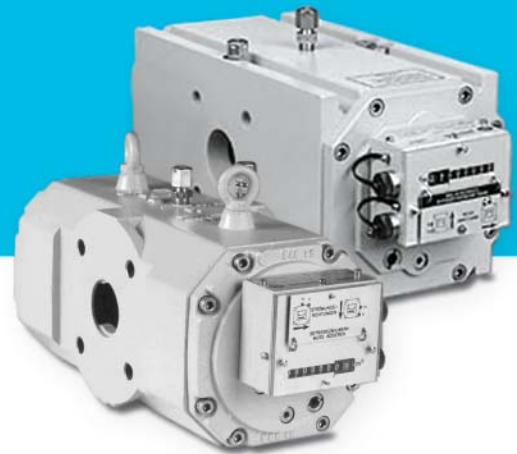


IRM-1

Rotary gas meter with measuring cartridge



Applications

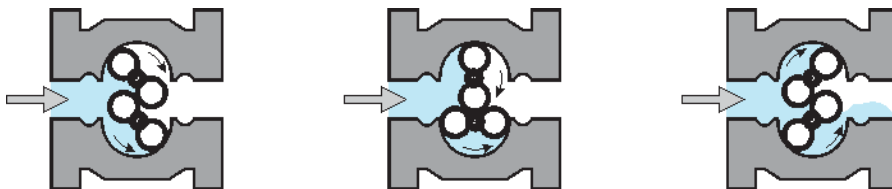
Media: Natural gas, town gas, inert gases
Industries: Gas industry, furnace construction, chemicals industry
Tasks: Measurement, control, regulation

Brief information

Operating principle: Elster-Instromet IRM-1 rotary gas meters are volumetric measuring devices for gaseous media which operate according to the positive displacement principle. They record the operating volume. Electronic volume correctors can be used in order to correct the volume to the standard volume.

The measuring cell consists of two 8-shaped impellers which, together with the housing, form four measuring chambers per revolution that are periodically filled and emptied.

The number of revolutions is proportional to the measured volume. The rotation is transferred to a mechanical index via a gear assembly and the volume is then recorded.



The IRM-1 rotary gas meter is based on the measuring cartridge system. This means that the measuring cell is contained in a measuring cartridge which is sealed into the housing with O-rings and is thus mechanically separated from the housing. Any potential pipeline stress will be absorbed by the housing and will not be transferred to the measuring cartridge. Another advantage is that the measuring cartridge can be replaced if repairs need to be carried out, without having to remove the housing from the pipeline.

General: Rotary gas meters are characterised by a high measuring range and a compact design. Due to their measuring principle, they do not require a straight inlet or outlet pipe section. Rotary gas meters must be lubricated with oil. Oil level checks and maintenance can be carried out from the front side only thanks to interconnected oil chambers to the front and rear of the meter. The double index allows the meter to be adapted to any flow direction.

Main features

- Meter sizes: G16 – G250
- Flow rates from 0.5 to 400 m³/h
- Nominal sizes DN 40 – DN 100
- Pressure ratings PN 10/16 and ANSI 150, special version up to ANSI 600
- Housing made from spheroidal graphite cast iron (GGG-40) or aluminium
- Double index for universal installation and flow direction
- Optional: Duo meter G65 – G250
- Optional: Bypass
- Optional: Absolute-ENCODER S1D
- Optional: mechanical index drive

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Technical data	
Operating temperature	-20 °C to +60 °C
Protection class	IP44: Meter with universal index, ventilated IP65: Meter with universal index, closed IP54: Meter with multi index IP67: Meter with Absolute-ENCODER index SID
Housing	Aluminium or cast steel GGG-40, high pressure version made of steel
Metrological approvals	PTB, NMI
ATEX approval	Ex II 2 Gc T6 according to ATEX directive 94/9/EC
Media	Natural gas, town gas, inert gases; other gases on request
Max. error ± 1 % for $Q_1 - Q_{max}$ ± 2 % for $Q_{min} - Q_1$	$Q_1 = 0.2 \quad Q_{max}$ for measuring range ≤ 1:20 $Q_1 = 0.15 \quad Q_{max}$ for measuring range > 1:30 $Q_1 = 0.1 \quad Q_{max}$ for measuring range = 1:50 $Q_1 = 0.05 \quad Q_{max}$ for measuring range > 1:50
Reproducibility	< 0.1%
Applicable standards	EN 12480, DIN EN 13463-1 and -5, EN 50020:2002
Index variants	Universal index (double index), Absolute-ENCODER SID (option)
Outputs	- 4 LF pulse generators (reed contact) on 2 separate connection sockets - 1 HF pulse generator (option), not possible with integrated Absolute-ENCODER index SID
Pressure/temperature tapping	2 pressure tapplings 1/4" NPT, 2 thermowells can be used (option)

