

## FN3002 Load Cell Tension and Compression



**Rod End Load Cell**  
**10 to 2000 kN (2 to 400 kLbf)**  
**Stainless steel or aluminum**  
**Harsh Industrial Environment**  
**High Level Output Model with Integrated Amplifier**

### DESCRIPTION

The FN3002 is suitable for measuring cable tension and for use in test benches and in many industrial applications. The FN3002 has compact dimensions and measures tension and compression in standard ranges from 10,000 to 2,000,000 N. Numerous options are available for adaptation to severe environments, for example, IP67 or IP68 protection. A model with integrated amplifier for high-level output is also available.

With many years of experience as a designer and manufacturer of sensors, Measurement-Specialties often works with customers to design or customize sensors for specific uses and testing environments.

To meet your needs we also offer complete turnkey systems. The matched components (sensor, power, amplifier and digital display) are formatted, calibrated and ready for immediate use.

### FEATURES

Full Scale Range : from 0-10 kN to 0-2000 kN  
 (2 kLbf to 400 kLbf)  
 Tension and Compression  
 Threaded Male Mechanical Fitting  
 Accuracy: 0.25% F.S.  
 Optional Rod End  
 High Level Output Model with Integrated Amplifier

### APPLICATIONS

Assembly forces  
 Weighing  
 Tool Force  
 Offshore  
 Civic works

### STANDARD RANGES

F.S. Ranges in N	10K	20K	50K	100K	200K	500K	1000K	2000K
F.S. Ranges in Lbf	2K	4K	10K	20K	40K	100K	200K	400K
Stiffness in N/m	$6 \times 10^7$	$1 \times 10^8$	$3 \times 10^8$	$7 \times 10^8$	$8.5 \times 10^8$	$1.5 \times 10^9$	$2 \times 10^9$	$3.5 \times 10^9$
Stiffness in Lbf/ft	$4.1 \times 10^6$	$6.9 \times 10^6$	$2.1 \times 10^7$	$4.8 \times 10^7$	$5.8 \times 10^7$	$1.0 \times 10^8$	$1.4 \times 10^8$	$2.4 \times 10^8$
Material	Aluminum	Stainless steel						

## FN3002 Load Cell Tension and Compression

### PERFORMANCE SPECIFICATIONS

Ambient Temperature: 20±1°C (unless otherwise specified)

#### PARAMETERS

Operating Temperature Range (OTR)	-20 to 80 °C [-4 to 176 °F]
Compensated Temperature Range (CTR)	0 to 60 °C [32 to 140 °F]
Zero Shift in CTR	<0.5% F.S. / 50°C [100 °F]
Sensitivity Shift in CTR	<2.10 <sup>-4</sup> / °C of reading [ $<1.10^{-4}$ / °F of reading]
Range (F.S.)	0-10 kN to 0-2000 kN [0-2 klbf to 0-400 klbf]
<b>Over-Range</b>	
Without Damage	1.5 x F.S.
Without Destruction	2 x F.S.
<b>Accuracy</b>	
Combined Non-Linearity & Hysteresis	±0.25% F.S.

#### Electrical Characteristics

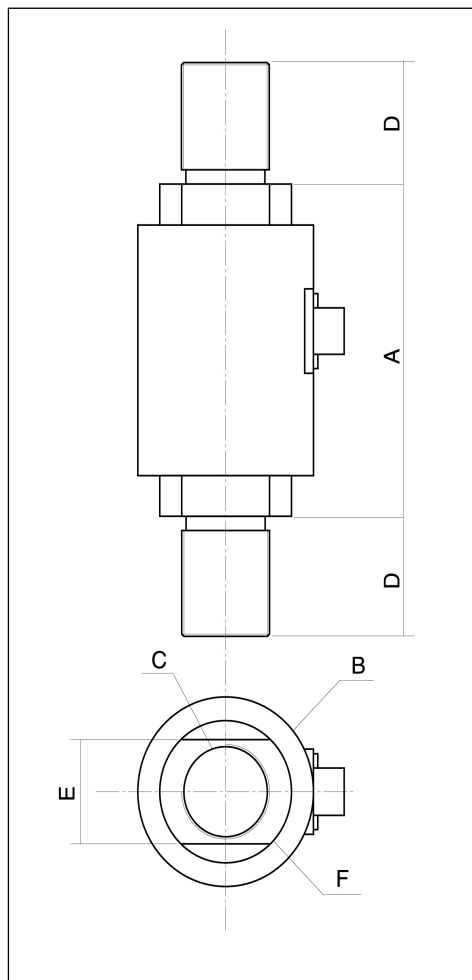
Model	FN3002	FN3002-A1	FN3002-A2
Supply Outage	10Vdc	10–30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output	2mV/V	0.5 to 4.5V	±5V
Zero Offset	±5% F.S.	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	350 to 700Ω	<50mA	<50mA
Output Impedance	350 to 700Ω	<10Ω	<10Ω
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

