

# Datasheet P-502C

## Digital Pressure Meter

### > Introduction

High-Tech model P-502C digital electronic pressure meters have a well-proven compact thru-flow design. The instruments include a diaphragm type piezo-resistive pressure sensor for pressure measurement. The pressure meter performs with high accuracy and repeatability. EL-PRESS model P-502C can optionally be combined with a close-coupled control valve to act as a “back pressure controller” for upstream ( $P_1$ ) pressure control or a “forward pressure controller” for downstream ( $P_2$ ) pressure control.

### > Technical specifications

#### Measurement / Control system

|                                                |                                                                             |
|------------------------------------------------|-----------------------------------------------------------------------------|
| Accuracy<br>(incl. linearity and hysteresis)   | : $\pm 0,5\%$ of full scale (FS)                                            |
| Pressure rangeability                          | : 1 : 50 for pressure meter;<br>1 : 20 for P2-control; 1 : 5 for P1-control |
| Repeatability                                  | : $\leq 0,1\%$ RD                                                           |
| Response time sensor                           | : 2 msec                                                                    |
| Operating temperature                          | : $-10 \dots +70^\circ\text{C}$                                             |
| Temperature sensitivity                        | : $0,1\%$ FS/ $^\circ\text{C}$                                              |
| Leak integrity                                 | : tested $< 2 \times 10^{-9}$ mbar l/s He                                   |
| Attitude sensitivity<br>(at $90^\circ$ change) | : $< 0,3$ mbar                                                              |
| Warm-up time                                   | : negligible                                                                |

#### Mechanical parts

|                              |                                                    |
|------------------------------|----------------------------------------------------|
| Material (wetted parts)      | : stainless steel 316L or comparable               |
| Process connections          | : compression type or face seal couplings          |
| Seals                        | : standard : Viton<br>options: EPDM, FFKM (Kalrez) |
| Ingress protection (housing) | : IP40                                             |

#### Calibration

References verified by an ISO 17025 calibration laboratory, directly traceable to Ducth and international standards.

*Although all specifications in this datasheet are believed to be accurate, the right is reserved to make changes without notice or obligation.*

