

ELFF Load Cell



- **Ultra Low Profile**
- **High Level and mV Output**
- **High Stability**
- **Compact Compression or Tension/Compression Design**
- **10 – 100 lbf**
- **Full NIST Traceable 11 Point Calibration**
- **Full Teflon Insulated and Shielded Mini-Cable**

DESCRIPTION

The ELFF series tension/compression load cells raise the bar for high performance at low cost. Measurement Specialties proprietary Microfused™ technology, derived from demanding aerospace applications, employs micro-machined piezoresistive strain gages fused with high temperature glass to a high performance stainless steel force measuring flexure. Microfused™ technology eliminates age-sensitive organic epoxies used in traditional load cell designs providing excellent long term span and zero stability. Operating at very low strains, Microfused™ technology utilizes strain gages providing gage factors greater than 100, an essentially unlimited cycle life expectancy, superior resolution, exceedingly high over-range capabilities (without the need for stops) and an amplified ratiometric high level 0.5 to 4.5 V output or 20 mV/V bridge output. Microfused™ sensors are ideal for your test and measurement applications.

Teflon insulated shielded mini-cable is provided as well as full NIST traceable calibration certificates. The ELFF unit is fully thermally compensated and will provide an essentially unlimited cycle life expectancy. The ELFF can be configured with a variety of options to fine tune the instrument to your application: select from several standard package geometries, compensated temperature ranges, input voltages, lead lengths or specify entirely unique combinations of these options.

FEATURES

- Low Cost
- Optional High Level Output
- Small, Low Profile Design
- Low Noise
- Robust: High Over Range
- High Reliability
- Low Deflection
- Fast
- Essentially Unlimited Cycle Life

APPLICATIONS

- Surface Mount Assembly System Force Feedback
- Robotics and Effectors
- Weighing
- Dental and Biomechanical Parameter Measurements
- Satellite and Aerospace Force Feedback
- Ultra Low Deflection Measurement Applications

ELFF Load Cell

STANDARD RANGES

| Lbf | N | Body Style |
|-----|-----|------------|
| 10 | 50 | B4, T2, T4 |
| 20 | 100 | B4, T2, T4 |
| 50 | 250 | B4, T2, T4 |
| 100 | 500 | T2 |

PERFORMANCE SPECIFICATIONS

Supply Voltage: 5V

Ambient Temperature: 25°C (unless otherwise specified)

| PARAMETERS | MIN | TYP | MAX | UNITS | NOTES |
|--|-----------------------|------------|----------|----------|-------|
| Output Span (Amplified/Ratiometric) | | 0.5 to 4.5 | ±3 %Span | V | |
| Output Span (Bridge Only) | | 20 | ±5 %Span | mV/V | |
| Zero Force Output | | | ±5 | %FSO | 1 |
| Non Linearity | | | ±0.5 | %FSO | |
| Hysteresis | | | ±0.5 | %FSO | |
| Temperature Error – Zero | | | ±0.03 | %FSO/ °C | |
| Temperature Error – Span (Thermal Sensitivity Shift) | | | ±0.03 | %/ °C | |
| Maximum Over Load | | | 250 | % | |
| Impedance In (Bridge Only) | | | 3 | KΩ | |
| Impedance Out (Bridge Only) | | | 2.2 | KΩ | |
| Compensated Temperature | 20 | | 80 | °C | |
| Operating Temperature | -40 | | +120 | °C | |
| Storage Temperature | | | | °C | |
| Excitation Voltage | | | 5 | Vdc | |
| Isolation Resistance (250Vdc) | 50 | | | KΩ | |
| Deflection at Rated Load | | | 0.05 | mm | |
| Cycle Life Expectancy | Essentially Unlimited | | | | |

Notes

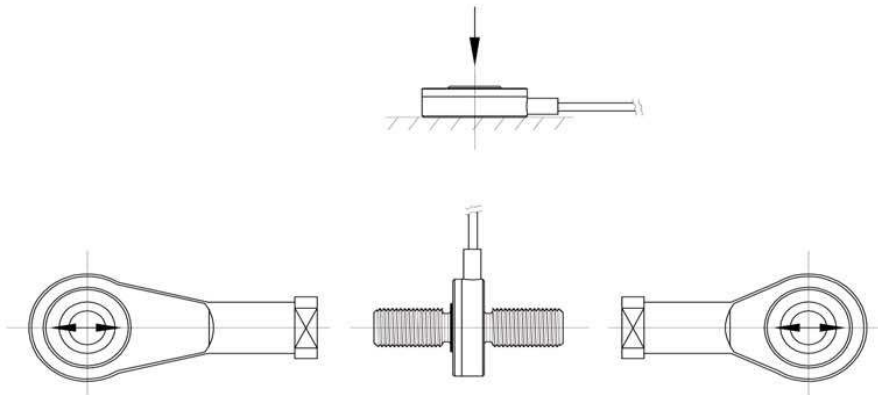
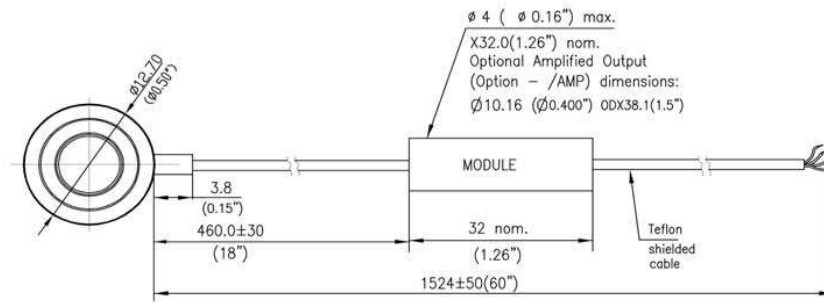
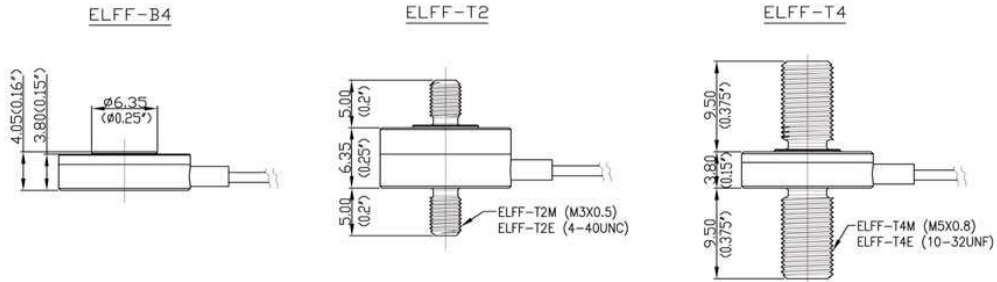
1. Re: Zero output: Lower trim values available on request.

