JOY FC EC AO2DO RS485 Modbus

Fancoil Regulator (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.

» 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.

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)*, CO2* *(optional)*
Network technology	RS485 Modbus RTU, **Fail-safe Biasing required**
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. bei 21 °C)
Measuring range humidity *(optional)*	0..100% rH non-condensing
Accuracy humidity *(optional)*	±2% between 10..90% rH (typ. at 21 °C)
Measuring range CO2 *(optional)*	0..2.000 ppm
Accuracy CO2 *(optional)*	(5% of measuring value) + 50 ppm
Control function	setpoint adjustment +0..+50 °C, fan stages
Display	LCD 2,5", 240x160 px, white backlighting
Functions	integrated PI- and 2-point-/ 3-point-controllers, 2nd control loop: 2-point controller
Enclosure	PC and glass, optional black or white

*Humidity and CO2 measured values are not processed internally. The values are displayed and can be read out by higher-level systems for evaluation and further use.

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)	

Output voltage	1x 0..10 V, max. load 5 mA, EC FAN control	
Output switch contact	2x normally open contacts (heating/cooling), 24 V max. load 3 A	
Power supply	24 V = (±10%) or 24 V ~ (±10%)	
Power consumption	max. 3 W (24 V ~)	
Inputs	**DI1** input for NTC 10 K or floating contact	**DI2** digital input for non-floating contact

***Power supply**

When several BUS devices are supplied by one 24 V AC voltage supply, it is to be ensured that all “positive” operating voltage input terminals (+) of the field devices are connected with each other and all “negative” operating voltage input terminals (-) (=reference potential) are connected together (in-phase connection of field devices).

In case of reversed polarity at one field device, a supply voltage short-circuit would be caused by that device. The consequential short-circuit current flowing through this field my cause damage to it. **Therefore, pay attention to correct wiring.**

» 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…

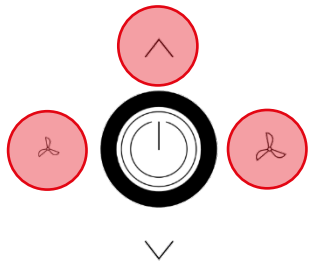
- Air draught (e.g.: close to windows / doors / fans …)
- Near heating sources,
- Direct sunlight
- Niches / between furniture / …

» MOUNTING ADVICES JOY

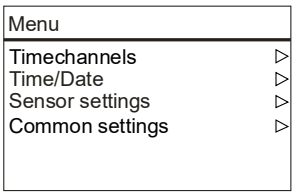
Plasterboard boxes shall be covered by wall paper or paint to avoid that the plasterboard box's front rim will be partially visible underneath JOY. Maybe consider using white plasterboard boxes (i.e. Kaiser 9063-77).

» CONFIGURATION

» Parametermenu



Access to Parametermenu:
Press buttons for 3 seconds simultaneously



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

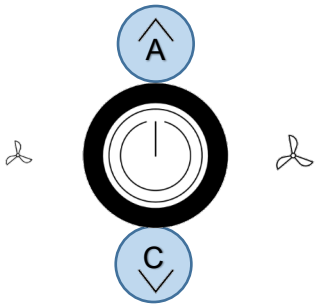
»JOY MODBUS SOFTWARE MANUAL

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

»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

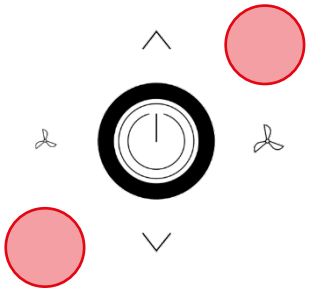
Configuration software:
uConfig | Microsoft Windows is required to use the uConfig configuration software

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 installer for the configuration software can be found in the Download-Section on our website. The installer retrieves all necessary files and plug-ins from our web server. In this version an update function is integrated in the software.
Download-Section https://www.thermokon.de/en-gb/download

»CO2 FACTORY SETTING

To reset the sensor to factory settings, use the key combination.
This key combination only works in the CO2 sensor settings menu.

