JOY SR FC EC AO2DO RS485 Modbus

Electronic Fancoil Thermostat (from Version 4.x)

thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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» APPLICATION

Modern fan coil room thermostat to control fan coil units with EC fans. It is suitable for 2- and 4-pipe systems. It has 2 relays and 1 analogue output 0-10V (heating valve, cooling valve and EC fan). The device combines a modern design with a 2,5" LCD and a touch-sensitive surface, 3 time program options each with 4 time periods options.

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.

» 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

» TECHNICAL DATA

Measuring values	temperature, humidity* *(optional)*
Network technology	RS485 Modbus RTU, **Fail-safe Biasing required**
Radio technology	EnOcean (IEC 14543-3-10), transmission power <10 mW
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Measuring range humidity *(optional)*	0..100% rH non-condensing
Accuracy humidity *(optional)*	±2% between 10..90% rH (typ. at 21 °C)
Control function	setpoint adjustment 0..+50 °C, fan stages
Display	LCD 2,5", 240x160 px, white backlighting

*Humidity measured value is not processed internally. The values are displayed and can be read out by higher-level systems for evaluation and further use.

Functions	integrated PI-controller, 2nd control loop: 2-point controller, MSG server for 2nd control loop via radio	
Enclosure	PC and glass, optional black or white	
Protection	IP30 according to EN 60529	
Connection electrical	**Terminal 1..8** terminal block max. 1,5 mm²	**Terminal 9..12** terminal block max. 1.0 mm²
Ambient condition	0..+50 °C, max. 85% rH non-condensing	
Weight	195 g	
Mounting	flush mounted with standard EU box (Ø=60 mm)	
Notes	there are 20 EnOcean transmit / receive channels available for various functions	

Output voltage	1x 0..10 V, max. load 5 mA, EC FAN control	
Output switch contact	2x normally open contacts (heating/cooling), 240 V max. load 500 mA	
Power supply	85..260 V ~	
Power consumption	max. 3 VA (260 V ~)	
Inputs	**DI1** input for NTC 10 K or floating contact	**DI2** digital input for non-floating contact

» MOUNTING ADVISE ROOM SENSORS

The Accuracy of the room sensors are influenced by the technical specifications as well as the positioning and the installation type.

During Assembly:
- Seal mounting box (if present).
- Installation type, air draught, heat source, radiation heat or direct sunlight can affect the measurement.
- Bulding material specific properties of the installation place *(brick-, concrete-, partition wall, cavity wall, …)* can affect the measurement.

Assembly not recommendet in…
- Air draught (e.g.: close to windows / doors / fans …)
- Near heating sources,
- Direct sunlight
- Niches / between furniture / …

» MOUNTING ADVICES JOY

Plasterboard boxes shall be covered by wall paper or paint to avoid that the plasterboard box's front rim will be partially visible underneath JOY. Maybe consider using white plasterboard boxes (i.e. Kaiser 9063-77)

» CONFIGURATION

» Parametermenu
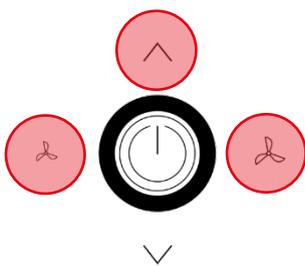
Access to Parametermenu:
Press buttons for 3 seconds simultaneously

