

# DATASHEET P-502CM

## EL-PRESS Metal Sealed P-502CM

Metal-Sealed Digital Electronic Pressure Meter



### Metal-Sealed Digital Electronic Pressure Meters

Bronkhorst® model P-502CM Electronic Pressure Transducers (EPTs) 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-502CM is suited for precise measurement of pressure ranges between 2...100 mbar and 1,28...64 bar absolute or 0,42...21 bar gauge. The EPT 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 optional pressure control by means of a separately mounted 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) | standard: ± 0,5 % FS   |
| Repeatability                             | < 0,1 % RD   |
| Pressure rangeability                     | 1:50 for pressure meter;<br>1 : 20 for P2-control; 1 : 5 for P1-control  |
| Response time (sensor)                    | 2 msec   |
| Operating temperature                     | -10 ... +50 °C<br>up to +70°C on request   |
| Temperature sensitivity                   | 0,1% FS/°C   |
| Leak integrity, outboard                  | < 2 x 10 <sup>-11</sup> Pa.m <sup>3</sup> /s He  |
| Attitude sensitivity                      | may be mounted in any position   |
| Warm-up time                              | negligible   |

## Mechanical parts

|                         |                                    |
|-------------------------|------------------------------------|
| Material (wetted parts) | stainless steel 316L or comparable |
| Process connections     | 1/4" face seal couplings           |
| Seals                   | metal-to-metal (no rings)          |
| Weight                  | 0,6 kg                             |
| Ingress protection      | IP40                               |

## Electrical properties

|                                   |  |                |                |                    |
|-----------------------------------|--|----------------|----------------|--------------------|
| Power supply                      | +15 ... 24 Vdc   |                |                |                    |
| Max. power consumption meter      | Supply   | at voltage I/O | at current I/O | extra for fieldbus |
|                                   | 15 V   | 95 mA          | 125 mA         | <75 mA             |
|                                   | 24 V   | 65 mA          | 85 mA          | <50 mA             |
| Max. Power consumption controller | 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;<br>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);<br>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 /<br>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-602CM (P2-CONTROL)**

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-502C**

Min. pressure 2...100 mbar  
Max. pressure 1,28...64 bar  
Absolute or gauge pressure  
High accuracy