

## Model TH

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### Thru-Hole Load Cell



#### DESCRIPTION

Model TH Donut Shaped Load Cell features a smooth thru-hole design for use in applications which require the load structure to pass through the cell. Such applications include bolt force measurement, post or leg mount, and rolling mill systems. Load ranges as low as 15,000 pounds and as great as 200,000 pounds can be measured within a maximum full scale non-linearity of  $\pm 0.25$ . This model is used in compression

applications. For optimum performance, this load cell must be mounted between load surfaces which are flat and parallel. The Model TH Donut Shaped Load Cell is designed to provide the customer with an internal hole diameter which is large relative to the outside diameter. The Model TH is a small size, high capacity load cell.

#### FEATURES

- 15000 lb to 200000 lb range
- Thru-hole design
- Compact column construction
- mV/V output
- 0.25 % linearity

# Model TH

## PERFORMANCE SPECIFICATIONS

| Characteristic           | Measure               |
|--------------------------|-----------------------|
| Load ranges <sup>3</sup> | 15000 lb to 200000 lb |
| Accuracy                 | 0.5 %                 |
| Linearity (max.)         | ±0.25 % full scale    |
| Hysteresis (max.)        | ±0.25 % full scale    |
| Non-repeatability (max.) | ± 0.1 % full scale    |
| Output (tolerance)       | 2 mV/V (nominal)      |
| Operation                | Compression           |
| Resolution               | Infinite              |

## ENVIRONMENTAL SPECIFICATIONS

| Characteristic           | Measure                             |
|--------------------------|-------------------------------------|
| Temperature, operating   | -54 °C to 121 °C [-65 °F to 250 °F] |
| Temperature, compensated | 15 °C to 71 °C [60 °F to 160 °F]    |
| Temperature effect, zero | 0.005 % full scale/°F               |
| Temperature effect, span | 0.005 % full scale/°F               |

## ELECTRICAL SPECIFICATIONS

| Characteristic               | Measure             |
|------------------------------|---------------------|
| Strain gage type             | Bonded foil         |
| Excitation (calibration)     | 10 Vdc              |
| Insulation resistance        | 5,000 mOhm @ 50 Vdc |
| Bridge resistance            | 350 ohm             |
| Zero balance                 | ±1 % full scale     |
| Electrical termination (std) | Teflon cable (5 ft) |

## MECHANICAL SPECIFICATIONS

| Characteristic         | Measure               |
|------------------------|-----------------------|
| Maximum allowable load | 150 % FS <sup>1</sup> |
| Weight                 | See table             |
| Case material          | Stainless steel       |
| Deflection full scale  | See table             |
| Natural frequency      | See table             |

## WIRING CODES

| Cable | Unamplified    |
|-------|----------------|
| Red   | (+) excitation |
| Black | (-) excitation |
| Green | (-) output     |
| White | (+) output     |

## RANGE CODES

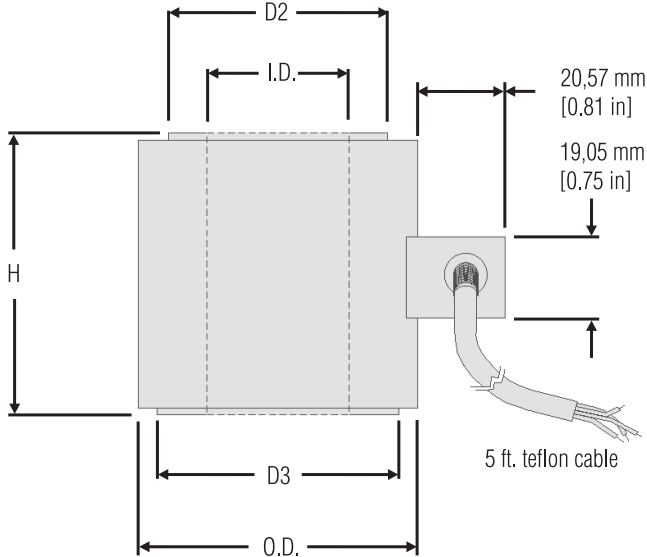
| Range codes | Range     |
|-------------|-----------|
| EJ          | 15000 lb  |
| EL          | 20000 lb  |
| EN          | 30000 lb  |
| EP          | 50000 lb  |
| ER          | 75000 lb  |
| ET          | 100000 lb |
| FJ          | 150000 lb |
| FL          | 200000 lb |

