

**thermokon**  
Sensortechnik GmbH

**STC-DO Light 230 V**

EasySens Receiver 2-channel

Installation and operating instructions

**DESCRIPTION**

The receiver is part of the EasySens system by thermokon. The system is based on radio transmitters and receivers which operate at 868.3 MHz frequency, to wirelessly control consumers. Various electric loads such as lamp bulbs, HV halogen lamps and inductive loads can be switched with the output of the receiver.

The function of the receiver is adjustable for each radio transmitter. Before use, the radio transmitters must be assigned to the receiver. Every radio transmitter can control an unlimited number of receivers.

**NOTES**

- Read the operating instructions carefully before installing the device.
- Bidirectional functions (transmit/receive) integrated.
- The operating instructions for the radio transmitters must be observed!

**SAFETY**

**CAUTION! DANGER OF ELECTRICAL SHOCK!**  
The housing contains current-carrying components. Contact can lead to personal injury! All work on the mains network and the device may only be performed by an authorised electrician.

- Disconnect power supply from the device.
- Secure the device against being powered on again.
- Check that the device is powered off.
- Close the housing securely before applying power.

This device is only intended to be used for its stated application. Unauthorised conversions, modifications or changes are not permissible! This device may not be used in conjunction with other devices whose operation could present a hazard to people, animals or property.

- The following must be observed:**
- Prevailing statutes, standards and regulations.
  - State-of-the-art technology at the time of installation.
  - The device's operating instructions.
  - Operating instructions can only cite general stipulations. These are to be viewed in the context of a specific system.

**TECHNICAL INFORMATION**

General Data	
Own consumption	Standby < 0,5W
Transmit frequency	868,3 MHz
Power supply	100-240V~ / 50-60 Hz
Fuse protection	MCB with 16A maximum
Ambient temperature	-20 to +40 °C
Storage temperature	-40 to +85°C
Plug-in terminal	max. 1 x 1,5 mm <sup>2</sup>
Test specifications	EN 60669-2-1
Identification	CE ; KEMA/KEUR
Protection type	IP20

Load Types	230V~	110V~
Incandescent lamps	2500 W	1250 W
HV halogen lamps	1200 W	600 W
Motor load	600 VA	300 VA
Electronic ballast	3 units <sup>(1)</sup>	3 units <sup>(1)</sup>

<sup>(1)</sup> The quantity depends on the type and manufacturer. The device's data sheet must be observed!

**RF RANGE**

Radio signals are electromagnetic waves. The farther away the transmitter is, the weaker is the field strength surrounding the receiver. As such, the range is limited. Different materials or interference sources in the direction of the signals can further reduce the range. The range can be increased by the use of Easy-Sens Repeaters (radio amplifiers).

Material	Reduction
Wood, plaster, non-coated glass	0 - 10%
Masonry, wood/plaster walls	5 - 35%
Reinforced concrete	10 - 90%

Range	Conditions
> 30 m	Under good conditions (large, clear space without obstructions).
> 20 m	Through up to 5 plaster/drywall board walls or 2 brick/porous concrete walls (furniture and persons in the room): For transmitter and receiver with good aerial positioning/layout.
> 10 m	Through up to 5 plaster/drywall board walls or 2 brick/porous concrete walls (furniture and persons in the room): For receivers installed in walls or corners of rooms, receivers with internal aerial or narrow corridors.

Through 1-2 ceilings/walls	Depending on ceiling/wall armouring and type of aerial in the receiver.
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**NOTE:** Go to [www.thermokon.com](http://www.thermokon.com) for further information on "Range".

**ENOCEAN EQUIPMENT PROFILES (EEPs)**

EnOcean EEPs are standardised communication profiles. These enable communication between the various products of various manufacturers.

