CP-02X
ROOM SENSOR

Description:
The transmitter is intended for measuring carbon dioxide concentration in places occupied by people (office rooms, conference rooms, living quarters etc.).

Description

The transmitter is available in various versions with Modbus RTU communication, with humidity measurement and in versions that have a display. The data coming from the transmitter can be used, for example, for control of the ventilation system.

The model with the display makes possible sequential reading of the measured values. The display can be locked so as to show the requested parameters only.

The ABCLogic™ automatic calibration method eliminates the possibility of zero-point drift and the ABCLogic™ function can be turned off in the configuration tool.

The control output can be managed according to the value of a single measurement or by selecting all the values. The controller settings can be changed in the configuration tool.

The lower CO_2 limit for the control output is set to 400 ppm by default. This means that the control output will transmit a minimum signal (0 V or 2 V – depending on the selected sensor configuration) for a value of 400 ppm. For the upper limit, it is possible to select one of three values: 1000 ppm (default value), 1200 ppm and 1400 ppm. This is the CO_2 concentration for which the control output reaches the highest value.

Parameter	Value
Power supply	24 V AC/DC (22 to 28 V) < 2 VA
CO_2 measurement range	0 to 2000 ppm
CO_2 measurement accuracy	Standard. ±40 ppm +3% of the reading
Long-term stability	year 2% FS (automatic calibration)
Temperature measuring range	0... 50°C
Temperature measurement accuracy	±0.5°C
Humidity measurement range*	0 to 100% RH
Humidity measurement accuracy	±2% RH
Control voltage	0 to 10 V
Control current	2 mA
Communication	Modbus RTU
Working conditions – temperature	0... 50°C
Working conditions – humidity	0 to 85% RH (non-condensing)
Wire clamps	1.5 mm2, screw clamps
Housing	IP20, ABS plastic
Dimensions (width x height x depth)	87 x 86 x 30 mm

Dimensions

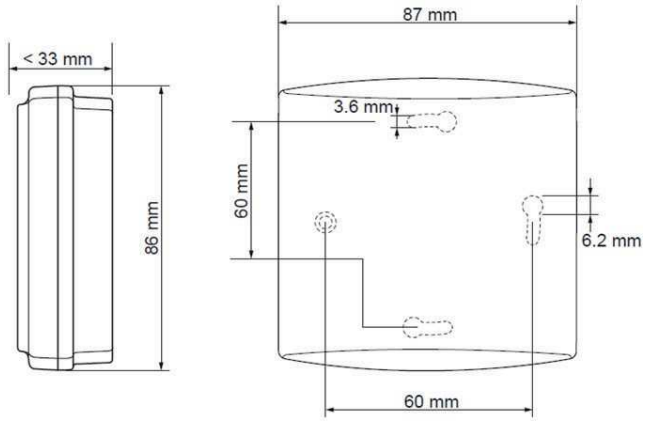


Figure 1. Device dimensions

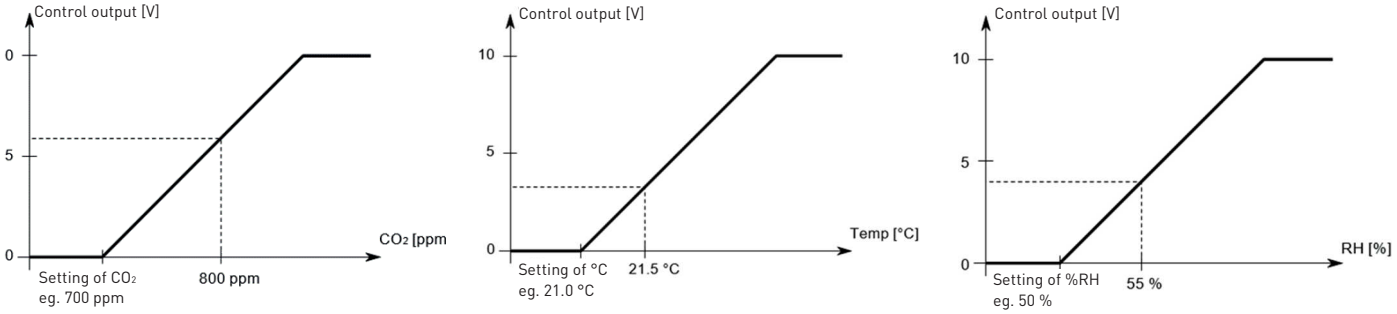
Operating Principle

CP-02X series sensors are available for several most commonly used CO_2-dependant control ranges. However, if the proposed ranges do not meet the user's requirements, the user can customise the sensor control output settings by means of the configuration tool or Modbus RTU protocol – provided that the given sensor offers this functionality. The sensor makes it possible to scale the output signal for the signal range (0–10 V, 2–10 V or 0–5 V), the direction of the control output and the parameter preset value. Additionally, the control signal can be adjusted by means of P or PI regulators. The configuration details of the settings are given in the "CP-02X Sensors Operating Manual".

