STC-DO 8 Type 3

Wireless Actuator with 8 digital outputs

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

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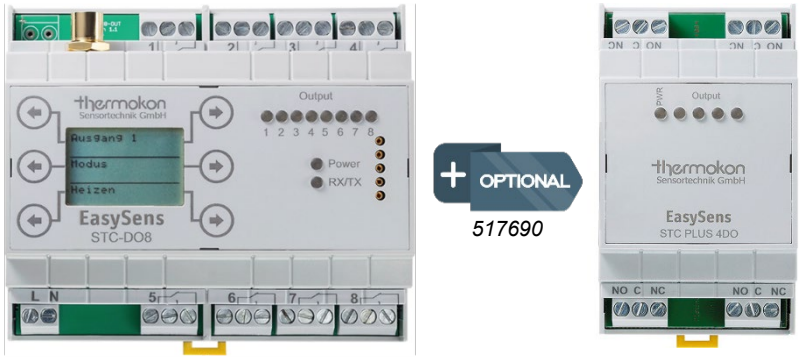
enocean®



» APPLICATION

Bidirectional receiver with 8 digital outputs (or 12 with extension module STC-Plus 4DO). For heating/cooling control, fan coil control, control of lights and blinds etc. Incl. ext. receiving antenna (2,5 m).

This product is intended for use as part of an automation solution for (functional) buildings. It transmits sensor data within a building over short distances unencrypted by radio to suitable receivers. No personal data or location data is transmitted.

The product cannot communicate directly with the Internet and is not intended for applications that use the Internet to forward unprocessed sensor data. Automation stations that forward data via the Internet, e.g. to visualise the building status, must ensure that the data to be forwarded is encrypted as required by law.

» TYPES AVAILABLE – TYPE 3

Wireless receiver – multi relay 24 V
- STC-DO8 24 V type switch actuator

Wireless receiver – multi relay 100..230 V
- STC-DO8 230 V type switch actuator

» SECURITY ADVICE – CAUTION

The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.
CAUTION! Risk of electric shock due to live components within the enclosure, especially devices with mains voltage supply (usually between 90..265 V).

Please comply with
- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

»PRODUCT TESTING AND CERTIFICATION

Declaration of conformity
The declaration of conformity of the products are available on our website
https://www.thermokon.de/direct/en-gb/categories/stc-do8

»TECHNICAL DATA

Output switch contact	**STC-DO8 24 V:** 8x relay with change-over contact (floating), 24 V =/~ 6 A, 12x relay with additional module STC-PLUS 4DO	**STC-DO8 100..230 V:** 8x relay with change-over contact (floating), 230 V ~ 6 A, 12x relay with additional module STC-PLUS 4DO
Radio technology	EnOcean (IEC 14543-3-10), transmission power <10 mW	
Frequency	868 MHz, optional 902 MHz / 315 MHz	
Antenna	external transmit- / receive antenna	
Data transmission	bidirectional	
Power supply	**STC-DO8 24 V:** 18..24 V = / ~ SELV	**STC-DO8 100..230 V:** 100..240 V ~ (±10%)
Power consumption	**STC-DO8 24 V:** typ. 2,0 W (24 V =) | 3,5 VA (24 V ~)	**STC-DO8 100..230 V:** 3,5 VA
Display	LCD 37,5 mm x 31,6 mm	
Functions	lighting, blinds/shutter, signalling contact, switch actuator, multi actuator	
No. Of buttons	6 capacitive touch sensor buttons	
Switching values	**STC-DO8 24 V:** 6 A resistive load (24 V =/~) **STC-DO8 100..230 V:** 6 A resistive load (230 V ~)	
Enclosure	ABS, light grey	
Protection	IP20 according to EN 60529	
Connection electrical	terminal block, max. 1,5 mm²	
Ambient condition	0..+60 °C max. 85% rH non-condensing	
Weight	ca. 250 g (without external antenna)	
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715	
Delivery contents	external transmit- / receive antenna with magnetic holding	
Notes	For inductive and / or capacitive loads, a suitable protection must be provided (varistor, RC element, inrush current limiting element, ...).	

»INFORMATION ABOUT EASYSENS® (RADIO) / AIRCONFIG GENERAL USAGE

EasySens® - airConfig
Basic information about EasySens® radio and about general usage of our airConfig software, please download from our website.