The table below is intended for qualified personnel requiring the communication profiles for a project with Thermokon products:

EEP	Description	Function	Mode
F6-02-02	Light control 2 Rocker	01	01
F6-03-02	Light control 4 Rocker	01	01
F6-04-01	Key Card Activated Switch	01	01
F6-10-00	Mechanical Handle	07	01
D5-00-01	Single input/window contacts	07	01
A5-06-02	Light sensor 0lx to 1.020lx	09	04
A5-07-01	Occupancy	08	11
A5-08-01	Light (0lx to 510 lx), Occupancy and PIR	08	04
A5-08-02	Light (0lx to 1020 lx), Occupancy and PIR	08	04
A5-08-03	Light (0lx to 1530 lx), Occupancy and PIR	08	04
A5-38-08	Gateway	–	–
A5-38-09	Extended lighting control	–	–
D2-01-08	Electronic switches with energy measurement and local control	–	–
32-02-01	Secure light and blind control	01	01
A5-3F-00	RLT Radio Link Test (Slave)	–	–

**NOTE:** When a new radio transmitter has been assigned to the receiver in learn mode, the transmitter's function and mode have been set to the standard values (see PROGRAMMING).

**STATUS ACKNOWLEDGES**

When a new radio transmitter is assigned to the receiver in learn mode, the receiver sends a status acknowledge directly to the radio transmitter. The operator can therefore use the bidirectional functions of radio transmitters, visualisations and receivers.

EEP	Status Acknowledges
A5-11-04	<b>Extended lighting status:</b> – status of the output (channel) – energy consumption (optional) – error messages (optional)
A5-30-02	<b>Window visualisation:</b> – status message: Window closed/open
D2-01-08	<b>VLD bidirectional:</b> – status of the output (channel) – error messages (optional) – additional functions (optional)

**UTE Teach in (D2-01-08) for a gateway is achieved as follows:**  
Press the device learn mode button (for selected channel), the RED LED will start blinking. Press the same button for longer than 2 seconds, the LED will start blinking green. Release the button, UTE Query message will be sent by the device and it will wait for 800ms for UTE response packet. If Response packet is received then LED will give constant glow of RED (binding done indication) for 3seconds. If binding has not occurred then LED will not glow RED and will go OFF after 800ms (wait time for UTE response).

**UTE Teach Out for a gateway can be done using any one of the options below:**  
Put the device in learn mode and generate UTE Teach OUT Query command from gateway, after being taught out, the device will send UTE response and RED Blinking LED will go off. Clear all transmitters using LRN and CLR button on EasySens.

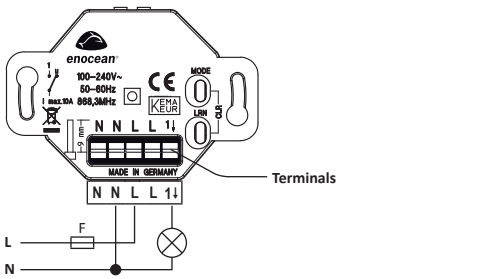
**INSTALLATION**

**IMPORTANT INSTALLATION INFORMATION !**

Installation and commissioning may only be performed by an authorised electrician. Mains power to electrical equipment must be switched off during installation. Applicable laws and standards of the country in which the device is operated must be observed!

This device is intended for installation in a 60 mm wall box. They are to be equipped with the 1-5 multipurpose frame from the switch range.

- NEVER install EasySens receivers in a metal enclosure or in the immediate vicinity of large metal objects.
- Installation close to floor level or on the floor is not recommended.



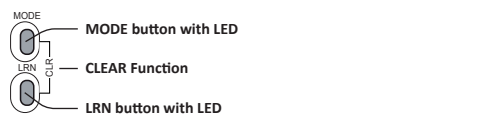
- Switch off mains voltage.
- Protect power supply line with a MCB (F = max. 16A).
- Ensure that the device is mounted on an even surface in the vertical plane.
- Mount the wall box in a suitable position.
- Install the device as shown in wiring diagram.
- Secure device in the wall box.
- Switch on mains voltage.
- Assign transmitters (max. 32) to the receiver's channels (see PROGRAMMING).

**PROGRAMMING**

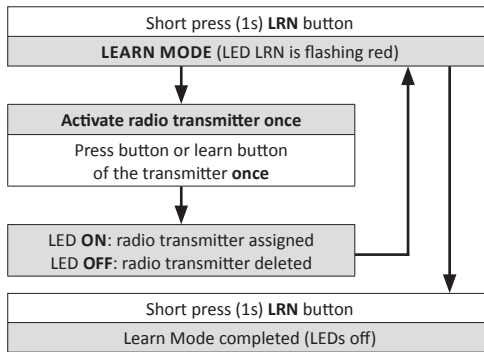
**NOTES ON PROGRAMMING**

For programming, the receiver must be connected to the mains power supply. The programming is retained even in a power failure.

