

## ELWF

### Miniature Load Cell

- ▣ Measurement ranges 0 ... 25 N to 0 ... 10 kN
- ▣ Compression
- ▣ Non-linearity  $\pm 1$  % FSO
- ▣ Output signal 0.5 ... 4.5 V ratiometric, 20 mV/V, 6 mV/V
- ▣ Supply voltage 5 VDC



The ELWF series compression load cells raise the bar for high performance at low cost. Measurement Specialties proprietary Microfused™ technology, derived from demanding aerospace applications, employ 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 a ratiometric span of 20 mV/V. High level of 0.5 to 4.5 V ratiometric outputs (/AMP) available operating from 5 Vdc excitation.

Microfused™ sensors are ideal for your test and measurement applications. Shielded, Teflon insulated instrumentation cabling is provided along with full NIST traceable calibration certificates. The ELWF unit is fully thermally compensated and will provide an essentially unlimited cycle life expectancy. The ELWF can be configured with a variety of options to fine-tune the instrument to your application: select from several standard compensated temperature ranges, input voltages, lead lengths or specify entirely unique combinations of these options.

#### ▣ Features

- Through-Hole Design
- Low Cost
- Low Profile
- Low Noise
- Robust: High Over-Range
- High Reliability
- Low Deflection
- Fast
- Essentially Unlimited Life Cycle
- Optional High Level Output: 0.5 V to 4.5 V (Option /AMP)

#### ▣ Applications

- Bolt Loads
- Assembly Forces
- Biomedical Force Measurement
- Tool Forces
- Thrust Measurements
- Robotics End Effectors

#### ▣ Standard Ranges

Ranges		Body Style
N	lbf	
25	5	B1
50	10	B1, D1
100	20	B1, D1
500	100	D1, D2
1k	200	D2
2.5k	500	D2
5k	1k	D3
10k	2k	D3

## ■ Specifications

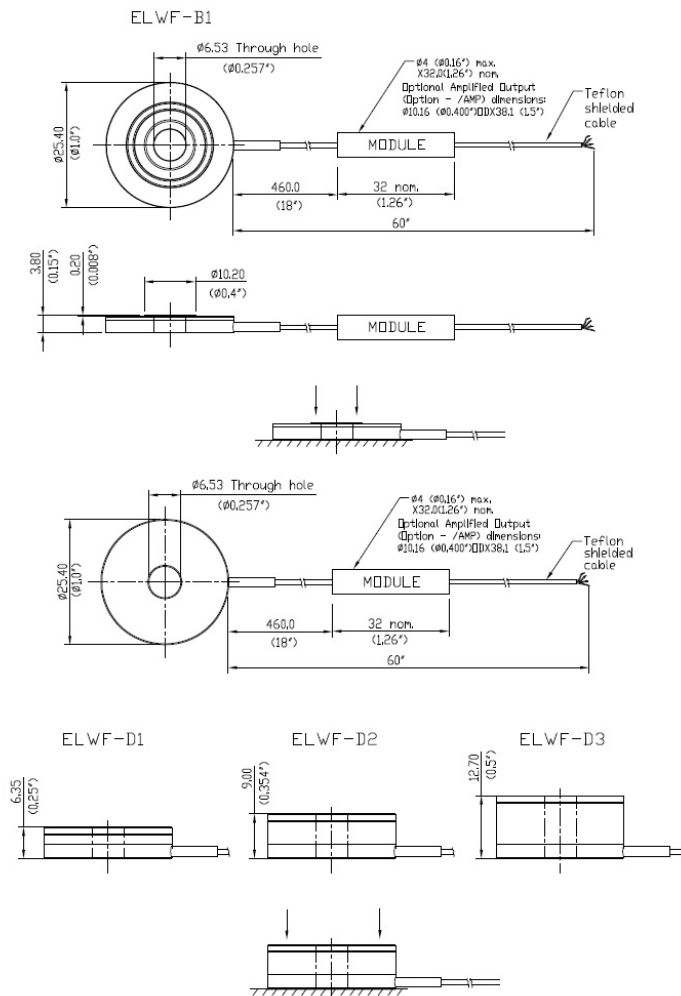
All values at temperature 25 °C and supply voltage 5 V

