

Proline t-mass I 500 thermal mass flowmeter

Insertion flowmeter with long-term stability
as remote version with up to 4 I/Os



Benefits:

- Flexible, convenient programming based on 21 standard gases or freely definable gas mixtures thereof
- High level of process control – premium measurement accuracy and repeatability
- Reliable monitoring – detection of process disturbances and reverse flow
- Flexible installation – suitable for large dimensional range and circular pipes or rectangular ducts
- Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses
- Reduced complexity and variety – freely configurable I/O functionality
- Integrated verification – Heartbeat Technology

Specs at a glance

- **Max. measurement error** Gas: 1.0% o.r. (10 to 100% o.f.s.), 0.1% o.f.s. (1 to 10% o.f.s.)
- **Measuring range** 20 to 733501 kg/h (44 to 1669340 lb/h)
- **Medium temperature range** -40 °C to +180°C (-40 °F to +356°F)
- **Max. process pressure** -0.5 to 20 bar_g (-7.25 to 290 psi_g)
- **Wetted materials** Materials for insertion tube Stainless steel, 1.4404 (316/316L) Process connections, process coupling Stainless steel, 1.4404 (316/316L) Sensing element Unidirectional Stainless steel, 1.4404 (316/316L) Alloy C22, 2.4602 (UNS N06022); Bidirectional Stainless steel, 1.4404 (316/316L) Reverse flow detection Stainless steel, 1.4404 (316/316L) Clamping rings PEEK PVDF 1.4404 (316/316L) Flat ring seal EPDM FKM

Field of application: The patented sensor design of t-mass I provides unprecedented measurement stability in thermal insertion mass flow measurement. It compensates in real time for changes of process conditions: temperature, pressure, flow direction and gas type. The innovative remote transmitter of t-mass I 500 maximizes installation flexibility and operational safety in demanding environments. Heartbeat Technology enables measurement reliability and compliant verification.

Features and specifications

Gas

Measuring principle

Thermal

Product headline

Insertion flowmeter with long-term stability as remote version with up to 4 I/Os.

Flexible, convenient programming based on 21 standard gases or freely definable gas mixtures thereof.

Measurement of utility and process gases as well as gas mixtures in circular piping or rectangular ducts.

Sensor features

High level of process control – premium measurement accuracy and repeatability. Reliable monitoring – detection of process disturbances and reverse flow. Flexible installation – suitable for large dimensional range and circular pipes or rectangular ducts.

Insertion version for DN 80 to 1500 (3 to 60"). Bidirectional measurement; high measuring performance. Patented drift-free sensor with SIL 2.

Transmitter features

Full access to process and diagnostic information – numerous, freely combinable I/Os and fieldbuses. Reduced complexity and variety – freely configurable I/O functionality. Integrated verification – Heartbeat Technology.

Remote version with up to 4 I/Os. Backlit display with touch control and WLAN access. Standard cable between sensor and transmitter.

Gas

Nominal diameter range

DN 80 to 1500 (3 to 60")

Wetted materials

Materials for insertion tube

Stainless steel, 1.4404 (316/316L)

Process connections, process coupling

Stainless steel, 1.4404 (316/316L)

Sensing element

Unidirectional

Stainless steel, 1.4404 (316/316L)

Alloy C22, 2.4602 (UNS N06022);

Bidirectional

Stainless steel, 1.4404 (316/316L)

Reverse flow detection

Stainless steel, 1.4404 (316/316L)

Clamping rings

PEEK

PVDF

1.4404 (316/316L)

Flat ring seal

EPDM

FKM

Measured variables

Massflow, temperature, standard volume flow, volume flow, Free air delivery, velocity, heat flow, energy flow, density

Max. measurement error

Gas: 1.0% o.r. (10 to 100% o.f.s.), 0.1% o.f.s. (1 to 10% o.f.s.)

Measuring range

20 to 733501 kg/h (44 to 1669340 lb/h)

Max. process pressure

-0.5 to 20 bar_g (-7.25 to 290 psi_g)

Gas

Medium temperature range

-40 °C to +180°C (-40 °F to +356°F)

Ambient temperature range

-40 to 60°C (-40 to 140°F)

Optional:

Transmitter: -50 to 60°C (-50 to 140°F),

Sensor: -60 to 60°C (-60 to 140°F)

Transmitter housing material

Aluminium, AlSi10Mg, coated

Polycarbonate

Degree of protection

IP66/67, Type 4X enclosure Sensor: IP68, Type 6P (optional)

Display/Operation

4-line backlit display with touch control (operation from outside)

Configuration via local display and operating tools possible

Remote display available

Outputs

4-20 mA HART (active/passive)

4-20 mA (active/passive)

Pulse/frequency/switch output (active/passive)

Relay output

Inputs

Status input

4-20 mA input

Digital communication

HART, Modbus RS485

Power supply

DC 24V

AC 100 to 240V

Gas

Hazardous area approvals

ATEX, cCSAus, IECEx, NEPSI, JPN, UK Ex, EAC, KC

Product safety

CE, C-tick

Functional safety

Functional safety according to IEC 61508, applicable in safety-relevant applications in accordance with IEC 61511

Metrological approvals and certificates

Calibration performed on accredited calibration facilities (acc. to ISO/IEC 17025)

Heartbeat Technology complies with the requirements for measurement traceability according to ISO 9001:2015 – Section 7.1.5.2 a

Pressure approvals and certificates

CRN

Material certificates

3.1 material

NACE MR0175/MR0103



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