

Elster® IRM-3 DUO

Rotary gas meter in sizes from DN100 to DN200 (4" to 8")

Honeywell Elster IRM-3 DUO rotary gas meters provide accurate and dependable gas flow measurement, combining robust construction with proven performance for gas distribution, industrial processes, and commercial installations.

Applications

Honeywell Elster's IRM-3 DUO are suitable for measuring natural gas, hydrogen and various filtered, non-corrosive gases.

Brief information

General

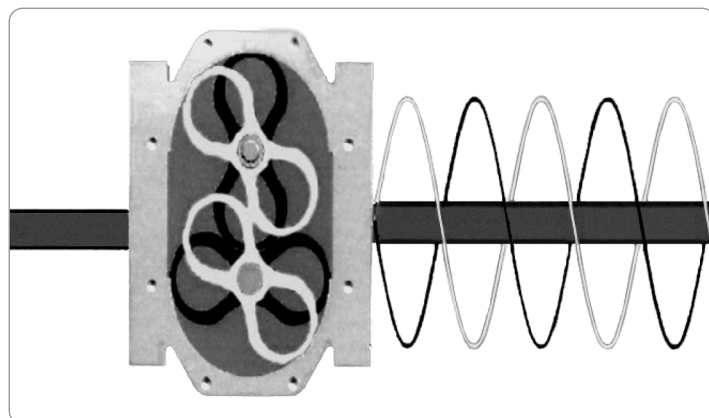
Honeywell Elster rotary gas meters are characterized by high measuring ranges and compact dimensions. They ensure high accuracy, even if the gas flow is low or irregular. The IRM-3 DUO rotary meter combines two measuring chambers and two impellers with an offset in one housing. This construction reduces pulsation as well as resonances and ensures a low-noise operation.

Operating Principle

Rotary gas meters are volume-measuring devices for gaseous media which operate according to the positive displacement principle. Because measurement is volumetric, meter accuracy is largely unaffected by installation conditions, making rotary gas meters ideal for compact metering systems that do not require an inlet section. The meters directly measure gas volume under operating conditions and are approved for custody transfer applications. When used with an electronic volume conversion device (EVC), the measured operating volume can be converted to standard volume for billing and process control purposes.

DUO Measurement Procedure

The sizes G 400 - G 1000 meters have two phase-shifted pairs of impellers (DUO), which form two separate units of measurement. The pulsations of both measurement units eliminate each other. The result is an extremely quiet operation without resonance and pulsations. The resulting additional enhanced measurement characteristic allows the use of these meters as a test rig master meter with a high measuring range.



Features and benefits



DUO Principle
pulsation and
resonance free Low-
Noise



Suitable for 100% H2
for custody transfer
and non-custody
transfer applications



Used as reference
meter in major
calibration facilities



Conformity to
OIML R137, EN12480
1&2, PED, ATEX and
IECEx



Lowest measurement
uncertainty, typically
+/- 2 % for Q_{min} to Q_t
x +/- 1 % for Q_t to Q_{max}

IRM-3 DUO

Meter index and pulse options

S1V index head

The rugged design of the meter index (including the plastic cover) has proven itself in the harshest environments and is IP67 certified. The S1 index head is equipped with an 8-digit mechanical index for continuous meter reading. For better usability the index head can be rotated by 350° without breaking any seals. Low-frequency pulse outputs (reed contacts) enable seamless integration with Flow Computers, Electronic Volume Correctors (EVCs), and other monitoring systems. For enhanced security, the meter also incorporates a tamper-detection switch that helps identify unauthorized external manipulation attempts



S1V Meter Index

S1D index head (standard)

The S1D index head provides same features and benefits as the S1 Index head. Additionally, it has two 8-digit mechanical indexes for both flow directions. After the installation the correct index can be used, and the second index will be covered in accordance with the correct flow direction.



S1D Meter Index

S2 index head

The S2 index head provides same features and benefits as the S1 Index head. The S2 index head is designed for installations where a top reading of the measured flow rate is required. ABSOLUTE ENCODER (OPTION)
Absolute ENCODER for digital data transfer between the meter and Flow Computer/EVC.



