



ACD G10 and G16

Diaphragm Meters - High Accuracy Commercial Meters

Itron Diaphragm ACD G10-G16 meters combine accuracy and long life in a very compact casing. Through our proven know-how in gas measurement, combined with the use of modern engineering and production techniques, Itron has developed this smaller size, highly accurate meter, ensuring reduced shipping costs, and easier handling and simplified installation. Our range of ACD G10-G16 meters are designed for commercial use for gas suppliers and gas utilities worldwide.

KEY BENEFITS

- » Ready for remote reading and data management
- » Long-term accuracy and reliability
- » Robust, maintenance-free meter
- » Compact design
- » MID approved
- » High resistance to corrosion

APPLICATION

The ACD diaphragm meters are used for applications requiring high precision and large rangeability at low pressure (below 1 bar gauge).

They are supplied in two versions - a compact and a standard version (single and two pipe). Due to the volumetric principle of the diaphragm meters, its metrology is not influenced by installation conditions.

They are designed for use with natural gas, manufactured gas and other non-corrosive gases.

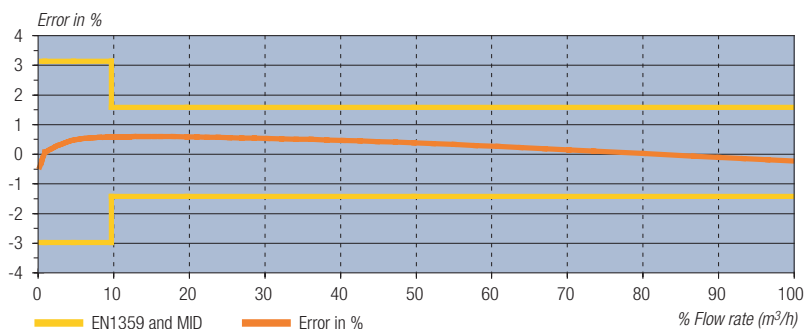
The ACD diaphragm meters are approved for fiscal use.

OPERATING PRINCIPLE

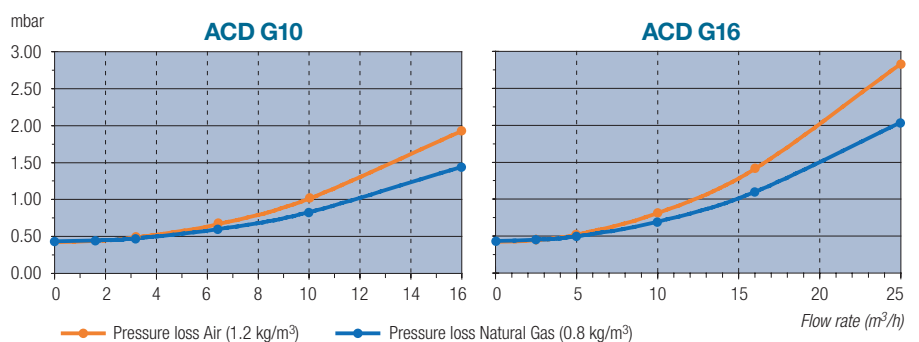
The movement of the diaphragm is caused by the pressure difference between the inlet and the outlet of the meter. The reciprocal filling is controlled by means of two sliding valves.

This oscillating movement is transformed into a rotational one and is mechanically transmitted to the totalizer through a magnetic coupling or a stuffing box.

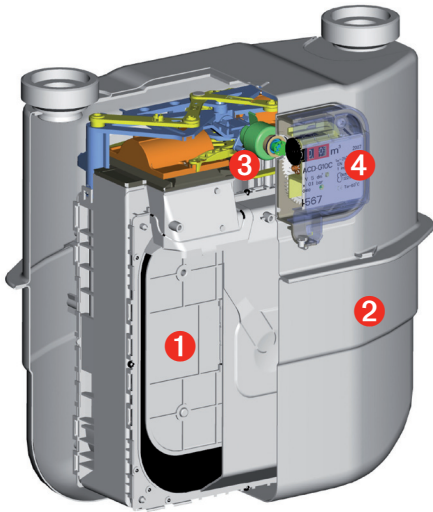
TYPICAL ERROR CURVE



PRESSURE LOSS CURVE



CONSTRUCTION



The ACD G10-G16 meters contain four main parts:

