

mini CORI-FLOW™ MI-series

Rugged low-flow Coriolis mass flow meter with PID controller

> Introduction

The mini CORI-FLOW MI-series is a specialized product line designed for (chemical) research pilot plants. It is ideal for accurately measuring and controlling low-flow in heavy-duty industrial applications, including hazardous (Zone 2) areas and up to pollution degree 3. This compact and rugged flow instrument ensures high accuracy measurement and control of low mass flow rates, providing fluid temperature and density as secondary output.

With its integrated PID controller functionality, the mini CORI-FLOW MI-series is a reliable instrument that can adapt to various challenging requirements. Its durable and weatherproof housing guarantees a long lifetime, while the versatile electronics support a wide range of valves, pumps, and communication options.



Mass Flow Meter model MI130 MkII

> Technical specifications

Measurement / control system

Mass flow rates	0...2000 g/h* (MI130) 0...30 kg/h* (MI140) *) advised minimal flow: $\geq 5 \times ZS$
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	-20...+70 °C
Ambient temperature	-20...+70 °C
Tube temperature accuracy	$\pm 0,5$ °C
Density accuracy	$\leq \pm 0,005$ g/cm ³ (at calibration conditions)
Response time (sensor)	≤ 200 msec
Refresh (cycle) time	< 5 msec
Temperature sensitivity	≤ 20 mg/h/°C (MI130), ≤ 500 mg/h/°C (MI140)
Noise flow value	$\leq 0,8$ g/h RMS (MI130), ≤ 8 g/h RMS (MI140)
Mounting	any position, attitude sensitivity negligible
Additional features	ratio & batch dosing, diagnostic parameters

Electrical properties

Power supply	15...24 Vdc $\pm 10\%$
Power consumption	2,5 W (nominal, basic version)
Analog setpoint (input)	0...5 (10) Vdc or 0 (4)...20 mA
Customised I/O (2x)	current (accuracy $\leq 1,7$ μ A), frequency, pulse, digital, voltage (accuracy $\leq 0,7$ mV)
Analog output	0...5(10) Vdc (accuracy $\leq 2,9$ mV), 0(4)...20 mA (accuracy ≤ 7 μ A), Hart 7.6

Digital communication (optional)

◆ RS232/RS485	Modbus RTU/ASCII, FLOW-BUS, PROFIBUS DP
◆ Ethernet	PROFINET, EtherCAT, EtherNet/IP, Modbus-TCP, POWERLINK
◆ CAN 2.0	CANopen, DeviceNet (not Ex)
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 on pc-board
Service port	micro USB connector on pc-board

