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MADE IN GERMANY

# FLOW$^{EVO}$ / FLOW$^{EVO}$ Plus

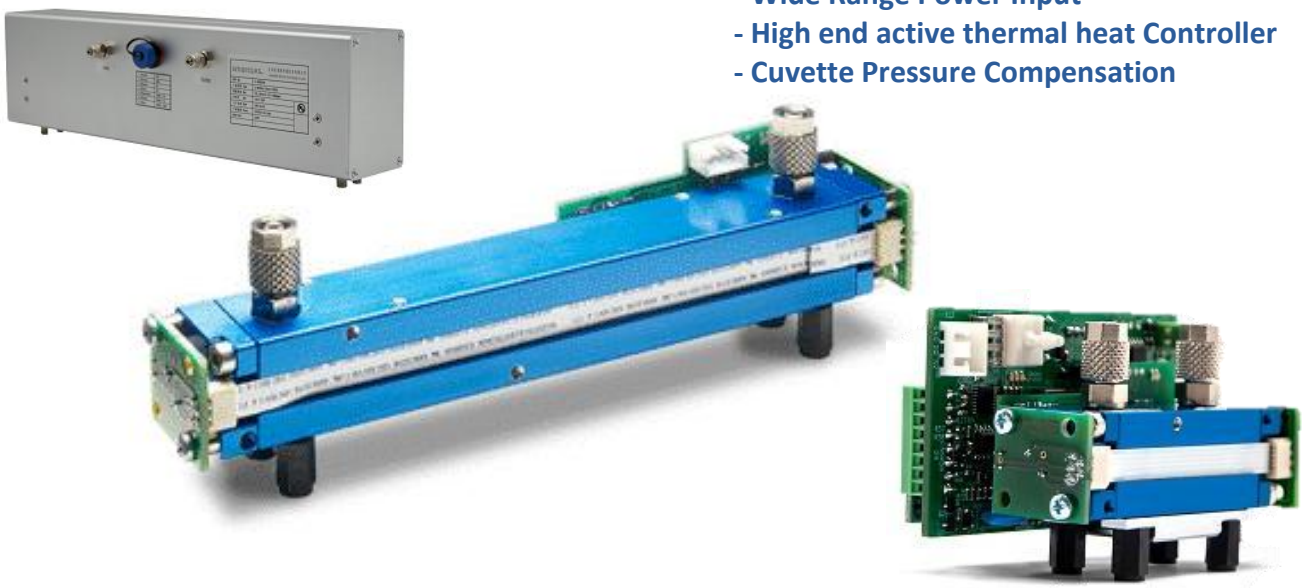
**Infrared gas Sensor**
**Carbon dioxide $CO_2$ 10 Vol.%**
**smartGAS item number:**
**F3-212107/ P3-212107.xxx**

## Product features:

- "Ready to use" NDIR sensors
- Compact Design
- Low maintenance
- Low detection limits
- Selective against influencing gases
- Flexible interfaces
- Temperature and drift compensated
- Compact construction

## Product Features FLOW$^{EVO}$ Plus only

- Active Noise reduction Filter
- Low noise at lowest T90 time
- Low LDL
- High data frequency
- Wide Range Power Input
- High end active thermal heat Controller
- Cuvette Pressure Compensation



The **Flow$^{EVO}$** sensors have a large spectrum of measurable gases and are especially convincing where it is important to have the highest precision and reliability. Different versions can be very easily combined, also facilitating complex measuring tasks. All **smartGAS** sensors are designated by low detection limits, very small drift, a large temperature range and a fast response time and markedly low operating and maintenance costs. Our NDIR sensors in the **Flow$^{EVO}$** series combine measuring precision with compact design and simple handling.

**Optional Accessories**
- Case and thermal isolation
- Heater and heat controller
- USB Adapter
- CONNECT Interface
- Calibration/Data Logger software
- Calibration and test gases
- Gas Cooler, Filter, Pre-treatment
- Analog Interfaces (EVO$^{Plus}$)

**Support**
- Design-In support
- Customization:
  - Software
  - Protocols
  - Measuring ranges
  - Background gas optimizing
  - Interfaces

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## FLOW$^{EVO}$ / FLOW$^{EVO}$ Plus | Carbon dioxide $CO_2$ | F3-212107/ P3-212107.xxx

### General features — 22 Apr 2026

| | | | |
|---|---|---|---|
| Measurement principle: | | Non Dispersive Infra-Red (NDIR), dual wavelength | |
| Measurement range: | | 0 … 10 Vol.% Full Scale [FS] | |
| Gas supply: | | by flow (nearly atmospheric pressure) | |
| | | FLOW$^{EVO}$ F3- | FLOW$^{EVO}$ Plus P3-.xxx |
| Mounting dimensions: | | 76 mm x 30 mm x 50 mm (L x W x H) | 76 mm x 30 mm x 55 mm (L x W x H) |
| Flow Rate: | | 0.1 ... 1.0 l/min | |
| Gas Cuvette Length/Material | | 40 mm / Alloy | |
| Cuvette Volume | | ≈ 2,01 cm³ | |
| Gas Connections | | 5/3mm Rubber Tube Fitting (default) | |
| Warm-up time: | | < 2 minutes (start-up time) \| < 30 minutes (full specification | |

