

# FN3148 Load Cell with mechanical stops



- Ranges from 10 to 2 000 N [2 to 400 lbf]
- S-Beam sensor with mechanical stops in tension and compression
- Combined linearity & hysteresis < 0.05% F.S.
- High level output with integrated amplifier

## DESCRIPTION

The **FN3148** high precision load cell features accuracy of 0.05% F.S. It is available in standard ranges from 0-10 N to 0-2000 N. Integrated mechanical stops protect against accidental overloads in tension and compression. For high-level output a model with integrated amplifier is available.

For lower ranges, another sensor, model **FN3280**, can measure 0-1 to 0-5N [0.2 to 1 lbf].

With many years of experience as a designer and manufacturer of sensors, Measurement Specialties, Inc. 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

- High accuracy
- Tension and Compression
- Integrated Mechanical Stops
- Integrated Amplifier optional
- Cable or connector output

## APPLICATIONS

- Process control equipment
- Medical Instruments
- Weighing
- Laboratory and Research
- Calibration test benches

## STANDARD RANGES

<b>Ranges in N</b>	10	50	100	200	500	1K	2K
<b>Ranges in lbf</b>	2	10	20	40	100	200	400
<b>Stiffness in N/m</b>	$2.2 \times 10^4$	$1.8 \times 10^5$	$3.7 \times 10^5$	$8.3 \times 10^5$	$2.2 \times 10^6$	$4.5 \times 10^6$	$9.5 \times 10^6$
<b>Stiffness in lbf/ft</b>	$1.5 \times 10^3$	$1.2 \times 10^4$	$2.5 \times 10^4$	$5.7 \times 10^4$	$1.5 \times 10^5$	$3.1 \times 10^5$	$6.5 \times 10^5$

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## PERFORMANCE SPECIFICATIONS

All values are typical at temperature 20±1° C

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	<0.5 % of reading / 50° C [/100° F]
Range (F.S.)	0-10 to 0-2000 N [0-2 lbf to 0-400 lbf]
Over-Range	
Without Damage	5 to 100 x F.S. (see table)
Accuracy	
Combined non-linearity & hysteresis	≤±0.05% F.S.

### Electrical Characteristics

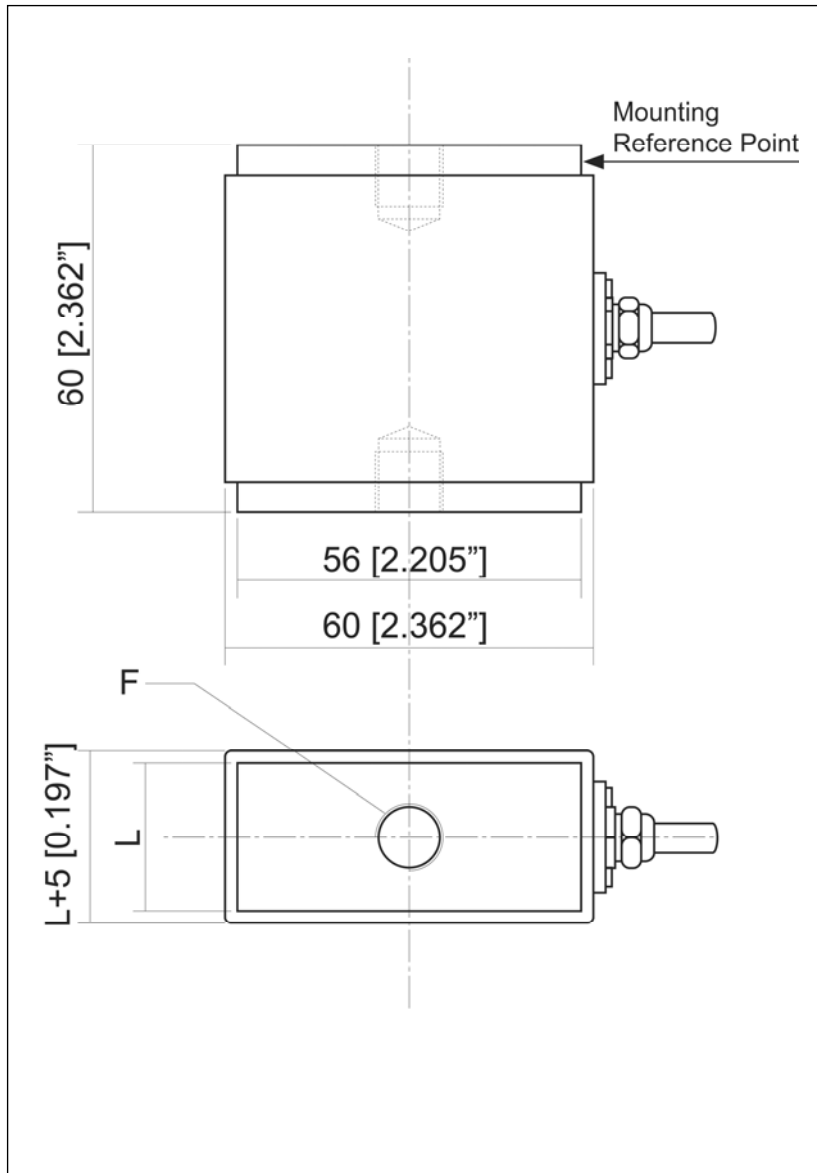
Model	FN3148	FN3148-A1	FN3148-A2
Supply Voltage	10Vdc	10 to 30Vdc	±15Vdc (±12 to ±18Vdc)
F.S. Output <sup>3</sup>	±2mV/V typical	±2V ±5% F.S.	±5V ±5% F.S.
Zero Offset <sup>3</sup>	±5% F.S.	2.5V ±5% F.S.	0V ±5% F.S.
Input Impedance/Consumption	350 to 700Ω	<50mA	50mA
Output Impedance	350 to 700Ω	1 kΩ <sup>4</sup>	1 kΩ <sup>4</sup>
Insulation under 50Vdc	≥100MΩ	≥100MΩ	≥100MΩ

