Digital time switch STS-2DW
- two channel -
with daily and weekly program

Operating manual

Switchtec Ltd
Brooms Road
Stone Business Park
Stone
Staffordshire
ST15 0SH

Tel.: 01785 818600
Fax: 01785 811900
http://www.switchtec.co.uk
E-mail: sales@switchtec.co.uk

Thank you for buying this device. As a reward for your confidence you will get hight technical and functional features, which are provided by this product. We believe that this manual will help you to get familiar with this product.

---

1. Before you start…

Before you start working and programming this time switch, read carefully the following instructions. Thus you avoid possible difficulties and you will better understand the structure of this manual.
1. Only 4 control buttons were chosen for easy and fast setting.
2. There is a difference between a short pressing and long holding of the button. Each button pressing (<1s) is indicated in the manual as(OK) + description of the actual button, holding for longer than (>1s) is indicated in the manual as **OK**.
3. The time is displayed in 24-hour or 12-hour format.
4. The time switch is backed-up by a built-in Lithium battery, which is saving data in case of power failure. Back-up of function - see the technical parameters pg. 15.
5. Fast movement - to set the valume buttons. ➕ / ➖ the fast movement is possible by holding the button..

⚠ WARNING

The device is made to be connected to 1-phase net of alternating / direct voltage and must be installed in accordance with rules and standards applicable in the particular country. The instalation, connecting, setting and handling can be done only by a person with the adequate electromachanical qualification, who is well informed about the function of this device and the manual.
There are over-voltage protections and protections agains the disturbing pulses in the supply net in this device. To get the right function of these protections there must be also appropriate protections of higher rank (A,B,C) and also , in accordance with the standards shielding of the switched devices (contactors, engines, inductive load, etc.). Before you start with instalation itself, make sure that the device is not energized and that the main switch is in possition "OFF"
Do not instal the device to the sources of excessive electromagnetic disturbances. Assure an excellent circulation of the air by correct instalation so the maximal operating temperature of the device is not surpassed even in case of permanent operation and higher temperature of the surrounding. To instal and set, use a screwdriver with dimension 2 mm. Be aware of the fact that it is a fully electronical device while handling it.
Not problematic function of the device depends on the transport, storing and handling. If you find any marks of demage or missing part or if the device seems not oparational, do not instal this device and claim the warranty at your distributore. After the end of durability of the device it must be stored in protective waste dump.
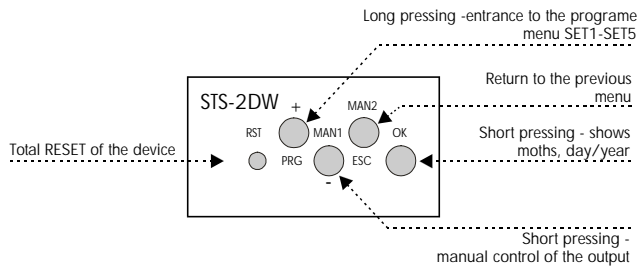
---

2. Features of the device

The time switch is designed and produced to be in accordance with world quality and safety standards. When comparing this device with similar products there are few important changes which lead to high operational possibilities and technical level.

Features of the device:

➤ two-channel version, 2-modul, mounting on DIN rail, terminals

➤ daily and weekly program in one device

➤ power supply AC 230 V or AC/DC 12-240 V

➤ is used to control different appliencies in the real time, the appliencies can be controlled in regular time cycles in the course of a day and week

➤ operational modes: according to the program/ permanently by hand/ random/holiday program

➤ automatically switches from summer to winter time (possible to block out)