- ❶ A measuring unit with:
 - » Four measuring chambers.
 - » Two sliding valves.
 - » An outlet pipe.
- ❷ A steel casing fitted with one or two connections
- ❸ A magnetic coupling or stuffing box transmits the movement of the measuring unit to the totalizer
- ❹ A totalizer is available in different versions depending on the application



ACD Measuring Unit

Technical Specifications

| | | |
|--------------------------------|--|--|
| Gas Type | Natural Gas, air, propane, butane, nitrogen and all non-corrosive gases | |
| Cyclic Volume | 5 dm ³ | |
| Temperature Range | Ambient: -25°C to +55°C Gas: -25°C to +55°C Storage: -40°C to +70°C | |
| Maximum Working Pressure | Compact version: 0.5 bar Standard version: 0.5 bar (1 bar optional) | |
| Flow Range | G10: | Qmin 0.10 m ³ /h Qmax 16 m ³ /h |
| | G16: | Qmin 0.16 m ³ /h Qmax 25 m ³ /h |
| Accuracy | Class 1.5 | |
| Approval | MID (04/22/EC) module B, DE-07-MI002-PT013 Rev.2, and EN1359:1998 + A1:2006 | |
| Metrology | In accordance with the EN1359:1998/A1:2006 and MID Maximum permissible errors are +/-3% from Qmin to 0.1 Qmax and +/-1.5% from 0.1 Qmax to Qmax. | |
| Starting Flow Rate | Typical value: < 8 dm ³ /h | |
| Totalizer | IP54 UV resistant cover Fitted with a reflecting disc on the first drum to facilitate periodical checks Customised name plate: bar code, customer serial number or logo | |
| Magnetic Coupling Stuffing Box | The meter is equipped as standard with a magnetic coupling As an alternative a stuffing box can be also installed | |
| Connections | Single pipe or 2 pipe connections From DN32 to DN50 depending on the G-size Other connections are available on request | |
| Backrun Stop | Prevents the meter from running backwards in case of tampering | |
| RPF (Resistant Power Factor) | According to PRS11 (< 1.2) | |
| Materials | Casing: | aluminium-coated sheet steel |
| | Measuring unit body: | polyacetal (POM) |
| | Diaphragms: | polyester fabric coated with NBR-ECO |
| | Distribution valves and grid: | phenol resin |
| Colour | Light grey RAL7035 | |

Options

| | |
|--------------------------------|--|
| Thermowell | The meters can be fitted with a thermowell to allow electronic temperature compensation. A second thermowell for reference measurements is available on special request |
| High Temperature Loading (HTL) | The meters can be delivered in a HTL version following EN1359 PNO,1 |
| Pressure Tapping | This device allows the gas pressure to be measured at a reference point. |



Thermowell fitted onto an ACD standard

TOTALIZER FEATURES

With the ECO series, Itron offers a complete portfolio to address today's and future energy resource and environmental challenges.

"e" series

Supporting the prevailing European Communication

Standards and ensuring interoperability

This smart meter equipped with an electronic index is designed to facilitate integration into wired and wireless fixed networks and has built-in communications capabilities which detects reversed operation, magnetic tampering and backflow.

- » High accuracy error curve correction
- » Optional temperature conversion
- » Built-in 2-way wired/wireless M-Bus communication
- » Safe data transmission with AES
- » Tamper protection and detection

"c" series

Smart ready, allowing for future AMR capabilities

Itron's latest-generation mechanical index meter comes standard with our Cyble™ target, and can be upgraded in the field to implement AMR and enable remote reading via different communication technologies.

- » Smart reading possible with additional modules
- » Can be retrofitted on site without recalibrating the meter
- » Reliable of an electronic switch (no wear or bouncing)
- » Proven, tested design backed by 20 years' experience
- » Protection against magnetic tampering

"o" series

Retrofit enabling smart upgrades to existing meter park

- » The "o" series addresses traditional meters with a mechanical index, already installed in the field, to minimize stranded assets when AMR/AMI is required. LF transmitters - via a Reed switch - and a Pulse RF radio module transform pulses into transmittable data.

