

TURBINE METER SERIES

FMT-Dc



The best way to predict the future **is to create it**

Introduction

The FMT-Dc series turbine meter is a unique meter, designed to perform on the highest level of accuracy. The meters comply with all international standards and are approved for custody transfer. The actual flow sensor, TWO cartridges which are exchangeable with conventional cartridges used in other turbine meter series, can monitor all kinds of flow effects and monitor the results if connected to flow computer devices. Since these flow computer can analyze any effect, the FMT-Dc is also able to monitor itself and detect any kinds of failures. For example bearing failures, blade failures or dirt in the meter.

When in use, the two independent turbine wheels are not subjected simultaneously to the same flow effects. This results in minimal differences between the two turbine wheels, which are being detected and diagnosed by the flow computer in a split second. This technique allows for a significant reduction of the uncertainty margin. Also, it opens new possibilities for the future, e.g. remote calibration could be a next step in successfully reducing the measurement uncertainty.

In order to fully exploit the possibilities of two turbine wheels, it has to be established that both turbine wheels operate independently and that occurring influences do not have the same effect at the same time on both turbine wheels.



Principle

The operation of the FMT series of turbine meter is based on the measurement of the velocity of gas. The flowing gas is accelerated and conditioned by the integrated multi stage flow conditioner. The multi stage flow conditioner prepares the gas flow profile by removing undesirable swirl and asymmetry before the gas flows over the freely rotating turbine wheel.

The dynamic forces of the flowing gas cause the rotor to rotate. The turbine wheel is mounted on the main shaft, with high-precision, low-friction ball bearings.

The turbine wheel has helical blades that have a known angle relative to the gas flow. The gas flow drives the turbine wheel at an angular velocity, which is proportional with the gas velocity. Using a gearing mechanism, the rotating turbine wheel drives the mechanical counter.

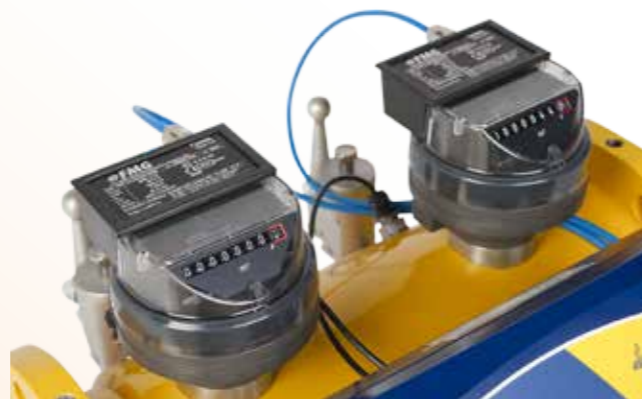
Applications

The standard FMT-Lx turbine meter is suitable for custody transfer gas measurement of all non-corrosive gases such as natural gas, propane, butane, air, nitrogen, hydrogen, etc. for low and high operating pressures. The special construction of the FMT-Dc enables to meet the performance of the FMT-Lx, but can provide twice the amount of information. The FMT-Dc can be modified to perform as a master meter or transfer master meter.

Options

With two independent cartridges, the meter will provide two independent measurements and will therefore operate like two separate meters in serie. Both cartridges in the meterbody can be provided with High Frequency Sensors and Indexes the way the FMT-Lx is able to.

The FMT-Dc series turbine meter can also be equipped with Electronic Volume Correction Devices or connected to flow computer since all required tappings can be provided double.



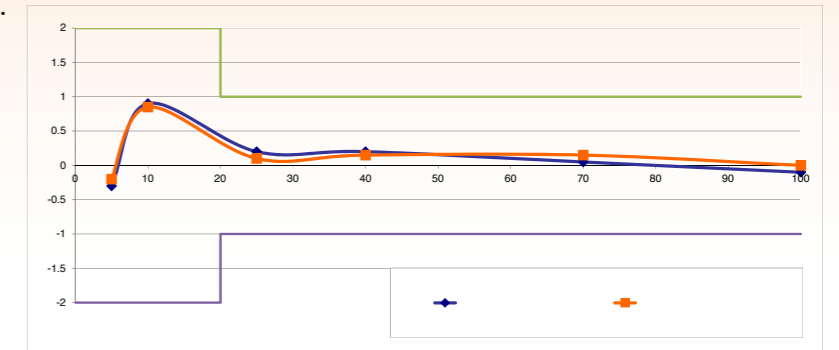
Accuracy

Each FMT-Dc turbine gas meter is tested with atmospheric air to traceable calibrated references. The error limits are typical half of those allowed by MID, EN standards or OIML recommendations. For pressures of above 8 bar even narrower limits are available. Optionally, meters can be calibrated with natural gas at pressures up to 100 bar, using test installations traceable to primary standards.

