

# JOY FC EC 3AO RS485 BACnet

Fancoil Regulator (from Version 4.x)

**thermokon**<sup>®</sup>  
HOME OF SENSOR TECHNOLOGY

## Datasheet

Subject to technical alteration  
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## » APPLICATION

Modern design, flush mounting fan coil room thermostat. Used for individual control of temperature in commercial, industrial and residential buildings. It is tailored for two-pipe and four-pipe fan coil units with two-wire electric valves or controlling a 6-way valve. 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* ( <i>optional</i> ), CO2* ( <i>optional</i> )                   |
| Network technology                           | RS485 BACnet MS/TP, <b>Fail-safe Biasing required</b>                                  |
| Measuring range temp.                        | 0..+50 °C                                                                              |
| Accuracy temperature                         | ±1 K (typ. bei 21 °C)                                                                  |
| Measuring range humidity ( <i>optional</i> ) | 0..100% rH non-condensing                                                              |
| Accuracy humidity ( <i>optional</i> )        | ±2% between 10..90% rH (typ. at 21 °C)                                                 |
| Measuring range CO2 ( <i>optional</i> )      | 0..2.000 ppm                                                                           |
| Accuracy CO2 ( <i>optional</i> )             | (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                                                  |
| Protection                                   | IP30 according to EN 60529                                                             |

\*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.

|                       |                                                                                                                    |                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Connection electrical | Terminal 1..8<br>terminal block max. 1,5 mm²                                                                       | Terminal 9..12<br>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        | 3x 0..10 V, max. load 5 mA, EC FAN control, heating/cooling<br>or control 6-way-valves (configurable via software) |                                                  |
| Power supply          | 24 V = (±10%) or 24 V ~ (±10%)                                                                                     |                                                  |
| Power consumption     | max. 2,5 W (24 V =)                                                                                                |                                                  |
| Inputs                | D11<br>1 input for NTC10k or potential free contact                                                                | D12<br>digital input, for potential free 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...**

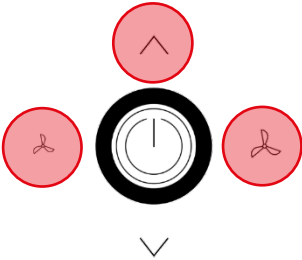
- Air draught (e.g.: close to windows / doors / fans ...)
- Near heating sources,
- Direct sunlight
- Niches / between furniture / ...

**» 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

| Menu            |   |
|-----------------|---|
| Timechannels    | ▷ |
| Time/Date       | ▷ |
| Sensor settings | ▷ |
| Common settings | ▷ |

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

## » JOY BACNET SOFTWARE MANUAL

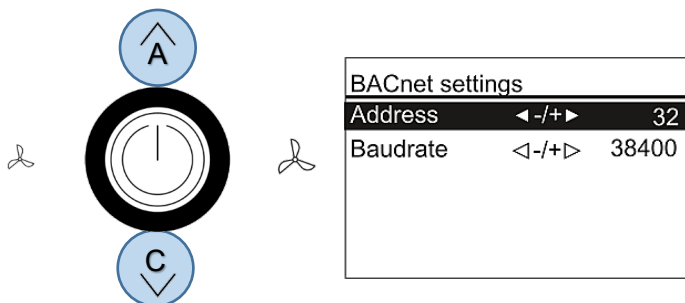


Detailed information on device functions and software  
<https://www.thermokon.de/direct/files/joy-rs485-bacnet-manual.zip>

## » PARAMETER MENU – BACNET 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 BACnet 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!



| BACnet settings |      |       |
|-----------------|------|-------|
| Address         | ◀-/▶ | 32    |
| Baudrate        | ◀-/▶ | 38400 |

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

**Baud rate (default: 19200)**  
9600Bd | 19200Bd | 38400Bd | 57600 | 76800 | 115200 Bd

## » CONFIGURATION VIA UCONFIG | MICROSD-CARD OR BACNET



### Configuration software:

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

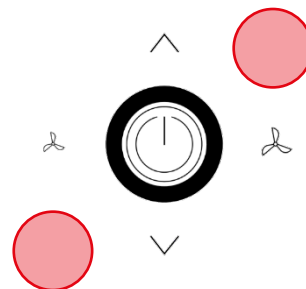
The JOY room thermostat can be parameterised using the uConfig configuration software. An SD card is used to transfer the created configuration file to the device.

