



# Industrial Gas Flow Meters High Pressure - Radial Blade Turbine

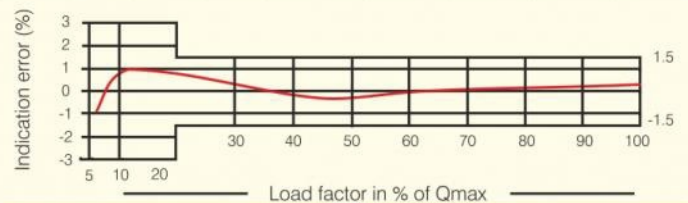
## Elgas / GWF Radial Blade Turbine Type Meter for internal and industrial measurements

Part No. 1471-1487



TECHNICAL CHARACTERISTICS QUANTO MONOPIPE EQZ

		LOAD RANGE		PRESSURE	PULSE GENERATORS (OPTION)			
DN (mm)	Size	Qmin (m³/h)	Qmax (m³/h)	Pmax bar	LF 1 pulse = m³	2 <sup>nd</sup> LF 1 pulse = m³	MF 1 pulse = m³	HF approx. f at Qmax(Hz)
40/50	Q 16	3	25	6	1	1	0.01	350
40/50	Q 25	4	40	6	1	1	0.01	550
40/50	Q 40	5	65	6	1	1	0.01	850
40/50	Q 65	6	100	6	1	1	0.01	1300
50	Q 100	10	160	6	1	1	0.01	1300
80	Q 65	10	100	6	1	1	0.01	200
80	Q 100	12	160	6	1	1	0.01	320
80	Q 160	15	250	6	1	1	0.01	500
80	Q 250	20	400	6	1	1	0.01	800
100	Q 100	13	160	6	1	1	0.01	280
100	Q 160	15	250	6	1	1	0.01	440
100	Q 250	20	400	6	1	1	0.01	380
100	Q 400	25	650	6	1	1	0.01	610



- Operational Pressure max 6 bar
- Meter without monopipe fitting can be calibrated
- Pressure extraction connection inside the meter
- Counting device is in a gas-free space
- Low starting value
- High measurement stability and operational security due to high-quality, wear-resistant components; self lubricating ball bearings
- Designed for simple servicing (measurement-cartridge principle)

- Standard integrated flow strainer
- Short straight inlet lengths (2xDN)
- Operation temperature range:
  - gas temperature -10°C upto +60°C
  - ambient temperature -10°C upto +60°C

### OPTIONS

- Over run brake:
  - mechanical over run brake without measuring range restriction for the intermittent operation
- Pulse generators:
  - 2XLF-IPG, 1X can be retro fitted without breaking the manufacturing seal
  - MF-IPG
  - HF-IPG
- Temperature sensor pockets in the monopipe fitting
- We can also deliver version for Bio-gas/Sewage-gas applications

### MOUNTING AND MAINTENANCE

- Mounting/dismounting of the meter element possible without disconnecting the monopipe fitting
- The monopipe fitting remaining in the pipe network enables mounting/dismounting of the meter element without tension from the pipe network
- Can be installed in any position from horizontal to vertical (turbine axis not suspended and roller counter axle always horizontal)

Please ask for full technical catalogue

### NORMS

Developed and produced according to Quality Standard ISO 9001

Also available for Bio Gas and Sewage Gas

## ELGAS EVC Electronic volume corrector for all Gas Meters

Technical details on demand



## Sensus Meters

Part No. 1490 / 1492 / 1493

Range - Cubix & Sonix  
Model : G 2.5, G 4, G 6

### COMMERCIAL GAS FLOW METERS:

We distribute G2.5, G4, G6, G10, G16, G25, meters  
G1.6, 2.5, 4 are conforming to BS/EN 1359. 0.5 Bar or 1.5 bar  
(Conversion Software offered free with each meter)

Also available in AMR systems designed for Radio Frequency Reading or Wired BMS formats



### SPECIFICATION

Type			G 4	G 6
Nominal Diameter	DN	mm	20/25/32	25
Connection Size	ISO 228	mm	3/4"	1 1/4"
Capacity		Q - m <sup>3</sup> /hr	0.04	0.06
		Q - m <sup>3</sup> /hr	6	10
Cyclic Volume	Q <sub>min</sub>	V - dm <sup>3</sup>	2.4 (2.0)	3.5
Pressure Size	Q <sub>max</sub>	Bar	0.5	0.5 / 1
Pressure Loss		mbar	<2.0	<2.0
Pipe Distance		mm	250	250

