Honeywell

# Model 13E

## Subminiature Load Cell

### DESCRIPTION

Model 13E (compression only) subminiature load cell is designed to measure load ranges from 0.5 N to 5 kN. With subminiature dimensions, including diameters from 9,7 mm to 19,1 mm [0.38 in to 0.75 in] and heights of 3,3 mm to 6,4 mm [0.13 in to 0.25 in], these units are easily incorporated into systems having limited space. Model 13E combines high frequency response and low deflection to achieve a combined non-linearity and hysteresis of 0.25 % to 0.5 % full scale. A balance module is included in the load cell's lead wire cable for temperature compensation and should not be removed.

### FEATURES

- 0.5 N to 5 kN
- mV/V output
- Subminiature design
- Fast dynamic response

# Model 13E

## PERFORMANCE SPECIFICATIONS

| Characteristic | Measure |
|---|---|
| Load ranges[6] | 0.5 N to 5kN |
| Linearity | ±0.5 % full scale |
| Hysteresis | ±0.5 % full scale |
| Non-repeatability | ±0.1 % full scale |
| Tolerance on output 0.5 N to 5 N | 15 mV/V (nominal) |
| Tolerance on output 10 N | 1.5 mV/V (nominal) |
| Tolerance on output 20 N to 5 kN | 2 mV/V (nominal) |
| Operation | Compression only |
| Resolution | Infinite |

## ENVIRONMENTAL SPECIFICATIONS

| Characteristic | Measure |
|---|---|
| Temperature, operating | -55 °C to 120 °C [-65 °F to 248 °F] |
| Temperature, compensated | 15 °C to 70 °C [60 °F to 158 °F] |
| Temperature effect, zero | 0.02 % full scale/°C |
| Temperature effect, span | 0.04 % full scale/°C |
| Protection rating | IP65 |

## ELECTRICAL SPECIFICATIONS

| Characteristic | Measure |
|---|---|
| Strain gage type 0.5 N to 5 N | Semiconductor |
| Strain gage type 10 N to 5 kN | Bonded foil |
| Excitation (calibration) | 5 Vdc |
| Insulation resistance | 5000 mOhm @ 50 Vdc |
| | |
| Bridge resistance (tolerance) 0.5 N to 5 N | 500 ohm (nominal) |
| Bridge resistance (tolerance) 00 N to 5 kN | 350 ohm (nominal) |
| Zero balance (tolerance) | ±3 % of full scale (nominal) |
| Shunt calibration data | Included |
| Electrical termination (std) | 1,5 m integral cable with balance board[3] |

## MECHANICAL SPECIFICATIONS

| Characteristic | Measure |
|---|---|
| Maximum allowable load | 150 % full scale[1] |
| Weight | See table |
| Material | Stainless steel |
| Deflection @ full scale | See table |

## RANGE CODES

| Range codes | Range |
|---|---|
| **000N5** | 0.5 N |
| **001N5** | 1.5 N |
| **002N5** | 2.5 N |
| **005N0** | 5 N |
| **010N0** | 10 N |
| **020N0** | 20 N |
| **050N0** | 50 N |
| **100N0** | 100 N |
| **200N0** | 200 N |
| **500N0** | 500 N |
| **01KN0** | 1 kN |
| **02KN0** | 2 kN |
| **05KN0** | 5 kN |

## WIRING CODES

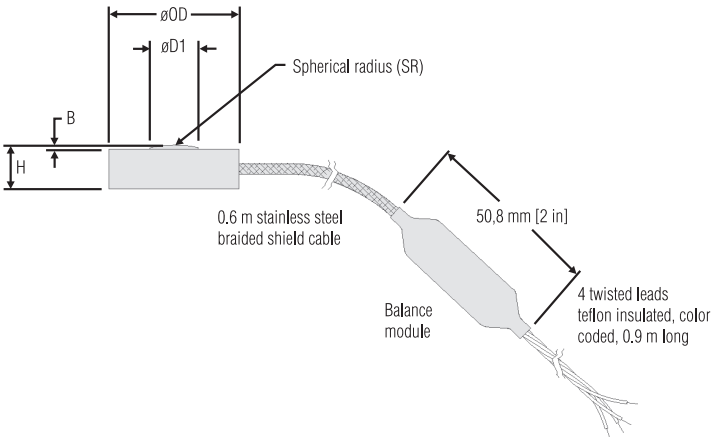
| Cable | Unamplified |
|---|---|
| **Red** | (+) excitation |
| **Black** | (-) excitation |
| **Green** | (-) output |
| **White** | (+) output |

## DEFLECTIONS AND RINGING FREQUENCIES

| Capacity (lb) | Deflection at full scale (mm) | Weight | Weight with cable |
|---|---|---|---|
| 0.5 N | 0.0015 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 1.5 N | 0.0015 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 2.5 N | 0.0015 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 5 N | 0.0020 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 10 N | 0.0127 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 20 N | 0.0127 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 50 N | 0.0101 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 100 N | 0.0101 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 200 N | 0.0101 | 1 g [0.002 lb] | 9 g [0.019 lb] |
| 500 N | 0.0101 | 3 g [0.006 lb] | 11 g [0.024 lb] |
| 1 kN | 0.0127 | 3 g [0.006 lb] | 11 g [0.024 lb] |
| 2 kN | 0.0127 | 10 g [0.022 lb] | 18 g [0.039 lb] |
| 5 kN | 0.0152 | 10 g [0.022 lb] | 18 g [0.039 lb] |

