

Fluenta FGM 160-II Flare Gas Meter

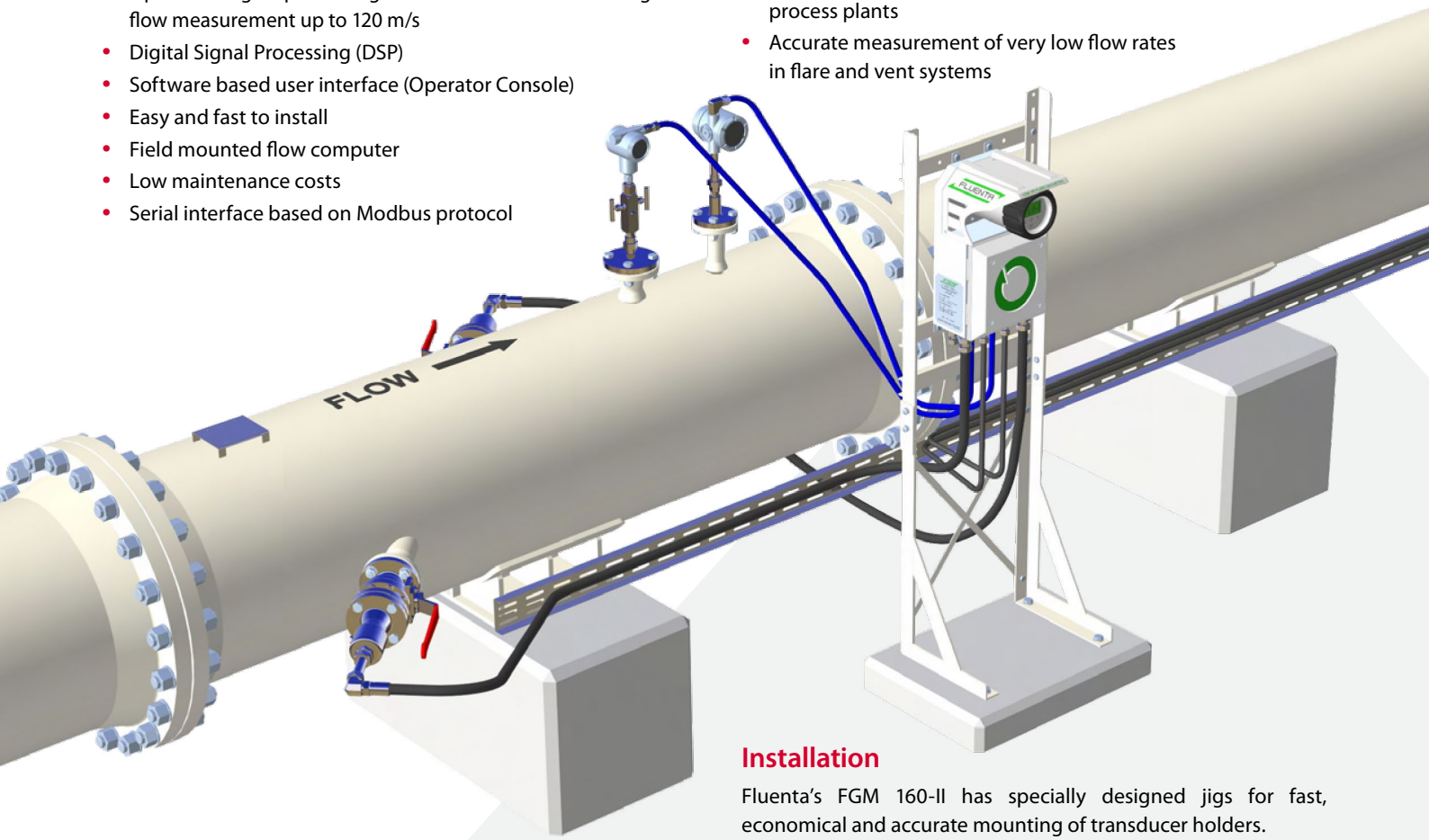
Field Computer & Ultrasonic Transducers

The Fluenta FGM 160-II has been developed to measure flare gas in pipes where pressure, a wide range of velocity and large pipe diameters represent a challenge. Fluenta offers world-class flare gas meters characterized by:

- Optimized signal processing and acoustic sensors enabling flow measurement up to 120 m/s
- Digital Signal Processing (DSP)
- Software based user interface (Operator Console)
- Easy and fast to install
- Field mounted flow computer
- Low maintenance costs
- Serial interface based on Modbus protocol

