

Elster® Quantometer Q/Q75

Short pattern Turbine Flow Meters for non-fiscal applications

Applications

Medium:

Natural gas, Air, Methane, Nitrogen, other non-corrosive gases

Verticals:

Heavy Industry, Petrochemicals, Steel, Power, Minerals, Heating

Function:

In-plant Allocation Metering, Volume Input for Controls, Consumption Monitoring for Burners, Boilers, Furnaces etc.

Brief information

Honeywell Elster Quantometers are highly reliable turbine gas meters, which are used in many industrial applications to determine the actual flow rate as well as consumption over a period of time fulfilling requirements of industrial, non-fiscal metering. The Q/Q75 offering is mainly used for heavier industrial applications where the Q Type is available for sizes up to DN150/6" and the Q75 cover the range from DN200/8" to DN600/24". For light industrial applications Quantometers QA/QAe are recommended.

For fiscal applications Honeywell offers fiscally approved meters e.g. TRZ2 and SM-RI-X turbine meters and the RABO rotary gas meter.

Operating principle

The gas flowing through the meter sets a turbine wheel in motion. The number of revolutions of the wheel is proportional to the volume that has passed through the meter. The volume is registered by a mechanical 8-gigit roller counter in the meter index.

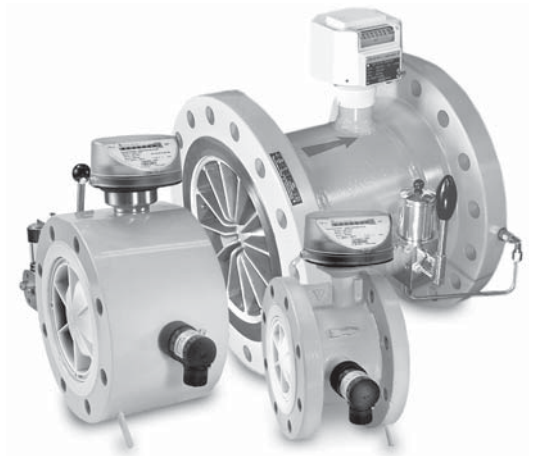
The metering principle is proven over decades also in fiscal applications. Design, materials and assembly process meet the highest standards.

The need for metering

Energy efficiency is a key metric in almost every company today. Quantometers are used to meter the consumption of boilers, heaters, furnaces and other major consumers in any industrial or commercial plant. By knowing the exact consumption data production and heating processes can be controlled more precisely and overall energy efficiency can be improved significantly. Data from quantometers is also used for internal cost allocation between cost centers.

Installation requirements

Honeywell recommends 3DN of straight upstream piping for accurate metering as well as 2DN outlet in the same nominal size as the meter. A filter must be installed upstream of the meter if particles e.g. rust are expected in the gas flow to ensure long lifetime of the instrument. Up to DN150/6" the meters can be installed in horizontal or vertical position. Installation of meters DN200/8" and above must be in horizontal position. The exact flow direction is defined during the ordering process and marked on the housing.



FEATURES & BENEFITS

- Compact Dimensions (short pattern)
- High performance to price ratio
- Meter sizes G65 to G16.000
- Flow ranges 6 – 25.000 m³/h
- Measuring range up to 1:20
- Meter size DN50 (2") to DN 600 (24")
- Meter body material: Cast Iron or Steel
- Temperature range: -10°C to +60°C (others on request)
- Flange connections acc. to EN or ASME
- Protection class IP67 (suitable for outdoor installation)
- Index: 8-digits mechanical roller counter
- Two low frequency outputs as standard
- High metering accuracy
- Approvals: DVGW, ATEX, PED

Index variants

The Q Type Quantometer the S1 index is used which is also installed on the fiscal TRZ2 turbine meter.

The Q75 meter utilizes the same index (Type MI-2) as the SM-RI-X turbine meter.

Both index variants share the following features:

- 8-digit mechanical counter
- Rotatable up to 355°
- Absolute ENCODER as an option for digital transfer of meter reading to electronic devices



S1 Index



MI-2 Index

Pulse Outputs

Low frequency (LF)

Q/Q75 turbine meters are fitted with two LF outputs as a standard. In addition an anti-tampering switch enables users to monitor possible manipulations caused by the use of external magnets.

