

T-65-13

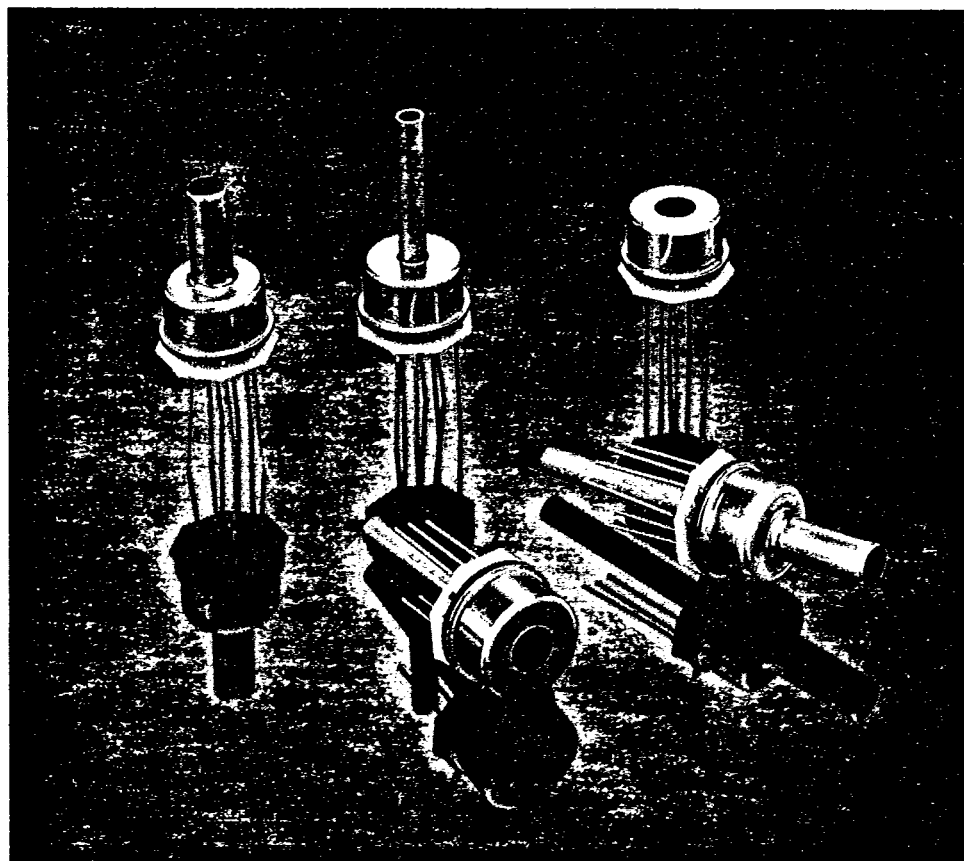
FOXBORO/ICT

LASER-TRIMMED
TO-8 PRESSURE
TRANSDUCER

MODEL 1841

Features

- Laser-trimmed temperature compensated TO-8 sensor
- Normalized output option for sensor-to-sensor interchangeability
- High accuracy TO-8 replacement
- Choice of A, B, or C accuracy grades
- Gage, absolute or differential configurations
- Current or voltage excitation



The Model 1841 Laser Trimmed TO-8 Pressure Transducer provides all the features and accuracy needed for a quick and convenient replacement and interchange with printed circuit mounted TO-8 pressure sensors. To accomplish this, the 1841 feature set contains built-in temperature compensation, pin-for-pin TO-8 compatibility and a normalized output option with 100 mVdc ± 2 mVdc performance.

The 1841 also features moderate cost with a choice of three high accuracy reference accuracy grades. These accuracy options are intended for users unwilling to sacrifice performance to achieve interchangeability.

Finally, the 1841 can be purchased with either voltage or current excitation to help speed and simplify OEM design tasks by allowing use of a constant voltage source rather than the constant current source generally used for sensors.

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 1841 T0-8 Family

The family consists of gage, absolute and differential transducers covering ranges from 5 PSI to 100 PSI. The 1841 is offered in either voltage or current excitation. There are two major option choices available for the 1841:

Temperature Compensation:

1. Laser trimmed with standard output
2. Laser trimmed with normalized output

Accuracy Grades:

The 1841 is offered in A, B, or C accuracies

Temperature Compensation

For maximum convenience, the standard 1841 is purchased fully temperature compensated over a 100° F range. Compensation is accomplished using Foxboro/ICT's in-house laser trim facilities for tighter product accuracy specifications and delivery enhancement for either large or small orders.

Normalized Output Option

For those users wishing the maximum in design convenience and sensor interchangeability, the Model 1841 may be purchased with normalized output. For most models this means output will be 100 ± 2 mVdc (Current excited units) or 50 ± 2 mVdc (voltage excited units).

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.

The 1841's T0-8 package is configured to provide users with a standard set of pins, electrical inputs and outputs, plus commonly used pressure connections to allow quick, direct replacement and second sourcing of parts. This insures a reliable supply of critical pressure sensing components for user products.

High Volume Delivery by Design

To reduce volume delivery to just a few weeks, the 1841 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.

This means the 1841's modular sensor can be prefabricated to the header level, fully tested for accuracy and temperature compensation resistor values, and stored until customers request unique combinations of accuracy grade, method of temperature compensation, and pressure connections. Once ordered, the product is quickly assembled and delivered to each customers' unique requirements.