#### Notes

1. Electrical Termination: Connector output including mate
2. Materials: Body in stainless steel or aluminium alloy depending on F.S.; aluminum cover
3. Protection Index: IP50 (other protection levels on request)

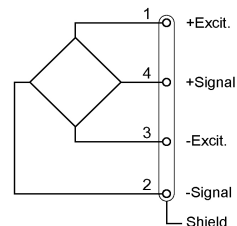
# FN3002 Load Cell Tension and Compression

## DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)

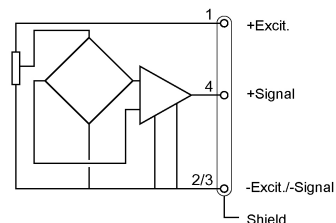


### Wiring Schematic

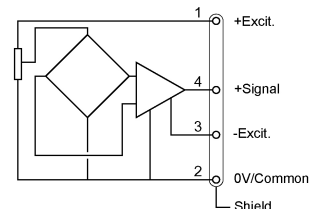
#### FN3002



#### FN3002-A1



#### FN3002-A2



### Dimensions in mm [inch]

F.S. Ranges in N [Lbf]	10K [2K]	20K [4K]	50K [10K]	100K [20K]	200K [40K]	500K [100K]	1000K [200K]	2000K [400K]
A	70 [2.76]	75 [2.95]	80 [3.15]	85 [3.35]	105 [4.13]	140 [5.51]	160 [6.30]	
B	40 [1.57]	50 [1.97]	55 [2.17]	65 [2.56]	85 [3.35]	115 [4.53]	150 [5.91]	
C (Thread)	M20x1.5	M22x1.5	M35x1.5	M45x1.5	M64x4	M80x2	M110x2	
D	25 [0.98]	25 [0.98]	32 [1.26]	40 [1.57]	70 [2.76]	100 [3.94]	115 [4.53]	
E	22 [0.87]	30 [1.18]	36 [1.42]	48 [1.89]	66 [2.60]	85 [3.35]	120 [4.72]	
F	30 [1.18]	40 [1.57]	45 [1.77]	55 [2.17]	75 [2.95]	95 [3.74]	130 [5.12]	
Material	Aluminum	Stainless steel						

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### OPTIONS

<b>A1</b> : Unipolar tension
<b>A2</b> : Bipolar Tension (ex.±15Vdc)
<b>ET1</b> : CTR -20 to 100 °C [-4 to 212 °F] OTR = CTR
<b>ET2</b> : CTR -40 to 120 °C [-40 to 248 °F] OTR = CTR
<b>ET3</b> : CTR -40 to 150 °C [-40 to 302 °F] OTR = CTR ( <b>Note</b> : Not available with A1 and A2 options)
<b>P5</b> : IP65 Protection Index (needs option PE)
<b>PE</b> : Cable Gland Termination with 2 m [6.5 ft] cable
<b>PE/LC</b> “x”: Additional cable length to standard length (in m) with PE option ( <b>Note</b> : “X” = Custom value)

### ORDERING INFO

FN3002 - A1 - 100KN -/ET1/PE



### RECOMMENDED ACCESSORIES

<b>ER</b> : Rod Ends
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