press. In the manual marked as:

○ - short button press (<1s)

● - long button press (>1s)

①/② - number indicates button press sequence



After 30s of inactivity (from the last press of any button) will device automatically returns into starting menu.

SET 1 Program setting

ADD - add a new program

by SHT1/2 and SHT3/2 - selection of channel

by SHT-3 and SHT-3/2 - selection of daily / night mode

OUT - setting of switching mode
 - **OUT ON** - normal
 - **OUT ON $\frac{1}{2}$** - cyclic
 - **OUT ON $\frac{1}{2}$ $\frac{1}{2}$** - pulse
 - **OUT OFF** - turn off the switching mode

only by yearly mode: setting of year, month and day

setting of hour and minute of program start / end *

only by daily mode: **ON/OFF** - setting of the program activity in concrete day of the week

If the program memory is full, display announces it by notice **FULL**.

* If "- -" (2 dashes) is set as the hour or minute value instead of a numerical value, the start / end of the program will be repeated every hour or every minute.

Program adjustment

EDIT - adjustment of already saved programs

selection / entrance into chosen program

- by SHT-1/2 and SHT-3/2 selection / adjustment of channel

- by SHT-3 and SHT-3/2 selection / adjustment of set mode

OUT - selection / adjustment of switching mode

only by yearly mode: adjusting of date (year, month and day)

time adjustment (hours / minutes)

only by daily mode: **ON/OFF** - selection / adjustment of program activity in concrete day of the week

Program deleting

DEL - deleting of individual programs

program selection - long press **OK** - deleting of chosen program

Deleting of all programs

in starting menu (time is shown on display) - press simultaneously button **PROG** and **OK** and display announces a notice **ALL**

press button **OK** to complete the deleting of all set programs

SET 2 Date and time setting

year setting

month setting

day setting

setting of time in 24 or 12 hour format

hour setting

minutes setting

activation of changeover between summer/winter time

SET 3 Setting of programmed / random mode

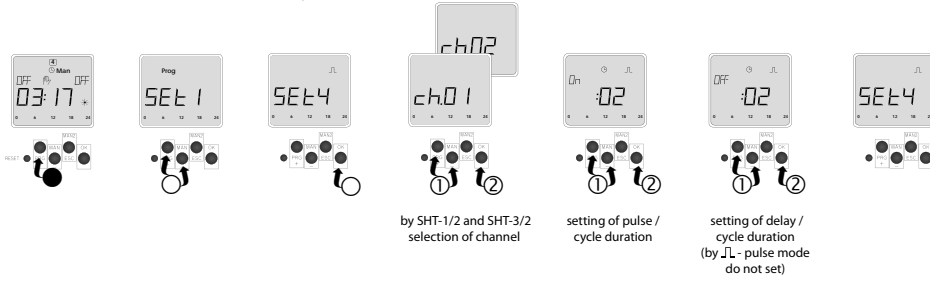
by SHT-1/2 and SHT-3/2 - selection of channel

PROG - relay is switching according programs set in menu **SET 1**

AUTO - relay is switching randomly in 10-120 min interval

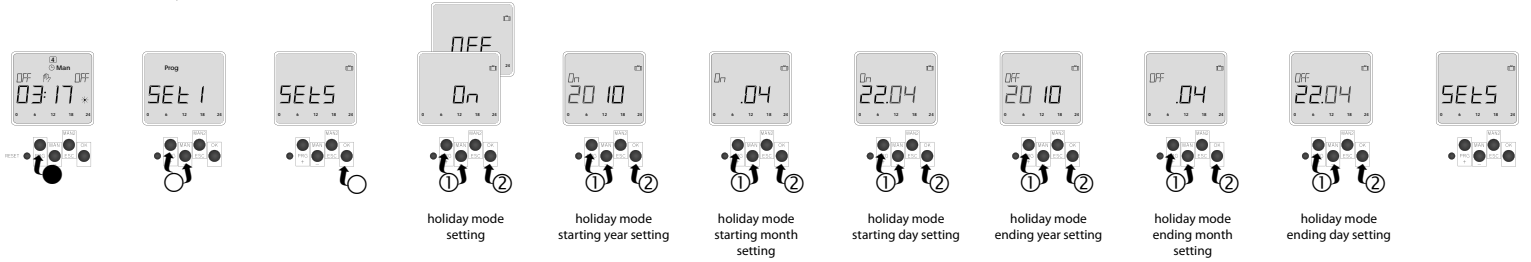
In starting mode by chosen channel flashes symbol **PROG** or **AUTO** on display (automatically preset switching according **PROG**).

SET 4 Setting of pulse / cyclic mode interval



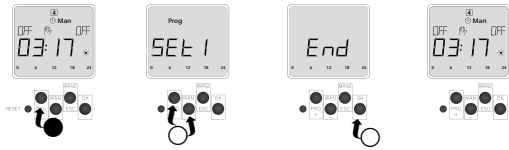
Setting of time of pulse / cyclic mode switching is realized by **SET 1**.

SET 5 Holiday mode

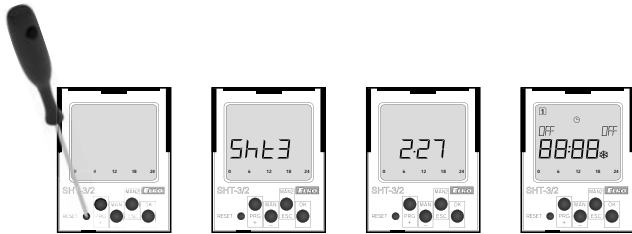


In the starting mode during the activation of holiday mode, flashes symbol **■** on display.

END Exit from menu - return to the starting mode



Reset



Activated by, covered RESET button, short press with blunt spike (with max. 2 mm diameter).

After press, information about type of device and firmware version will displayed for 3 s and then device performs in starting mode.

Reset will delete an actual time, set time of pulse/cyclic mode and all temporary functions (manual or random switch output).

Reset will save all set programs.

Example of programming

Setting of SHT-3/2 to be activated from Monday till Friday at 8:00 by program 0 (Pr 00), and deactivated from Monday till Friday at 16:30 by program 1 (Pr 01).

