STC-MSG Server UP

MSG Server for communication between EnOcean sensors and EnOcean valve actuators

thermokon Sensortechnik GmbH

Data Sheet

Subject to technical alteration
Issue date: 10.10.2014

enocean alliance
No Wires. No Batteries. No Limits.

Application

Wirelessly controlled heating regulator for operation of up to 5 valve actuators in connection with wireless room operating units. Furthermore, it is feasible to make use of the function "energy stop" by seamlessly connecting window contacts SRW01 and handles SRG01 to the SAB05, resulting in an automated closing of the valves, if a window is open.

STC-MSG Server UP can learn in the following sensors:

5x	EnOcean valve actuator (SAB05)
1x	Room operating panel type SR04x, SR06x or SR07x
10x	Digital input module SR65DI, EnOcean switches, EnOcean motion sensors (e.g. SR-MDS, SR-MOW)
20x	Window contact SRW01 or window handle SRG01

Types available

STC-MSG Server UP	1-channel, power supply 110..240 V ~

Security Advice – Caution

The installation and assembly of electrical equipment must be performed by a skilled electrician.

The modules must not be used in any relation with equipment that threatens, directly or indirectly, human health or life or with applications that can result in danger for people, animals or assets.

Before connecting devices with electrical power supply, the installation must be isolated from power source!

Notes on Disposal

For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

Electrical Connection

The devices are constructed for the operation of mains voltage (normally between 90 and 265 V). For the electrical connection, the technical data of the corresponding device are valid.

Especially with regard to passive sensors in 2-wire conductor versions, the wire resistance of the supply wire has to be considered. If necessary the wire resistance has to be compensated by the follow-up electronics. Due to self-heating, the wire current affects the measurement accuracy. So it should not exceed 1 mA.

Sensing devices with transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (±0,2 V).When switching the supply voltage on/off, onsite power surges must be avoided.

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Transmitting Frequency and Measuring Principle

The device sends an event- or a time-controlled telegram to the receiver.

A: event-controlled
By activating the learn button of the device, the internal microprocessor is woken up and a request telegram is generated and transmitted to the receiver. The request telegram contains the status of the device as well as the battery status.

B: time-controlled
The internal microprocessor wakes up at a predefined interval according to the settings. A request telegram is generated and transmitted to the receiver.

After a telegram was sent, the device expects the answer telegram to be received within 1 sec. In case no telegram can be received, the device falls back into sleep mode.

If a telegram has been received, the control loop is calculated and the actuator will react before entering the sleep mode.

Information about EasySens (Radio)

Transmission Range

As the radio signals are electromagnetic waves, the signal is damped on its way from the sender to the receiver. That is to say, the electrical as well as the magnetic field strength is removed inversely proportional to the square of the distance between sender and receiver ($E,H \sim 1/r^2$).

Beside these natural transmission range limits, further interferences have to be considered: Metallic parts, e.g. reinforcements in walls, metallized foils of thermal insulations or metallized heat-absorbing glass, are reflecting electromagnetic waves. Thus, a so-called radio shadow is built up behind these parts.

Radio waves can penetrate walls, however signal dampening is increased vs transmitting within the free field.

Penetration of radio signals:

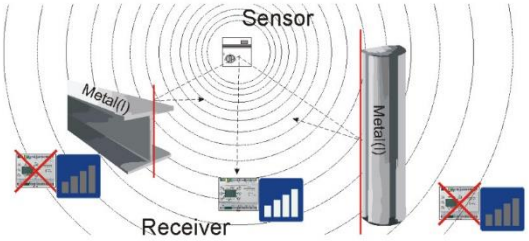
Material	*Penetration*
Wood, gypsum, glass uncoated	90..100%
Brick, pressboard	65.. 95%
Reinforced concrete	10.. 90%
Metal, aluminium pasting	0.. 10%

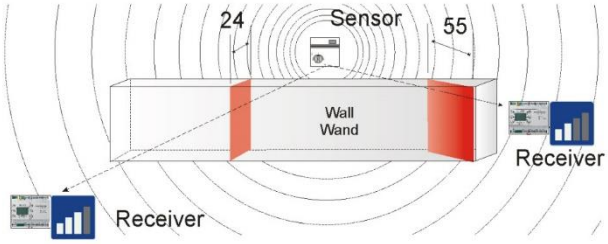
This means that the building material used in a building is of paramount importance for the evaluation of the transmitting range. For an evaluation of the environment, please see guide values listed below:

Radio path	*Range/penetration*
Visual contacts	Typ. 30 m range in passages, corridors, up to 100 m in halls
RI gypsum walls/wood	Typ. 30 m range through max. 5 walls
Brick wall/Gas concrete	Typ. 20 m range through max. 3 walls
Reinforced concrete/-ceilings	Typ. 10 m range through max. 1 ceiling

Supply blocks and lift shafts should be seen as a compartmentalization

In addition, the angle with which the signal sent arrives at the wall is also important. Depending on the angle, the effective wall strength and thus the damping attenuation of the signal changes. If possible, the signals should run vertically through the wall. Recesses should be avoided.





