Proline t-mass F 500
thermal mass flowmeter

Inline 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
- Easy maintenance – removable sensor
- 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** 0.5 to 3750 kg/h (1.1 to 8250 lb/h)
- **Medium temperature range** -40 °C to +180°C (-40 °F to +356 °F)
- **Max. process pressure** PN40 / Cl. 300 / 20K
- **Wetted materials** Measuring tubes • DN 15 to 50 (½ to 2"): stainless cast steel, CF3M/1.4408 • DN 65 to 100 (2½ to 4"): stainless steel, 1.4404 (316/316L) Process connections Flange connections Stainless steel, 1.4404 (F316/F316L) Threaded connections 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)
**Field of application:** The patented sensor design of t-mass F provides unprecedented measurement stability in thermal inline mass flow measurement. It compensates in real time for changes of process conditions: temperature, pressure, flow direction and gas type. The innovative remote transmitter von t-mass F 500 maximizes installation flexibility and operational safety in demanding environments. Heartbeat Technology ensures measurement reliability and compliant verification.

**Features and specifications**

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<th>Gas</th>
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<td><strong>Measuring principle</strong></td>
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<td>Thermal</td>
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<td><strong>Product headline</strong></td>
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<td>Inline 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 small line sizes.</td>
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<td><strong>Sensor features</strong></td>
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<td>High level of process control – premium measurement accuracy and repeatability. Reliable monitoring – detection of process disturbances and reverse flow. Easy maintenance – removable sensor. Inline version with DN 15 to 100 (½ to 4”). Bidirectional measurement; high measuring performance. Patented drift-free sensor with SIL 2.</td>
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<td><strong>Transmitter features</strong></td>
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<td>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.</td>
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### Nominal diameter range
DN 15 to DN 100 (1/2" to 4")

### Wetted materials

**Measuring tubes**
- DN 15 to 50 (1/2 to 2"): stainless cast steel, CF3M/1.4408
- DN 65 to 100 (2½ to 4"): stainless steel, 1.4404 (316/316L)

**Process connections**
- **Flange connections**
  - Stainless steel, 1.4404 (F316/F316L)
- **Threaded connections**
  - Stainless steel, 1.4404 (316/316L)

**Sensing element**
- **Unidirectional**
  - Stainless steel, 1.4404 (316/316L)
- **Bidirectional**
  - Stainless steel, 1.4404 (316/316L)

**Reverse flow detection**
- Stainless steel, 1.4404 (316/316L)

### 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
0.5 to 3750 kg/h (1.1 to 8250 lb/h)

### Max. process pressure
PN40 / Cl. 300 / 20K

### Medium temperature range
-40 °C to +180°C (-40 °F to +356 °F)
Gas

**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

**Outputs**
4 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

**Hazardous area approvals**
ATEX, cCSAus, IECEx, NEPSI, JPN, UK Ex, EAC
Gas

**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**
PED, CRN

**Material certificates**
3.1 material
NACE MR0175/MR0103

More information [www.us.endress.com/6F5B](http://www.us.endress.com/6F5B)