The LF pulses are generated through Reed switches in the IN-S10 plug-in pulser known from other meters in the Elster product line. The number of pulses is in direct relation to the actual volume in m³ which has flown through the meter. The maximum frequency at Q_{max} is 0,5 Hz.

The standard IN-S10 pulser is fitted with a 2,5m oped ended 6-wire cable.

Optionally pulsers with one (type IN-S11) or two (type IN-S12) 6-pin flange plugs and Binder type connection sockets can be supplied.

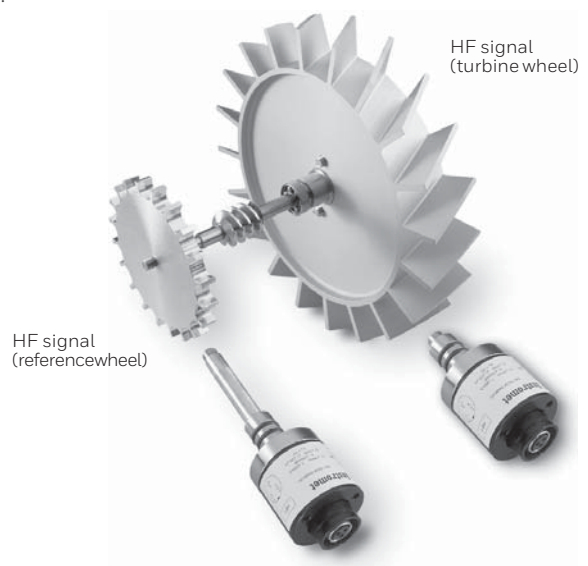
High frequency (HF)

High frequency pulsers are optional and can be used for control or regulation purposes. The HF pulsers offer a much higher resolution than the LF pulses and e.g. can be transformed into a 4-20 mA signal with a external converter.

The Q type can be installed with a A1R type pulser, the Q75 uses a pulser called BI-ISM-Y1. Both pick up the revolutions from the turbine wheel through a proximity switch.

Connection / Pin Assignments

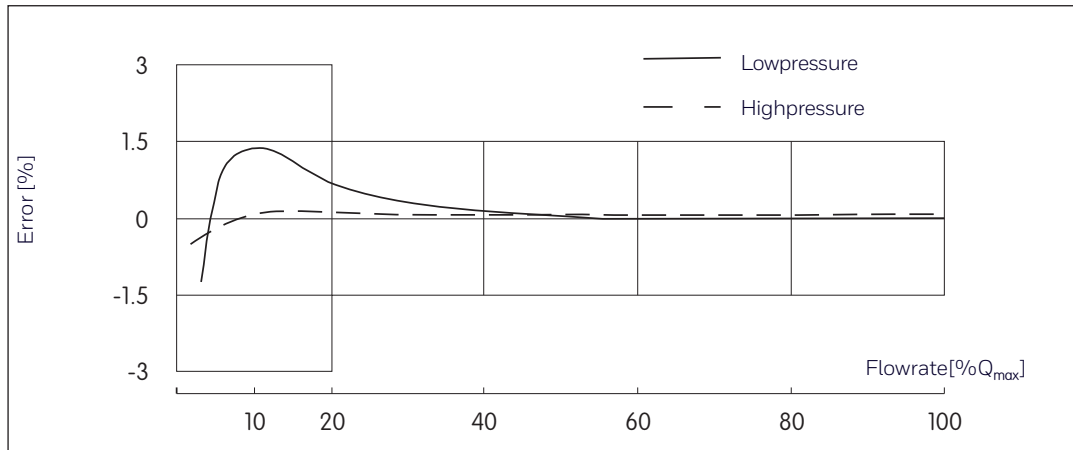
The terminal connection pins for the different pulsers can be found in the manual.