Other Interference Sources

Devices that also operate with high-frequency signals, e.g. computer, audio-/video systems, electronic transformers and ballasts etc. are also considered as an interference source. The minimum distance to such devices should amount to 0,5 m.

Selecting the best Device Mounting Position using field strength measuring instruments (e.g. Thermokon AirScan)

Instruments for measuring and indicating the received field strength (RSSI) of the EnOcean telegrams and interfering radio activity of transmission frequency support electrical installers during the planning phase and enable them to verify whether the installation of EnOcean transmitters and receivers is possible at the positions planned.

They can be used for the examination of interfered connections of devices, already installed in the building, to determine the correct mounting position for the wireless sensor/ receiver:

Person 1 operates the wireless sensor and produces a radio telegram by manual actuation while Person 2 monitors the displayed field strength values on the measuring instrument. Person 1 does vary the wireless sensor's position to determine the optimal intended mounting position.

High-Frequency Emission of Wireless Sensors

Since the development of cordless telephones and the use of wireless systems in residential buildings, the influence of radio waves on people's health living and working in the building have been discussed intensively. Due to incomplete measuring results and long-term studies, very often great feelings of uncertainty exist with the supporters as well as with the critics of wireless systems.

A measuring expert certificate of the institute for social ecological research and education (ECOLOG) has confirmed, that the high-frequency emissions of wireless keys and sensors based on EnOcean technology are **considerably lower** than comparable conventional keys.

Even conventional keys send electromagnetic fields, due to the contact spark. The emitted power flux density (W/m²) is 100 times higher than using a wireless switch considering the total frequency range. In addition, a potential exposition by low frequency magnet fields emitted via used wires are reduced due to wireless keys.

If the radio emission is compared to other high-frequency sources in a building such as DECT-telephones and basis stations, these systems are 1.500 times higher-graded than wireless switches.

Technical Data

Power supply**:**	110..240 V ~, 50/60 Hz
Power consumption:	max. 0,5 VA
Antenna:	Internal sending/receiving antenna
Transmitting frequency:	868 MHz
Transmitting power:	<10 mW
Transmitting range:	approx. 30 m in buildings (depending on building structure)

Clamps:	Terminal screw max. 1,5 mm²
Housing:	ABS, colour red
Protection:	IP20 according to EN 60529
Ambient temperature:	-20..+60 °C
Humidity:	0..75% rH, not condensed
Storage temperature:	-20..+70 °C
Weight:	55 g

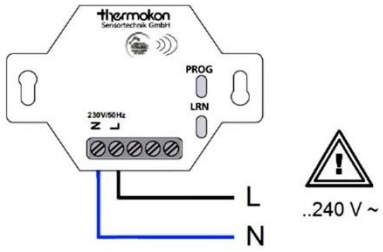
Mounting Advices

The housing of the module is designed for an installation in walls and ceilings.

The ideal mounting place in rooms is found approx. 1 m under the ceiling (optimum radio transmission range). The distance to other senders (e.g. GSM/DECT/Wireless LAN/ EnOcean senders) should be at least 2 m.

For best location of the repeater and best radio transmission range, please see “Information about EasySens (Radio). Please also note our general notes in “INFOBLATT THK”.

Connection plan



Commissioning

1. Set Receiver into Learn Mode:

Actuate the LRN-button on the receiver and keep it pressed. After 2 seconds, the receiver automatically switches to learn mode. During Learn-mode the LRN-LED is flashing.

2. Learning-in of Radio Sensors:

Actuate the LRN-button at the radio temperature sensor (sender). The sender allocation at the receiver is shown for 2 seconds by means of the permanently flashing LRN-LED. (Remark: Only one temperature sensor can be learned in. If another sensor is learned, the ID of the current sensor will be overwritten). Afterwards the flashing of the LED restarts and it is possible to learn-in additional devices by pressing their respective learn button.

3. Exit Learn Mode:

The LRN mode of the receiver is left automatically by actuating the LRN button for more than 2 seconds or if no button at the sender is actuated within 60 seconds. Afterwards, the receiver is ready for operation and uses the measured values transmitted by the sender.

4. Clearing of Senders (if required):

Learned-in senders (radio sensors or window contacts) can be cleared. Set the receiver into LRN mode (see point 1). If the respective LRN button is actuated on the sensor learned-in, the sensor will be learned-off. The deletion of the sensor is shown by the LRN-LED, which flashes twice for 4 seconds.

5. Restoration of Delivery Mode (if required):

Actuate LRN button and PROG button on the receiver. After approx. 5 seconds, all senders learned-in are cleared out of the storage. The clearing of the memory is indicated by flashing of LRN-LED and PROG-LED.

Configuration

General

The STC-MSG Server UP is designed as an interface between EnOcean based valve actuators (SAB0x) and other common EnOcean based sensors (temperature, motion, window status etc.).

The sensors transmit their values to the STC-MSG Server UP time- or event-controlled (e.g. current room temperature, set point, window status etc.). The STC-MSG Server UP verifies the data and calculates the necessary actuation variable (valve opening).

