# DATASHEET P-702CV

## EL-PRESS P-702CV (P1-control)

Digital Pressure Controller


### Digital Electronic Back Pressure Controllers

Bronkhorst® model P-702C Digital Pressure Controllers (Electronic Pressure Controllers - EPCs) are suited for precise measurement and control of upstream pressure ranges between 20…100 mbar and 12,8…64 bar absolute or between 7...35 mbar and 12,8...64 bar gauge. This Digital Pressure Controller 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 compact, fast acting control valve.

EL-PRESS series are equipped with a digital pc-board, offering high accuracy, excellent temperature stability and fast response. The main digital pc-board contains all of the general functions needed for measurement and control. 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: M10A - Ranges (FS): 20 ... 100 bara - P-max: 200 bara - Burst pressure: n.a. |
| Relative pressure sensors | Code: 100R - Ranges (FS): 35 ... 100 mbarg - P-max: 0,7 barg - Burst pressure: 0,8 barg<br>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 | measurement: 1 : 50 (2…100%)<br>control: 1 : 5 (with flow range 1 : 50) |
| Control stability | ≤ ± 0,05 % FS (typical for 1 $l_n$/min $N_2$ at specified process volume) |
| Operating temperature | -10 … +70 °C |
| Temperature sensitivity | 0,1% FS/°C |
| Max. Kv-value | 6,6 x $10^{-2}$ |
| Leak integrity, outboard | tested < 2 x $10^{-9}$ mbar l/s He |
| Attitude sensitivity | max. error at 90° off horizontal < 0,3 mbar |
| Warm-up time | negligible |

**Mechanical parts**

| | |
|---|---|
| Material (wetted parts) | stainless steel 316L or comparable |
| Process connections | compression type or face seal (VCR/VCO) couplings |
| Seals | standard: Viton®;<br>options: EPDM, Kalrez® (FFKM), FDA and USP Class VI approved compounds |
| Weight | 0,7 kg |
| Ingress protection | IP40 |

**Electrical properties**

| | | | | |
|---|---|---|---|---|
| Power supply | +15 … 24 Vdc | | | |
| Max. power consumption | Supply<br>15 V<br>24 V | at voltage I/O<br>290 mA<br>200 mA | at current I/O<br>320 mA<br>215 mA | extra for fieldbus<br><75 mA<br><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 / 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*

## Recommended accessories

E-8000 SERIES

### DIGITAL READOUT / CONTROL SYSTEMS

**Digital Readout / Control Systems**

- Bright, wide angle, 1.8" display (TFT technology)
- User friendly operation, menu driven with 4 push buttons


BRIGHT SERIES

### COMPACT LOCAL R/C MODULE

**Compact Local R/C Module**

- Bright, wide angle, 1.8" display
- User friendly operation
- Indication/operation/configuration

PIPS SERIES

**Plug-in Power Supply**

- For lab-style or industrial devices
- Interchangeable plugs (Euro, UK, USA, Australian, IEC) for mains connection

## Related products


**EL-PRESS P-712CV (P1-CONTROL)**

- Min. pressure 12,8...64 bar
  Max. pressure 20...100 bar
- Absolute or gauge pressure
- High accuracy


**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


**IN-PRESS P-5X2CI+F-0XXAI (P1-CONTROL)**

- Min. pressure 2...100 mbar
  Max. pressure 8...400 bar
- Absolute or gauge pressure
- Compact IP65 design


**IQ+FLOW IQP-700C EPC (P1-CONTROL)**

- Min. pressure 0,1...0,5 bar
  Max. pressure 2...10 bar
- Ultra compact
- MEMS technology

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