➤ sealed transparent cover of the front pannel

➤ 100 memory places, illuminated LCD display, min. step 1 s

➤ operational backup - up to 3 years
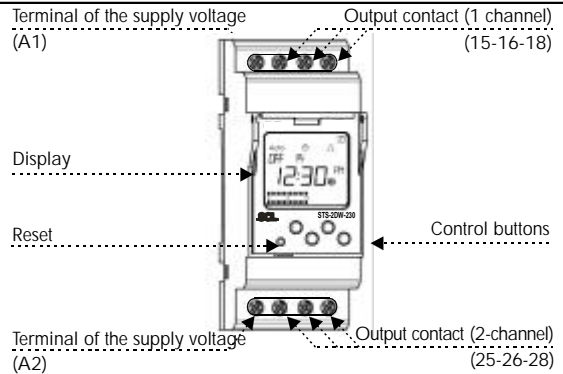
➤ pulse and cyclic output (chapter 11)
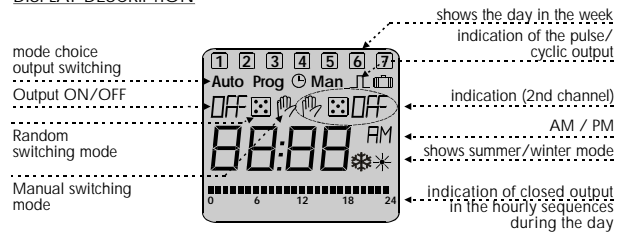
3. Description of the control buttons and modes

Long pressing -entrance to the program menu SET1-SET5

Return to the previous menu

Short pressing - shows moths, day/year

Total RESET of the device

STS-2DW

Short pressing - manual control of the output

button	ORIGINAL MODE		PROGRAMING MODE	
	SHORTLY ○	LONG ●	SHORTLY ○	LONG ●
+ PRG		entrance to the program	upwards	fast upwards
- MAN1	Manual mode 1 channel		downwards	fast downwards
MAN2 ESC	Manual mode 2 channel		one level up	entrance to the start mode
OK	searching date/year		confirm	

-5-

4. Description of the device

Terminal of the supply voltage (A1)

Output contact (1 channel) (15-16-18)

Display

Control buttons

Reset

Terminal of the supply voltage (A2)

Output contact (2-channel) (25-26-28)

DISPLAY DESCRIPTION

mode choice output switching

Output ON/OFF

Random switching mode

Manual switching mode

shows the day in the week indication of the pulse/ cyclic output

indication (2nd channel)

AM / PM

shows summer/winter mode

indication of closed output in the hourly sequences during the day

-6-

5. How to put it into operation

The device is sold with pre-programed real time in economical mode.If you press any button for 2 seconds (with no supply) the real pre-set time will show
It is not possible to control the relay output in economical mode.
After the supply is connected to the device, the figures are shown on the display permanently and the device functions normally.

Illumination
The standard illumination of the display is set for 10 seconds from the last pressing of any button. Permanent ON/OFF can be done by long pressing of buttons together **ESC MAN OK**. After activation of permanent ON/OFF of display illumination, the display shortly flicker.
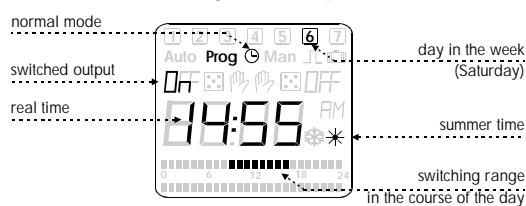
Reset of the device
Reset of the device is done by a hidden button (RST) using not sharp pin (for example by a pen) with the diameter not bigger than 2 mm. After a short pressing of this button, the type of the device is shown for 3 sec.(SHT-1), version firmware and then the device will switch into the starting mode . Reset will delete the real time, the set time of the pulse/ cyclic mode and all the temporary functions (manually or accidently switched output). Reset keeps the set programs..

Switching into a programming mode
is done by a long pressing of the button (PRG). Then by short pressing (PRG) get in menu from SET1 to SET5 (see the chapter 12). Entrance into the particular menu by the button (OK). If the device is not operated for 20 sec, the device will switch itself into the previous menu.