- The operating instructions for the transmitters must be observed!
- No transmitter is assigned to the receiver in its delivered state.
- Up to 32 transmitters should be assigned in learn mode to the radio receiver prior to use.
- Several transmitters can be assigned or deleted in learn mode.
- In learn mode, activating several times over alternately assigns and deletes the transmitters!
- Learn mode ends after 30 s when no button is pressed.
- Programming ends automatically after 30 s when no button is pressed.



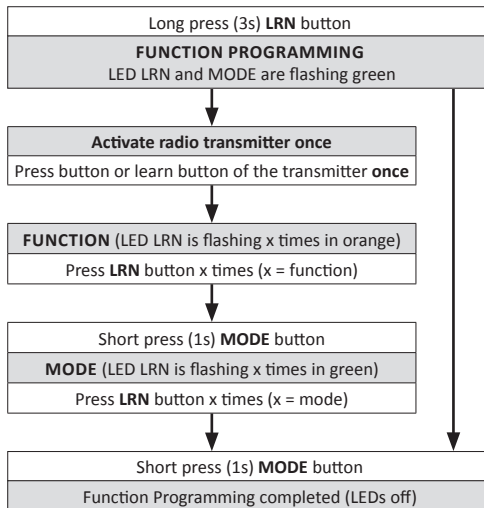
**LEARN MODE: Assigning or Deleting transmitters**



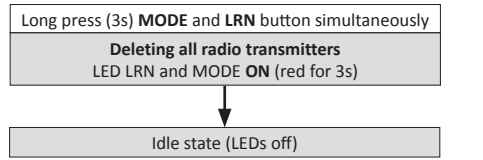
Assigning radio transmitters in learn mode allocates the following standard functions:

Radio Transmitter	Receiver's default function
Wall Transmitter	Function 01 ⇔ Mode 01
Window Contact	Function 07 ⇔ Mode 01
Window Handle	Function 07 ⇔ Mode 01
Motion Sensor	Function 08 ⇔ Mode 11
Light Sensor	Function 09 ⇔ Mode 04

**FUNCTION PROGRAMMING: Set Function and Mode**



**CLEAR FUNCTION: Deleting all transmitters**



**PROGRAMMING EXAMPLE**

Assigning or Deleting transmitters	
	Short press (1s) button LRN: LED LRN is flashing red (Learn Mode)
	Press button O or I of the transmitter
	LED LRN ON: Radio transmitter assigned LED LRN OFF: Radio transmitter deleted
	Short press (1s) button LRN: LEDs off (Learn Mode completed)

**Set function 3 and mode 2**

	Long press (3s) button LRN
	LED LRN and MODE are flashing green
	Press button O or I of the transmitter
	LED LRN is flashing x times in orange (x = function) Press LRN button 3 times = function 3
	Short press (1s) button MODE
	LED LRN is flashing x times in green (x = mode) Press LRN button 2 times = mode 2
	Short press (1s) button MODE: LEDs off (Function Programming completed)

**TROUBLESHOOTING**

**NEW SYSTEM OR EXISTING SYSTEM**

- Check circuit breaker and power supply  
**Caution:** Electrician only.
- Check connection cables  
**Caution:** Electrician only.
- Check connected electrical loads.
- Check the system's surroundings for changes that could cause interference (e.g. metal cabinets, furniture or walls which have been moved).
- Delete all transmitters and reprogramme the receiver.

**RECEIVER SWITCHES BY ITSELF**

This may be caused by operation of an external transmitter that was coincidentally assigned to the receiver. Delete all transmitters and reprogramme the receiver.

**RANGE LIMITATIONS**

- Use of the device in the vicinity of metal objects or materials with metal components.  
**Note:** Maintain a distance of at least 10 cm.
- Moist materials.
- Devices which emit high-frequency signals (e.g. audio and video systems, computers, electronic ballasts in light fixtures).  
**Note:** Maintain a distance of at least 0.5 m.

**CONTACT**

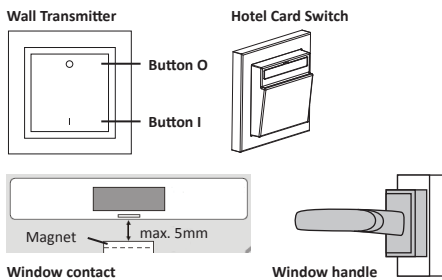
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**GENERAL INFORMATION**

**DISPOSAL OF THE DEVICE**  
 Do not dispose of old devices in the household waste! The device must be disposed of in compliance with the laws and standards of the country in which it is operated!

