

Double-Ended Beam Load Cell

FEATURES

- · Capacities: 5k to 250k lbs
- Low profile construction
- Nickel-plated alloy steel construction
- Certified to OIML R60 3000d, NTEP CoC-10000d
- Sealing: IP67 (DIN 40.050)

Optional

- FM approved for use in hazardous locations
- ATEX versions are available for use in potentially explosive atmospheres
- EDOC option available; product appearance will differ from the photograph due to coating



- Platform scales
- · On-board weighing
- Weighbridges
- Silo hopper weighing

DESCRIPTION

The Model 5103 transducers are double-ended, center-loaded shear beam load cells. The Model 5103 is constructed of nickel-plated alloy steel.









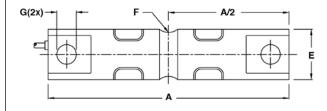


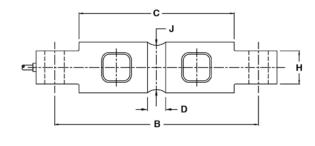
These products are suitable for tank weighing systems, low cost weighbridges, and axle weighers.

A reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gage area.

A specially designed mounting arrangement is available, providing the ideal solution for vessel / tank weighing.

OUTLINE DIMENSIONS in millimeters





| Capacity (lbs) | 5k, 10k | 20k | 30k- 60k | 100k | 150k | 200k, 250k |
|-------------------|------------|-------|-------------|-------|-------|---------------|
| Α | 206.2 | 206.2 | 260.4 | 285.8 | 285.8 | 406.9 |
| В | 174.6 | 174.6 | 215.9 | 241.3 | 241.3 | 330.2 |
| С | 133.1 | 133.1 | 165.1 | 190.5 | 190.5 | 254.0 |
| D | 15.7 | 21.3 | 25.4 | 31.8 | 31.8 | 33.0 |
| Е | 43.2 | 49.5 | 76.2 | 88.9 | 99.1 | 136.5 |
| F | 12.7 | 12.7 | 25.4 | 38.1 | 38.1 | 50.8 |
| G | 16.7 | 16.7 | 26.9 | 26.9 | 26.9 | 39.6 |
| Н | 28.4 | 28.4 | 60.2 | 63.5 | 71.1 | 116.8 |
| J | 37.6 | 37.6 | 69.3 | 82.3 | 92.5 | 131.4 |

Cable specifications

Cable length 10 m (6 m for 5k-20k)

Excitation + Red
Excitation - Black
Output + Green
Output - White
Shield Transparent

Above dimensions apply to non-EDOC-coated load cells.



