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Model MPB



High Capacity Compact Compression Load Cell

DESCRIPTION

The compact Model MPB Load Cells are designed for applications requiring high capacity yet where space restrictions require that the cell be small in size. The Model MPB will measure compression load forces in ranges between 15,000 to 2,000,000 pounds.

Applications include impact testing and mine shaft roof simulations. The diameter of these load cells range between 1.25 in and 10 in while the height ranges between approximately 0.63 in and 14 in depending on the load range desired.

FEATURES

- 8 ton to 1000 ton range
- Stainless steel
- mV/V output
- 0.25 % accuracy
- CE approved

Torque Transducers, Load Cells (general purpose, weighing & fatigue rated). Multi-Axis Force/Torque, Weighing Instruments, Process Instruments, Portable Data Loggers, Pressure Sensors, Proximity Sensors, Laser (Distance Measuring) Sensors, & more.

Model MPB

PERFORMANCE SPECIFICATIONS

| Characteristic | Measure |
|--------------------------|--|
| Load ranges ⁹ | 1 ton to 1000 ton |
| Accuracy | ± 0.25 % best fit straight line ² |
| Non-repeatability | ± 0.02 % full scale |
| Output (tolerance) | 2 mV/V (nominal) |
| Operation | Compression |
| Resolution | Infinite |

ENVIRONMENTAL SPECIFICATIONS

| Characteristic | Measure |
|--------------------------|--------------------------------------|
| Temperature, operating | -57 °C to 121 °C [-70 °F to 250 °F] |
| Temperature, compensated | 21 °C to 71 °C [70 °F to 160 °F] |
| Temperature, storage | -73 °C to 149 °C [-100 °F to 300 °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 (tolerance) | 350 ohm (nominal) |
| Zero balance (tolerance) | ± 1% of full scale |
| Shunt calibration data | Included |
| Electrical termination (std) 1 ton to 5 ton | Cable |
| Electrical termination (std) 10 ton to 1000 ton | Connector |

MECHANICAL SPECIFICATIONS

| Characteristic | Measure |
|------------------------|----------------------------|
| Maximum allowable load | 150 % FS ³ |
| Material | All welded stainless steel |
| Life cycles (approx.) | 1 million cycles |

RANGE CODES

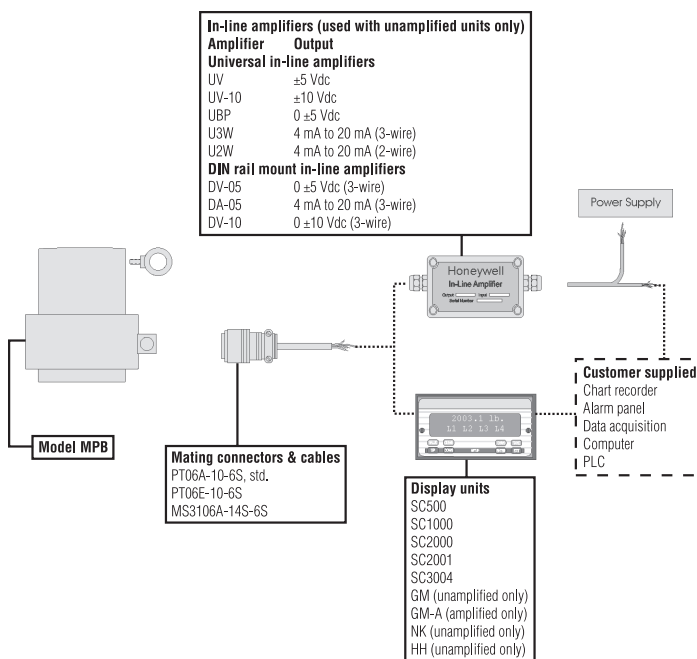
| Range Code | Available ranges | Range Code | Available ranges |
|------------|------------------|------------|------------------|
| DL | 1 ton | ET | 50 ton |
| DR | 2.5 ton | FL | 100 ton |
| DV | 5 ton | FR | 250 ton |
| EL | 10 ton | FT | 500 ton |
| EP | 25 ton | FV | 1000 ton |

