



SERIES: PTS360

- **0.075% ACCURACY**
- **UP TO 100:1 RANGEABILITY**
- **SELF-DIAGNOSIS MESSAGES**
- **HART® PROTOCOL COMMUNICATION**
- **LOCAL ZERO AND SPAN ADJUSTMENTS**
- **LONG-TERM STABILITY AND SERVICE LIFE**
- **AUTOMATIC TEMPERATURE COMPENSATION**
- **4-20 mA OUTPUT & DIGITAL COMMUNICATION**
- **INTRINSICALLY SAFE AND EXPLOSION PROOF**
- **EXCELLENT ALTERNATING LOAD RESISTANCE**
- **BRACKET FOR 2" PIPE OR SURFACE MOUNTING**
- **5-DIGIT & 4-DIGIT LCD'S INDICATORS WITH BACK LIGHT**
- **3 YEARS ACCURACY STABILITY AND 5 YEARS LIMITED WARRANTY**



INTRODUCTION

Utilizing the smart technology in manufacturing of pressure transmitters resulted in introduction of a new transmitter with a lot more features than the old analogue model.

When deciding about purchasing analogue or smart transmitters for pressure systems, you will find that smart transmitters have higher accuracy and precision along with faster dynamic response than the analogue ones. This will give the smart models an advantage to produce tighter process control.

Moreover, smart transmitters reduce commissioning by allowing fast identification, fast configuration, fast loop tuning and improved self diagnostics.

Smart transmitters can be configured and serviced in the field or from a remote location, such as the control room, along the 4-20 mA line. This ease of field service can be very important to quick field troubleshooting and improves maintenance issues.

Smart transmitters communicate through HART™ (Highway Addressable Remote Transducer) protocol, a platform ready for complete digital integration of your process system. The HART communication protocol is capable of performing simultaneous analogue and digital communications. HART protocol allows multi-drop instrument installation, operation over remote telephone communication lines and transmission of multiple variables when operating digitally.

SMART PTS360

Indumart PTS360 Series of Smart Pressure Transmitters are two-wire microprocessor-based instruments, which can receive a pressure lines, and indicate the value of the fluid pressure on its wide LCD display, and generate a 4-20 mA output signal directly or inversely proportional to the pressure of the input lines. Digital communication for remote calibration and monitoring is also provided, superimposing a digital signal on the same pair of wires that carries the 4-20 mA signal.

The PTS360 Series utilize the proven piezoresistive silicon technology. Deflections of the diaphragms under pressure are transferred by a manometric fluid to the sensor to produce very highly accurate measurements.

Thermal drift is automatically compensated using the signal from a thermistor integrated into the pressure sensor. The high accuracy sensor coupled with the temperature compensation feature give a measurement precision, which is more than adequate for even the most demanding applications.

Due to the materials and technology used in the construction of these pressure transmitters, these instruments are excellent in reliability, resistance to corrosion against the majority of chemically aggressive media and withstanding mechanical shocks.

The electronic circuit boards are ATEX intrinsically safe for use in hazardous areas and the enclosure of the instrument is ATEX explosion proof type II 1/2 Exia/d IIC T5/T6 or II 1/2 D Exia/D 20/tD A21 T85/T100.

These transmitters can be configured utilizing any of the three following methods: **(1)** locally configuring the instrument (zero, range, shift, characteristics and damping ratio) by means of pushbuttons on the transmitter, **(2)** by a PC with a dedicated interface and the Indumart smart configuration software (STS306); **(3)** with having the capability of digital communication, they may be configured using Indumart hand-held terminal with HART protocol or other hand-held communicators*. The data interchange with the transmitter enables the user to identify the transmitter, calibrate the sensor, read the immediate measured value of the input and the current output of the transmitter. User may alter the measurement unit and the range, introduce zero elevation, apply measurement inversion and set the damping time. Additionally the operator may force an output current with a set value.

* Some hand-held communicators make transmitter configuration possible in the range of basic commands.