»OVERVIEW OF THE RADIO TELEGRAMS

EEP
The structure of the data contained in the telegram can be found in the EEP (EnOcean equipment profile) list provided by the EnOcean Alliance. http://www.enocean-alliance.org/eep/

»NOTES ON DISPOSAL

The crossed-out wheelie bin symbol indicates that the product or removable batteries must not be disposed of with household or commercial waste. Within the EU, you are legally obliged to dispose of the product separately and appropriately in accordance with the national laws of your country. Alternatively, please contact your supplier or Thermokon Sensortechnik GmbH. Further information can be found at: www.thermokon.com

»COMPATIBILITY LIST (OVERVIEW OF THE SUPPORTED RADIO TELEGRAMS (EEP´S)/DEVICES)

It is possible to seamlessly connect the following numbers of sensors to the STC-DO8 per output/channel:

- 10x digital input modules SR65DI, EnOcean switch, occupancy sensors SR-MDS, MOC, MOW (Solar)
- 20x window contacts SRW01 or window handles SRG01
- 1x individual sensor – user configurable

Any 4 byte EnOcean based sensor (4BS) can be learned-in to the STC-DO8 via the menu point “Learning-in of individual sensor“. The evaluation of the data detected by this sensor can be freely parameterized by the user. Thus, it is also possible to learn-in and to evaluate sensors which's profiles are not supported by the STC-DO8 actually. (see page 7 individual sensor)

EEP (EnOcean Equipment Profiles)		Device
D5-00-01	**single input contact**	SRW01, thanos, SR65 DI
F6-02-01 (F6-02-xx)	**rocker switch**	SR-MDS Solar, SR65-DI, Handsender
F6-04-01	**key card activated switch**	SR-KCS, SR65-DI
F6-10-00	**window handle**	SRG01
A5-07-01	**occupancy with supply voltage monitor**	SR-MOC, SR-MOW, SR-MDS Solar, SR65-DI
A5-08-01	**illuminance 0..510lx, temperature 0..+51°C, occupancy button**	SR-MDS, SR-MDS Solar
A5-30-01	**single input contact, battery monitor**	SR65 DI

»MOUNTING ADVICES

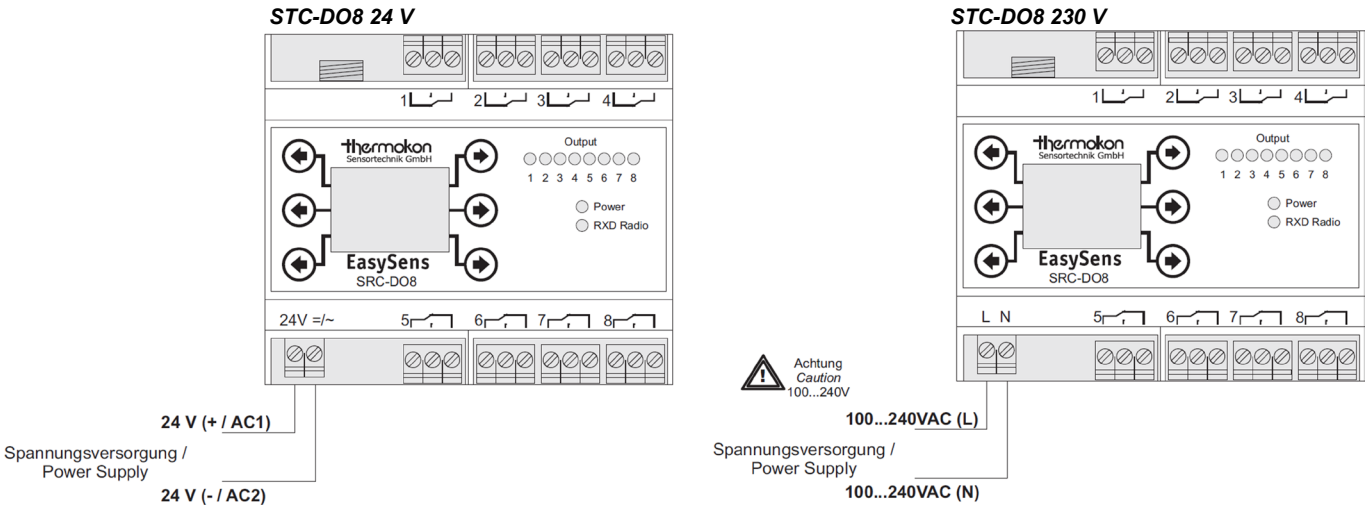
The housing of the module is designed for installation on standard DIN rails according to DIN EN 50022. For operation, a separate external 868 MHz receiving antenna is necessary.

The antenna has a magnetic flux and must be mounted in the middle of a metal plate with the minimum dimensions 180 mm x 180 mm (material: galvanized sheet steel, please see “accessories”). The ideal mounting place in rooms is found approx. 1 m under the ceiling (optimum radio transmission range). The antenna should be adjusted vertically downwards and should have a minimum distance of approx. 90 mm to the wall. The distance to other senders (e.g. GSM/DECT/Wireless LAN/ EnOcean senders) should be 2 m at least. To match the colour of the room, the antenna can be painted, accordingly (do not use any metallic lacquers).

Cable Laying Notice

- Cable laying should be made in an electric conduit.
- A cable crushing should be avoided.
- The minimum bending radius of the extension cable amounts to 50mm
- Do not use an active pull-up device for the cable laying, in order to avoid any damages of the sheathing respectively of the connectors.