Measurement Uncertainty

Elster® Quantometers Type Q/Q75 fulfil the following error limits after factory calibration:

- ± 1.5% for 0.2Q_{max} to Q_{max}
- ± 3.0% for Q_{min} to 0.2Q_{max}



Typical error curve of a turbine gas meter

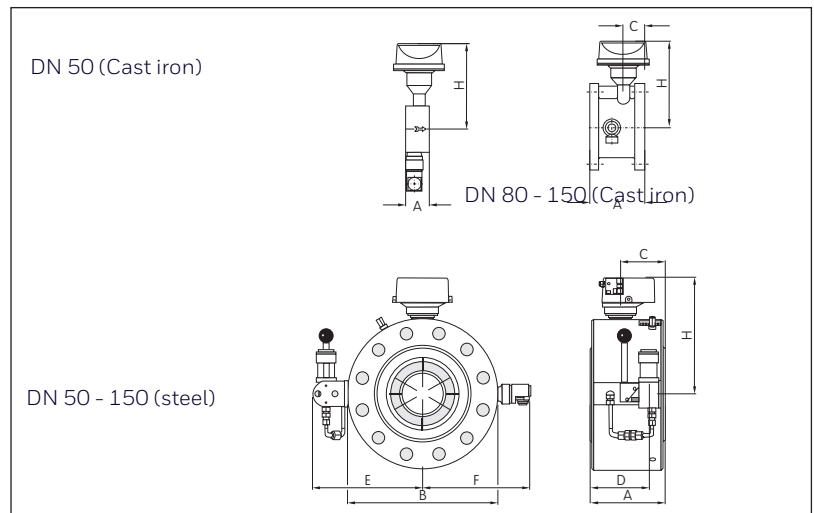
| Technical Data | | | | | | | | |
|-------------------------|-------|-----------------|---|--------------------------------------|-----------------------------|-------------------------------------|-------|---|
| Diameter [mm / inch] | Model | Measuring Range | | | Pressure loss* [mbar] | Pulse Rate [Imp/m ³] | | *HF-Frequency [Hz @ Q _{max}] |
| | | G-Size | Q _{min} [m ³ /h] | Q _{max} [m ³ /h] | | LF | HF | |
| 50 / 2" | Q | 65 | 6 | 100 | 12 | 10 | 28500 | 792 |
| 80 / 3" | Q | 100 | 10 | 160 | 2 | 1 | 10500 | 467 |
| | | 160 | 13 | 250 | 5,3 | 1 | 10500 | 729 |
| | | 250 | 20 | 400 | 13,6 | 1 | 10500 | 1167 |
| 100 / 4" | Q | 400 | 20 | 400 | 5,8 | 1 | 6630 | 733 |
| | | 400 | 32 | 650 | 13,1 | 1 | 6630 | 1192 |
| 150 / 6" | Q | 650 | 32 | 650 | 2,6 | 1 | 2560 | 451 |
| | | 650 | 50 | 1000 | 6,5 | 1 | 2560 | 694 |
| | | 1000 | 80 | 1600 | 16,8 | 1 | 2560 | 1111 |
| 200 / 8" | Q75 | 1600 | 50 | 1000 | 1,5 | 0,1 | 770 | 214 |
| | | 1000 | 80 | 1600 | 2,5 | 0,1 | 1180 | 524 |
| | | 1600 | 130 | 2500 | 5,5 | 0,1 | 1060 | 736 |
| 250 / 10" | Q75 | 2500 | 80 | 1600 | 1,5 | 0,1 | 825 | 367 |
| | | 1600 | 130 | 2500 | 3,5 | 0,1 | 1320 | 917 |
| 300 / 12" | Q75 | 2500 | 200 | 4000 | 8,5 | 0,1 | 1200 | 1333 |
| | | 4000 | 130 | 2500 | 1,5 | 0,1 | 810 | 563 |
| | | 2500 | 200 | 4000 | 4 | 0,1 | 1270 | 1411 |
| 400 / 16" | Q75 | 4000 | 320 | 6500 | 9 | 0,1 | 1175 | 2122 |
| | | 6500 | 200 | 4000 | 1,5 | 0,1 | 660 | 733 |
| | | 4000 | 320 | 6500 | 4 | 0,1 | 1055 | 1905 |
| 500 / 20" | Q75 | 6500 | 500 | 10000 | 9 | 0,1 | 890 | 2472 |
| | | 10000 | 320 | 6500 | 1,5 | 0,1 | 530 | 957 |
| | | 6500 | 500 | 10000 | 4 | 0,1 | 865 | 2403 |
| 600 / 24" | Q75 | 10000 | 800 | 16000 | 9 | 0,1 | 770 | 3422 |
| | | 16000 | 500 | 10000 | 1,5 | 0,01 | 470 | 1306 |
| | | 10000 | 800 | 16000 | 4 | 0,01 | 720 | 3200 |
| | | 16000 | 1300 | 25000 | 9 | 0,01 | 650 | 4514 |