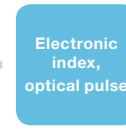


"o" series Totaliser with LF "cable"

Building Blocks of Itron's ECO series



Base Meter



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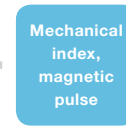
Communication Module

Totalizer characteristics "e" series

| | |
|--|---|
| Meter Size | G10 / G16 |
| European Metrological Approval (04/22/EC - Module B) | N° DK-0200-MI002-020 Rev.3 |
| Temperature Range | Temperature (converted): -10°C to +55°C (-25°C to +55°C optional for G10) Storage temperature: -40°C to +70°C (> 55°C for up to 4 hours) |
| ATEX Approval | II 2G Ex ib IIB T3 |
| Relative Humidity | Maximum 93% non-condensing between -25°C and +55°C |
| Display | LCD with 9 digits (3 decimals) |
| M-Bus Interface | 300bps / 2400 bps / one bus load, wireless or dongle (up to four bus loads) |
| Battery | Lithium battery with an average lifetime of min. 15 years under reference conditions |
| Standards | EN12405-1: 2007-08, Directive 2004/108/EC (EMC) and OIML D11 (EMC), NTA8130-May 2007, DSMR V2.2+ (Netherlands) |
| Serial Bus | M-Bus slave (wired: EN13757-2/3, wireless: EN13757-4) |
| Customer Port | IR service interface (EN62056-21) |
| Mechanical Environment | M1 |
| Electronical Environment | E2 |



Base Meter



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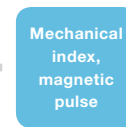
Communication Module

Totalizer characteristics "c" series

| | |
|--|--|
| Meter Size | G10 / G16 |
| European Metrological Approval (04/22/EC - Module B) | N° DE-07-MI002-PTB013 Rev.2 |
| Display | Mechanical index with 8 drums (2 decimals) |
| Transmission Rate | 0.1 m³ / rotation |
| Transmission System | Cyble™ target |
| Mechanical Environment | M2 |
| Electronical Environment | E2 |



Base Meter



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Communication Module

Totalizer characteristics "o" series

| | |
|--|---|
| Meter Size | G10 / G16 |
| European Metrological Approval (04/22/EC - Module B) | N° DE-07-MI002-PTB013 Rev.2 |
| Display | Mechanical index with 8 drums (2 decimals) |
| Pulse Generator | Standard 0.1 m³ / pulse (optional 1 m³ / pulse) |
| Pulse Transmitter | Retrofittable LF system, 180 Vdc max – 50 mA max standard 0.1 m³/pulse. Different versions: with 1m cable, terminal block or binder plug (Double LF pulse transmitter) |
| Mechanical Environment | M2 |
| Electronical Environment | E2 |

Dimensions and Weight

| Model | G Size | Qmax m ³ /h | Qmin m ³ /h | Cyclic Volume dm ³ | DN mm | Threads Standard | Pmax bar | Pmax HTL bar | Pressure Loss (Air) mbar | A mm | B mm | C mm | D mm | E mm | | Weight kg | |
|-------|-----------|---------------------------|---------------------------|-------------------------------------|----------|---------------------|-------------|--------------------|--------------------------------|---------|---------|---------|---------|---------------|-------------------|---------------|-------------------|
| | | | | | | | | | | | | | | "e" series | "c & o" series | "e" series | "c & o" series |

ACD Compact: 2 pipe version

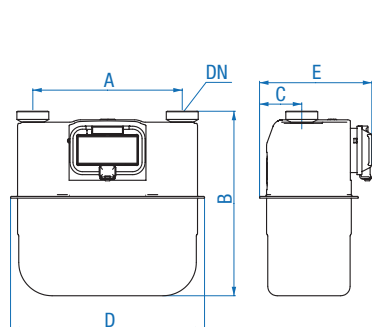
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|---|-----|----|------|---|----|-----------------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|---|
| 1 | G10 | 16 | 0.10 | 5 | 32 | G1¼" A ISO228-1 | 0.5 | 0.1 | 1.9 | 250 | 310 | 71 | 325 | 204 | 189 | 4.4 | 4 |
| 2 | G10 | 16 | 0.10 | 5 | 32 | MFIT001 | 0.5 | 0.1 | 1.9 | 250 | 310 | 71 | 325 | 204 | 189 | 4.4 | 4 |
| 3 | G10 | 16 | 0.10 | 5 | 40 | G2" A ISO228-1 | 0.5 | 0.1 | 1.9 | 250 | 310 | 71 | 325 | 204 | 189 | 4.4 | 4 |
| 4 | G16 | 25 | 0.16 | 5 | 40 | G2" A ISO228-1 | 0.5 | 0.1 | 2.9 | 250 | 310 | 71 | 325 | 204 | 189 | 4.4 | 4 |