S2 Meter Index

Low frequency pulsers IN-S1x and PCM

Elster-Instromet rotary gas meters are fitted with 2 low-frequency (LF) pulsers E1 and a monitoring contact (PCM) for detection of interferences caused by external magnetic fields as standard. Pulser modules IN-S1x can be plugged on without opening the index and can be retrofitted or replaced at any time.

- Max. 2x LF outputs (type E1) with maximum frequency of 0.5 Hz
- 1x manipulation contact
- The standard IN-S10 pulse output is delivered with 2.5m open-ended 6- wire cable to be connected directly to an EVC or junction box. Optionally the IN-S11 and IN-S12 offer a 6-pin flange plug and one/two connector sockets.

Low frequency pulsers IN-W1x and PCM (optional)

The Rabo compact gas meters can be optionally fitted with the LF Wiegand sensor module IN-W11 at the factory, instead of with the LF pulser module IN-S1x. The IN-W11 is a low-frequency pulse generator with a defined pulse width for maximum reliability with no mechanical wear.

High frequency pulsers (optional)

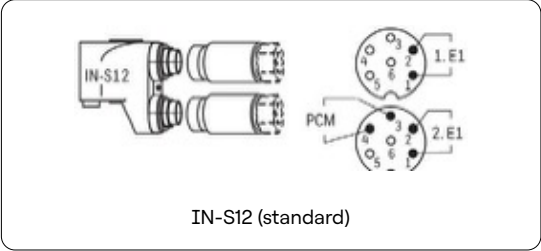
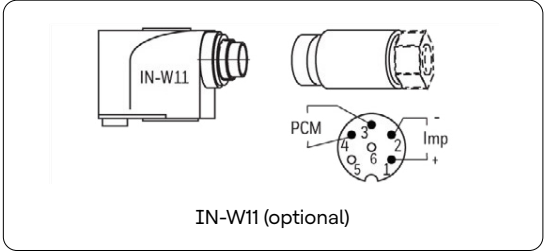
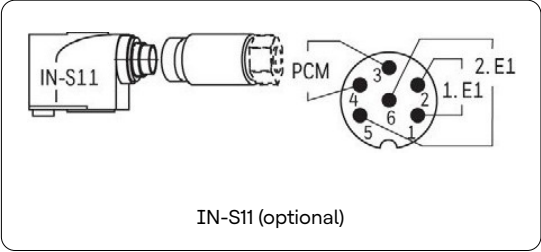
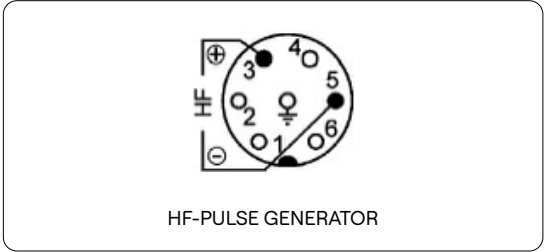
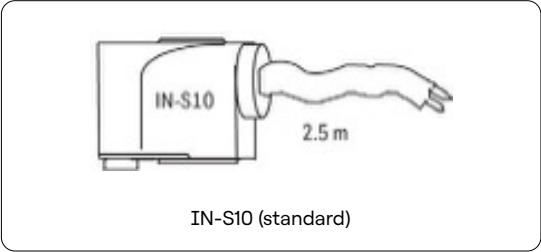
The IRM-3 DUO gas meters can be optionally fitted with two HF sensors at the factory. The sensor is an inductive high-frequency pulse generator with a signal output according to IEC 60947-5-6 (NAMUR)

IRM-3 DUO meters can be equipped with low and high frequency pulsers depending on customer requirements.

