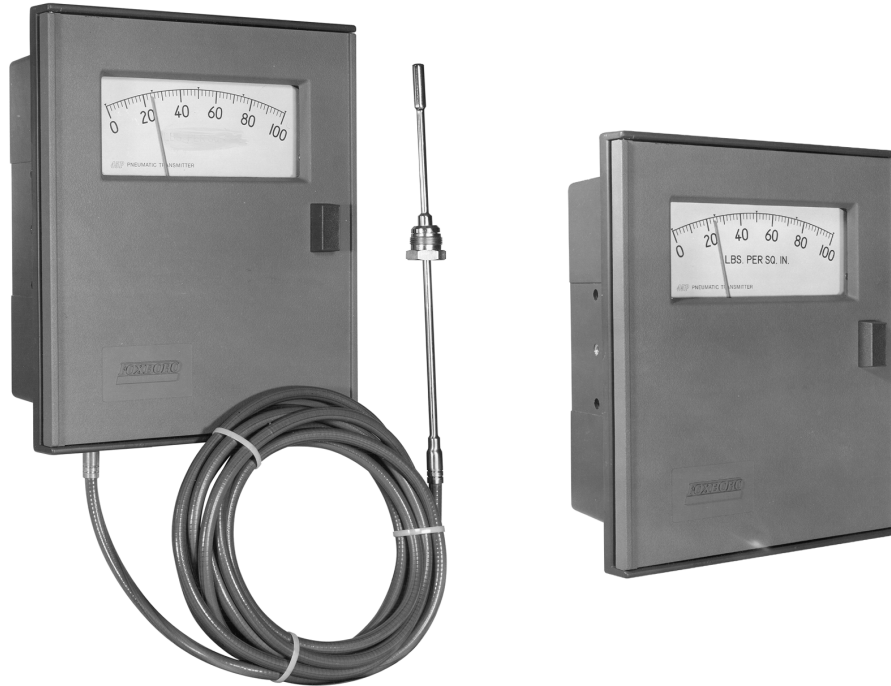


## **45P Pneumatic Indicating Transmitter**



*The 45P Pneumatic Indicating Transmitter measures vacuum, pressure, differential pressure, or temperature, depending on the measuring element selected. It converts the position of the measuring element to a proportional 20 to 100 kPa, 3 to 15 psi, 3 to 27, or 0.2 to 1.0 bar or kg/cm<sup>2</sup> pneumatic output signal.*

### **WIDE SELECTION OF MEASURING ELEMENTS**

Invensys offers the widest variety of element constructions and ranges in the industry. These instruments and elements have performed reliably, as evidenced by thousands of maintenance-free installations. This versatility and dependability enables the 45P Transmitters to be applied to virtually any process.

### **CONTINUOUS INDICATION**

Process-actuated pointer provides continuous indication, even upon loss of air supply.

### **ENVIRONMENTALLY PROTECTED INSTRUMENTS**

A field-proven, glass fiber-reinforced polyester case with a gasketed door provides excellent protection from corrosive atmospheres, weather, and flame. The glass-filled, polyurethane finished, phenylene oxide door is hinged for ease of access to the inside of the instrument. Enclosure is constructed for either indoor or outdoor use as defined by IEC IP53 and provides the environmental protection of NEMA Type 3.

### **CONTINUOUSLY AIR PURGED**

Internally mounted air relay maintains a constant purge inside the enclosure. This air purge protects the interior parts from damage due to dust, dirt, and fumes.

**EASY-TO-READ MEASUREMENT**

Bright fluorescent red pointer, and long horizontal sector scale with bold black markings on a white background, provide an easily readable scale, even at a distance.

**BLOW-OUT PROTECTION**

The weather resistant seal is obtained by prestressing the door. A low increase in internal pressure causes the door to deflect enough to break the seal. The opening increases rapidly with increasing internal pressure. This blow-out protection does not require any supplemental device.