ACD Standard: 2 pipe version

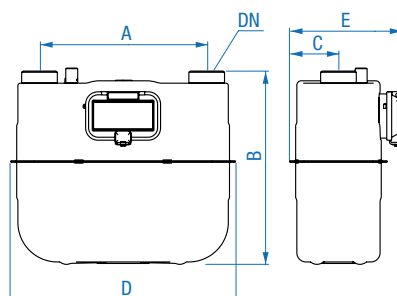
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|----|-----|----|------|---|----|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 10 | G10 | 16 | 0.10 | 5 | 32 | G1¼"A ISO228-1 | 0.5 | 0.1 | 1.9 | 280 | 328 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 11 | G10 | 16 | 0.10 | 5 | 40 | G2"A ISO228-1 | 0.5 | 0.1 | 1.6 | 280 | 324 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 12 | G10 | 16 | 0.10 | 5 | 40 | G2"A ISO228-1 | 0.5 | 0.1 | 1.6 | 290 | 349 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 13 | G10 | 16 | 0.10 | 5 | 40 | G2"A ISO228-1 | 0.5 | 0.1 | 1.6 | 300 | 353 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 14 | G16 | 25 | 0.16 | 5 | 32 | G1¼"A ISO228-1 | 0.5 | 0.1 | 2.9 | 280 | 328 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 15 | G16 | 25 | 0.16 | 5 | 40 | G2"A ISO228-1 | 0.5 | 0.1 | 2.7 | 280 | 324 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 16 | G16 | 25 | 0.16 | 5 | 40 | G1½" BS Withworth | 0.5 | 0.1 | 2.7 | 280 | 328 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 17 | G16 | 25 | 0.16 | 5 | 40 | G2"A ISO228-1 | 0.5 | 0.1 | 2.7 | 300 | 353 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 18 | G16 | 25 | 0.16 | 5 | 50 | MFIT001 | 0.5 | 0.1 | 2.7 | 280 | 327 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |
| 19 | G16 | 25 | 0.16 | 5 | 50 | Flange ISO PN10 | 0.5 | 0.1 | 2.7 | 280 | 417 | 123 | 396 | 206 | 191 | 9.0 | 8.6 |
| 20 | G16 | 25 | 0.16 | 5 | 40 | 2" BS746 | 0.5 | 0.1 | 2.7 | 280 | 347 | 85 | 382 | 206 | 191 | 5.3 | 4.9 |

ACD Standard: Single pipe version

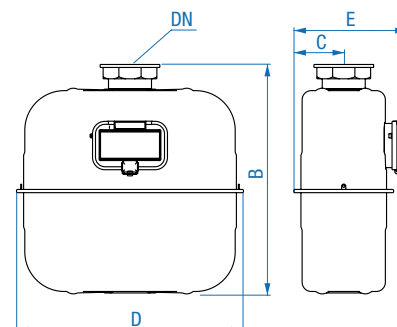
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|----|-----|----|------|---|----|---------------|-----|-----|-----|---|-----|----|-----|-----|-----|-----|-----|
| 30 | G10 | 16 | 0.10 | 5 | 40 | G2¾" ISO228-1 | 0.5 | 0.1 | 1.9 | - | 370 | 85 | 382 | 206 | 191 | 5.8 | 5.4 |
| 31 | G16 | 25 | 0.16 | 5 | 40 | G2¾" ISO228-1 | 0.5 | 0.1 | 2.9 | - | 370 | 85 | 382 | 206 | 191 | 5.8 | 5.4 |



ACD Compact: Two Pipe version



ACD Standard: Two Pipe version



ACD Standard: Single Pipe version



Our company is the world's leading provider of smart metering, data collection and utility software systems, with over 8,000 utilities worldwide relying on our technology to optimize the delivery and use of energy and water.

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