

GE Sensing

Description

The Series T family of differential pressure transmitters measure low pressures and feature low power consumption and a variety of analog signal outputs. A wide selection of standard pressure ranges and electrical ratings is available.

These transmitters feature: no moving parts to wear out, reliable long term stability, and are virtually position insensitive.

The Series T transmitters are an excellent choice for many HVAC, process and automation monitoring requirements. These transmitters monitor: filter differential pressures, fan static pressures, clean room

pressures, variable air volume systems and velocity pressures. They have been used for bubbler level systems, leak detection and in medical and analytical instruments.

The transmitters are housed in a flame retardant, glass-reinforced polyphenylene oxide (NORYL™) case. Electrical connections are made by means of a 3/8 in terminal strip with #6 screws.

The Series T includes four models: Model T10, Model T20, Model T30 and Model T40. These four models incorporate a variety of power and signal options.

The span or zero adjustment is performed with a 20-turn potentiometer for fine resolution.

Series T General Eastern Differential Pressure Transmitters

Series T is a General Eastern product. General Eastern has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



GE Sensing

T10	Three-wire DC Voltage In DC Voltage Out
T20	Four-wire 24, 120, or 240 VAC In DC Voltage Out
T30	Two-wire DC Voltage In 4 to 20 mA Out
T40	Four-wire 24, 120, 240 VAC In 4 to 20 mA Out

Operation

The pressure sensing element is a differential capacitance cell for pressure measurements ranging from 0.1 in to 5 in (2.54 mm to 127 mm) of water (25 Pa to 1.0 kPa), or piezoresistive (silicon) sensors for pressure measurements ranging from 5 in (127 mm) of water to 30 psi (2.06 bar) (1.0 kPa to 200 kPa).

The capacitance cell is capable of sensing very low pressures, negative or differential. A very light weight, responsive diaphragm within the cell deflects a small amount when a small pressure is applied. This deflection results in a change in capacitance which is then detected and amplified electronically.

The piezoresistive sensor is a solid state device designed in a Wheatstone bridge configuration. When pressure is applied to the device the resistance of the bridge changes by a small amount. This resistance change is converted to a voltage and amplified.

Series T Specifications

General

- Measures differential, gage pressure, or vacuum
- Suitable for air or inert gases
- Maximum safe momentary overpressure: see reference table A

Performance

Accuracy

± 1% of span (including non-linearity and hysteresis)

Calibration

(Traceable to NIST)

Environmental

Operating Temperature Range

32°F to 115°F (0°C to 45°C)

Storage Temperature

-20°F to 160°F (-30°C to 70°C)

Effect of Temperature

- on zero: ±0.05%/°C
- on span: ±0.02%/°C

Operating Humidity Range

10% to 90% RH
non-condensing

Shock Resistance

10 G (11 ms)

Vibration Resistance

5 G to 50 Hz

Electrical Connections

Connections

External 3/8 in terminal strip with #6 screws

Physical

Pressure Port Connections

3/16 in diameter suitable for:

- 1/8 in ID Tygon™ or polyurethane tubing
0.11 in to 0.15 in (3 mm to 4 mm)
- 1/4 in OD polyethylene tubing (6 mm)

Integral filters at both ports

Dimensions (W x L x H)

3.00 in x 5.15 in x 1.40 in
(76 mm x 131 mm x 36 mm)

Material

Flame retardant, glass-reinforced polyphenylene oxide (NORYL) case

Weight

0.42 lbs (190 g) maximum

Model T 10 Specifications

DC Power Input/Voltage Output

Diagram shows area of detail.
Please see inset diagrams for wiring.

Electrical

Supply Voltage

11 to 32 VDC (14.5 to 32 VDC for 10 Volts output)
Protected against reversal of polarity

Supply Current

10 mA

Output

- 0 to 5 Volts, linear
- 0 to 10 Volts, linear
- Sink or source 3.5 mA
- Protected against short circuit

Ordering Information

Order Number (See Table below and Reference Table A on page 8)

T10 - PPP - V - O

Example: T10 - 01E - 5 - A

PPP = Pressure Range	V = Voltage Output	O = Offset (See Note)
See Reference Table A	5 = 0 to 5 Volts X = 0 to 10 Volts	- = No offset A = 1/4 offset B = 1/2 offset

If the measured differential pressure is expected to go from positive to negative, a transmitter with offset (elevated zero) should be ordered.

