Datasheet P-506C

Differential Pressure Transducer

> Introduction

High-Tech model P-506C digital differential pressure transducers include a diaphragm type piezo-resistive pressure sensor for differential pressure measurement. The pressure meter performs with high accuracy and repeatability. EL-PRESS model P-506C with on-board PID controller can optionally be combined with a control valve to regulate the pressure difference between two locations in the system according to the set point adjusted.

EL-PRESS Pressure Meter model P-506C

> Technical specifications

Measurement / Control system

Accuracy (incl. linearity and hysteresis)	: ± 0,5% of full scale (FS)
Pressure rangeability	: 1 : 50 for pressure meter; 1 : 20 or 1 : 5 for pressure control (depending on configuration)
Repeatability	: ≤ 0,1% RD
Response time sensor	: 2 msec
Operating temperature	: -10…+70°C
Temperature sensitivity	: 0,1% FS/°C
Leak integrity	: tested < 2 x 10^{-9} mbar l/s He
Attitude sensitivity (at 90° change)	: < 6 mbar d
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 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.

Electrical properties

Power supply	: +15…24 Vdc
Power consumption	: max. 385 mA; add 50 mA for Profibus, if applicable
Analog output	: 0…5 (10) Vdc, min. load impedance > 2 kΩ; 0 (4)…20 mA (sourcing), max. load impedance < 375 Ω
Analog setpoint (for EPT + control valve)	: 0…5 (10) Vdc, min. load impedance > 100 kΩ; 0 (4)…20 mA, load impedance ~250 Ω
Digital communication	
Standard (9-pin D-conn. male)	: RS232
By optional interface board	: Profibus-DP®, DeviceNet™, Modbus-RTU, 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);
DeviceNet™	: 5-pin M12-connector (male);
Modbus-RTU/FLOW-BUS	: RJ45 modular jack

> Sensor codes, ranges and burst pressure

Sensor code	Pressure ranges	Burst pressure
300D (Differential pressure)	100 … 200 mbard	2,5 bard
1K0D „ „	0,2 … 1 bard	4 bard
4K0D „ „	1 … 4 bard	7 bard
15KD „ „	4 … 15 bard	30 bard

> Model number identification

P – N N 6C – NNNA – A A A – NN – A

Base
5 Pressure meter

Pressure rating[1)]
0 64 bara
1) Please mind the burst pressure of the sensor (see page 1)

Sensor code
Factory selected

Communication (I/O)
A RS232 + analog (n/c control)
B RS232 + analog (n/o control)
D RS232 + DeviceNet (n/c)
E RS232 + DeviceNet (n/o)
M RS232 + Modbus-RTU (n/c)
N RS232 + Modbus-RTU (n/o)
P RS232 + Profibus-DP (n/c)
Q RS232 + Profibus-DP (n/o)
R RS232 + FLOW-BUS (n/c)
S RS232 + FLOW-BUS (n/o)

Analog output
A 0…5 Vdc
B 0…10 Vdc
F 0…20 mA sourcing
G 4…20 mA sourcing

Supply voltage
D + 15…24 Vdc

Connections (+ side / - side)
1 1/8" OD compression type
2 ¼" OD compression type
3 6 mm OD compression type
8 ¼" Face seal male

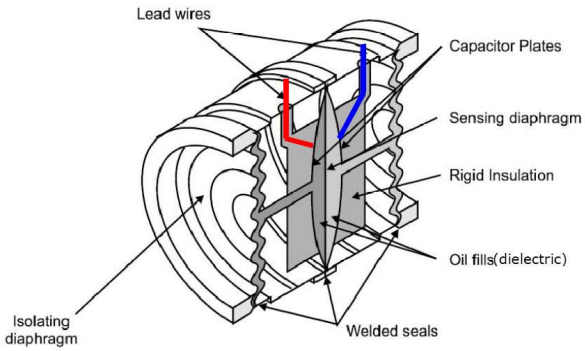
Seals
V Viton (factory standard)
E EPDM
K Kalrez (FFKM)

> Measuring principle

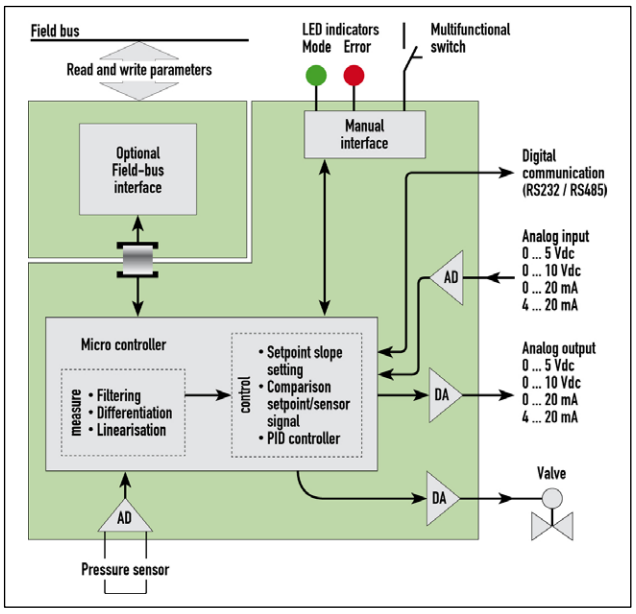
The EL-PRESS differential pressure sensor is a piezo-resistive bridge on the surface of a silicon chip, with a pressure diaphragm, whose thickness determises the pressure range. When a pressure difference acts on this chip, the diaphragm flexes, and the resistor values of the bridge alter in proportion to the delta P (ΔP). Plus and minus side of the sensor are is separated from the external pressure by thin, sensitive stainless steel diaphragms, and the sealed off cavities are filled with oil. Since the standard oil filling is flamable, advises to take precautions when oxygen or any other explosive fluid is used.