**OPERATING CONDITIONS**

Influence	Reference Operating Conditions	Normal Operating Conditions Limits	Operative Limits
Ambient Temperature	25 ±2° C (77 ±3° F)	-40 and +80° C(a,b) (-40 and +180° F)	-40 and +80° C(a,b) (-40 and +180° F)
Relative Humidity	50 ±10%	5 and 95%	5 and 95%
Supply Pressure for Output of: 20 to 100 kPa 3 to 15 psi 3 to 27 psi 0.2 to 1.0 bar or kg/cm <sup>2</sup>	140 ±1.4 kPa 20 ±0.2 psi 30 ±0.3 psi 1.4 ±0.01 bar or kg/cm <sup>2</sup>	125 and 160 kPa 18 and 23 psi 29 and 30 psi 1.3 and 1.6 bar or kg/cm <sup>2</sup>	170 kPa 25 psi 36 psi 1.7 bar or kg/cm <sup>2</sup>
Supply Voltage(a)	120 ±1 V ac 220 ±2 V ac 240 ±2 V ac	Rated +10, -15%	Rated +10, -15%
Supply Frequency(a)	50 ±3.0 Hz or 60 ±3.0 Hz	47 and 63 Hz	47 and 63 Hz
Vibration(a)	-	0.25 mm (0.01 in) double amplitude from 5 to 25 Hz	0.25 mm (0.01 in) double amplitude from 5 to 25 Hz
Position	Upright (Vertical)	5 angular degrees from vertical in any direction.	No Limit

(a)Element not included.

(b)With electronic servo element, low temperature value is -30° C (-20° F).

## PERFORMANCE SPECIFICATION

(Accuracy and dead band are at reference operating conditions. Effects are at normal operating conditions.)  
(In percent of output span)

### **Accuracy**

Input to Pointer or Input to Output,  $\pm 0.5\%$  of span for qualified elements.

### **Dead Band**

0.1%

### **Ambient Temperature Effect**

An ambient temperature variation of  $55^{\circ}\text{C}$  ( $100^{\circ}\text{F}$ ) causes a zero error of 1.0% maximum, and a span error of 1.0% maximum. The error values are from input to output.

### **Supply Voltage Effect**

(With electronic servo element.) Maximum error is  $\pm 0.25\%$  for supply voltage change of +10% to -15%.

### **Supply Pressure Effect**

A supply pressure variation of 35 kPa (5 psi, 0.35 bar or  $\text{kg/cm}^2$ ) may cause an output error of 5% maximum.

### **Supply Frequency Effect**

(With electronic servo element.) Maximum error is less than 0.1% of span for a change within the specified limits.

### **Position Effect**

a 5 degree change of position in any direction from vertical causes an output error of 0.5% maximum.

**FUNCTIONAL SPECIFICATIONS**

**Elements**

Refer to Element Specifications section for the pressure, differential pressure, temperature, and electronic servo elements used in this transmitter.

**Output Signal**

20 to 100 kPa, 3 to 15 psi, 3 to 27 psi, or 0.2 to 1.0 bar or kg/cm<sup>2</sup>.

**Air Consumption**

Under normal operation 0.5 m<sup>3</sup>/h (0.3 cfm) at standard conditions.

**Air Delivery and Exhaust**

3.2 m<sup>3</sup>/h (1.9 cfm) at standard conditions.

**Scale and Pointer**

Sector scale, white background with black numbers. Effective scale length is 150 mm (6 in). Pointer has fluorescent red finish. Refer to Chart and Dial Catalog 600 for available ranges.

**Electronic Servo Element**

**POWER REQUIREMENTS**

10 VA maximum, 8.5 W rms maximum.

**BURNOUT INDICATION**

For thermocouples only. Upscale or downscale action on open-circuit condition. Field-selectable using a soldered jumper.

**SERVO MOTOR**

Direct drive torque motor with sufficient torque to drive all available attachments. Direction of angular rotation is field-selectable.

**RESISTANCE CONVERTER**

*Output*

Linear with equivalent temperature.

*Maximum Lead Wire Length*

2300 m (7500 ft) (1.00 mm<sup>2</sup> or 18 AWG conductor) (50Ω maximum per conductor).

*Lead Wire Effect*

Error per 30 m (100 ft) for a 1% mismatch in lead resistance. Assuming 0.64Ω per 30 m (100 ft) (1.00 mm<sup>2</sup> or 18 AWG).

**Span Error**

Less than ±0.1% of span.

**Zero Error**

±0.02° C (±0.04° F) can be compensated by

readjustment of linkages.

**MILLIVOLT OR MILLIAMPERE CONVERTER**

*Output*

Linear with millivolt or milliampere input.

**Instrument Mounting Configuration**

Refer to Table 1. An “X” in the table means that the specified mounting is available. A “–” means that mounting is not available.