»CONNECTION PLAN



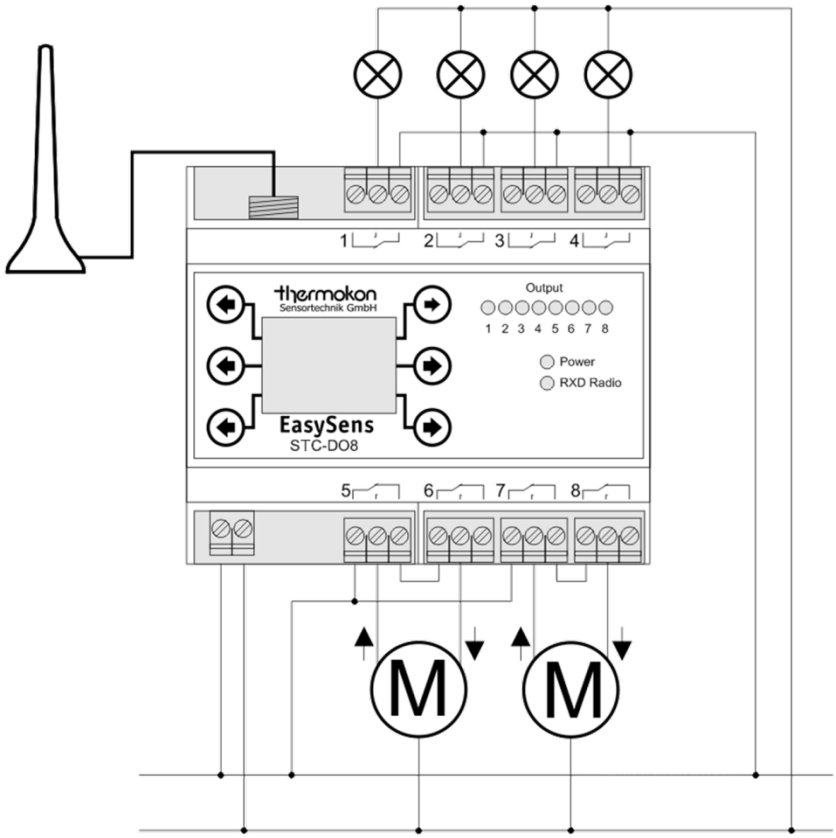
Assignment of the outputs
The functions of the individual outputs in dependence on the device settings are shown in the following table:

	Universal / Pilot Contact / 1-/2-Button operation	Blind / Shutter
Output 1	On / Off	Down
Output 2	On / Off	Up
Output 3	On / Off	Down
Output 4	On / Off	Up
Output 5	On / Off	Down
Output 6	On / Off	Up
Output 7	On / Off	Down
Output 8	On / Off	Up

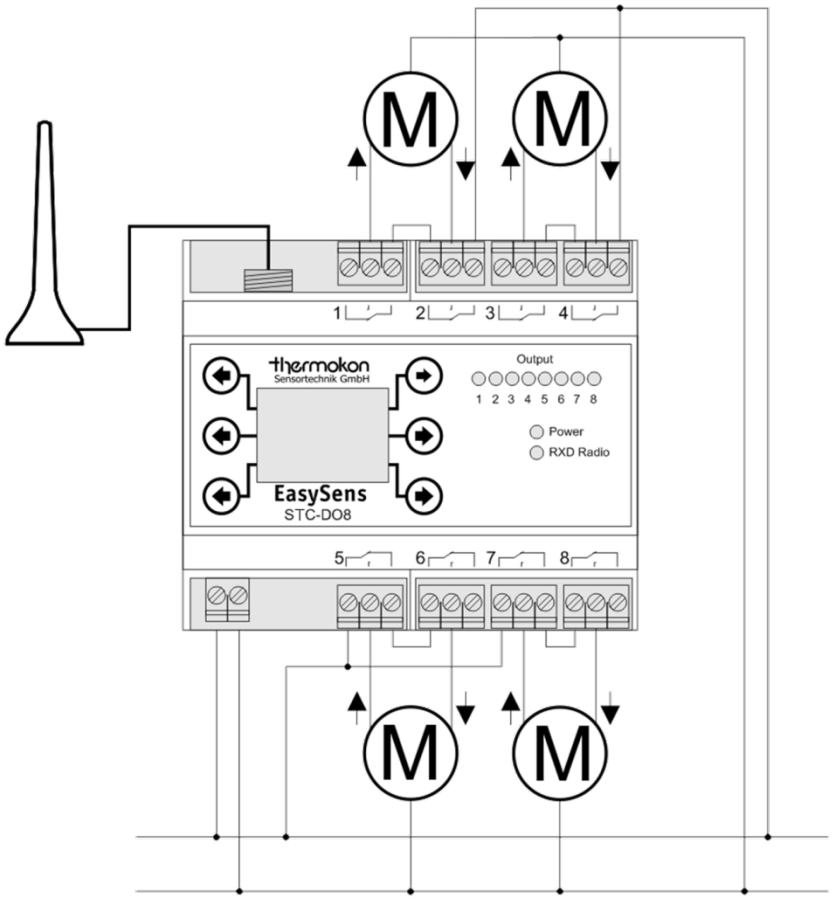
Notice:

A combination of low voltage and mains voltage at the individual outputs is not safe. All relay outputs must use a common phase - various phases are prohibited.

