

# PT Series Pressure Transmitters

## User Manual



**ABUS TECHNOLOGIES INC.**

## WARNING

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- ✓ This manual should be passed on to the end user.
- ✓ The contents of this manual are subject to change without prior notice.
- ✓ All rights reserved.
- ✓ ABUS gives no warranty of any kind with regard to this manual, including, but not limited to, fitness for a particular purpose.
- ✓ If any question arises or errors are found, or if any information is missing from this manual, please inform your supplier or inform at [info@abustek.com](mailto:info@abustek.com).
- ✓ The specifications mentioned in this manual are limited to those for the standard type under the specified model number break-down and do not necessarily apply for customized instruments.
- ✓ Please note that changes in the specifications, construction, or component parts of the instrument may not immediately be reflected in this manual at the time of change.
- ✓ If the customer or any third party is harmed by the use of this product, ABUS assumes no responsibility for any such harm owing to any defects in the product which were not predictable, or for any indirect damages.

Although Warning hazards are related to personal injury, and Caution hazards are associated with equipment or property damage, it must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all Warning and Caution notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of Technical Communications Department, ABUS Technologies

## HEALTH AND SAFETY

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To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given. Any deviation from these instructions will transfer the complete liability to the user.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

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## 1. INTRODUCTION

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PT Series of Pressure Transmitters are precision engineered to fit most industrial pressure measurement applications. The compact, rugged design make these instruments suitable for applications including hydraulics and pneumatics, vacuum, test equipment, liquid level measurement, pressure control, compressor control, pump protection and numerous other processing and control operations. A wide range of electrical connection and process connection options are available to meet almost every requirement.

The PT Series features an all-welded stainless steel measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time. The compact case is also made of stainless steel and is available with environmental protection ratings.

PT Series industrial Pressure transmitter adopts high performance chips and deals with special amplified chip, integrative configuration, and smart profile. They are widely used in field of hydraulic pressure, chemical, petro-chemical, power, food, pharmaceutical and, OEM Applications.

### Applications

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- Industrial OEM Equipment
- HVAC / R Equipment
- Water Management
- Process Control
- Pneumatics Pressure
- Hydraulic Systems

## 2. PRESENTATION

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### 2.1 Features

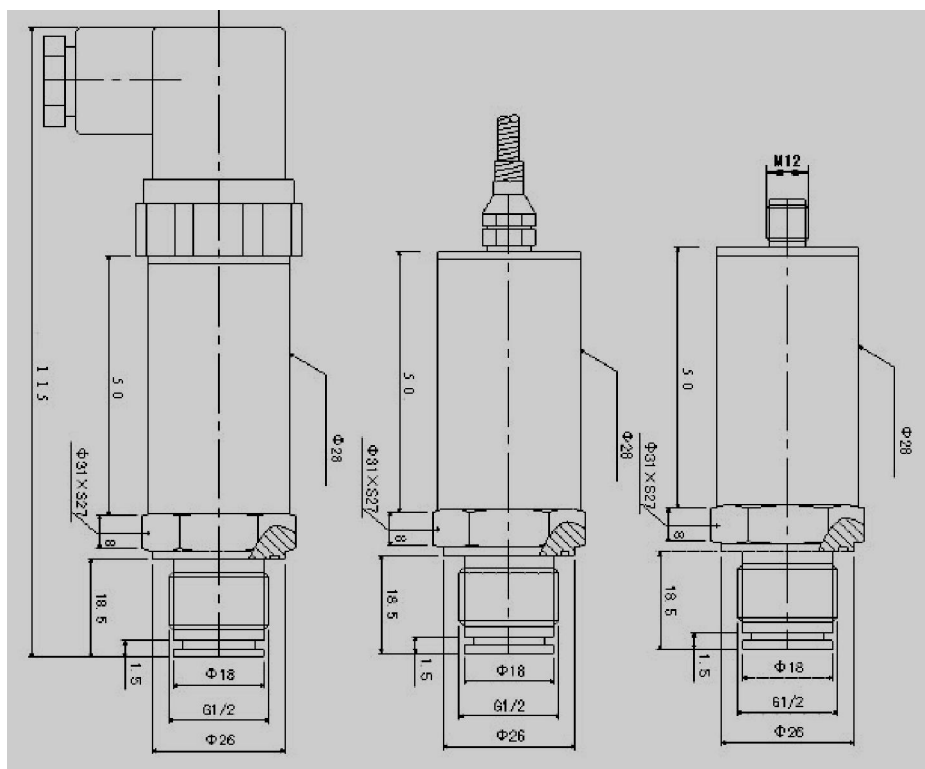
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1. Stainless steel wetted parts.
2. Excellent resistance to corrosive processes.
3. Small figure design, any position to install.
4. Various optional signal output.
5. OEM process to fit application of the customers.