#### EL-PRESS Pressure Meter model P-502C

#### Electrical properties

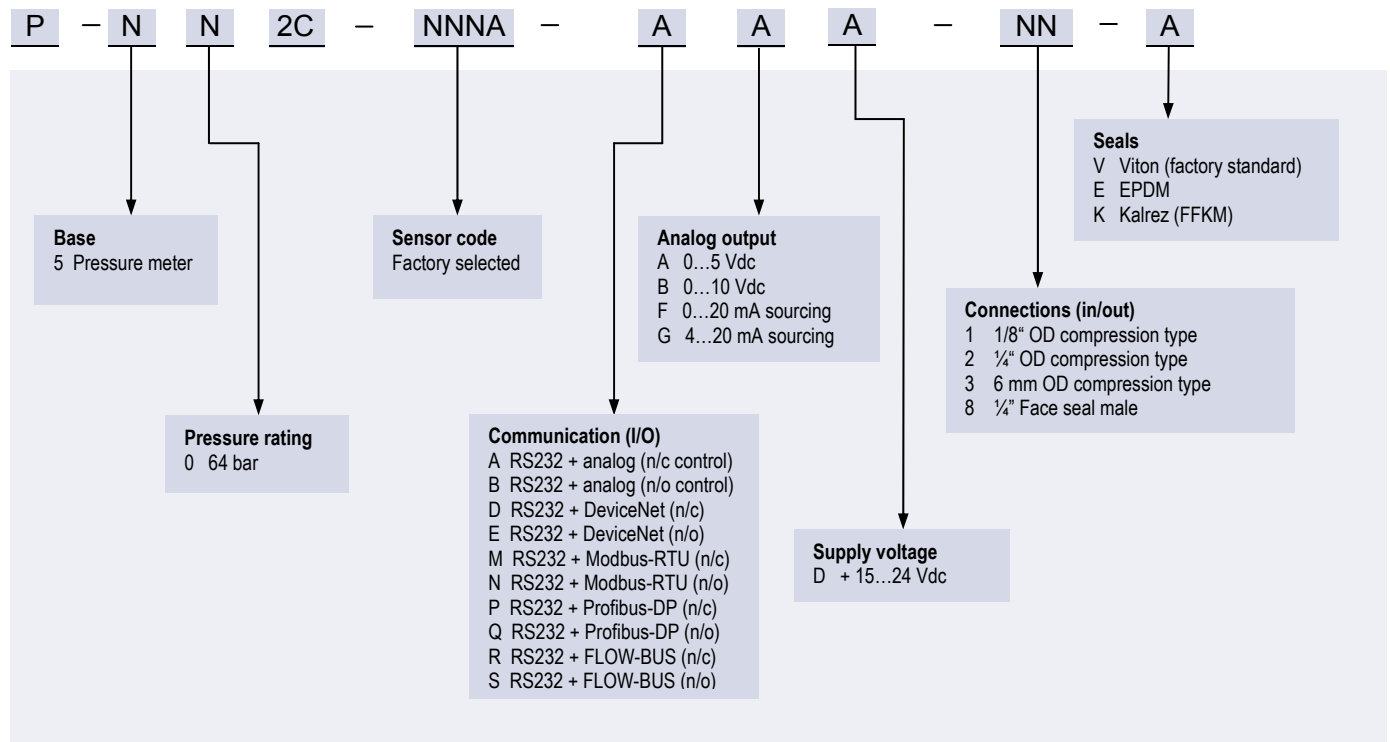
|                                              |                                                                                                                                        |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Power supply                                 | : $+15 \dots 24$ Vdc                                                                                                                   |
| Power consumption                            | : max. 385 mA; add 50 mA for Profibus, if applicable                                                                                   |
| Analog output                                | : $0 \dots 5$ (10) Vdc, min. load impedance $> 2$ k $\Omega$ ;<br>0 (4) $\dots 20$ mA (sourcing), max. load impedance $< 375$ $\Omega$ |
| Analog setpoint<br>(for EPT + control valve) | : $0 \dots 5$ (10) Vdc, min. load impedance $> 100$ k $\Omega$ ;<br>0 (4) $\dots 20$ mA, load impedance $\sim 250$ $\Omega$            |
| Digital communication                        |                                                                                                                                        |
| Standard (9-pin D-conn. male)                | : RS232                                                                                                                                |
| By optional interface board                  | : Profibus-DP <sup>®</sup> , DeviceNet <sup>™</sup> , Modbus-RTU, FLOW-BUS                                                             |
| Electrical connection                        |                                                                                                                                        |
| Analog/RS232                                 | : 9-pin D-connector (male);                                                                                                            |
| Profibus-DP <sup>®</sup>                     | : bus: 9-pin D connector (female);<br>power: 9-pin D-connector (male);                                                                 |
| DeviceNet <sup>™</sup>                       | : 5-pin M12-connector (male);                                                                                                          |
| Modbus-RTU/FLOW-BUS                          | : RJ45 modular jack                                                                                                                    |

### > Sensor codes, ranges and burst pressure

| Sensor code              | Pressure ranges   | Burst pressure |
|--------------------------|-------------------|----------------|
| 350A (Absolute pressure) | 100 ... 350 mbara | 1,4 bara       |
| 1K1A " "                 | 0,35 ... 1,1 bara | 3,1 bara       |
| 6K0A " "                 | 1,1 ... 6bara     | 10,5 bara      |
| 20KA " "                 | 6 ... 20 bara     | 62 bara        |
| M10A " "                 | 20 ... 64 bara    | 200 bara       |
| 350R (Relative pressure) | 100 ... 350 mbarg | 1,4 barg       |
| 1K1R " "                 | 0,35 ... 1,1 barg | 3,1 barg       |
| 6K0R " "                 | 1,1 ... 6 barg    | 10,5 barg      |
| 20KR " "                 | 6 ... 20 barg     | 62 barg        |

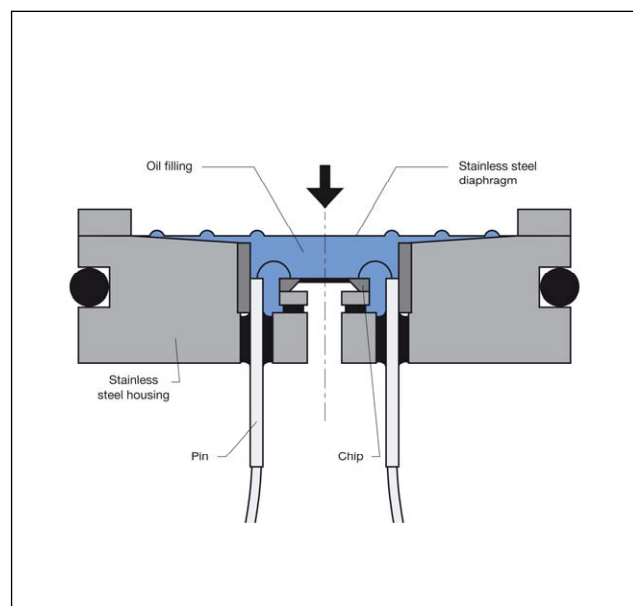
По вопросам продаж и поддержки обращайтесь:  
Волгоград (844)278-03-48, Воронеж (473)204-51-73, Екатеринбург (343)384-55-89, Казань (843)206-01-48,  
Краснодар (861)203-40-90, Красноярск (391)204-63-61, Москва (495)268-04-70, Нижний Новгород (831)429-08-12,  
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(845)249-38-78, Уфа (347)229-48-12  
Единый адрес: brk@nt-rt.ru  
Веб-сайт: steamflow.nt-rt.ru

