

Elster® RABO®

Highly Accurate Rotary Gas Meter

Applications

Honeywell Elster has combined tried and tested product features of their RPM and IRM rotary meter product lines with new developments into a single product. The new Honeywell Elster Rotary Gas Meter offers a feature set that meets virtually all market applications in one simple design.

Rotary-All-By-One, simply, all-in-one!

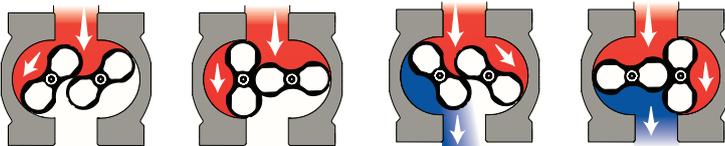
Brief information

General

- MAOP 290 psig
- Temperature range -40 F to +140 F
- Meets ANSI B109.3 and EN12480:2015
- Approvals pursuant to MID/PED/ATEX directives
- Media: dry natural gas, noncorrosive industrial gases.

Operating Principle

The Elster Rotary Gas meter utilizes the rotary-type positive displacement principle of operation which makes volumetric measurements by displacing finite volumes of gas. The positive displacement occurs within a cavity formed between the meter's internal housing and its rotating impellers. The counter-rotating "figure-8" impellers turn as a result of pressure drop across the meter's inlet and outlet created as downstream gas is consumed. The rotating impellers separate the flowing gas into small, finite, volumes and are counted using a mechanical index.



As the left impeller rotates toward the vertical position gas enters the cavity created between the impeller and the housing.

When the left impeller reaches the vertical position, a finite volume of gas is captured in the left cavity.

As the impellers continue to turn, the volume of gas in the left cavity is discharged. Simultaneously, gas is entering the space between the right impeller and housing.

After further rotation, the right impeller becomes vertical and a finite volume of gas is captured in the right cavity.