## 2.2 Technical Parameters

<b>Accuracy:</b>		±0.25%FS (BFSL) ±0.5%FS (limit point calibration)
<b>Ranges:</b>	<i>Absolute:</i>	0...1 to 0...50 bar, 0...15 to 0...750 psi
	<i>Vacuum:</i>	(-1)... bar, (-15)...0 psi
	<i>Gauge:</i>	0...100mB to 0...1000 bar, 0...1.5 to 0...15000 psi
<b>Output:</b>		0...5 V, 0...10 V, 0.5...4.5 V, 4...20 mA (Customized On request)
<b>Power Supply:</b>		24Vdc (10~36Vdc)
<b>Maximum Pressure:</b>		1.5 x F.S.
<b>Adjustability Zero / Span:</b>		± 10 % using potentiometers inside.
<b>Electrical Connections:</b>		M12 connector, Five Pin bendix connector, Hirschman Type or Direct down-lead.
<b>Process Connection:</b>		G1/4, M20 x 1.5, 1/4NPT (Customized On request)
<b>Pressure Inlet:</b>		All media compatible with stainless steel 316
<b>Operating temperature:</b>		-40 ~ 85°C (125°C for short durations) * Higher range, on request.
<b>Ambient temperature:</b>		-20 ~ +80°C
<b>Wetted Parts:</b>		SS 316L / Al2O3 / NBR
<b>Case:</b>		Stainless steel
<b>Housing:</b>		Stainless steel, protection class IP65.

## 3. DIMENSIONS



All dimensions in mm

## 4. ORDERING DETAILS

TYPE			DESCRIPTION
Type	PT10	Absolute Pressure Transmitter	0 ~ 25 bar
	PT20	Gauge/Compound Pressure Transmitter	-1 ~ 0 ~ 1800 bar
	PT30	Vacuum Pressure Transmitter	-760 ~ 0 mmHG
Range	—		Specify Range code
Output		D	4 ~ 20 mA
		V	0 ~ 10 V
		A	Others, specify
Process Connection		A	G 1/4"
		E	G 1/2"
		O	1/4" NPT
		U	Others, specify
Electrical Connection		W	DIN Connector (Hirschman Type)
		X	Thread Screw
		Y	Bendix Connector
		Z	Direct Down-lead
Integral Indicator (Refer LPI-PT)		+ LPI-PT	Loop Powered Indicator
		0	W/O Indicator
Zero and Span Adjustment		1	With Internal Z & S
		0	W/O