Double-Ended Beam Load Cell

| PARAMETER UNIT VALUE Standard capacities (E _{max}) 2.3°, 4.5°, 9.1, 13.6, 18.2, 22.7, 27.2, 45.4, 68°, 91°, 113° t Standard capacities (E _{max}) 5k°, 10k°, 20k, 30k, 40k, 50k, 60k, 100k, 150k°, 200k°, 250k° Ibs Accuracy class according to OIML / NTEP NTEP Non-Approved C3 Max. number of verification intervals (n _m) IIIL 10000 D3 3000 Minimum verification interval (v _{mn}) IIIL 10000 D3 3000 Rated output (= S) 3.0 mV/V Rated output tolerance 0.0030 ±mV/V Zero balance 1.0 ±% FSO Combined error 0.0200 0.0300 0.0200 ±% FSO Non-repeatability 0.0100 0.0100 ±% splied load Creep error (30 minutes) 0.0300 0.0245 ±% applied load Creep error (20 minutes) 0.030 0.0450 ±% applied load Temperature effect on min. dead load output (0.001) 0.0140 0.0070 ±% SPO/5°C (*F) Maximum safe overload 150 ½ applied load/5°C (*F) | SPECIFICATIONS | | | | | | | | | |
|--|--|---|--------------------|--------------------------|---------------------------|--|--|--|--|--|
| Standard capacities (E _{max}) | PARAMETER | | VALUE | | | | | | | |
| Accuracy class according to OIML / NTEP NTEP NOn-Approved C3 | Standard capacities (E _{max}) | 2.3*, 4.5*, 9.1, 13 | t | | | | | | | |
| Max. number of verification intervals (n _w) IIII 10000 D3 3000 Minimum verification interval (ν _{min}) 3.0 mV/V Rated output (= S) 3.0 mV/V Rated output tolerance 0.003 ±mV/V Zero balance 1.0 ±% FSO Combined error 0.0200 0.0300 0.0200 ±% FSO Non-repeatability 0.0100 0.0100 0.0100 ±% FSO Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (20 minutes) 0.030 0.0450 0.0032 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load/s°C (°F) Maximum safe overload 150 % E _{max} Maximum safe side load 100 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.5/0.5/0.5/0.9/0.9/0.9 mm | Standard capacities (E _{max}) | | | | lbs | | | | | |
| Minimum verification interval (v _{min}) E _{max} /10,000 Rated output (= S) 3.0 mV/V Rated output tolerance 0.003 ±m/V/V Zero balance 1.0 ±% FSO Combined error 0.0200 0.0300 0.0200 ±% FSO Non-repeatability 0.0100 0.0100 0.0100 ±% FSO Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (30 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load Temperature effect on sensitivity (0.0008) 0.0450 0.0053 ±% applied load Temperature effect on sensitivity (0.0008) 0.0070 0.0053 ±% applied load Maximum safe overload 0 0.0070 ±% rscO/5°C (°F) Minimum dead load 0 % E _{max} Maximum safe side load 150 % E _{max} Ultimate overload 5 to 12 V Maximum sa | Accuracy class according to OIML / NTEP | NTEP | Non-Approved | C3 | | | | | | |
| Rated output (= S) 3.0 mV/V Rated output tolerance 0.003 ±mV/V Zero balance 1.0 ±% FSO Combined error 0.0200 0.0300 0.0200 ±% FSO Mon-repeatability 0.0100 0.0100 0.0100 ±% FSO Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (30 minutes) 0.0300 0.0450 0.0053 ±% applied load Creep error (20 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% FSO/5°C (°F) Minimum dead load 0 0.0070 0.0053 ±% applied load *% FSO/5°C (°F) Maximum safe overload 150 % E _{max} ** applied load/5°C (°F) Maximum safe side load 100 % E _{max} ** applied load/5°C (°F) Maximum safe side load 100 % E _{max} ** E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.6/0.5/0.5/0.9/0.9 mm ** E _{max} <th>Max. number of verification intervals (n_{Ic})</th> <th>IIIL 10000</th> <th>D3</th> <th>3000</th> <th></th> | Max. number of verification intervals (n _{Ic}) | IIIL 10000 | D3 | 3000 | | | | | | |
| Rated output tolerance 0.003 ±mV/V | Minimum verification interval (v _{min}) | | | E _{max} /10,000 | | | | | | |
| Zero balance 1.0 ±% FSO Combined error 0.0200 0.0300 0.0200 ±% FSO Non-repeatability 0.0100 0.0100 0.0100 ±% FSO Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (30 minutes) 0.030 0.0450 0.0053 ±% applied load Creep error (20 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load/5°C (°F) Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load/5°C (°F) Maximum bade load 0 % E _{max} 0.0070 ±% applied load/5°C (°F) Maximum safe overload 150 % E _{max} 0.0070 ±% applied load/5°C (°F) Maximum safe side load 150 % E _{max} 0.0070 ±% applied load/5°C (°F) Maximum safe side load 100 % E _{max} 0.0070 ±% applied load/5°C (°F) Maximum safe side load 100 % E _{max} <th>Rated output (= S)</th> <th></th> <th>mV/V</th> | Rated output (= S) | | mV/V | | | | | | | |
| Combined error 0.0200 0.0300 0.0200 ±% FSO Non-repeatability 0.0100 0.0100 0.0100 ±% FSO Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (30 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load Minimum dead load 0.0070 0.0050 ±% applied load ±% applied load Maximum dead load 0.0070 0.0050 ±% applied load ±% applied load Maximum safe overload 0.0070 0.0050 ±% applied load *% FSO/5°C (°F) Maximum safe side load 150 % E _{max} **E _{max} Maximum safe side load 100 % E _{max} **E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.5/0.5/0.5/0.5/0.5/0.9/0.9 mm Excitation voltage 15 V Input resistan | Rated output tolerance | | ±mV/V | | | | | | | |
| Non-repeatability 0.0100 0.0100 0.0100 ±% FSO Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (30 minutes) 0.0300 0.0450 ±% applied load Creep error (20 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% FSO/5°C (°F) Temperature effect on sensitivity (0.0008) 0.0070 0.050 ±% applied load Maximum safe overload 0 % E _{max} Ms E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 150 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.5/0.9/0.9 mm Excitation voltage 15 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance ≥5000 MΩ Compensated temperature range -10 to +40 | Zero balance | | ±% FSO | | | | | | | |
