

Electronic Turbine Gas Meter TME 400



The new generation of TME 400 meters (Turbine Meter Electronic) are turbine meters with an integrated electronic totalizer. In contrast to widely used mechanical turbines, the TME 400 directly processes the electrical pulses from the sensor monitoring the turbine wheel in the electronic meter head.

In this way, the TME 400 can not only display and save the totalizer reading, but also, for example, the current flow rate. In addition, several totalizers can be realized and the meter can transmit its measured values as well as additional signals directly via various interfaces (pulses, analog, digital).

Furthermore, the TME 400-VC offers a volume corrector integrated in the head, including pressure and temperature measurement. In addition to operating flow and operating volume, it also calculates the standard volume. An external volume corrector is no longer required.

With all TME 400 versions, a long-lasting backup battery ensures reliability even in case of a complete power failure.

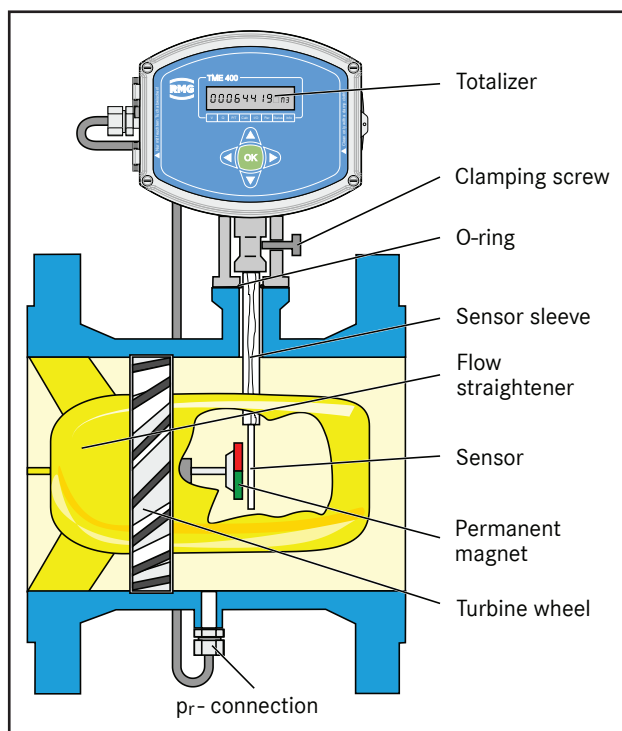
Description

Method of operation

With turbine gas meters, the gas flow strikes a mechanically mounted turbine wheel and drives it. The rotational speed of the turbine wheel is proportional to the flow rate of the gas. Since the gas flows through an invariable cross section (annular gap of the turbine wheel), the flow velocity is also proportional to the volume flow.

In the TME 400, a magnetic disk is mounted on the shaft of the turbine wheel, rotating at the same speed as the turbine wheel. A Wiegand sensor scans this disk and generates one electrical pulse per revolution which is transmitted to the electronic meter head. Each pulse is directly proportional to a certain volume flow. The meter can therefore display both the current flow (Q_M) and the total flowed volume (V_M).

Furthermore, the volume corrector integrated in the TME 400-VC allows the calculation of the standard volume (V_N). In order to do this, the meter measures operating pressure and operating temperature in addition to the operating volume flow. From this, the standard volume flow can be calculated using a suitable equation of state together with the corresponding standard conditions. Then this values is summed up in the standard volume totalizer and stored in the data logger.



TME 400-VM

The TME 400-VM (Volume Meter) is the basic version of the TME400 family. As the abbreviation VM indicates, it is a so-called volumeter, i.e. a pure operating volume meter for non custody transfer applications.