WIRING CODES

| Connector | Unamplified |
|-----------|----------------|
| A | (+) excitation |
| B | (+) excitation |
| C | (-) excitation |
| D | (-) excitation |
| E | (-) output |
| F | (+) output |

| Wire | |
|-------|----------------|
| Red | (+) excitation |
| Black | (-) excitation |
| Green | (-) output |
| White | (+) output |

TYPICAL SYSTEM DIAGRAM



High Capacity Compact Compression Load Cell

INTERNAL AMPLIFIERS

| Amplifier specifications | Voltage output: Option 2a | Voltage output: Option 2b | Vehicle voltage output: Option 2c | Vehicle voltage output: Option 2t | Current three-wire: Option 2j | Current two-wire: Option 2k | Intrinsically safe amp: Option 2n (2N)*** |
|---|---|---|---|---|--|--|--|
| Output signal | 0 V to 5 V | ±5 V | 0 V to 5 V or ±5 V @ 45 mA | 0 V to 10 V or ±10 V @ 45 mA | 4 mA to 20 mA | 4 mA to 20 mA | 4 mA to 20 mA |
| Input power (voltage) | ±15 V or 26 Vdc to 32 Vdc | ±15 V or 26 Vdc to 32 Vdc | 18 Vdc to 28 Vdc | 15 Vdc to 28 Vdc | 22 Vdc to 32 Vdc | 9 Vdc to 32 Vdc | 9 Vdc to 28 Vdc |
| Input power (current) | 45 mA | 45 mA | 40 mA | 40 mA | 65 mA | 4 mA to 28 mA | 4 mA to 24 mA |
| Freq. resp (amp) | 3000 Hz | 3000 Hz | 3000 Hz | 3000 Hz | 2500 Hz | 300 Hz | 2000 Hz |
| Power supply rej. | 60 db | 60 db | 60 db | 60 db | 60 db | 60 db | 60 db |
| Operating temp. | -20 °F to 185 °F | -20 °F to 185 °F | -20 °F to 185 °F | -20 °F to 185 °F | 0 °F to 185 °F | 0 °F to 185 °F | -20 °F to 185 °F |
| Reverse voltage protection | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Short cir. protection | Momentary | Momentary | Momentary | Momentary | Yes | Yes | Yes |
| Wiring code: connector (std) | A (+) Supply B (-)Output/supply C (-)Supply D (+) Output E Shunt cal 1 F Shunt cal 2 | A (+) Supply B (-)Output/supply C (-)Supply D (+) Output E Shunt cal 1 F Shunt cal 2 | A (+) Supply B Output common** C Supply return ** D (+) Output E Shunt cal 1 F Shunt cal 2 | A (+) Supply B (-) output C Supply return D (+) Output E Shunt cal 1 F Shunt cal 2 | A (+) Supply B Output common** C Supply return** D (+) Output E Shunt cal 1 F Shunt cal 2 | A (+) Supply B No connection C No connection D (+) Output E Case ground F No connection | A (+) Supply B No connection C No connection D (+) Output E Case ground F No connection |
| Wiring code: cable^{4,5,6} | R (+) Supply Br (-) Supply O (-)Output/supply G (+) Output B Shunt cal 1 Y Shunt cal 2 | R (+) Supply Br (-) Supply O (-)Output/supply G (+) Output B Shunt cal 1 Y Shunt cal 2 | R (+) Supply Bl Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2 | R (+) Supply Bl Supply return G (+) Output W (+) Output B Shunt cal 1 Br Shunt cal 2 | R (+) Supply Bl Output common* G Supply return* W (+) Output B Shunt cal 1 Br Shunt cal 2 | R (+) Supply Bl (+) Output W Case ground | R (+) Supply Bl (+) Output W Case ground |

* Black and green wires are internally connected.