Control of 4 lamps and 2 blind/shutter drives



Control of 4 blind/shutter drives



» FUNCTION DESCRIPTION

The function of the 8 outputs can be determined via the configuration menu.

Function Universal
The respective output is switched as soon as the switch-on command is received by one or more sensors. All sensors learned-in are logical **OR** circuit linked, i.e. as soon as any window contact SRW01 reports “window opened” or any digital module SR65DI reports “contact closed” or a ceiling multi-sensor SR-MDS reports “movement” or a window handle reports “window opened or tilted” or an EnOcean wireless switch is turned-on, the relay is switched. In reverse order the relay is reset if all sensors received the switching-off command.

Function 1-Button Operation
The corresponding output is switched-on as soon as the learned-in button of an EnOcean switch is pushed and is reset automatically after expiration of an adjusted after-run time (5 seconds…20 minutes). If the after-run time is deactivated, the output is switched-on as long as the button is released again (button operation).

If the after-run time is set to the “Duration ON”, the output is switched-on after actuation of the learned-in button and is only switched-off when the button is pushed again.

Function 2-Button Operation
The corresponding output is switched-on as soon as the I-button of a learned-in EnOcean switch is pushed and is reset after actuation of the O-button of a learned-in EnOcean switch.

Function Blind and Shutters
The outputs 1/2 (1:Up, 2:Down), 3/4 (3:Up, 4:Down), 5/6 (5:Up, 6:Down) and 7/8 (7:Up, 8:Down) can be used for the control of blinds and shutters.

Blind function: The output Up/Down is switched-on as long as the button Up/Down is pushed. If the corresponding button is pushed for more than 2 seconds, the output keeps switched-on for the time of the adjustable after-run time although the button is released again (lock).

Shutter function: The output Up/Down is switched on for the period of the adjustable after-run time if the button Up/Down is pushed (lock). If the corresponding button is pushed for more than 2 seconds and is released afterwards, the output is switched-off immediately.

The outputs for “Up” and “Down” are locked back-to-back by the software, so that always only one relay is switched and a damage of the blind/shutter drive is avoided.

During installation/wiring a wired interlock has to be included additionally according to the application example shown in this product sheet.

Time Switch
By means of the integrated time switch of the STC-DO8 it is possible to switch each output time-controlled. Therefore, 8 switching times are available in total, which can be assigned to each weekday and each output individually. Furthermore, an overlapping of the individual switching times is possible.

A switching command which is released by the time switch has the same priority as a switching command released by an EnOcean based sensor. A switching-off command of an EnOcean based sensor can switch-off an output even if the output was switched-on by a time switch command before. After configuring the time switch, the output will be set at the next ON-command.

Communication Monitoring Sender/Receiver:
If no valid radio telegram of a learned-in sensor is received by the receiver for a time exceeding 90 minutes (SRW01: 45 minutes), the receiver will mark this sensor as invalid in the address memory. The error function is indicated by a message in the display.

After receipt of an valid radio telegram, the sensor will be marked valid again and the receiver is restarting working in normal operation.

Notice: Depending on the selected parameters of the receiver, the behaviour of the error function can be different.

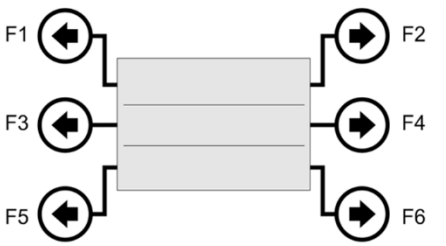
If the communication between the receiver and a sensor is permanently faulty, the receiver indicates the sensor as invalid in the address memory. No further evaluation of this sensor is done by the receiver.

Important Notice: The communication monitoring is not working together with the window handle SRG01 and EnOcean switches (PTM modules).

» CONFIGURATION

The STC-DO8 has 6 capacitive buttons which re-calibrate themselves automatically after a reset. In order to guarantee a smooth function of the buttons, they must not be touched during calibration. Calibration is finished as soon as the green LED (power) shines continuously.

The STC-DO8 has a configuration menu via which any properties can be set. The menu is partitioned into 3 levels, whereas for operation each level is exactly assigned to 2 keys.



Notice:
For menu items in which 1 value shall be changed (e.g. basic set point), the left button has the function "left/-" and the right button "right/+".

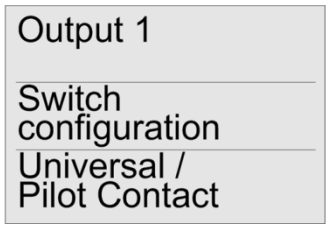
For menu items in which 2 values shall be changed (e.g. time including hours and minutes), the left button has the function "Value A +" and the right button "Value B +".