**Table 1. Mounting Configuration**

Element Code	Mounting Code (–F)		Mounting Code (–P)	
	Pipe(a)	Yoke(b)	Panel(c)	Surface(c)
DE-□	–	X	X	–
PA-C□	X	–	X	X
PA-MA	X	–	X	X
PB-A□	X	–	X	X
PB-B□	X	–	X	X
PB-C□	X	–	X	X
PB-□□	X	–	X	X
PB-GA	X	–	X	–
TA-□□	X	–	X	X
E□□□□	X	X	X	X

(a)Bracket provided for mounting to DN 50 or 2 in vertical pipe.

(b)Socket, attached to Type 37 Element, allows instrument to be mounted to DN 50 or 2 in pipe stub.

(c)Brackets provided for flush panel mounting is 229 x 286 mm (9.0 x 11.3 in). For horizontal multiple panel mounting, a minimum distance of 267 mm (10.5 in) from center line to center line is required.

**Temperature Sensors (for use with Electronic Servo Element)**

A platinum RTD (DIN 43760 calibration) is used with the resistance converter. Base metal thermocouple Types T, J, E, and K and noble metal thermocouple Types R, S, and B, and other millivolt signal sources are used with the millivolt converter. Refer to Element Specifications section for table providing sensor range and span limits (includes nonstandard ranges). Refer to Table 6 Measurement Range Code for standard ranges.

## PHYSICAL SPECIFICATIONS

### Flammability Rating

#### CASE

Meets Type V-I and V-O of UL94 (Underwriters Laboratory Incorporated Standard for Test Flammability of Plastic Materials, UL94.)

#### DOOR

Meets Type V-O of UL94

### Materials of Construction

#### CASE

Glass fiber-reinforced gray polyester molding.

#### DOOR

Hinged, glass fiber-reinforced phenylene oxide with blue polyurethane finish ultraviolet-resistant polycarbonate window.

### Connections

Connections for pressure and temperature elements are in the bottom of the case. Connections for differential pressure are in the back of the case on the Type 37 Element. Electrical connections (electronic servo element) are located on the upper right side of case.

### Environmental Protection

The enclosure is weatherproof and dusttight as defined by IEC, IP53 and provides the environmental protection of NEMA Type 3.

### Data Plate

Aluminum data plate fastened to inside of door with pressure-sensitive adhesive. Includes space for customer tag data up to a maximum of 72 characters or spaces. For additional space, see optional Customer Tag.

### Approximate Mass

4.5 kg (10 lb) less mounting brackets and elements. With spiral pressure element, 4.7 kg (10.3 lb). With Type 37 Element, 23 kg (51 lb). With electronic servo element, 5.7 kg (12.5 lb).

**ELEMENT SPECIFICATIONS**

**Table 2. Differential Pressure Elements**

Element Code	Element Type	Spans Available Between			Maximum Operating Pressure		
		kPa $\Delta P$	inH <sub>2</sub> O $\Delta P$	mbar $\Delta P$	MPa	psi	bar or kg/cm <sup>2</sup>
DE-A(a,b) DE-B(a,b)	Type 37 Diaphragm	5 and 50	20 and 200	50 and 500	14	2000	140

(a)DE-A body and cover are cadmium-plated carbon steel; DE-B body and cover are AISI Type 316 stainless (316 ss).

(b)These are zero-based elements. The lower range value is zero and the upper range value is as shown (100% of span). Zero differential pressure can be elevated (compound range) so that lower range value is as low as -50% of span; or suppressed so that upper range value is as high as either 150% of span or 50 kPa (200 inH<sub>2</sub>O or 500 mbar)  $\Delta P$ , whichever is less.

**Table 3. Temperature Elements (Refer to PSS 3-3A1 A for detailed specifications)**

Element Code	Thermal System Class	Range Limits(a)		Spans Available Between	
		°C	°F	°C	°F
TA-1A	IA	-130 and +315	-200 and +600	25 and 330	40 and 600
TA-2A and TA-2B	IIA and IIB	-45 and +315	-50 and +600	40 and 215(b)	70 and 400(b)
TA-3B	IIIB	-195 and +760	-320 and +1400	70 and 550	120 and 1000

(a)Does not include temperate overrange protection values.

(b)For Class II Thermal Systems, span limits vary with operating temperature.

