



**red-y smart pressure controller** product information

# 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 our 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.

### 1 device – 3 functions

The *smart pressure controller* combines three functions:

- » **Pressure controller**
- » **Pressure controller with flow measurement/limitation**
- » **Flow controller with pressure measurement**

### Operating status indication



The instruments offer an inbuilt LED status indication

### 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



### 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.

### 3-year warranty\*

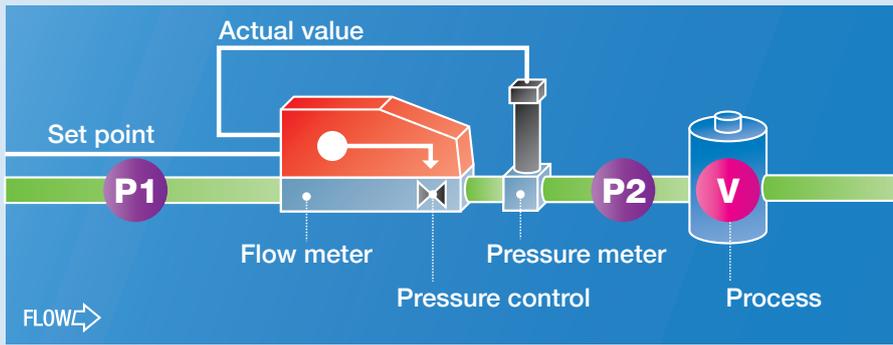


High-quality components ensure long and trouble-free operation

\*does not apply to calibration, options and accessories

## Pressure control

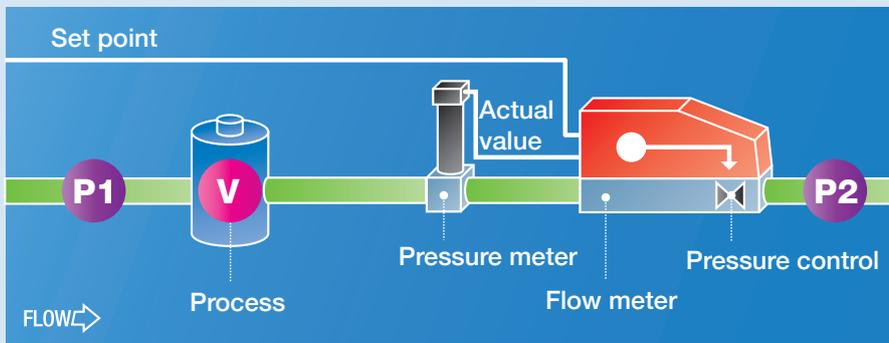
In this application the electronic pressure controller regulates a digitally specified set pressure value. The flow rate depends on the process consumption. Maximum flow limitation enables pressure control of stable gas mixtures, for example.



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

## Back pressure control

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



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

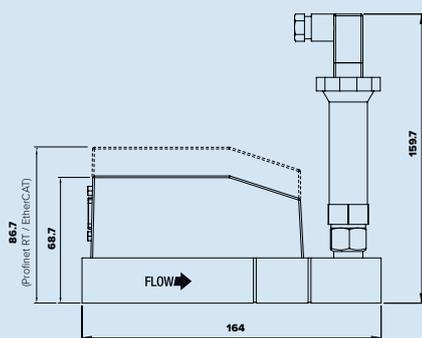
## Control & Accessories

Various control options are available:

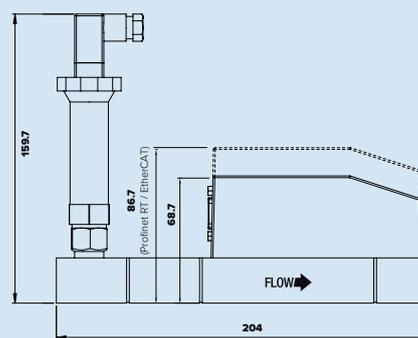
- » **Directly on the pressure controller, no further control equipment required**
- » **Via PC with our free software get-red-y**
- » **Via PC with LabView software (LabView VIs available)**
- » **Display and Control Device (PCU-10)**
- » **SPS (provided by customer)**
- » **Analog control on request**

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

## Dimensions G $\frac{1}{4}$ " \*



**red-y smart pressure controller GSP**



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

\*Dimensions G $\frac{1}{2}$ " 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<sup>(1)</sup>

## 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)	
G¼"	from 0.25 ... 25 mln/min	to 0.6 ... 60 lln/min
G½"	from 0.3 ... 30 lln/min	to 4 ... 450 lln/min