Measuring ranges according to PTB approval

Size	Nominal diameter	Measuring range		Q_{min} [m³/h]		Q_{max} [m³/h]	Measuring volume [dm³]		HF** [imp/m³] (option)
		National	EC approval	National	EC approval		Single	Duo *	
G 16	40/50	1 : 50	1 : 20	0.5	1.3	25	0.233	-	8555
G 25	40/50	1 : 80	1 : 20	0.5	2.0	40	0.373	-	5346
G 40	40/50	1 : 130	1 : 20	0.5	3.0	65	0.599	-	3333
G 65	50	1 : 160	1 : 20	0.6	5.0	100	0.932	0.755	2141
G100	80	1 : 160	1 : 20	1.0	8.0	160	1.184	1.007	1690
G160	80/100	1 : 160	1 : 20	1.6	13.0	250	2.482	2.063	803
G250	80/100	1 : 160	1 : 20	2.5	20.0	400	3.939	3.521	506

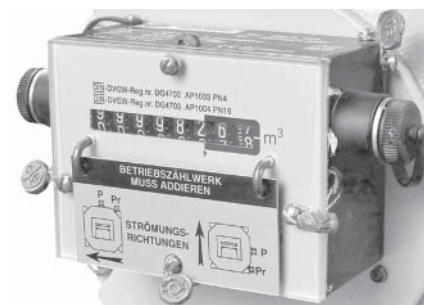
* Special version

** Stated HF pulse values nominal, specific values may differ

Universal index



Flow direction: left - right
respectively. top - bottom

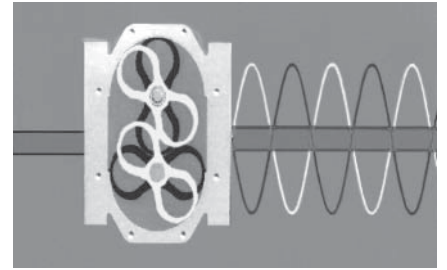


Flow direction: right - left
respectively. bottom - top

IRM-1 DUO

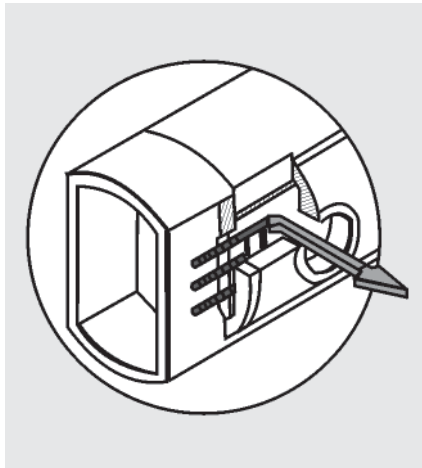
A special version with two phase-shifted pairs of impellers (DUO) in a measuring cartridge is available for special applications G65 – G250. Pulsations generated by conventional rotary gas meters are prevented in this case. This leads to greater improvements in the measuring characteristics at both high and low pressures.

The meter is ideally suited for particular requirements in the high pressure range and for application as a test rig master meter.



Bypass option

The measuring cartridge system provides the so-called bypass option, which ensures gas distribution, even when the impellers are blocked. From a certain differential pressure between the inlet and outlet of the meter, an internal valve opens and redirects the gas around the measuring cartridge. To make this case noticeable, a pressure gauge with a slave pointer must be installed between the inlet and outlet.



IRM-1 HD

The meters for pressure ratings ANSI 300 and ANSI 600 feature a steel housing and are always equipped with the bypass option.

The Multi-Index is used in these meters. The flow direction must be given when ordering.