### PULSE GENERATOR



## Metrix Meter

2 Bar

Part No. 1497

For Mall Food Courts & Branded Restaurant Chains



### Applications

The residential / commercial gas meters are designed according to European Norm EN 1359 to measure the consumption of gas in households and of consumer, where the maximum consumption of all gas appliance does not exceed 2.5 m<sup>3</sup>/h in case of Gas Meter UG G1.6, 4m<sup>3</sup>/h in case of Gas Meter UG G2.5 and 6m<sup>3</sup>/h in case of Gas Meter UG G4, of the air density 1.2 kg/m<sup>3</sup>. They are suitable to measure the consumption of Natural Gas, Synthetic Gases and their mixtures. They can be equipped with low frequency pulse transmitter Type N1.3

Technical Data for UG G4	
Nominal flow rate Q <sub>n</sub>	4 m <sup>3</sup> /h
Minimal flow rate Q <sub>min</sub>	0.04m <sup>3</sup> /h
Optional	0.016m <sup>3</sup> /h
Maximum flow rate Q <sub>max</sub>	6m <sup>3</sup> /h
Cyclic Volume - V	1.2dm <sup>3</sup>
Allowable indication errors limit during	
EEC initial verification	
	- Q <sub>min</sub> to 0,1 Q <sub>max</sub> - E + -3%
	- Q, 1max to Q <sub>max</sub> - E + -1.5%
Maximum working pressure P <sub>max</sub>	UG AL - 200kPa (2 bar)
Connection Size	1 1/4" or 3/4"
Max. Pressure drop at - Q <sub>max</sub> 200 PA	(2 mbar)
Index measuring	99999,999 m <sup>3</sup>
Pulse value	0.01 m <sup>3</sup>
Distance between connection bases	130
Weight	-2 kg
Possible connection standards ISO, British Standard, NPT, NEN and others	For LPG / NG

## FMG Rotary Piston Displacement Type Meter for Dry Gas



Part No. 1471A to 1487A & 1494, 1495, 1496

The FMG series of rotary gas meters is designed to meet the highest demands of reliable and accurate measurement of gas flow. The meters fully comply with the EN12480 and OIML R137. A compact exchangeable aluminum cartridge allows local repair and on-site cleaning. Installation stresses caused by connecting piping are minimal due to the robust design and construction of the casing and cartridge. The aluminum casing (body and cover) is designed for working pressures up to 21 bar (300 psi) with a safety factor of 5. Square impellers and improved positioning of main bearings and shafts makes the meter less susceptible to overload and pressure shocks.

An aluminum index and protection of the LF pulsers with the associated magnets helps prevent manipulation of the meter by

**OPTIONS:**  
ENCODER / MULTIPLE CONNECTORS / MULTIPLE THERMO  
WELLS / TOTALLY  
SEALED / INSTRUMENT DRIVE / SIDE READING

Technical details on demand

externally applied magnets or other external forces. Tampering of meters with strong neodymium magnets is a major concern of utility companies in many parts of the world.

This type of manipulation is very difficult to detect and or prove, therefore, prevention of such actions is the best cure. Further, in order to be prepared for the "smart grid", the index can be equipped with an intelligent encoder. A unique proprietary oiling system, where-by the oil is distributed directly to the timing gears by means of a disc, eliminates oil loss at high impeller speed and will lubricate the timing gears at very low loads. All plugs and oil sight glasses are in the front of the meter, allowing the meter to be installed in very compact installations.

DN40 – DN150 (1-1/2" – 6")

PN16, ANSI150, ANSI300  
0,5 – 650 m<sup>3</sup>/h (17 – 23.000 acfh)  
MID, PED, ATEX approved  
CARTRIDGE DESIGN  
ROBUST CONSTRUCTION  
LOW SENSIVITY TO INSTALLATION STRESS  
EASY LOCAL REPAIR  
ON-SITE CLEANING  
INTEGRATED THERMO WELLS  
TAMPER PROOF INDEX  
CLASS 1 OR CLASS 1.5  
>> 1:160 RANGE  
MULTI POSITION

