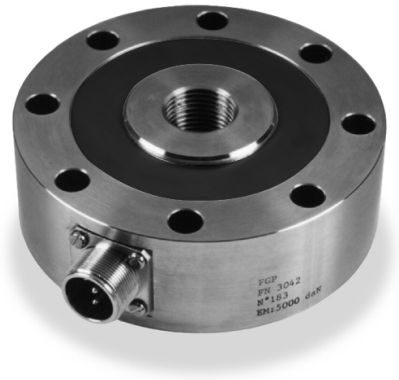
# FN3042 Load Cell for Fatigue Testing



- **Pan Cake load cell**
- **Full Scale Range : from 5 to 500 kN (1 to 100 kLbf)**
- **Tension and Compression**
- **Suited for fatigue testing**
- **High Level Output Model with Integrated Amplifier**

## DESCRIPTION

The FN3042 is highly suited for use in test benches and fatigue tests. Due to the mechanical design, the FN3042 is especially durable. It measures tension and compression in standard ranges from 0-5 kN to 0-500 kN and is able to undergo more than 1000000 cycles of full scale with very little change in zero offset stability.

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 0-5 kN to 0-500 kN (0-1 kLbf to 0-100 kLbf)
- Tension and Compression
- Accuracy: 0.25% F.S.
- Skydrol compatible on request
- High Level Output Model with Integrated Amplifier

## APPLICATIONS

- Process control equipment
- Weighing calibration tool
- Dynamic fatigue tests
- Aerospace test bed
- Robotics and effectors
- Laboratory and Research

## STANDARD RANGES

| F.S. Ranges in N | 5K | 10K | 25K | 50K | 100K | 200K | 500K |
|---|---|---|---|---|---|---|---|
| F.S. Ranges in Lbf | 1K | 2K | 5K | 10K | 20K | 40K | 100K |
| Stiffness in N/m | $1.7x10^8$ | $3x10^8$ | $6x10^8$ | $1.5x10^9$ | $2x10^9$ | $3.5x10^9$ | $6.5x10^9$ |
| Stiffness in Lbf/ft | $1.2x10^7$ | $2.1x10^7$ | $4.1x10^7$ | $1.0x10^8$ | $1.4x10^8$ | $2.4x10^8$ | $4.5x10^8$ |
| Material | Aluminum | Stainless steel | | | | | |

# FN3042 Load Cell for Fatigue Testing

## PERFORMANCE SPECIFICATIONS

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

**PARAMETERS**

| | |
|---|---|
| Operating Temperature Range (OTR) | -20 to 80 ℃ [-4 to 176 ℉] |
| Compensated Temperature Range (CTR) | 0 to 60 ℃ [32 to 140 ℉] |
| Zero Shift in CTR | <0.5% F.S. / 50℃ [100 ℉] |
| Sensitivity Shift in CTR | $<2.10^{-4}$ / ℃ of reading [$<1.10^{-4}$ / ℉ of reading] |
| Range (F.S.) | 0-5 kN to 0-500 kN [0-1 klbf to 0-100 klbf] |
| **Over-Range** | |
| Without Damage | 2 x F.S. |
| Without Destruction | 3 x F.S. |
| **Accuracy** | |
| Combined Non-Linearity & Hysteresis | ±0.25% F.S. |

**Electrical Characteristics**

| **Model** | **FN3042** | **FN3042-A1** | **FN3042-A2** |
|---|---|---|---|
| Supply Outage | 10V | 10–30Vdc | ±15Vdc (±12 to ±18Vdc) |
| F.S. Output | ±1.5mV/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 alloy cover

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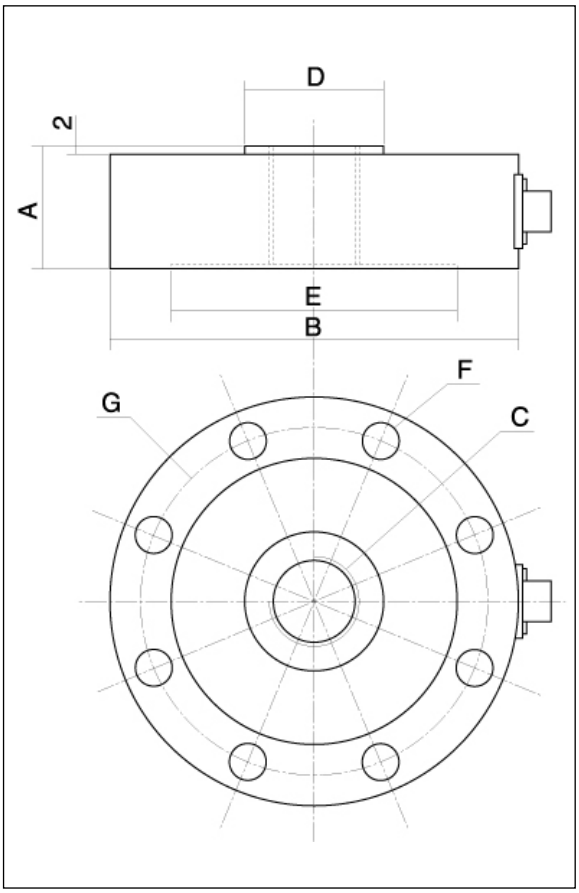
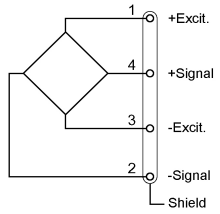
## DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)