Characteristic data for the switch version in accordance with IEC 60947-5-6 (NAMUR)	
Rated Voltage:	Un = 8 V DC
Internal Resistance:	Ri = 1 kΩ
Current Consumption:	Active area free I > 3 mA Active area covered I ≤ 1 mA

IRM-3 DUO

Meter index and pulse options

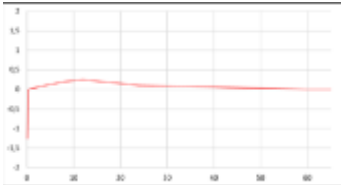


IRM-3 DUO

Technical specifications

Technical data	
Gas Temperature	-25°C to +70°C
Ambient Temperature	-25°C to +70°C
Storage Temperature	-40°C to +70°C
Operating Pressure	Max. 20 bar
Protection Class	Up to IP 67 (suitable for outdoor installation)
Housing	Aluminum
MID Approval	T11553 (PTB)
PED Approval	SD-0085CR0009 (DVGW Cert GmbH)
ATEX / Approval	Ex-Zone 1 in accordance EC directive 2014/34/EU (ATEX) Ⓔ II 2G Ex h IIC T4 Gb
Medium	Natural gas, various filtered, non-corrosive gases and 100% H2
Metrological Accuracy Class	AC 1,0
Reproducibility	< 0.1%
Indexes	S1D (standard), S1V, MI2
Pulse Outputs	• LF pulser IN-Sx (reed contact, standard) in accordance with EC type-examination certificate TÜV 16 ATEX 7729 X and IECEx TUR 16.0032 X Ⓔ II 2G Ex ia IIC T4 Gb • LF pulser IN-W11 (Wiegand sensor, optional) in accordance with EC type-examination certificate FTZÜ 04 ATEX 0277 / Ⓔ II 2G Ex ia IIC T6/T4 Gb • HF pulser A1K (Namur sensor, optional) in accordance with EC type-examination certificate KIWA16ATEX0051X and IECEx KIWA16.0024 X Ⓔ II 2G Ex ia IIC T4 Gb

Error limits
Maximum permissible error limits in accordance with EN12480
±1.0% for Q _t * to Q _{max}
±2.0% for Q _{min} to Q _t



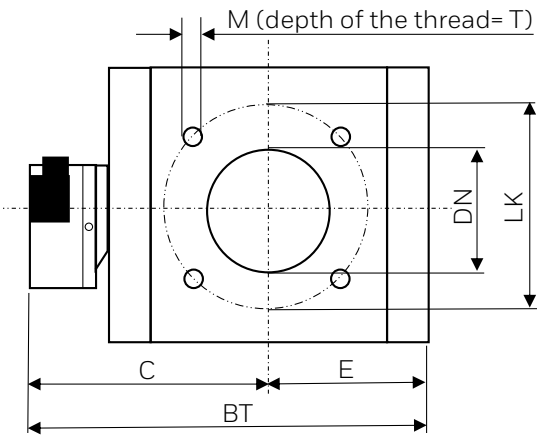
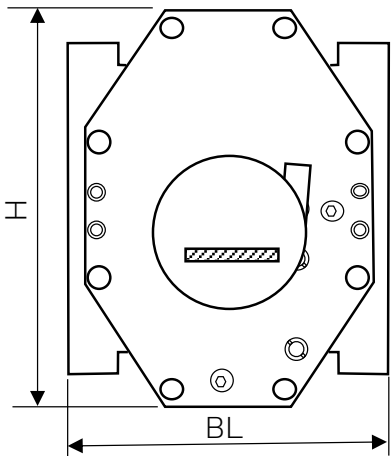
Performance data (measuring ranges, pressure loss, pulse value)														
DN		Q _{max}	Q _{min}								V	LF	HF	Δp (air)*
mm	Type	[m³/h]	1:160	1:130	1:100	1:80	1:65	1:50	1:30	1:20	[dm³]	[pulses/m³] [pulses/cuft]	[pulses/m³] [pulses/cuft]	[mbar] at Q _{max}
100	G400 23M	650	-	-	6	8	10	13	21	32	5,53	1 0,01	720 20,3	7
150	G400 23M	650	-	-	6	8	10	13	21	32	5,53	1 0,01	720 20,3	4
150	G650 38M	1000	6	7	10	12	15	20	33	50	8,85	1 0,01	450 12,7	6
200	G1000 56M	1600	10	12	16	20	25	32	53	80	14,2	1 0,01	282 8	4,8