Three options are available:

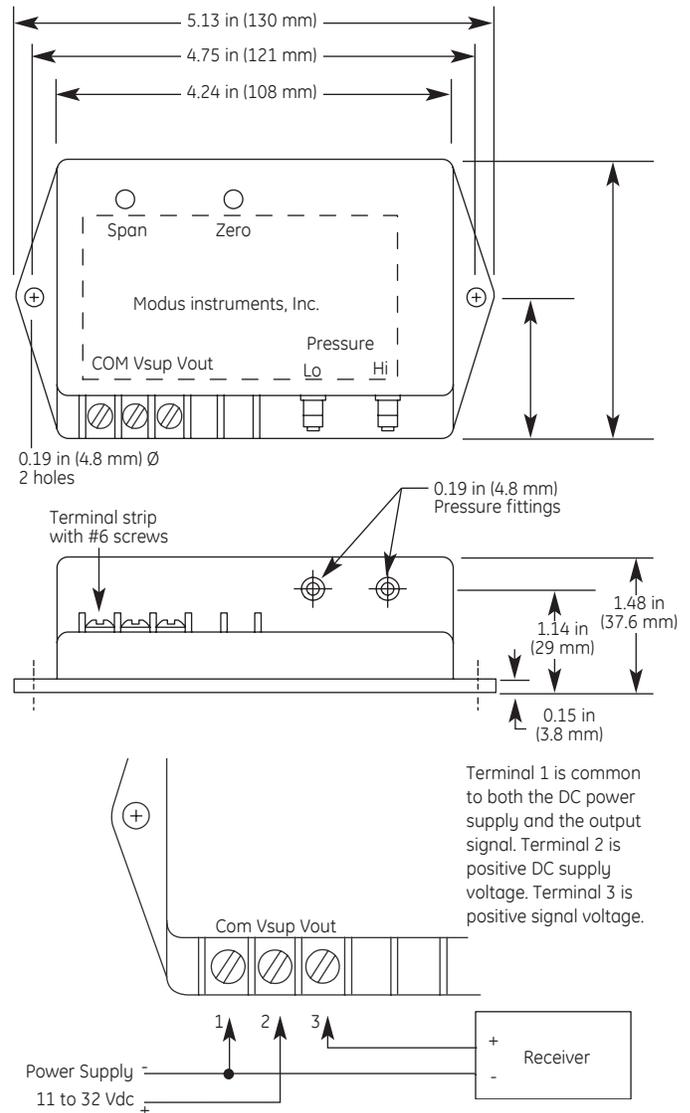
"-" **No offset.** At zero differential pressure the output signal is:

4 mA (4 to 20 mA range)

0 V (0 to 5 V range)

0 V (0 to 10 V range)

Pressure excursion: 0% to 100% of Range, see Table A



Terminal 1 is common to both the DC power supply and the output signal. Terminal 2 is positive DC supply voltage. Terminal 3 is positive signal voltage.

"A" 1/4 span offset. At zero differential pressure the output signal is:

8 mA (4 to 20 mA range)

1.25 V (0 to 5 V range)

2.5 V (0 to 10 V range)

Pressure excursion: -33% to 100% of Range, see Table A

"B" 1/2 span offset. At zero differential pressure the output signal is:

12 mA (4 to 20 mA range)

2.5 V (0 to 5 V range)

5 V (0 to 10 V range)

Pressure excursion: -100% to 100% of Range see Table A

To order: determine the positive pressure range; from Table A find the corresponding pressure code, then add the required offset (none, A, or B).

For example, T30 05E A is a transmitter with a maximum range of 1 in (25.40 mm) of H₂O at 20 mA and a minimum range of -0.33 in of H₂O at 4 mA.