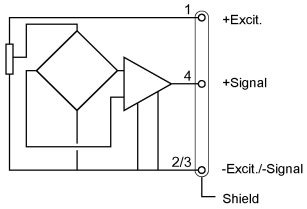



**Wiring Schematic**

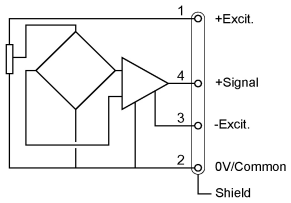
**FN3042**




**FN3042-A1**




**FN3042-A2**




**Dimensions in mm [inch]**

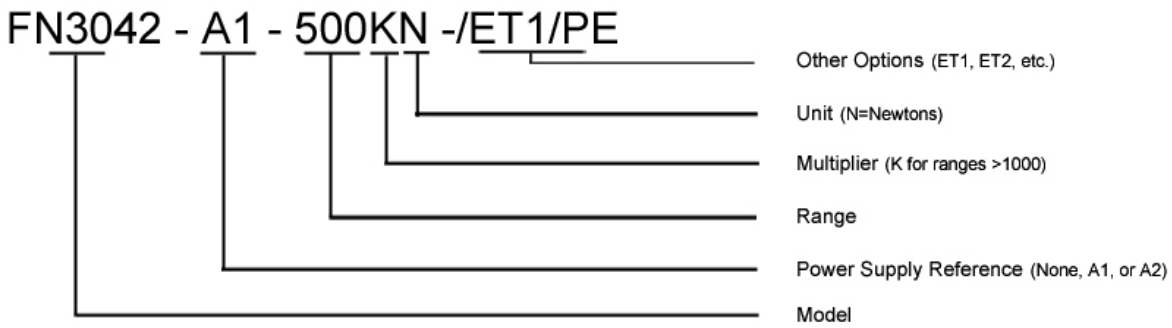
| F.S. Ranges in N [Lbf] | 5K [1K] | 10K [2K] | 25K [5K] | 50K [10K] | 100K [20K] | 200K [40K] | 500K [100K] |
|---|---|---|---|---|---|---|---|
| **A** | 30 [1.18] | 30 [1.18] | 30 [1.18] | 40 [1.57] | 50 [1.97] | 50 [1.97] | 70 [2.76] |
| **B** | 101 [3.98] | 101 [3.98] | 101 [3.98] | 119 [4.69] | 144 [5.67] | 168 [6.61] | 228 [8.98] |
| **C (Thread)** | M16 x 2 | M20 x 1.5 | M20 x 1.5 | M24 x 2 | M36 x 3 | M45 x 4 | M64 x 4 |
| **D** | 34 [1.34] | 34 [1.34] | 34 [1.34] | 49 [1.93] | 66 [2.60] | 72 [2.83] | 102 [4.02] |
| **E** | 70 [2.76] | 70 [2.76] | 70 [2.76] | 83 [3.27] | 104 [4.09] | 118 [4.65] | 152 [5.98] |
| **F** | 8 x 8.2 [0.32] | 8 x 8.2 [0.32] | 8 x 8.2 [0.32] | 8 x 10.2 [0.40] | 8 x 12.2 [0.48] | 8 x 16.2 [0.64] | 16 x 20.2 [0.8] |
| **G** | 85 [3.35] | 85 [3.35] | 85 [3.35] | 101 [3.98] | 124 [4.88] | 143 [5.63] | 190 [7.48] |
| **Material** | Aluminum | Stainless steel | | | | | |

# FN3042 Load Cell for Fatigue Testing

## OPTIONS

| |
|---|
| **A1** : Unipolar Tension |
| **A2** : Bipolar Tension |
| **ET1** : CTR -20 to 100 ºC [-4 to 212 ºF] OTR = CTR |
| **ET2** : CTR -40 to 120 ºC [-40 to 248 ºF] OTR = CTR |
| **ET3** : CTR -40 to 150 ºC [-40 to 302 ºF] OTR = CTR ( **Note** : ET3 not available with A1 and A2 options) |
| **PE** : Cable Gland Termination with 2 m [6.5 ft] cable |
| **PE/LC"x"**: Additional cable length to standard length (in m) with PE option (**Note** : "X" = Custom value) |

## ORDERING INFO





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