## MOUNTING DIMENSIONS

| Ranges | Range code | OD mm [in] | D1 mm [in] | H mm [in] | B mm [in] | SR mm [in] |
|---|---|---|---|---|---|---|
| 0.5 N | 000N5 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 1.5 N | 001N5 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 2.5 N | 002N5 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 5 N | 005N0 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 10 N | 010N0 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 20 N | 020N0 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 50 N | 050N0 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 100 N | 100N0 | 9,7 [0.38] | 2,3 [0.09] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 200 N | 200N0 | 9,7 [0.38] | 2,2 [0.086] | 3,3 [0.13] | 0,7 [0.03] | 6 [0.24] |
| 500 N | 500N0 | 12,7 [0.50] | 3,0 [0.12] | 3,8 [0.15] | 0,5 [0.02] | 13 [0.51] |
| 1 kN | 01KN0 | 12,7 [0.50] | 3,0 [0.12] | 3,8 [0.15] | 0,5 [0.02] | 13 [0.51] |
| 2 kN | 02KN0 | 19,1 [0.75] | 6,4 [0.25] | 6,4 [0.25] | 0,6 [0.023] | 13 [0.51] |
| 5 kN | 05KN0 | 19,1 [0.75] | 6,4 [0.25] | 6,4 [0.25] | 0,6 [0.023] | 13 [0.51] |




## OPTION CODES

| | **Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://sensing.honeywell.com/TMsensor-ship for updated listings.** |
|---|---|
| **Load range** | 0.5, 1.5, 2.5, 5, 10, 20, 50, 200, 500, 1K, 2K, 5K N |
| **Temperature compensation** | 1a. 15 °C to 70 °C<br>1j. -65 °C to 50 °C<br>1k. -20 °C to 85 °C |
| **Internal amplifiers** | 2u. Unamplified, mV/V output |
| **Electrical termination** | 1,5 m integral cable with balance board[3]<br>6a. Bendix PTIH-10-6P - (or equivalent) 6 pin (max. 120 °C) on end of cable<br>6e. Integral cable: Teflon<br>6v. Phoenix connector on end of cable |
| **Electrical connector orientation** | 15d. Connector on end of cable |
| **Load direction** | 30c. Negative in compression, compression testing only |
| **Shock and vibration** | 44a. Shock and vibration resistance |

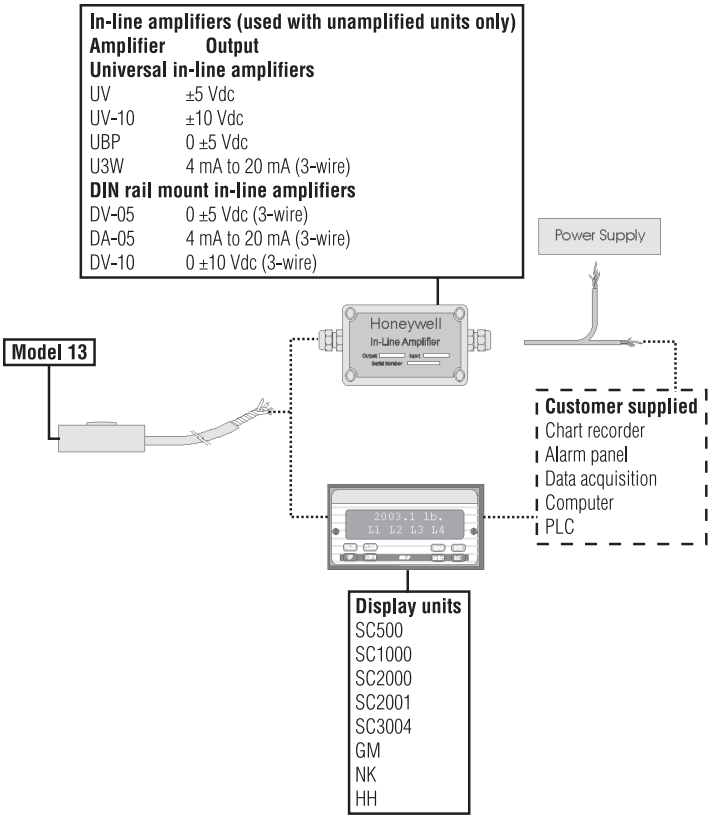
# Model 13E

## Subminiature Load Cell

### NOTES

1. Allowable maximum loads – maximum load to be applied without damage.[2]
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. A small 50 mm long x 2 mm thick circuit board is located approximately 60 cm from cell body. Do not remove this board.
4. Only for ranges greater-than-or-equal-to 10 N.
5. Specifications may vary with this option.
6. This unit is calibrated to Metric (non-Imperial) units.

### TYPICAL SYSTEM DIAGRAM

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

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


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