Relative and differential pressure transmitter

Type 699

The type 699 transmitters are available in switchable pressure ranges and with or without display. The full-version includes customer specific adjustment possibilities. Especially developed sensors for each pressure range ensure accurate long term stable measurement and the large variety of options provide the perfect platform for use in air conditioning technology as well as for fine measurement in the industrial and medical environment.

**Pressure range**

-1 ... 1 mbar / 0 ... 0.3 – 50 mbar

+ Available with or without LCD display
+ Adjustable measurement range
+ Switchable output signals
+ Switchable response curve (linear or root-extracted)
+ Resettable Zero Point (Reset button)
+ Full scale adjustable
+ Attractive price / performance ratio
+ Application at over and low pressure range possible
+ Fast, easy mounting. Housing incorporates integral bracket for wall or ceiling mounting
**Technical overview**

**Pressure range**
- Relative and differential: -1 ... 1 mbar / 0 ... 0.3 – 50 mbar

**Operating conditions**
- **Medium:** Air and neutral gases
- **Storage:** 0 ... +70 °C
- **No condensation**

**Tolerable overload on one side**
- Application at over pressure range:
  - < 3 mbar: P1 = 50 mbar, P2 = 4 mbar
  - > 3 mbar: P1 = 100 mbar, P2 = 4 mbar

**Rupture pressure**
- Ambient temperature: 2 x overload
- 70 °C: 1.5 x overload

**Materials in contact with medium**
- **Sensor:** Ceramic Al₂O₃ (96%)
- **Diaphragm:** Silicone
- **Housing:** Polycarbonat PC

**Electrical overview**
- **Output 1:** Power supply 1)  Load
  - 2 wire: 4 ... 20 mA, 8.0 ... 33 VDC, Current consumption: < 20 mA
  - 3 wire: 0 ... 10 V, 13.5 ... 33 VDC / 24 VAC ±15%, > 10 kOhm, < 10 mA
  - 0 ... 20 mA, 13.5 ... 33 VDC / 24 VAC ±15%, < 500 Ohm, < 30 mA
  - 4 ... 20 mA, 13.5 ... 33 VDC / 24 VAC ±15%, < 500 Ohm, < 30 mA
  - 0 ... 5 V, 3) Additional adjustable by software (with LCD-Display only)

- **Filter:** Response time switchable by: off, 0.2s, 1s, 5s, 20s
- **Polarity reversal protection:** Short circuit proof and protected against polarity reversal. Each connection is protected against crossover up to max. supply voltage.

**Dynamic response**
- Response time: < 20 ms
- Load cycle: < 10 Hz

**Protection standard**
- **Without cover:** IP 00
- **With cover:** IP 54, IP 65

**Display**
- **LCD Display:** Double spaced, 8 digit alphanumeric
- **Module MODBUS:** RTU RS-485

**Ranges of adjustment**
- The zero point is adjustable by reset button.
- The Full scale is adjustable by DIP-Switch and additional by the turbopoti.

**Adjustability**
- Optional version with self configurable parameters (see order code selection table)

**Electrical connection**
- Screw terminals for wire and stranded conductors up to 1.5 mm²
- Cable gland with built-in strain relief PG11

**Pressure connection**
- Connection pipe: Ø 6.2 mm

**Mounting instructions**
- **Installation arrangement:** Recommendation: Vertical, (Factory calibration) with pressure connections downwards
- **Mounting:** Mounting bracket (integrated in case)

