Electronic pressure controller with integrated flow measurement
Pressure and flow in a single device:
Electronic pressure controller for gases with integrated flow measurement

The new electronic red-y smart pressure controllers combine the reliable technology out of thermal mass flow controllers with electronic pressure control.
The devices automatically control a predefined process pressure and at the same time measure and/or limit the flow rate. On-the-fly switching between pressure control and flow control offers maximum flexibility.

<table>
<thead>
<tr>
<th>1 device – 3 functions</th>
<th>Operating status indication</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>The smart pressure controller combines three functions:</td>
<td>The instruments offer an inbuilt LED status indication</td>
<td>Built-in display</td>
</tr>
<tr>
<td>» Pressure controller</td>
<td></td>
<td>Display of flow rate, total and measuring unit. Defining a set point (controller only)</td>
</tr>
<tr>
<td>» Pressure controller with flow measurement/limitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>» Flow controller with pressure measurement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Options

- **Built-in display**
  Display of flow rate, total and measuring unit. Defining a set point (controller only)

- **Multigas**
  One meter or controller can be used for up to 10 different gases or gas mixtures

- **Profibus**
  The instruments are available with Profibus interface: DP-V0 & DP-V1 protocols

- **Industrial Ethernet**
  Two industrial ethernet protocols Profinet RT and EtherCAT are available

- **3-year warranty**
  High-quality components ensure long and trouble-free operation
  
*does not apply to calibration, options and accessories

**Instrument versions**

- **Integrated pressure control**
  Accuracy: ± 0.5 % of full scale

- **Integrated back pressure control**
  Accuracy: ± 0.5 % of full scale

**It’s a red-y smart**

The pressure controllers combine the innovative equipment design of the red-y smart series with the development competence of Vögtlin Instruments GmbH. High-quality components ensure long and trouble-free operation.
**Pressure control**

In this application the electronic pressure controller regulates a digitally specified set pressure value. The flow rate depends on the process consumption. Maximum flow limitation enables pressure control of stable gas mixtures, for example.

![Diagram of pressure control](image)

**Application example:**
Pressure control of a pressure vessel containing a stable gas mixture for laser gas or welding applications.

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**Back pressure control**

In this configuration the effect of the control valve is reversed. The process generates a certain pressure, which must be readjusted.

![Diagram of back pressure control](image)

**Application example:**
Overpressure control of a sterile chamber. The flow rate is used as a leakage indicator.

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**Control & Accessories**

Various control options are available:

- Directly on the pressure controller, no further control equipment required
- Via PC with our free software get-red-y
- Via PC with LabView software (LabView VIs available)
- Display and Control Device (PCU-10)
- SPS (provided by customer)
- Analog control on request

A wide range of cables, power supply units, fittings and filters for fast integration of the pressure controllers is available.

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**Dimensions G₁/₄" * **

![Pressure controller dimensions](image)

red-y smart pressure controller GSP
*Dimensions G₁/₂" on request*
### Technical Data «red-y smart pressure controller»

#### Instrument types

- **red-y smart pressure controller GSP**
  - Electronic pressure controller

- **red-y smart back pressure controller GSB**
  - Electronic back pressure controller

- **IP67/ATEX versions**
  - red-y industrial pressure controller (1)

#### Measuring & control ranges Pressure

- **Pressure control**
  - Absolute, differential or gauge pressure
  - Standard measuring ranges from 30 mbar up to 10 bar (graded)
  - Turndown ratio: 1 : 100

- **Back pressure control**
  - Absolute, differential or gauge pressure
  - Standard measuring ranges from 30 mbar up to 10 bar (graded)
  - Dynamic range depending on the application

#### Measuring ranges Flow

- **(Air/Full scale freely selectable)**
  - **Connection**
  - **Measuring range (air)**