Starting mode (example)

normal mode

switched output

real time

day in the week (Saturday)

summer time

switching range in the course of the day

-7-

6. Program setting - Prog
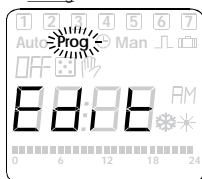

1) (PRG) => SEt 1 (Prog flashes)

2) (OK) => Add (add a new program)

3) (OK) => Pr.04 (information about the number of the new program)

4) (OK) => CH01 - choice of channel

5) (OK) => Out - choice of the output mode (see chapter11)

normal (On/Off) - symbol doesn't show

pulse - symbol shows ⎍

pulse - symbol is shown ⎍

6) (OK) => hour setting, but flashes (+) (−)

7) (OK) => minute setting, but. (+) / (−)

8) (OK) => day in the week setting, but. (+) / (−)

9) (OK) => if there is ON mode, the programme is activ for that day

10) (OK) => saving into the memory and return to the step 2

If the memory is full, FULL is shown.

-8-

7. Editing / Delete of the programs

Editing

1) **PRG** => SEt 1 (Prog flashes)
2) **OK** => Add
3) **OK** => Edit - program editing
4) **OK** => entrance to the program position of No. 00 but.
   ⊕ / ⊖ possible to move between programs
5) **Esc** => choice of the dispay: - program number
   - program time
6) **OK** => confirm the chosen program for editing
   Then continue as described in chapter6
   (Setting the program) step 4-6
7) **Esc** => back to menu EDIT
   If no program is stored, FREE is shown.

Deleting of programs:

1) **PRG** => SEt 1 (Prog is flashing)
2) **OK** => Add
3) 2x **PRG** => DEL
4) **OK** => entrance to the program position of No. 00 but.
   ⊕ / ⊖ possible to move between programs
5) **Esc** => choice of the display: - program number
   - program time
6) **OK** => delete the program
   A reset of all programmes is possible only from starting mode.
   **PRG** **OK** => The display shows ALL. Confirm by button **OK** .

Deletes all programs:

8. Setting the date and time 🕐

1) **PRG** => SEt 1
2) **PRG** => SEt 2
3) **OK** => year setting but. ⊕ / ⊖
4) **OK** => day setting but. ⊕ / ⊖
5) **OK** => month setting but. ⊕ / ⊖
6) **OK** => setting the format of program (12h / 24h)
7) **OK** => hour setting but. ⊕ / ⊖
8) **OK** => minute setting but. ⊕ / ⊖
9) **OK** => switching from summer/winter time ON -
   (automatical switching activated)
10) **OK** => saves the setting and returns to mode SET2
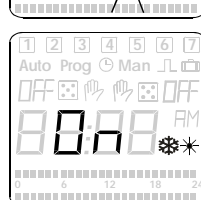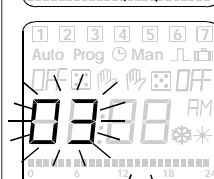
Since this time the set time starts
If you use non existing date, ERR is shown.

Switching summer/winter time is blocked out.

9. Random switching choice ⚄

Mode the CUBE - random switching of the output in the range from 10 to 120 min.
Example of use: it is mainly for not regular switching of appliencies(for ex. light), which simulates presents of people in the house.

Random switching mode
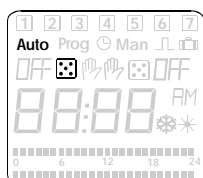
1) **PRG** => SEt 1
2) 2x **PRG** => SET3, Symbol Man flashes
3) **OK** => CH01 - choice of channel
4) **OK** => mode Prog, but. ⊕ / ⊖ choose ⚄
5) **OK** => confirmation and return to the starting

During the activation in the starting mode, the function symbol ⚄ flashes

10. Manual switching of the output ✋

The output can be permanently switched on or off by short pressing of the button **MAN1** or **MAN2** in the starting mode1 or 2. It is indicated on the display by ON/OFF and symbol ✋ . The manual control is superior to the programs.

11. Cyclic /pulse output setting ⊓

This choice is activated in the program setting chapter 6, step 4.

Normal mode
The output is switched according to the set time in a program.

Cyclic mode
Works the same way as the "normal mode" but the output cycles in below set times.
Example of use: regular ventilation in set time and particulat interval,
advertisement flashing for example in the nighttime and so on.