**Tests / Admissions**
- **UL**
- **Electromagnetic compatibility:** CE-conformity acc. EN 61326-2-3

**Weight**
- **Without display:** ~ 90 g
- **With display:** ~ 100 g

**Packaging**
- Single packaging in cardboard
- Multiple packaging: 20 / 40 / 120

**Accuracy**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>±0.5 mbar</th>
<th>0 ... 1 mbar</th>
<th>0 ... 3 mbar</th>
<th>0 ... 5 mbar</th>
<th>0 ... 10 - 50 mbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance zero point</td>
<td>% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.7</td>
<td>±0.0 ±0.7</td>
<td>±0.0 ±0.7</td>
</tr>
<tr>
<td>Tolerance zero at FS</td>
<td>% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.7</td>
<td>±0.0 ±0.7</td>
<td>±0.0 ±0.7</td>
</tr>
<tr>
<td>Resolution</td>
<td>% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.7</td>
<td>±0.0 ±0.7</td>
<td>±0.0 ±0.7</td>
</tr>
<tr>
<td>Total of linearity, hysteresis and repeatability</td>
<td>% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±1.0</td>
<td>±0.0 ±1.0</td>
<td>±0.0 ±1.0</td>
</tr>
<tr>
<td>Long term stability acc. to DIN EN 60770</td>
<td>% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±1.0 ±1.0</td>
<td>±1.0 ±1.0</td>
<td>±1.0 ±1.0</td>
</tr>
<tr>
<td>TC zero point</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.5</td>
<td>±0.0 ±0.4</td>
<td>±0.0 ±0.3</td>
</tr>
<tr>
<td>TC sensitivity</td>
<td>±% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.5</td>
<td>±0.0 ±0.4</td>
<td>±0.0 ±0.3</td>
</tr>
<tr>
<td>TC sensitivity</td>
<td>±% of FS</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.1</td>
<td>±0.0 ±0.5</td>
<td>±0.0 ±0.4</td>
<td>±0.0 ±0.3</td>
</tr>
</tbody>
</table>

- No additional root-extracted errors.
- For changing diaphragm position, compensable with zero point reset.

Test conditions: 25 °C, 45% rF, Power supply 24 VDC
TC z.p. / TC z.p. 0 ... 70 °C

1) Adjustable by DIP-Switch
2) At nominal pressure
3) Additional adjustable by software (with LCD-Display only)
### Order code selection table

<table>
<thead>
<tr>
<th>Pre-adjustment</th>
<th>699.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>max. range</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>middle range (factory setting)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>min. range (factory setting)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Signal range selectable</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pressure range of -10% to 100% fs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Pressure range of -100% to 100% fs</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Pressure range selectable

<table>
<thead>
<tr>
<th>mbar (hPa)</th>
<th>Pa</th>
<th>mmWS</th>
<th>inH₂O</th>
<th>under pressure max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...0.5</td>
<td>30/50</td>
<td>3/5</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>0...0.3</td>
<td>50/100</td>
<td>5/10</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>0...1/5</td>
<td>100/200</td>
<td>10/20</td>
<td>0.5</td>
<td>1/2</td>
</tr>
<tr>
<td>0...3/10</td>
<td>500/1000</td>
<td>50/100</td>
<td>1/2</td>
<td>3</td>
</tr>
<tr>
<td>0...5/16</td>
<td>1000/1600</td>
<td>50/100</td>
<td>1/2</td>
<td>10</td>
</tr>
<tr>
<td>0...16/25</td>
<td>1600/2500</td>
<td>100/250</td>
<td>1/2</td>
<td>20</td>
</tr>
<tr>
<td>0...30/50</td>
<td>3000/5000</td>
<td>150/500</td>
<td>1/2</td>
<td>50</td>
</tr>
<tr>
<td>0...50/80</td>
<td>5000/8000</td>
<td>200/800</td>
<td>1/2</td>
<td>100</td>
</tr>
<tr>
<td>0...80/120</td>
<td>8000/12000</td>
<td>300/1200</td>
<td>1/2</td>
<td>200</td>
</tr>
</tbody>
</table>

### Accessories / Connection Kit

| Pressure range variation (optional) | Indicate W and state range on order (e.g.: W0 ... + 8mbar/OUT1...6V) | 9 | 1 | 5 |

### Range of characteristic line

a) b) c)

- 100% Out
- 0% Pressure
- 100% Pressure
- 0% Pressure
- 100% Pressure
- 100% Out
- 0% Pressure
- 100% Pressure
- 0% Pressure
- 100% Pressure

### Depending on the version parameters are adjustable by customer

- **Version**: Variable parameters
- **Dual DIP-Switch**: Pressure ranges in grades
- **Tenfold DIP-Switch**: Pressure ranges in grades; stepless adjustable with Turbo-Poti / output signals / filter (off / on) / response curve (linear / root extracted)
- **Tenfold DIP-Switch with Display**: Pressure ranges in grades; stepless adjustable with Turbo-Poti / pressure units / pressure range character / output signals; additional 0...5 V / filter (off / 0.2s / 1s / 5s / 20s) / response curve (linear / root extracted) / backlight (off / 5min / on)

### Accessories

- Connection kit for vent duct (metal), 90° angled including tube 2 m long (Fig. 1) | 100312
- Connection kit for vent duct (plastic), straight including tube 2 m long (Fig. 2) | 100064
- DIN-rail mounting adaptor (Fig. 3) | 112854
- Module MODBUS | 117305
- Calibration certificate | 100551

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**under pressure max. acc. order code selection table = -50 Pa / 100 Pa**

**Accessories supplied loose**