metrix italia

CGR-FX

ROTARY
GAS METERS

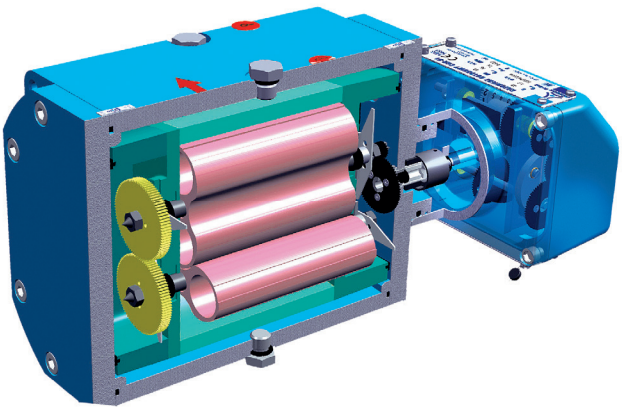
CGR-FX

Description

The rotary gas meter is a volumetric meter designed to fiscal high precision measurements. It is normally used both in transport and in the distribution of gas, but also as a meter sample in the calibration facilities. The gas flows through the chambers defined by the special shape at "8" of the pistons, putting them in motion. The rotation of the pistons is transmitted to the numerator through a magnetic coupling, which guarantees the complete separation between the inside and the outside of the meter. The measuring cartridge is separate from the external body, so it is extraneous to any mechanical stress due to non-perfect alignment of the flanges.

As said above, together with the high precision of machining of the parts, which allows to minimize the distance of the rotors, the Rotary meter ensures minimum pressure losses and a wide field of measurement.

All serviceable parts (lights on the oil level, plug of the oil inclusion, index, pulse generator, etc,) are located on the front, so it is possible to install the meter in close contact with the rear wall .



Tecnical features

- Pressure rating: PN16, ANSI150
- Meter sizes: from G10 to G400
- Nominal diameter: from DN40 to DN100
- Meter body: aluminium, cast iron
- Flow: from 0,16 to 650 m^3/h
- Variable directions possible without any construction changes
- Rangeability: up to 1:250, depending on the meter size; standard 1:50
- Temperature range:
  Gas temperature -20°C / +60°C
  Ambient temperature -25°C /+70°C
- 2 Pressure connections
- 1 Thermowell (2nd opt.)
- 2 Pulse gen. LF as standard
- Pulse gen. HF optional (max 4)
- Gas: see side table
- Comply with the standard EN12480
- Approved MID - PED - ATEX
- IP degree IP66/67

Types of gas that can be measured by the meter:

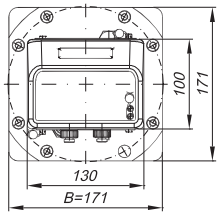
Gas	Symbol	Density ρ Kg/m³	Density related to air
Carbon dioxide	CO_2	1,84	1,53
Argon	Ar	1,66	1,38
Nitrogen	N_2	1,16	0,97
Butane	C_4H_{10}	2,53	2,10
Helium	He	0,17	0,14
Ethane	C_2H_6	1,27	1,06
Ethylene	C_2H_4	1,17	0,98
Gas natural		~0,75	~0,63
Methane	CH_4	0,67	0,55
Carbon monoxide	CO	1,16	0,97
Propane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

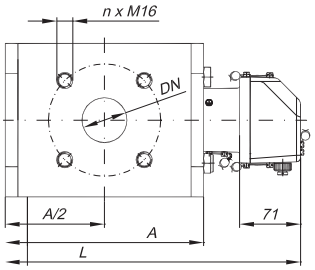
Values of density referred to:p = 1,01325 bar T = 20°C

Dimension e weights (standard version)

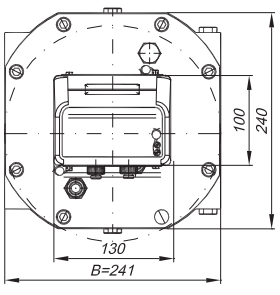
	DN				n holes	A	B	L	Peso
	40	50	80	100		mm	mm	mm	kg
ALUMINIUM									
G10	+	+			4	165	171	277	10
G16	+	+			4	165	171	277	10
G25	+	+			4	184	171	296	12
G40	+	+			4	225	171	337	14
G65		+			4	295	171	407	19
G100		+			4	391	171	503	24
G100			+		8	391	171	503	24
G100			+	+	8	249	241	356	25
G160			+	+	8	314	241	421	31
G250			+	+	8	439	241	546	42
G400				+	8	439	241	546	42
CAST IRON									
G10	+	+			4	246	181	358	33
G16	+	+			4	246	181	358	33
G25	+	+			4	246	181	358	33
G40	+	+			4	246	181	358	33
G65		+			4	316	181	428	38
G100		+			4	412	181	524	45
G100			+		8	412	181	524	45
G100			+	+	8	327	253	439	64
G160			+	+	8	327	253	449	64
G250			+	+	8	452	253	564	78
G400				+	8	452	253	564	78

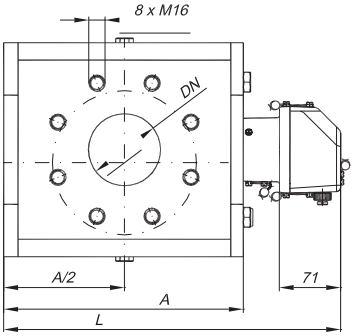
Series "171"