FEATURES & BENEFITS

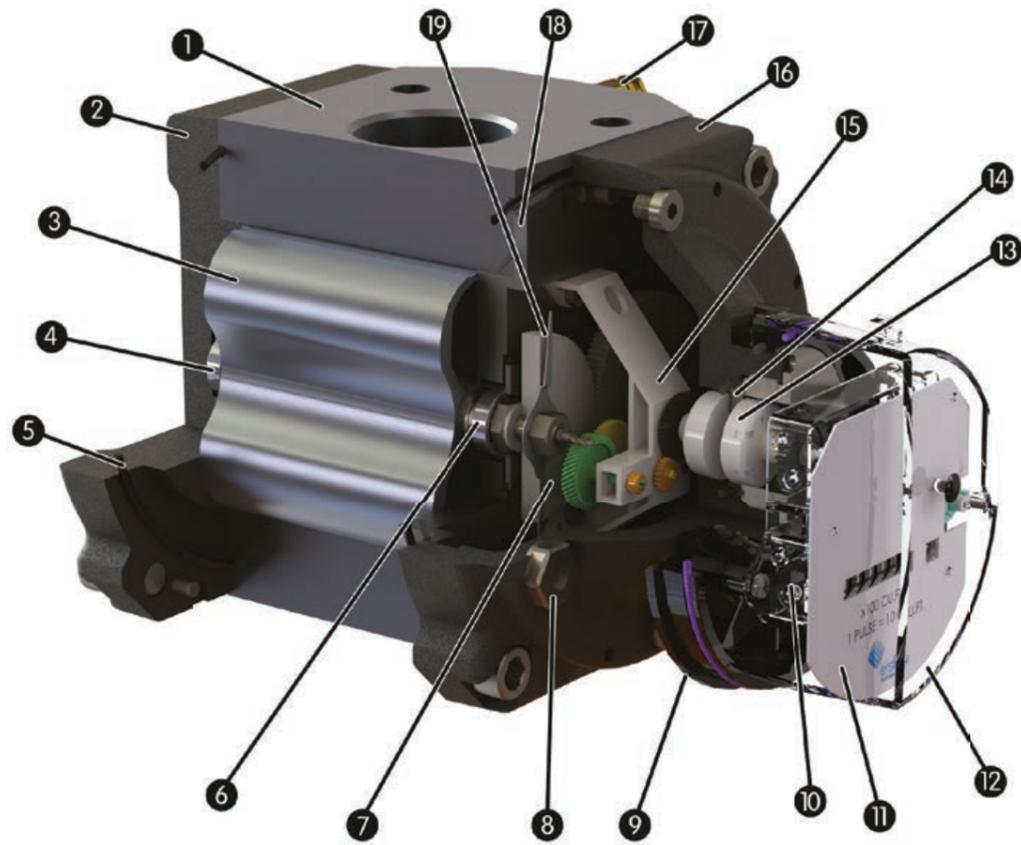
Main Features

- 4 meter sizes
- 3,500 to 14,000 acfh Maximum Capacity
- 2", 3" and 4" ANSI 125/150 flanged connections
- High rangeability across the flow range
- Low pressure drop
- Differential pressure taps on inlet and outlet with pressure test ports
- Non-lubricated and non-resettable index
- End view, rotatable index
- Heavy duty, compact design
- High impact-resistant, ultraviolet stabilized index cover
- Anodized extruded aluminum body and impellers
- Anodized forged aluminum case covers
- Permanently lubricated bearings
- 10ft³ output on all meter sizes

Options

- Pulse outputs
- Thermowell
- Index masking
- Gasket strainers
- Flange bolts and gaskets
- AMR mounting
- Differential pressure gauge kit
- Instrument Drive
- Bracked or ID-mounted P&T correction (EC 350)

Elster® Rotary Gas Meter Construction



| Meter Construction | | |
|--------------------|---------------------|---|
| No. | Part Name | Material |
| 1 | Case | Extruded Aluminum, Hard-coat Anodized |
| 2 | Back Case Cover | Forged Aluminum, Hard-coat Anodized |
| 3 | Impellers | Extruded Aluminum, Hard-coat Anodized |
| 4 | Back Bearing | Stainless Steel, Permanently Lubricated, Shielded |
| 5 | O-Ring | Buna-N |
| 6 | Front Bearing | Stainless Steel, Lubricated, Shielded |
| 7 | Timing Gears | Carbon Steel |
| 8 | Sight Glasses | Aluminum Housing |
| 9 | Index Base | High Performance Polyamide (Nylon) |
| 10 | Index | Polycarbonate |
| 11 | Index Masking Plate | Aluminum |
| 12 | Index Cover | Polycarbonate, UV Resistant |
| 13 | Index Drive | Magnet |
| 14 | Pressure Plate | Stainless Steel |
| 15 | Gear Box | Polyoxymethylene |
| 16 | Front Case Cover | Forged Aluminum, Hard-coat Anodized |
| 17 | Pressure Test Ports | Brass Housing |
| 18 | Front Bearing Plate | Aluminum, Hard-coat Anodized |
| 19 | Oil Stinger | Steel |
| | Lubricating Oil | Shell Morlina |

Pulse Outputs

Elster Rotary Gas flow meters come equipped with a drive magnet as standard equipment for easy adaptability of a low frequency pulse generator. The pulse generators are attachable to the exterior of the index cover, and can be retrofitted or changed without opening the index. They also have sealing capability to visually detect tampering.

| Model | Description |
|---------|-------------------------------------|
| IN-S10 | 8' cable |
| IN-S10A | 1.5' cable for Itron AMR connection |
| IN-S11 | 1 connector |
| IN-S12 | 2 connectors |

All models include 2 independent switches and a tamper circuit. Pulse value is 10 acf (0.28 x am³) for all meter sizes. IN-S11 and IN-S12 come with mating connector, no cable included.