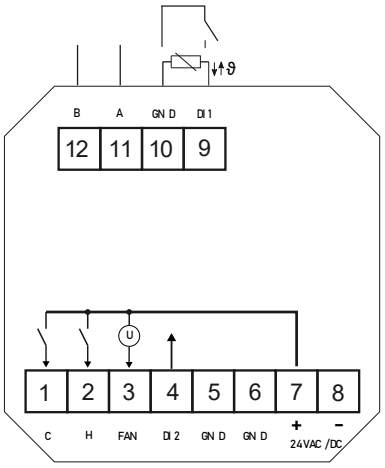


»PRODUCT TESTING AND CERTIFICATION

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

»CONNECTION PLAN

JOY Fancoil EC AO2DO (24 V ~/=)



1 Cooling
2 Heating
3 EC Fan (0..10 V)
4 Digital Input 2
5 GND
6 GND
7 24 V = (±10%) or 24 V ~ (±10%)
8 GND

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

Use twisted and shielded cables in pairs to supply the devices and control line (e.g., J-Y(ST)Y 2x2xØ0.8).

No parallel connection of inputs.
Exception: DI2.

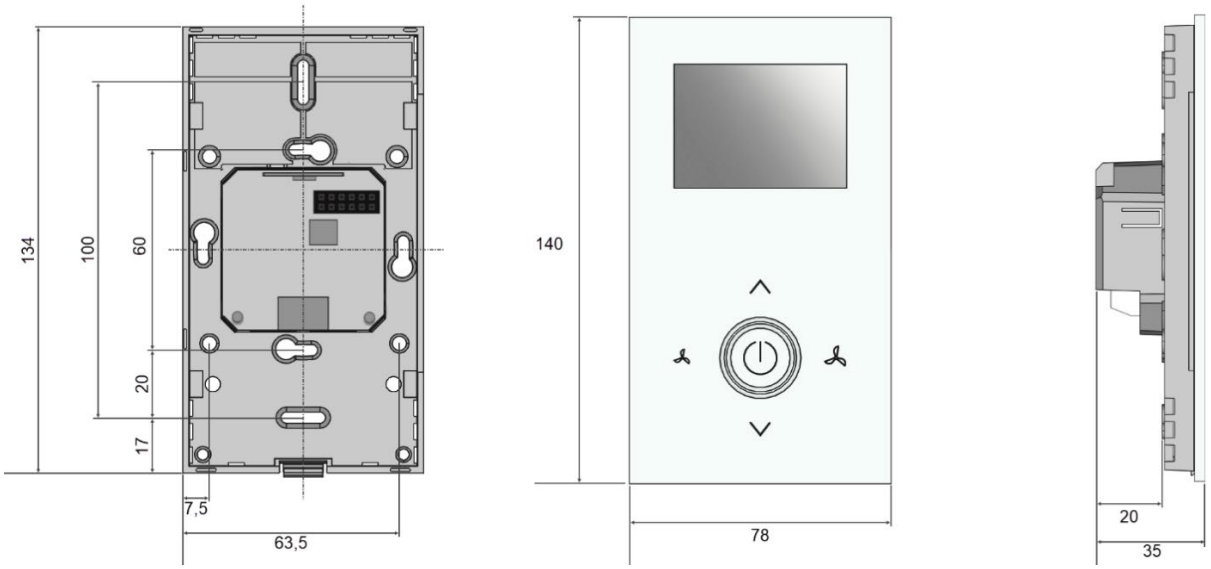
Switching element contacts (changeover, window contact, dew point, etc.) must be designed in accordance with EN/IEC 60947-5-1 (precious metal).

For multiple devices connected together:
AC power supply: Connect + / - in phase.

DC power supply: Connect the “-” terminals of all connected devices with low impedance.

For different power supplies, connect the GND (“-”) terminals to each other.

»DIMENSIONS (MM)



»ACCESSORIES (OPTIONAL)

Frame for surface mounting JOY pure white	Item No. 760201
Frame for surface mounting JOY black	Item No. 760195
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