



Fig.: BG 6
with Pulse Generator V3.2 and Totalizing Roller Counter

Bellows-type gas meters are applicable for measuring the volume of flowing inert and dry gases and are particularly effective at high gas flows.

Please note that gases containing aggressive components may reduce the life span of bellows-type gas meters, if the casing of the measuring unit (tinplate), the valve/control elements (polyamide) or the bellows (nitrile rubber, Perbunan®) should be attacked. For more details regarding the materials used which are in contact with the gas, please refer to data sheet 02.02.

The desired measurement range can be selected from among 6 magnitudes (types) extending together as a whole from 40 ltr/h to 160 m³/h at a gas temperature ranging from -20° to +50° Celsius. The solidly soldered casing on the standard model is designed to withstand a maximum overpressure of 50 to 500 mbar depending on the meter type.

The measurement of **RITTER** bellows-type gas meters works on the principle of displacement. The gas meters employ a twin-chamber measuring unit with a deformable bellow within each chamber. Thus, a compulsory measurement of the gas flow is possible by periodically filling and emptying these chambers.

The design of the measuring chamber is such that the measuring volume per cycle of the bellows is constant. Among other advantages, this design of the measuring unit enables a measurement accuracy of ±2%.



BG 10

(Fig. with "Adding Roller Counter")



BG 40

(Fig. with "Adding Roller Counter")

The major advantage and superiority of volumetric Gas Meters (like Bellows-type Gas Meters) is the **direct** measurement of gas volume. Other measurement principles – such as speed, heat capacity, hot-wire resistance or similar – determine gas volume using secondary measured variables. However, with these indirect measurement principles both the gas condition and composition has a big influence on the measurement accuracy and must be corrected by using correcting factors.

Such **correcting factors** which take into account gas type, temperature, humidity etc. are **not necessary with volumetric gas meters**. It should be noted that with other, non-volumetric measurement processes, the measurement accuracy given for that process can only be achieved if the correcting factors for the immediate condition of the gas are exactly known.

Please note: The flow direction cannot be reversed.

Equipment: All RITTER bellows-type gas meters include the following as standard equipment: twin-chamber measuring unit; 8-digit totalizing counter; large, one-needle dial; and magnetic coupling (between the measuring unit and counting mechanism); gas pipe connection: inch thread.

Performance Data:

- Measurement accuracy:
 - approx. +/- 1% at standard flow rate (exact value is stated in individual calibration certificate)
 - approx ± 2% across the measurement range relative to calibration value at standard flow rate
- Maximum gas inlet pressure (overpressure):
 - BG4, BG6: 300 mbar
 - BG10, BG16: 50 mbar
 - BG 40, BG100: 500 mbar
- Temperature range: -20 to +50° Celsius
- **No reverse flow direction**
- Flow rate (measuring range) and meter indication:

| Model | Flow Rate | | | Minimum Dial Division [ltr] | Maximum Value [ltr] |
|--------|-----------------|-----------------|------------------|--------------------------------|------------------------|
| | Minimum [ltr/h] | Maximum [ltr/h] | Standard [ltr/h] | | |
| BG 4 | 40 | 6,000 | 3,000 | 0.1 | 99,999,999 |
| BG 6 | 60 | 10,000 | 5,000 | 0.2 | 999,999,990 |
| BG 10 | 100 | 16,000 | 10,000 | 0.5 | 999,999,990 |
| BG 16 | 160 | 25,000 | 15,000 | 0.4 | 999,999,990 |
| BG 40 | 400 | 65,000 | 39,000 | 0.4 | 999,999,990 |
| BG 100 | 1,000 | 160,000 | 95,000 | 0.4 | 999,999,990 |

