

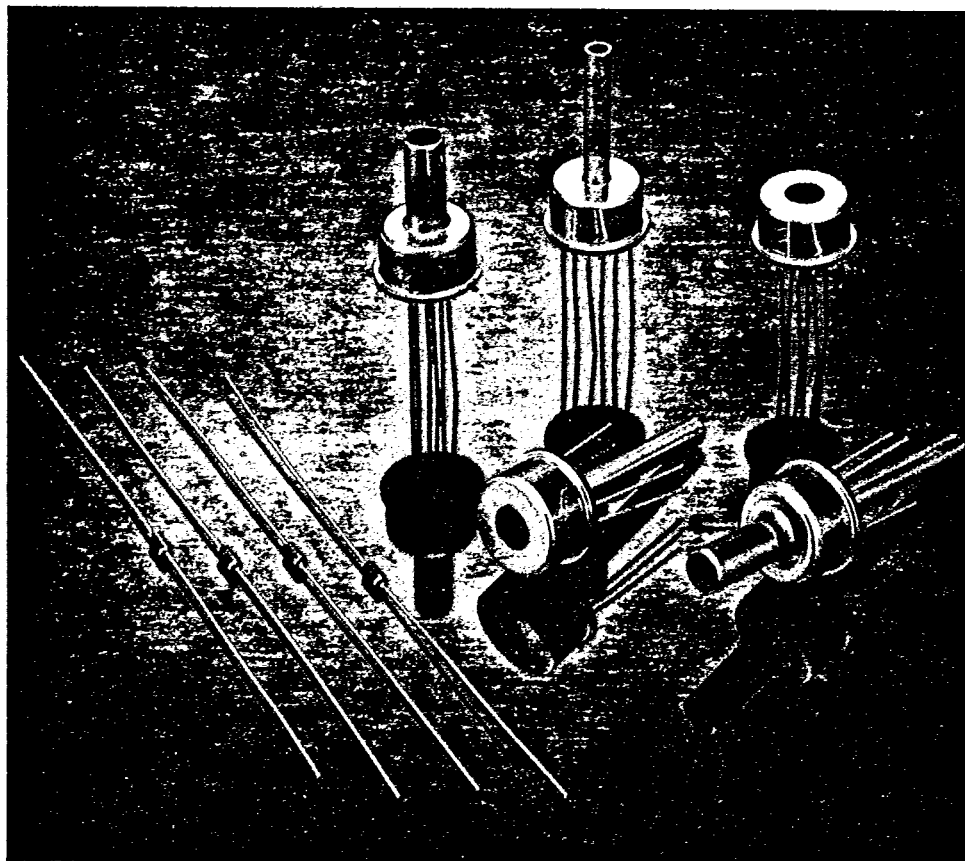
## FOXBORO/ICT

LOW COST  
TO-8 PRESSURE  
TRANSDUCER

## MODEL 1840

## Features

- Economical TO-8 printed circuit mounted pressure sensor
- Pin-for-pin TO-8 replacement
- Choice of A, B, C, or D accuracy grades
- Gage, absolute or differential configurations
- Current or voltage excitation
- Two resistor temperature compensation choices



The Model 1840 Pressure Transducer is designed to provide a high quality, low cost, pin-for-pin TO-8 replacement and high reference accuracy for OEM users and others in high volume applications.

## Applications

- Avionics:  
Altimeters  
Wind shear detectors  
Cabin pressure monitors
- Medical equipment:  
Blood gas analyzers  
Anesthesia monitors
- Pneumatics:  
Pressure-to-current converters
- Pressure calibration  
instruments

## The 1840 T0-8 Family

The family consists of gage, absolute and differential transducers covering ranges from 5 PSI to 100 PSI. The 1840 is offered with either voltage or current excitation. There are two major option choices available for the 1840:

### Temperature Compensation:

1. Discrete resistors
2. Data printouts

### Accuracy Grades:

The 1840 is offered in accuracies of A, B, C, and D.

## Temperature Compensation Choices

### Resistors:

For those users wishing the convenience of receiving more complete compensation tools, the standard 1840 is provided with both temperature compensation resistors and a data readout for each individual sensor.

### Data:

To speed up the temperature compensation task, the 1840 option set includes data only printouts of pressure and calibration runs performed on each individually serialized sensor. This allows users the option of performing confirming measurements, or of entering the data for each sensor into their system or microprocessor for ease of compensation and final installation.

## Applications

A wide variety of applications exist in medical products, automotive and transportation markets, instrumentation such as hand held pressure calibrators, pneumatic controllers (P/I, I/P converters), for standard printed circuit mounted T0-8 pressure sensors.

