

MI-series mini CORI-FLOW™

Industrial low-flow Coriolis mass flow meter with PID controller



Mass Flow Meter model MI130

> Introduction

As the world's most compact heavy-duty Coriolis mass flow meters with integrated PID controller, the MI-series from Bronkhorst, fit perfectly in any industrial application where high precision mass low-flow metering for low flow rates is required. It's the key to accurate dosing (batch and continuous).

The MI-series consist of two models and cover a flow rate range up to 30 kg/h, suitable for liquid and gas, independent of the fluid properties. This industrial version of the mini CORI-FLOW has a robust and weatherproof metal housing. The versatile electronics support a wide range of valves and pumps and offers extensive connectivity.

> Technical specifications

Models and mass flow range

| | |
|-------|----------------|
| MI130 | 0...2,000 g/h* |
| MI140 | 0...30 kg/h* |

**) advised minimal flow: $\geq 5 \times ZS$*

Measurement / control system

| | |
|---------------------------|--|
| Features include | mass flow, density, temperature, PID controller, ratio & batch dosing, diagnostic parameters |
| Mass flow accuracy | $\leq 0.2\% Rd$ ($\leq 0.5\% Rd$ for gas) $\pm ZS$ |
| Repeatability | $\leq 0.05\% Rd \pm ZS$ |
| Zero stability (ZS) | 0.2 g/h (MI130), 6 g/h (MI140) |
| Fluid temperature range | -20...+70 °C |
| Ambient temperature range | -20...+70 °C |
| Tube temperature accuracy | ± 0.5 °C |
| Density accuracy | $\leq \pm 0.02$ g/cm ³ |
| Refresh (cycle) time | ≤ 5 msec |
| Temperature sensitivity | ≤ 20 mg/h/°C (MI130), ≤ 500 mg/h/°C (MI140) |
| Noise flow value | ≤ 0.8 g/h RMS (MI130), ≤ 8 g/h RMS (MI140) |

Electrical properties

| | |
|-------------------------|--|
| Power supply | 15...24 Vdc $\pm 10\%$ |
| Max. power consumption | 2.5 W (up to 7 W, depends on I/O options) |
| Analog setpoint (input) | 0...5 (10) Vdc or 0 (4)...20 mA |
| Customised I/O (2x) | current (accuracy ≤ 1.7 μ A), frequency, pulse, digital, voltage (accuracy ≤ 0.7 mV) |
| Analog output | 0...5(10) Vdc (accuracy ≤ 2.9 mV), 0(4)...20 mA (accuracy ≤ 7 μ A) |

Digital communication (optional)

| | |
|-----------------------|---|
| ◆ RS232/RS485 | Modbus RTU/ASCII, FLOW-BUS, PROFIBUS DP |
| ◆ Ethernet | PROFINET, EtherCAT |
| ◆ Other | HART 7.6 |
| Mains supply | M20 cable gland, screw terminals 2.5 mm ² |
| Digital communication | M20 cable gland, screw terminals 2.5 mm ² , 2x |
| Customised I/O | M12 cable gland, screw terminals 2.5 mm ² |
| Valve control signal | M12 cable gland, screw terminals 2.5 mm ² |
| Bus termination | dipswitch integrated |
| Service port | micro USB connector |

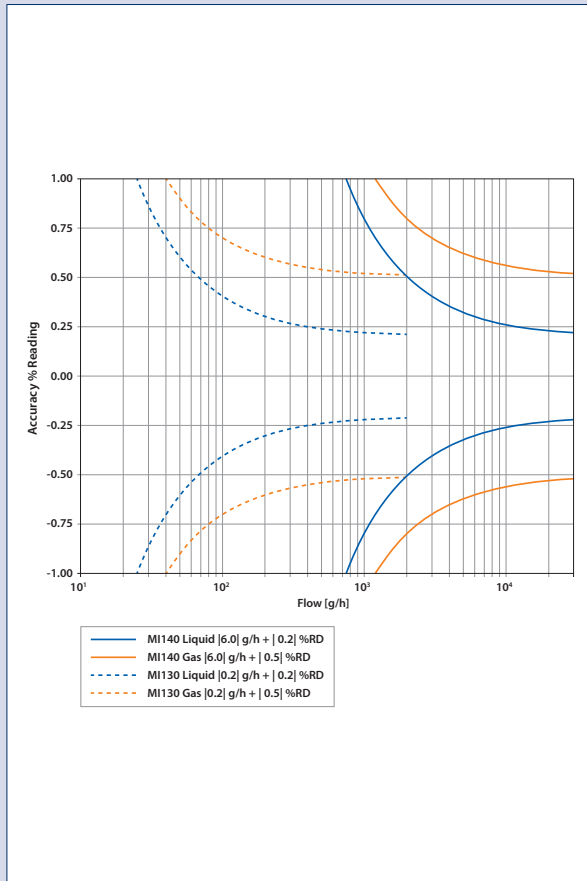
Mechanical parts

| | |
|------------------------------|---|
| Material housing | metal with silicon and NBR seals |
| Material wetted parts | stainless steel 316L / 1.4404, Ra ≤ 0.8 μ m Hastelloy C22 (optional, pending) |
| Sensor | single tube (fluidic flow path without dead zones or obstacles) |
| Sensor tube ID (mm) | 0.5 (MI130), 1.14 (MI140) |
| Pressure rating (PN) | 200 bar |
| Ingress protection (housing) | IP66 (high pressure jets) and IP67 (full immersion) |
| Attitude sensitivity | negligible, mounting in any position |
| Environment | unconditioned and hazardous |