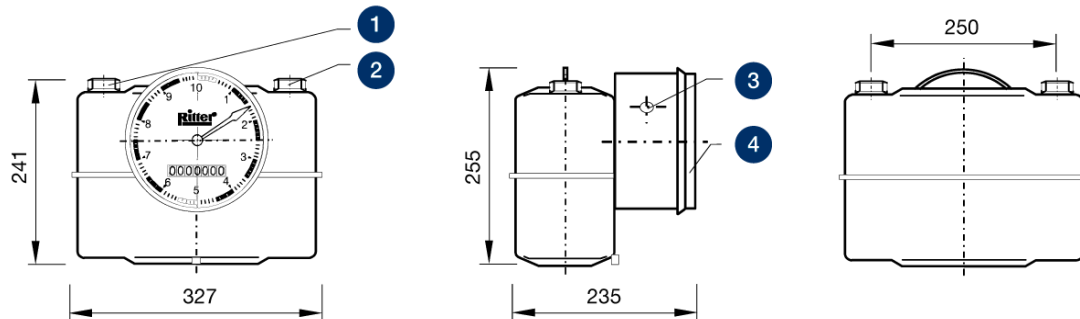
- Materials:**
- Casing: zinc-coated steel sheet, powder-coated
 - BG4 – BG16: casing parts soldered
 - BG40 – BG100: casing parts screwed
 - Measuring unit: tinplate
 - Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)
 - Rod linkage: BG 4: polyamide; all others: polyamide/brass
 - Slide gate: Bakelite

- Accessories:**
- Thermometer, range 0° to +60°C
 - Manometer, range 60 mbar differential pressure
 - Nozzles for flexible tube connection
 - Electronic Display Unit, including Interface RS 232 and Analog Output (requires Pulse Generator)

Built-in Options:

- LCD display, resettable, 8-digit (substitutes Totalizing Roller Counter)
- Pulse Generator (for connection of Electronic Display Unit or Computer)

BELLOWS-TYPE GAS METERS BG 4 • DATA-SHEET



Legend

- 1. Gas inlet
- 2. Gas outlet
- 3. Pulse generator port (option)
- 4. Removable cover

Performance Data

| | | | |
|-------------------------------------|-------------|--|-----------------|
| Minimum flow Q_{min} | 40 ltr/h | Maximum gas inlet pressure | 300 mbar |
| Standard flow $Q_{standard}$ | 3,000 ltr/h | Minimum differential pressure ⁽¹⁾ | 1 mbar |
| Maximum flow Q_{max} | 6,000 ltr/h | Minimum dial division | 0.1 ltr |
| Measurement accuracy ⁽²⁾ | 2 % | Indication dial plate | 10 ltr |
| Measuring cavity capacity | 2 ltr/U | Maximum indication value ⁽³⁾ | 99,999,999 ltr |
| Temperature range | 5 to 40 °C | Weight | 4.6 kg |

⁽¹⁾ Differential pressure (= pressure loss) gas inlet gas outlet

⁽²⁾ Across the measuring range in relation to the calibration value at nominal flow

⁽³⁾ Standard Totalizing Roller Counter

No reverse flow direction possible!

Models (materials)

Casing: zinc-coated steel sheet (soldered) with outside also lacquered

Measuring unit: Tinplate

Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)

Rod linkage: Polyamide

Slide gate: Bakelite

Standard Equipment

- > 8-digit Totalizing Roller Counter
- > Large, One-needle Dial
- > Magnetic Coupling (between the measuring drum and counting mechanism)
- > Screw Connection 1" (G 1 A, DIN ISO 228)
- > Twin-Chamber Measuring Unit

Built-in Options

- > Pulse Generator , standard or Ex-proof version (for connecting Electronic Display Unit/Computer)
- > LCD Display , resettable, 8-digit (replaces Totalizing Roller Counter)

Accessories

- > Thermometer (BG)
- > Manometer for pressure $p_{max} = 60$ mbar
- > Electronic Display Unit »EDU 32 FP«, displays volume and calculates flow rate via RS232 and analog-output in realtime (pulse generator required)
- > Nozzles for flexible tube connection

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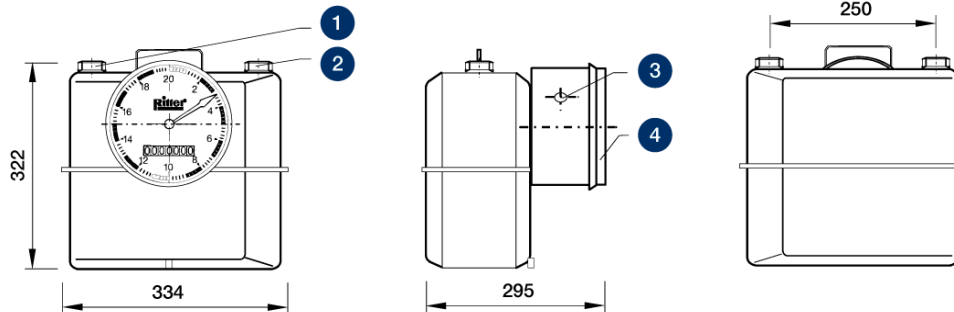
The most recent version of this data-sheet can be found at <https://www.ritter.de/en/data-sheets/bg-4/>