Technical Data	imperial metric	2.5M G40	3.5M G65	5.5M G100	7M -	9M G160	9M G160
Displaced volume	cf	0,025	0,025	0,041	0,050	0,063	0,063
	dm <sup>3</sup>	0,72	0,72	1,16	1,43	1,80	1,80
Nominal Pipe Size	in.	1-1/2	2	3	3	3	4
	mm	40	50	80	80	80	100
Base Rating (Qmax)	acfh	2500	3500	5500	7000	9000	9000
	m <sup>3</sup> /h	65	100	160	200	250	250
Rangeability +/- 1%	ratio	65	100	100	100	100	100
Rangeability +/- 2%	ratio	100	160	160	160	160	160
Coverage	imperial	15C-2,5M	15C-3.5M	2M-5.5M	3M-7M	3M-9M	3M-9M
	metric	G16-G40	G16-G65	G40-G100	-	G65-G160	G65-G160
Max. Operating Pressure (MAOP)	psig	300	300	300	300	300	300
	kPa	2100	2100	2100	2100	2100	2100
Temperature Range	deg.F			-40 to +140			
	deg.C			-40 to +70			
Start Rate	cfh	2,0	2,0	2,8	2,8	3,5	3,5
	m <sup>3</sup> /h	0,06	0,06	0,08	0,08	0,1	0,1
Stop Rate	cfh	1,8	1,8	2,1	2,1	2,8	2,8
	m <sup>3</sup> /h	0,05	0,05	0,06	0,06	0,08	0,08
Average Differential @ 100% Flow Natural Gas	in. w.c.	0,7	0,7	0,7	1,0	1,1	1,0
	Pa	90	160	180	240	280	240
Drive Rate Index, ID	cf/rev	10	10	10	10	10	10
	m <sup>3</sup> /rev	0,1	0,1	1	1	1	1
Flange-to-Flange	in.	6-3/4	6-3/4	6-3/4	6-3/4	6-3/4	6-3/4
	mm	171	171	171	171	171	171
Flange Connection	ANSI	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF
	DIN	PN16	PN16	PN16	N/A	PN16	PN16
Net Weight <sup>(2)</sup>	lbs.	26	26	31	35	41	41
	kg	12	12	14	16	19	19
Technical Data	imperial metric	9M G160	16M G250	23M G400	23M G400	3.5M G65	7M G100
Displaced volume	cf	0,069	0,111	0,180	0,180	0,041	0,063
	dm <sup>3</sup>	1,98	3,17	5,15	5,15	1,16	1,80
Nominal Pipe Size	in.	3	4	4	6	2	3
	mm	80	100	100	150	50	80
Base Rating (Qmax)	acfh	9000	16000	23000	23000	3500	7000
	m <sup>3</sup> /h	250	400	650	650	100	160
Rangeability +/- 1%	ratio	100	100	100	100	65	65
Rangeability +/- 2%	ratio	160	160	160	160	100	100
Coverage	imperial	3M-9M	7M-16M	7M-23M	7M-23M	2M-3.5M	3M-7M
	metric	G65-G160	G100-G250	G160-G400	G160-G400	G40-G65	G65-G100
Max. Operating Pressure (MAOP)	psig	300	300	300	232	450	450
	kPa	2100	2100	2100	1600	3000	3000
Temperature Range	deg.F			-40 to +140			
	deg.C			-40 to +70			
Start Rate	cfh	4,2	5,3	7,0	7,0	2,8	3,5
	m <sup>3</sup> /h	0,12	0,15	0,20	0,20	0,08	0,1
Stop Rate	cfh	3,5	4,2	5,6	5,6	2,1	2,8
	m <sup>3</sup> /h	0,10	0,12	0,16	0,16	0,06	0,08
Average Differential @ 100% Flow Natural Gas	in. w.c.	1,6	1,0	2,2	1,7	0,7	1,1
	Pa	400	240	550	420	180	280
Drive Rate Index, ID	cf/rev	10	100	100	100	10	10
	m <sup>3</sup> /rev	1	1	1	1	0,1	1
Flange-to-Flange	in.	9-1/2	9-1/2	9-1/2	16	on request	on request
	mm	241	241	241	457	on request	on request
Flange Connection	ANSI	150#FF	150#FF	150#FF	150#FF	300#RF	300#RF
	DIN	PN16	PN16	PN16	PN16	N/A	N/A
Net Weight <sup>(2)</sup>	lbs.	70	84	110	136	37	51
	kg	32	38	50	62	17	23

### Residential Diaphragm Gas Meter

The RAYCHEM is a compact residential gas meter designed to measure accurately volumes of natural gas, LPG and all non-corrosive gases.