## DEFLECTIONS AND RINGING FREQUENCIES

| Capacity (lb) | Deflection at full scale mm [in] | Ringling frequency (kHz) | Weight kg [lb] |
|---------------|----------------------------------|--------------------------|----------------|
| 15000         | 0,025 [0.001]                    | 35                       | 0,18 [0.4]     |
| 20000         | 0,025 [0.001]                    | 35                       | 0,18 [0.4]     |
| 30000         | 0,051 [0.002]                    | 17                       | 0,45 [1.0]     |
| 50000         | 0,051 [0.002]                    | 17                       | 0,45 [1.0]     |
| 75000         | 0,076 [0.003]                    | 14                       | 0,90 [2.0]     |
| 100000        | 0,076 [0.003]                    | 14                       | 0,90 [2.0]     |
| 150000        | 0,152 [0.006]                    | 12                       | 1,13 [2.5]     |
| 200000        | 0,102 [0.004]                    | 10                       | 2,72 [6]       |

### MOUNTING DIMENSIONS

| Ranges (lb)   | H mm [in]   | OD mm [in]  | ID mm [in]   | D2 mm [in]   | D3 mm [in]   |
|---------------|-------------|-------------|--------------|--------------|--------------|
| 15000, 20000  | 38,1 [1.50] | 38,1 [1.50] | 19,3 [0.76]  | 26,92 [1.06] | 29,21 [1.15] |
| 30000, 50000  | 50,8 [2.00] | 50,8 [2.00] | 25,65 [1.01] | 38,1 [1.50]  | 38,1 [1.50]  |
| 75000, 100000 | 63,5 [2.50] | 63,5 [2.50] | 32,60 [1.26] | 47,75 [1.88] | 47,75 [1.88] |
| 150000        | 76,2 [3.00] | 76,2 [3.00] | 38,35 [1.51] | 58,67 [2.31] | 61,97 [2.44] |
| 200000        | 88,9 [3.50] | 88,9 [3.50] | 44,70 [1.76] | 69,85 [2.75] | 88,9 [3.50]  |



