

BUBBLING-THROUGH PRESSURE TRANSDUCER

Type: **ADLM-P**

- HYDROSTATIC, NO CONTACT
- 4 ... 20 mA AND 0 ... 10 V
- LCD DISPLAY, 4 KEYS
- RS232, CANopen OR Profibus



IP65



Display



RS232

4...20 mA
0...10 V

ORDER CODE

Code	Field	Meaning
PE	series	Bubbling-Through Pressure Transducer
0	input	positive relative pressure
2	output	4 ... 20 mA and 0 ... 10 V
0	supply	24 V DC
0 ... A	pressure sensor	0 ... 1000 mbar standard · 1 for 50 · 2 for 100 · 3 for 200 · A for 350 mbar
0	measuring range	please specify: a pressure value, or density and filling height
0 · 3 · 4	interface	RS232 · RS232 and CANopen · RS232 and Profibus
0 · 1 · 2	casing	aluCase 160 × 90 × 60 · plastic 162 × 92 × 60 · plastic with EMC coating
0 · 1	configuration	factory setting · customized, please specify
0 · 1	special model	no · yes, please specify

For the measuring range the manufacturer asks either for a pressure value (0 ... 600 mbar, 3 m water column) or for density and filling height (0.8 g/cm³ and 4 m). Values not given are taken from the factory setting.



OVERVIEW

A hose pump builds up a pressure in a bubbling-through tube. At the bevelled end of the tube air escapes as soon as the hydrostatic pressure is reached — density times filling height — and exactly that pressure stands in the tube, where the sensor reads it. The sensor itself never touches the medium, which is the advantage over a diving probe and the reason aggressive and abrasive media are no problem; foaming has no influence either, unlike with ultrasonics, and no connection below the tank is needed. The bubbling point may be up to 50 m away. The transducer gives 4 ... 20 mA and 0 ... 10 V at once, shows the value on an LCD display with four keys, and carries an RS232 interface; CANopen or Profibus are available as options. Twenty calibration points linearise irregular tank shapes into a volume. The housing is either die-cast aluminium or plastic, both IP65.

MEASUREMENT AND OUTPUT	DEVICE AND MOUNTING
• Positive relative pressure, hydrostatic • Sensor 0 ... 50 ... 1000 mbar, five ranges • Output 4 ... 20 mA and 0 ... 10 V at once • Combined error $\pm 1\%$ of full scale • Resolution 12 bit, TC < 50 ppm/K • 20 calibration points for the volume • LCD display and four keys • RS232; CANopen or Profibus optional	• Casing aluminium 160 × 90 × 60 mm, 1.1 kg • Or plastic 162.2 × 92.2 × 60.2 mm, 0.7 kg • Protection class IP65, EMC coating optional • Pressure connection for 6 mm plastic tube • Two cable glands M20 × 1.5, terminals to 2.5 mm² • External pump fed with 24 V DC, 250 mA • Bubbling point up to 50 m away • Operation -10 ... +60 °C, supply 24 V DC



TECHNICAL DATA

INPUT AND MEASUREMENT

Kind of pressure	positive relative pressure (hydrostatic)
Pressure sensor	0 ... 50 · 0 ... 100 · 0 ... 200 · 0 ... 350 · 0 ... 1000 mbar
Nominal pressure	50 · 100 · 200 · 350 mbar · 1 bar
Maximum pressure	550 · 550 mbar · 1 · 1 · 2 bar, in the same order
Burst pressure	800 · 800 mbar · 1.5 · 1.5 · 3 bar, in the same order
Older models	also 500 mbar (maximum 1 bar, burst 1.5 bar) and 2 bar (maximum 4 bar, burst 6 bar)
Bubbling point	up to 50 m away; the end of the tube should be bevelled at 45° for a defined point

MECHANICS

Casing aluminium	aluCase AC 092 with clip-on covers · 160 × 90 × 60 mm · die-cast aluminium · RAL 9006 · approx. 1.1 kg
Casing plastics	U-CASE 2 · 162.2 × 92.2 (101.1) × 60.2 mm · ASA 757G Luran S, UL94 HB · black · approx. 0.7 kg · protective insulation to VDE 100
Cable entry	2 glands M20 × 1.5, metal or plastic with the casing
Connection	plug-in terminal strip, lockable, up to 2.5 mm ²
Pressure connection	for 6 mm tube (nylon, PA, PUR, Hytrel), sealing O-ring, silicone free
Airing	pressure compensation part of polyamide 6
Protection class	IP65

DISPLAY AND SETTINGS

Display	multifunction indicator for current values, switch points and diagnostic values, with four keys for programming
Settings	adjustment over the four keys; tare over a key on the base board or externally (active or passive); 20 calibration points linearise the volume. Factory setting: range as ordered, analog output 0 ... 10 V and 4 ... 20 mA, indication 0 ... 100.0 %, no linearisation, pulse 10 s, break 3600 s, external tare active at 24 V

OUTPUT AND SUPPLY

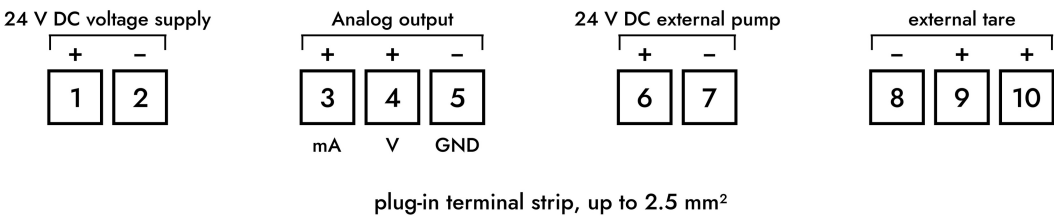
Analog	0 ... 10 V and 4 ... 20 mA
Current	load < 500 Ω
Voltage	load resistance > 10 kΩ
Interface	RS232; option CANopen or Profibus
External pump	24 V DC, 250 mA
Supply voltage	24 V DC ±20 %
Power consumption	approx. 5 W with options
Residual ripple	200 mV

ACCURACY AND AMBIENT

Resolution	12 bit at the pressure sensor
Combined error	± 1 % of full scale
Temperature coefficient	< 50 ppm/K
Operating temperature	-10 ... +60 °C
Storage temperature	-20 ... +70 °C



ELECTRICAL CONNECTION



Ten plug-in screw terminals. The manufacturer marks the negative terminals with an earth symbol, which is drawn here as a minus; terminal 5 is labelled GND in the document. Terminals 6 and 7 feed the external hose pump with 24 V DC.

ACCESSORIES

Bubbling-through tube	any material; the end bevelled at 45°
External pump	hose pump, fed with 24 V DC / 250 mA from the transducer
Interface	CANopen or Profibus, ordered with the device

The maximum distance to the bubbling point is 50 m.

COMPLIANCE

 IP65	Protection class	IP65, both casings
 Display	Indication	LCD multifunction display with four keys
 RS232	Interface	RS232; CANopen or Profibus as options
 4...20 mA 0...10 V	Output signal	4 ... 20 mA and 0 ... 10 V at once

No approval beyond these is documented in the manufacturer document; the plastic casing carries protective insulation to VDE 100.



DIMENSIONS (mm)

