ELAF Load Cell



- **Compact Design: 0.5”, 1.25” and 1.5” Diameter**
- **10 – 5000 lbf**
- **High level and mV Output**
- **High Stability**
- **Industry Standard Packaging**
- **Resists Off Axis Load Components**
- **Full NIST Traceable 11 Point Calibration**
- **Shileded Teflon Cabling with Strain Relief**

DESCRIPTION

The ELAF series 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. From the ultra compact 0.5” diameter B0 design to the high range 1.5” Diameter B3 package, the ELAF provides exceptional flexibility and superior performance.

Measurement Specialties’ ELAF Test and Measurement series sensors, unlike most designs, are provided with a "four-bar" design where a flexible diaphragm parallels the measuring flexure. This configuration is far less susceptible to off-axis load components than single diaphragm traditional designs. Shielded, teflon insulated instrumentation cabling is provided along with spring steel strain reliefs and full NIST traceable calibration certificates. The ELAF unit is fully thermally compensated and will provide an essentially unlimited cycle life expectancy. The ELAF 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
- Low Off-Axis Response
- Fast
- Essentially Unlimited Cycle Life

APPLICATIONS

- Theatrical Rigging Loads
- Assembly Forces
- Weighing
- Tool forces
- Thrust Measurements
- Batch Weighing
- Robotics End Effectors
- Product Validation Testing
- Material Test
- Hoist and Winch Loads

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STANDARD RANGES

Lbf	N	Body Style
10	50	B0
25	125	B0
50	250	B0, B1, B2
100	500	B0, B1, B2
250	1250	B0, B1, B2
500	2500	B0, B1, B2
1000	5000	B1, B2
2000	10000	B1, B2, B3
3500	17500	B3
5000	25000	B3

PERFORMANCE SPECIFICATIONS

Supply Voltage: 5V

Ambient Temperature: 25°C (unless otherwise specified)

PARAMETERS	MIN	TYP	MAX	UNITS	NOTES
Span (Amplified/Ratiometric)		0.5 to 4.5	±3 %Span	V	
Span (Bridge Only)		20	±5 %Span	mV/V	
Zero Force Output			±5	%FSO	1
Non Linearity			±0.25	%FSO	
Hysteresis			±0.25	%FSO	
Temperature Error – Zero (Over Compensated Temperature Range)			±0.01	%FSO/ °C	
Temperature Error – Span (Thermal Sensitivity Shift Over Compensated Temperature Range)			±0.01	%/ °C	
Maximum Over Load			250	%	2
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

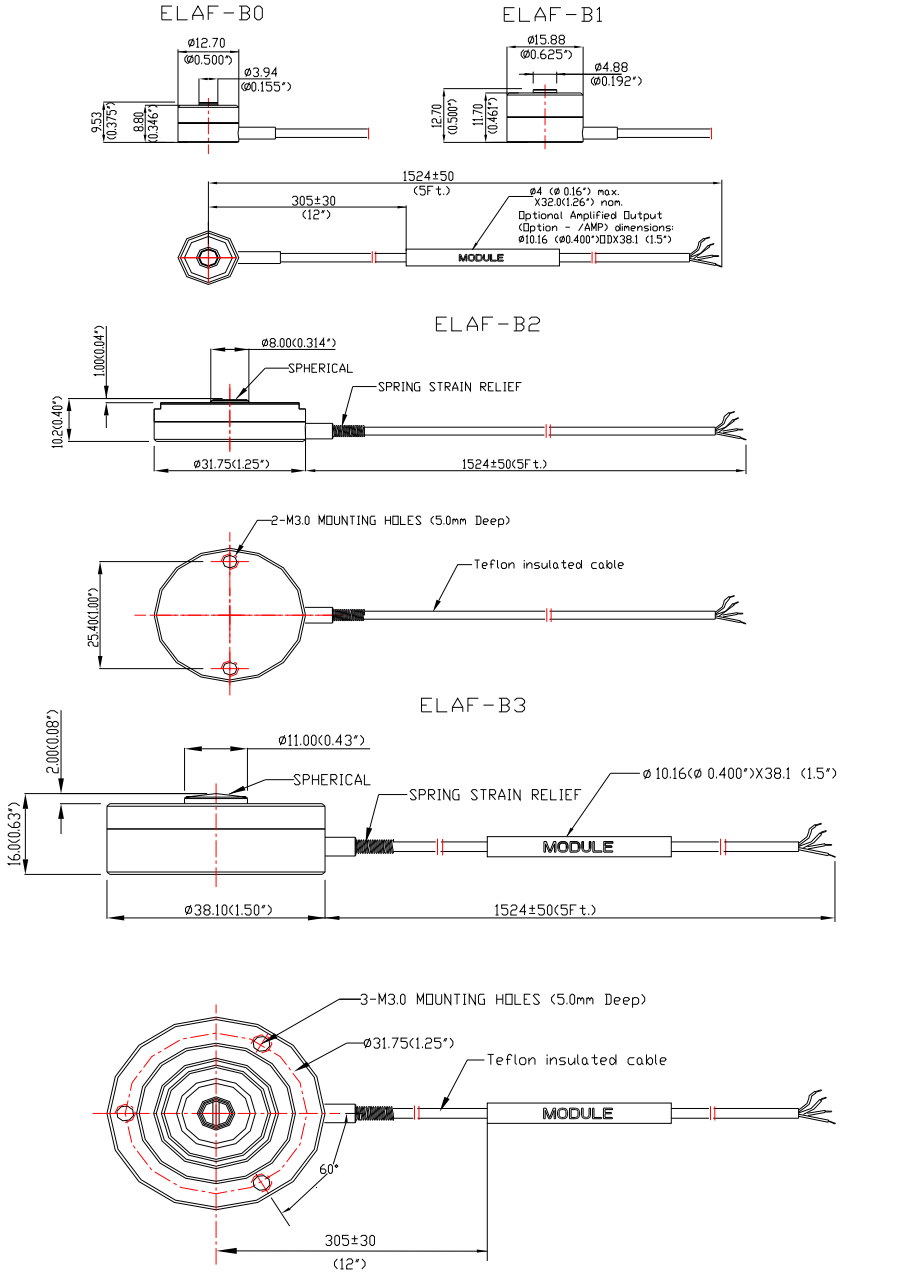
1. Re: Zero output: Lower trim values available on request.
2. Except B1-1KL, B2-2KL, B3-3.5KL, B3-5KL: 150%

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.

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DIMENSIONS



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OPTIONS

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 lbf range.
L00M: Replace “00” with total cable length in meters. Specified on units with N range.
L6M: Units provided with 6m total cable length. Specified on units with 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
AMP: Internal Amplifier, Models B2 only. Provides 0.5 – 4.5V Output ±5% @ 5V input (ratiometric).
EAMP: External Amplifier (B0, B1and B3 models only). Provides 0.5 – 4.5V Output ±5% @ 5V input (ratiometric). Module dimensions: 10.16mm (0.40”) OD X 38.1 mm (1.5”) length

ELECTROMAGNETIC COMPATIBILITY: RESIDENTIAL, COMMERCIAL, AND LIGHT INDUSTRY

ORDERING INFORMATION

ELAF Load Cell

ELAF - B3 - 17.5KN - /V10/M25P/...