Pulse mode
In the moment the program starts, it switches for the time set below.
Example of use: system of integrated time (central clock), where the clock moves minute by minute by the defined pulse, schoolbell.
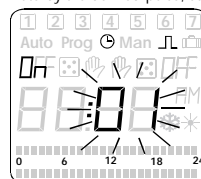
1) **PRG** => SEt 1
2) 3x **PRG** => SET4
3) **OK** => CH01 - choice of channel
4) **OK** => setting of the switching period On (pulse)
5) **OK** => setting of the time to switch OFF
6) **OK** => confirmation and return to menu SET4
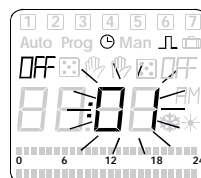
The time is possible to be set 1-99s.
For the pulse output the lenght of the pulse is defined by parameter ON (step 3).

12. Setting the holiday mode

The holiday mode is to block the program and random mode the output will be permanently switched Off) without having to change the programs or the switch the device off.
It is necessary to set the begining and end of the period during which we require the holiday mode.
Example for use:holiday, service and so on.
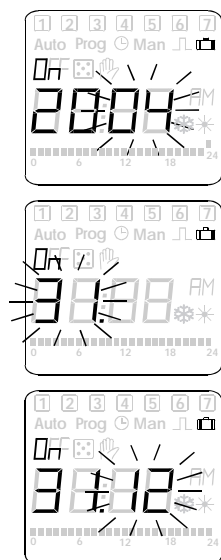
1) PRG => SEt 1
2) 4x PRG => SET5
3) OK => activates the chosen holiday mode
ON/OFF. If it is OFF, return to menu SET5.
4) OK => sets the year of the beginig of the holiday mode.
5) OK => sets the begining day
6) OK => sets the begining month
7) OK => sets the end year and end of the holiday program.
8) OK => set the end day
9) OK => sets the end month
10) OK => saving and return to menu SET5

-13-

13. Menu layout

Sets the programs **Prog**
SEt1
— Add => adds a new program
— Edit => edits the current program
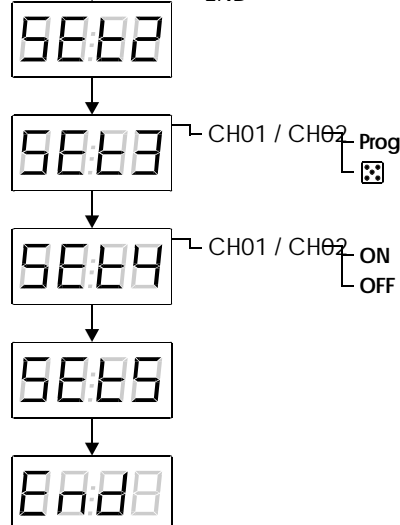— Del => deletes program
— END => ends and returns to mode SET1

Sets day and time 🕐
SEt2

Sets the mode **Man**
SEt3 — CH01 / CH02 **Prog** 🎲

Sets the pulse/cyclic output
SEt4 — CH01 / CH02 **ON** — **OFF**

Sets the holiday mode
SEt5

End
End

-14-

14. Technical parameters STS-2DW

|		
Supply terminals:		A1 - A2
Supply voltage:	UNI	AC/DC 12 - 240 V (AC 50 - 60 Hz)
Consumption		AC 0.5 - 2 VA / DC 0.4 - 2 W
Supply voltage:	230	AC 230 V / 50 - 60 Hz
Consumption		AC max. 14 VA / 2 W
Tolerance of the supply voltage:		-15 %; +10 %
The real time saving:		yes
Transmission to summer /winter time:		automatic(possible to cancel)
Output (both channels)		
Number of contacts:		1x changeover (AgSnO$_2$)
Rated current:		16 A / AC1
Switching capacity:		4000 VA / AC1, 384 W / DC
Peak current:		30 A / <3 s
Switching voltage:		250 V AC1 / 24 V DC
Min. switching capacity DC:		500 mW
Mechanical durability:		>3x10^7
Electric durability (AC1):		> 0.7x10^5
Time cycle		
Operational backup during the power failure:		up to 3 years
Accuracy of the operating:		max. +/- 1 s day at 20 ^{o}C
Min. switching time (normal mode):		1 min
Min. pulse switching time(pulse mode):		1 s