To achieve a long battery lifetime of the valve actuator, the same is put in an energy saving mode (sleep mode). The actuator is waking up in a certain time interval (T_wake up). If the valve actuator awakes, it sends a request telegram to the STC-MSG Server UP.

Afterwards, the STC-MSG Server UP re-transmits its new actuating variable (valve opening) to the valve actuator within 0.5 seconds. The valve actuator starts the valve position and falls back into sleep mode.

Function Energy Stop

If a wireless window contact/window handle is connected, the corresponding actuator can only drive, if

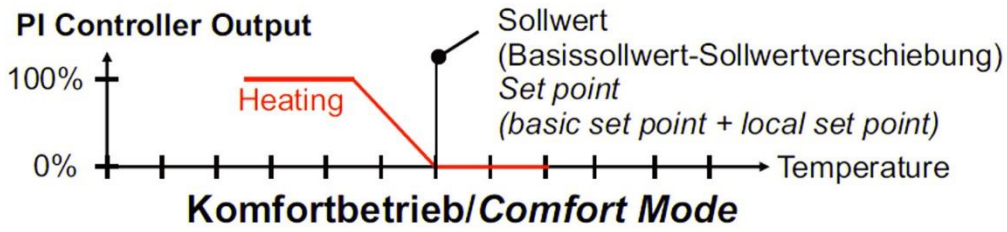
- the information „window closed“ is transmitted by the window contact/window handle or
- no signal has been received from the window contact within the last 45 minutes (faulty window contact) or
- the window contact/window handle reports „window open“, the room temperature dropped below the adjustable frost protection limit (default +8 °C).

Additional Function Comfort Operation/ Lowering Operation:

When using the room sensor SR04P MS or SR07P MS or up to 10 sensors type digital input module SR65DI or motion sensors type SR-MDS or EnOcean based wireless switches, the STC-MSG can be toggled from the operation mode “COMFORT” to the “LOWERING” mode by a radio signal.

In comfort mode, the set point of the controller is made up of

Basic set point + local set point adjustment.



In the lowering mode, the set point of the controller is made up of

Basic set point – lowering temperature or basic set point
± set point adjustment-lowering temperature, depending on parameterization.

Toggling is done:

- SR04P MS by means of the slide switch (position 1 = lowering operation, position 0 = comfort operation),
- SR07P MS by means of the slide switch (position Night = lowering operation, position Day = comfort operation),
- SR65 DI by means of the digital input for potential-free contacts
  (contact open = lowering operation, contact closed = comfort operation).
- SR-MDS by means of motion detection
  (motion detected = comfort operation, no motion detection = lowering operation).
- EnOcean wireless switch: by means of pushing the button (position 1= comfort operation, position 0=lowering operation).

The parameter for the basic set point and lowering temperature can be adjusted during the installation of STC-MSG Server UP.

Amendment of Receiver Parameter:

The standard parameters can be changed in the operation mode “Learn mode” by the PROG-button.

Parameter	Description	Default status
1 *)	Do not consider local set point adjustment	Deactivated
2	**Local set point adjustment = ±5 K**	**Activated**
3	Local set point adjustment = ±2,5 K	Deactivated
4	Basic set point = +18 °C	Deactivated
5	Basic set point = +19 °C	Deactivated
6	Basic set point = +20 °C	Deactivated
7	**Basic set point = +21 °C**	**Activated**
8	Basic set point = +22 °C	Deactivated
9	Basic set point = +23 °C	Deactivated
10	**P-Band = 1,5 K / Tn = 100 Min.**	**Activated**
11	P-Band = 1,5 K / Tn = 50 Min.	Deactivated
12	P-Band = 4 K / Tn = 200 Min.	Deactivated
13	Do not ignore set point potentiometer in lowering mode	Activated
14	Ignore set point potentiometer in lowering mode	Deactivated
15	Lowering temperature = -2 K	Deactivated
16	**Lowering temperature = -4 K**	**Activated**
17	Lowering temperature = -6 K	Deactivated
18	Lowering temperature = -12 K	Deactivated
19	No after-running time (Overtime/Party function)	Deactivated
20	**After-running time 1 hour (Overtime/ Party function)**	**Acivated**
21	After-running time 3 hours (Overtime/ Party function)	Deactivated

1) Notice: This setting must be used for all wireless sensors without a set point adjuster (SR04/SR06) so that the receiver uses the correct set value.

Example: Change Basic Set Point from +21 °C to +19 °C

1. Set Receiver in Learn Mode:

   - Actuate the LRN-button and keep it pressed for more than 2 seconds.
   - Receiver automatically switches to learn mode. LRN-LED is flashing.

2. Choose Basic set point +19 °C:

   - Actuate PROG button for 5 times.
   - Device acknowledges the choice of the parameter by PROG-LED flashing 5 times.

3. Leave Learn Mode:

   - Actuate the LRN-button and keep it pressed for more than 2 seconds.
   - Receiver automatically switches to normal operation. LRN-LED is out.

Dimensions (mm)