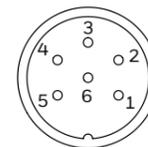
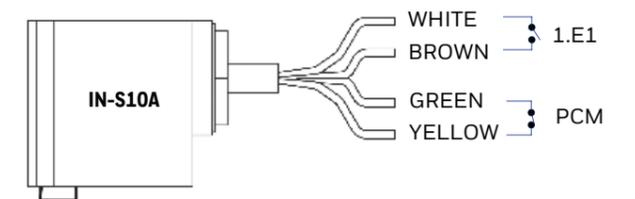
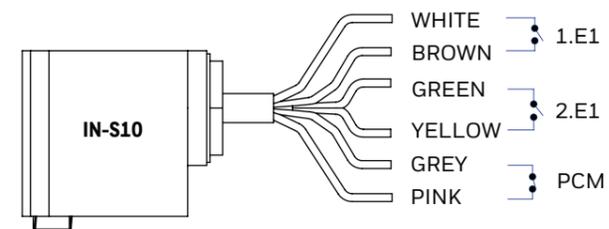
| Technical Specifications | | | | |
|---------------------------------|-----------------|------|------|------|
| Description | Min | Typ. | Max. | Unit |
| Voltage (U) | 1 | | 24 | V |
| Current (I) | 2 | | 76 | mA |
| Power (P) | | | 1,1 | mW |
| Static Contact Resistance | | | 200 | mΩ |
| Insulation Resistance | 10 ⁹ | | | Ω |
| Breakdown Voltage | 100 | | 100 | VDC |
| Switching Time Including Bounce | | 0.5 | | ms |
| Release Time | | 0.1 | | ms |



Temperature range: -40°C ... +70°C

IP-Class: IP67

Explosion protection: Ex II 2 G EEx ia 2C T4



| Pulsar Pin-Out Connections | | | |
|----------------------------|--------------|---------------|---------------|
| Connector | 1.E1 | 2.E1 | PCM |
| IN-S11 | 1 + 2 | 5 + 6 | 3 + 4 |
| IN-S12 | 1 + 2 (Back) | 1 + 2 (Front) | 3 + 4 (Front) |



Thermowell

316 SS, 0.25" Bore

| Model |
|---------------------|
| 1/4" NPT with gland |

Index Masking

| Mask |
|------------------|
| 4 X 1,000 CF |
| 5 X 100 CF (Std) |
| 5 X 1,000 CF |
| 6 X 10 CF |
| 6 X 100 CF |
| Blank |

Instrument drive

- Provide an output shaft to drive instruments
- Accept known instruments via industry standard mounting plate
- CW shaft rotation
- 1:1 gear ratio
- Replaceable break-away feature
- <0.1% effect on accuracy at Q_{min}
- Able to retrofit in the field

Gaskets, Strainers, Bolts

Gaskets and bolts are necessary for mounting a meter in the gas line. Gaskets and strainers are high quality Garlock® BLUE-GARD® Style 3000, and Grade 5 bolts are Xylan® coated for increased corrosion resistance and reduced friction. Gasket strainers are an effective way to protect the meter and downstream equipment from weld slag and other debris in the gas system.

| Technical Specifications | | | |
|--------------------------|-----------------|------------|------|
| Description | Size | Type | Mesh |
| Gasket Strainer | 2" ANSI 125/150 | Full Face* | 80 |
| Gasket Strainer | 3" ANSI 125/150 | Full Face* | 80 |
| Gasket Strainer | 4" ANSI 125/150 | Full Face* | 80 |
| Gasket Strainer | 2" ANSI 125/150 | Ring | 40 |
| Gasket Strainer | 3" ANSI 125/150 | Ring | 40 |
| Gasket Strainer | 4" ANSI 125/150 | Ring | 40 |
| Gasket Strainer | 2" ANSI 125/150 | Ring | 20 |
| Gasket Strainer | 3" ANSI 125/150 | Ring | 20 |
| Gasket Strainer | 4" ANSI 125/150 | Ring | 20 |
| Gasket Strainer | 2" ANSI 125/150 | Full Face* | 20 |
| Gasket Strainer | 3" ANSI 125/150 | Full Face* | 20 |
| Gasket Strainer | 4" ANSI 125/150 | Full Face* | 20 |
| Gasket & Bolts | 2" ANSI 125/150 | Ring | N/A |
| Gasket & Bolts | 3" ANSI 125/150 | Ring | N/A |
| Gasket & Bolts | 4" ANSI 125/150 | Ring | N/A |