**Table 4. Pressure Elements (For a Torque Factor Rating of 30) (Refer to PSS 3-2A1 A for detailed specifications.)**

Element Code	Element Type	Element Material	Spans Available Between(a)	
			kPa or MPa(b)	psi(c)
PA-CA	Absolute Bellows	316 ss(d)	17 and 240 kPa abs	2.5 and 35 psia
PA-CC		Bronze	13 and 270 kPa abs	1.9 and 39 psia
PA-MA	Absolute Double Spiral	316 ss	140 and 700 kPa abs	20 and 100 psia
PB-AA	Helical	316 ss	1.4 and 40 MPa	200 and 6000 psi
PB-AM(e)		K-Monel	1.7 and 14 MPa	250 and 2000 psi
PB-BA	Spiral	316 ss	82 and 1400 kPa 82 and 100 kPa vac	12 and 200 psi 12 and 15 psi vac
PB-M(e)	Bellows	K-Monel	140 and 1400 kPa	20 and 200 psi
PB-CA(f)		316 ss	35 and 200 kPa	4.5 and 29 psi
PB-CC(f)		Brass	30 and 180 kPa 34 and 100 kPa vac	4 and 26 psi 4.9 and 15 psi vac
PB-DF	Diaphragm 50 mm (2 in)	Cu-Ni-Sn Alloy	6 and 70 kPa 6 and 35 kPa vac	0.9 and 10 psi 0.9 and 5 psi vac
PB-PF	Diaphragm 75 mm (3 in)	Cu-Ni-Sn Alloy	2 and 10 kPa 2 and 6 kPa vac	0.3 and 1.5 psi 0.3 and 0.9 psi vac
PB-GA(g)	Heavy-Duty Helical	316 ss	0.5 and 200 MPa	75 and 30000 psi

- (a) All elements have zero-based ranges. Therefore, the lower range value is zero, and the minimum and maximum upper range values are as listed.
- (b) To convert kPa to bar or kg/cm<sup>2</sup>, multiply kPa value by 0.01; to convert MPa to bar or kg/cm<sup>2</sup>, multiply MPa value by 10.
- (c) To convert psi to inH<sub>2</sub>O, multiply psi value by 2.7.73. To convert psi to inHg, multiply psi value by 2.036.
- (d) AISI Type 316 stainless steel.
- (e) K-Monel elements comply with NACE Standard MR-01-75.
- (f) Replacement element uncalibrated.
- (g) Element extends through back of case. Replacement element not recommended. Return instrument to Invensys.

**Table 5. Electronic Servo Element(a)**

Element Code	Sensor or Input Signal	Measurement	Range Limits	Span Limits
E□□Q□□□□	Platinum RTD	Temperature	-200 and +650° (-325 and +1200° F)	20 and 555° C (40 and 1000° F)
E□□X□□□□	Platinum RTD	Temperature Difference	-200 and +650° (-325 and +1200° F)	15 and 165° C (25 and 300° F)
E□□□□□□□	Thermocouple	Temperature or Temperature Difference	-15 and +100 mV(b)	5 and 100 mV(b)
E□□M□□□□	Millivolt Input	Temperature or Temperature Difference	-15 and +100 mV	5 and 100 mV
E□□A□□□□	Milliampere Input	Temperature or Temperature Difference	4 and 20 mA or 10 and 50 mA	16 or 40 mA

(a)Refer to Table 6 Measurement Range Code Table for standard ranges offered.

(b)Range and span limits for thermocouples are shown in millivolts only, rather than ° C and ° F. This simplifies listing thermocouple temperature range and span limits which vary with wire size, thermocouple type, and thermocouple construction.



## OPTIONAL FEATURES

### Air Supply Sets

Fixed or adjustable combination pressure regulator and filter. Available with 50 mm (2 in) pressure gauge having a 0 to 200 kPa or 0 to 30 psi scale. Gauge is mounted and piped to transmitter. Fixed pressure regulator also available without gauge. Maximum output is 1 MPa (150 psig). Auxiliary Specification (AS) Reference is IAS.

### Reverse Output

Output signal of 100 to 20 kPa, 15 to 3 psi, or 1.0 to 0.2 bar or kg/cm<sup>2</sup>, AS Reference TR 15-3.

### Customer Tag

A stainless steel tag supplied with instrument for customer tag data that doesn't fit on data label. Two tags are available. A tag fastened with drive screws with a maximum of 4 lines with 11 characters or spaces per line. AS Reference is SCT. A tag wired to instrument with a maximum of 10 lines with 40 characters or spaces per line. AS Reference is MTS.

### Derivative Unit

For temperature transmitters. This unit introduces a derivative term into the transmitter output, and is used to improve system performance when transmission distances are long. AS Reference is DU.