Application

- Measurement of flare and vent gas, characterized by a large velocity range, low pressure and large pipe diameters
- Flare gas density calculation for gas composition indications
- Leak detection and loss calculation for mass balance in process plants
- Accurate measurement of very low flow rates in flare and vent systems



Advantages

- Widest velocity range on the market
- Wetted non intrusive sensor design for all pipe sizes
- High measurement accuracy throughout entire range
- Unique signal processing ensures high accuracy at low flow rate
- Fast response time
- Certified for operation in hazardous areas
- No flow rig based calibration required
- Rapid installation gives reduced costs
- Low maintenance
- High reliability

Installation

Fluenta's FGM 160-II has specially designed jigs for fast, economical and accurate mounting of transducer holders. These holders are welded onto the pipeline at an angle suitable for each different pipe size. The meter can either be delivered as a hot/cold tap version or with a prefabricated spool piece.

Operating Principle

The Fluenta FGM 160-II measures gas velocity based on the time-of-flight technique. The ultrasonic transducers are mounted at an angle to the pipe. Both transducers transmit and receive pulses and the transit time is measured. When the gas is flowing in the pipe, the pulses travelling against the flow take longer to reach the opposite transducer than the pulse travelling with the flow. This time difference is used to calculate the velocity of the flowing medium.

Registered Address

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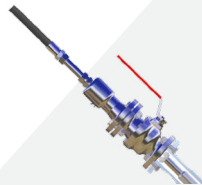
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Specifications

Field Computer

Power Input:	+24 VDC – (20 – 32 VDC) 110 – 240 VAC 50/60 Hz, safe area power supply optional
Consumption:	13 W maximum
Power / Instrument cable:	Standard twisted pair: RFOU(i)2-3 x 2 x 0.75mm2
Dimensions:	470 x 280 x 290mm (H x W x D)
Weight:	16kg
Input signals:	Signal from transducers via std instrument cable
Temperature & Pressure:	4-20 mA or HART interface
Output:	6 x 4-20 mA analog output channels, with selectable parameters. HART Pulse/frequency signal RS 422/485 2 - or 4 - wire Modbus Protocol, RTU
Optional output:	Foundation Fieldbus TCP/IP via Ethernet Softflow
Electrical classification:	Explosion proof Ex de [ia] IIC T6, Tamb: -40°C to +60°C (Zone 1)
Ingressive Protection:	IP66



Ultrasonic Transducers

The Fluenta FGM 160 ultrasonic transducers are wetted Time-of-Flight but non-intrusive. The advantage of this is that the intrusive sensors are more exposed to deposits and particles in the flow. In addition, high flow velocity may cause vibration of the sensors. Such vibration can, over a period of time, lead to a reduced performance of the sensors.

Standard Material:	SS316/Titanium
Optional Material:	Titanium/Hastelloy Titanium/6Mo Titanium/Duplex
Safety class:	Ex ia II C T4–T6 intrinsically safe (Zone 0)
Transducer Cable Length:	Up to 164 ft (50m)

System Performance and Characteristics

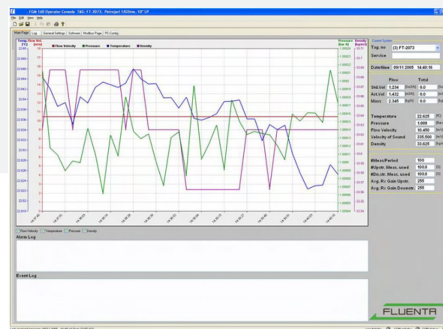
Pipe size:	Standard 2" to 72" Optional 74" to 82"
Velocity range:	0,03 – 120 m/s (0.1 – 394 ft/s)
Accuracy:	Standard +/- 2.5% to 5% Optional +/- 1% to 2%
Resolution:	0.0008 m/s
Repeatability:	Better than 1%
Turndown ratio:	4000:1
Operating temperature (Transducers):	Standard -70°C to +145°C Optional -110°C to +220°C
Ambient temperature (Field computer)	-40°C to +60°C
Design temperature (Transducers)	Standard -150°C to +315°C Optional -150°C to +350°C
Design pressure:	20 Bar a (transducers)

Measurement Parameters

Standard and actual volume flow, mass flow, totalised standard volume flow, totalised mass flow, molecular weight, standard density, actual density, pressure, temperature, speed of sound, gas velocity.

Operator Console

- Trend curves of all relevant measured and calculated values
- Full access to all parameters
- Log of historical measurements
- Reconfiguration and SW upload to field computer
- Integrated service console
- TCP/IP interface option for remote diagnostics and control



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