** Pins B and C are internally connected.

*** See our Web site for the most up-to-date information regarding intrinsically safe approvals, ref. #008-0547-00.

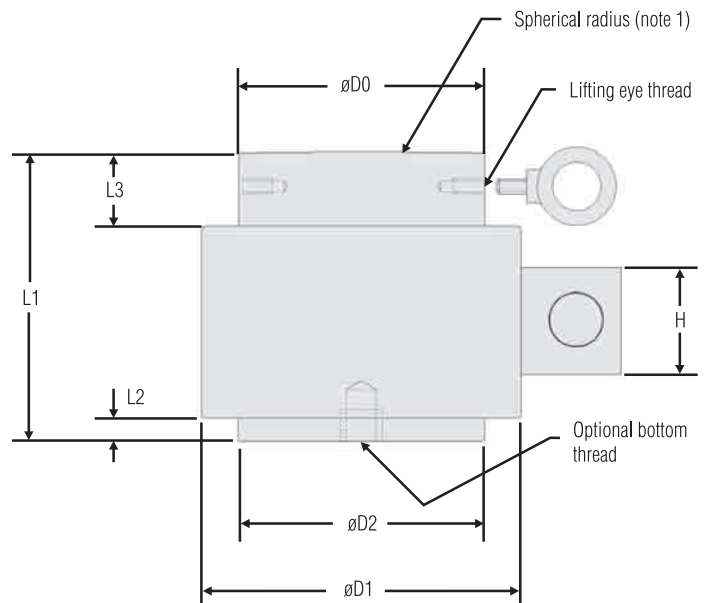
Model MPB

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 ranges | 1, 2.5, 5, 10, 25, 50, 100, 250, 500, 1000 ton | |
| Temperature compensation | 1a. 60 °F to 160 °F 1b. 30 °F to 130 °F 1c. 0 °F to 185 °F 1d. -20 °F to 130 °F 1e. -20 °F to 200 °F 1f. 70 °F to 250 °F | 1g. 70 °F to 325 °F ¹⁰ 1h. 70 °F to 400 °F ¹⁰ 1i. -65 °F to 250 °F ¹⁰ 1j. 0 °C to 50 °C 1k. -20 °C to 85 °C 1m. -25 °C to 110 °C |
| Internal amplifiers^{6,7} | 2a. Four-wire, 0 Vdc to 5 Vdc output 2c. 0 Vdc to 5 Vdc 2j. 4 mA to 20 mA (three-wire) output 2k. 4 mA to 20 mA (two-wire) ¹¹ | 2n (2N) 4 mA to 20 mA (two-wire) intrinsically safe ¹¹ 2t. 0 Vdc to 10 Vdc output 2u. Unamplified, mV/V output |
| Electrical termination | 6a. Bendix PTIH-10-6P (or equivalent), 6-pin (max. 250 °F) 6b. MS3102E-14S-6P connector (10 ton to 1000 ton range) ⁵ 6e. Integral cable: Teflon (1 ton to 5 ton range) 6f. Integral cable: PVC (-20 °F to 160 °F) | 6g. Integral cable: Neoprene (0 °F to 180 °F) ⁶ 6i. Integral underwater cable (max. 180 °F) ⁶ 6j. 1/2-14 conduit fitting 6q. Integral cable: Polyurethane 6v. Phoenix connector on end of cable |
| Electrical connector orientation | 15a. Horizontal electrical exit port orientation 15b. Vertical electrical exit port orientation 15c. Radial electrical exit port orientation | |
| Shunt calibration | 8a. Precision internal resistor (max. 250 °F) ¹⁰ | |
| Bridge type | 11a. Square bridge ¹⁰ 11b. Symmetrical bridge ¹⁰ 11c. Square and symmetrical bridge ¹⁰ 31a. Dual bridge | |
| Bridge resistance | 12b. 5000 ohm (foil) (max. 250 °F) | |
| Special calibration | 30a. Positive in compression, compression testing only 9a. 10 point (5 up/5 down) 20 % increments @ 70 °F 9b. 20 point (10 up/10 down) 10 % increments @ 70 °F 9c. ASTM E-74 calibration 9e. CE mark 30c. Negative in compression, compression testing only | |
| Shock and vibration | 44a. Shock and vibration resistance | |
| Interfaces | 53e. Signature calibration ⁵ 53t. TEDS IEEE 1451.4 module ⁸ | |