The sensor control output does not need to operate in dependence upon the level of CO_2. The user can define the control output for any one of the parameters such as CO_2, temperature, humidity, or all three of them at the same time. If you select all three values, the control output signal is determined according to the measurement that triggers the highest value of the control signal.

The sensor makes possible ventilation control according to CO_2 concentration (and the temperature). As an option, it is possible to improve the use of the fresh air depending on the daytime mode.

The following situation is presented in the exemplary figure:



CO_2 = 6 V
Temperature = 3 V
Humidity = 4 V
} Control output = 6 V

By default, the control output is set for control according to the CO_2 parameter.

Installation

Only qualified specialists can connect and configure the device. All connections must only be made when the power supply is off.

There must be the same supply voltage potential in the sensor and connected 24 V AC actuators.

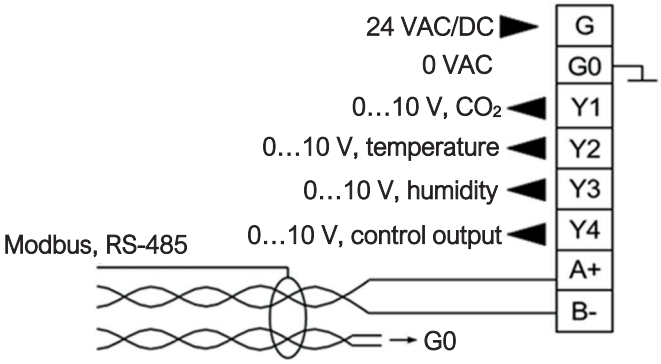


Figure 2. Wiring diagram

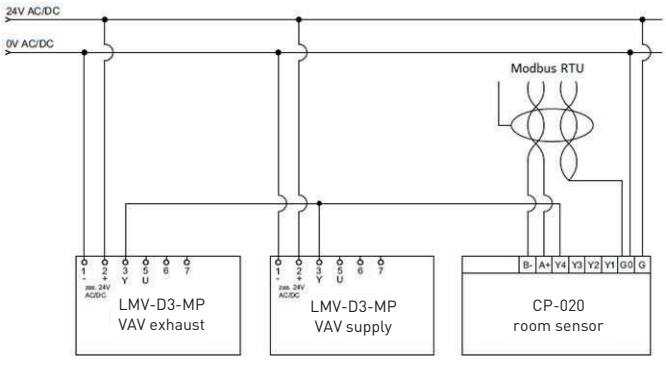


Figure 3. Connections for the CP-02X sensor outside the iFlow system

Installation

The device must be installed in a dry environment (IP20), by attaching it to the surface of a wall by means of screws or in a flush-mounted box (60 mm hole spacing). The recommended height for installation is 150 to 180 cm. All potential factors introducing measurement errors should be eliminated to the best extent possible. The list below contains common factors that can introduce measurement errors.

- Direct exposure to sunlight
- Proximity of the room user
- Air draughts coming from windows or doors
- Air draughts coming from the flush-mounted box
- Temperature difference caused by mounting on the end wall

CP-02X – Room sensor

When ordering, please provide information as follows:

CP-02<X>-<W>-<M><F>-<V><K>

Where:

X	Humidity measurement	
	0	**– No humidity measurement**
	1	– Humidity measurement
W	Display*	
	none	**– No display**
	W	– With display
M	Modbus RTU communication*	
	none	**– No Modbus RTU communication**
	M	– Modbus RTU communication
F	Use regime*	
	none	**– Version intended for using outside the iFlow system (default setting)**
	address (3,6,9 etc.)	– The iFlow address number
V	Output signal*	
	none	**– 0–10 V (default setting)**
	V	– 2–10 V
K	Upper ppm limit (for which the control output reaches its maximum)*	
	none	**– 1000 ppm (default setting)**
	1	– 1200 ppm
	2	– 1400 ppm

* Optional values – if not specified, the default values will be used

** If ordering a larger number of products, it is possible to configure the sensors for some other settings than in the table above

Sample order: **CP-020-W-M**

Notes