**Example: PT20 >10 > D > 1 > W > LPI-PT > 1**

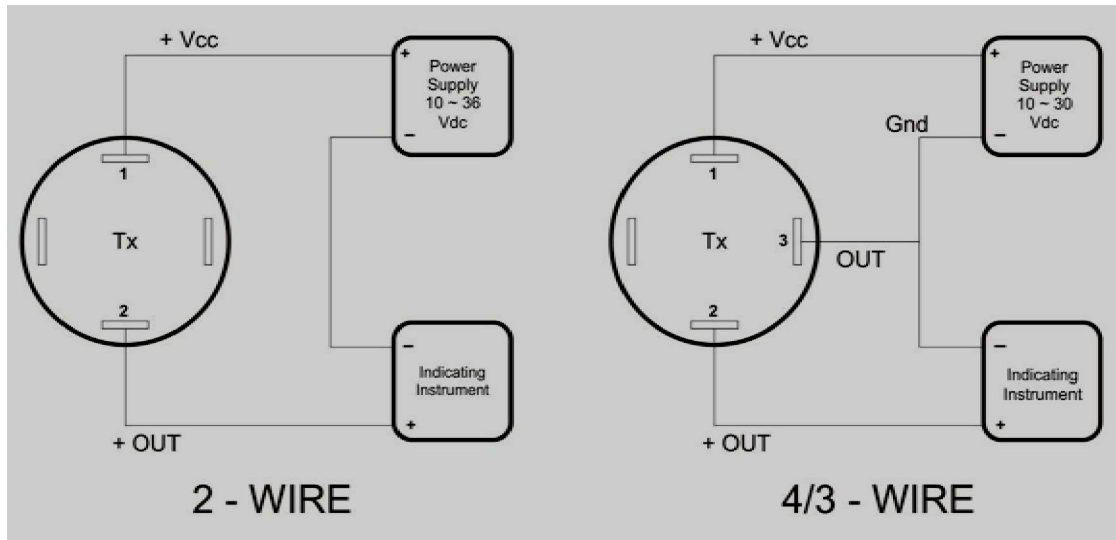
STANDARD RANGES FOR PT SERIES			
CODE	GAUGE/ABS. PRESSURE	CODE	COMPOUND
01	1.00 bar	17	600.00 bar
02	1.60 bar	18	1000.00 bar
03	2.50 bar	19	1500.00 Bar
04	4.00 bar	20	1800.00 Bar
05	6.00 bar		
06	10.00 bar		<b>COMPOUND</b>
07	16.00 bar	41	-1 ~ 0.6 bar
08	20.00 bar	42	-1 ~ 1.0 bar
09	25.00 bar	43	-1 ~ 2.0 bar
10	40.00 bar	44	-1 ~ 3.0 bar
11	60.00 bar	45	-1 ~ 5.0 bar
12	100.00 bar	46	-1 ~ 9.0 bar
13	160.00 bar		
14	200.00 bar		<b>VACUUM</b>
15	250.00 bar	61	-760 ~ 0 mm/Hg
16	400.00 bar		
<b>CUSTOMIZED RANGES &amp; UNITS - MARK 00 AS THE CODE, SPECIFY RANGE AND UNIT AT THE END OF PART NO.</b>			

**Example: PT20 >00 > D > 1 > W >0 > 0 >0-50 PSI**

Table 1

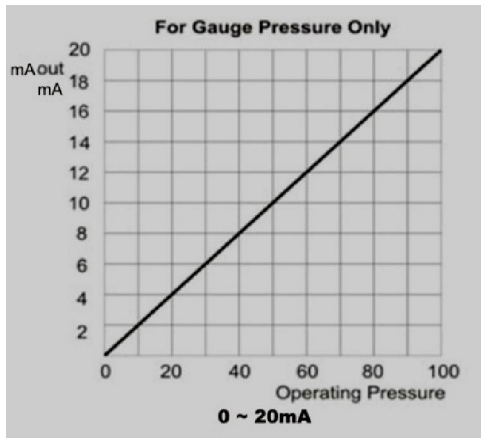
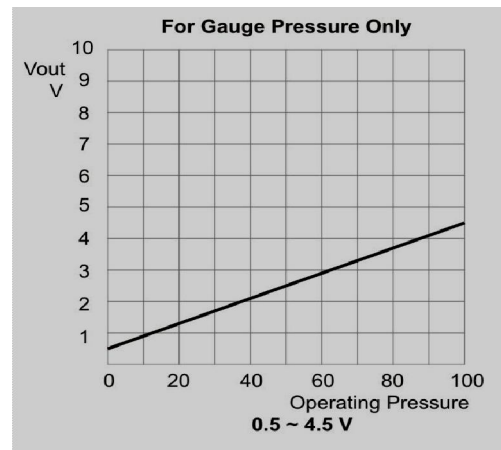
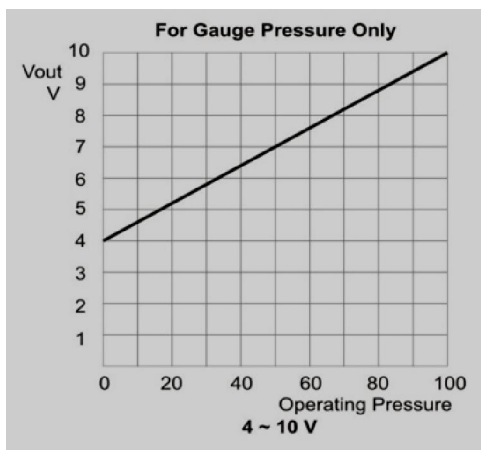
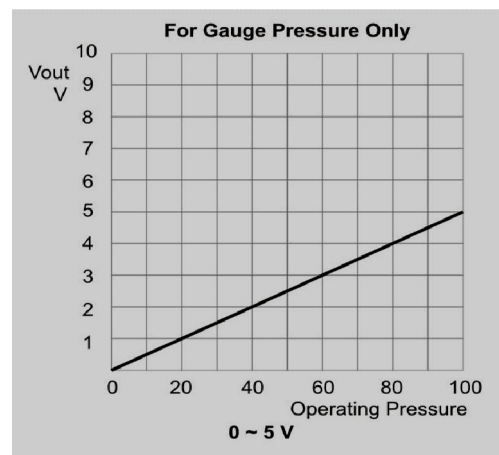
## 5. CONNECTIONS