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Menu
Timechannel                ▷
Time/Date                  ▷
Sensor settings            ▷
Common settings            ▷
EnOcean list               ▷
EnOcean configuration      ▷
```

If no entry is made for 8 minutes, the parameter menu is left automatically.

»JOY MODBUS SOFTWARE MANUAL

Detailed information on device functions and software
https://www.thermokon.de/direct/files/joy-rs485-modbus-manual.zip

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»PARAMETER MENU – MODBUS INTERFACE

The configuration menu is activated by simultaneously pressing the buttons "up" (A) and "down" (C) for at least 5 seconds.

The menu is enabled during the first 60 minutes after switching on the supply voltage as long as the device is not actively involved in Modbus communication. As soon as the device receives a valid request addressed to the device from a DDC, access to the menu is blocked. Without valid communication, access is blocked after 60 minutes!

Modbus settings		
Address	◄ -/+ ►	32
Baudrate	◄ -/+ ►	19200
Parity	◄ -/+ ►	Even

Address (default: 32)
Adjustable address (1-247)

Baud rate (default: 19200)
9600Bd | 19200Bd | 38400Bd | 57600Bd

Parity (default: even)
Non | odd | even

»CONFIGURATION VIA UCONFIG | MICROSD-CARD OR MODBUS

Configuration software:
uConfig | Microsoft Windows is required to use the uConfig configuration software.

The JOY room thermostat can be parameterised using the uConfig configuration software. An SD card is used to transfer the created configuration file to the device. For BUS devices, a live configuration can also be performed via the BUS interface.

The online installer for the configuration software can be found in our download center. The installer retrieves all necessary files and plug-ins from our web server. In this version an update function is integrated in the software.
→ **https://www.thermokon.de/download**

»MENU → ENOCEAN CONFIGURATION

The access to the menu <**EnOcean configuration**> can be protected with a password via Modbus. The login remains unlocked in the EnOcean menu until 10 minutes after the last key press. Default password: 0000 (deactivated)

More detailed information for the configuration of the EnOcean channels can be found in the specification.

»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: https://www.thermokon.de/direct/files/airconfig-software-manual-en.pdf

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»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://tools.enocean-alliance.org/EEPViewer/

»PRODUCT TESTING AND CERTIFICATION

CE

Declaration of conformity
The declaration of conformity of the products can be found on our website
https://www.thermokon.de/direct/en-gb/categories/joy-fancoil

»CONNECTION PLAN

JOY Fancoil EC AO2DO (85..260 V ~)
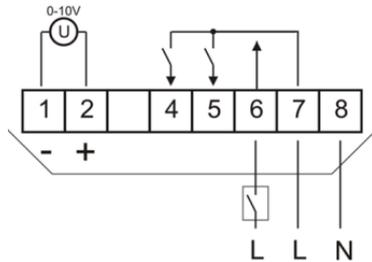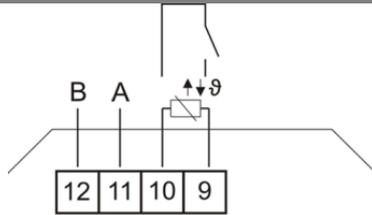
1 EC Fan GND
2 EC Fan (0..10 V)

4 Cooling
5 Heating
6 Digital Input 2 (230V)
7 L
8 N

12 Modbus B
11 Modbus A
10 GND DI 1
9 Digital Input 1 (or NTC10K)

Note:
The inputs for floating contacts must not be connected in parallel. If the function (Change-Over DI, window contact, dewpoint,…) of several devices is to be switched by one contact, the input for the floating contacts must be used. It must be ensured that the same phase is used for jointly switched devices.

»DIMENSIONS (MM)
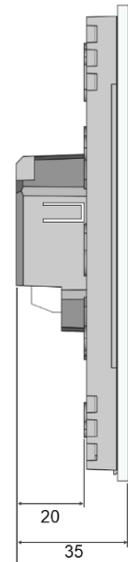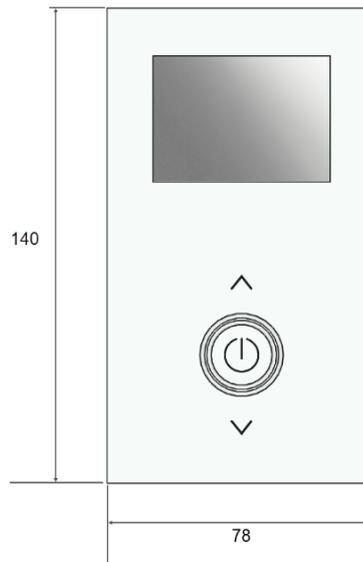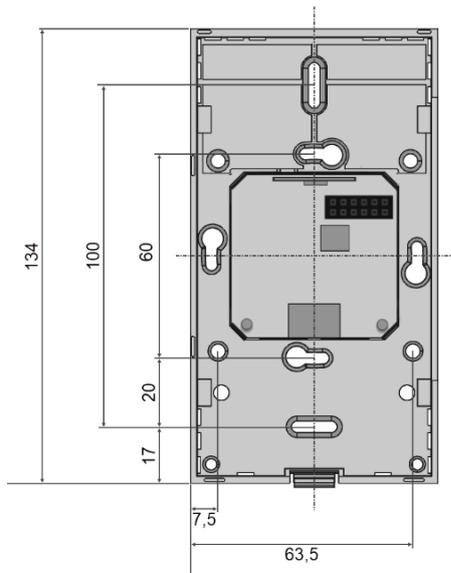
»ACCESSORIES (OPTIONAL)

Frame for surface mounting JOY pure white	Item No. 760201
Frame for surface mounting JOY black	Item No. 760951
Decorative frame pure white for JOY	Item No. 681452
Decorative frame black for JOY	Item No. 740951
MicroSD card 2GB	Item No. 500098
RS485 Biasing Adapter	Item No. 811378
USB RS485 Modbus RTU Logger	Item No. 809917
Converter RS485 Modbus - USB	Item No. 668293

»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