Absolute-ENCODER index S1D

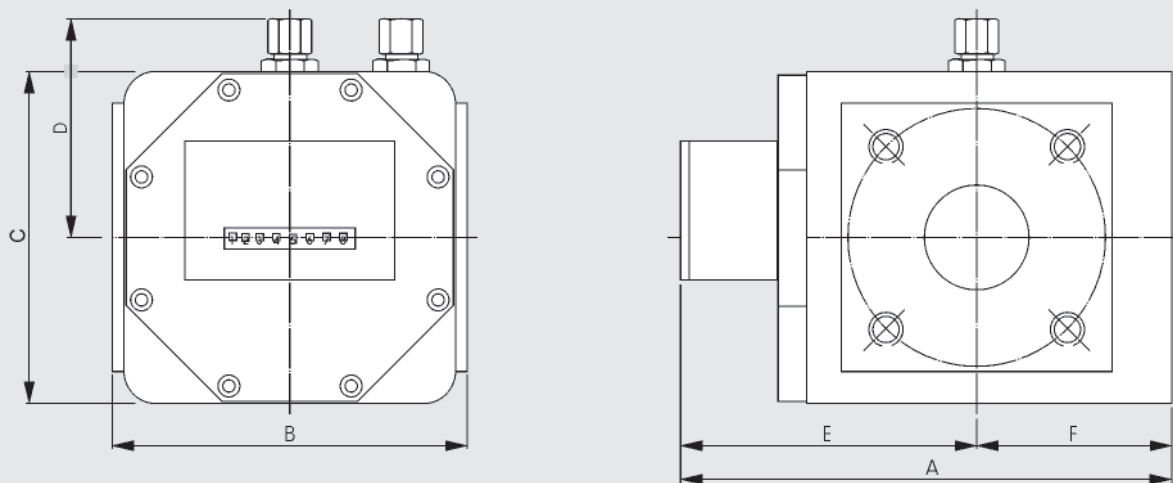
- Electronically readable mechanical double index
- PTB and ATEX approval
- Various data interfaces available

Detailed information can be found on the data sheet "Absolute-ENCODER S1"



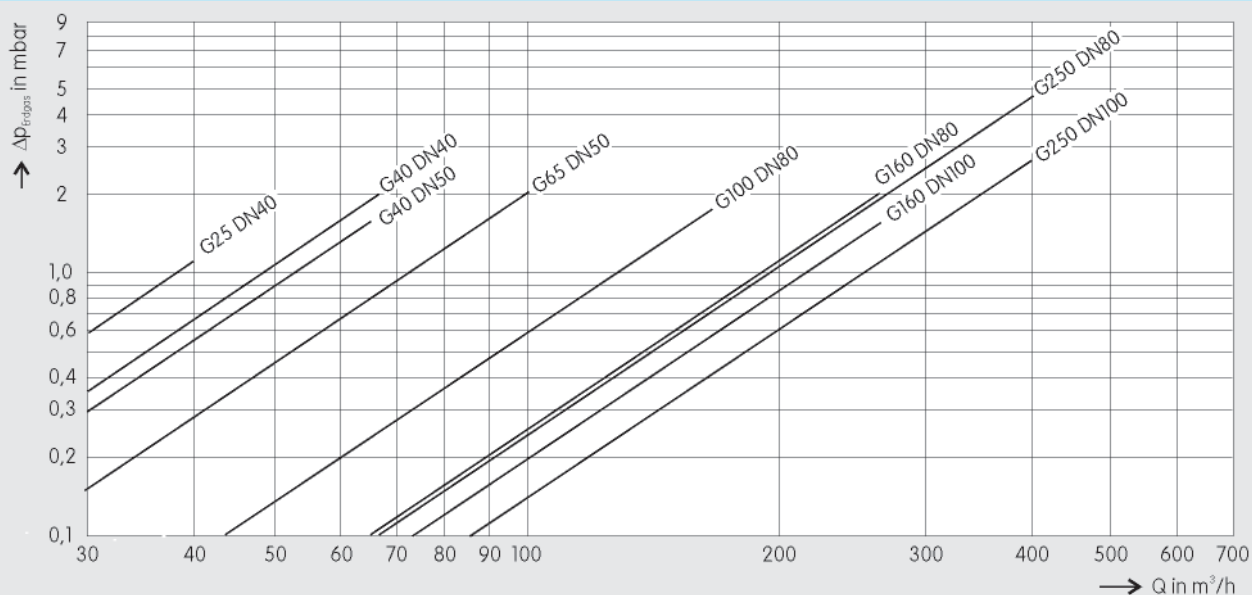
IRM-1: Rotary gas meter with measuring cartridge

Dimensions and weights



Size	Nominal diameter	Aluminium housing						Weightt [kg]	GGG-40 housing						Weightt [kg]
		A	B	C	D	E	F		A	B	C	D	E	F	
G 16	40/50	256	171	172	125	154	102	11	-	-	-	-	-	-	-
G 25	40/50	286	171	172	125	169	117	13	-	-	-	-	-	-	-
G 40	40/50	334	171	172	125	193	141	15	330	171	166	138	188	142	25
G 65	50	406	171	172	125	229	177	18	404	171	166	138	225	179	29
G100	80	460	171	172	125	256	204	20	456	171	200	138	251	205	32
G160	80/100	486	241	238	158	269	217	35	480	241	245	174	262	218	55
G250	80/100	626	241	238	158	339	287	45	620	241	245	174	332	288	67

Pressure loss



The pressure loss values refer to natural gas (0.8 kg/m³) at atmospheric pressure. When using natural gas at higher operating pressures, these values must be multiplied by the absolute pressure (in bar).

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