

SMART PRESSURE TRANSMITTER (501P)

- HART Protocol communication interface
- 0.075% inaccuracy and non-linearity
- High Rangeability
- 0 – 0.0016 bar (1. 6kPa) till -1/0 -600 bar
- Automatic temperature compensation
- 4 - 20 mA output
- True non-interactive zero and span
- Local zero and span adjustment
- Totally Field configurable with keypad
- Bright Backlit LCD indicator
- Adjustable damping
- Indication in engineering units
- AISI 316L or Hasteloy C Wetted P
- Robust design
- Small and light weight
- Weather-proof housing
- Intrinsically safe as option
- Explosion Proof as option



DESCRIPTION

ABUS 501P Smart Pressure Transmitter uses as its measuring principle, the well known and field proven technique of sensing a crystal silicon chip and a diaphragm micro-machined into the chip, enhanced by microprocessor based electronics.

Designed for process control applications, these 2-wire transmitters generate a 4-20 mA signal proportional or characterized to the applied pressure. This signal can be transmitted over a pair of twisted wires through long distances (limited only by the wire resistance and load). Remarkable features of the transmitters are its 0.075% inaccuracy and non-linearity(optional), 20:1 rangeability, compactness and light weight.

The pressures are directly applied to the isolating diaphragm that provide isolation and resistance against process fluid corrosion. Being microprocessor based, the electronic circuit is extremely versatile and accurate. Combined with the sensor precision, it provides the high accuracy and rangeability.

Transmitter performance is improved by continuous monitoring of the sensor temperature and corresponding auto corrections.

A local display permits easy reading and writing of data and easy configuration of device parameter without requiring Hart Communicator.

TECHNICAL SPECIFICATIONS

Functional Specifications

Process Fluid	: Liquid, gas or vapor
Range	: 0-0,0016 to -1-0-600 bar
Output signal	: Two wire 4-20, 20-4 mA and HART protocol
Power supply	: 12 -45 VDC
Load limitation	: 0-600Ω for 24VDC
Indicator	: LCD Indicator
Hazardous area*	: IP67 weather-proof, intrinsically safe and explosion proof EEx ia, EExd IIC, T6, T5, to EN 50.014, EN 50.018 and EN 50.020 for Zone 0 IIA, IIB, IIC
Zero and span	: Non-interactive local adjustment
Ambient Temp.	: -20 to 80°C display -10 to 70°C
Process Temp.	: -20 to 80/130°C, -65 to 150°C, 0 to 200, 0-350°C
Storage Temp.	: -40 to 85°C
Turn-on time	: Performs within specifications in less than 120 milliseconds after power is applied
Overpressure	: 400%
Humidity limits	: 0 – 100% RH
Damping Adj.	: Adjustable
Configuration	: By push button on the transmitter or HC, PC using HART Protocol

Performance Specifications

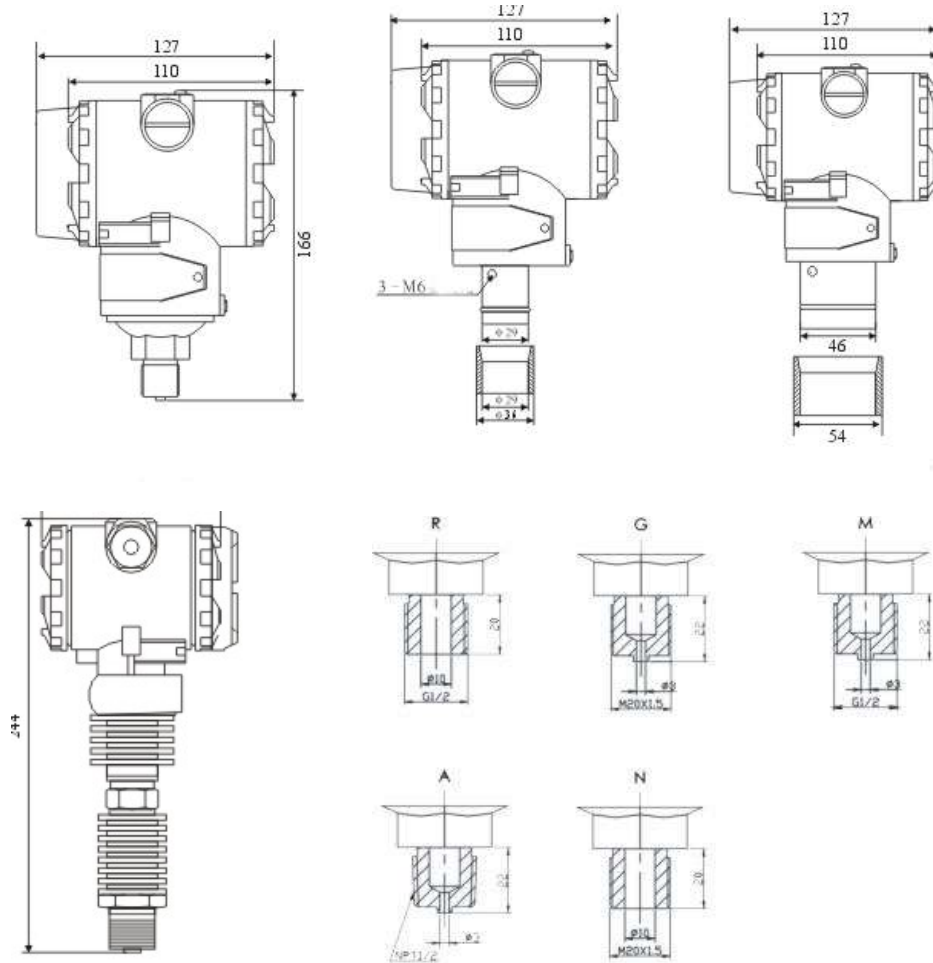
Resolution	: ±0.01 %
Inaccuracy	: ±0.075%
Temperature effect	: ±0.1 %/10K Zero and Span
Power Supply effect	: Negligible between 12 and 45 VDC
Mounting Effect	: Any position, No span effect
EMC	: EN 50081-1, EN 50082-2, 89/336/EEC