RAYCHEM (MID approved)

Part No. 1491

Steel Version

Basic Features

- Compact size: 1.2 dm<sup>3</sup> cyclic volume
- Range: G1.6, G2.5, G4
- EN 1359 & O.I.M.L compliance

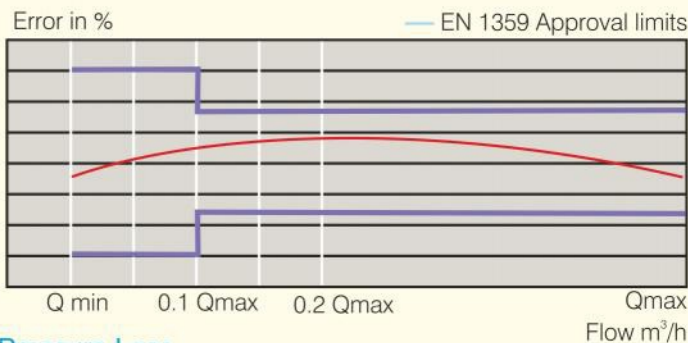
Design

- Long-term accuracy & safety
- Ready for remote reading & data management

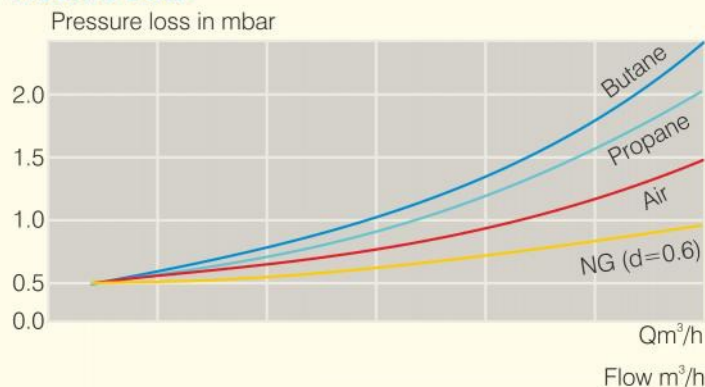
Quality

- World-class, ISO9001 certified, European Engineering and Manufacturing

#### Accuracy Curve



#### Pressure Loss



#### APPLICATION

The RAYCHEM, with an installed base of over 30 million units, is a versatile meter that makes it the preferred choice of many large utilities world-wide.

#### METROLOGY

The RAYCHEM meets O.I.M.L, EN 1359 and MID (certificate delivered by the LNE), and more than 25 national metrological standards (DVGW,NMI Class 1....).

Its design and the careful choice of materials enable the RAYCHEM to meet the highest demand in international markets in terms of accuracy and long-term stability.

During the preliminary test controls on the sonic nozzle test benches, all meters are tested at Qmin, 0.2 Qmax and Qmax.

#### OPERATING PRINCIPLE

The RAYCHEM is a positive displacement diaphragm gas meter with a stand-alone twin chamber measuring unit.

The twin chambers are each fitted with a flexible and gas-tight diaphragm which is moved by the differential between the inlet and outlet pressure. The Gas enters one side of the diaphragm pan while on the other side it comes out through a separate port on the valve. When one side is full, the rotating mono-valve moves on to the next position, allowing the gas to fill the empty side. A transmission gear and a mechanical coupling or stuffing box transfer the reciprocating motion to the mechanical retrofitable index. The measuring unit is housed in a robust gas-tight casing.

#### CONSTRUCTION

With its casing in steel, high protection against corrosion is ensured by 500 hours salt fog spray test resistant cathodoporesis treatment. The aluminum version can withstand up to 1000 hours salt fog spray test.

The extreme strength of the case joint is achieved by rolling the belt & compressing the flanges into contact with a sealant applied between the faces. This forms a joint which is both gas-tight and fire-resistant.

#### MEASURING UNIT

The achievement of the fixed stroke mechanism is the result of precision and high quality automation, and eliminates the need for an adjustable tangent. This confines all registration adjustments to the accessible change wheels behind the index.

The long life synthetic diaphragms, coupled to the well-proven movement design, combine to give excellent stability and accuracy during the whole life of the metre.

All materials have been selected for their superior resistance to chemicals and gas. The valve and the grid, thanks to a special Bakelite formulation, enjoy high gliding properties and are protected against premature wear.

Finally, a back-run stop prevents the metre from running backwards in case of tampering.

#### INDEX

The metres are available with metric or cubic inch indexes. They come with a permanent magnet for pulse generation and can be retrofitted with a pulse transmitter. Ip54 and Ip67 versions are available for specific environments.

#### QUALITY ASSURANCE

Quality assurance procedures- such as ISO 9001- and strict controls throughout the manufacturing process ensure a very high quality level.

Gas AMR Meter for NG / LPG



Bypass arrangement



It is a must to install a suitable filter and regulator before any LPG / NG flow meter

Meter Bypass System Diagram