Parameter	Value
Full Scale Output Span <sup>(1)</sup> :	Model D1, D2, D3: 20 mV/V ( 19 ... 21 mV/V) Model B1: 6 mV/V ±5 %
Zero Force Output, max.:	±5 % FSO
Non-Linearity, max.:	±1 % FSO
Hysteresis, max.:	±1 % FSO
Temperature Error – Zero, max.:	±0.05 % FSO/K
Temperature Error – Span, max.:	±0.05 %/K
Maximum Over Load:	Ranges up to 5 kN (1 klbf): 200 % Ranges > 5 kN (1 klbf): 150 %
Impedance Input, max.:	3 kΩ
Impedance Output, max.:	2.2 kΩ
Compensated Temperature Range:	+20 ... +80 °C
Operating Temperature Range:	-40 ... +120 °C
Supply Voltage:	5 VDC
Isolation Resistance, max.:	50 MΩ at 250 VDC
Deflection at Rated Load, typ.:	<0.05 mm
Cycle Life Expectancy:	Essentially unlimited

### Notes:

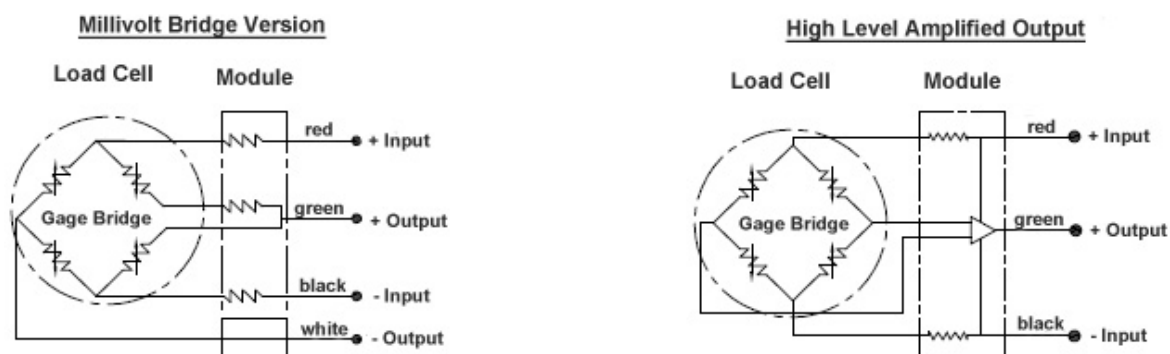
1. High level output 0.5 ... 4.5 V optional

## ■ Dimensions

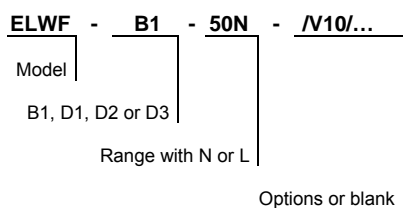


All dimensions in mm [inch], approx. values.  
These drawings are for information only and not  
intended for construction purpose.  
Please ask for detailed drawings.

## Wiring



## Options and Ordering Information



### Note :

**L=lbf ; N=Newton.**

Newton range units must have cable lengths specified in meters. Lbf range units must have cable lengths specified in inches.

<b>Comp. temperature ranges:</b>	<b>Standard</b>	=	<b>+20 ... +80 °C</b>
	Z0	=	-40 ... +20 °C
	Z1	=	-20 ... +40 °C
	Z2	=	0 ... +60 °C
	Z*	=	Non-Standard, contact factory
<b>Supply voltage:</b>	<b>Standard</b>	=	<b>5 VDC</b>
	V00	=	T1 models: Replace "00" with excitation between 1 and 10 V. (At excitations less than 5 V sensitivity decreases proportionately.) Sensitivity at excitations > 5 V equals 20 mV/V.)
	V2.5	=	Sensitivity equals 50 % of nominal data sheet value
	V10	=	Sensitivity equals 100 mV FSO. Note that input impedance may increase substantially when excitations > 5 Vdc are specified.
<b>Special cable length:</b>	<b>Standard</b>	=	<b>1.5 m (5 ft)</b>
	L00F	=	Replace "00" with total length in ft
	L00M	=	Replace "00" with total length in m
<b>Compensation Module Location:</b> MxxP		=	Replace XX with percentage of cable length.
<b>Connector wired to cable:</b>	C	=	Microtech type male or equivalent
	R	=	RJ telephone type male (w/o mate)
<b>Calibration</b>	AN	=	Calibrate lbf range unit in Newtons
	AL:	=	Calibrate N range unit in lbf
<b>Amplifier Module</b>	AMP:	=	Amplified output option provides 0.5 ... 4.5 V output $\pm 5$ % ratiometric (5 VDC input only), module dimensions 10.16 mm OD x 38.1 mm length
<b>Special Notes:</b>		=	Provided with full NIST calibration, spring strain relief and Teflon shielded cable. Housing styles offered: B1, D1, D2, D3 and D4. Sensitivity for all ranges: 20 mV/V

Due to continual product development, ALTHEN and partners reserve the right to vary the foregoing details without prior notice.