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BELLOWS-TYPE GAS METERS

BG 6 • DATA-SHEET



Legend

- 1. Gas inlet
- 2. Gas outlet
- 3. Pulse generator port (option)
- 4. Removable cover

+

Performance Data

| | | | |
|-------------------------------------|--------------|--|-----------------|
| Minimum flow Q_{min} | 60 ltr/h | Maximum gas inlet pressure | 300 mbar |
| Standard flow $Q_{standard}$ | 5,000 ltr/h | Minimum differential pressure ⁽¹⁾ | 1 mbar |
| Maximum flow Q_{max} | 10,000 ltr/h | Minimum dial division | 0.2 ltr |
| Measurement accuracy ⁽²⁾ | 2 % | Indication dial plate | 20 ltr |
| Measuring cavity capacity | 3.5 ltr/U | Maximum indication value ⁽³⁾ | 99,999,999 ltr |
| Temperature range | 5 to 40 °C | Weight | 6.4 kg |

⁽¹⁾ Differential pressure (= pressure loss) gas inlet gas outlet

⁽²⁾ Across the measuring range in relation to the calibration value at nominal flow

⁽³⁾ Standard Totalizing Roller Counter

No reverse flow direction possible!

Models (materials)

Casing: zinc-coated steel sheet (soldered) with outside also lacquered

Measuring unit: Tinplate

Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)

Rod linkage: Polyamide

Slide gate: Bakelite

Standard Equipment

- > 8-digit Totalizing Roller Counter
- > Gewindeanschluss 1-1/4" (G 1-1/4 A, DIN ISO 228)
- > Large, One-needle Dial
- > Magnetic Coupling (between the measuring drum and counting mechanism)
- > Twin-Chamber Measuring Unit

Built-in Options

- > Pulse Generator , standard or Ex-proof version (for connecting Electronic Display Unit/Computer)
- > LCD Display , resettable, 8-digit (replaces Totalizing Roller Counter)

Accessories

- > Thermometer (BG)
- > Manometer for pressure $p_{max} = 60$ mbar
- > Electronic Display Unit »EDU 32 FP«, displays volume and calculates flow rate via RS232 and analog-output in realtime (pulse generator required)
- > Nozzles for flexible tube connection

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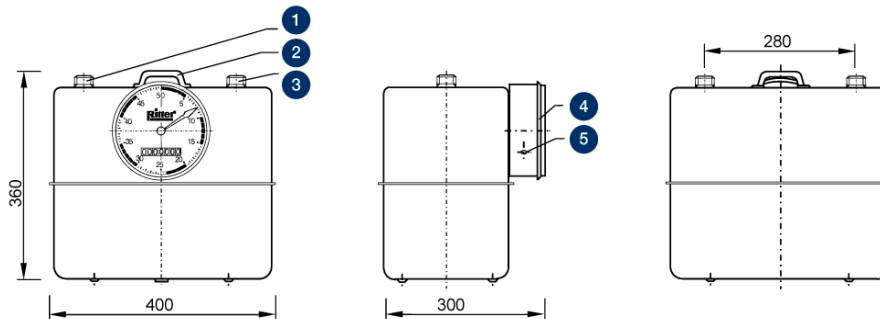
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BELLOWS-TYPE GAS METERS

BG 10 • DATA-SHEET



Legend

- 1. Gas inlet
- 2. Handle
- 3. Gas outlet
- 4. Removable cover

+

Performance Data

| | | | | | |
|-------------------------------------|---------|-------|--|-------------|-------------|
| Minimum flow Q_{min} | 100 | ltr/h | Maximum gas inlet pressure | 50 | mbar |
| Standard flow $Q_{standard}$ | 10,000 | ltr/h | Minimum differential pressure ⁽¹⁾ | 1 | mbar |
| Maximum flow Q_{max} | 16,000 | ltr/h | Minimum dial division | 0.5 | ltr |
| Measurement accuracy ⁽²⁾ | 2 | % | Indication dial plate | 50 | ltr |
| Measuring cavity capacity | 10 | ltr/U | Maximum indication value ⁽³⁾ | 999,999,990 | ltr |
| Temperature range | 5 to 40 | °C | Weight | 11 | kg |

⁽¹⁾ Differential pressure (= pressure loss) gas inlet gas outlet

⁽²⁾ Across the measuring range in relation to the calibration value at nominal flow

⁽³⁾ Standard Totalizing Roller Counter

No reverse flow direction possible!