Specifications

GRADE							
Temperature Compensated Performance	A		B		C		Units
	Max	Min	Max	Min	Max	Min	
Reference Accuracy:							
(Non-linearity, hysteresis, repeatability)							
10 to 100 PSI	0.05		0.125		0.25		±%of Span, BFSL
5 PSI			0.125		0.375		±%of Span, BFSL
Standard Output-Current Excitation:							
10 to 100 PSI	125	75	150	75	150	75	mVdc
5 PSI			95	55	150	75	mVdc
Standard Output-Voltage Excitation:							
10 to 100 PSI	65	40	75	40	75	40	mVdc
5 PSI			45	25	75	40	mVdc
Normalized Output-Current Excitation:							
10 to 100 PSI		100±2		100±2		100±2	mVdc
5 PSI				40±2		50±2	mVdc
Normalized Output-Voltage Excitation:							
10 to 100 PSI		40±2		40±2		40±2	mVdc
5 PSI				20±2		25±2	mVdc
Zero pressure output	2	-2	2	-2	2	-2	mVdc
Temperature range performance:							
Total Zero temperature error:							
10 to 100 PSI	0.5		1.00		1.00		±%of Span in reference to 27°C
5 PSI			1.00		1.5		±%of Span in reference to 27°C
Total Span temperature error:							
10 to 100 PSI	0.5		1.00		1.00		±%of Span in reference to 27°C
5 PSI			1.00		1.5		±%of Span in reference to 27°C
Long-term drift	0.2		0.2		0.2		±%of Span per 6-months
Compensated Temperature range	30 to 130°F(-1 to 54°C)						
Operating Temperature Range:							
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: (Current or Voltage excitation)

Standard Output

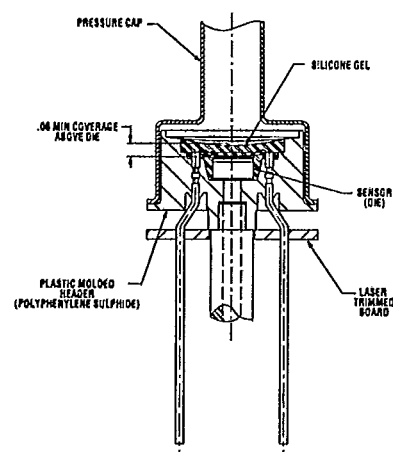
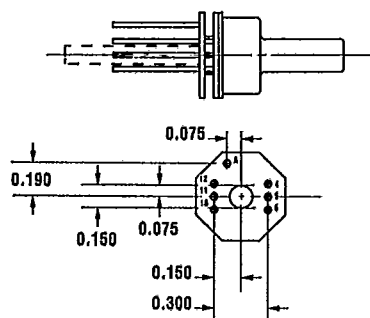
Pin	Connection
1	NC
4	+Output
5	+Input
6	-Input
10	-Output
11	NC
12	NC

Normalized Output

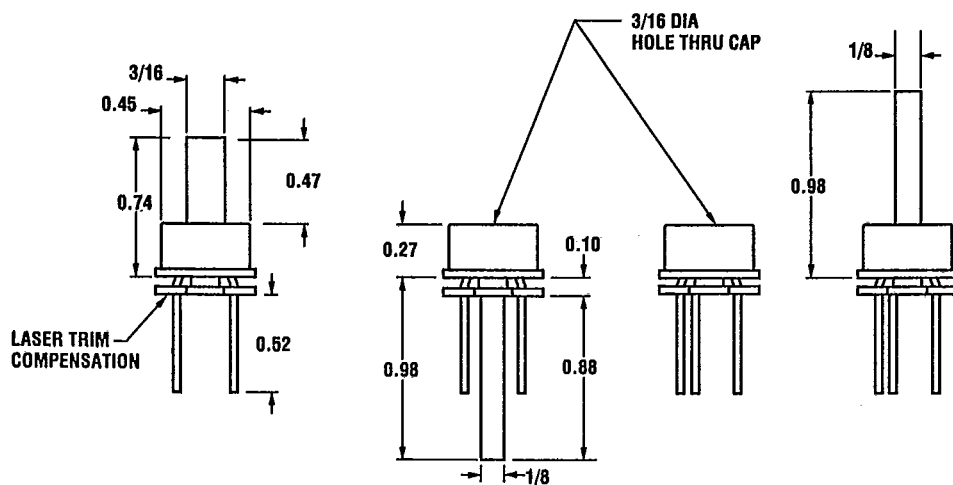
Pin	Connection
1	+Input
4	+Output
5	NC
6	-Input
10	-Output
11	NC
12	NC

Pressure Applications:

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

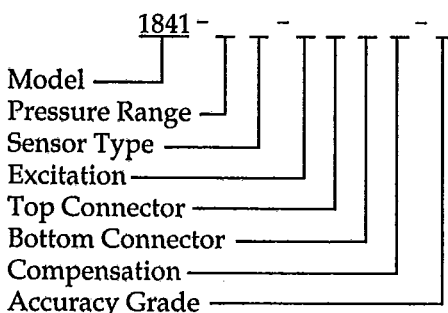


The 1841 TO-8 Family



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 μ 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

- L = Laser trimmed
- N = Laser trimmed, normalized

Accuracy Grade

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