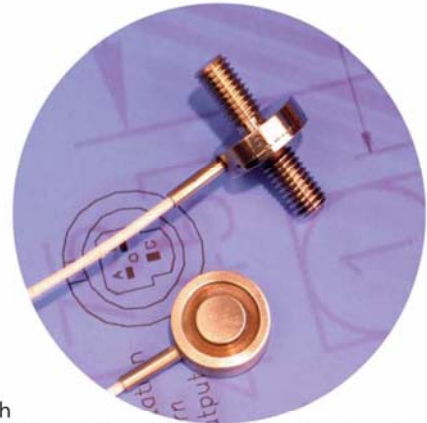




# ELFF Load Cell

PRELIMINARY

- Ultra Low Profile
- High Level and Milivolt Output
- High Stability
- Compact Compression or Tension/Compression Design
- Ranges: 10 through 100 lbf
- Full NIST Traceable 11 Point Calibration
- 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 overrange 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 Overrange
- ◆ High Reliability
- ◆ Low Deflection
- ◆ Fast
- ◆ Essentially Unlimited Cycle Life

### APPLICATIONS

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

<b>Maximum Over Load:</b>	250%,
<b>Recommended Excitation:</b>	5 Vdc
<b>Output Span (Amplified/Ratiometric):</b>	0.5 to 4.5 V +/-3% of Span at 5 Vdc Excitation
<b>Output Span (Bridge Output):</b>	20 mV/V +/-5%
<b>Output at No Load (Zero Output):</b>	+/-5%
<b>Nonlinearity:</b>	+/-0.5% FSO
<b>Hysteresis:</b>	+/-0.5% FSO
<b>Temperature Compensation:</b>	20 -80°C
<b>Thermal Zero Shift:</b>	+/- 0.03% FSO/°C
<b>Thermal Sensitivity Shift:</b>	+/- 0.03% /°C
<b>Operating Temperature Range:</b>	-40°C to 120°C
<b>Impedance In (Bridge Only):</b>	3 K ohm nominal
<b>Impedance Out (Bridge Only):</b>	2.2 K ohm nominal
<b>Deflection at Rated Load:</b>	< 0.05 mm nominal
<b>Isolation Resistance:</b>	>50 Megohm nominal at 250 Vdc
<b>Cycle Life Expectancy:</b>	Essentially Unlimited

Note: Positive output in tension.  
 Note: Re: Zero output: Lower trim values available on request.  
 Note: Laser welded stainless steel body construction. Spring strain relief and shielded teflon cable provided standard.

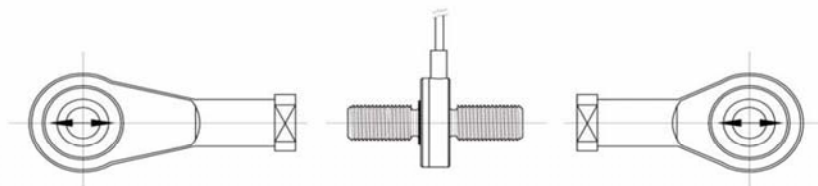
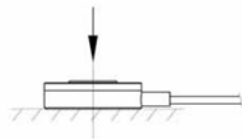
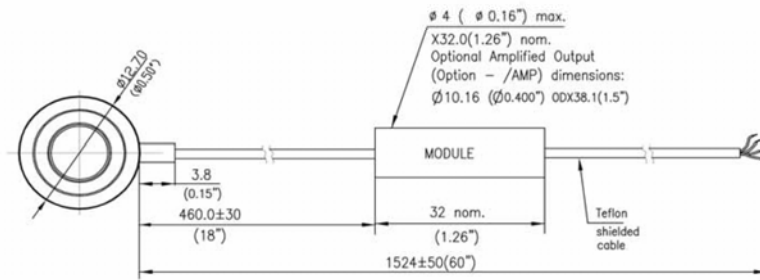
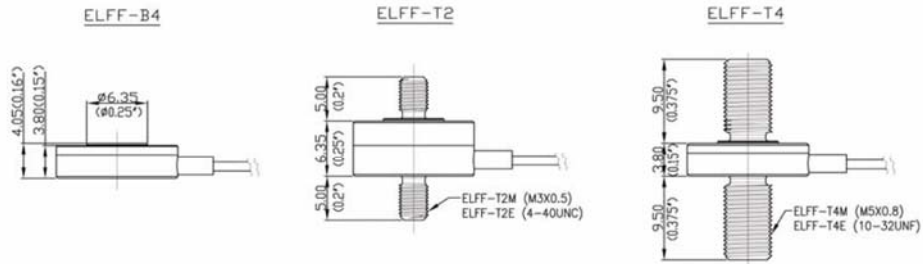
PRELIMINARY