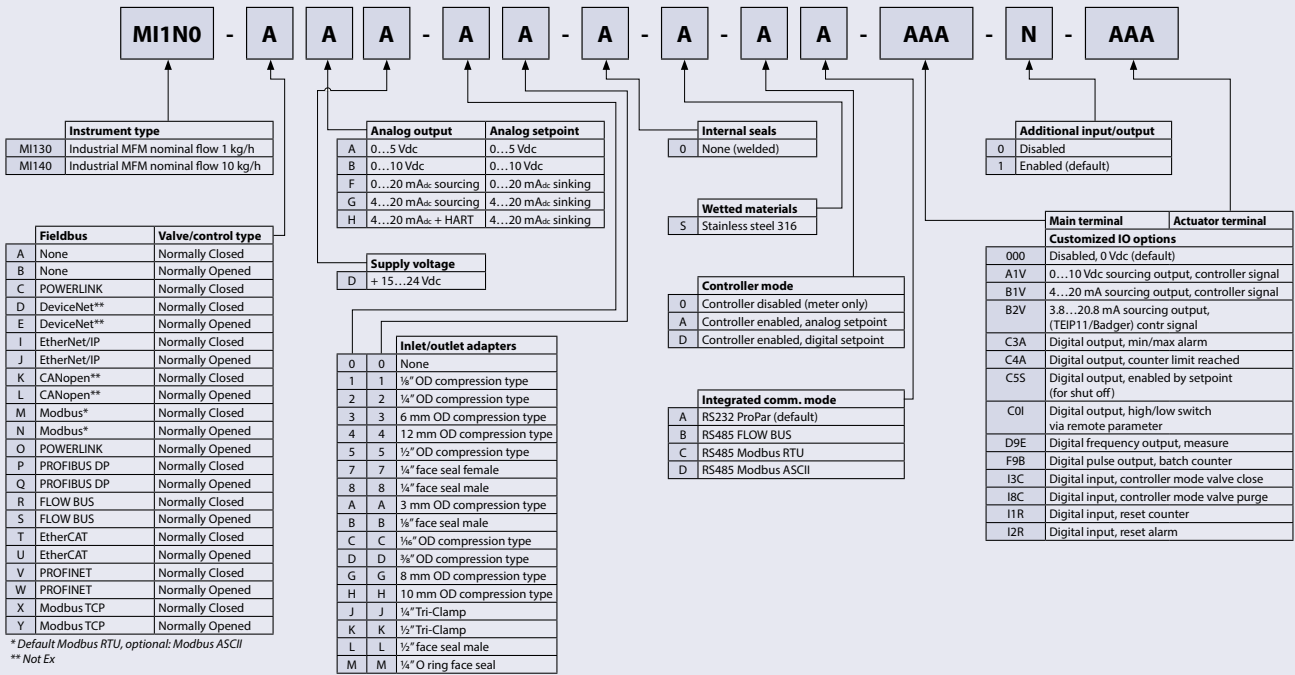
Mechanical parts

Material housing	anodised EN AW-6082-T6 (AlSi1MgMn) and 316L (1.4404) body with FKM seals
Material wetted parts	stainless steel 316L / 1.4404, Ra $\leq 0,8$ μ m (typical)
Sensor	single tube flow path full metal (welded) without seals, dead zones or obstacles
Sensor tube ID (mm)	0,5 (MI130), 1,14 (MI140)
Pressure rating (PN)	200 bar
Ingress protection (housing)	IP66/IP67
Environment	industrial area (up to pollution degree 3) with additional gas or dust (Ex) atmosphere (zone 2/22 or EPL Gc/Dc)

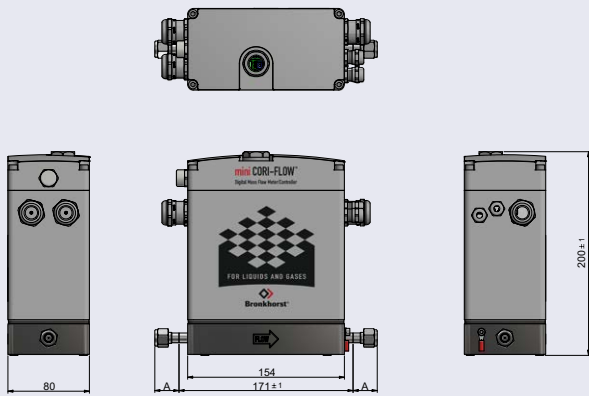
Explosion safety

IECEx	Ex ec IICT4 Gc, Ex tc IIICT100 °C Dc
ATEX/UKEx	Ex II 3G Ex ec IICT4 Gc, Ex II 3D Ex tc IIICT100 °C Dc

> Model key



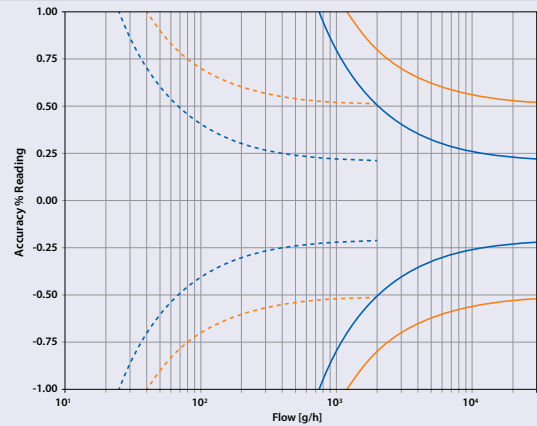
> Dimensions



For dimensions of the adapters ('A'); please check bronkhorst.com for drawing 7.05.672

Dimensions in mm

> Accuracy



MI130 for liquid [- - - -]; MI130 for gas [- - - -]
MI140 for liquid [————]; MI140 for gas [————]

> Data communication



*) HART based signal, beta version

> Applications

The robust low-flow Coriolis mass flow meter with PID controller excels in research installations, precisely injecting additives such as fluid odorizers



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