The device contains electrical components that must be disposed of as electronics waste. The enclosure is made from recyclable plastic.

## FUNCTIONS



### FUNCTION 1

TWO-BUTTON OPERATION	
MODE	
1	Press button O = Switch off Press button I = Switch on
2	Press button O = Switch on Press button I = Switch off
3	Press button O = Switch off after 3 min. Press button I = Switch on
4	Press button O = Switch off after 5 min. Press button I = Switch on
5	Press button O = Switch off after 10 min. Press button I = Switch on
6	Press button O = Switch off after 30 min. Press button I = Switch on
7	Press button O = Switch off after 3 min.
8	Press button O = Switch off after 5 min.
9	Press button O = Switch off after 10 min.
10	Press button O = Switch off after 30 min.

#### NOTES

- Mode 3-6 are suitable for movement sensors.
- Mode 7-10 are suitable for time-delayed power deactivation of sockets. A different radio transmitted with appropriate functionality is required to switch on!

### FUNCTION 2

ONE-BUTTON OPERATION	
MODE	
1	Press button O = Change-over
2	Press button I = Change-over
3	Press button O / I = Change-over
4	Press button O = Switch off
5	Press button I = Switch off
6	Press button O / I = Switch off
7	Press button O = Switch off Press button I = Change-over
8	Press button O = Change-over Press button I = Switch off

### FUNCTION 3

BUTTON OPERATION	
MODE	
1	Press button O = Switch on Release button O = Switch off
2	Press button I = Switch on Release button I = Switch off
3	Press button O / I = Switch on Release button O / I = Switch off
4	Press button O = Switch on for 5s Release button O = Switch off
5	Press button I = Switch on for 5s Release button I = Switch off
6	Press button O / I = Switch on for 5s Release button O / I = Switch off

HOTEL CARD	
OPERATION	
Insert the hotel card	Switch on
Remove the hotel card	Mode 7-10
MODE	
7	Switch off after 1 min.
8	Switch off after 3 min.
9	Switch off after 5 min.
10	Switch off after 10 min.

**NOTE:** To activate (identify) the hotel card switch during the learn mode or function programming insert the hotel card once.

### FUNCTION 4

STAIRWELL LIGHTING	
OPERATION	
Long press button O / I	Switch on for 4 hours
Short press button O / I	Mode 1-5
MODE	
1	Switch on for 2 min.
2	Switch on for 5 min.
3	Switch on for 10 min.
4	Switch on for 30 min.
5	Switch on for 60 min.

**NOTE:** When the switch on time is over, the lighting is switched off for 2s (turn off warning), then switched back on again for 30s.

### TIME SWITCH

OPERATION	
Press button O	Switch off
Press button I	Mode 6-10
Mode	
6	Switch on for 2 min.
7	Switch on for 5 min.
8	Switch on for 10 min.
9	Switch on for 30 min.
10	Switch on for 60 min.

### FUNCTION 5

FAN CONTROL	
OPERATION	
Press button I	Switch on after 3 min.
Press button O	Mode 1-6
MODE	
1	Switch off after 2 min.
2	Switch off after 6 min.
3	Switch off after 10 min.
4	Switch off after 15 min.
5	Switch off after 20 min.
6	Switch off after 30 min.

**Realisation of illumination with fan control by using two Easy-Sens receivers and one transmitter. The first receiver is used for fan control and the second for light control.**

**Programming receiver:**

- Assign the transmitter to the first receiver (fan control), set function 5 and mode 1 to 6.
- Assign the transmitter to the second receiver (light control) and e.g. set function 1 and mode 1.

**Function:**

- Button I will switch the light on. The fan will switch on after 3 minutes
- Button O will switch the light off. The fan will be switched off after expiration of the follow-up time.

