




Electromagnetic Flow Meter



measuring
•
monitoring
•
analysing

MIS

 IO-Link



- Accuracy:
$\pm(0.5\% \text{ of reading} + 0.5\% \text{ of full scale})$
- Monitoring, transmitter function, dosing
- Bidirectional measuring
- p_{\max} : 16 bar; t_{\max} : 70 °C
- Connection flange
2", DN50, 3", DN80,
4", DN100



SS

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Description

The new flow meter MIS was developed for measuring and monitoring medium-sized flow of conductive liquids in pipes. The device operates according to the electromagnetic measurement principle. According to Faraday's Law of magnetic induction, a voltage is induced in a conductor moving through a magnetic field. The electrically conductive measuring agent acts as the moved conductor. The voltage induced in the measuring agent is proportional to the flow velocity and is therefore a value for the volumetric flow. The flowing media must have a minimum conductivity. The induced voltage is picked up by two sensing electrodes which are in contact with the measuring agent and sent to the measuring amplifier.

The flow rate will be calculated based on the cross sectional area of the pipe.

The measurement is not depending on the process liquid and its material properties such as density, viscosity and temperature. The units include a universal U-PACE electronics (Universal Precision and Control Electronics) which features two outputs arbitrarily configurable by the customer.

The U-PACE electronics offers various diagnostic functions and the following features:

- Flow- and temperature measurement
- Monitoring, dosing and transmitter function
- Dosing function with external control input
- Coloured, multi-parameter configurable TFT-display, rotatable in 90° steps
- Bidirectional measuring
- Intuitive setup menu via 4 optical touch keys
- 2 configurable outputs (pulse-/frequency-/alarm- and analogue output)
- Grand and resettable totaliser
- IO link function

Significant Characteristics

- Monitoring, dosing and transmitter function
- Dosing function with external control input
- Coloured, multi-parameter configurable TFT-display, rotatable in 90° steps
- Bidirectional measuring
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- Grand and resettable totaliser

Areas of Application

- Water tapping
- Water treatment
- Water distribution network (leakage detection management)
- Watering
- Waste water treatment
- Filtration systems (e.g. reverse osmosis and ultrafiltration)
- Industrial applications

Technical Details

| | |
|---|--|
| Measurement process: | electromagnetic |
| Range: | see flow specific values |
| Media: | conductive fluids |
| Minimum conductivity: | ≥20 µS/cm |
| Max. medium viscosity: | 70 cP |
| Max. pressure: | 16 bar |
| Accuracy: | <±(0.5% of reading + 0.5% of full scale)* |
| Repeatability: | ±0.2% of full scale |
| Response time flow t_{90} (alarm output / pulse output): | <250 ms |
| Mounting position: | in all directions |
| In-/outlet: | 5 x DN/3 x DN |
| Pressure drop (max. at 3 m/s): | 25 mbar |
| Handling: | 4 optical touch fields, useable with hand gloves |
| Housing: | aluminium, powder coated, display screen PMMA |

Wetted parts

| | |
|----------------------|--|
| Connection: | steel ASTM A105, paint coated (Corrosivity category C4M) |
| Lining: | NBR (others on request) |
| Electrodes: | Hastelloy® C276 |
| Protection: | IP 67 |
| Media temperature: | -10 °C ... +70 °C |
| Ambient temperature: | -10 °C ... +60 °C |

Electrical data

| | |
|--------------------------|---|
| Supply voltage: | 19 - 30 V _{DC} , internal power consumption max. 200 mA |
| Display: | TFT display, 128 x 128 pixels, 1.4" display orientation in 90° steps adjustable |
| Display repetition rate: | 0.5 ... 10 s, adjustable |
| Pulse output | Push-Pull, freely scalable, configurable for partial and accumulated totaliser |

* Under reference conditions: media temperature: 15 °C ... 30 °C, 1 cSt, 500 µS/cm, 1 bar
ambience temperature: 15 °C ... 30 °C



Technical Details (continued)

| | | | |
|------------------|---|------------------------|---|
| Frequency output | Push-Pull, freely scalable, 2 kHz @ overflow f_{min} @ FS = 50 Hz f_{max} @ FS = 1000 Hz | Control input: | active signal U_{high} max. $30 V_{DC}$ $0 < Low < 10 V_{DC}$ $15 V_{DC} < High < Vs$ |
| Alarm output: | NPN, PNP, Push-Pull, configurable max. $30 V_{DC}$, max. 200 mA short-circuit proof | Dosing function: | Dosing output OUT2: Push-Pull, High active Control input OUT1: START/STOP 0,5 s $< t_{high} < 4$ s RESET $t_{high} > 5$ s |
| Analogue output: | active, 3 wire, 0(4)-20 mA, max. load 500Ω or 0(2)-10 V_{DC} , ($R_i = 500 \Omega$) (factory calibrated with $R_L = 1 M\Omega$) | Electrical connection: | plug M12x1, 4-pin |

Flow Specific Values

| DN | Size | | Measuring range (m ³ /h) |
|-----|------|------|-------------------------------------|
| | | ASME | |
| 40 | | 1½" | 0.2 ... 45 |
| 50 | | 2" | 0.3 ... 63 |
| 65 | | 2½" | 0.4 ... 100 |
| 80 | | 3" | 0.6 ... 160 |
| 100 | | 4" | 1.0 ... 250 |
| 125 | | 5" | 1.6 ... 400 |
| 150 | | 6" | 2.4 ... 600 |
| 200 | | 8" | 4.0 ... 1000 |