| Minimum dead load output return 0.0250 0.0300 0.0167 ±% applied load Creep error (30 minutes) 0.030 0.0450 0.0053 ±% applied load Creep error (20 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load Maximum dead load 0 % E _{max} Maximum safe overload 150 % E _{max} Maximum safe side load 100 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.6/0.5/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance ≥5000 MΩ Compensated temperature range -10 to +40 °C Operating temperature range -40 to +90 °C | Combined error | 0.0200 | 0.0300 | 0.0200 | ±% FSO | | | | | |
| Creep error (30 minutes) 0.0300 0.0245 ±% applied load Creep error (20 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% applied load/5°C (°F) Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load/5°C (°F) Minimum dead load 0 % E _{max} Maximum safe overload 150 % E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.5/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance >5000 MΩ Compensated temperature range -10 to +40 °C Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel | Non-repeatability | 0.0100 | 0.0100 | 0.0100 | ±% FSO | | | | | |
| Creep error (20 minutes) 0.030 0.0450 0.0053 ±% applied load Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% FSO/5°C (/°F) Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load/5°C (/°F) Minimum dead load 0 % E _{max} Maximum safe overload 150 % E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Minimum dead load output return | 0.0250 | 0.0300 | 0.0167 | ±% applied load | | | | | |
| Temp. effect on min. dead load output (0.001) 0.0140 0.0070 ±% FSO/5°C (/°F) Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load/5°C (/°F) Minimum dead load 0 % E _{max} Maximum safe overload 150 % E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.5/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Creep error (30 minutes) | | 0.0300 | 0.0245 | ±% applied load | | | | | |
| Temperature effect on sensitivity (0.0008) 0.0070 0.0050 ±% applied load/5°C (/°F) Minimum dead load 0 % E _{max} Maximum safe overload 150 % E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Creep error (20 minutes) | 0.030 | 0.0450 | 0.0053 | ±% applied load | | | | | |
| Minimum dead load 0 % E _{max} Maximum safe overload 150 % E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range -10 to +40 °C Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Temp. effect on min. dead load output | (0.001) | 0.0140 | 0.0070 | ±% FSO/5°C (/°F) | | | | | |
| Maximum safe overload 150 % E _{max} Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.5/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range -10 to +40 °C Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Temperature effect on sensitivity | (0.0008) | 0.0070 | 0.0050 | ±% applied load/5°C (/°F) | | | | | |
| Ultimate overload 300 % E _{max} Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Minimum dead load | | % E _{max} | | | | | | | |
| Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Maximum safe overload | 150 | | | | | | | | |
| Maximum safe side load 100 % E _{max} Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Ultimate overload | 300 | | | % E _{max} | | | | | |
| Deflection at E _{max} 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.9/0.9 mm Excitation voltage 5 to 12 V Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range −10 to +40 °C Operating temperature range −40 to +80 °C Storage temperature range −40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Maximum safe side load | 100 | | | % E _{max} | | | | | |
| Maximum excitation voltage 15 V Input resistance 700±7 Ω Output resistance 700±7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range -10 to +40 °C Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Deflection at E _{max} | 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.5/0.9/0.9 | | | | | | | | |
| Input resistance 700 ± 7 Ω Output resistance 700 ± 7 Ω Insulation resistance ≥5000 MΩ Compensated temperature range $-10 \text{ to } +40$ °C Operating temperature range $-40 \text{ to } +80$ °C Storage temperature range $-40 \text{ to } +90$ °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Excitation voltage | 5 to 12 | | V | | | | | | |
| Output resistance 700 ± 7 Ω Insulation resistance ≥5000 $MΩ$ Compensated temperature range -10 to $+40$ °C Operating temperature range -40 to $+80$ °C Storage temperature range -40 to $+90$ °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Maximum excitation voltage | 15 | | | V | | | | | |
| Insulation resistance ≥5000 MΩ Compensated temperature range -10 to +40 °C Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Input resistance | | Ω | | | | | | | |
| Compensated temperature range -10 to +40 °C Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Output resistance | | Ω | | | | | | | |
| Operating temperature range -40 to +80 °C Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Insulation resistance | | ΜΩ | | | | | | | |
| Storage temperature range -40 to +90 °C Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Compensated temperature range | | °C | | | | | | | |
| Element material (DIN) Nickel-plated alloy steel Sealing (DIN 40.050 / EN 60.529) IP67 | Operating temperature range | | -40 to +80 | °C | | | | | | |
| Sealing (DIN 40.050 / EN 60.529) IP67 | Storage temperature range | | °C | | | | | | | |
| | Element material (DIN) | 1 | | | | | | | | |
| Recommended torque on fixation bolts 12 to 14 N [⋆] m | Sealing (DIN 40.050 / EN 60.529) | | | | | | | | | |
| | Recommended torque on fixation bolts | | N*m | | | | | | | |

^{*} Only 20k-100k lbs (9.1-45.4 t) capacities are OIML approved.

FSO-Full Scale Output

All specifications subject to change without notice.



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