### FUNCTION 6

LIGHTING SCENE A-D	
SCENES	
An additional radio transmitter is necessary to memorise and activate a light scene. In the case of a system with several receivers, each receiver must be programmed, and the radio transmitter assigned!	
<b>Programm receiver:</b>	
– Assign radio transmitter.	
– Set function 6 and the desired mode.	
<b>Store light scene A-D:</b>	
– Switch on the required light scene (receivers).	
– Press button I or O of the transmitter for longer than 2s. The lighting goes off and on as confirmation.	
<b>Select light scene A-D:</b>	
– Short press button I or O on the transmitter.	

MODE	
1	Short press button O = Switch on scene A Long press button O = Store scene A
2	Short press button I = Switch on scene B Long press button I = Store scene B
3	Short press button O = Switch on scene C Long press button O = Store scene C
4	Short press button I = Switch on scene D Long press button I = Store scene D

### FUNCTION 7

WINDOW CONTACT AND WINDOW HANDLE	
MODE	
1	All window contacts closed = Switch off Window contact opened = Switch on
2	All window handles closed = Switch off Window handle opened = Switch on
3	Window visualisation (without switching function) Status message: window open/closed

#### NOTES

- For purely window visualisation purposes without switching function, window contacts and window handles must be assigned to Mode 3 (e.g. for handheld transmitter, PC visualisation, etc.).
- The assignment and programming of a window contact is also possible before the installation!
  - To activate (identify) the window contact during learn mode or function programming press the programming button of the window contact once.
  - To activate (identify) the window handle during learn mode or function programming open or close the handle once.

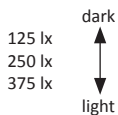
## MOVEMENT DETECTOR AND LIGHT SENSOR

Specifically functions 8 and 9 are suitable for movement detectors and light sensors. Movement detectors can be used with an integrated or external light sensor. The captured data are sent by RF signal to the receiver for evaluation. Assigning these in learn mode first allocates the following default functions:

Name	Default function
Light Sensor	Function 09 ⇔ Mode 04
Movement detector	Function 08 ⇔ Mode 11
Movement detector with integrated light sensor	Function 08 ⇔ Mode 04

**NOTE:** The function and mode can be changed when necessary (see PROGRAMMING).

#### Light value:



### FUNCTION 8

FULLY AUTOMATIC	
FUNCTION	
Presence and light value from mode 1-12 not exceeded	Switch on
Absence or light value exceeded	Mode 1-12
MODE	
1	Switch off after 2 min. (125 lx)
2	Switch off after 5 min. (125 lx)
3	Switch off after 15 min. (125 lx)
4	Switch off after 2 min. (250 lx)
5	Switch off after 5 min. (250 lx)
6	Switch off after 15 min. (250 lx)
7	Switch off after 2 min. (375 lx)
8	Switch off after 5 min. (375 lx)
9	Switch off after 15 min. (375 lx)
10	Switch off after 2 min. (PIR without light measurement)
11	Switch off after 5 min. (PIR without light measurement)
12	Switch off after 15 min. (PIR without light measurement)

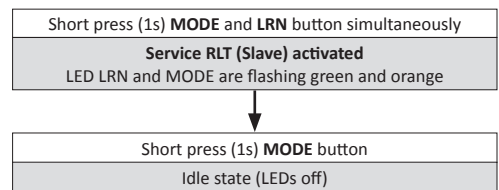
### FUNCTION 9

SEMI AUTOMATIC	
FUNCTION	
Absence or light value exceeded	Mode 1-12
MODE	
1	Switch off after 2 min. (125 lx)
2	Switch off after 5 min. (125 lx)
3	Switch off after 15 min. (125 lx)
4	Switch off after 2 min. (250 lx)
5	Switch off after 5 min. (250 lx)
6	Switch off after 15 min. (250 lx)
7	Switch off after 2 min. (375 lx)
8	Switch off after 5 min. (375 lx)
9	Switch off after 15 min. (375 lx)
10	Switch off after 2 min. (PIR without light measurement)
11	Switch off after 5 min. (PIR without light measurement)
12	Switch off after 15 min. (PIR without light measurement)

## ENOCEAN SERVICE RL (Slave)

The EnOcean Service RL (RadioLinkTest) allows the operator to test the distance between an EnOcean transmitter (e.g. handheld transmitter 450 FU-HS 128) and a receiver.

This test is evaluated by the master. The receiver is used as a slave. This function is ideal for testing the suitability of the receiver's site before it is installed.



**NOTE:** The EnOcean Service RL ends automatically after 30 s or successful evaluation!