### Notes

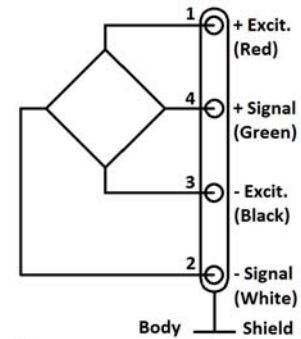
1. Electrical Termination: Cable gland termination, 2m cable length standard
2. Materials: Body in aluminium alloy and cover in stainless steel
3. Other signal output on request
4. Output impedance < 100Ω on request
5. CE conformance according to EN 61010-1, EN 50081-1, EN 50082-1

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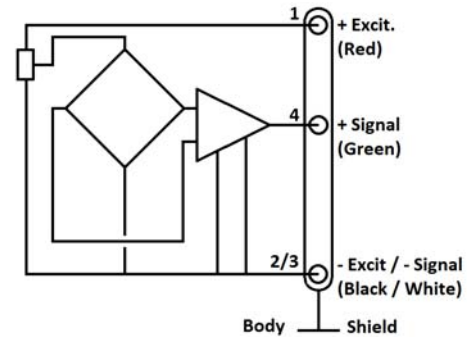
## DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)



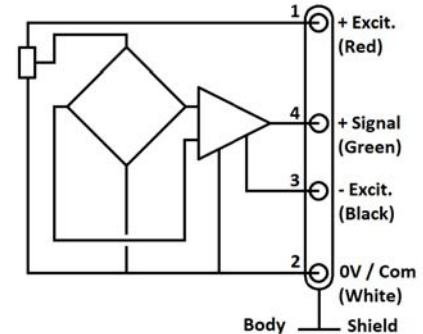
### Wiring Schematic



### Version -A1



### Version -A2



### Dimensions in mm [inch]

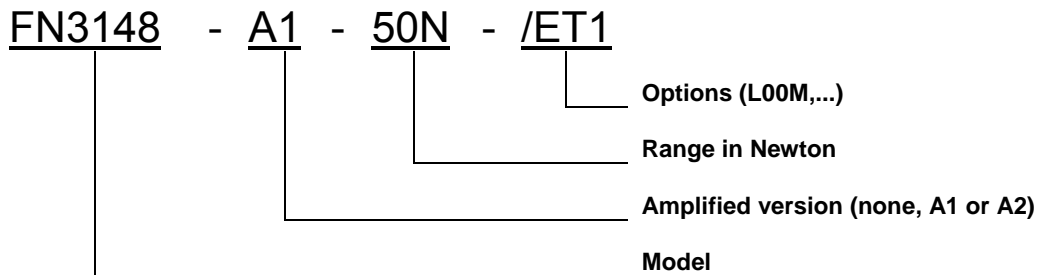
Range in N [in lbf]	10 [2]	50 [10]	100 [20]	200 [40]	500 [100]	1K [200]	2K [400]
F (Thread)	M6			M10			
L	20 [0.79"]	25 [0.98"]					
Over-range (compression)	20 kN [4 klbf]						
Over-range (tension)	1 kN [200 lbf]			2 kN [400 lbf]	5 kN [1 klbf]	10 kN [2klbf]	
Stiffness in N/m [in lbf/ft]	2.2x10 <sup>4</sup> [1.5x10 <sup>3</sup> ]	1.8x10 <sup>5</sup> [1.2x10 <sup>4</sup> ]	3.7x10 <sup>5</sup> [2.5x10 <sup>4</sup> ]	8.3x10 <sup>5</sup> [5.7x10 <sup>4</sup> ]	2.2x10 <sup>6</sup> [1.5x10 <sup>5</sup> ]	4.5x10 <sup>6</sup> [3.1x10 <sup>5</sup> ]	9.5x10 <sup>6</sup> [6.5x10 <sup>5</sup> ]

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## OPTIONS

<b>A1</b> : Amplified Tension output with unipolar power supply
<b>A2</b> : Amplified Tension output with bipolar power supply
<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>SC</b> : Connector output (Jaeger 4b mini)
<b>L00M</b> : special cable length, replace "00" with total length in meters

## ORDERING INFORMATION



## RECOMMENDED ACCESSORIES

<b>ER</b> : Rod Ends
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