-15-

14. Technical parameters of STS-2DW

Min. switching time for cycle(cyc. mode):	2 s
Time of program data storing:	min. 10years
Number of memory places:	100
Program:	setting daily/weekly
information :	LCD display illuminated
Other information:	
Operational temperature:	-10 .. +55 ^{o}C
Storing temperature:	-30 .. +70 ^{o}C
Electric compactness:	4 kV (supply-output)
Operational position:	random
Mounting:	DIN rail EN 60715
Cover:	IP 20
Overvoltage cathegory:	III.
Pollution level:	2
Connecting wire profile:	without cavern max. 2x1.5 mm^2, 2x2.5 mm^2 with cavern max. 2x1.5 mm^2, 1x2.5 mm^2
Dimension:	90 x 35.6 x 64 mm
Weight:	UNI - 137 g, 230 - 119 g
Applying standards:	EN 61812-1, EN 61010-1

Information about this product can be also found on :
www.elkoep.cz/sht1e.htm

-16-

15. Mode priorities

HIGHEST

⇨ MANUAL

⇨ HOLIDAY

⇨ RANDOM

⇨ PROGRAMMED
(NORMAL MODE)

LOWEST
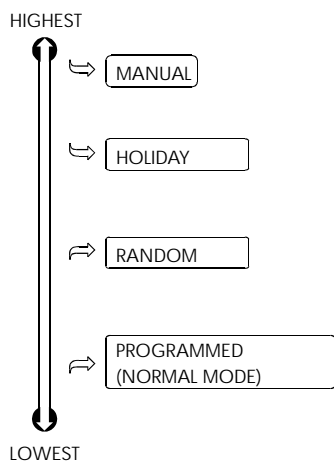
16. Example of use for STS-2DW

- serves to control all appliancies in a real time. The appliances can be controlled in certain regular time cycles or according to the set program
- in combination with other devices can be achieved combined controlling (ventilation of rooms, control of irrigation, schoolbell control, church bells…)

L

N
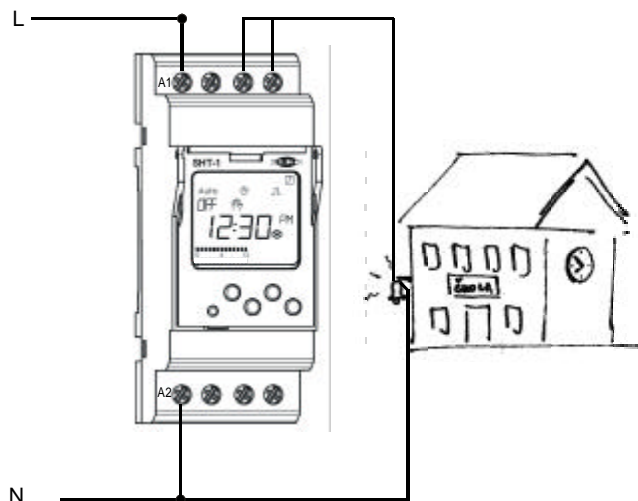
17. Certificate of warranty

The warranty period on this device is 24moths from purchase.
If there is a breakdown of the device within the warranty which is not caused by the user gives the user a right for the free of charge, properly and in time repair. To get it solved within the warranty conditions, the claim must be rightful, applied within the warranty period and the device must be complete (including documentation)

Warning:
For right and just execution of your claim it is necessary to provide the purchase receipt and descriptions of the fault. If your products is not operational, search for other cause too, as foe example: power failure or wrong way of using.

PRODUCT...

PRODUCTION NUMBER...

PURCHASE DATE..

LEGAL STAMP AND SIGNATURE OF THE SELLER