WIRE	SIGNAL OUTPUT	EXCITATION
2-wire	4 ~ 20mA	12 ~ 36 Vdc
3-wire	0 ~ 10 Vdc	12 ~ 18 Vdc



Output Type	Function	Colour	6PIN		Output Type	Function	Colour	6PIN
Output: 3.33mV/V 0-5V; 0-10V	Signal +	Blue	A		Output: 4-20mA	Power +	Red	A
	Signal -	Green	B			Power -	Blue	B
	Power +	Red	C					
	Power -	Yellow	D					
Hirschman DIN Output: 3.33mV/V 0-5V;0-10V	Power+	Red	1		Hirschman DIN Output: 4-20mA	Power+	Red	1
	Signal+	Blue	2			Power -	Black	2
	Power -/	white	3					
	Signal -							
Direct Leading Wire Output: 3.33mV/V 0-5V;0-10V	Signal +	Blue			Direct Leading Wire Output: 4-20mA	Power +/Signal +	Red	
	Signal -	Green				Power -/Signal -	Black	
	Power +	Red						
	Power -	Yellow						
M12 connector Output: 3.33mV/V 0-5V;0-10V	Power+	Red	1		M12 connector Output: 3.33mV/V 0-5V; 0-10V	Power+/ Signal+	Red	1
	Signal-	Blue	3			Power-/ Signal-	Black	3
	Power -/							
	Signal -	Black	4					

## Output Characteristics (FOR PT20-12XXXX Pressure Transmitter)

**A****B****C****D**



## 6. INSTALLATION

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### Recommendation

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1. Please confirm the configuration for Pressure Transmitter i.e. 2- wire, 3-wire and accordingly follow the wiring procedure. Ensure that the excitation voltage is supplied to the correct points and is within the specified limits for that particular configuration as mentioned in the table above.
2. When installed, ensure that the transmitter is not subjected to the excessive sources, and it should be considered before installing the Transmitter. Use suitable diaphragm if needed.
3. Process connection must be properly sealed with material compatible with the process liquid / gas.
4. When installing transmitter with diaphragm, seals / process connector should be tightened not the transmitter, otherwise transmitter calibration may get affected.

## 7. OPERATION

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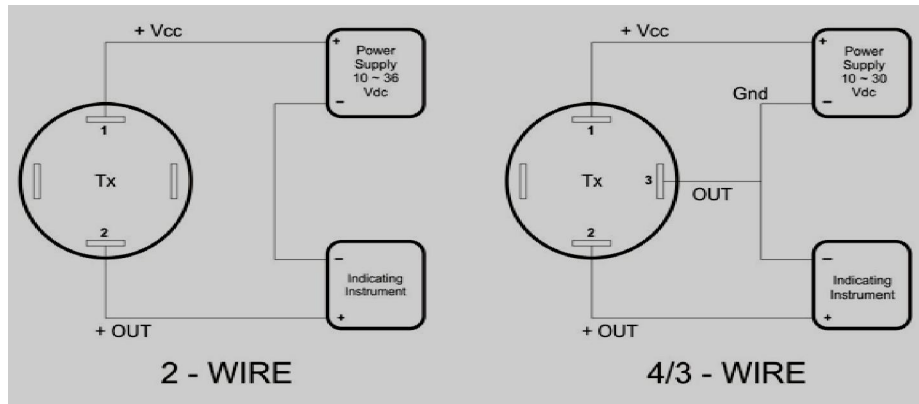
### 7.1 Zero and Span Adjustment Procedure