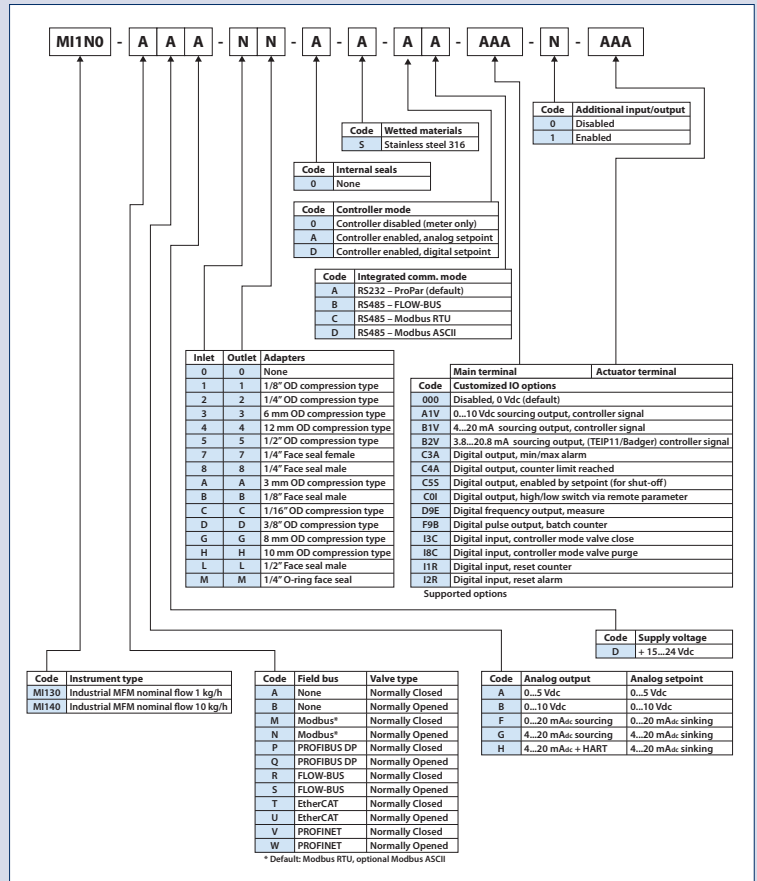
Explosion safety (pending)

| | |
|------------------------------------|---|
| IECEX (EN-IEC 60079) | Ex ec IIC T1...T6 Gc, Ex tc IIIC T70°C Dc |
| ATEX (EN-IEC 60079) | II 3 G Ex ec IIC T1...T6 Gc, II 3 D Ex tc IIIC T70°C Dc |
| Class Div (ANSI/ISA 12.12.01-2013) | Class 1, Division 2, Groups A, B, C & D, T4 |

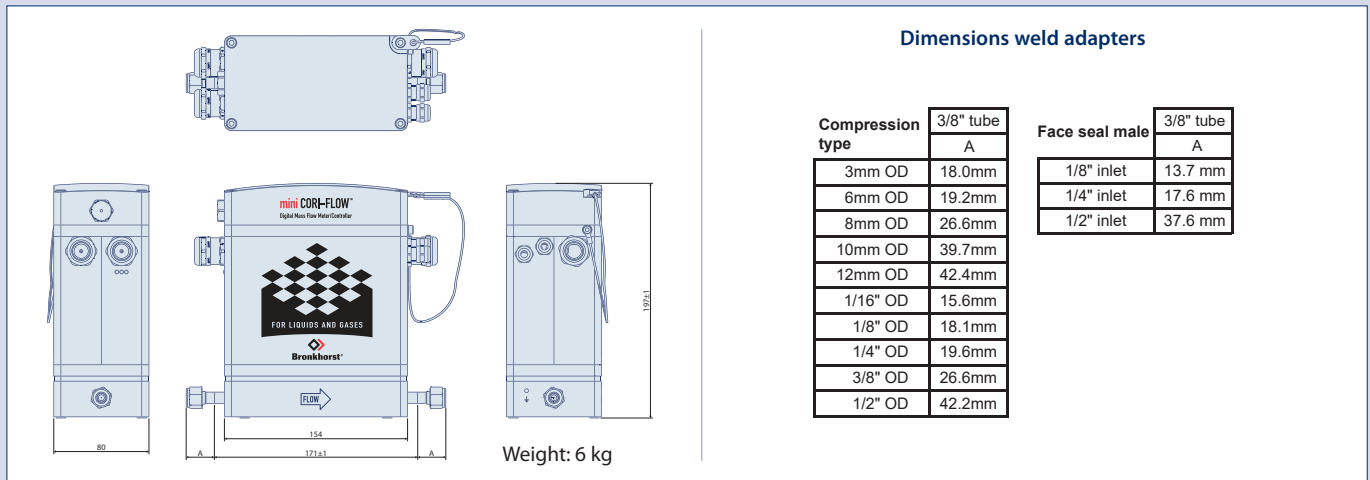
> Mass flow accuracy



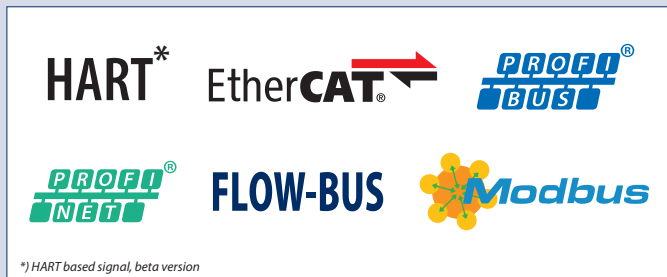
> Model key



> Dimensions (mm) and weight (kg)



> Digital data communication



> Typical applications

Injection of chemical additives and odourisation of fluids



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