J. DITTRICH

# Technical Data Sheet

# MF420-IR-CO2

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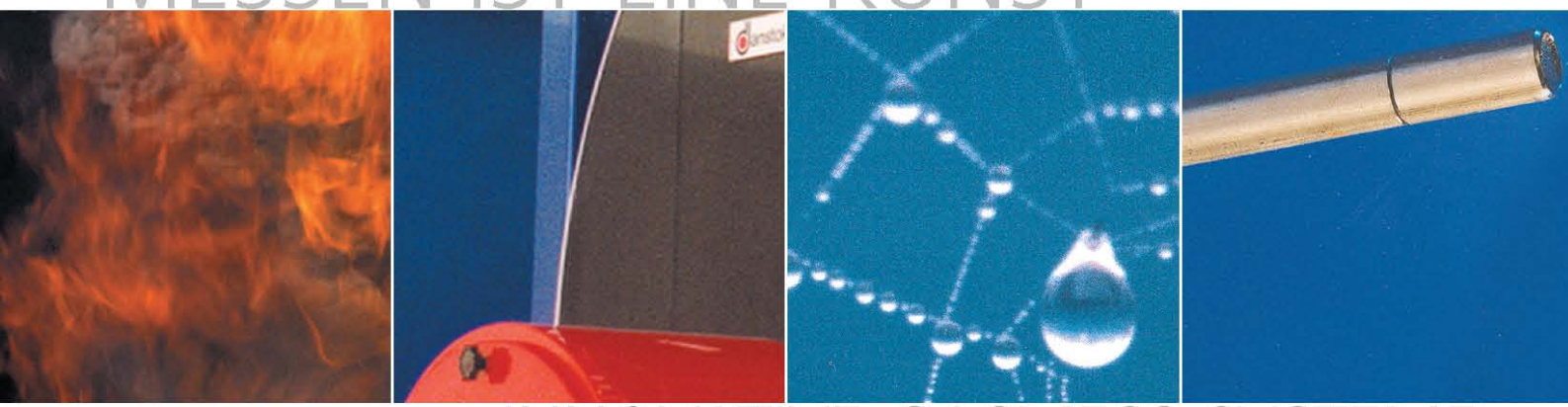

INNOVATIVE GASMESS-SYSTEME

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# 1. Properties

The gas measuring system MF420-IR-CO2 determines with the help of a specific infrared sensor the concentration of carbon dioxide in the air mixture at an ambient temperature of -10 to +50° C. It is compact, robust, easy to handle and in normal applications maintenance-free. The aluminium housing is suitable for wall mounting.

Available standard measuring ranges:

- 0-3,000 ppm (0-0.3 Vol%)
- 0-6,000 ppm (0-0.6 Vol%)
- 0-10,000 ppm (0-1 Vol%)
- 0-50,000 ppm (0-5 Vol%)
- others upon request.

As (1) the measured signals are evaluated and processed according to a new digital algorithm and (2) material and construction of the sample cell are novel, the infrared measuring system MF420-IR-CO2 detects the concentration of carbon dioxide faster, more accurately and at less cost than conventional infrared systems.

The infrared measuring system determines the absolute $CO_2$ content of the surrounding air, monitors itself continuously and signals malfunctions of the hard- and software. The whole measuring range is linear. Power supply occurs via 24 V DC.

Basic processing and output of the measured values (linear output, 4-20 mA or 0-10 V) are integrated into the measuring system. Evaluation and further processing of the measured values occur in a downstream device according to the users specifications (for e.g. ventilation system, limit monitor, display, programmable logic controller). For connection to Ethernet, a special module is available which supplies the net with the measured values.

In normal applications calibration is not necessary, however, if required, calibration can be carried out by an expert.

## 2. Design of the gas measuring system

The two-beam infrared sensor is mounted in an aluminium housing on a sensor holder above the diffusion opening. The cable entry is a screwed cable gland (PG11). In addition, a transmitter containing a signal amplifier and an output of 4-20 mA or optionally 0-10 V is arranged in the housing. The transmitter based on the three-wire system processes and transmits the measured signals (see Fig. 1).


**Fig. 1:** Gas measuring system MF420-IR-CO2.

## 3. Technical data

| Transmitter | | |
|---|---|---|
| Power supply | | Screw terminals |
| | Electric current | about 100 mA |
| Connections | Pin 1 | 0 V |
| | Pin 2 | 4-20 mA or 0-10 V |
| | Pin 3 | 24 V DC ± 5% |
| Ambient temperature | -10° C to +50° C | |
| Air pressure | 900 hPa to 1100 hPa | |
| Permissible humidity | 15-95% relative humidity | |
| Output | 4-20 mA | max. load 450 Ω |
| Housing | Aluminium | red |
| Type of protection (housing) | IP 40 | |
| Weight of housing | about 500 g | |
| Size of housing | about L90 x W85 x H65 mm | |
| Connecting cable | 3x1.5 ² Cu + functional ground | Shielded cable |
| Length | 50 Ω forward and return lead | |
| Sensor | | |
| Gas contact | via diffusion | |
| Measuring range | 0-3,000 ppm $CO_2$ | i.e. 0-0.3 Vol% $CO_2$ |
| | 0-6,000 ppm $CO_2$ | i.e. 0-0.6 Vol% $CO_2$ |
| | 0-10,000 ppm $CO_2$ | i.e. 0-1 Vol% $CO_2$ |
| | 0-50,000 ppm $CO_2$ | i.e. 0-5 Vol% $CO_2$ |
| | others upon request | |
| Heating-up time | 5 min | |
| Accuracy | ± 2% | FS (full scale) |
| Reproducibility | ± 1% | |
| Reaction time | about 30 s | |

## 4. Connection of MF420-IR-CO2

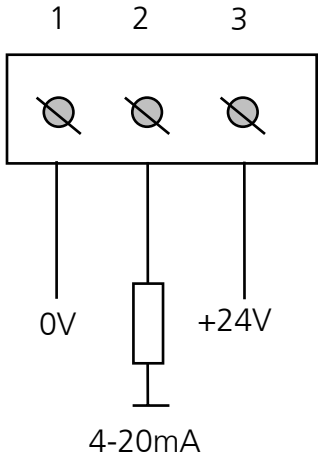


**Fig. 2:** Connection of MF420-IR-CO2. Pin 2 optionally 0-10 V.

The gas measuring system has to be connected to the downstream unit by means of a four-core shielded cable with maximum 50 Ω cable resistance, including the forward and return lead (see Fig. 2). Connection to circuit occurs via Pin 1 and Pin 3, reading of the measured values via Pin 2 (4-20 mA or 0-10 V).

## 5. Calibration of the gas measuring system

The device is in normal applications maintenance-free, calibration therefore usually not necessary. If required, calibration can be carried out by a specialist.

## 6. Other

The user should test whether the gas measuring system MF420-IR-CO2 is suitable for his application under the given conditions. Special attention has to be paid to compatibility of materials: For e.g. the sample cell must not corrode under any circumstances and the filters must not become opaque.

Subject to technical modifications without notice. (01/06) 