

ES-FLOW

ES-113I

Low-Flow Ultrasonic Flow Meter for Liquids, 1500 ml/min



Technical specifications

Measurement & control

Type of media	liquids with speed of sound 1000...2000 m/s
Flow range	liquid: 0...1500 ml/min (nominal flow rate: 600 ml/min or 36 l/h) full scale (FS) value is user-configurable (100...1500 ml/min)
Accuracy	±0.8% Rd
Repeatability	±0.1% Rd
Turndown ratio	up to 1:750
Settling time (in control, typical)	1 sec. (typical)
Zero point stability (ZS)	< ±0.4 ml/min
Response time (sensor)	< 50 msec (meter, 198%)
Operating temperature	0...60 °C
Fluid temperature	-10...90 °C
Temperature sensitivity	< 0.1% Rd/°C
Leak integrity, outboard	< 2 x 10 ⁻⁹ mbar l/s He
Mounting	any position
Warm-up time	30 minutes
Storage/transport conditions	0...50 °C, max. 95% RH (non-condensing)

Approvals

Marking	CE, RoHS, WEEE, REACH
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Mechanical specs

Pressure rating (PN) - in barg	100
Ingress protection	IP66/67
Surface roughness wetted parts	<0.8 µm (Ra max)
Material wetted parts	stainless steel 316L (1.4404)
Housing material	stainless steel 316L (1.4404)
Sealing material	none, only weldings (in fluid path)
Sensor inner diameter	straight tube, 1.3 mm
Process connections	3 mm, 6 mm, 1/8", 1/4" OD compression type, 1/4" face seal male, 1/4" or 1/2" Tri-Clamp (welded) fittings
Weight	1.3 kg

Electrical properties

Power supply	15...24 Vdc ±10%
Power consumption	meter: 2.5 W typical at 24 V controller: 7 W typical at 24 V for fieldbus: add 0.9 W
Analog output	0...5 (10) Vdc or 0 (4)...20 mA (sourcing)
Analog setpoint	0...5 (10) Vdc or 0 (4)...20 mA (sinking)
Digital communication	standard: RS232; options: DeviceNet™, CANopen®, PROFIBUS DP, Modbus RTU/ASCII, FLOW-BUS, EtherCAT®, PROFINET, Modbus/TCP, EtherNet/IP, POWERLINK
Frequency/Pulse output	max 50 kHz

Electrical interfaces

Actuator output	4-pin M8 (female)
Power (main connector)	8-pin M12A (male)
Function (instrument connector)	Analog, RS232, RS485
PROFIBUS DP	5-pin M12 B (female)
CANopen / DeviceNet	5-pin M12A (male)
Modbus RTU/ASCII/FLOW-BUS	5-pin M12A (male)
Modbus TCP / EtherNet/IP / EtherCAT® / PROFINET / POWERLINK	2x 4 pin M12D (female)