ELAF Load Cell PRELIMINARY

Compact Design: 0.5", 1.25" and 1.5" Diameter
Compression Ranges: 10 through 5000 lbf
High Level and Millivolt Output
High Stability
Industry Standard Packaging
Resists Off Axis Load Components
Full NIST Traceable 11 Point Calibration
Shielded 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 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. 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 instrumention 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 Overrange
◆ 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

Maximum over load:	250% (Except B1-1KL, B2-2KL, B3-3.5KL, B3-5KL: 150%)
Recommended Excitation:	5 Vdc
Output Span (Amplified/Ratiometric):	0.5 to 4.5 V +/-3% of Span at 5 Vdc Excitation
Output span (Bridge Only):	20 mV/V +/- 5%
Output at No Load (Zero Output):	+/- 5% FSO
Nonlinearity:	+/ - 0.25% FSO
Hysteresis:	+/- 0.25% FSO
Temperature Compensation	20 -80°C
Thermal Zero Shift	+/- 0.01% FSO/°C
Thermal Sensitivity Shift:	+/- 0.01% /°C
Operating Temperature Range:	-40°C to 120°C
Impedance In (Bridge Only):	3 K ohm nominal
Impedance Out (Bridge Only):	2.2 K ohm nominal
Deflection at Rated Load	< 0.05 mm nominal
Isolation Resistance:	> 50 Megohm nominal at 250 Vdc
Cycle Life Expectancy:	Essentially Unlimited

Note: Positive output in compression.
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.
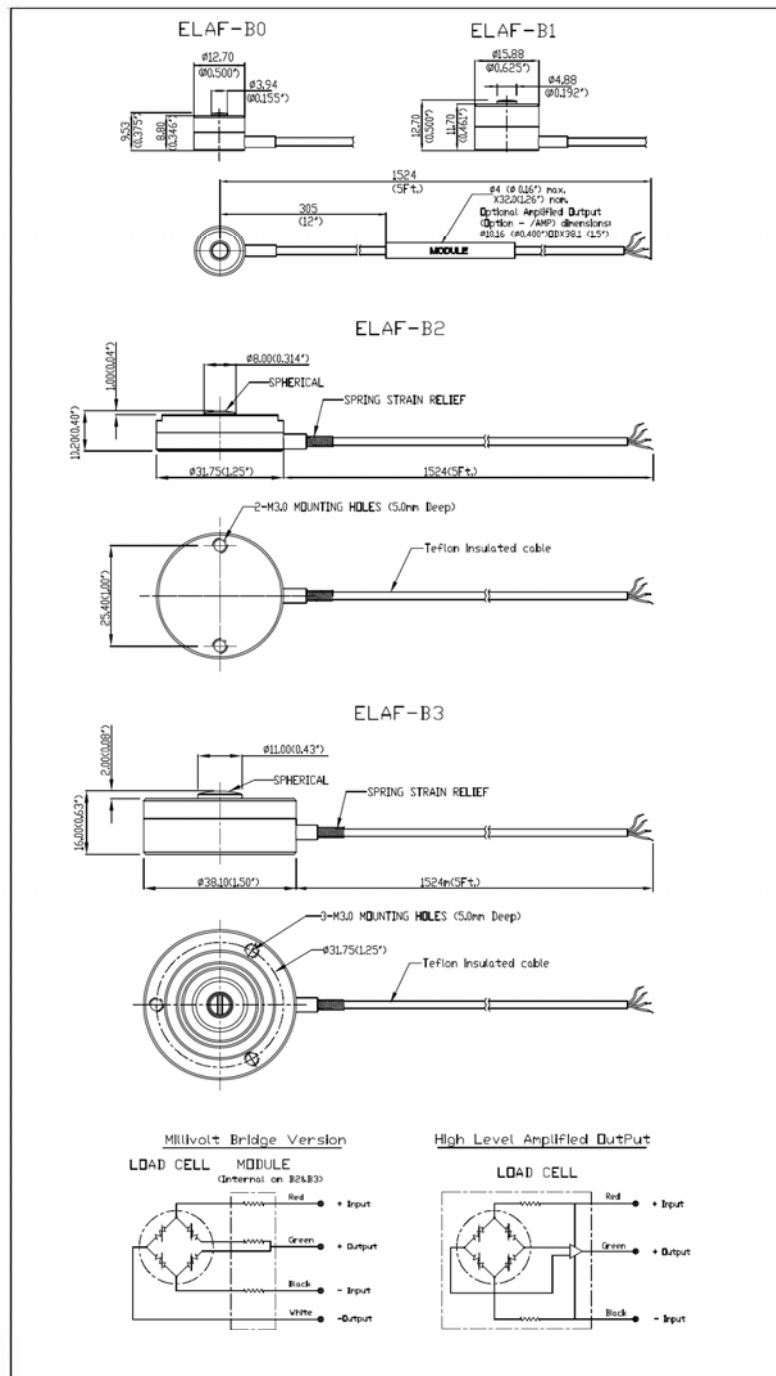Note: Unique 4 bar linkage design provides resistance to off axis load components.

PRELIMINARY

ELAF Load Cell

PRELIMINARY

dimensions

PRELIMINARY

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ELAF 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 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 > 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 on units with lbf range

L00M: Replace "00" with total cable length in meters. Specified on units with N range

L6M: Units provided with 6 m total cable length. Specified on units with N range

L10M: Units provided with 10 m 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, B3 only. Provides 0.5-4.5 V Output +/- 5% at 5 V input (ratiometric).

EAMP: External Amplifier (B0 and B1 models only). Provides 0.5-4.5 V Output +/- 5% at 5 V input (ratiometric). Module dimensions: 10.16 mm (0.40") OD X 38.1 mm (1.5") length

ELECTROMAGNETIC COMPATIBILITY RESIDENTIAL, COMMERCIAL AND LIGHT INDUSTRY

ordering information

	Family		Body		Range			Multiplier	Units		Options
Example:	ELAF	-	B2	-	250				N	-	/option1/option2/...optionX
											* See above
			B0, B1, B2, B3		lbf	N	Body Style	K for ranges>1000	L=lbf N=Newton		
			Ref Note*		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				

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 incorporated into the unit part number.

SXXXX designation reserved for Meas Spec European operations.

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