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

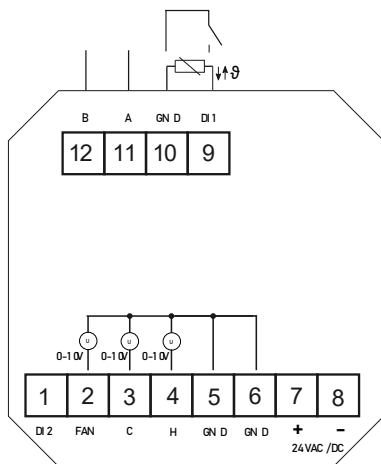


### Declaration of conformity

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 3AO (24 V ~/=)



**1 Digital Input 2**

**2 EC Fan (0..10 V)**

**3 Cooling (0..10 V) or 6-way valve**

**4 Heating (0..10 V) or 6-way valve**

**5 GND DI 2**

**6 GND**

**7 24 V = (±10%) or 24 V ~ (±10%)**

**8 GND**

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.

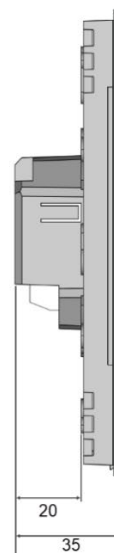
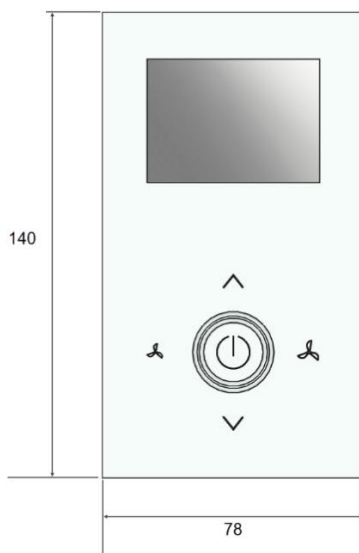
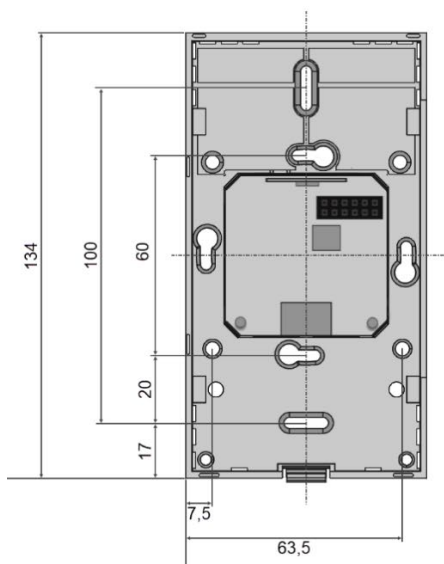
**12 B**

**11 A**

**10 GND DI 1**

**9 Digital Input 1 (or NTC10K)**

## » DIMENSIONS (MM)



## » ACCESSORIES (OPTIONAL)

Frame for surface mounting JOY pure white

Frame for surface mounting JOY black

Decorative frame pure white for JOY

Decorative frame black for JOY

MicroSD card 2GB

Item No. 760201

Item No. 760195

Item No. 681452

Item No. 740951

Item No. 500098

RS485 Biasing Adapter

USB-Interface RS485

Item No. 811378

Item No. 668293

## » NOTES ON DISPOSAL



The crossed-out wheeled 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](http://www.thermokon.com)