Model T 20 Specifications

AC Power Input/Voltage Output

Electrical

Transformer isolation between power supply and output is 2500 Vrms

Output voltage

- 0 to 5 Volts
- 0 to 10 Volts
- Sink or source 3.5 mA
- Protected against short circuit

Ordering Information

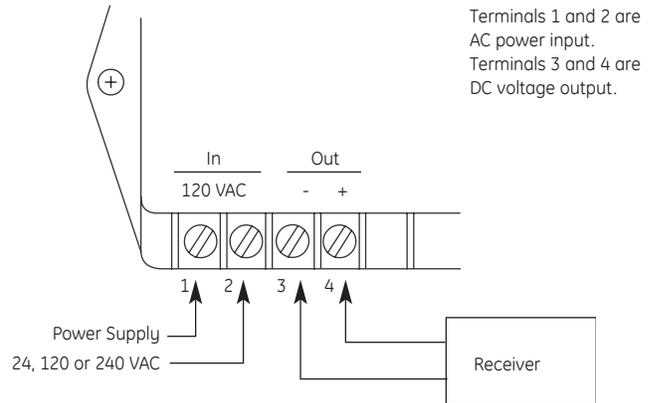
Order Number (See Table below and Reference Table A on page 8)

T20 - PPP - S - V - O

Example: T20 - 07P - C - X - B

PPP = Pressure Range	S = Supply Voltage	V = Voltage Output	O = Offset (See Note)
See Table Reference A	C = 24 VAC	5 = 0 to 5 Volts	- = No offset
	D = 120 VAC	X = 0 to 10 Volts	A = 1/4 offset
	E = 240 VAC		B = 1/2 offset

If the measured differential pressure is expected to go from positive to negative, a transmitter with offset (elevated zero) should be ordered.
Three options are available:



"-" No offset. At zero differential pressure the output signal is:

4 mA (4 to 20 mA range)

0 V (0 to 5 V range)

0 V (0 to 10 V range)

Pressure excursion: 0% to 100% of Range, see Table A

"A" 1/4 span offset. At zero differential pressure the output signal is:

8 mA (4 to 20 mA range)

1.25 V (0 to 5 V range)

2.5 V (0 to 10 V range)

Pressure excursion: -33% to 100% of Range, see Table A

"B" 1/2 span offset. At zero differential pressure the output signal is:

12 mA (4 to 20 mA range)

2.5 V (0 to 5 V range)

5 V (0 to 10 V range)

Pressure excursion: -100% to 100% of Range see Table A

To order: determine the positive pressure range; from Table A find the corresponding pressure code, then add the required offset (none, A, or B).

For example, T30 05E A is a transmitter with a maximum range of 1 in (25.40 mm) of H₂O at 20 mA and a minimum range of -0.33 in of H₂O at 4 mA.

Model T 30 Specifications

Two Wire / 4 to 20 mA Output

Electrical

- Supply Voltage: 11 to 32 VDC
(See diagram right for maximum loop resistance)
- Protected against reversal of polarity
- Output limited to approx. 3.85 mA at low end of span and approx. 25 mA at upper end of span

Ordering Information

Order Number (See Table below and Reference Table A on page 8)

T30 - PPP - O

Example: T30 - 06E - B

PPP = Pressure Range	O = Offset (See Note)
See Reference Table A	- = No offset
	A = 1/4 offset
	B = 1/2 offset

If the measured differential pressure is expected to go from positive to negative, a transmitter with offset (elevated zero) should be ordered.

Three options are available:

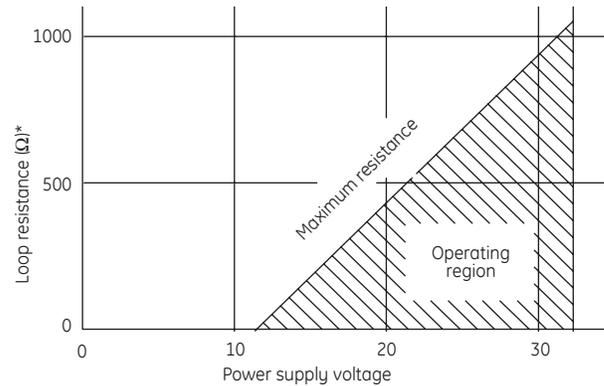
"-" **No offset.** At zero differential pressure the output signal is:

