

FMEA Bubbling through pressure transducer valve

Bubbling-Through Pressure Transducer

FEMA

● Characteristics

	- Input:	pos. relative pressure (hydrostatic pressure)
	- Analog output:	4...20 mA and 0...10 V (standard version)
	- Voltage supply:	24 VDC +/-20%
	- Combined error:	±1% FS
	- Casing:	Aluminum/Plastics/Plastics with EMC coating
	- Indication:	LCD-display
	- Pressure connection:	for 6 mm plastic pipe
	- Interface:	CANopen / Profibus (options)
	- Protection class:	IP65
	- Data output:	interface RS232
	- Volume calculation:	20 calibration points for linearization

● Advantages in Comparison with other Measuring Methods

- No contact between sensor and medium (disadvantage with diving probe)
- No extensive mechanical construction (a pressure sensor needs a connection below the tank)
- Cost-effective solution (in difference to the use of radar engineering)
- Foaming has no influence (problem with ultrasonics)
- Easy mounting
- Reliable function

● Technical Data

Input

Kind of pressure: positive relative pressure (hydrostatic pressure)
 Pressure sensor: 0...1000 mbar / 0...50 mbar / 0...100 mbar / 0...200 mbar / 0...350 mbar
 Overpressure limit: For overpressure limits and burst pressure, see table on page 3

Output

Analog: 0...10 V and 4...20 mA
 Current: load <500 Ω
 Voltage: load resistance >10 kΩ
 Interface: RS232 (option: CANopen / Profibus)
 External pump: 24 VDC (250 mA)

Indication

Display: multifunction indicator for current values / switch points / diagnostic values
 Function: 4 keys for programming

● Applications

For use in all ranges where conventional level measuring is not possible or too expensive. Range of application: Purification plants, pump houses, well buildings, chemical industry, special vehicle construction (tanks for water and fuel), food manufacturing industry.

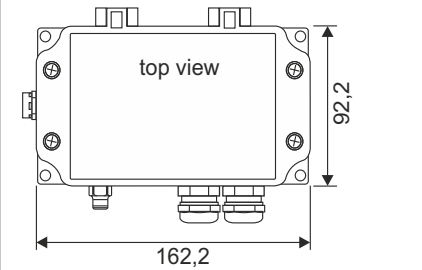
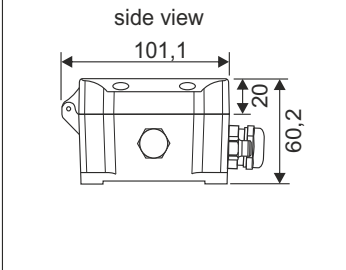
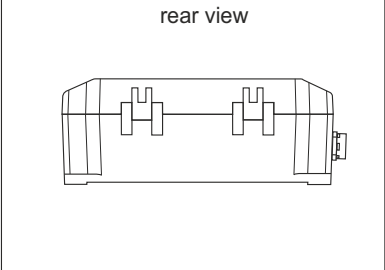
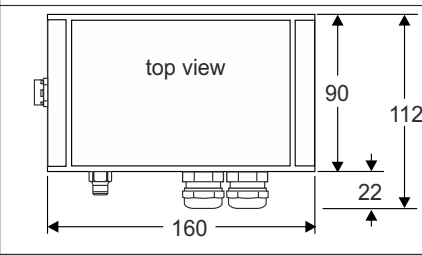
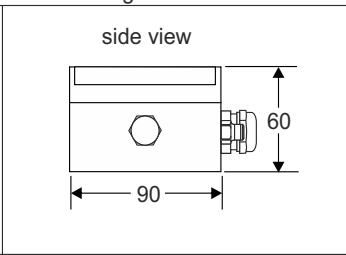
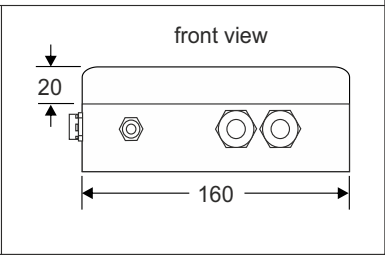


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● **Technical Data (Continued)**