Error limits according MID

Measuring accuracy:

0.2 Qmax to Qmax: ± 1% or better
 Qmin to 0.2 Qmax: ± 2% or better
 Repeatability: better than 0.1%



Main Features

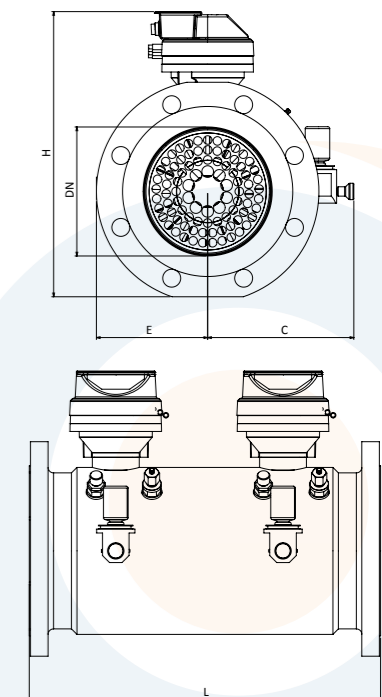
- Flow range 10 - 40.000 m³/h
- Diameters DN80 - DN600 (3" - 24")
- Pressure rates PN 10 - 100, ANSI 150 - 600
- Compliant with MID 2014/32/EU
- Compliant with OIML R137 1&2 (2014)
- MID temperature range -40°C to +70°C
- Length 3 x DN
- Removable meter cartridge
- 2 x DN inlet/outlet sections required
- Oil flushing and lubrication system
- Multipurpose exchangeable index
- Tamper proof IP67 sealed index
- 1 FMT-Dc is similar to 2 FMT-Lx meters
- Seals according EN 549 (seals for gas appliances and gas equipment)

Size (mm)	G-Value	DN (mm)	L (mm)	C (mm)	E (mm)	H (mm)
80 (3")	G100-G400	80	240	136	111	262
100 (4")	G100-G1000	100	300	155	129	304
150 (6")	G160-G1600	150	450	170	144	349
200 (8")	G400-G2500	200	600	185	170	403
250 (10")	G650-G4000	250	750	236	203	483
300 (12")	G1000-G6500	300	900	236	241	524
400 (16")	G1600-G10000	400	1200	295	295	623
500 (20")	G2500-G16000	500	1500	375	375	755
600 (24")	G4000-G25000	600	1800	425	425	855

*. All G-values will be combined with a measuring range of 1 to 20 measured with air under atmospheric conditions

More information

For missing information refer to the FMT-Lx Turbine meter brochure since the FMT-Dc is identical to the FMT-Lx when the quantity of cartridges is not taken in account.



About us

Flow Meter Group B.V. (FMG)

FMG is an engineering/manufacturing company specializing in the development and production of energy and gas measurement systems. Located in the Netherlands, FMG produces a wide range of rotary and turbine gas meters, volume conversion devices, master meters and calibration benches. Unique product features include self diagnosis and tamper prevention. All products and services are certified by the Dutch NMI and comply with the latest EU and/or OIML directives.

Flow Meters

FMG offers a large variety of flow meters ranging from very small (100 dm³/h) up to very large (40.000 m³/h) flow rates and in pressures from atmospheric to 100 bar (1440 psi). All FMG meters comply with international safety and metrological standards. Meters designated for fiscal use are tested, certified and approved by the Netherlands Metrological Institute NMI.

FMG has added extra features to the meters in terms of increased accuracy, protection from manipulation, increased rangeability and superior performance in order to go beyond the minimum requirements of the existing standards.



Positive Displacement Meters



Master Meters



Custody Transfer Short Length Turbine Meters



Flow Computers



Test Benches

Contact



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