### External Phenolic Nameplate

Laminated plastic nameplate 38 x 76 mm (1.5 x 3 in) with white characters on a black background. Maximum of 5 lines with 28 characters or spaces 3 mm (0.13 in) high, or 24 characters or spaces 4 mm (0.16 in) high, per line. AS Reference is N/P.

### Tamperproof Door Knob

Door knob is replaced by one requiring a specially shaped key for operation. Used to prevent unauthorized access to the instrument settings. AS Reference is TPK.

### Element Oxygen Service Preparation

Elements are cleaned, assembled, calibrated, and packaged in a Class 10000 Clean Room which meets both mandatory and nonmandatory requirements established by U.S.A. Federal Standard 209a.

#### TYPE 37 ELEMENT

For Type 37 Element with 316 ss body and cover only. AS Reference is OS-FC.

#### PRESSURE ELEMENTS

Available for 316 ss as spiral and helical elements only. AS Reference is OS-W.

### Other Element Options and Accessories

Contact Invensys.

#### THERMAL SYSTEMS

Accessories offered are flanges for mounting sensor in driers, covers, and ducts where a pressure-tight connection is not required.

#### WELLS

Used with thermal systems. Plain or lagged, threaded or flanged, solid, welded, or tapered. Standard material is 304 or 316 ss. Numerous material options, sheathing, and coatings available.

#### PRESSURE ELEMENTS

Options include overrange and underrange protection, expanded scale, nuclear service cleaning, and pressure seals.

#### TYPE 37 ELEMENT

Accessories include manifold piping sets, condensing chambers for steam service, seal chambers, vapor traps, flange valve assemblies, flexible connectors, and shut-off valves.

#### ELECTRONIC SERVO ELEMENT

Voltage divider module for 45P with voltage input. AS Reference is VDI.

#### 30 V DC POWER SUPPLY

For 4 to 20 mA electronic servo element, provides loop power to unpowered devices such as pressure transmitters for d/p Cell transmitters. AS Reference is LPS.

#### POWER FAILURE DETECTION

Solenoid-operated mechanism for electronic servo element powered by 120 V ac. Drives pointer to either 0 to 100% of scale when electrical power is interrupted. AS Reference is PFD.

Table 6. Measurement Range Code Table – Standard (Consult Invensys for Ranges not shown)

Range Measurement		Range Units – Available with Measurement/Sensor Type Code															
Code	Range	mV	mA	° C							° F						
01	0 to 5	M															
02	0 to 10	M															
03	0 to 20	M															
04	0 to 30									Q							
05	0 to 50	M								Q					Q		
06	-50 to +50									Q					Q		
07	-100 to +50				J*												
08	0 to 75	M								Q							
09	-20 to +80				J												
10	0 to 100	M			J					Q					Q		
11	-100 to 0									Q							
12	-200 to +100				J*	E											
13	-100 to +100					E					J*	E					
14	50 to 100									Q							
15	-20 to +120														Q		
16	-																
17	-25 to +125			T													
18	0 to 150				J					Q					Q		
19	-50 to +150				J*	E											
20	50 to 150														Q		
21	4 to 20		A														
22	10 to 50		A														
23	0 to 200			T	J		K			Q	J				Q		
24	-100 to +200					E					J*	E					
25	100 to 200									Q					Q		
26	0 to 250			T	J					Q	T		E		Q		
27	-50 to +250			T							J*						
28	50 to 250										J				Q		
29	0 to 300				J		K			Q	T	J			Q		
30	-350 to +300										T*		E*				
31	100 to 300				J					Q	J				Q		
32	0 to 400				J		K			Q	T	J		K	Q		
33	100 to 400													K	Q		
34	200 to 400				J					Q					Q		
35	0 to 500				J		K			Q	T	J		K	Q		
36	-150 to +500										T		E				

Table 6. Measurement Range Code Table – Standard (Consult Invensys for Ranges not shown)

