

DynaLabs

Model DYN-C-3000-LN

Range [g]: 2, 5, 10, 30, 50, 100, 200

Product Manual

Product Support

If at any time you have questions or problems with the DYN-C-3000-LN sensors, please contact a Dynalabs engineer at:

Phone: +90 312 386 21 89 (9 a.m. to 5 p.m., UTC +3)

E-mail: info@dynamalabs.com.tr

Warranty

Our products are warranted against defective materials and workmanship for one year. Defects arising from user errors are not covered by the warranty.

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1) Introduction

Capacitive accelerometers are based on proven micro-electro-mechanical systems (MEMS) technology. These capacitive accelerometers are reliable and long-term stable. These sensors are Differential Ended type DC response sensors. The advantages of these sensors are their outstanding temperature stability, external noise immunity and their lightweight. These sensors feature standard reliable aluminum housing with protection class IP68. Steel housing is also possible.

Dynalabs 3000LN series triaxial accelerometers provide Low noise – high resolution with an outstanding noise performance from 9 to 680 $\mu\text{g}/\sqrt{\text{Hz}}$. These accelerometers provide a wide frequency range ($\pm 5\%$) from 700 Hz to 2,500 Hz

DYN-C-3000-LN sensors offer the following options;

- Custom Cable Length
- Custom Housing Material
- Custom Connector
- Base plate



2) General Information

2.1) Unpacking and Inspection

Dynalabs products provide adequate protection for undamaged products to be transported. Document the damages that occur indirectly during the transport and contact the customer representative.

2.2) System Components

The DYN-C-3000-LN has the following components:

- MEMS Sensor
- Calibration Certificate
- Product Manual

2.3) Specifications

Table 1: Specifications datasheet

| Full scale acceleration | (g) | 3002LN ±2 | 3005LN ±5 | 3010LN ±10 | 3030LN ±30 | 3050LN ±50 | 3100LN ±100 | 3200LN ±200 |
|----------------------------|------------------------------------|--------------|--------------|---------------|---------------|---------------|----------------|----------------|
| Sensitivity | (mV/g) | 1,350 | 540 | 270 | 90 | 54 | 27 | 13.5 |
| Frequency range (±5%) | (Hz) | 700 | 1,150 | 2,000 | 2,300 | 2,700 | 2,900 | 2,500 |
| Non-linearity (full scale) | (%) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| Noise (in band) | ($\mu\text{g}/\sqrt{\text{Hz}}$) | 9 | 21 | 40 | 100 | 180 | 340 | 680 |
| Bias temperature | ($\text{mg}/^\circ\text{C}$) | ±0.2 | ± 0.5 | ± 1 | ± 3 | ± 5 | ± 10 | ± 20 |
| Shock survivability | (g) | ±3000 pk | ±3000 pk | ±3000 pk | ±3000 pk | ±3000 pk | ±3000 pk | ±3000 pk |

Environmental

Table 2: Environmental Specifications datasheet

| | |
|----------------------------------|-------------------|
| Protection Level | IP 68 |
| Operating Voltage | 6 V – 40 V |
| Operating Temperature | -40 °C to +100 °C |
| Operating Current Consumption mA | 21 mA |
| Isolation | Case isolated |

Physical

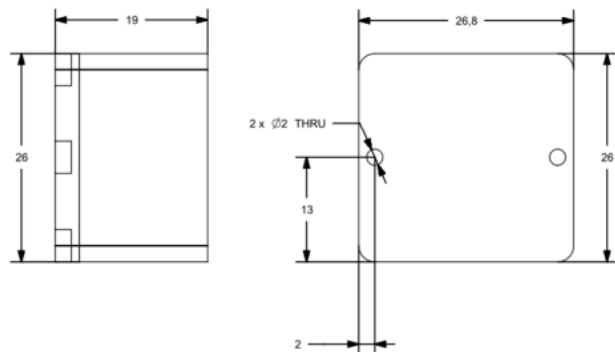
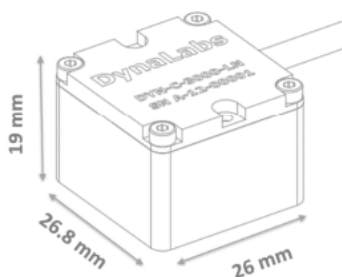
Table 3: Physical Specifications datasheet

| | |
|------------------------|---------------------------------|
| Sensing Element | MEMS Capacitive |
| Housing Material | Aluminum or Steel |
| Connector (Optional) | D-Sub 9 or 15 pin, Lemo, Binder |
| Mounting | Adhesive or screw mount |
| Base plate (Optional) | Aluminum or Steel |
| Weight (without cable) | 21 g (aluminum) 45 g (steel) |

2.4) Outline Drawing

The dimensional properties of DYN-C-3000-LN sensors are given below;

Technical Drawings:



3) Operation and Installation

3.1) General

The general sensor connector configuration is given below;

Cable Code/Pin Configuration:

- Red : V + Power supply voltage +6 to +40 VDC
- Black : Ground Power GND
- X -Axis : Yellow : Signal(+) Positive, analog output voltage signal for differential mode
Purple : Signal(-) Negative, analog output voltage signal for differential mode
- Y -Axis : Blue : Signal(+) Positive, analog output voltage signal for differential mode
Green : Signal(-) Negative, analog output voltage signal for differential mode
- Z -Axis : White : Signal(+) Positive, analog output voltage signal for differential mode
Orange : Signal(-) Negative, analog output voltage signal for differential mode

WARNING

Never connect the power supply and/or the power ground to yellow, purple, blue, green, white and/or orange cables.

Never connect the power supply to the power ground. Always use a clean power source and check the voltage range.

4) Sensor Static Calibration Verification

Using gravity, voltage values are measured in the + and – gravity directions, providing a value of ± 1 g. The measurement should be made as follows;

When the acceleration value of 3000LN series sensors is entered into the data acquisition system, the sensor shows +1 g with the effect of gravity, which is in the direction of the axis to be calibrated.

When the sensor is positioned in the opposite direction to the axis to be calibrated, the arrow shows -1g as shown below under the effect of gravity.

Using gravity, the voltage values that provide 1 g in the + and - directions are measured and compared with the catalog value. The calibration value should be close to the catalog value with 10% tolerance. Sensor catalog sensitivity values are given in Table 1.



5) Declaration of Conformity

DynaLabs



*This declaration of conformity is issued under the sole responsibility of the manufacturer.
The product(s) are developed, produced and tested according to following EC- directives:*

- 2014/35/EU – Low Voltage Directive (LVD)
- 2006/42/EU – Machinery Safety Directive
- 2015/863/EU – RoHS Directive

Applied standards:

- EN 61010-1:2010
- EN ISO 12100:2010
- MIL-STD-810-H-2019 (Test Methods: 501.7 - High Temperature, 502.7 - Low Temperature, 514.8 - Vibration, 516.8 – Shock)

*DYNALABS MÜHENDİSLİK SANAYİ TİCARET LİMİTED ŞİRKETİ declares
that above mentioned products meet all the requirements of the above mentioned
standards and regulations.*

A handwritten signature in blue ink, appearing to be 'Canan Karadeniz', written in a cursive style.

Canan Karadeniz, General Manager

Ankara, 15.07.2021