4 mA (4 to 20 mA range)

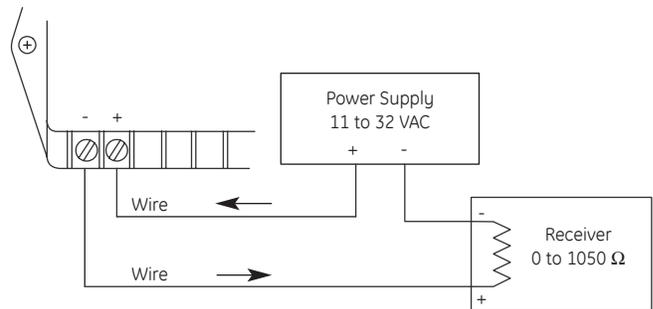
0 V (0 to 5 V range)

0 V (0 to 10 V range)

Pressure excursion: 0% to 100% of Range, see Table A



* Loop resistance=Wire res. + Receiver res.



"A" **1/4 span offset.** At zero differential pressure the output signal is:

8 mA (4 to 20 mA range)

1.25 V (0 to 5 V range)

2.5 V (0 to 10 V range)

Pressure excursion: -33% to 100% of Range, see Table A

"B" **1/2 span offset.** At zero differential pressure the output signal is:

12 mA (4 to 20 mA range)

2.5 V (0 to 5 V range)

5 V (0 to 10 V range)

Pressure excursion: -100% to 100% of Range see Table A

To order: determine the positive pressure range; from Table A find the corresponding pressure code, then add the required offset (none, A, or B).

For example, T30 05E A is a transmitter with a maximum range of 1 in (25.40 mm) of H₂O at 20 mA and a minimum range of -0.33 in of H₂O at 4 mA.

Model T 40 Specifications

AC Power Input / 4 to 20 mA Output

Electrical

Nominal Input Voltage	Power Consumption	Operating Voltage Range
24 VAC, 50/60Hz	1.5 W	20 to 30 VAC
120 VAC, 50/60Hz	1.5 W	100 to 140 VAC
240 VAC, 50/60Hz	1.5 W	200 to 260 VAC

- Transformer isolation between power supply and output is 2500 Vrms
- Receiver resistance can be from 0 to 600 Ω
- Output limited to approx. 27 mA at the upper end of span

Ordering Information

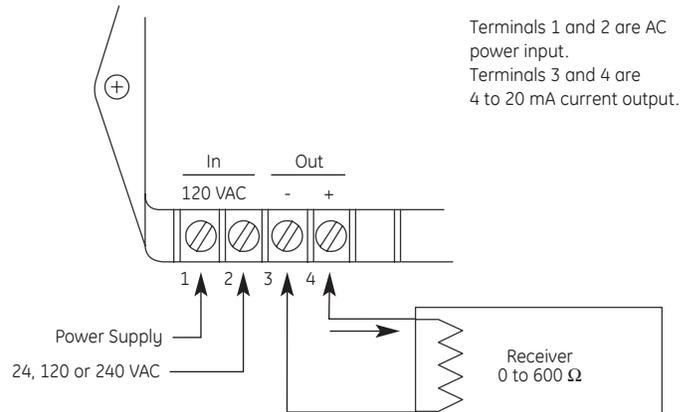
Order Number (See Table below and Reference Table A on page 8)

T40 - PPP - S - O

Example: T40 - 03M - E - B

PPP = Pressure Range	S = Supply Voltage	O = Offset (See Note)
See Reference Table A	C = 24 VAC D = 120 VAC E = 240 VAC	- = No offset A = 1/4 offset B = 1/2 offset

If the measured differential pressure is expected to go from positive to negative, a transmitter with offset (elevated zero) should be ordered.
Three options are available:



"-" No offset. At zero differential pressure the output signal is:

4 mA (4 to 20 mA range)