<table>
<thead>
<tr>
<th>Size</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>G¼&quot;</td>
<td>0.25 ... 25 min/min</td>
<td>0.6 ... 60 in/min</td>
</tr>
<tr>
<td>G½&quot;</td>
<td>0.3 ... 30 in/min</td>
<td>4 ... 450 in/min</td>
</tr>
</tbody>
</table>

- **Turndown ratio & accuracy Flow**

  - **Standard**
    - **Accuracy:** ± 1.0 % of full scale
    - **Turndown ratio:** 1 : 50
  
  - **Hi-Performance**
    - **(up to 150 l/min)**
    - **Accuracy:** ± 0.3 % of full scale + ± 0.5% of reading
    - **Turndown ratio:** 1 : 100

#### Pressure controller with external transmitter, special measuring ranges (e.g. 0-20 Pa) & customer-specific solutions on request

#### Performance data

- **Media**
  - (real gas calibration)
  - Air, O2(2), N2(2), He, Ar, CO2, H2, CH4, C3H8 (other gases and gas mixtures on request)
  - O2 & N2 are calibrated with air

- **Response time Flow Measurement**
  - ± 80ms
  - depending on device configuration & according to SEMI standard E17-1011, 5-100% of range under optimized conditions

- **Response time Pressure Measurement**
  - 150ms

- **Response time Pressure Control**
  - Depending on the measuring section

- **Repeatability**
  - ± 0.2% of full scale (according to SEMI standard E56-0309)

- **Longterm stability**
  - < 1% of measured value / year

- **Power supply**
  - 24 Vdc (18 – 30 Vdc), 15 Vdc on request

- **Current consumption**
  - max. 250mA

- **Temperature**
  - (environment/gas) 0 – 50°C

- **Materials**
  - Anodized aluminium, optional stainless steel electropolished 1.4305 or 1.4404 (1)

- **Seals**
  - FKM, EPDM, optional FFKM

- **Pressure**
  - Vacuum up to 10 bar g

- **Pressure sensitivity**
  - < 0.2% / bar of reading (typical N2)

- **Temperature sensitivity**
  - < 0.025% FS measuring range type / °C

- **Warm-up time**
  - < 1 sec. for full accuracy

#### Integration

- **Output signals digital**
  - RS-485, Modbus RTU (Slave), Lab View-VIs available
  - Option: ProfiBus DP-V0, DP-V1/Profinet RT / EtherCAT

- **Output signals analog**
  - 0 .. 20 mA, 4 .. 20 mA, 0 .. 5 V, 0 .. 1.5 V, 0 .. 10 V, 2 .. 10 V

- **Analog setpoints**
  - Realizable with AD-converter (on request)

- **Process connection**
  - G¼" (BSPPP(2) female) up to 60 ln/min, G½" (BSPPP(2) female) up to 450 ln/min
  - 3 British Standard Pipe Parallel

- **Inlet section**
  - None required

- **Electrical connection**
  - Sub D plug, 9 pole / PG cable gland or M12 plug (3)
  - Option Profibus: Sub D 9 pole / PG cable gland or M12 plug (3)
  - Option Profinet RT or EtherCAT: 2x RJ45 (IN/OUT) / M12 plug (3)

- **Mounting orientation**
  - Any position (consult manufacturer above 5 bar or vertical mounting)

#### Safety

- **Test pressure**
  - 16 bar a

- **Leak rate**
  - < 1 x 10⁻⁵ mbar l/s He

- **Environmental protection**
  - IP50 (IP67(2))

- **EMC**
  - EN 61326-1

- **ATEX Certification** (1)
  - Category 3 / Zone 2

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(1) Specifications for red-y industrial pressure controller (IP67/ATEX)/Expected availability of the Profinet RT & EtherCAT option for red-y industrial series from Q2/2019 onwards.