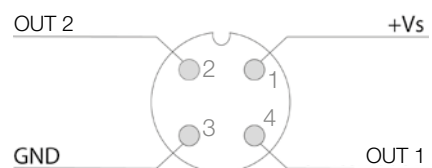
Configuration of outputs

| Output 1 (OUT1, PIN 4) | Output 2 (OUT2, PIN 2) |
|-------------------------------|-----------------------------|
| Analogue output 4-20 mA | Analogue output 4-20 mA |
| Analogue output 0-20 mA | Analogue output 0-20 mA |
| Analogue output 2-10 V | Analogue output 2-10 V |
| Analogue output 0-10 V | Analogue output 0-10 V |
| Switching output NPN/PNP/PP | Switching output NPN/PNP/PP |
| Pulse output PP | Pulse output PP |
| Frequency output PP | Frequency output PP |
| Communication mode M12 COM | |
| Communication mode IO-Link | |
| Control input | |
| Control input dosing function | Dosing output |

IO-Link specification

| | |
|-------------------------|-------------------------------------|
| Manufacturer ID: | 1105 (decimal), 0 x 0451 (hex) |
| Manufacturer name: | Kobold Messring GmbH |
| IO-Link specification: | V1.1 |
| Bitrate: | COM3 |
| Minimal cycle time: | 1,1 ms |
| SIO-Mode: | yes (OUT1 in configuration IO-Link) |
| Block parameterisation: | yes |
| Operational readiness: | 10 s |
| Max. cable length: | 20 m |

Electrical Connection MIS



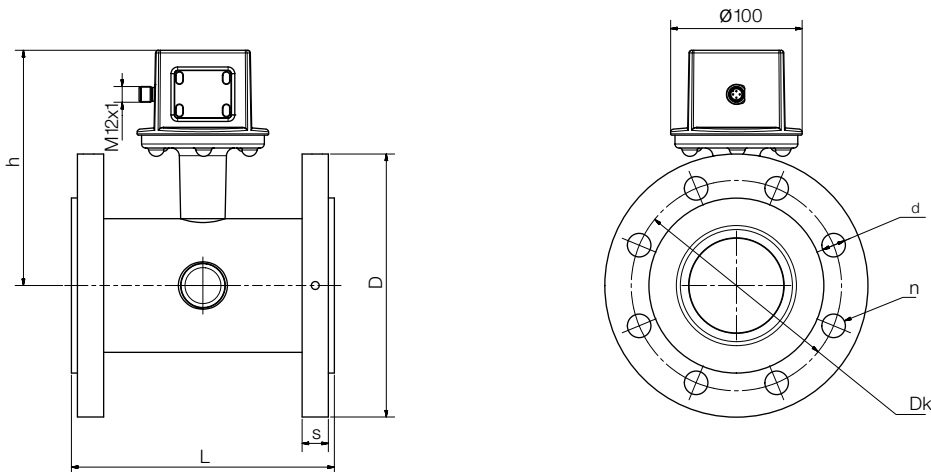
Order Details (Example: MIS-H 330B1 HH 100)

| Model | Material lining | Flange type/ size | Material process connection | Measuring and earthing electrodes | Transmitter mounting |
|-------|--|--|-----------------------------|--|----------------------|
| MIS- | H = hard rubber X ¹⁾ = acc. to specification | 320B = DN50 PN16 form A DIN EN 1092-1 325B = DN65 PN16 form A DIN EN 1092-1 330B = DN80 PN16 form A DIN EN 1092-1 335B = DN100 PN16 form A DIN EN 1092-1 206R = 2" Class 150 FF ASME B16.5-2003 208R = 3" Class 150 FF ASME B16.5-2003 210R = 4" Class 150 FF ASME B16.5-2003 XXXX = acc. to specification | 1 = steel, paint coated | HH = Hastelloy® XX²⁾ = acc. to specification | 100 = integrated |

¹⁾ Possible linings on request: EPDM (replace "X" with "E"), soft rubber (replace "X" with "W") and PTFE (replace "X" with "P")

²⁾ On request are following available: platinum, stainless steel, tantal, titanium

Dimensions [mm]



| | Nominal diameter | h | L | D | s | Dk | d | n |
|------|------------------|-----|-----|-----|----|-------|------|----|
| DIN | DN50 | 167 | 200 | 165 | 20 | 125 | 18 | 4 |
| | DN80 | 179 | 200 | 200 | 20 | 160 | 18 | 8 |
| | DN100 | 186 | 250 | 220 | 22 | 180 | 18 | 8 |
| | DN150 | 211 | 300 | 285 | 22 | 240 | 22 | 8 |
| | DN200 | 263 | 350 | 340 | 24 | 295 | 22 | 12 |
| ASME | 2" | 167 | 200 | 150 | 21 | 120.6 | 19 | 4 |
| | 3" | 179 | 200 | 190 | 26 | 152.4 | 19 | 4 |
| | 4" | 186 | 250 | 230 | 27 | 190.5 | 19 | 8 |
| | 6" | 211 | 300 | 279 | 31 | 241.3 | 22.2 | 8 |
| | 8" | 263 | 350 | 343 | 34 | 298.4 | 22.2 | 8 |

Weight

| Nominal size | | Pressure rating | NBR lining |
|--------------|--------|-----------------|-------------|
| [mm] | [Inch] | | Weight [kg] |
| 50 | 2 | PN16 / Cl. 150 | 9.4 |
| 80 | 3 | PN16 / Cl. 150 | 12 |
| 100 | 4 | PN16 / Cl. 150 | 15.6 |
| 150 | 6 | PN16 / Cl. 150 | 26.4 |
| 200 | 8 | PN16 / Cl. 150 | 48.4 |

