

Proline t-mass A 150/B 150

Cost-effective flowmeter for utility gases

Simple and robust measuring technology

- Wide application range: for compressed air, nitrogen, carbon dioxide and argon
- Proven thermal mass flow measurement: ideally suited for gases in utilities, even at low pressures and flow velocities
- Industry-optimized devices: preconfigured, multiple process connections for circular pipes and rectangular ducts
- Optimal process monitoring: simultaneous measurement of mass flow, gas temperature and corrected volume (Nm³, SCFM) without compensation
- Cost-effective measurement: easy installation and operation, maintenance-free
- Versatile implementation: e.g. for consumption measurement, leak detection, process control, cost allocation or energy management
- Extensive industry experience: over 55 000 thermal flowmeters installed successfully in compressed air and gas applications



Proline

simply clever

Process monitoring is becoming more demanding and the need for maximum product quality is steadily increasing. This is why Endress+Hauser continues to provide industry-specific flow measurement solutions optimized for future technology requirements.

The new generation of our Proline flowmeters is based on a uniform device concept. This means time and cost savings, as well as maximum safety over the entire plant life cycle.

Optimal application solutions Proline incorporates all modern flow measuring technologies, and thus optimizing plant up-time – true to our motto: “The industry-optimized flowmeter for your application.”

Innovative and proven in use Proline is based on a versatile, continually updated technology concept, guaranteeing that you are always implementing state-of-the-art technology.

Perfect integration Proline can be integrated seamlessly into your plant asset management, providing reliable information for optimizing production and business processes.

Added value in every respect



W@M Life Cycle Management

- Open information system for device documentation and management
- Device-specific information for everyday work
- Quality of information unparalleled in scope and depth



HistoROM

- Automatic data storage ensures maximum plant safety
- Simple data restoration enables quick exchange of components
- Event logbook and data logger for quick failure analysis



Simple operation

- Time-saving Endress+Hauser operating concept
- Optimal usability through guided parameterization
- User-specific menu structures and device access





t-mass 150

Measurement, monitoring and management

In many sectors of industry, there are utilities with compressed air, nitrogen (N_2), carbon dioxide (CO_2) or argon (Ar). Their creation, transport and distribution consume a lot of energy. The long-term objectives for plant operators are therefore clearly defined: Make processes run efficiently while saving costs.

The new t-mass 150 is a thermal mass flow meter that was developed exactly for these fields of application:

- Control (distribution)
- Allocation of usage (delivery, consumption)
- Monitoring (limit value, alarm)
- Leak detection
- Trend analysis of compressor performance

When measuring gas flow, the thermal mass flow measurement offers unbeatable advantages in comparison to other methods:

- Direct mass measurement – no pressure or temperature compensation required
- Multivariable – a single measuring device for mass flow, gas temperature and corrected volume (Nm^3 , SCFM)
- Wide turn down (100:1) – measurement of the smallest flow even with low pressure
- Energy-saving – almost no pressure drop
- Maintenance-free – no moving parts
- Targeted leak detection





t-mass 150

Advantages at a glance

Simple operation

- Uniform Endress+Hauser operating concept
- Fast commissioning via guided configuration of parameters
- 17 display languages for use anywhere in the world
- Flexible operating options from local display to commercially available field devices

Secure data storage

- High plant availability through customer-friendly data storage concept (HistoROM)
- No data loss – automatic storage of device data
- Fast restoration of device and configuration data for servicing
- Integral data logger for querying, monitoring and analysis of measured values

Maximum operational safety

- High plant availability due to permanent self-diagnosis and error monitoring
- Clear and unambiguous categorization of errors enables targeted reaction to device and process faults

Seamless system integration / Life Cycle Management

- All device settings are custom preconfigurable, e.g. gas type or measuring range
- Proven W@M information system:
 - Global access to all device information
 - Cost-effective support of business processes
- Compatibility between field device and process control system ensured at all times, as firmware/device drivers are available during the entire life cycle

Industry-optimized sensors

- Easy and fast installation
- Multiple process connections for installation in circular pipes or rectangular ventilation ducts
- Robust industrial stainless steel design
- Multivariable measurement – one single measuring device for mass flow, gas temperature and corrected volume



Your benefits throughout the life cycle

- Minimum operating and maintenance costs
- Maximum reliability in operation
- Highest measuring accuracy for internal cost allocation
- Highest plant efficiency for energy management

Fits everywhere

In pipelines and air ventilation ducts

In-line version

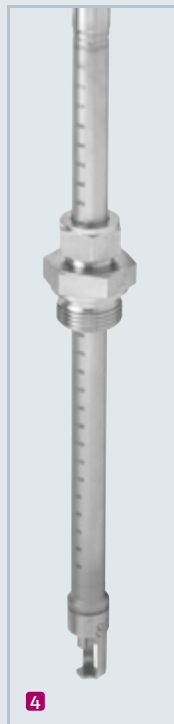
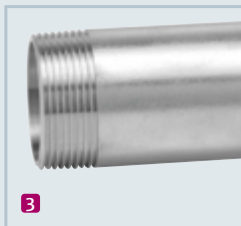
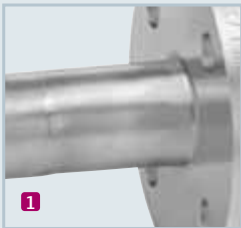
DN 15 to 50 (½ to 2")

- ❶ With welded flanges
- ❷ With lap-joint flanges
- ❸ With threaded connections

Insertion version

DN 80 to 1500 (3 to 60")

- ❹ Suitable for circular pipes or rectangular air ventilation ducts
- ❺ Optionally with "hot tap" mounting tool for inserting or removing the device under process conditions, e.g. for recalibration, certification or service purposes



Lowering energy consumption

Compressed air as an example

The production of compressed air consumes extensive amounts of energy worldwide – in total, 10% of industrial power consumption. There are numerous reasons to explain why a great amount of that energy is wasted unnecessarily:

- Air loss through leaks (up to 30%)
- Excessive system pressure due to clogged filters
- Unused waste heat from compressors (up to 95%)
- Insufficient compressor performance
- Compressors running at unproductive times

The questions for cost-conscious plant operators are therefore always the same:

- How much compressed air do I actually need?
- Does this need vary throughout the day?
- What is the base load?
- How much electricity (kWh) does it take to generate one standard cubic meter of compressed air?