Please contact your sales partner for further information.
<table>
<thead>
<tr>
<th>Instrument type</th>
<th>red-y smart series (Gas)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Function</strong></td>
<td></td>
</tr>
<tr>
<td>Pressure controller</td>
<td>P</td>
</tr>
<tr>
<td>Back pressure controller</td>
<td>B</td>
</tr>
<tr>
<td>With external pressure transmitter</td>
<td>K</td>
</tr>
<tr>
<td><strong>Full scale of measuring range (air)</strong></td>
<td></td>
</tr>
<tr>
<td>Customer-specific (Divider A, up to 600mln/min)</td>
<td>A X</td>
</tr>
<tr>
<td>Customer-specific (Divider B, up to 6000mln/min)</td>
<td>B X</td>
</tr>
<tr>
<td>Customer-specific (Divider C, up to 60 ln/min)</td>
<td>C X</td>
</tr>
<tr>
<td>Customer-specific (Divider D, up to 450ln/min)</td>
<td>D X</td>
</tr>
<tr>
<td><strong>Instrument versions</strong></td>
<td></td>
</tr>
<tr>
<td>Standard (±1.0% full scale, 1 : 50)</td>
<td>S</td>
</tr>
<tr>
<td>Hi-Performance (±0.3% full scale, ±0.5% reading, 1 : 100)</td>
<td>T</td>
</tr>
<tr>
<td>Customer-specific / OEM</td>
<td>K</td>
</tr>
<tr>
<td><strong>Materials (body, seals)</strong></td>
<td></td>
</tr>
<tr>
<td>Aluminium, FKM**</td>
<td>A</td>
</tr>
<tr>
<td>Aluminium, EPDM</td>
<td>B</td>
</tr>
<tr>
<td>Stainless steel, FKM</td>
<td>S</td>
</tr>
<tr>
<td>Stainless steel, EPDM</td>
<td>T</td>
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<tr>
<td>Customer-specific / OEM</td>
<td>K</td>
</tr>
<tr>
<td><strong>Analog signals (output)</strong></td>
<td></td>
</tr>
<tr>
<td>Current 4.20 mA**</td>
<td>B</td>
</tr>
<tr>
<td>Current 0.20 mA</td>
<td>C</td>
</tr>
<tr>
<td>Voltage 0.5 V</td>
<td>D</td>
</tr>
<tr>
<td>Voltage 1.5 V</td>
<td>E</td>
</tr>
<tr>
<td>Voltage 0.10 V</td>
<td>F</td>
</tr>
<tr>
<td>Voltage 2.10 V</td>
<td>G</td>
</tr>
<tr>
<td>Customer-specific / OEM</td>
<td>K</td>
</tr>
<tr>
<td><strong>Analog output signals pressure transmitter</strong></td>
<td></td>
</tr>
<tr>
<td>Current 4.20 mA**</td>
<td>B</td>
</tr>
<tr>
<td>Current 0.20 mA</td>
<td>C</td>
</tr>
<tr>
<td>Voltage 0.5 V</td>
<td>D</td>
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<tr>
<td>Voltage 1.5 V</td>
<td>E</td>
</tr>
<tr>
<td>Voltage 0.10 V</td>
<td>F</td>
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<tr>
<td>Voltage 2.10 V</td>
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<tr>
<td>Not defined</td>
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<tr>
<td>Customer-specific / OEM</td>
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<tr>
<td><strong>Control valve (integrated)</strong></td>
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</tr>
<tr>
<td>Type 0.1</td>
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<tr>
<td>Type 0.2</td>
<td>2 2</td>
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<tr>
<td>Type 0.5</td>
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<tr>
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<tr>
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<td>Type 8.0</td>
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<tr>
<td>Valve mounted</td>
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<tr>
<td>Customer-specific / OEM</td>
<td>9 9</td>
</tr>
<tr>
<td>No valve</td>
<td>0 0</td>
</tr>
</tbody>
</table>

**Type code red-y smart pressure controller**

<table>
<thead>
<tr>
<th>Type code</th>
<th>G S – – –</th>
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**Standard**