For menu items in which more than 2 values shall be changed, the left button has the function "Selected value +" and the right button "Select value".

» CONFIGURATION OF SWITCHING OUTPUTS

Switch Configuration

In this menu point the behavior of the corresponding output can be adjusted.



Possible selections: Universal / Pilot Contact,

1-Button operation, 2-Button operation, Blind, Shutter

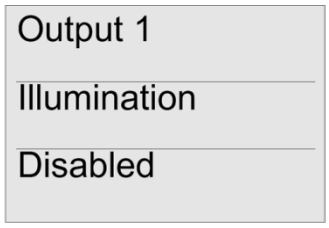
Factory setting: Universal

Illumination (SR-MDS)

In this menu point a switching threshold for the brightness supplied by the SR-MDS sensors can be adjusted.

If the measured Lux-value is less than the set threshold and occupancy has detected by the sensor, the output switches on (follow-up time).Factory setting: Universal

If the measured Lux-value is greater than the set threshold, the output remains off.



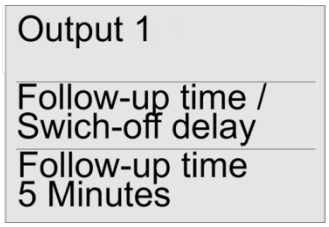
Adjustable range: disabled, 1 ... 512 Lux

Resolution: 1 Lux

Factory setting: Disabled

Follow-up Time / Switch-off delay

Adjustment of the follow-up time. Depending on the configuration of the output, the after-run time is used for different functions.



Possible selections: Disabled, 5 seconds, 15 seconds, 30 seconds, 1 minute, 2 minutes, 5 minutes, 15 minutes, 30 minutes, 60 minutes, 120 minutes, Always ON

Factory setting: 5 minutes

The parameters of the follow-up time have a different meaning depending on the configuration of the output:

Function Universal / Pilot Contact:
If a SR-MDS ... learned-in to an output reports “movement” and if the illumination value is lower than the threshold, the output is switched-on and automatically switched-off again after expiration of the follow-up time.

Function 1-Button Operation:
If a learned-in button is pushed, the output is switched-on and automatically switched-off again after expiration of the after-run time. If the after-run time is deactivated, the output is switched-off again, as soon as the button is released. If the after-run time is set to “Duration ON”, the output is switched-on as soon as a learned-in button is pushed and is switched-off again if this or any other learned-in button is pushed, again.

If a SR-MDS ... learned-in to an output reports “movement” and if the illumination value is lower than the threshold, the output is switched-on and automatically switched-off again after expiration of the follow-up time.

Function 2-Button Operation:
If a SR-MDS ... learned-in to an output reports “movement” and if the illumination value is lower than the threshold, the output is switched-on and automatically switched-off again after expiration of the follow-up time.

Function Blind/Shutters:
If one of the buttons Up/Down is pushed and the corresponding output is in the lock position, it is switched-off automatically after expiration of the follow-up time.

Send EnOcean-ID

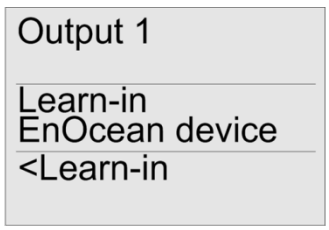
(EEP: A5-11-01) Lighting Controller

Menu point to send a learn telegram of the output.

Press F6 to generate a learn telegram.

Seamless Connection of EnOcean devices

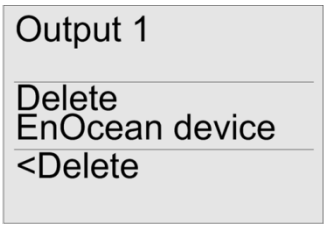
Menu point for seamless connection of a EnOcean device to the set output.



In order to learn-in the requested sensor, the F5 key must be actuated in the corresponding menu. Afterwards, the learning-in procedure for the corresponding sensor described in the operating instructions must be carried out within 45 seconds. If the sensor was connected successfully, a corresponding notice is displayed.

Seamless Connection of EnOcean devices

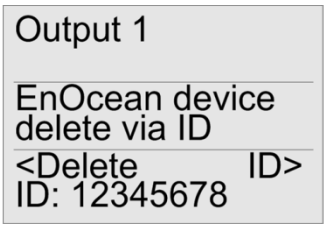
Menu point for seamless connection of a EnOcean device to the set output.



In order to clear the requested sensor, the F5 key must be actuated in the corresponding menu. Afterwards, the learning-out procedure for the corresponding sensor described in the operating instructions must be carried out within 45 seconds. If the sensor was successfully disconnected (learned-out) a corresponding notice is displayed.