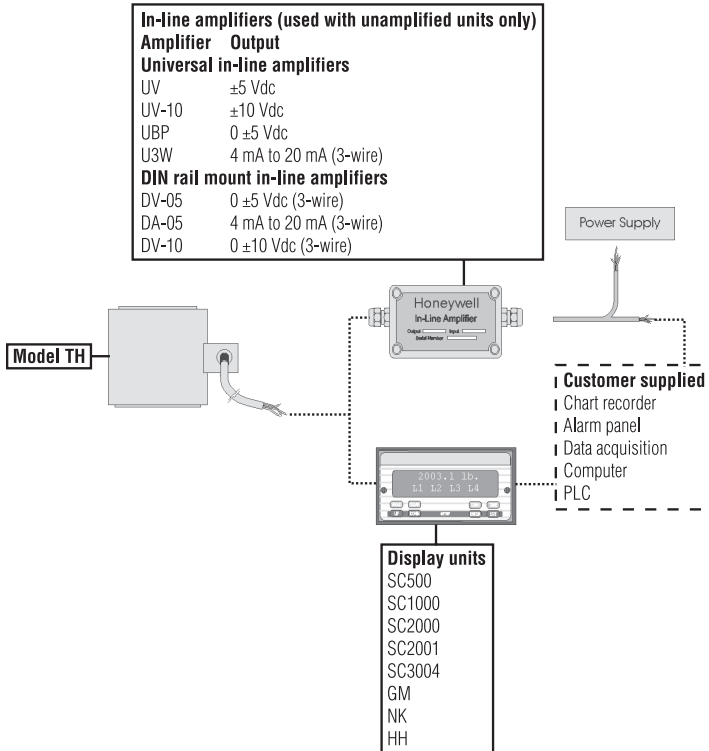
### OPTION CODES

|   |   |   |
|---|---|---|
|   | <b>Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see <a href="http://sensing.honeywell.com/TMsensor-ship">http://sensing.honeywell.com/TMsensor-ship</a> for updated listings.</b>             |   |
| <b>Load ranges</b>                      | 15K, 20K, 30K, 50K, 75K, 100K, 150K, 200K   |   |
| <b>Temperature compensation</b>         | 1a. 60 °F to 160 °F<br>1b. 30 °F to 130 °F<br>1c. 0 °F to 185 °F<br>1d. -20 °F to 130 °F<br>1e. -20 °F to 200 °F<br>1f. 70 °F to 250 °F   | 1g. 70 °F to 325 °F<br>1h. 70 °F to 400 °F<br>1i. -65 °F to 250 °F<br>1j. 0 °C to 50 °C<br>1k. -20 °C to 85 °C<br>1m. -25 °C to 110 °C  |
| <b>Internal amplifiers</b>              | 2u. Unamplified, mV/V output  |   |
| <b>Electrical termination</b>           | 6a. Bendix PTIH-10-6P (or equivalent), 6-pin (max. 250 °F)<br>6b. MS connector MS3102E-14S-6P (mates with MS3106E-14S-6S) (max. 160 °F) <sup>4</sup><br>6e. Integral cable: Teflon (5 ft range)<br>6f. Integral cable: PVC<br>6g. Integral cable: Neoprene  | 6h. Integral cable: Silicone<br>6i. Integral underwater cable<br>6j. 1/2-14 conduit fitting with 5 ft of 4 conductor PVC cable<br>6q. Integral cable: Polyurethane<br>6v. Phoenix connector on end of cable<br>15d. Connector on end of cable |
| <b>Shunt calibration</b>                | 8a. Precision internal resistor   |   |
| <b>Special calibration</b>              | 9a. 10 point (5 up/5 down) 20 % increments @ 70 °F<br>9b. 20 point (10 up/10 down) 10 % increments @ 70 °F<br>9c. ASTM E-74 calibration<br>30a. Positive in compression, compression testing only<br>30c. Negative in compression, compression testing only |   |
| <b>Bridge type</b>                      | 31a. Dual bridge  |   |
| <b>Bridge resistance</b>                | 12b. 5000 ohm (foil)  |   |
| <b>Electrical connector orientation</b> | 15a. Horizontal electrical exit port orientation<br>15b. Vertical electrical exit port orientation<br>15c. Radial electrical exit port orientation<br>15d. Connector on end of cable  |   |
| <b>Shock and vibration</b>              | 44a. Shock and vibration resistance   |   |
| <b>Interfaces</b>                       | 53e. Signature calibration<br>53t. TEDS IEEE 1451.4 module  |   |

## NOTES

1. Allowable maximum loads – maximum load to be applied without damage.<sup>2</sup>
2. Without damage - loading to this level will not cause excessive zero shift or performance degradation. The user must consider fatigue life for long-term use and structural integrity. All structurally critical applications (overhead loading, etc.) should always be designed with safety redundant load paths.
3. This unit calibrated to Imperial (non-Metric) units.
4. Cannot be used with options 1c, 1e, 1f, 1g, 1h, or 1i.

## TYPICAL SYSTEM DIAGRAM



**Warranty.** Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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### **WARNING** **PERSONAL INJURY**

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARNING** **MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**