Models (materials)

Casing: zinc-coated steel sheet (soldered) with outside also lacquered

Measuring unit: Tinplate

Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)

Rod linkage: Polyamide

Slide gate: Bakelite

Standard Equipment

- > 8-digit Totalizing Roller Counter
- > Large, One-needle Dial
- > Magnetic Coupling (between the measuring drum and counting mechanism)
- > Screw Connection 2" (G 2 A, DIN ISO 228)
- > Twin-Chamber Measuring Unit

Built-in Options

- > Pulse Generator , standard or Ex-proof version (for connecting Electronic Display Unit/Computer)
- > LCD Display , resettable, 8-digit (replaces Totalizing Roller Counter)

Accessories

- > Thermometer (BG)
- > Manometer for pressure $p_{max} = 60$ mbar
- > Electronic Display Unit »EDU 32 FP«, displays volume and calculates flow rate via RS232 and analog-output in realtime (pulse generator required)
- > Nozzles for flexible tube connection

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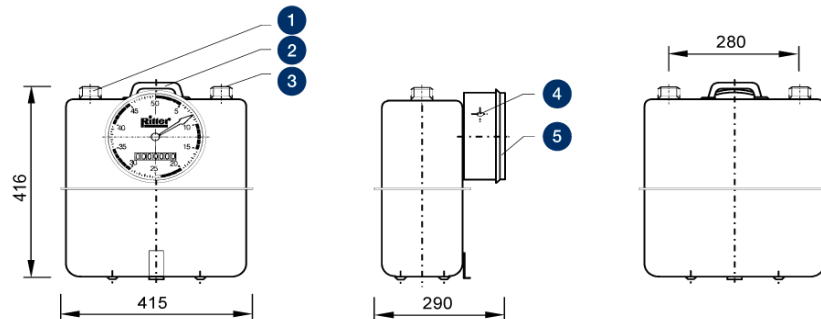
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BELLOWS-TYPE GAS METERS

BG 16 • DATA-SHEET



Legend

- 1. Gas inlet
- 2. Handle
- 3. Gas outlet
- 4. Pulse generator port (option)
- 5. Removable cover

+

Performance Data

| | | | | | |
|-------------------------------------|---------|-------|--|-------------|-------------|
| Minimum flow Q_{\min} | 160 | ltr/h | Maximum gas inlet pressure | 50 | mbar |
| Standard flow Q_{standard} | 15,000 | ltr/h | Minimum differential pressure ⁽¹⁾ | 1 | mbar |
| Maximum flow Q_{\max} | 25,000 | ltr/h | Minimum dial division | 0.4 | ltr |
| Measurement accuracy ⁽²⁾ | 2 | % | Indication dial plate | 100 | ltr |
| Measuring cavity capacity | 10 | ltr/U | Maximum indication value ⁽³⁾ | 999,999,990 | ltr |
| Temperature range | 5 to 40 | °C | Weight | 11 | kg |

⁽¹⁾ Differential pressure (= pressure loss) gas inlet gas outlet

⁽²⁾ Across the measuring range in relation to the calibration value at nominal flow

⁽³⁾ Standard Totalizing Roller Counter

No reverse flow direction possible!