### Measuring response*

| | | | |
|---|---|---|---|
| Digital resolution: | | 0.001 Vol.% / 10 ppm | |
| | | FLOW$^{EVO}$ F3- | FLOW$^{EVO}$ Plus P3- |
| Response time (t90) | Standard | < 16 s (Standard Mode default) | < 1.6 s |
| 0 .. 90%[FS]@0.7 l/min: | Fast Mode | < 1.6 s (Fast Mode)** | -/- |
| Detection limit (3 σ): | Standard | ≤ 0.5 % [FS] | ≤ 0.3 % [FS] |
| | Fast Mode | ≤ 1.0 % [FS] | -/- |
| Repeatability: | | ≤ ± 0.5 % [FS] | |
| Linearity error (straight line deviation): | | ≤ ± 1 % [FS] | |
| Long term stability (zero): | | ≤ ± 1.2 % [FS] over 1000 h period | |
| Long term stability (span): | | ≤ ± 1.2 % [FS] over 1000 h period | |

### Influence of T,P,flow rate,other*

| | FLOW$^{EVO}$ F3- | FLOW$^{EVO}$ Plus P3- |
|---|---|---|
| Temp. dependence (zero): | ≤ ± 0.2 % [FS] per °C | Option: Constant heated 45 °C ±0.1 °C |
| Temp. dependence (span): | ≤ ± 0.2 % [FS] per °C | Option: Constant heated 45 °C ±0.1 °C |
| Pressure dependence: | + 0.156 % of actual reading / hPa | Option: Pressure Compensated |
| Flow rate dependence: | ≤ ± 0.5 % [FS] per 0.1 l / min | |
| Cross sensitivity (zero) other gases: | Consult manufacturer | |
| Gas dew point requirement: | Not condensing, particle free and clean sample gas | |

### Electrical parameters

| | FLOW$^{EVO}$ F3- | FLOW$^{EVO}$ Plus P3- |
|---|---|---|
| Supply voltage: | 3.3V .. 6.0 VDC | 10 .. 26 VDC recommend 24VDC |
| Supply current (peak): | < 400mA @ 3.3V, < 240mA @ 5.0V | < 8 W (while heater on) |
| Inrush current: | < 600mA | < 800mA |
| Average power consumption: | < 800mW | < 800 mW (at stabilized temperature) |
| Digital output signal: | Modbus ASCII / RTU 1 Wire TTL autobaud, autoframe | RS485/RS232 Modbus ASCII / RTU autobaud, autoframe, Free ASCII |
| Max read out data rate | 2.5 Hz | 10 Hz |
| Calibration: | zero and span by software | |

### Climatic conditions

| | |
|---|---|
| Operating temperature: | Operating : 0 .. + 50 °C \| Storage : -20 .. + 60 °C |
| Air pressure: | 800 .. 1150 hPa |
| Ambient humidity: | 0 .. 95 % relative humidity (not condensing) |

### Options**** FLOW$^{EVO}$ Plus P3-

| | | |
|---|---|---|
| P3-nnnnnn-1x1 | Heater | Temp. : 45 °C (Default) |
| P3-nnnnnn-1x3 | Heater and Pressure Sensor | Temp. : 45 °C (Default) and cuvette pressure compensation |
| P3-nnnnnn-11x | Analog Interface1 | 4-20mA Isolated (3kV/rms), max load 650Ω (not possible for cased version) |
| P3-nnnnnn-12x | Analog Interface2 | 0-20mA max load 600Ω \| 0-2/5/10 VDC \| 0.4-2/1-5/2-10 VDC min resistance load 2kΩ |
| P3-nnnnnn-1xx1 | Cased 6/4mm tube | For case size please refer the drawing*** |
| P3-nnnnnn-1xx2 | Cased 5/3mm tube | For case size please refer the drawing*** |
| P3-nnnnnn-1xx5 | Cased 6/4mm tube with pump | |
| P3-nnnnnn-1xx6 | Cased 5/3mm tube with pump | |
| P3-nnnnnn-1xxxp | Pin Configuration | ‚p' can be Pin configuration A/B/C/D/E (only for cased version) |
| P3-nnnnnn-1xxxxm | Communication mode | ‚m' the selected communication mode |
| P3-nnnnnn-1xxxxxc | Connected analog voltage output | ‚c' connected analog Voltage output 2/5/10VDC refer to Pin configuration |

* Typical values related to 1013 hPa, Ta = 22 °C, flow = 0.7 l / min for dry (not condensing) and clean sample gas. Stated values exclude calibration gas tolerance.

** Adjustable only via smartGAS Calibration-Tool Software.

*** Case size may differ between version with and without pump

**** See also DS_F3_P3_Options and FLOW$^{EVO}$ Plus Manual

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