Remarks

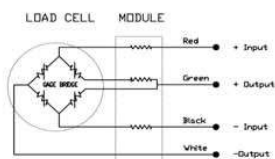
- Positive output in compression.
- Laser welded stainless steel body construction.
- Spring strain relief and shielded Teflon cable provided standard.
- Unique 4 bar linkage design provides resistance to off axis load components.

ELFF Load Cell

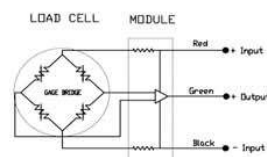
DIMENSIONS



Millivolt Bridge Version



High Level Amplified OutPut



ELFF Load Cell

OPTIONS

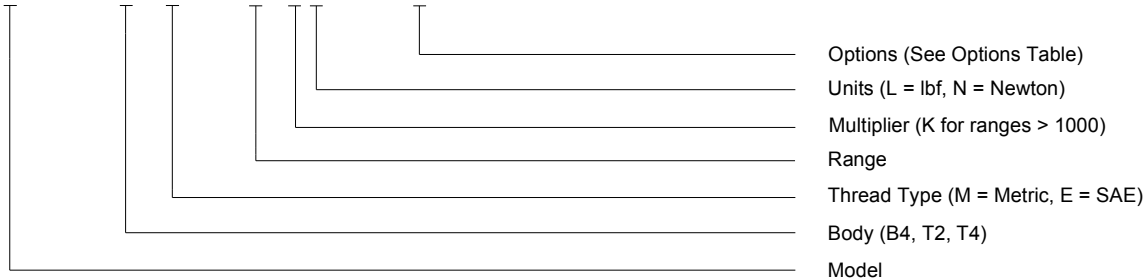
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|--|
| Standard Compensation Range: 20 to 80°C |
| Z0: -40 to +20°C |
| Z1: -20 to +40°C |
| Z2: 0 to 60°C |
| Z*: Nonstandard compensation temperature range |
| Excitation Voltage (Bridge Only): 5 Vdc standard |
| V00: Replace "00" with excitation between 1 and 10V. (At excitations less than 5V, sensitivity decreases proportionately. Sensitivity at excitations > 5V equals 20 mV/V) |
| V2.5: Sensitivity equals 50 mV FSO nominal |
| V10: Sensitivity equals 100 mV FSO. Note that input impedance may increase substantially when excitations >5Vdc are specified. |
| Excitation Voltage (Amplified): 5Vdc Standard (higher excitations available: Consult factory) |
| Standard Cable Length = 5ft (1.5m) |
| L00F: Replace "00" with total cable length in feet. Specified on units with SAE threads and lbf range. |
| L00M: Replace "00" with total cable length in meters. Specified on units with SAE threads and N range. |
| L6M: Units provided with 6m total cable length. Specified on units with SAE threads and N range. |
| L10M: Units provided with 10m total cable length. Specified on units with N range. |
| MXXP: MXXP Special Compensation Module Location: Models B0 and B1 only. Replace XX with percentage of cable length. |
| M10P: Module located at 10% of cable length ±5% |
| M25P: Module located at 25% of cable length ±5% |
| M50P: Module located at 50% of cable length ±5% |
| M75P: Module located at 75% of cable length ±5% |
| C: Microtech type male or equivalent (w/o mate) |
| R: RJ Telephone type male (w/o mate) |
| AN: Calibrate lbf range unit in Newtons |
| AL: Calibrate N range unit in lbf |
| AC: Alternate calibration: Units with studs are calibrated in Tension by default. Option AC provides compression calibration in addition to tension calibration. |
| AMP: Provides amplified, ratiometric output of 0.5 – 4.5V in tension only. Amplified units with option AC for amplified operation in tension and compression. Zero trimmed to +2.5Vdc ±5% or +2Vdc ±3% span in tension and compression at 5Vdc input. |

ELECTROMAGNETIC COMPATIBILITY: RESIDENTIAL, COMMERCIAL AND LIGHT INDUSTRY

ELFF Load Cell

ORDERING INFORMATION

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