

# JOY FC EC AO2DO LRW

Fancoil Regulator

**thermokon**<sup>®</sup>  
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.

**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*, CO2* (optional)                                                |
| Measuring range temp.          | 0..+50 °C                                                                              |
| Accuracy temperature           | ±1 K (typ. bei 21 °C)                                                                  |
| Measuring range humidity       | 0..100% rH non-condensing                                                              |
| Accuracy humidity              | ±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 | <b>Terminal 1..8</b><br>terminal block max. 1,5 mm <sup>2</sup> | <b>Terminal 9..12</b><br>terminal block max. 1.0 mm <sup>2</sup> |
| 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), 240 V max. load 500 mA |                                                                |
| Power supply          | 85..260 V ~                                                         |                                                                |
| Power consumption     | max. 3 VA (260 V ~)                                                 |                                                                |
| Inputs                | <b>DI1</b><br>input for NTC 10 K or floating contact                | <b>DI2</b><br>digital input for non-floating contact (230 V ~) |

#### » LoRaWAN®

|                                     |                                                                       |
|-------------------------------------|-----------------------------------------------------------------------|
| Radio technology                    | LoRaWAN®                                                              |
| LoRaWAN version                     | 1.0.3                                                                 |
| Device class                        | Class C                                                               |
| Frequency                           | EU868 (863-870 MHz)                                                   |
| Max. transmission power             | +14 dBm (25 mW)                                                       |
| Receiver sensitivity                | -137 dBm                                                              |
| Antenna                             | Internal send- / receiver antenna                                     |
| LoRaWAN Features                    | Over the Air Activation (OTAA), Adaptive Data Rate (ADR)              |
| Data transmission<br>(configurable) | Heartbeat interval, change of value, hysteresis transmission behavior |

## » 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.
- Building 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

#### » Configuration via uconfig | microsd-card



##### 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 LoRaWAN devices, a live configuration can also be performed via LoRaWAN Downlink.

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/download>

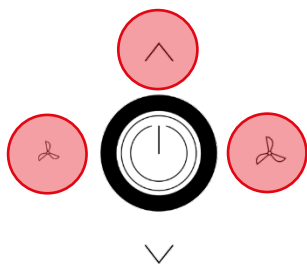
## » JOY LRW SOFTWARE MANUAL



Detailed information on device functions and software

<https://www.thermokon.de/direct/files/joy-rs485-modbus-manual.zip>

## » PARAMETERMENU



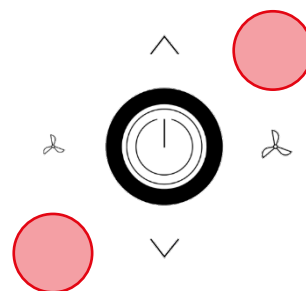
Access to Paramettermenu:  
Press buttons for 3 seconds simultaneously

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

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

## » 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.



## » PARAMETER MENU – LORAWAN



The <LoRaWAN Configuration> menu can be password protected via uConfig. The login remains active for 10 minutes after the last key press in the LoRaWAN menu. Default password: 4321

## » PRODUCT TESTING AND CERTIFICATION



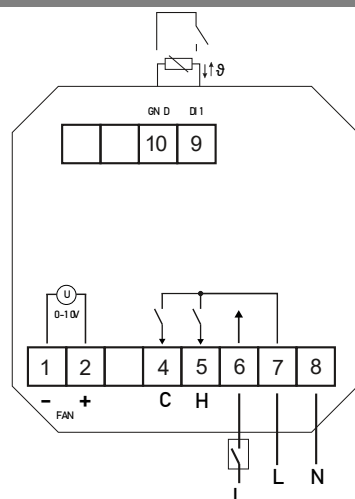
### Declaration of conformity

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 (85..260 V ~)



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

No parallel connection of inputs.  
 Exception: DI2.

**4 Cooling**  
**5 Heating**  
**6 Digital Input 2 (230V)**

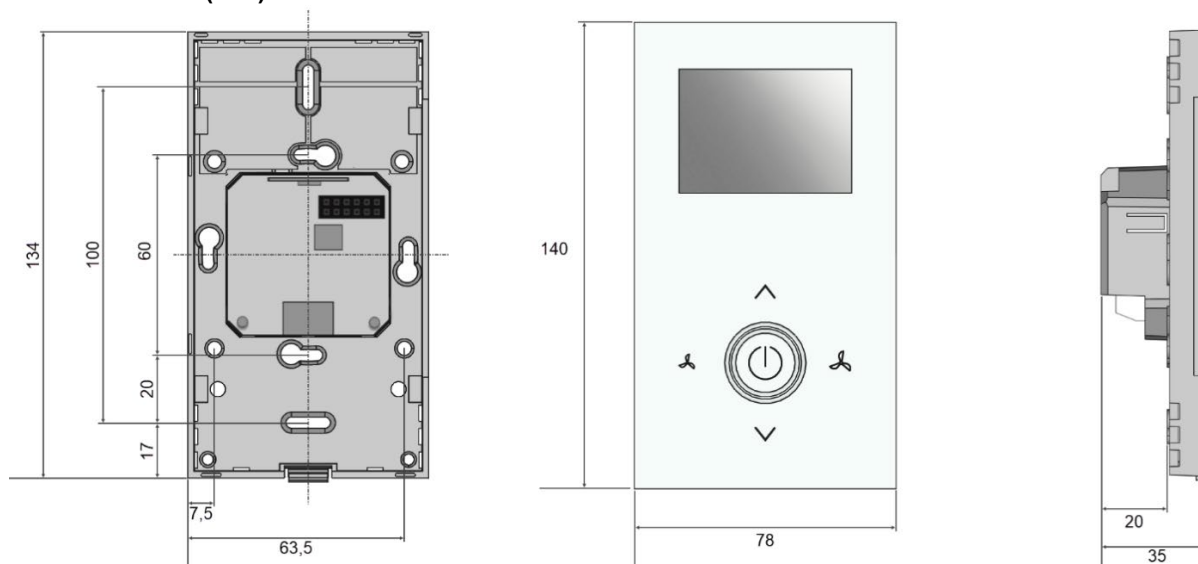
For multiple devices connected together:  
 AC power supply: connect with the same phase.

**7 L**  
**8 N**

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

**9 Digital Input 1 (or NTC10K)**  
**10 GND DI 1**

## » 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

## » 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)