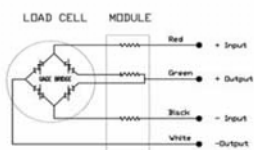
ELFF Load Cell

PRELIMINARY

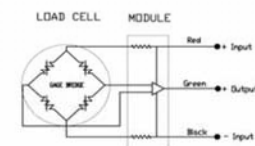
dimensions



Millivolt Bridge Version



High Level Amplified OutPut



PRELIMINARY



**ELFF Load Cell**

**PRELIMINARY**

**options**

- Standard Compensation Range:** +20 to +80°C
- Z0: -40°C to +20°C
- Z1: -20°C to +40°C
- Z2: 0°C to +60°C
- Z\*: Nonstandard compensation temp range
- Excitation Voltage (Bridge Output):** 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 > 5 Vdc are specified.
- Excitation Voltage (Amplified):** 5 Vdc Standard (Higher excitations available: Consult factory)
- Standard Cable Length = 5 ft (1.5 m)**
- L00F: Replace "00" with total cable length in feet. Specified only on units with SAE threads and lbf range
- L10F: Units provided with 10 ft total cable length. Specified only on units with SAE threads and lbf range
- L00M: Replace "00" with total cable length in meters. Specified only on units with metric threads and N range
- L6M: Units provided with 6 m total cable length. Specified only on units with metric threads and N range
- L10M: Units provided with 10 m total cable length. Specified only on units with metric threads and N range
- MXXP:** MXXP Special Compensation Module Location: 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 0.5-4.5 V in tension only. Amplified units with option AC for amplified operation in tension and compression: Zero trimmed to + 2.5 Vdc +/- 5% of 2 V +/- 3% span in tension and compression at 5 Vdc input.

ELECTROMAGNETIC COMPATIBILITY RESIDENTIAL, COMMERCIAL AND LIGHT INDUSTRY

**ordering information**

Family	Body	Thread Type	Range	Multiplier	Units	Options															
Example: ELFF	T2	E	100		N	/option1/option2/...optionX															
	B4, T2, T4 Ref Note*	M-Metric E-SAE	<table border="1"> <tr> <th>lbf</th> <th>N</th> <th>Body Style</th> </tr> <tr> <td>10</td> <td>50</td> <td>B4, T2, T4</td> </tr> <tr> <td>20</td> <td>100</td> <td>B4, T2, T4</td> </tr> <tr> <td>50</td> <td>250</td> <td>B4, T2, T4</td> </tr> <tr> <td>100</td> <td>500</td> <td>T2</td> </tr> </table>	lbf	N	Body Style	10	50	B4, T2, T4	20	100	B4, T2, T4	50	250	B4, T2, T4	100	500	T2	K: For ranges >1000	L=lbf N=Newton	* See above
lbf	N	Body Style																			
10	50	B4, T2, T4																			
20	100	B4, T2, T4																			
50	250	B4, T2, T4																			
100	500	T2																			
<p>NOTE: Metric threaded units must have Newtons range specified.            NOTE: SAE threaded units must have lbf range specified.            NOTE: Metric threaded units must have cable lengths specified in meters            NOTE: Nominal is defined as any value within the range of +50% to -30% of the stated value.            NOTE: Typical values: 50% of units will be delivered with specifications greater than the typical value and 50% of units will be delivered with specifications less than the typical value stated.            *NOTE: EXXXX: Special Factory Designation for custom components. No options need to be incorporated into the unit part numbers.            SXXXX designation reserved for MEAS Spec European operations.</p>																					

**PRELIMINARY**