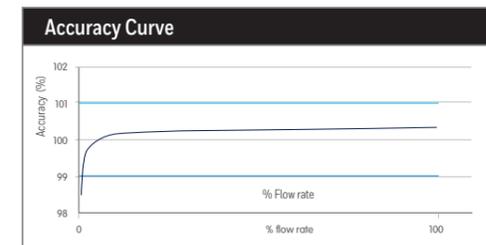
*Not rated for full MAOP of the meter.



Elster® Rotary Gas Meter Performance

| Performance | Units | 3.5M/G65 | 5.5M/G100 | 9M/G160 | 14M/G250 |
|---|---------------------------|-------------|-------------|-------------|-------------|
| Rangeability | | 90:1 | 160:1 | 160:1 | 160:1 |
| Start Rate | acfh [am ³ /h] | 1.3 [0.04] | 0.9 [0.03] | 2.5 [0.07] | 2.5 [0.07] |
| Stop Rate | acfh [am ³ /h] | 1.1 [0.03] | 0.8 [0.02] | 1.9 [0.05] | 2.3 [0.07] |
| Flow Rate at 1/2" w.c. DP, Gas | acfh [am ³ /h] | 2,715 [77] | 4,074 [115] | 5,722 [162] | 6,740 [191] |
| Differential Pressure at 100% Flow Rate | in. w.c. [mBar] | 1.46 [3.64] | 1.23 [3.06] | 1.70 [4.23] | 2.65 [6.60] |

Note: Values are for air, except Flow rate at 1/2" w.c.DP, which are natural gas values.



Sizing Chart

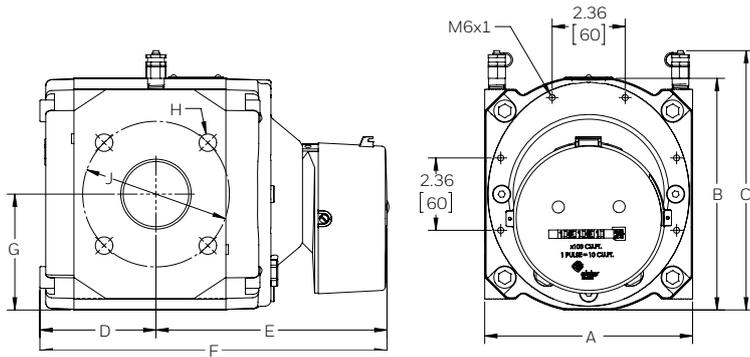
Using the chart below, select the appropriate meter by using the Maximum Instantaneous Flow Rate (scfh) and the Minimum Operating Pressure (psig) at any given point in time.

Example: A flow rate of 25,000 scfh and an operating pressure range of 75-100 psig would require a 5.5M meter based on a 75 psig minimum inlet pressure.