## High Volume Delivery By Design

For fast product delivery the 1840 is designed around a proprietary modular thermal plastic header that reduces product cost, retains the traditional high performance of Foxboro/ICT pressure sensors, and allows the basic header to be stocked by pressure range.

The 1840's modular sensor is prefabricated to the header level, fully tested for accuracy and temperature compensation resistor values. Once ordered, the product is assembled and quickly delivered to unique customer requirements.

To maintain full T0-8 compatibility, the 1840 retains use of standard pressure connectors for long term compatibility with current all-metal T0-8 designs.

## Specifications

GRADE								
Temperature Compensated Performance	A		B		C		D	Units
	Max	Min	Max	Min	Max	Min	Min	
<b>Reference Accuracy:</b>								
(Non-linearity, hysteresis, repeatability)								
10 to 100 PSI	0.05		0.125		0.25		0.5	±% of Span, BFSL
5 PSI			0.125		0.375			±% of Span, BFSL
<b>Current Span Output:</b>								
10 to 100 PSI	125	75	150	75	150	75	25	mVdc
5 PSI			95	55	150	75	75	mVdc
<b>Voltage Span Output:</b>								
10 to 100 PSI	65	25	75	25	75	25	25	mVdc
5 PSI			45	20	75	25		mVdc
<b>Zero pressure output</b>	2	-2	2	-2	2	-2	±2	mVdc
<b>Temperature range performance:</b>								
<b>Total Zero temperature error:</b>								
10 to 100 PSI	0.5		1.00		1.00		2.00	±% of Span in reference to 27°C
5 PSI			1.00		1.5			±% of Span in reference to 27°C
<b>Total Span temperature error:</b>								
10 to 100 PSI	0.5		1.00		1.00		2.00	±% of Span in reference to 27°C
5 PSI			1.00		1.5			±% of Span in reference to 27°C
<b>Long-term drift</b>	0.2		0.2		0.2		0.2	±% of Span per 6-months
<b>Compensated Temperature range</b>	30 to 130°F (-1 to 54°C)							
<b>Operating Temperature Range:</b>								
Media Temperature	-40 to + 250°F (-40 to + 121°)							
Ambient temperature	-40 to + 250°F (-40 to + 121°)							

## Electrical Specifications

Input excitation-Current:	<2.0mA
Input excitation-Voltage:	<15 Vdc
Electrical connections:	Standard TO-8, 6-pin PCB gold plated brass pins 0.020" dia X 0.56" long
Effect of excitation change:	Ratiometric
Output common mode voltage:	2 Volts, typical
Input impedance-Current:	2000Ω min. 8000Ω max.
Output impedance-Current:	3500Ω min. 6000Ω max.
Input impedance-Voltage:	8000Ω min. 40000Ω max.
Output impedance-Voltage:	3500Ω min. 6000Ω max.
Response time (10% to 90%):	≤1 millisecond
Insulation resistance:	100 megOhms at 50 Vdc

## Physical Specifications

Pressure Overrange Protection:	3X, or 200 PSI, whichever is less
Media compatibility Top:	Gases compatible with silicone gel, Fortron 1140 and nickel
Media compatibility-Bottom:	Gases and liquids compatible with silicon, pyrex, RTV, Fortron 1140, and 316 S.S.
Materials of construction	
Sensor header:	Fortron 1140 (Polyphenylene sulphide)
Sensor Isolation:	Dimethyl silicone gel
Interconnecting pins:	Gold plated brass
Internal wetted parts	
Top:	Nickel, silicone gel
Bottom:	316 S.S., silicon, RTV
Mass:	2.5 grams (0.088 oz)

## Environmental Conditions

Position Effect:	≤0.05% of Span Zero shift for 90° tilt in any direction
Vibration:	No change at 10 G's RMS, 20 to 2000 Hz
Shock:	Will withstand 100 G's for 11 milliseconds
Life:	100 million cycles

## Reference Conditions

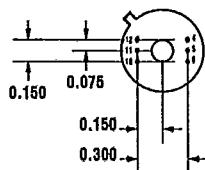
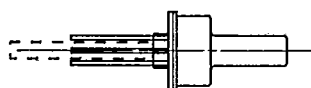
Media temperature:	27±1°C (80±2°F)
Ambient temperature:	27±1°C (80±2°F)
Vibration:	0.1G (1m/s/s) max
Humidity:	50% ± 10%
Ambient pressure:	12.8 to 16.5 PSI (860 to 1060 mBar)
Supply voltage:	1.5 ± 0.0015 mA or 10 ± 0.01 Vdc