Delete EnOcean device via ID

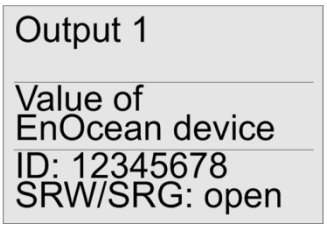
In this menu, EnOcean devices can be cleared by means of their ID.



By button F6 a sensor is selected. By means of button F5 this sensor can be cleared after having confirmed the safety query.

Show value of EnOcean device

This menu shows the values/status of the EnOcean sensors learned-in.



By means of buttons F5 and F6 the sensors can be selected. The ID of the chosen sensor as well as its value/status are displayed.

Individual sensor
Any 4 byte EnOcean based sensor (ORG 7) can be learned-in to the STC-DO8 via the menu point “Learning-in of individual sensor“. The evaluation of the data detected by this sensor can be freely parameterized by the user. Thus, it is also possible to learn-in and to evaluate sensors which's profiles are not supported by the STC-DO8 actually. First, the user has to determine which data byte of the sensor shall be evaluated (menu “Data byte individualsens”). Afterwards, an upper or lower threshold for the evaluation of the data byte must be set (menu “Lower threshold/Upper threshold”).

Depending on the configuration of the outputs, the following action can be triggered by the individual sensor:

Function universal:
If the measuring value of the data byte selected exceeds the upper threshold, the output is switched on. If the measuring value of the data byte selected falls down the lower threshold, the output is switched off.

Function 1-Operation of buttons:
If the measuring value of the data byte selected exceeds the upper threshold, the output is switched on for the period of the after running time adjusted.

Function 2-Operation of buttons:
If the measuring value of the data byte selected exceeds the upper threshold, the output is switched on. If the measuring value of the data byte selected falls down the lower threshold, the output is switched off.

Function Blind/Shutters:

If the measuring value of the data byte selected exceeds the upper threshold, the output for blind/shutters is switched to UP for the period of the after-running time adjusted.

If the measuring value of the data byte selected falls down the lower threshold, the output for blind/shutters is switched to DOWN for the period of the after-running time adjusted.

Notice:

If a value less than the lower threshold is parameterized for the upper threshold, the above mentioned functions are executed in reverse order (inverted operation).

Data Byte Individualsensor

Selection of the designated data byte of the individual sensor.

Adjustable range: Data byte 0...3

Factory setting: Data byte 0

Lower Threshold

Setting of the lower threshold to analyse the individualsensor.

Adjustable range: 0...255

Factory setting: 85

Upper Threshold

Setting of the upper threshold to analyse the individualsensor.

Adjustable range: 0...255

Factory setting: 85

Individualsensor Lock Time

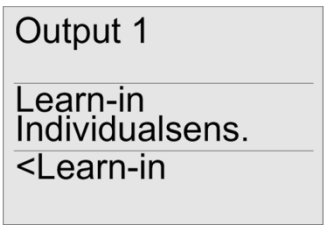
Via this parameter it is determined for how many minutes the evaluation of the individual sensors shall be ignored in case an EnOcean based switch, learned-in to the same output, has sent a switch signal.

Adjustable range: 0...255 minutes

Factory setting: 30 minutes

Seamless Connection of Individual Sensors

Menu point for seamless connection of a individual sensor to the set output.



In order to learn-in the requested sensor, the F5 key must be actuated in the corresponding menu. Afterwards, the learning-in procedure for the corresponding sensor described in the operating instructions must be carried out within 45 seconds. If the sensor was connected successfully, a corresponding notice is displayed.

Delete Individualsensor

Menu for clearing a individual sensor at the output set.

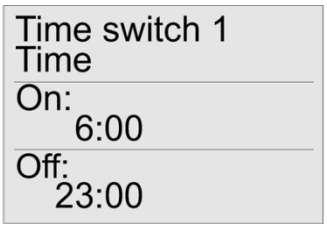
In order to clear the requested sensor, the F5 key must be actuated in the corresponding menu. Afterwards, the learning-out procedure for the corresponding sensor described in the operating instructions must be carried out within 45 seconds. If the sensor was successfully disconnected (learned-out) a corresponding notice is displayed.

»PARAMETERIZATION OF TIME SWITCH

In total, there are 8 times by which the integrated time switch can be configured. The times can be field assigned to every output and weekday.

Time switch 1…8 (time)

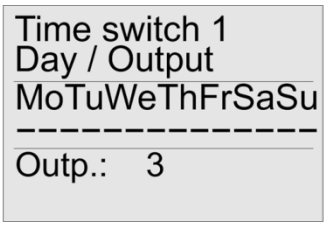
Time setting for the corresponding time switch.



Factory setting: 6:00 ON and 23:00 OFF

Time Switch 1…8 (output)

Assignment of the individual week days and outputs for the corresponding time switch.



Key F3 reverses the selection of the weekday chosen. F4 selects a weekday. F5 reverses the selection of the output/channel chosen. F6 selects an output.

