

# DATASHEET P-602CM

## EL-PRESS Metal Sealed P-602CM (P2-control)

Metal-Sealed Forward Pressure Controller



### Metal-Sealed Forward Pressure Controllers

Bronkhorst® model P-602CM Forward Pressure Transducers (EPCs) are designed especially to meet the requirements of the semicon market as well as other high purity gas applications. The instruments feature high surface quality and are of modular construction with metal-to-metal seals that ensure long-term leak tightness. The P-602CM is suited for precise measurement and control of pressure ranges between 5...100 mbar and 3,2...64 bar absolute or 1,05...21 bar gauge. The EPC has a well-proven compact thru-flow design and includes a diaphragm type piezo-resistive pressure sensor, a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for pressure control by means of integrated control valve.

In addition to the standard RS232 output the instruments also offer analog I/O. As an option, an on-board interface can be mounted to provide CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS protocols

### Technical specifications

#### Measurement / control system

|   |  |
|---|--|
| Absolute pressure sensors                 | Code: 350A - Ranges (FS): 100 ... 350 mbara - P-max: 1,0 bara - Burst pressure: 1,4 bara<br>Code: 1K1A - Ranges (FS): 0,35 ... 1,1 bara - P-max: 3,1 bara - Burst pressure: 4,2 bara<br>Code: 6K0A - Ranges (FS): 1,1 ... 6 bara - P-max: 10,5 bara - Burst pressure: 14 bara<br>Code: 21KA - Ranges (FS): 6 ... 21 bara - P-max: 62 bara - Burst pressure: 84 bara<br>Code: 64KA - Ranges (FS): 21 ... 64 bara - P-max: 100 bara - Burst pressure: n.a. |
| Relative pressure sensors                 | Code: 350R - Ranges (FS): 100 ... 350 mbarg - P-max: 1,0 barg - Burst pressure: 1,4 barg<br>Code: 1k1R - Ranges (FS): 0,35 ... 1,1 barg - P-max: 3,1 barg - Burst pressure: 4,2 barg<br>Code: 6K0R - Ranges (FS): 1,1 ... 6 barg - P-max: 10,5 barg - Burst pressure: 14 barg<br>Code: 21KR - Ranges (FS): 6 ... 21 barg - P-max: 62 barg - Burst pressure: 84 barg  |
| Accuracy (incl. linearity and hysteresis) | + 0,5 % FS   |
| Repeatability                             | < 0,1 % RD   |
| Pressure rangeability                     | measurement: 1 : 50 (2...100%)<br>control: 1 : 20 (with flow range 1 : 50)   |
| Control stability                         | ≤ ± 0,05 % FS (typical for 1 slm N <sub>2</sub> at specified process volume)   |
| Operating temperature                     | -10 ... +50 °C<br>up to +70°C on request   |
| Temperature sensitivity                   | 0,1 % FS/°C  |
| Max. Kv-value                             | 6,6 x 10 <sup>-2</sup>   |
| Leak integrity, outboard                  | < 2 x 10 <sup>-11</sup> Pa.m <sup>3</sup> /s He  |
| Leak-by through closed valve              | < 10 <sup>-5</sup> Pa.m <sup>3</sup> /s He   |
| Attitude sensitivity                      | may be mounted in any position   |

## Measurement / control system

Warm-up time negligible

## Mechanical parts

Material (wetted parts) stainless steel 316L or comparable

Process connections 1/4" face seal couplings

Seals outer seals: metal-to-metal (no O-rings);  
valve seat: Kalrez® (FFKM); option: Viton®

Weight 0,7 kg

Ingress protection IP40

## Electrical properties

Power supply +15 ... 24 Vdc

| Max. power consumption | Supply | at voltage I/O | at current I/O | extra for fieldbus |
|------------------------|--------|----------------|----------------|--------------------|
|                        | 15 V   | 290 mA         | 320 mA         | <75 mA             |
| 24 V                   | 200 mA | 215 mA         | <50 mA         |                    |

Analog output 0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)

Digital communication standard: RS232;  
options: CANopen®, DeviceNet™, EtherCAT®, PROFIBUS DP, PROFINET, Modbus RTU, ASCII or TCP/IP, EtherNet/IP, POWERLINK or FLOW-BUS

## Electrical connection

Analog/RS232 9-pin D-connector (male);

PROFIBUS DP bus: 9-pin D-connector (female);  
power: 9-pin D-connector (male);

CANopen® / DeviceNet™ 5-pin M12-connector (male);

FLOW-BUS/Modbus-RTU/ASCII RJ45 modular jack

Modbus TCP / EtherNet/IP /  
POWERLINK 2 x RJ45 modular jack (in/out);

EtherCAT®/ PROFINET 2 x RJ45 modular jack (in/out);

## Control valve options

## External actuator options to be connected to the controller

## Ex-proof specifications

## Approvals / certificates

Technical specifications subject to change without notice.

**Note:** The measuring cell of the pressure sensor is separated from the external pressure by a thin, sensitive stainless steel diaphragm, and the sealed off cavity between diaphragm and cell is filled with oil. Since the standard oil filling is flammable, Bronkhorst advises to take precautions when oxygen or any other explosive fluid is used.

For dimensional drawings and hook-up diagrams please visit the [product page](#) on our [website](#)

## Related products



**EL-PRESS METAL SEALED P-502CM**

Min. pressure 2...100 mbar  
Max. pressure 1,28...64 bar  
Metal-to-metal outer seals  
Cleanroom assembled



**EL-PRESS METAL SEALED P-702CM (P1-CONTROL)**

Min. pressure 2...100 mbar  
Max. pressure 1,28...64 bar  
Metal-to-metal outer seals  
Cleanroom assembled



**EL-FLOW METAL SEALED F-201CM**

Min. flow 0,12...6 mln/min  
Max. flow 1... 50 ln/min  
Pressure rating 64 bar  
Metal-to-metal outer seals  
Cleanroom assembled



**EL-PRESS P-602CV (P2-CONTROL)**

Min. pressure 5...100 mbar  
Max. pressure 3,2...64 bar  
Absolute or gauge pressure  
High accuracy