## Turndown ratio & accuracy Flow

### <Standard>

Accuracy: ± 1.0 % of full scale  
Turndown ratio: 1 : 50

### <Hi-Performance> (up to 150 lln/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

<b>Media</b> (real gas calibration)	Air, O <sub>2</sub> <sup>(2)</sup> , N <sub>2</sub> <sup>(2)</sup> , He, Ar, CO <sub>2</sub> , H <sub>2</sub> , CH <sub>4</sub> , C <sub>3</sub> H <sub>8</sub> (other gases and gas mixtures on request) <sup>2</sup> O <sub>2</sub> & N <sub>2</sub> are calibrated with air
<b>Response time Flow Measurement</b>	± 80ms depending on device configuration & according to SEMI standard E17-1011, 5-100% of range under optimized conditions
<b>Response time Pressure Measurement</b>	150ms
<b>Response time Pressure Control</b>	Depending on the measuring section
<b>Repeatability</b>	± 0.2% of full scale (according to SEMI standard E56-0309)
<b>Longterm stability</b>	< 1% of measured value / year
<b>Power supply</b>	24 Vdc (18 – 30 Vdc), 15 Vdc on request
<b>Current consumption</b> Standard	Meter: max. 100mA; Controller: max. 250mA (with valve type 8 max. 490mA)
<b>Current consumption</b> Profinet RT / EtherCAT	Meter: max. 125mA; Controller: max. 340mA (with valve type 8 max. 560mA)
<b>Temperature</b> (environment/gas)	0 – 50°C
<b>Materials</b>	Anodized aluminium, optional stainless steel electropolished 1.4305 or 1.4404 <sup>(1)</sup>
<b>Seals</b>	FKM, EPDM, optional FFKM
<b>Pressure</b>	Vacuum up to 10 bar g
<b>Pressure sensitivity</b>	< 0.2% / bar of reading (typical N <sub>2</sub> )
<b>Temperature sensitivity</b>	< 0.025% FS measuring range type / °C
<b>Warm-up time</b>	< 1 sec. for full accuracy

## Integration

<b>In- / Output signals digital</b>	RS-485; Modbus RTU (Slave); Lab View-VIs available Option: Profibus DP-V0, DP-V1/Profinet RT / EtherCAT
<b>In- / Output signals analog</b>	0..20 mA, 4..20 mA, 0..5 V, 1..5 V, 0..10 V, 2..10 V
<b>Analog setpoints</b>	Realizable with AD-converter (on request)
<b>Process connection</b>	G¼" (BSPP <sup>(3)</sup> female) up to 60 lln/min, G½" (BSPP <sup>(3)</sup> female) up to 450 lln/min <sup>3</sup> British Standard Pipe Parallel
<b>Inlet section</b>	None required
<b>Electrical connection</b>	Sub D plug, 9 pole / PG cable gland or M12 plug <sup>(1)</sup> Option Profibus: Sub D 9 pole / PG cable gland or M12 plug <sup>(1)</sup> Option Profinet RT or EtherCAT: 2x RJ45 (IN/OUT) / M12 plug <sup>(1)</sup>
<b>Mounting orientation</b>	Any position (consult manufacturer above 5 bar or vertical mounting)

## Safety

<b>Test pressure</b>	16 bar a
<b>Leak rate</b>	< 1 x 10 <sup>-6</sup> mbar l/s He
<b>Ingress protection class</b>	IP50 (IP67 <sup>(1)</sup> )
<b>EMC</b>	EN 61326-1
<b>ATEX Certification<sup>(1)</sup></b>	II 3G nA IIC T4 Gc (Category 3 / Zone 2)  II 3D Ex tc IIIC T100°C Dc (Category 3 / Zone 22)

<sup>1</sup>Specifications for red-y industrial pressure controller (IP67/ATEX)/Profinet RT & EtherCAT option for red-y industrial series not yet ATEX certified.  
Please contact your sales partner for further information.

## Type code <red-y smart pressure controller>

Instrument type	red-y smart series (Gas)	<b>G</b>	<b>S</b>																	
<b>Function</b>	Pressure controller																			<b>P</b>
	Back pressure controller																			<b>B</b>
	With external pressure transmitter																			<b>K</b>
<b>Full scale of measuring range (air)</b>	Customer-specific (Divider A, up to 600mln/min)																			<b>A X</b>
	Customer-specific (Divider B, up to 6000mln/min)																			<b>B X</b>
	Customer-specific (Divider C, up to 60 lln/min)																			<b>C X</b>
	Customer-specific (Divider D, up to 450ln/min)																			<b>D X</b>
<b>Instrument versions</b> defined by the manufacturer	Standard (±1.0% full scale, 1: 50)																			<b>S</b>
	Hi-Performance (±0.3% full scale, ±0.5% reading, 1: 100)																			<b>T</b>
	Customer-specific / OEM																			<b>K</b>
<b>Materials (body, seals)</b>	Aluminium, FKM**																			<b>A</b>
	Aluminium, EPDM																			<b>B</b>
	Stainless steel, FKM																			<b>S</b>
	Stainless steel, EPDM																			<b>T</b>
	Customer-specific / OEM																			<b>K</b>
<b>Analog signals (output)</b>	Current 4..20 mA**																			<b>B</b>
	Current 0..20 mA																			<b>C</b>
	Voltage 0..5 V																			<b>D</b>
	Voltage 1..5 V																			<b>E</b>
	Voltage 0..10 V																			<b>F</b>
	Voltage 2..10 V																			<b>G</b>
	Customer-specific / OEM																			<b>K</b>
<b>Analog output signals pressure transmitter</b>	Current 4..20 mA**																			<b>B</b>
	Current 0..20 mA																			<b>C</b>
	Voltage 0..5 V																			<b>D</b>
	Voltage 1..5 V																			<b>E</b>
	Voltage 0..10 V																			<b>F</b>
	Voltage 2..10 V																			<b>G</b>
	Not defined																			<b>N</b>
Customer-specific / OEM																			<b>K</b>	
<b>Control valve (integrated)</b> defined by the manufacturer	Type 0.1																			<b>2 1</b>
	Type 0.2																			<b>2 2</b>
	Type 0.5																			<b>2 3</b>
	Type 1.2																			<b>2 6</b>
	Type 4.5																			<b>1 2</b>
	Type 8.0																			<b>1 3</b>
	Valve not defined																			<b>8 8</b>
	Valve mounted																			<b>9 5</b>
	Customer-specific / OEM																			<b>9 9</b>
	No valve																			<b>0 0</b>
<b>Type code</b>		<b>G</b>	<b>S</b>																	<b>- -</b>

\*\*Standard

## Worldwide TASI Flow Network



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