metrix italia

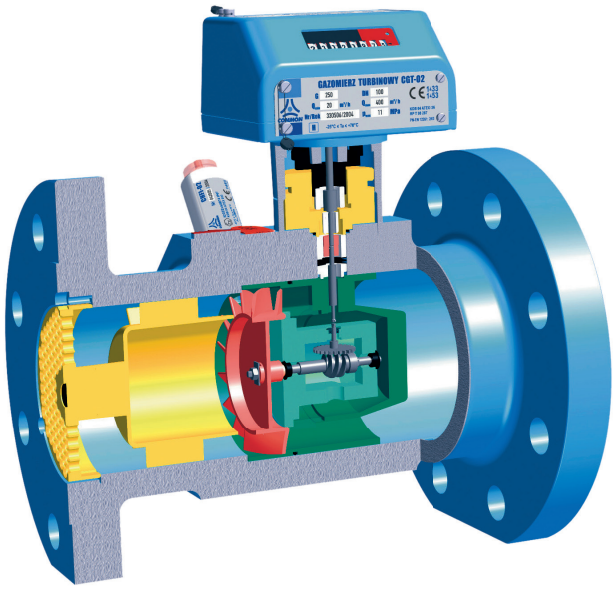
CGT-02

TURBINE GAS METER
FOR FISCAL USE

CGT-02

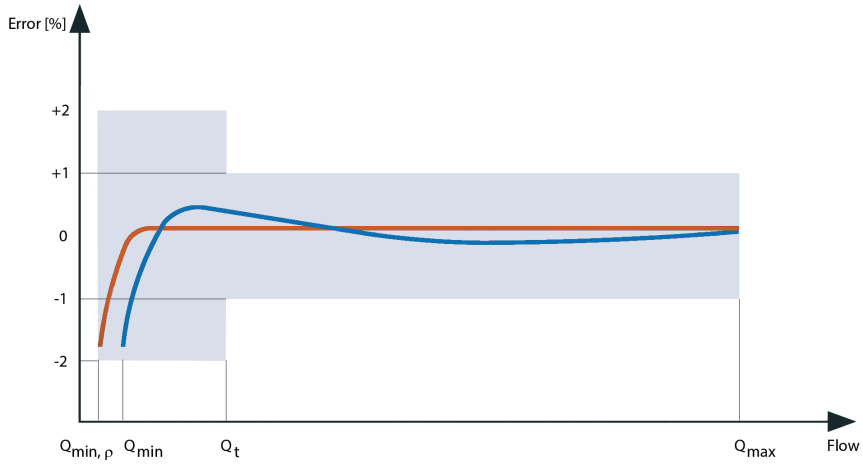
Description

The turbine meter uses the principle of proportionality between the quantity of gas passing through the meter itself and the number of revolutions of the rotor. A mechanical / magnetic transmission system actuates the counting unit, installed in the upper part of a meter, which shows the volume of flowed gas to the operating conditions.
The high precision of the bearings, precise tolerances of all the parts of measurement and the application of a flow straightener with specific characteristics, reduce the pressure losses to minimum values.
The measuring cartridge is separate from the external body and is therefore extraneous to any mechanical stress due to non-perfect alignment of the fl ange and completely replaceable.



- Approvals MID - ATEX - PED
- EN12261 compliant
- Manufactured in accordance with ISO 9001 meet the ISO 9951 DIN 33800
- Environmental requirements: E2 - M2
- integrated flow straightener as standard (upstream = 2DN)
- Sizes from G65 DN50 to G6500 DN400, standard; larger sizes on request.
- Flow rates: 5 ÷ 10000 m^3/h (standard)
- Standard ratio 1:20; ratios higher on request
- Fields pressure from PN10 to PN110 and ANSI 150 to ANSI 600
- Minimum pressure drop
- High measurement accuracy and stability over time.
- Length 3 DN
- Body stainless steel case or GGG40, compact and robust construction. aluminum impeller.
- Suitable for outdoor installation IP66/67
- The meters are equipped as standard with 2 generators of low frequency pulses (reed contact)
- On request they can also be installed in high-frequency pulse generators HF (NAMUR)
- Temperature range:
  gas temperature -25 ° C / + 70 ° C
  ambient temperature -25 ° C / + 70 ° C