Models (materials)

Casing: zinc-coated steel sheet (soldered) with outside also lacquered

Measuring unit: Tinplate

Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)

Rod linkage: Polyamide

Slide gate: Bakelite

Standard Equipment

- > 8-digit Totalizing Roller Counter
- > Large, One-needle Dial
- > Magnetic Coupling (between the measuring drum and counting mechanism)
- > Screw Connection 2" (G 2 A, DIN ISO 228)
- > Twin-Chamber Measuring Unit

Built-in Options

- > Pulse Generator , standard or Ex-proof version (for connecting Electronic Display Unit/Computer)
- > LCD Display , resettable, 8-digit (replaces Totalizing Roller Counter)

Accessories

- > Thermometer (BG)
- > Manometer for pressure $p_{max} = 60$ mbar
- > Electronic Display Unit »EDU 32 FP«, displays volume and calculates flow rate via RS232 and analog-output in realtime (pulse generator required)
- > Nozzles for flexible tube connection

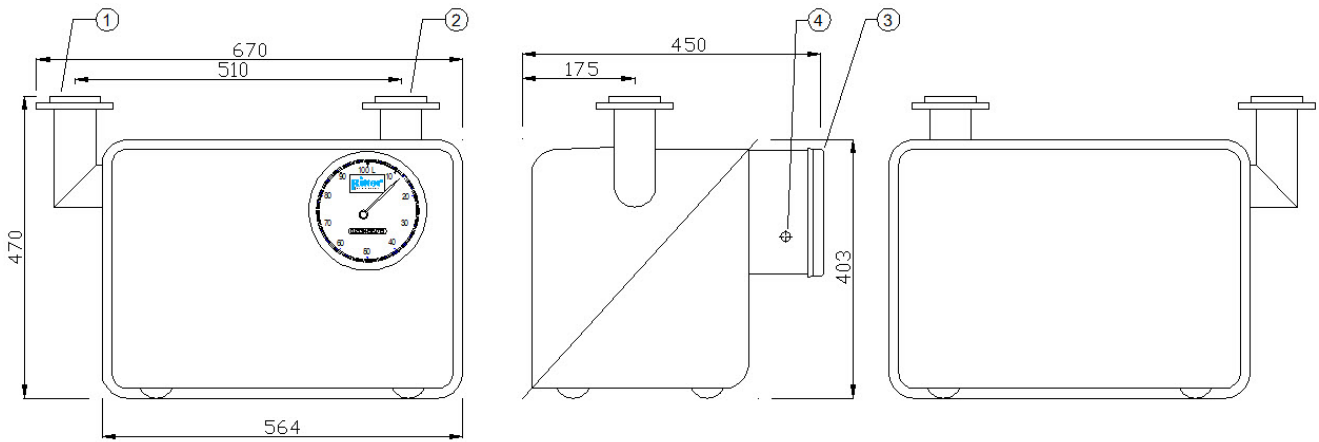
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BELLOWS-TYPE GAS METERS BG 40 • DATA-SHEET



Legend

1. Gas inlet
2. Gas outlet
3. Removable cover
4. Pulse generator port (option)
5. Reset button

+

Performance Data

| | | | |
|-------------------------------------|--------------|--|-----------------|
| Minimum flow Q_{\min} | 400 ltr/h | Maximum gas inlet pressure | 500 mbar |
| Standard flow Q_{standard} | 39,000 ltr/h | Minimum differential pressure ⁽¹⁾ | 1 mbar |
| Maximum flow Q_{\max} | 65,000 ltr/h | Minimum dial division | 0.4 ltr |
| Measurement accuracy ⁽²⁾ | 2 % | Indication dial plate | 100 ltr |
| Measuring cavity capacity | 30 ltr/U | Maximum indication value ⁽³⁾ | 999,999,990 ltr |
| Temperature range | 5 to 40 °C | Weight | 33 kg |

⁽¹⁾ Differential pressure (= pressure loss) gas inlet gas outlet

⁽²⁾ Across the measuring range in relation to the calibration value at nominal flow

⁽³⁾ Standard Totalizing Roller Counter

No reverse flow direction possible!

Models (materials)

Casing: zinc-coated steel sheet (soldered) with outside also lacquered

Measuring unit: Tinplate

Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)

Rod linkage: Polyamide

Slide gate: Bakelite

Standard Equipment

- > 8-digit Totalizing Roller Counter
- > Flange connection, diameter 65 mm, according to DIN 2642-PN10
- > Large, One-needle Dial
- > Magnetic Coupling (between the measuring drum and counting mechanism)
- > Twin-Chamber Measuring Unit

Built-in Options

- > Pulse Generator , standard or Ex-proof version (for connecting Electronic Display Unit/Computer)
- > LCD Display , resettable, 8-digit (replaces Totalizing Roller Counter)