## > Model number identification



## > Measuring principle

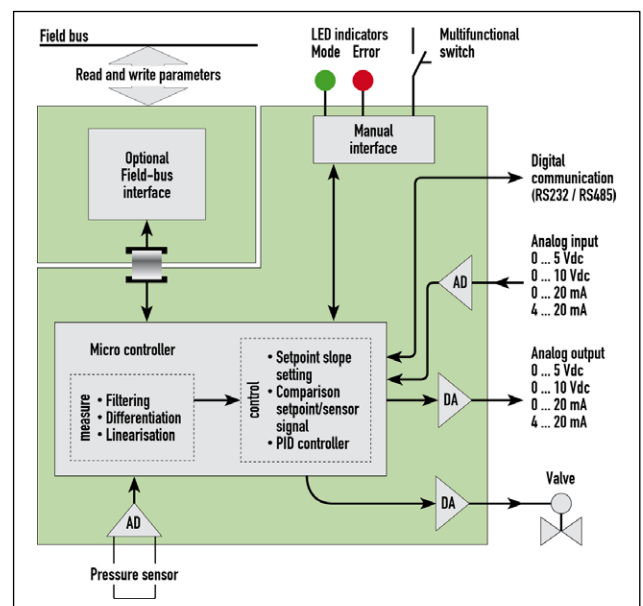
The High-Tech EL-PRESS pressure sensor is a piezo-resistive bridge on the surface of a silicon chip, with a pressure diaphragm, whose thickness determines the pressure range. When a pressure acts on this chip, the diaphragm flexes, and the resistor values of the bridge alter in proportion to the pressure. The measuring cell 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, advises to take precautions when oxygen or any other explosive fluid is used.