IRM-3 DUO

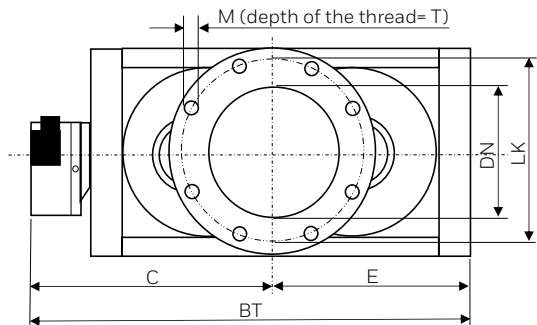
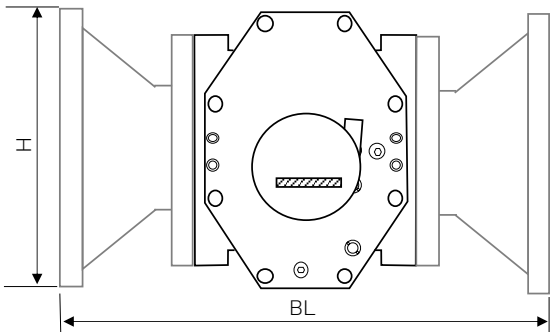
Technical Specifications

Dimensions, weights and connections

G400 – G650
23M – 38M



G1000
56M



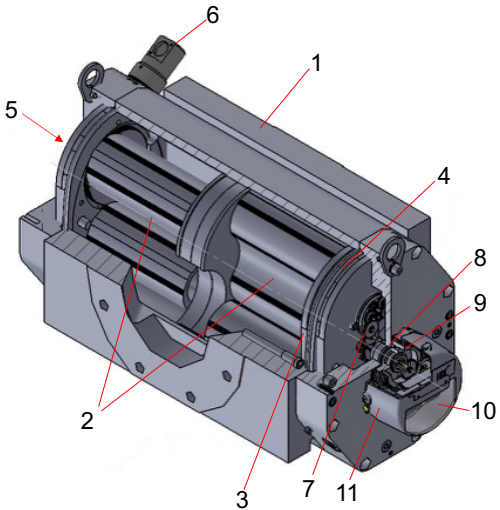
Dimensions and weights											
Size	DN	Dimensions [mm]									Weight [kg]
		LK	M	T	No.*	H**	BL**	BT	C	E	
G400	100	180	M16	24	8	308	241	497	284	213	46
G400	150	240	M20	30	8	308	260	497	284	213	50
G650	150	240	M20	30	8	308	260	629	350	279	62
G1000	200	295	M20	30	12 8***	340	600	841	456	385	113

- 1. * Number of bolts
- 2. ** HF pulse generators can protrude on the back side of the meter
- 3. *** PN16 (12) / PN10 (8)

Dimensions and weights											
Size	DN	Dimensions [in]									Weight [kg]
		LK	M	T	No.*	H**	BL**	BT	C	E	
23M	4"	7½	⅝	1⅞	8	12⅞	9½	19⅝	11⅞	7½	101
23M	6"	9½	¾	1⅞	8	12⅞	10¼	19⅝	11⅞	7½	110
38M	6"	9½	¾	1⅞	8	12⅞	10¼	24⅞	13⅞	11	137
56M	8"	11¾	¾	1⅞	8	13⅞	23⅝	33⅞	18	15¼	249

- 1. * Number of bolts
- 2. ** HF pulse generators can protrude on the back side of the meter
- 3. *** PN16 (12) / PN10 (8)

DN	Pressure rating	D _k	D _i
100 23M	PN 16 / Class 150	180/190,5	8xM16 / 8xM16
150 38M	PN 16 / Class 150	240/241,3	8xM20 / 8xM20
200 56M	PN 16 / Class 150	295/298,5	8xM20 / 8xM20



- 1. Housing
- 2. DUO Impellers
- 3. Bearing Cover
- 4. Synchronizing Gears
- 5. Ball Bearings
- 6. HF Pulser A1K (option)
- 7. Gear
- 8. Magnetic Coupler
- 9. Partition
- 10. Index
- 11. Main Plate
- 12. Index Cover

For more information

To learn more about honeywell
elster's gas solutions, visit
www.honeywell.com or contact
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