Example:

By means of this setting the time switch 1 is activated on all 7 weekdays and is assigned to output 3.

»SETTING OF TIME AND WEEKDAY

The internal clock of the STC-DO8 is set via the menu “Time”. Therefore, the sub-menus “Clock”, „Day and month“, „Year“ and “clock change” are available.

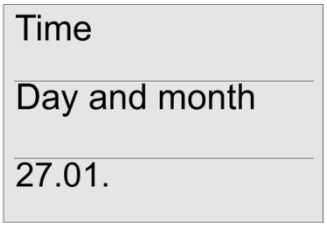
To make sure that the clock is also working correctly after a power failure, the STC-DO8 has an integrated energy buffer supplying the internal clock automatically for >24 hours.

Time

Setting of current time.

Day and Month

Setting of current date.



Year

Setting of current year.

Clock Change (summer/winter)

Setting of clock change (summer/winter) mode.

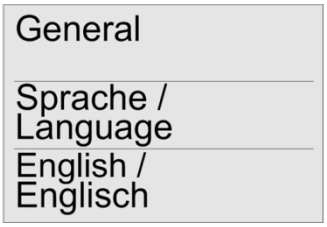
»GENERAL SETTINGS

In the menu “General” general settings for the STC-DO8 can be determined which are valid for the complete device and which are not assigned to an output or comfort time.

Language

Setting of menu language.

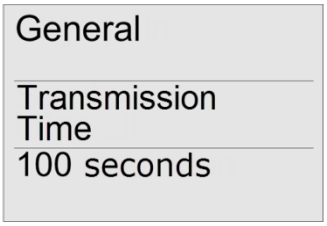
Possible selections: German, English



Factory setting: German

Transmission Time (Type STC-DO8 only)

Setting of the STC-DO8 transmission time.

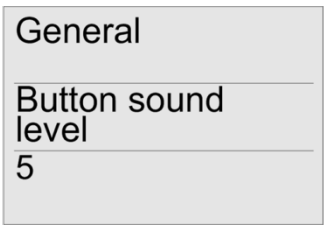


Adjustable range: 10, 100, 1000 seconds

Factory setting: 100 seconds

Volume of Button Sound

Setting of button sound volume.



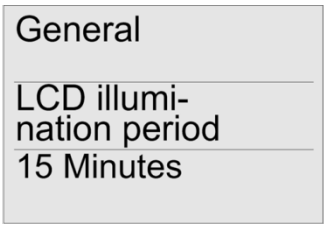
Adjustable range: 0…10

Resolution: 1

Factory setting: 5

Background Illumination Period

Setting of background illumination period.



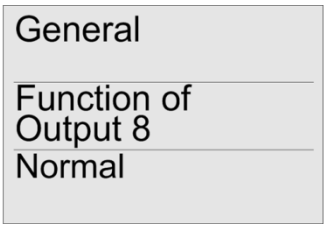
Adjustable range: 1…60 minutes

Resolution: 1 minutes

Factory setting: 15 minutes

Function of Output 8

Instead of a standard switching output, output 8 can also be used for an OR-function of output 1...7.



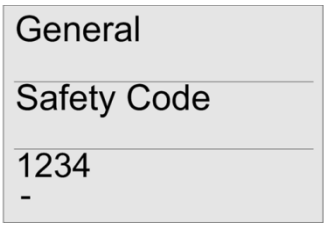
In this case, output 8 is always switched-on as soon as at least one of the outputs 1 to 7 should be switched-on (OR-function of the outputs 1 to 7).

Possible selections: Standard function or OR-function

Factory setting: standard function.

Safety Code

Setting of a four-digit safety code protecting the STC-DO8 against unauthorized access.



Adjustable range: 0000 ... 9999 (0000 deactivates the saftey code)

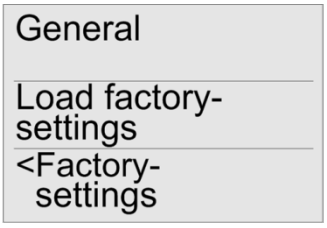
Resolution: 1

Factory setting: 0000

Button F5 increases the selected number by 1. Button F6 selects the next number of the four-digit code.

Load Factory Setting

The STC-DO8 can be reset to the original factory setting in the menu “General>Load Factory Settings”.



To load the factory settings, F5 must be actuated in the corresponding menu and the following security query must be confirmed.

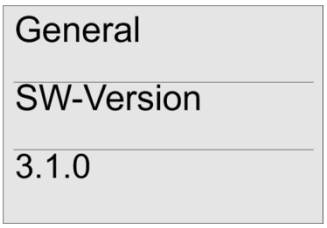
Restart

The STC-DO8 can be restarted in the menu “General>Restart”.

To restart the STC-DO8, F5 must be actuated in the corresponding menu and the following security query must be confirmed.

Software Version

Display of the STC-DO8 software version.