Functional scheme of the pressure sensor

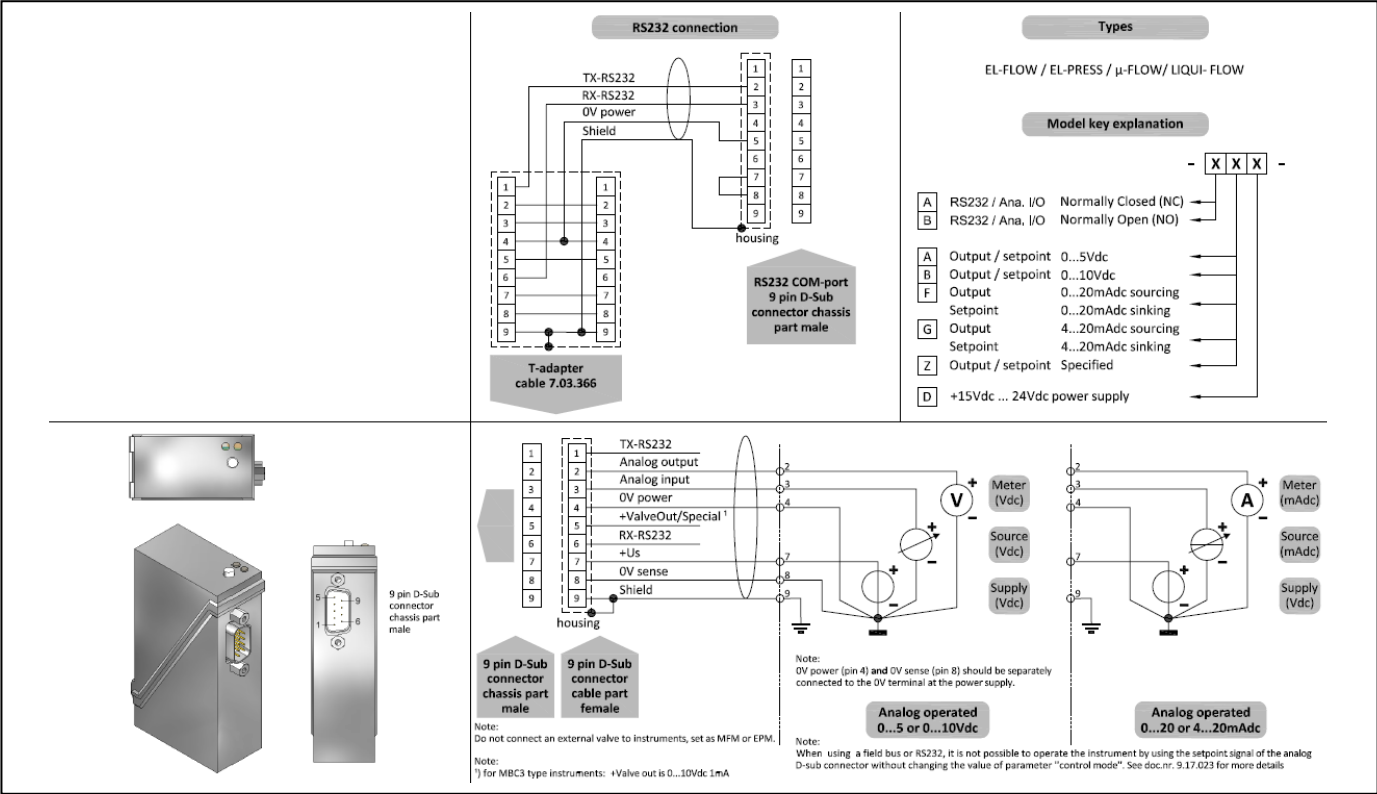
## > State of the art digital design

Today's EL-PRESS series are equipped with a diaphragm type piezoresistive pressure sensor and a digital pc-board, offering high accuracy, excellent temperature stability and fast response. The basic digital pc-board contains all of the general functions needed for measurement and control. In addition to the standard RS232 and RS485 output, the instruments also offer analog I/O. Furthermore, an optionally integrated interface board provides DeviceNet™, Profibus-DP®, Modbus-RTU or FLOW-BUS protocols via a separate connector.

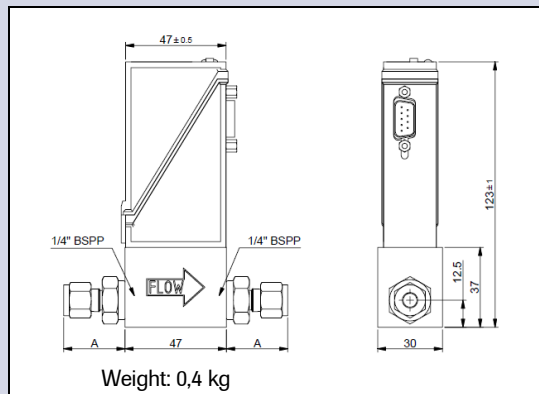


Functional scheme of the digital PC-board

> Hook-up diagram for analog or RS232 communication



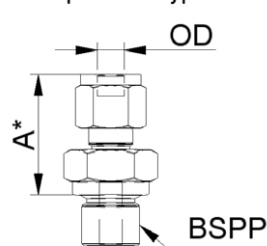
## > Dimensions (mm) and weight (kg)



Dimension table adapters (RS-type)

| Compression type |       |       | 1/4" BSPP |
|------------------|-------|-------|-----------|
| Size A           |       |       |           |
| adapter          | 3 mm  | OD    | 26.1      |
| adapter          | 6 mm  | OD    | 28.4      |
| adapter          | 8 mm  | OD    | 29.4      |
| adapter          | 10 mm | OD    | 30.2      |
| adapter          | 12 mm | OD    | 32.5      |
| adapter          | 1/8"  | OD    | 26.1      |
| adapter          | 1/4"  | OD    | 28.4      |
| adapter          | 3/8"  | OD    | 29.9      |
| adapter          | 1/2"  | OD    | 32.7      |
| Face-seal male   |       |       | Size A    |
| adapter          | 1/4"  | inlet | 23.2      |

Compression type



\*) Dimension A is typical finger-tight.

## > Options and accessories

|                                                                                                                                 |  |
|---------------------------------------------------------------------------------------------------------------------------------|--|
| - Free software support for operation, monitoring, optimizing or to interface between digital instruments and windows software. |  |
| - BRIGHT compact local Readout/Control modules<br>- E-5700 / E-7000 Power Supply                                                |  |
| - Interconnecting cables for power and analog/digital communication                                                             |  |

## > Alternatives

|                                                                   |  |
|-------------------------------------------------------------------|--|
| - IQ <sup>+</sup> FLOW, ultra compact Pressure Meter / Controller |  |
| - IN-PRESS Pressure Meter with 'industrial style' (IP65) housing  |  |
| - EL-PRESS Metal Sealed Pressure Meter / Controller               |  |

### По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72  
Астана +7(7172)727-132  
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