

# Electromagnetic Flowmeter



measuring  
•  
monitoring  
•  
analyzing

MIS



IO-Link

- Accuracy:  
<math>\pm(0.5\% \text{ of Reading} + 0.3\% \text{ of Full Scale})</math>
- Monitoring, Transmitter Function, and Batching
- Bidirectional Measurement
- $p_{\max}$ : 230 PSIG;  $t_{\max}$ : 158 °F
- Connection:  
3" or 4" ANSI Flange



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**Description**

The new MIS electromagnetic flowmeter was developed for measuring and monitoring medium-sized flow of conductive liquids in pipes. The electromagnetic measurement principle is as follows. 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 is calculated based on the cross sectional area of the pipe.

The measurement does not depend on the process liquid and its properties such as density, viscosity and temperature. The two outputs can be independently set to switch, or provide an analog or frequency output. A batching function can also be selected, where output 1 is set to switch as NPN/PNP/PP and output 2 is set as the control input.

**Product Highlights**

- Monitoring, Batching and Transmitter Function
- Batching Function has an External Control Input
- Colored, Multi-parameter Configurable TFT-display, Rotatable in 90° Increments
- Bidirectional Measurement
- Intuitive Setup Menu via 4 Optical Touch Keys
- 2 Configurable Outputs (Pulse/Frequency/Alarm and Analog Output)
- Grand and Resettable Totalizer

**Common Application Areas**

- Water Treatment
- Water Distribution Networks
- Waste Water Treatment
- Filtration Systems
- Industrial Applications

**Technical Details**

<b>Measurement Process:</b>	Electromagnetic
<b>Range:</b>	See Flow Specific Values
<b>Media:</b>	Conductive Liquids
<b>Minimum Conductivity:</b>	≥ 20 µS/cm
<b>Max. Media Viscosity:</b>	70 mm <sup>2</sup> /s
<b>Max. Pressure:</b>	230 PSIG
<b>Accuracy:</b>	< ± (0.5% of Reading+0.3% of Full Scale)*
<b>Repeatability:</b>	± 0.2% of Full Scale

**Response Time Flow t<sub>90</sub>**

**(Alarm Output/  
Pulse Output):** < 250 ms

**Mounting Position:** Universal

**Straight Piping**

**Requirement:** 5x Upstream, 3x Downstream

**Pressure Drop  
(Max. at 3 m/s):** 25 mbar

**Programming:** via 4 Optical Touch Fields,  
Can be used with Gloves

**Housing:** Powder-coated Aluminum Body,  
PMMA Display Screen

**Connection:** Steel (ASTM A105), Epoxy-coated  
(Corrosivity Category C4M)

**Wetted Parts**

**Lining:** NBR (Others on Request)

**Electrodes:** Hastelloy® C276

**Protection:** IP 67

**Media Temperature:** 14...158 °F

**Ambient Temperature:** 14...140 °F

**Electrical Specifications**

**Supply Voltage:** 19-30 V<sub>DC</sub>, Internal Power Consumption,  
Max. 200 mA

**Display:** TFT Display, 128x128 Pixels,  
1.4" Display, Orientation Adjustable in 90°  
Increments

**Display Rate:** 0.5...10 s, Adjustable

**Pulse Output:** Push-Pull, Freely Scalable, Configurable  
for Partial and Accumulated Totalizer

**Frequency Output:** Push-Pull, Freely Scalable,  
2 kHz @ Overflow  
f<sub>min</sub> @ FS = 50 Hz  
f<sub>max</sub> @ FS = 1000 Hz

**Alarm Output:** NPN, PNP, Push-Pull,  
Configurable Max. 30 V<sub>DC</sub>, Max. 200 mA  
Short-circuit Proof

**Analog Output:** Active, 3 wire, 0(4)-20 mA,  
Max. Load 500 Ω or 0(2)-10 V<sub>DC</sub>,  
(R<sub>i</sub> = 500 Ω)

**Control Input:** Active Signal U<sub>high</sub> Max. 30 V<sub>DC</sub>  
0 < Low < 10 V<sub>DC</sub>  
15 V<sub>DC</sub> < High < V<sub>S</sub>

**Batching Function:** Batching Output OUT2:  
Push-Pull, High Active  
Control Input OUT1:  
START/STOP 0,5 s < t<sub>high</sub> < 4 s  
RESET t<sub>high</sub> > 5 s

**Electrical Conn:** Plug M12x1, 4-pin

\* Under Reference Conditions: Media Temperature: 59...86 °F, 1 cSt, 500 µS/cm,  
14.5 PSI, Ambient Temperature: 59...86 °F

**Flow Specific Values**

ANSI Flange	Measuring Range
3"	2.65...700 GPM
4"	4.40...1,100 GPM

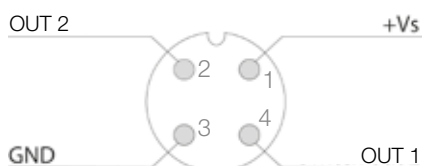
**Configuration of Outputs**

Output 1 (OUT1, PIN 4)	Output 2 (OUT2, PIN 2)
Analog Output 4-20 mA	Analog Output 4-20 mA
Analog Output 0-20 mA	Analog Output 0-20 mA
Analog Output 2-10 V	Analog Output 2-10 V
Analog Output 0-10 V	Analog 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 Batching Function	Batching 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 Parameterization:** Yes
- Operational Readiness:** 10 s
- Max. Cable Length:** 65 feet