As a multivariable flowmeter, t-mass 150 can reliably answer these questions. Through targeted measuring of air flow in compressed air network (submetering), leaks, for example, can be identified and eliminated through suitable

measures. However, the range of application for t-mass 150 goes even much further:

- Cost allocation of compressed air production to individual cost centers or buildings
- Reliable consumption measurement (trend measurement) for optimization of the processes

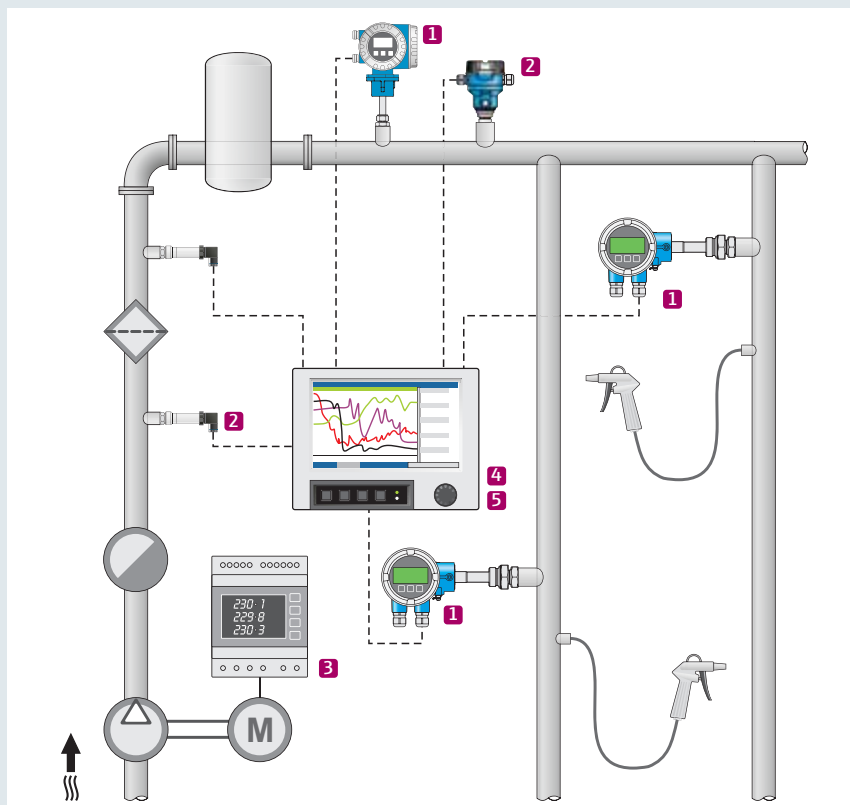


Did you know, ...

that a 1 mm (0.04 in) leak in a compressed air pipe can cause additional costs of USD 160 per year? And that 50 to 80 leaks of this size incur annual additional costs between USD 7940 and 11900?

- 1 millimeter (0.04 in) leak
Additional costs of USD 160/Year
- 3 millimeter (0.12 in) leak
Additional costs of USD 1455/Year

Monitoring compressed air networks with Endress+Hauser instruments



- 1 Flowmeters
- 2 Pressure devices
- 3 Electrical energy meters
- 4 Flow computer
- 5 Data managers (incl. software for energy monitoring and services)

Technical data

t-mass 150 (transmitter)		t-mass A, B (sensors)	
Display	4-line, with push buttons	Nominal diameters	t-mass A: DN 15 to 50 (½ to 2") t-mass B: DN 80 to 1500 (3 to 60")
Operation	– Via local display – Via operating tools, e.g. "FieldCare" from Endress+Hauser – Via a HART handheld	Process connections	t-mass A: lap-joint flange or flange (EN [DIN], ASME), threaded version t-mass B: insertion version (for pipes or rectangular ducts)
Power supply	DC 18 to 30 V	Maximum flow rate	Up to 1080000 kg/h (2 381 400 lb/h)
Ambient temperature	–40 to +60 °C (–4 to +140 °F)	Process pressure	t-mass A: –0.5 to 40 barg t-mass B: –0.5 to 20 barg
Design/Degree of protection	Compact design IP66 and IP67 (Type 4X enclosure)	Process temperature	–40 to +100 °C (–40 to +212 °F)
Galvanic isolation	All circuits for outputs and power supply are galvanically isolated from each other	Degree of protection	IP66 and IP67 (Type 4X enclosure)
Outputs	Current output (4–20 mA HART) Pulse/frequency/status output	Max. measured error	± 3% o.r. (15 to 100% of full scale) ± 0.45% o.f.s. (1 to 15% of full scale)
Communication	HART	Operable flow range	100:1
Ex approvals	cCSAus Cl. I Div. 2	Material (wetted parts)	1.4404/316L (stainless steel)
Subject to modification		Pressure loss	Negligible (<2 mbar)
		Approvals	PED Cat. 1, CRN

The t-mass A 150 / B 150 measuring system fulfills the EMC requirements according to IEC/EN 61326 and NAMUR NE21. It also conforms to the requirements of the EU and ACMA directives and thus carries the  and  mark.

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