Thermal Mass Flowmeter
FMT Series (Sensyflow)

Intelligent solutions for accurate gas mass flow measurement

- Direct mass flow measurement
- Robust design
- No moving parts
- High measuring accuracy
- Wide measuring range

ABB Instrumentation
Sensyflow gas flowmeters directly indicate the mass flow or normalised volume flow as the measuring signal. The mass measurement principle works without any additional pressure and temperature compensation and provides important advantages regarding the measurement:

- High measuring accuracy
- Wide measuring range
- Short response time
- Negligible pressure loss

**Principle of measurement**

The system uses the "Hot Film" anemometer principle. This reliable technique is based on the fact that a flowing gas transfers heat from a heated object. This flow dependant heat loss is directly proportional to the gas mass flow rate.

Leading edge technology has been used to develop a family of highly stable measuring devices and systems, with high operational reliability and excellent resistance to contamination effects.

All system components are designed for easy installation and handling. The high reproducibility of measuring results ensures high operational reliability and high measuring accuracy.

These devices are suited for applications in all industrial fields demanding quick and precise gas measurement, e.g. the chemical, environmental and process engineering industries, the food and beverages industries, or the automotive industry.
Calibration systems

Due to its high precision, the measuring system requires exact calibration. Each transmitter is submitted to extensive tests, including ageing, and a careful calibration procedure. For this purpose, ABB has ultra-modern test systems. Hypercritical Laval nozzles are used for reference. Consequently high accuracy, high precision and long-term stability requirements are met.

The calibration systems are connected to the “Deutscher Kalibrierdienst” (registration No. DKD-K-05701), the German calibration service, and accredited by the “Physikalisch Technische Bundesanstalt (PTB)”, the German national metrology institute. ABB offers the verification or calibration of customer instruments (both ABB and third party products, also when using other principles of measurement).

Process gas calibration

A flow calibration system for process gases, which is unique throughout the world, extends the range of calibration services offered by ABB. This allows high accuracy, high precision calibration of flowmeters, with different gases and gas mixtures and under realistic operating conditions.

Please contact us at any time concerning any questions related to the measuring range, different gas compositions, etc. We will gladly inform you about all technical applications.

Customer-specific calibration systems

ABB offers turn-key solutions for the automotive and related industries. The solutions are based on Sensyflow and other well-proven measuring instruments. Flow-dependent characteristics of engine components like turbo chargers, throttle valves, air filters, intake modules, etc. can be measured with these systems.
Direct Gas Mass Flow Measurement

independent of pressure and temperature

Application benefits FMT-IG and -VT series:

- Direct mass flow measurement, no additional pressure or temperature compensation required
- High measuring accuracy already in the lower measuring range
- Range up to 1:1000 permits part load operation and leakage detection
- Short response time
- Negligible pressure loss
- No moving parts, vibration-proof
- Robust design

- Easy and economical installation
- Reproducible results due to exact mounting position
- Measurement in large channels and ducts
- Installation/replacement possible during operation with hot-tap fittings
- Calibration on DKD test plants

Applications
- Gas mass flow measurement (at chemical and materials processing plants)
- Burner controls
- Fermentation gas
- Compressed air balance study

FMT500-IG (Sensyflow iG)

- Patented digital measured value acquisition
- Separate gas temperature measurement
- On-board diagnostic functions
- Graphic display with totalizer function
- PROFIBUS DP-V1 or analog/HART-signal
- Compact design, or remote version (sensor/electronics)
- Encapsulated field housing
- Operation via magnetic pen, keyboard or software
- Up to 4 applications (e.g. different gases or pipe diameters) handled with a single system

Approvals:
- ATEX for zone 0
- GOST
- DVGW
- (FM, CSA Class 1 Div. 1 pending)
**FMT400-VTS (Sensyflow VT-S)**
- Compact design, no special supply unit required
- 0/4...20 mA, directly from sensor
- Robust design, up to +70 °C (158 F) ambient temperature
- ATEX zone 2
- Certification DVGW, CSA

**Benefits FMT-VTC series at a glance:**
- Hygienic design
- Passed Weihenstephan Technical University test for CIP and SIP applications
- Process connections: flange (hygienic) or tube threads S (milk pipe)*
- ATEX zone 2
- Certification DVGW, CSA

* Typical application: CO₂ dosing in breweries and softdrink bottling plants

**Applications**
- Food and beverages
- Pharmacy

**Integrated Hot Tap fitting for FMT-IG and FMT-VT-series**
- Installation/replacement possible during operation
- Convenient and reliable handling
- Pressure ratings PN 16, up to 200 °C (392 F)
- Size ranges DN 50 up to DN 300

**FMT400-VTCS (Sensyflow VT-CS)**
- Compact design, 4-wire
- 0/4...20 mA, directly from sensor
Compact design – maintenance-free and vibration-proof

The Pressure Expert
FMT200-D (Sensyflow D):
- Compact measuring system for compressed air measurement
- Direct mass flow measurement
- Negligible pressure loss
- No moving parts, vibration-proof

- Easy and economical installation due to standard inch threads
- Measurement of compressed air consumption in diameters range 1” to 3”
- Leakage detection in compressed air systems (advantage: cost reduction)

Application
Compressed air balance study

The Multi Talent
FMT200-ECO2 (Sensyflow eco 2):
- Mass flow meter for air, independent of pressure and temperature
- Wide measuring range
- Extremely dynamic
- No moving parts
- Compact design
- Light-weight
- Easy installation
- Any mounting position allowed

- Variable process connections
  - Small flange DN 25
  - G3/8” to 1” threads
  - 8 to 14 mm hose adapters
  - Transair system
- Configurable output signals
  - Current or voltage
  - Pulse-/frequency-/Contact-output
  - Serial interface

Applications
Varnishing
Compressed air balance study
Pneumatic industry
High measuring accuracy – even during rapid flow changes

The Test Bench Champion
FMT700-P (Sensyflow P):

- High end device for air flow measurement
- Highest measuring accuracy
- Wide measuring range
- Extremely short response time
- No moving parts
- Robust design
- Simple integration into flowline
- Plug and play

- Multi-functional interface/ASAM-GDI
- Complete measuring systems with inlet and outlet paths, air filters, and quick-release fasteners
- Application for flow-dependent assemblies e.g. turbo chargers, filters, intake modules etc.
- Reference system for intake air measurement of the leading car manufacturers worldwide

Applications
- Engine test benches
- Component test benches
- Quality assurance

Automobile engine test bench