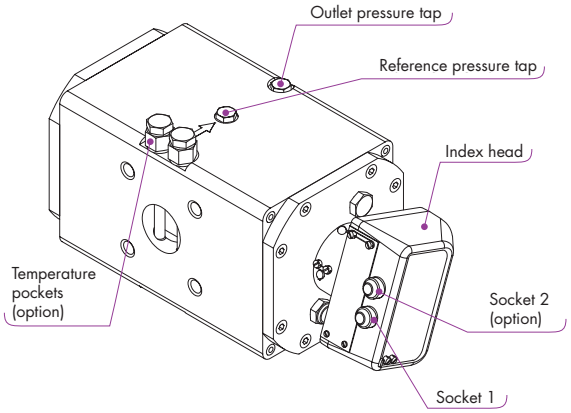


Series "241"



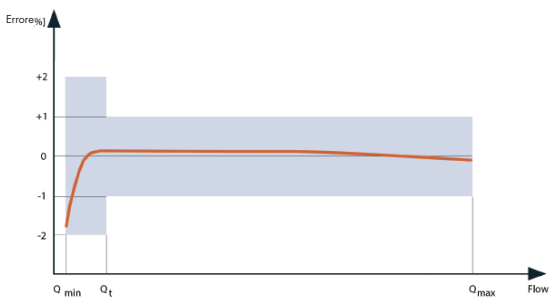


Output



Two pressure sockets, marked "pm" are available on the meter body: a central for detecting the pressure of exercise and the other to the outlet pressure.
Two input thermowells can be installed into the threaded holes.
Pulse generators
On the mechanical counter head are the connectors for pulse outputs; the mechanical counter can be rotated by 350 ° to facilitate the reading and the insertion of the connectors.
Standard are provided 2 BF (LFK); on request can be supplied 2 MF sensors (LFI1-LFI2), two HF (HF! -HF2) and 1 anti-fraud (AFK) recommended lubrication: Lubrina L12 (visc. 12mm2 / s at 20 ° C)

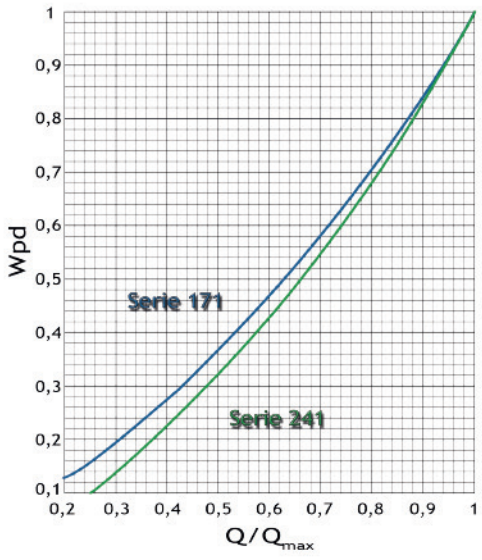
Accuracy of measurement



Qt ÷ Qmax < ± 1%
Qmin ÷ Qt < ± 2%

Qt= flow of transition
Qt= 0,1 Qmax for rangeability 1:50
Qt= 0,05 Qmax for rangeability >1:50

Pressure loss



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

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

$$W_{pd} = \left(\frac{p_m + p_s}{p_s}\right)$$

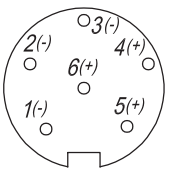
Where:
Δp_1 = pressure loss at p_m
Δp = loss of pressure from the diagram (see technical specifications table)
P_m = operating pressure in bar
ρ_s = standard density of the gas in Kg/m³
ρ_a = standard density of the air (1,2 Kg/m³)
p_s = atmospheric pressure (1,01325 bar)

Technical features

DN Nominal Diameter	G	Flow Qmax [m3/h]	Qmin [m3/h]						Series
			1:50	1:65	1:100	1:160	1:200	1:250	
ALUMINIUM									
40/50	G10	16	0,30	0,25	0,16	-	-	-	171
	G16	25	0,50	0,40	0,25	0,16	-	-	171
	G25	40	0,80	0,65	0,40	0,25	0,20	0,16	171
	G40	65	1,30	1,00	0,65	0,40	0,30	0,25	171
50/80	G65	100	2,00	1,60	1,00	0,65	0,50	0,40	171
	G100	160	3,20	2,50	1,60	1,00	0,80	0,65	171
80/100	G100	160	3,20	2,50	1,60	1,00	0,80	0,65	241
	G160	250	5,00	4,00	2,50	1,60	1,30	1,00	241
80/100	G250	400	8,00	6,50	4,00	2,50	2,00	1,60	241
100	G400	650	13,00	10,00	6,50	4,00	3,20	2,50	241
CAST IRON									
40/50	G10	16	0,30	0,25	-	-	-	-	171
	G16	25	0,50	0,40	0,25	-	-	-	171
	G25	40	0,80	0,65	0,40	0,25	-	-	171
	G40	65	1,30	1,00	0,65	0,40	0,30	0,25	171
50/80	G65	100	2,00	1,60	1,00	0,65	0,50	0,40	171
	G100	160	3,20	2,50	1,60	1,00	0,80	0,65	171
80/100	G100	160	3,20	2,50	1,60	1,00	-	-	241
	G160	250	5,00	4,00	2,50	1,60	1,30	1,00	241
80/100	G250	400	8,00	6,50	4,00	2,50	2,00	1,60	241
100	G400	650	13,00	10,00	6,50	4,00	3,20	2,50	241

Definitions and characteristics of pulse generators

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



HF1,HF2	LFI – HF3	LFK, AFK
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

Product range

Rotary piston gas meters

Turbine gas meters

Gas pressure regulators

Electronic volume correctors

Diaphragm gas meters

Smart meters

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Subject to change without notice - 03/18 ENG