NOTES

- For standard configuration with spherical radius, a hardened surface is recommended to maintain the best loading conditions. RC42 is recommended minimum hardness. Bearing lubricant at loading interface recommended for maximum life.
- Accuracies stated are expected for best-fit, straight-line for all errors including linearity, hysteresis and non-repeatability thru zero.
- Allowable maximum loads – Maximum load to be applied without damage.⁴
- 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.
- Special wiring code.
- Not available with option 1e, 1f, 1g, 1h, or 1i.
- Amplifier option not available with low ranges. Consult factory.
- Consult factory for TEDS availability with amplified models.
- This unit calibrated to Imperial (non-Metric) units.
- Non-amplified only.
- 5000 ohm bridge required.



MOUNTING DIMENSIONS

| Capacity (tons) (v.s.) | D0 mm [in] | D1 mm [in] | D2 mm [in] | L1 mm [in] | L2 mm [in] | L3 mm [in] | H mm [in] | Thread lifting eye | Optional bottom thread |
|------------------------|---------------|---------------|---------------|----------------|-------------|--------------|--------------|--------------------|---------------------------|
| 1 | 6,6 [0.26] | 22,1 [0.87] | 9,4 [0.37] | 19,05 [0.75] | 0,51 [0.02] | 1,52 [0.06] | 9,53 [0.375] | NA | 8-32 UNC x 0.18 in deep |
| 2.5 | 6,6 [0.26] | 22,1 [0.87] | 9,4 [0.37] | 19,05 [0.75] | 0,51 [0.02] | 1,52 [0.06] | 9,53 [0.375] | NA | 8-32 UNC x 0.18 in deep |
| 5 | 10,41 [0.41] | 24,89 [0.98] | 13,46 [0.53] | 22,35 [0.88] | 1,02 [0.04] | 1,52 [0.06] | 9,53 [0.375] | NA | 8-32 UNC x 0.18 in deep |
| 10 | 19,05 [0.75] | 37,85 [1.49] | 19,05 [0.75] | 28,45 [1.12] | 1,52 [0.06] | 4,06 [0.16] | 9,53 [0.375] | NA | 1/4-28 UNF x 0.25 in deep |
| 25 | 29,97 [1.18] | 49,78 [1.96] | 29,97 [1.18] | 44,96 [1.77] | 3,05 [0.12] | 7,62 [0.30] | 19,05 [0.75] | NA | 1/4-28 UNF x 0.25 in deep |
| 50 | 40,39 [1.59] | 61,98 [2.44] | 40,39 [1.59] | 64,0 [2.52] | 4,57 [0.18] | 4,83 [0.19] | 38,1 [1.5] | NA | 3/8-24 UNF x 0.38 in deep |
| 100 | 57,15 [2.25] | 81,03 [3.19] | 57,15 [2.25] | 85,85 [3.38] | 6,35 [0.25] | 17,53 [0.69] | 38,1 [1.5] | NA | 3/8-24 UNF x 0.38 in deep |
| 250 | 90,68 [3.57] | 112,78 [4.44] | 90,68 [3.57] | 135,89 [5.35] | 6,35 [0.25] | 43,18 [1.7] | 38,1 [1.5] | 1/4-28 | 3/4-16 UNF x 0.75 in deep |
| 500 | 128,27 [5.05] | 163,58 [6.44] | 128,27 [5.05] | 192,28 [7.57] | 6,35 [0.25] | 66,04 [2.6] | 38,1 [1.5] | 1/4-28 | 3/4-16 UNF x 0.75 in deep |
| 1000 | 181,36 [7.14] | 214,38 [8.44] | 181,36 [7.14] | 264,41 [10.41] | 6,35 [0.25] | 101,6 [4.0] | 38,1 [1.5] | 3/8-16 | 1-12 UNF x 1.0 in deep |

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.

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.