Accessories

- > Thermometer (BG)
- > Manometer for pressure $p_{max} = 60$ mbar
- > Electronic Display Unit »EDU 32 FP«, displays volume and calculates flow rate via RS232 and analog-output in realtime (pulse generator required)
- > Nozzles for flexible tube connection

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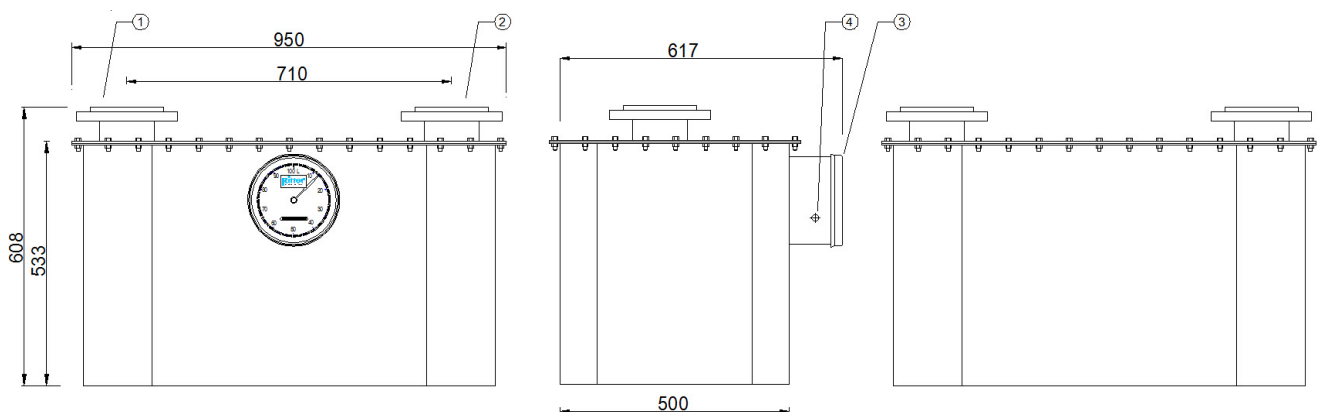
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BELLOWS-TYPE GAS METERS

BG 100 • DATA-SHEET



Legend

- 1. Gas inlet
- 2. Gas outlet
- 3. Removable cover
- 4. Pulse generator port (option)

Performance Data

| | | | | | |
|-------------------------------------|---------|-------|--|-------------|-------------|
| Minimum flow Q_{\min} | 1,000 | ltr/h | Maximum gas inlet pressure | 500 | mbar |
| Standard flow Q_{standard} | 95,000 | ltr/h | Minimum differential pressure ⁽¹⁾ | 1 | mbar |
| Maximum flow Q_{\max} | 160,000 | ltr/h | Minimum dial division | 0.4 | ltr |
| Measurement accuracy ⁽²⁾ | 2 | % | Indication dial plate | 100 | ltr |
| Measuring cavity capacity | 120 | ltr/U | Maximum indication value ⁽³⁾ | 999,999,990 | ltr |
| Temperature range | 5 to 40 | °C | Weight | 130 | kg |

⁽¹⁾ Differential pressure (= pressure loss) gas inlet gas outlet

⁽²⁾ Across the measuring range in relation to the calibration value at nominal flow

⁽³⁾ Standard Totalizing Roller Counter

No reverse flow direction possible!

Models (materials)

Casing: zinc-coated steel sheet (soldered) with outside also lacquered

Measuring unit: Tinplate

Bellows (within measuring unit): textile-reinforced nitrile rubber (Perbunan®)

Rod linkage: Polyamide

Slide gate: Bakelite

Standard Equipment

- > 8-digit Totalizing Roller Counter
- > Flange connection, diameter 100 mm, according to DIN 2642-PN10
- > Large, One-needle Dial
- > Magnetic Coupling (between the measuring drum and counting mechanism)
- > Twin-Chamber Measuring Unit

Built-in Options

- > Pulse Generator , standard or Ex-proof version (for connecting Electronic Display Unit/Computer)
- > LCD Display , resettable, 8-digit (replaces Totalizing Roller Counter)

Accessories

- > Thermometer (BG)
- > Manometer for pressure $p_{max} = 60$ mbar
- > Electronic Display Unit »EDU 32 FP«, displays volume and calculates flow rate via RS232 and analog-output in realtime (pulse generator required)
- > Nozzles for flexible tube connection

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