SPECIFICATIONS

Accuracy	Better than 0.075% of calibrated range (used between 30% and 100% of the nominal range); 0.16% for range "A"
Measuring Span	Up to 100% of the nominal span (See the Range Tables)
Accuracy Stability	Accuracy will be held for the nominal range for a minimum of 3 years
Output Signals	4...20 mA, 2-wire
Damping	Digitally adjustable from 0 to 60 sec.
Response Time	0.5 second
Thermal Drift	Effect of environmental temp. change <±0.08% (FS) /10°C; ±0.25% (FS) max. for the whole compensation range except for models A, B & C. For models A, B & C: <±0.1% (FS) //10°C; ±0.4% (FS) max.
Temp. Comp. Range	-25...80°C, (-5...65°C for range "A")
Power Supply	13.5 to 28 VDC without backlit display. If not used in the explosive atmosphere, power supply can be 13.5 to 55 VDC. Add 3 Volts to the minimum voltage, when the backlit is ON $R=(V-16.5^*)/0.0236$ * without the backlit $(V-13.5^*)/0.0236$
Maximum Load	0.002% FS / V
Power Supply Effect	2 km when using CEV cable
Communic. Distant	II 1/2 Ex ia IIC T4/T5
Intrinsically Safe	II 1/2 G Exia/d IIC T5/T6; for ≤25 kPa
Explosion-proof	II 1/2 D Exia/D 20/tD A21 T85/T100 for pressure > 25 kPa
Indicator	2 LCD's and a 10-segment bargraph with bright back light; large display: 5-digit, 7.5 mm high small display: 4-digit, 5 mm high
Process Connection	½", M20x1.5, M30x2, 1" with or without flush diaphragm; see the order code
Wetted Parts	316L SS (std.), Hastelloy C (option)
Wetted Part Standard	NACE MR - 01 - 75 compatible
Housing Material	Aluminum alloy with polyurethane paint Stainless steel housing (option)
Conduit Entry Size	½" NPTF (std.); M20x1.5 conduit (option)
Fill Liquid	Silicon (std), inert fill (oxygen service)
Medium Temp.	-25...+120°C; non-freezing
Storage & Ambient	-25...+85°C; Exi version up to 80°C Exd version up to 75°C
IP Rating	IP66
EMC Immunity	EN 61000-4-3: 2007 + A1:2008

HINTS TO THE BUYERS

1) The first question when purchasing a pressure transmitter is the **TYPE**: Smart or Analogue? Smart transmitters have remarkable advantages over the analogue ones. These features have been mentioned in the introduction part of this brochure. Cost comparison is also important, since the initial cost of a smart transmitters is higher than that of an analogue model, but in future, you will save on installation, start-up, calibration, spare parts inventory and maintenance costs.

2) **ACCURACY** of the transmitter utilized in a process is often very important. Using piezoresistive silicon technology in PTS360 results in a very high accuracy instrument which keeps its calibration for years in harsh conditions.

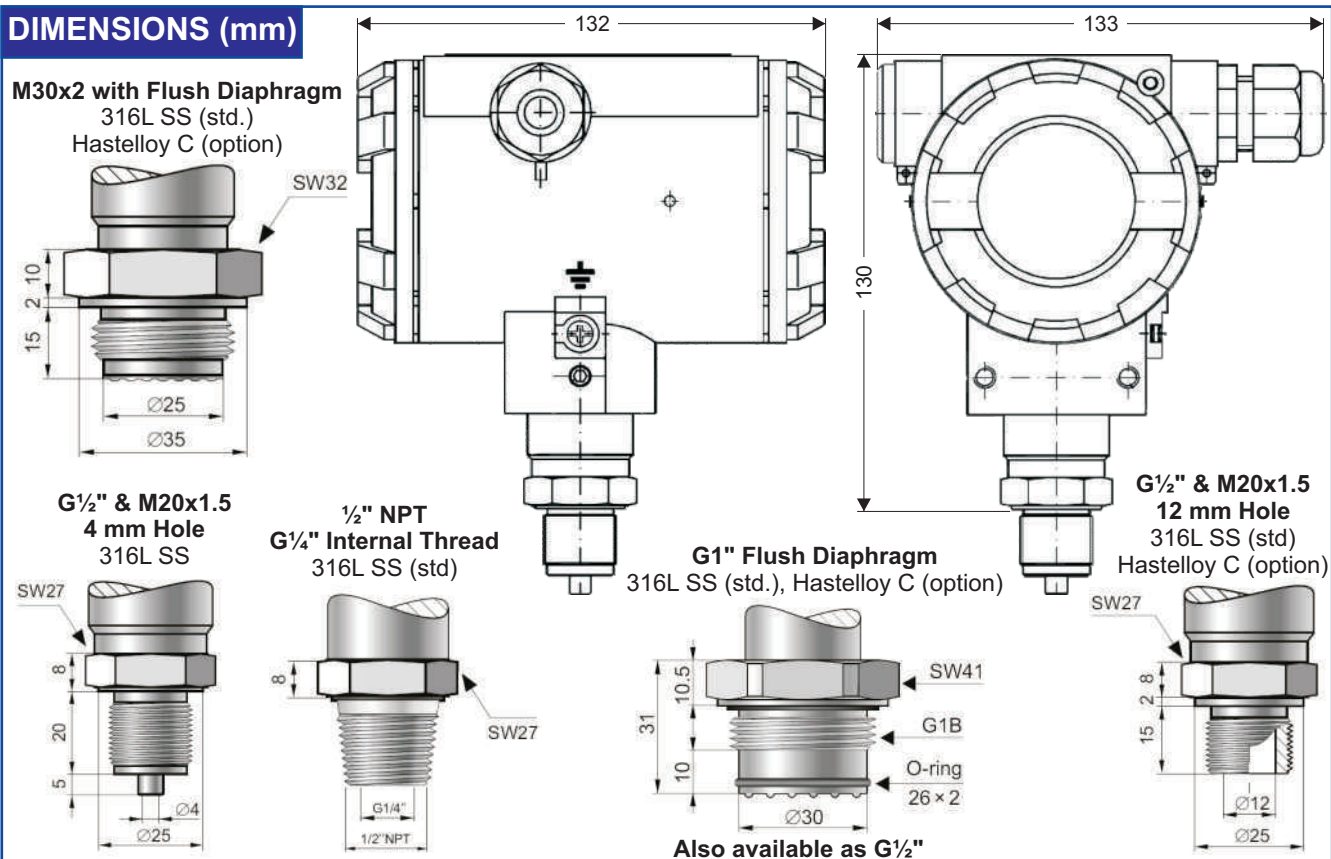
3) Wide **TURNDOWN RATIO** is an asset when you are concerned about keeping the number of spare transmitter in the stock. The *PTS360* series with wide rangeabilities will give the user a good flexibility for application of these transmitters and keeps the spare transmitters at its minimum. However, in order to receive the most accurate reading from any pressure transmitter available in the market, the user should choose the one with the closest nominal range to the application, and try not to use the turndown ratio in high extend. Increasing the turndown ratio decreases accuracy of the instrument.