Range Measurement		Range Units – Available with Measurement/Sensor Type Code																	
Code	Range	mV	mA	°C							°F								
37	200 to 500							K											Q
38	300 to 500				J														
39	0 to 600							K				T	J						Q
40	–																		
41	200 to 600												J						
42	300 to 600				J							T							
43	0 to 700				J														Q
44	200 to 700				J								J						
45	0 to 750				J			K									K		
46	0 to 800								R				J						Q
47	100 to 800												J			K			
48	300 to 800							K					J			K			
49	0 to 900												J						Q
50	500 to 900							K					J						
51	700 to 900							K					J						
52	0 to 1000							K		S			J			K			Q
53	500 to 1000									S			J			K			
54	0 to 1200												J			K			
55	200 to 1200												J			K			
56	400 to 1200												J			K			
57	0 to 1300								R										
58	–																		
59	800 to 1400								R										
60	900 to 1400									S									
61	0 to 1500								R*				J*						
62	500 to 1500												J*			K			
63	0 to 1600															K			
64	1100 to 1600									S*			J*						
65	1200 to 1600															K			
66	500 to 1700								R*							K			
67	0 to 1800								R*				J*			K			
68	0 to 2000															K			
69	1000 to 2000												J*					R	
70	1200 to 2000																	R	
71	0 to 2400															K*			
72	1200 to 2400															K*			
73	0 to 2500															K*			

Table 6. Measurement Range Code Table – Standard (Consult Invensys for Ranges not shown)

Range Measurement		Range Units – Available with Measurement/Sensor Type Code															
Code	Range	mV	mA	°C						°F							
74	1000 to 2500													K*	R		
75	1500 to 2500													K*		S	
76	1700 to 2500															S	
XX Nonstandard (including temperature difference)																	

\* These ranges exceed the I.S.A. recommended temperature limits for protected wire type thermocouples for the largest wire sizes shown. Consult ANSI publication MC 96.1, ASTM SPECIAL TECHNICAL PUBLICATION (STP) 470A, or SPECIFIC vendor thermocouple application data for guidance as to the maximum working temperature of the thermocouple assembly selected.