0 V (0 to 5 V range)

0 V (0 to 10 V range)

Pressure excursion: 0% to 100% of Range, see Table A

"A" 1/4 span offset. At zero differential pressure the output signal is:

8 mA (4 to 20 mA range)

1.25 V (0 to 5 V range)

2.5 V (0 to 10 V range)

Pressure excursion: -33% to 100% of Range, see Table A

"B" 1/2 span offset. At zero differential pressure the output signal is:

12 mA (4 to 20 mA range)

2.5 V (0 to 5 V range)

5 V (0 to 10 V range)

Pressure excursion: -100% to 100% of Range see Table A

To order: determine the positive pressure range; from Table A find the corresponding pressure code, then add the required offset (none, A, or B).

For example, T30 05E A is a transmitter with a maximum range of 1 in (25.40 mm) of H₂O at 20 mA and a minimum range of -0.33 in of H₂O at 4 mA.

Table A - Standard Pressure Ranges

English			Metric Units					
Pressure Code	Pressure Range English	Maximum Safe Momentary Overpressure	Pressure Code	Pressure Range Pascals	Maximum Safe Momentary Overpressure	Pressure Code	Pressure Range Pascals	Maximum Safe Momentary Overpressure
01E	0 to 0.100 in H ₂ O		01P	0 to 25.0 Pa		01M	0 to 2.50 mm H ₂ O	
02E	0 to 0.200 in H ₂ O	5 in H ₂ O	02P	0 to 50.0 Pa	1.25 kPa	02M	0 to 5.00 mm H ₂ O	125 mm
03E	0 to 0.300 in H ₂ O		03P	0 to 75.0 Pa		03M	0 to 7.50 mm H ₂ O	
04E	0 to 0.500 in H ₂ O		04P	0 to 100.0 Pa		04M	0 to 10.00 mm H ₂ O	
05E	0 to 1.00 in H ₂ O		05P	0 to 250 Pa		05M	0 to 25.0 mm H ₂ O	
06E	0 to 2.00 in H ₂ O	20 in H ₂ O	06P	0 to 500 Pa	5 kPa	06M	0 to 50.0 mm H ₂ O	500 mm
07E	0 to 3.00 in H ₂ O		07P	0 to 750 Pa		07M	0 to 75.0 mm H ₂ O	
08E	0 to 5.00 in H ₂ O		08P	0 to 1.00 kPa		08M	0 to 100 mm H ₂ O	
09E	0 to 10.0 in H ₂ O	5 psid	09P	0 to 2.50 kPa	35 kPa	09M	0 to 250 mm H ₂ O	3.5 m
11E	0 to 20.0 in H ₂ O		11P	0 to 5.00 kPa		11M	0 to 500 mm H ₂ O	
12E	0 to 30.0 in H ₂ O		12P	0 to 7.50 kPa		12M	0 to 750 mm H ₂ O	
13E	0 to 50.0 in H ₂ O		13P	0 to 10.0 kPa		13M	0 to 1.00 m H ₂ O	
14E	0 to 100 in H ₂ O	15 psid	14P	0 to 25.0 kPa	100 kPa	14M	0 to 2.5 m H ₂ O	10 m
15E	0 to 1.00 psid		15P	0 to 50.0 kPa		15M	0 to 5.0 m H ₂ O	
16E	0 to 2.00 psid	-	-	-	-	-	-	-
17E	0 to 3.00 psid	-	-	-	-	-	-	-
18E	0 to 5.00 psid	-	-	-	-	-	-	-
19E	0 to 15.0 psid	30 psid	16P	0 to 100 kPa	200 kPa	16M	0 to 10.0 m H ₂ O	20 m
20E	0 to 30.0 psid	60 psid	17P	0 to 200 kPa	400 kPa	17M	0 to 20.0 m H ₂ O	40 m



©2006 GE Sensing, Inc. All rights reserved.
920-362A

All specifications are subject to change for product improvement without notice. GE® is a registered trademark of General Electric Co. Other company or product names mentioned in this document may be trademarks or registered trademarks of their respective companies, which are not affiliated with GE.