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Minor adjustment can be made to the output signal in case of any drift. The procedure for same is indicated as below:

1. On top of the Pressure Transmitter is the DIN Connector. Remove it by first removing the screw.
2. Four Terminals will be found on top of which will be a rubber washer. Remove the rubber washer gently.
3. This next step is crucial and to be done very gently. Holding the PT in the palm of the hand, press down the four terminals and revolve the thread, such that the terminals do not move at all. This is necessary as the wiring inside the casing might get twisted and the device will be damaged.
4. After the thread is removed, gently lift the terminals. Inside is a PCB, and on each side of the PCB are two Potentiometers (covered under white wax) using which the Zero and Span adjustments will be done.
5. The symbols Z & S are etched on the body of the PT casing just below the terminals. Z indicates the potentiometer for Zero adjustment and S for Span adjustment.
6. Two wires, one for power and one for input are connected and the output is taken.
7. If while applying a pressure of 0 bar, the output deviated from standard Zero Signal (4 mA in case the output is 4-20 mA). Then the Zero adjustment has to be done till the output is exactly 4 mA. The same way, the Span adjustment is done with the S potentiometer by applying the full span pressure and getting an output of exactly 20 mA.
8. After adjustment is done, replace the thread, washer and DIN connector in the reverse order.

## 7.2 Example for Usage



## 8. MAINTENANCE

### Troubleshooting

S. No.	SPECIFICATIONS	ELIMINATE
1	No output	<ul style="list-style-type: none"> <li>Check the wiring configuration.</li> <li>Check the input power supply.</li> </ul>
2	No variation in output	<ul style="list-style-type: none"> <li>Check for leakage at pressure port / point.</li> <li>Check the span set of Indicating Instrument.</li> </ul>
3	Pressure not holding at constant input pressure.	<ul style="list-style-type: none"> <li>Check for leakage pressure point.</li> <li>Check for the connections ensure they are properly tightened.</li> </ul>

## 9. SAFETY PRECAUTIONS

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1. The unit should be powered for 15 minutes before use.
2. Use in ambient temperature of 0-60°C.
3. Avoid vibrations, shock, excessive dust, corrosive chemical materials or gaseous environment.
4. Input wire should not be too long. If measured signal have to be far away from the unit, please use 2-core shielded cable.
5. Use this instrument in the scope of its specifications, otherwise fire or malfunctions may result.
6. Contact of the instrument, with organic solvents or oils should be avoided.
7. Do not turn on the power supply until all of the wiring is completed. Otherwise electrical shock, fire or malfunction may result.
8. Do not disassemble, repair or modify the instrument.
9. All connections should be tightened properly.
10. Power supply should be constant, should not be fluctuating.

## 10. WARRANTY

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ABUS provides the original purchaser of this instrument a one (1) year warranty against defects in material and workmanship under the following terms:

- The one year warranty begins on the day of shipment as stated on the sales bill.
- During the warranty period all costs of material and labor will be free of charge provided that the instrument does not show any evidence of misuse.
- For maintenance, return the instrument with a copy of the sales bill to our factory.
- All transportation and insurance costs should be covered by the owner of the equipment.
- Should any sign of electrical or mechanical shock, abuse, bad handling or misuse be evident the warranty voids and maintenance costs will be charged.

### REV01(070710)

- Ordering Code updated for better understanding.
- Output characteristics included for 4-20 mA O/P.
- Zero and Span Adjustment procedure added

### REV02(080710)

- Output Characteristics Graph A modified
- Dimension Diagram Changed
- Connection Table Changed

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