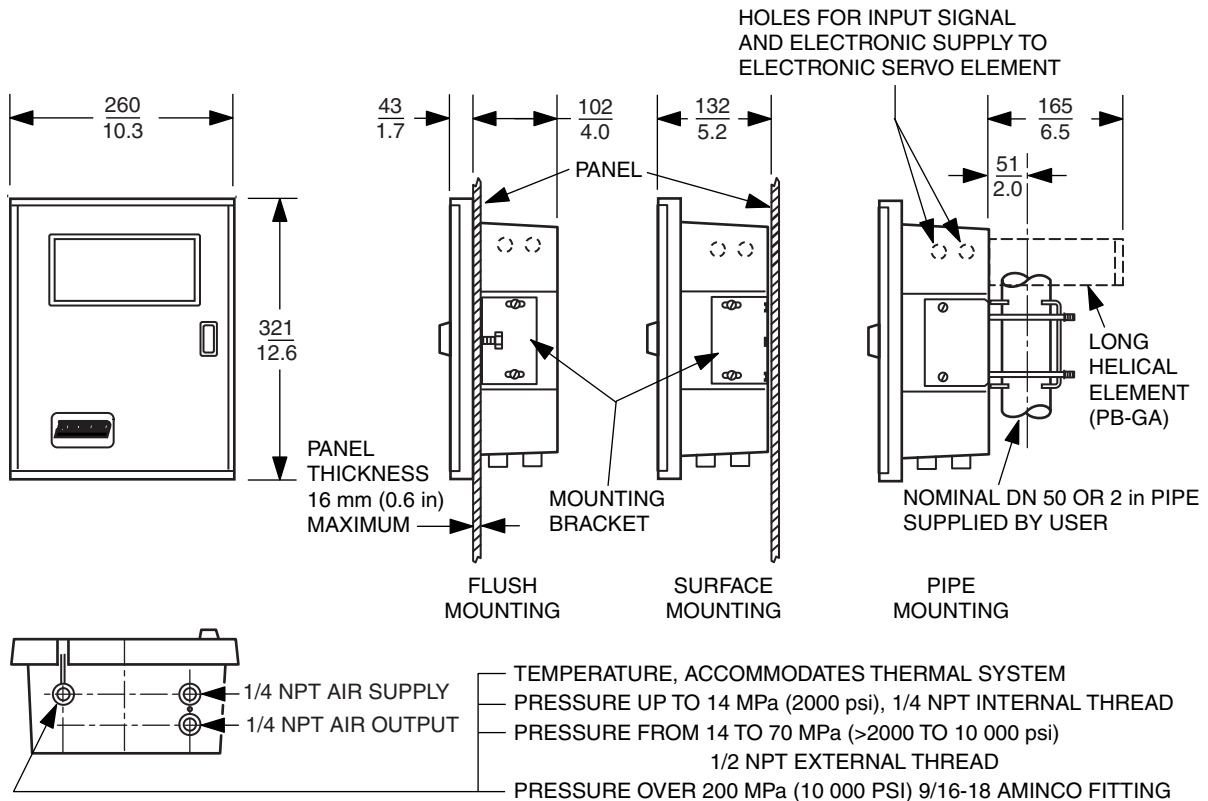
**MODEL CODE**

<u>Description</u>	<u>Model</u>
Pneumatic Indicating Transmitter	45P
<u>Mounting</u>	
Field Mounting on a DN 50 or 2 in pipe, or Yoke Mounting	-F
Flush Panel or Surface Mounting. Refer to Table 1. Mounting Configuration Table	-P
<u>Output Signal</u>	
3 to 15 psi	2
3 to 27 psi	3
0.2 to 1.0 kg/cm <sup>2</sup>	4
20 to 100 kPa	5
0.2 to 1.0 bar	6
<u>Measuring Element</u>	
Barton 224	/DD-B,F,D
Differential Pressure, Type 37	/DE-A,B
Absolute Pressure, Bellows	/PA-CA,CC
Absolute Pressure, Double Spiral	/PA-MA
Pressure, Helical	/PB-AA,AM
Pressure, Spiral	/PB-BA,BM
Pressure, Bellows	/PB-CA,CC
Pressure, Diaphragm	/PB-DF,PF
Stainless Long Helical	/PB-GA
Temperature, Thermal System	/TA-1A,2A,2B,3B
Electronic Servo (Remainder of code below applies to electronic servo element only)	/E
<u>Power Supply (For /E only)</u>	
120 V ac	S
220 V ac	N
240 V ac	P
<u>Measurement – Sensor Type (For /E only)</u>	
IEC/ISA Type T (Cu-CuNi) Thermocouple	T
DIN 43710-77 (Cu-CuNi) Thermocouple	C
IEC/ISA Type J (Fe-CuNi) Thermocouple	J
DIN 43710-77 (Fe-CuNi) Thermocouple	D
IEC/ISA Type E (NiCr-CuNi) Thermocouple	E
IEC/ISA Type K (NiCr-NiAl) Thermocouple (DN 43710-77)	K
IEC/ISA Type R (Pt13Rh-Pt) Thermocouple	R
IEC/ISA Type S (Pt10Rh-Pt) Thermocouple (DN 43710-77)	S
IEC/ISA Type B (Pt30Rh-PtRh) Thermocouple	B
mV dc or V dc	M
mA dc	A
Platinum RTD, 100-ohm Industrial equivalent to DIN prior to 1983 IEC-B Resistance	Q
Nonstandard (including Temperature Difference)	X
<u>Measurement Range (For /E only)</u>	
Select from Table 6 Measurement Range Code Table	XX
<u>Range Units (For /E only)</u>	
Degree Celsius	C
Degree Fahrenheit	F
mV dc or V dc	M
Milliamperes	A
<u>Burnout Feature (thermocouples only) (For /E only)</u>	
Upscale action (not available with RTD)	U
Downscale action (not available with RTD)	D
None	N
Upscale action – Reverse range (not available with RTD)	R
Downscale action – Reverse range (not available with RTD)	S
None – Reverse range	T
Example: 45P-P2/EST26FD	