> State of the art digital design

Todays 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.

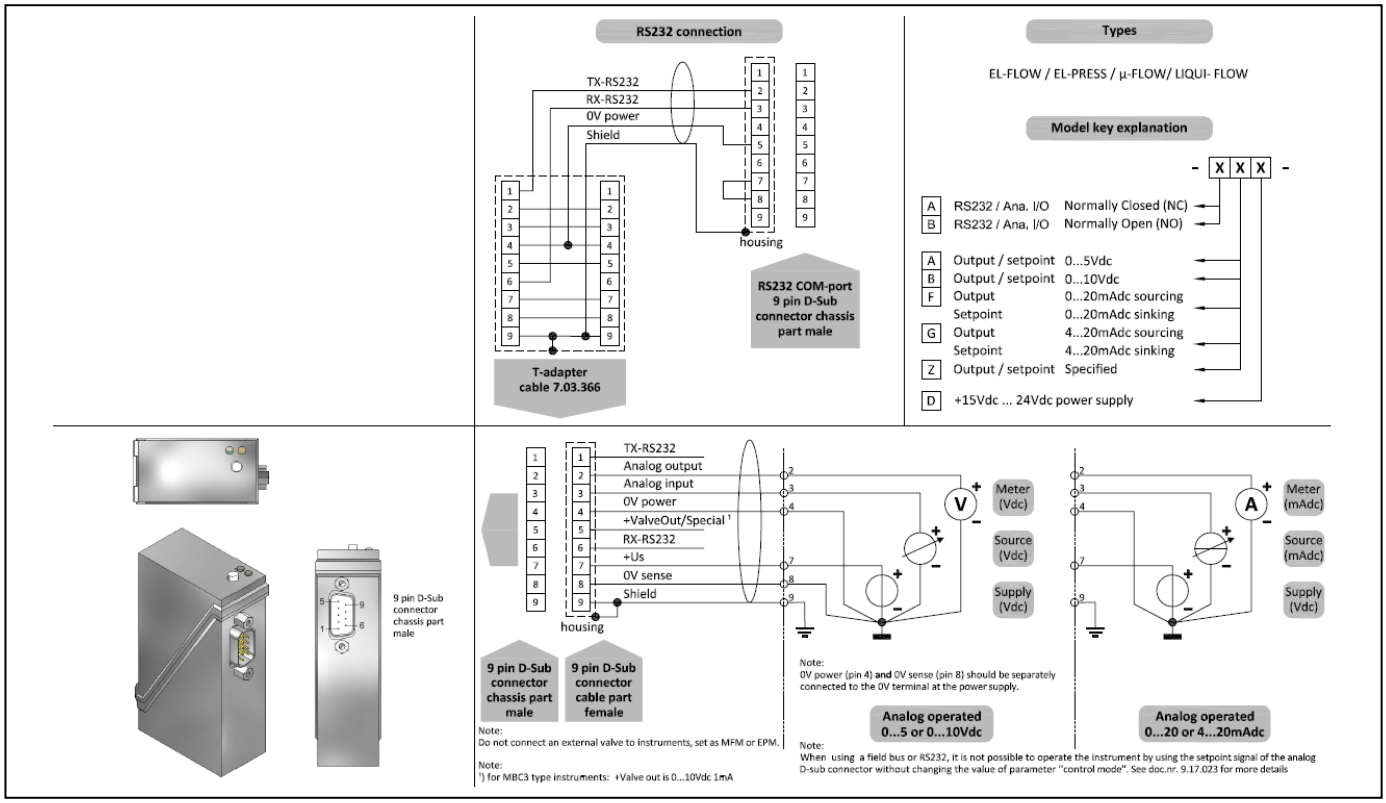


Functional scheme of the differential pressure sensor

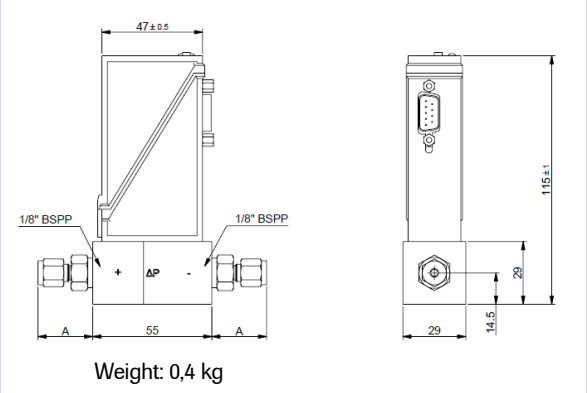


Functional scheme of the digital PC-board

> Hook-up diagram for analog or RS232 communication



> Dimensions (mm) and weight (kg)



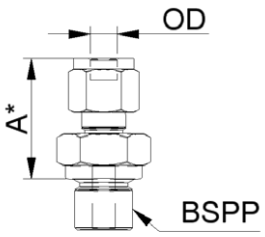
Weight: 0,4 kg

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 - E-5700 / E-7000 Power Supply	
- Interconnecting cables for power and analog/digital communication