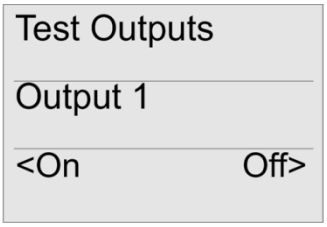


Test Outputs

Via the menu "Test Outputs" the function of all STC-DO8 outputs and all thermic actuators connected can be tested.

Advice: Please note that the normal control function of the STC-DO8 is stopped, as long as you are in the menu "Test Outputs". The control function is automatically activated again as soon as the menu "Test Outputs" is left.

Test Outputs



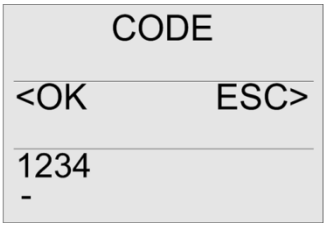
By means of the keys F3 and F4, the output to be tested is selected.

Afterwards, the chosen output can be switched on/off by the keys F5 and F6.

Safety Code Input

In order to prevent an unauthorized setting of the parameters, the STC-DO8 can be locked by a safety code.

After a restart or if none of the 6 buttons is actuated during the period of the LCD illumination, the next user is asked to insert the safety code when trying to make new settings at the STC-DO8.



Button F5 increases the selected number by 1.

Button F6 selects the next number of the four-digit code.

Button F3 confirms the input of the safety code.

Button F4 stops the input of the safety code.

Lock Parameterization

In order to avoid a change of the control properties by mistake after installation, the corresponding menu points can be locked. Due to the locking, only the time switch as well as time and date can be programmed afterwards. To activate the locking, push the two upper buttons (F1 and F2) of the switched-on STC-DO8 for 10 seconds until a tone of confirmation is heard. The unlocking is done in the same way.

» EXTENSION MODULES (TYPE STC-DO8 ONLY)

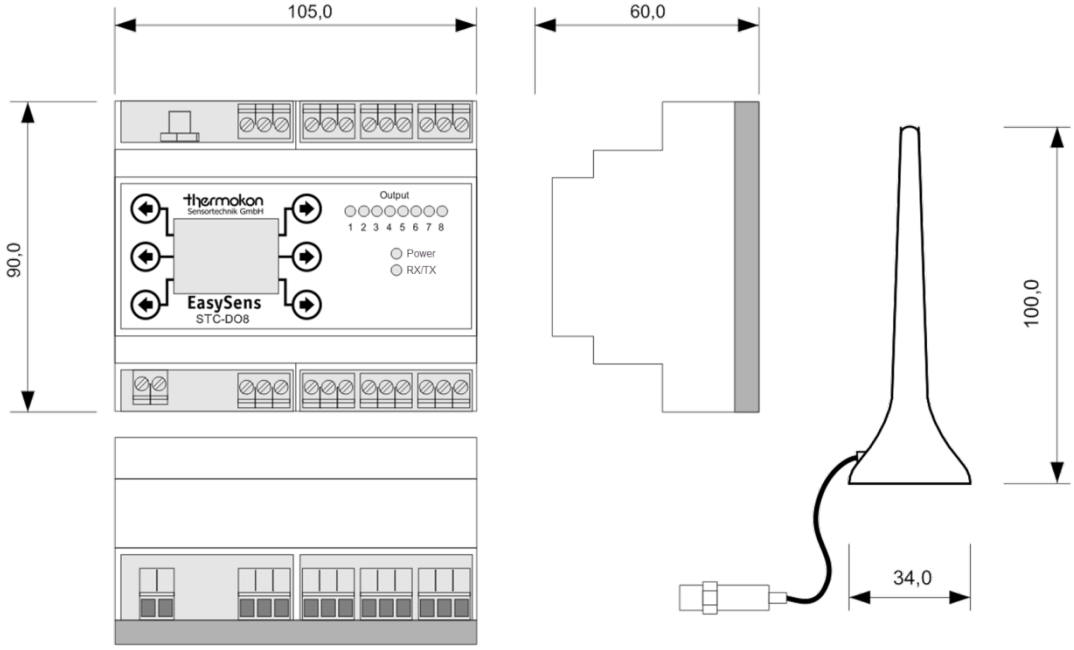
By the specially provided connector on the STC-DO8 extension modules can be added, so that the STC-DO8 can be expanded to a certain number of outputs.

The extension module is identified automatically by the STC-DO8 when starting the device. The identification is displayed with a corresponding message.

Besides the common menus "output 1..8", the "outputs A, B, C, ..." are available in the display menu for configuration of the additional outputs.

Further details can be found in the datasheet of the extension module.

» DIMENSIONS (MM)



» ACCESSORIES (OPTIONAL)

Antenna extension 10 m	Item No. 257206
Antenna extension 20 m	Item No. 257213
Antenna holder form L, 180x180 mm	Item No. 255097
Rawl plugs and screws	Item No. 102209