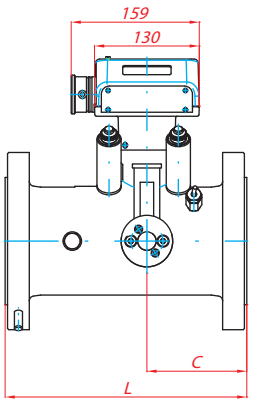
Measuring accuracy

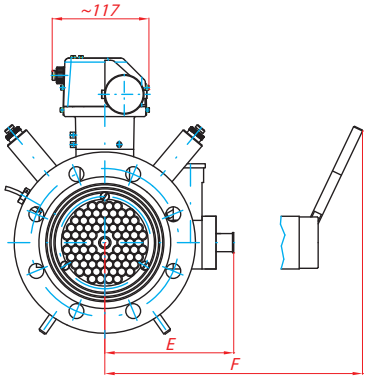


0,2 Qmax ÷ Qmax < ± 1%
Qmin ÷ 0,2 Qmax < ± 2%

Blue curve, low pressure (1 bar ass.)
Red cureve, high pressure (> 5 bar ass.)

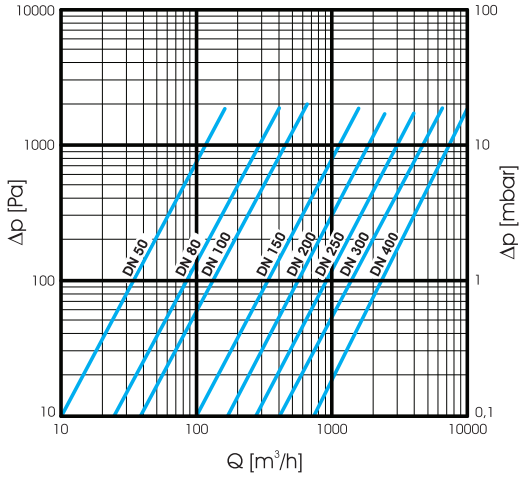
Dimensions e weights





DN	L	C	E,F*	Pressure		Weight	
				ANSI	PN	Cast iron	steel
mm	mm	mm	mm	-	-	kg	kg
50	150	150	150	-	16	11	12
				150	20	11	11
			226	300	50	-	12
				600	110	-	13
80	240	95	146	-	16	19	24
				150	20	18	24
			222	300	50	-	27
				600	110	-	30
100	300	124	157	-	16	24	32
				150	20	25	34
			223	300	50	-	42
				600	110	-	52
150	450	180	185	-	16	47	64
				150	20	46	64
			261	300	50	-	80
				600	110	-	105
200	600	240	202	-	16	70	70
				150	20	70	71
			282	300	50	-	100
				600	110	-	140
250	750	330	232	-	16	-	130
				150	20	-	130
			308	300	50	-	175
				600	110	-	250
300	900	350	258	-	16	-	190
				150	20	-	200
			345	300	50	-	260
				600	110	-	340
400	1200	400	387	-	16	-	350
				150	20	-	390
				300	50	-	480
				600	110	-	580

Pressure drop



The inevitable loss of pressure that is created during the flow of gas through the meter is determined to weather conditions.
To bring them back to the operating conditions, apply the following formula:

$$\Delta p_1 = \left(\frac{\rho_s}{\rho_a}\right) \bullet \left(\frac{p_m + p_s}{p_s}\right) \bullet \Delta p$$

Where:
$\Delta p1$= pressure loss at pm
Δp= oss of pressure from the diagram (see technical specifications table)
P_m= operating pressure in bar
ρ_s= standard density of the gas in Kg/m³
ρ_a= standard density of the air (1,2 Kg/m³)
p_s= atmospheric pressure (1,01325 bar)

Types of gas that can be measured by the meter:

Gas	Symbol	Density ρ Kg/m³	Density related to air
Carbon Dioxide	CO_2	1,84	1,53
Argon	Ar	1,66	1,38
Nitrogen	N_2	1,16	0,97
Butane	C_4H_{10}	2,53	2,10
Helium	He	0,17	0,14
Ethane	C_2H_6	1,27	1,06
Ethylene	C_2H_4	1,17	0,98
Natural Gas		~0,75	~0,63
Methane	CH_4	0,67	0,55
Carbon monoxide	CO	1,16	0,97
Propane	C_2H_8	1,87	1,56
Air		1,20	1