4) Among the advantages of using **HART** protocol is the fact that different brands of smart transmitters can use the same hand-held terminal.

5) For those users who are reluctant to spend to purchase an Indumart HART communicator (HHC315 or HHC315X), they may order **series 306 programming software** separately to configure the *PTS360* transmitters. Cost of the *306 series* software is substantially lower than purchasing an Indumart HART communicator.

Range	Nominal Range	Min. Set Range	Rangeability	Over pressure Limit
A	-700...700 Pa	100 Pa	14:1	50 kPa
B	-1.5 ~ 7 kPa	500 Pa	17:1	50 kPa
C	-10...10 kPa	2 kPa	10:1	100 kPa
D	0...25 kPa	2.5 kPa	10:1	100 kPa
E	-50...50 kPa	5 kPa	20:1	200 kPa
F	0...100 kPa	5 kPa	20:1	200 kPa
G	0...200 kPa	10 kPa	20:1	400 kPa
H	-100...150 kPa	12 kPa	20:1	400 kPa
J	-100...600 kPa	30 kPa	23:1	1.4 MPa
K	0...700 kPa	7 kPa	100:1	1.4 MPa
L	0...2500 kPa	25 kPa	100:1	5 MPa
M	0...7 MPa	70 kPa	100:1	14 MPa
N	0...16 MPa	160 kPa	100:1	45 MPa
P	0...30 MPa	300 kPa	100:1	45 MPa
R	0...100 MPa	1 MPa	100:1	120 MPa

Range	Nominal Range	Min. Set Range	Rangeability	Over pressure Limit
V	0...130 kPa abs	5 kPa	26:1	200 kPa
W	0...700 kPa abs	7 kPa	100:1	1.4 MPa
Y	0...2500 kPa abs	25 kPa	100:1	5 MPa
Z	0...7 MPa abs	70 kPa	100:1	14 MPa

$$100 \text{ kPa} = 1 \text{ bar} = 14.504 \text{ psi} = 10.1972 \text{ mH}_2\text{O} = 401.47 \text{ in. H}_2\text{O}$$


ORDER CODE

SMART PRESSURE TRANSMITTERS

Model:

PTS360 -

NOMINAL RANGE

Please choose a range code from the Table

ELECTRICAL ENCLOSURE

Aluminum with polyurethane paint (std.)

Stainless Steel (option)

PROCESS CONNECTION

1/2" NPT (male) with G1/4" (female) Internal Thread

1/2" NPT (female) - M20x1.5 with Adaptor

G1/2" (male), Ø4 mm Opening

M20x1.5, Ø4 mm Opening

G1/2" (male), Ø12 mm Opening (not available for range "R")

M20x1.5, Ø12 mm Opening (not available for range "R")

G1/2" Flush Diaphragm (not available for ranges "A, B, N, P & R")

G1" Flush Diaphragm (not available for ranges "A, B, N, P & R")

M30x2 Flush Diaphragm (not available for ranges "A, B, N, P & R")

WETTED PARTS

316L Stainless Steel (std)

Hastelloy C 276 (not available for connection types 1, 2, 3 & 4)

CONDUIT ENTRY SIZE

1/2" NPTF (std)

M20x1.5 (packing gland)

VERSION

Standard

Oxygen services (only available for 3 & 4 connection type)

CERTIFICATE

None

Intrinsically Safe (EEX ia IIC T5)

Explosion Proof (EEX d ia IIC T5)

Marine Certificate - DNV

CALIBRATED RANGE

Same as the nominal Range (std)

Other - please specify the range

REMOTE SEALS

Not Required

Required*

* please supply the required specifications.

Extended Temperature Compensation Ranges are also available as option. Please enquire.

Mounting bracket for 2" pipe mounting is a standard feature.



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