<u>Adjustment</u>		
Settings:	4 keys on display unit	
Tare:	key on front or externally	
Volume calculation:	20 calibration points for linearization	
<u>Accuracy</u>		
Resolution:	12 bit (pressure sensor)	
Combined error:	±1% FS	
TC:	<50 ppm/K	
<u>Power Supply</u>		
Voltage:	24 VDC, ±20%	
Power consumption:	maximum 5 W	
Residual ripple:	200 mV	
<u>Environmental Conditions</u>		
Operating temperature:	-10...+60°C	
Storage temperature:	-20...+70°C	
<u>Mechanics</u>		
Casing aluminum:	Type:	aluCase AC 092 with clip-on design covers
	Dimensions:	160 x 90 x 60 mm
	Material:	die-cast aluminum
	Mounting:	covered screw channels
	Color:	RAL 9006 (aluminum white)
	Weight:	approx. 1,1 kg (with options)
	Cable entry:	2 screwed cable glands M20x1,5
	Casing plastics:	Type:
Dimensions:		162,2 x 92,2 (101,1) x 60,2 mm
Material:		ASA 757G Luran S
Flammability:		UL94 HB
Mounting:		4 mounting holes
Color:		black
Weight:		approx. 0,7 kg (with options)
Cable entry:		2 screwed cable glands M20x1,5
	Protective insulation:	according VDE100
Protection class:	IP65	
Connection:	plug-in terminal strip, lockable, up to maximum 2,5 mm²	
Pressure connection:	for tube 6 mm O/D (made of nylon, PA, PUR, Hytrel)	
	sealing: O-ring (silicone free)	
Airing:	pressure compensation part (PA6)	

● **Dimensions (in mm)**

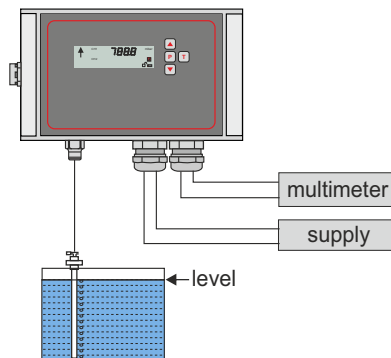
Casing plastics		
		
Casing aluminum		
		

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Electrical Connection

+	⊥	+	+	⊥	+	⊥	⊥	+	+	plug-in terminal strip
1	2	3	4	5	6	7	8	9	10	
voltage supply 24 V DC		analog output (0)4...20 mA 0...10 V			external pump 24 VDC		external tare			

Application Example



Note: Maximum distance to point of bubbling-through: 50 m
 Level measuring in all liquids possible
 Aggressive and abrasive media are no problem
 During bubbling through period the output signal is held
 Every material possible for the bubbling through tube or hose
 The end of the bubbling-through tube should have an angle of 45° (to have a devined point of bubbling)

Functional description: The hose pump generates a pressure in the bubbling-through tube (pulse). At the end of the tube air escapes when the hydrostatic pressure is reached (density x filling height). The existing pressure is transfered continously to the system. After each break the process repeats again. If the level of the liquid changes during the break, the output signal follows because the built-up pressure in the tube changes at the same time.

Pressure table

Nominal pressure	50 mbar	100 mbar	200 mbar	350 mbar	500 mbar	1 bar	2 bar
Maximum pressure	550 mbar	550 mbar	1 bar	1 bar	1 bar	2 bar	4 bar
Burst pressure	800 mbar	800 mbar	1,5 bar	1,5 bar	1,5 bar	3 bar	6 bar

Note: Older models of the ADLM-P can also come equipped with 500 mbar or 2 bar pressure sensors. In these cases, please refer to the gray-colored columns.

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● Order Code		E P X X X X X X - X X X											
Input:	positive relative pressure	0											
Output:	4...20 mA, 0...10 V	2											
Supply:	24 VDC	0											
Pressure sensor:	0...1000 mbar (standard)	0											
	0...50 mbar	1											
	0...100 mbar	2											
	0...200 mbar	3											
	0...350 mbar	A											
Measuring range:	(please specify) ¹⁾	0											
Interface:	RS232	0											
	RS232 and CANopen	3											
	RS232 and Profibus	4											
Casing:	AluCase 160x90x60	0											
	Plastics 162x92x60	1											
	Plastics 162x92x60 with EMC coating	2											
Configuration:	factory settings ²⁾	0											
	customized (please specify) ³⁾	1											
Special model:	No	0											
	Yes (please specify)	1											

- 1) Please give a pressure value (e.g. 0...600 mbar or 3 m water column) or the medium density and the filling level (e.g. density 0,8 g/cm³ and filling level 4 m).
- 2) Factory settings: Measuring range: as given / analog output: 0...10 V and 4...20 mA / indication: 0...100,0% / linearization: without / pulse: 10 s / break: 3600 s / external tare: active (24 V).
- 3) Settings can be selected as per section *Technical Data*. If no values are given, factory settings will be used.