* at Q_{max} with natural gas @ 0.8 kg/m³ density [atmospheric pressure]

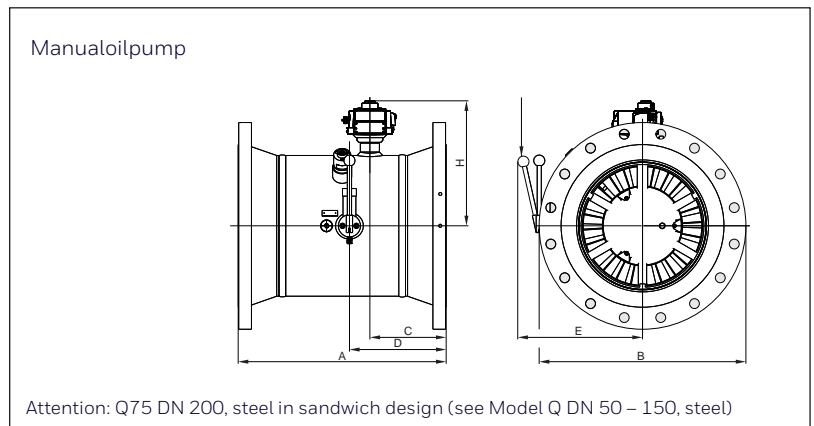
Weights and Dimensions Q/Q75

| Diameter | Model | Body material | Design | Dimensions | | | | | | | Weight [kg] | | |
|-----------|-------|---------------|----------|------------|-------------------------------|-----|-----|-----|-----|-----|-------------|----------|----------|
| | | | | A | B | C | D | E | F | H | ANSI 150 | ANSI 300 | ANSI 600 |
| 50 / 2" | Q | Cast Iron | Sandwich | 60 / 150 | As per flange class dimension | 75 | - | - | 143 | 170 | 4 | n/a | n/a |
| | | Steel | Flanged | 150 | | 75 | 75 | 198 | 134 | 165 | 14 | 15 | 16 |
| 80 / 3" | Q | Cast Iron | Flanged | 120 | | 52 | - | - | 158 | 190 | 13 | n/a | n/a |
| | | Steel | Sandwich | 120 | | 52 | 74 | 185 | 180 | 193 | 24 | 27 | 26 |
| 100 / 4" | Q | Cast Iron | Flanged | 150 | | 57 | - | - | 170 | 200 | 15 | n/a | n/a |
| | | Steel | Sandwich | 150 | | 57 | 104 | 217 | 211 | 230 | 38 | 48 | 53 |
| 150 / 6" | Q | Cast Iron | Flanged | 175 / 180 | | 76 | - | - | 195 | 225 | 28 | n/a | n/a |
| | | Steel | Sandwich | 175 / 180 | | 73 | 138 | 260 | 253 | 272 | 56 | 77 | 96 |
| 200 / 8" | Q75 | Cast Iron | Flanged | 200 | | 69 | 100 | 338 | - | 353 | 42 | n/a | n/a |
| | | Steel | Sandwich | 200 | | 69 | 100 | 338 | - | 353 | 90 | 120 | 152 |
| 250 / 10" | Q75 | Steel | Flanged | 375 | | 140 | 167 | 327 | - | 315 | 74 | 110 | 200 |
| 300 / 12" | Q75 | Steel | Flanged | 450 | | 172 | 224 | 352 | - | 338 | 136 | 182 | 264 |
| 400 / 16" | Q75 | Steel | Flanged | 600 | | 221 | 280 | 294 | - | 380 | 250 | 310 | 430 |
| 500 / 20" | Q75 | Steel | Flanged | 750 | | 335 | 365 | 445 | - | 431 | 412 | 562 | 742 |
| 600 / 24" | Q75 | Steel | Flanged | 900 | 350 | 380 | 495 | - | 482 | 657 | 907 | 1107 | |

Model Q



Model Q75



For more information

To learn more about Honeywell Elster's Gas Solutions, visit www.honeywellprocess.com or contact your Honeywell account manager.

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