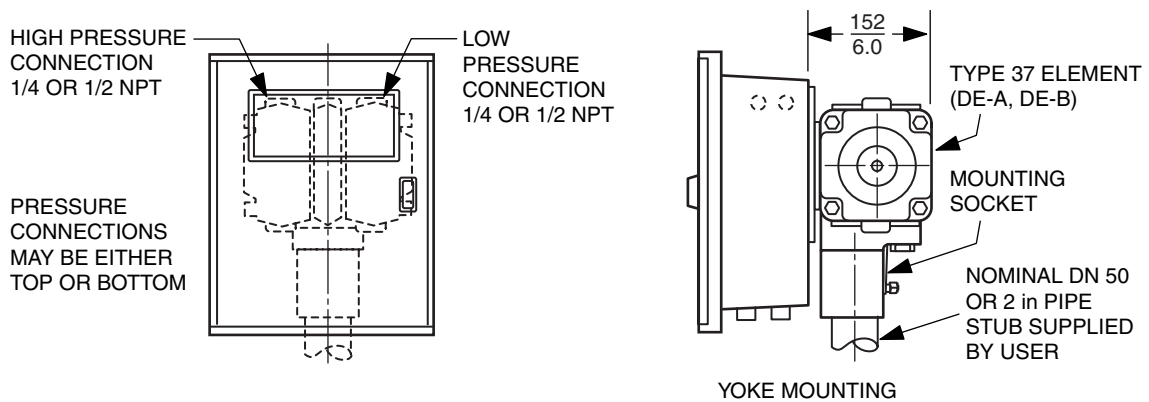
**DIMENSIONS - NOMINAL**

$\frac{\text{mm}}{\text{in}}$

**TRANSMITTER - FLUSH-, SURFACE-, AND PIPE-MOUNTED**



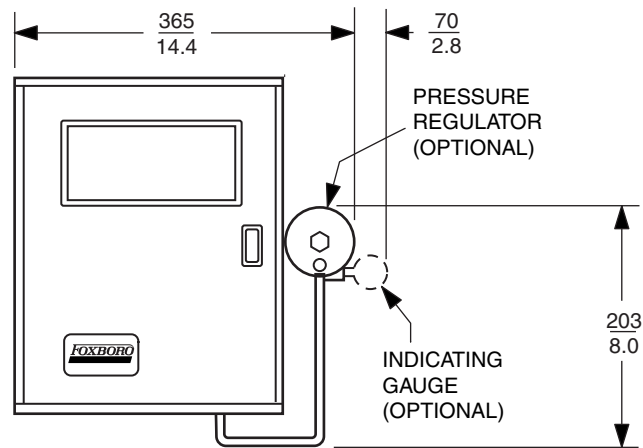
**TRANSMITTER WITH TYPE 37 ELEMENT**



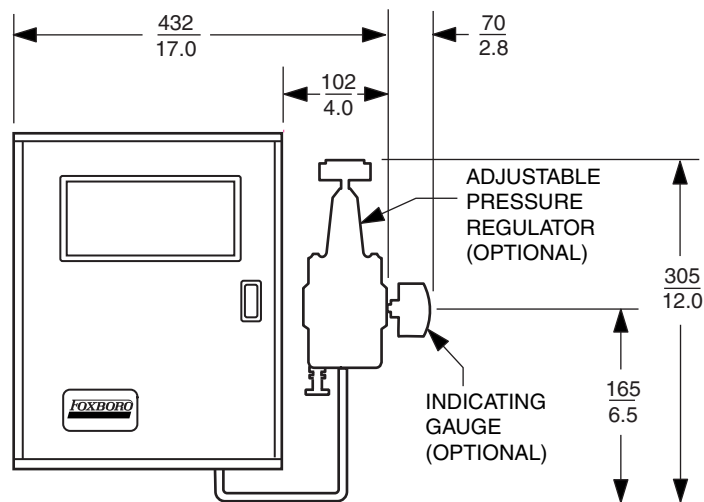
DIMENSION – NOMINAL

$\frac{\text{mm}}{\text{in}}$

TRANSMITTER MOUNTING WITH FIXED PRESSURE REGULATOR



TRANSMITTER MOUNTING WITH ADJUSTABLE PRESSURE REGULATOR



## ORDERING INSTRUCTIONS

1. Model Number
2. Specify thermal system as follows:
  - Class Code
  - Connection Tubing Code
  - Sensor Code
  - Normal Working Temperature Range
  - Ambient Temperature Range at Instrument Case and Ambient Temperature Range along Connecting Tubing
  - Sensor Distance above or Below Case (for Class II Systems only)
  - Anticipated “R” Dimension (Immersion Length)
  - Anticipated “R” Dimension (Insertion Length)
3. Scale Range and Calibration
4. Measurement Range
5. Optional Features
6. Accessories
7. Tag and Application

Invensys Operations Management  
5601 Granite Parkway Suite 1000  
Plano, TX 75024  
United States of America  
<http://iom.invensys.com>

Global Customer Support  
Inside U.S.: 1-866-746-6477  
Outside U.S.: 1-508-549-2424 or contact  
your local Invensys representative.  
Email: [iom.support@invensys.com](mailto:iom.support@invensys.com)  
Website: <http://support.iom.invensys.com>

Invensys, Foxboro, and d/p Cell are trademarks of  
Invensys plc, its subsidiaries, and affiliates.  
All other brand names may be trademarks of their  
respective owners.

Copyright 1983-2010 Invensys Systems, Inc.  
All rights reserved

MB 010

1210