Physical Specifications

Electrical Connection	: ½" – 14 NPT
Process Connection	: M G1/2, M20, G½NPT, cassette type
Wetted parts	: AISI 316L or Hastelloy
Filling fluid	: Silicone oil
Electronic housing	: Injected aluminum with polyester painting (RAL 5014) NEMA 4X, IP66
Identification plate	: 304 SS*
Approximate weight	: 1.6 kg
Mounting	: Directly supported by piping or optionally with mounting bracket for 2" pipes or with direct or remote seats

*Optional

Dimensions



ORDERING INFORMATION

501P							
SENSOR	TYPE	MATERIAL	CONNECTION	DISPLAY	TYPE	RANGE	
A1 Standard	W Weather Proof	1 316L	R G ½" hole 10mm	A None	G Gauge	X Specify	
A2 With Flanged Diaphragm	P Explosion proof	2 304S	G M20 hole 3mm	B LCD	A Absolute	0.01 to 1 Bar	1
	I Intrinsically safe	4 Hasteloy C	M G ½" hole 3mm			0.04 to 4 Bar	4
			A ½" 14 NPT			1.6 to 16 Bar	16
			N M20 hole 10mm			0.63 to 63 Bar	63
			P ½" NPT (F)			4.0 to 400 Bar	400
			Y Other(A2, other)			7.0 to 700 Bar	700

NOTE : Below Code to be used only with Type (A2) Flange Diaphragm

NOTE : Capillary Length if required shall be added after the ordering code in Meters.

Code	FLANGE SIZE (MM)					BOLT HOLE (MM)		
	Size	Specification	Diameter	A**	B***	Amount	Diameter	Distribution Diameter
A	3"	150lb	190.5	30	66	4	19	152
B	4"	150lb	228.6	30	89	8	19	190
C	3"	300lb	209.6	35	66	8	22.2	168
D	4"	300lb	254	38	89	8	22.2	200

** Flange Thickness

*** Effective Diaphragm Area

Measuring Accuracy

1.	Reference Conditions	Increasing Characteristic	
		Star-of-scale value 0 bar	
		Stainless steel seal diaphragm	
		Silicone oil filling	
		Room temperature 25° C (77° C)	
	Measuring span ratio r (spread, Turn-Down)	r = max. measuring span/set measuring span or nom. Pressure range	
2.	Linear Characteristic (Error in measurement)		
	-250 mbar	$r \leq 1.25$: 0.075%	
		$1.25 < r \leq 30$: $\leq (0.008 \cdot r + 0.055)\%$	
	-1 BAR	$r \leq 5$: $\leq 0.065\%$	
	4 bar	$5 < r \leq 100$: $(0.004 \cdot r + 0.0045)\%$	
	16 bar		
	63 bar		
	160 bar		
		-400 bar	$r \leq 3$: $\leq 0.075\%$
		700 bar	$3 < r \leq 10$: $\leq (0.0029 \cdot r + 0.071)\%$
			$10 \leq r \leq 100$: $\leq (0.005 \cdot r + 0.05)\%$
3.	Influence of ambient temperature (in percent per 28° C (50° F))		
	250 mbar	$\leq (0.16 \cdot r + 0.1)\%$	
	1 bar	$\leq (0.05 \cdot r + 0.1)\%$	
	4 bar	$\leq (0.025 \cdot r + 0.125)\%$	
	16 bar		
	63 bar		
	160 bar		
	400 bar		
		700 bar	$\leq (0.08 \cdot r + 0.16)\%$
4.	Long-term stability {temperature change $\pm 30^\circ\text{C}$ ($\pm 54^\circ\text{F}$)}		
	250 mbar	$\leq (0.2 \cdot r)$ % per year	
	1 bar	$\leq (0.2 \cdot r)$ % in 5 years	
	4 bar		
	16 bar	$\leq (0.1 \cdot r)$ % in 5 years	
	63 bar		
	160 bar		
	400 bar		
	700 bar		$\leq (0.2 \cdot r)$ % in 5 years

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