**Electrical Connection MIS**





## Electromagnetic Flowmeter Model MIS

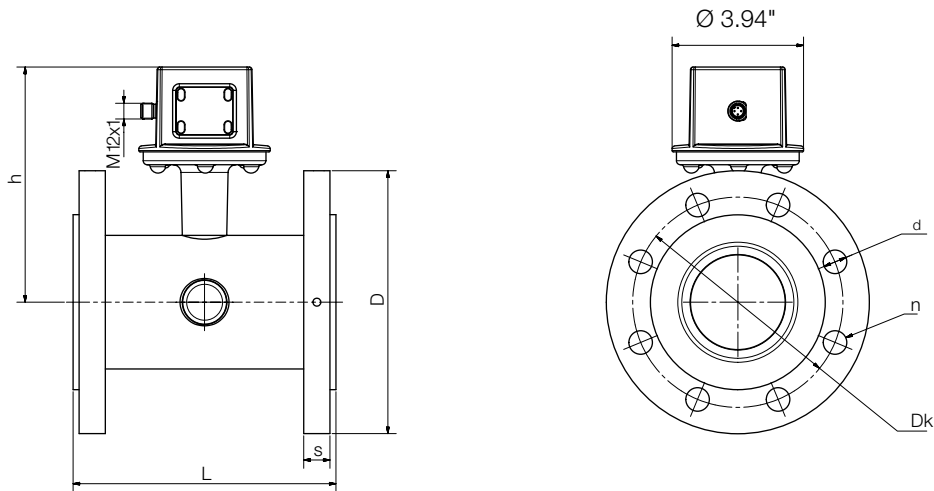
### Order Details (Example: MIS-H 208R 1 HH 100)

Model	Material Lining <sup>1)</sup>	Flange Type/Size	Material Process Connection	Measuring and Grounding Electrodes <sup>2)</sup>	Transmitter Mounting
MIS-..	..H.. = Hard Rubber	..208R.. = 3" ANSI, Class 150 ..210R.. = 4" ANSI, Class 150	..1.. = Steel, Epoxy-coated	..HH.. = Hastelloy®	..100 = Integrated

<sup>1)</sup> Possible linings available upon request: EPDM, soft rubber, and PTFE

<sup>2)</sup> Possible electrodes available upon request: platinum, stainless steel, tantalum, and titanium

### Dimensions



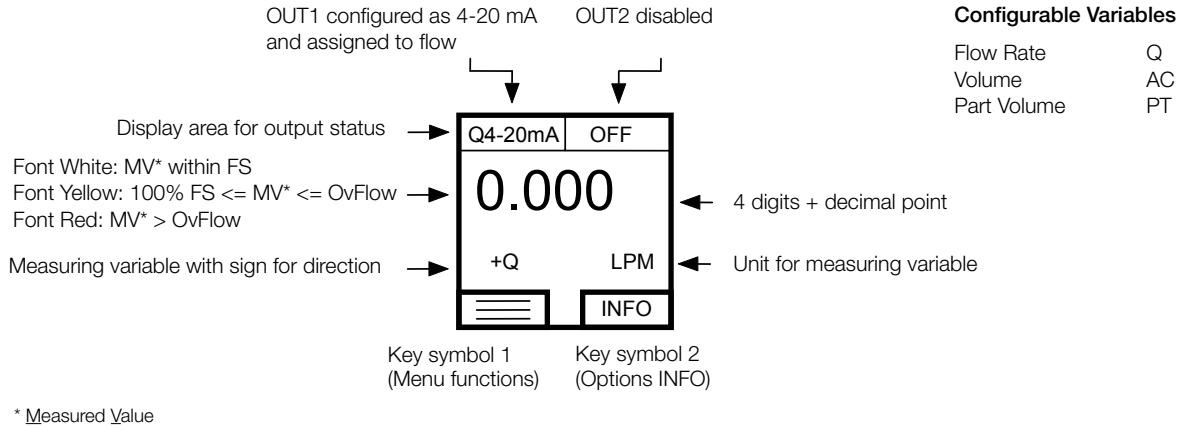
Flange	Nominal Diameter	h	L	D	s	Dk	d	n
ANSI 150 lb	3"	6.98"	7.87"	7.48"	1.02"	6.00"	0.75"	0.157"
	4"	7.29"	9.84"	9.06"	1.06"	7.50"	0.75"	0.315"

### Weight

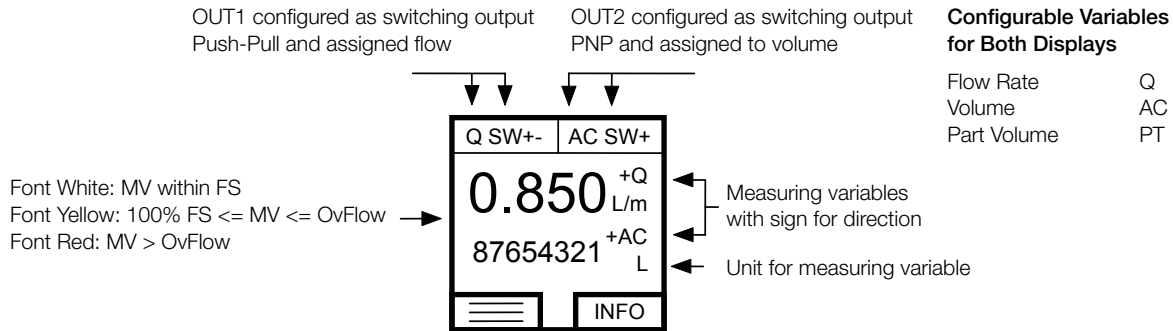
ANSI Flange	Pressure Rating	Weight
3"	Cl. 150	26.5 lbs
4"	Cl. 150	34.4 lbs



**Measuring Mode, Display Layout "Single" Configurable**



**Measuring Mode, Display Layout "Dual" Configurable**



OUT1 configured as Pulse output Push-Pull and assigned to Part Volume      OUT2 configured as analog output 4-20 mA and assigned to flow rate