| Model | | 3.5M/G65 | 5.5M/G100 | 9M/G160 | 14M/G250 |
|-------|--------|---|-----------------|-----------------|-----------------|
| psig | [Barg] | Corrected Capacity in scfh [sm ³ /h] | | | |
| 0.25 | [0.0] | 3,500 [100] | 5,500 [160] | 9,000 [250] | 14,000 [400] |
| 2 | [0.1] | 3,900 [110] | 6,100 [170] | 10,000 [280] | 15,600 [440] |
| 5 | [0.3] | 4,600 [130] | 7,200 [200] | 11,900 [340] | 18,400 [520] |
| 10 | [0.7] | 5,800 [160] | 9,100 [260] | 14,900 [420] | 23,200 [660] |
| 20 | [1.4] | 8,200 [230] | 12,800 [360] | 21,000 [590] | 32,700 [930] |
| 30 | [2.1] | 10,500 [300] | 16,600 [470] | 27,100 [770] | 42,200 [1,190] |
| 40 | [2.8] | 12,900 [370] | 20,300 [570] | 33,200 [940] | 51,700 [1,460] |
| 50 | [3.4] | 15,300 [430] | 24,000 [680] | 39,300 [1,110] | 61,200 [1,730] |
| 60 | [4.1] | 17,700 [500] | 27,800 [790] | 45,500 [1,290] | 70,700 [2,000] |
| 75 | [5.2] | 21,200 [600] | 33,400 [950] | 54,600 [1,550] | 85,000 [2,410] |
| 100 | [6.9] | 27,200 [770] | 42,700 [1,210] | 69,900 [1,980] | 108,700 [3,080] |
| 150 | [10.3] | 39,100 [1,110] | 61,400 [1,740] | 100,400 [2,840] | 156,300 [4,430] |
| 175 | [12.1] | 45,000 [1,270] | 70,700 [2,000] | 115,700 [3,280] | 180,000 [5,100] |
| 250 | [17.2] | 62,800 [1,780] | 98,700 [2,790] | 161,500 [4,570] | 251,300 [7,120] |
| 290 | [20.0] | 72,300 [2,050] | 113,700 [3,220] | 186,000 [5,270] | 289,300 [8,190] |

Note: All capacities are based on 14.4 psia atmospheric pressure, 14.73 psia base pressure, and 60° F base temperature.

Dimensions, Weights and Connections



| Dimensions and Weights | | | | | | |
|------------------------|-----------|-----------------------|-------------|-----------------------|-------------|--|
| | Units | 3.5M/G65 | 5.5M/G100 | 9M/G160 | 14M/G250 | |
| A | in. [mm] | 6.75 [171] | 6.75 [171] | 9.5 [241] | 9.5 [241] | |
| B | in. [mm] | 7.56 [192] | 7.56 [192] | 10.08 [256] | 10.08 [256] | |
| C | in. [mm] | 8.63 [219] | 8.63 [219] | 10.75 [273] | 10.75 [273] | |
| D | in. [mm] | 3.78 [96] | 5.43 [138] | 5.16 [131] | 6.14 [156] | |
| E | in. [mm] | 7.52 [191] | 9.17 [233] | 10.67 [271] | 11.65 [296] | |
| F | in. [mm] | 11.26 [286] | 14.61 [371] | 15.83 [402] | 17.76 [451] | |
| G | in. [mm] | 3.78 [96] | 3.78 [96] | 5.04 [128] | 5.04 [128] | |
| Nom. Pipe Size* | in. [mm] | 2 | 3 | 3 | 4 | |
| Bolt Size, H | | 5/8" - 11 | 5/8" - 11 | 5/8" - 11 | 5/8" - 11 | |
| # Bolts / Flange | | 4 | 4 | 4 | 8 | |
| Bolt Circle, J | in. [mm] | 4.75 [121] | 6.00 [152] | 6.00 [152] | 7.50 [191] | |
| Shipping Weight | lbs. [kg] | 29.8 [14] | 37.7 [17] | 73.9 [34] | 82.3 [37] | |
| Carton Size | in. | 18.3L x 10.6W x 12.6H | | 23.6L x 13.0W x 13.4H | | |
| | [mm] | 465L x 270W x 320H | | 600L x 330W x 340H | | |

*ANSI Class 125/150 flat face flange connection

| Ordering Information | |
|----------------------|--|
| Meter Model | |
| Index Masking | |
| AMR Mounting | - Horizontal or Vertical Flow |
| Special Badge | |
| Options | <ul style="list-style-type: none"> - Thermowell - Pulser - Gasket Strainer - Gasket and Bolt - Installation Kit - Instrument Drive |



For more information

To learn more about Honeywell Gas Measurement and Data Management Solutions, visit www.honeywellprocess.com or contact your Honeywell account manager.

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BR-16-25-ENG (Rev. 2) | 07/17
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