Values of density referred to:
p = 1,01325 bar T = 20°C

Recommendations for installation and operation

1. The meters must be transported to the installation site in their original packaging
2. The meters must be handled with care and protected against falls, direct influence of rain, snow and high humidity
3. The measured gas must be clean, dry and should not contain solid impurities. It recommends the use of an input filter (10 microns)
4. On new installations, we recommend the use of a temporary conical filter.
5. The seals must be positioned so as not to disturb the flow of gas.
6. The gas flow must flow in the direction of the arrow on the meter body.
7. The incoming and outgoing pipes should not cause stress to the counter.
8. If used outdoors, the meter must be protected against the weather.
9. The opening valve must be operated slowly in order to ensure a gradual increase of the pressure
10. Minimum straights input ≥2DN

The CGT-02 turbine gas meters can have up to 8 pulse generators in DN50-DN80 range, and up to 10 pulse generators in DN100-DN300 range:

- LFK - low frequency pulse generator REED — LFK1, LFK
- LFI - inductive low frequency pulse generator — LFI1, LFI2
- HF - generator Inductive medium frequency pulses on the counter — HF1, HF2
- HF - inductive high frequency pulse generator on the impeller — HF3, HF4
- HF - generator of inductive high-frequency pulses of the reference wheel — HF5, HF6
- AFK - REED contact our fraud

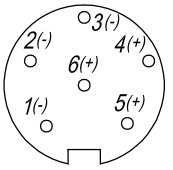
Technical features

DN Nominal Diameter	G	Qmax	Qmin Rangeability		LF Low freq	HF1, HF2 High freq approximate	HF3 - HF6 High freq approximate
			1:20	1:30			
-	-	m^3/h	m^3/h	m^3/h	imp/m^3	imp/m^3	imp/m^3
DN 50	G 65	100	5	-	10	2610	9429
DN 80	G 100	160	8	-	1	742	26974
	G 160	250	13	8	1	742	26974
	G 250	400	20	13	1	470	17059
DN 100	G 160	250	13	-	1	692	16782
	G 250	400	20	13	1	692	16782
	G 400	650	32	20	1	401	9719
DN 150	G 400	650	32	20	1	227	6873
	G 650	1000	50	32	1	227	6873
	G 1000	1600	80	50	0.1	129	3910
DN 200	G 650	1000	50	32	1	114	3113
	G 1000	1600	80	50	0.1	116	3167
	G 1600	2500	130	80	0.1	67	2025
DN 250	G 1000	1600	80	50	0.1	58	2111
	G 1600	2500	130	80	0.1	58	2111
	G 2500	4000	200	130	0.1	34	1223
DN 300	G 1600	2500	130	80	0.1	32	1181
	G 2500	4000	200	130	0.1	32	1181
	G 4000	6500	320	200	0.1	19	680
DN 400	G 2500	4000	200	130	0.1	13	444
	G 4000	6500	320	200	0.1	13	444
	G 6500	10000	500	320	0.1	7.0	285

Definitions and characteristics of pulse generators

PIN nr	Connector 1	Connector 2
1 - 4	LFK1 (standard)	LFK2
2 - 5	LFI1	LFI2
3 - 6	HF 1 o AFK	HF2

HF1,HF2	LFK, AFK	Connector 2
Ui = 16 V DC	Ui = 15,5 V DC	Ui = 15,5 V DC
Ii = 25 mA	Ii = 52 mA	Ii = 52 mA
Pi = 64 mW	Pi = 169 mW	Pi = 169 mW
Li = 50 µH	Li = 40 µH	Li = 0
Ci = 30 nF	Ci = 28 nF	Ci = 0F



The mechanical index can be rotated by 350 ° to facilitate the reading and the insertion of the connectors.

Products range

Rotary piston gas meters

Turbine gas meters

Gas pressure regulators

Electronic volume converters

Diaphragm gas meters

Smart meters

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