## Electrical connections

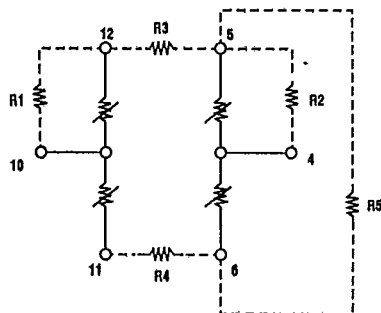
Connection	Excitation	
	Current Pin	Voltage Pin
+Output	4	4
+Input	5	R6
-Input	6	6
-Output	10	10
NC	11	11
NC	12	12

## Pressure Applications:

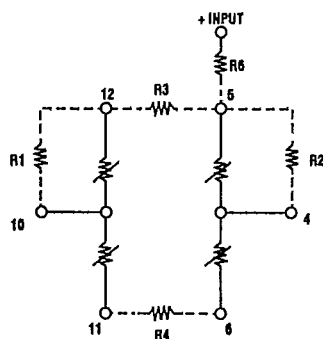
- Top entry positive pressure
- Bottom entry vacuum
- Differential pressure (top=higher pressure)



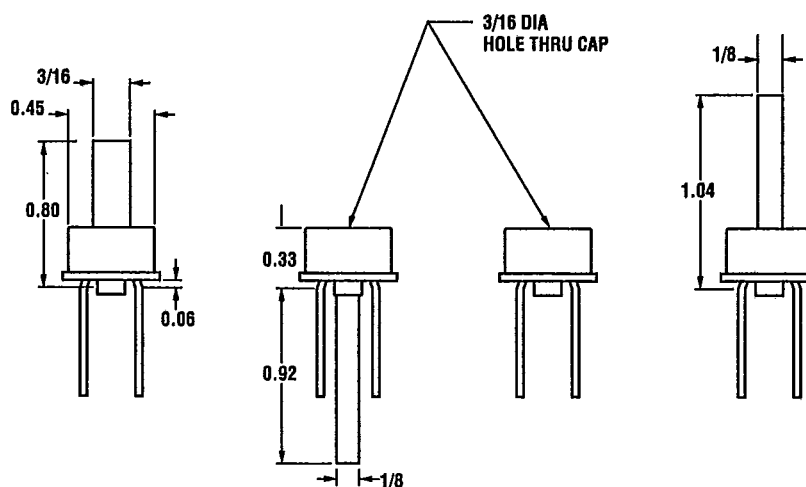
## Current Excitation



## Voltage Excitation

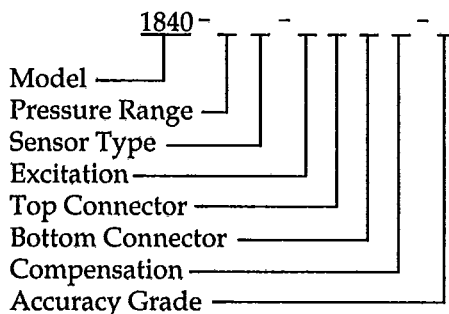


## The 1840 TO-8 Family



Dimensions in Inches

## Ordering Information



## Pressure Range and Types

- 01 = 0 to 05 PSI G,A,D
- 02 = 0 to 10 PSI G,A,D
- 03 = 0 to 15 PSI G,A,D
- 05 = 0 to 25 PSI G,A,D
- 07 = 0 to 30 PSI G,A,D
- 08 = 0 to 50 PSI G,A,D
- 09 = 0 to 100 PSI G

## Sensor Type

- G = Gage Pressure
- A = Absolute Pressure
- D = Differential Pressure (Available to 50 PSID)

## Power Supply Compatibility

- L = 1.5 mA  $\pm$  150  $\mu$ A @ 6 Vdc
- K = 10 Vdc  $\pm$  10 mVdc @ 0.3 mA

## Top Connection

- 1 = Nickel cap 3/16" hole
- 2 = Nickel cap 3/16" tube
- 3 = Nickel cap 1/8" tube

## Bottom Connection

- 0 = No connection
- 1 = 1/8" S.S. Tube

## Temperature Compensation

- M = Computer printout of resistor values
- R = Computer printout of resistor values and resistors

## Accuracy Grade

- A =  $\pm$ 0.05% BFS (0.10% TB)
- B =  $\pm$ 0.125% BFS (0.25% TB)
- C =  $\pm$ 0.25% BFS (0.5% TB)
- D =  $\pm$ 0.5% BFS (1.0% TB)



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