Features

- **Low-torque metering system with long-term stability**
Turbine design with a minimum of moving parts.
- **Battery or mains operation**
Autonomous operation with lithium cell for > 6 years or external power supply and backup battery to protect against power failures.
- **Explosion protection**
The TME 400 is intrinsically safe and can be used in zone 1.
- **Outputs**
Pulse output HF and LF (variable), alarm output, current output (4-20 mA, optional).
- **Digital interface**
Serial RS 485 interface for Modbus connection.
- **Archive**
Integrated fail-safe parameter, event and measured value archive.
- **RMGView^{EVC}**
Provided software for convenient parameterization and management of the device and the stored data.

TME 400-VC

The TME 400-VC (Volume Corrector) combines the features of the TME 400-VM with the benefits of a fully integrated PTZ volume corrector, which is also designed for non-custody transfer application. Pressure and temperature measurement are integrated directly into the meter.

Additional features (VC)

- **Volume corrector**
Integrated fully-fledged compact volume corrector including digital pressure and temperature measurement.
- **Calculation of the K coefficient**
Calculation according to SGERG88, AGA8 GROSS M1 and M2 as well as AGA8 NX19.
- **Display**
Operating volume, standard volume, current and maximum flow can be displayed.
- **Terminal block**
Inputs for pulses, pressure and temperature can be sealed separately from the rest. The lithium battery can be exchanged without opening the case.

Technical Data

Nominal size		Measuring range $Q_{\min} - Q_{\max}$ m ³ /h	Pressure rating		Dimensions		Weight kg
mm	in.		PN	ANSI	Length mm	Height ¹⁾ mm	
25	1	2,5 - 25	10/16 ²⁾	-	185	232	4
40	1½	6 - 70	10/16	-	140	232	4
50	2	6 - 100	10/16/40	150/300	150	267	10
80	3	13 - 160 16 - 250 25 - 400	10/16/40	150	120	302	14
100	4	25 - 400 40 - 650	10/16/40	150	150	312	25
150	6	40 - 650 65 - 1000 100 - 1600	10/16/40	150	175	342	40
200	8	100 - 1600 160 - 2500	10/16/40	150	200	367	60
250	10	160 - 2500 250 - 4000	10/16/40	150	300	407	70
300	12	250 - 4000 400 - 6500	10/16 40	150 300/600	300 450	412	100 200
400	16	400 - 6500 650 - 10000	10/16 40	150 300/600	600	422	180 400
500	20	on request					
600	24	on request					

¹⁾ measured from pipe center

²⁾ max. pressure for combustible gases: 5 bar

other pressure ratings on request

The nominal sizes DN 25 and DN 40 are only available with aluminum case with screw thread, for the other nominal sizes, the data refer to flange cases.
The weights are guidelines, devices of lower pressure ratings may be lighter in weight.

For some diameters and pressure ratings case versions for intermediate flange mounting (sandwich cases) are deliverable. Availability and technical data on request.

Technical data	
Hazardous area approval:	II 2G Ex ia IIC T4 Gb
Degree of protection:	IP 65
Ambient temperature:	-25°C - +55°C
Gas temperature range:	-20°C - +60°C
Temperature transmitter:	PT 1000
Pressure ranges:	0.8 - 2.5 bar(a) 2.0 - 6.0 bar(a) 2.0 - 10 bar(a) 4.0 - 20 bar(a)
Power supply:	Standard lithium battery with 3.6 V (service life > 6 years) Service life of the backup battery in case of external power supply with 24 V/DC via interface or current output > 10 years
Outputs:	<ul style="list-style-type: none"> 3 Transistor outputs: <ul style="list-style-type: none"> - HF - LF (Pulse width programmable) - Alarm Analog output 4 - 20 mA (only with external power supply), galvanically isolated
Interfaces:	RS 485 (Modbus protocol) / external power supply

Technical data is subject to change without notice.

For More Information

To learn more about products and solutions from RMG, visit www.rmg.com or contact your account manager.

RMG Messtechnik GmbH
Otto-Hahn-Straße 5
35510 Butzbach, Deutschland
Tel.: +49 (0)6033 897-0
Fax: +49 (0)6033 897-130

RMG-TME400-DE 01
November 2018
© 2018 RMG Messtechnik

