DynaLabs DYN-C-1000-LN Uniaxial Capacitive Accelerometers User Manual

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DynaLabs

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Product Support

If at any time you have questions or problems with the DYN-C-1000-LN sensors, please contact a Dynalabs engineer at

- **Phone:** +90 312 266 33 34 (9 a.m. to 5 p.m., UTC +3)
- **E-mail:** info@dynalabs.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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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 LN accelerometers provide Low noise – high resolution with an outstanding noise performance from 9 to 680 µg/√Hz. These accelerometers provide a wide frequency range (±5%) from 250 Hz to 1,500 Hz.

DYN-C-1000-LN sensors offer the following options;

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

General Information

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.

System Components
The DYN-C-1000-LN has the following components:

- MEMS Sensor
- Calibration Certificate
- Product Manual

Specifications

Table 1: Specifications datasheet

		1002LN	1005LN	1010LN	1030LN	1050LN	1100LN	1200LN
Full scale acceleration	(g)	±2	±5	±10	±30	±50	±100	±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)	(µg/√Hz)	9	21	40	100	180	340	680
Bias temperature	(mg/°C)	±0.2	± 0.5	± 1	± 3	± 5	± 10	± 20
Shock survivability	(g)	2,500	2,500	2,500	3,000	3,000	3,000	3,000

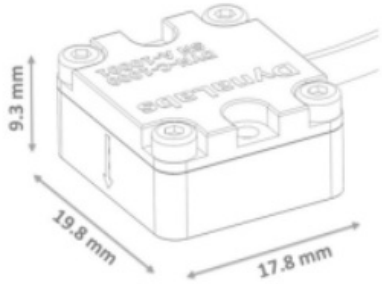
Environmental
Table 2: Environmental Specifications datasheet

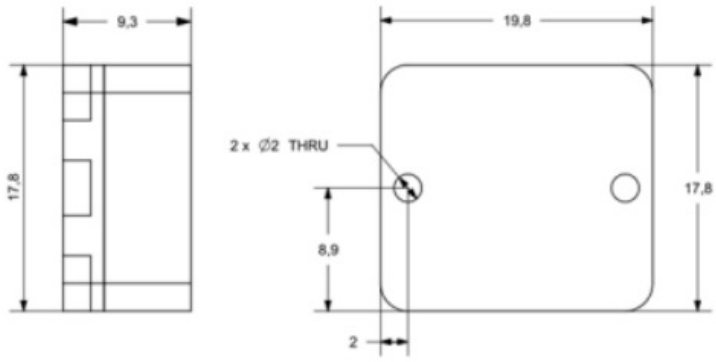
Protection Level	IP 68
Operating Voltage	5 V – 20 V
Operating Temperature	-40 °C to +100 °C
Operating Current Consumption mA	7 mA
Isolation	Case isolated

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)	10 g (aluminum) 20 g (steel)

Outline Drawing
The dimensional properties of DYN-C-1000-LN sensors are given below;





Operation and Installation

General
The general sensor connector configuration is given below; Cable Code/Pin Configuration:

- **Red :** V + Power supply voltage +5 to +20 VDC
- **Black :** Ground Power GND
- **X : Yellow :** Signal(+) Positive, analog output voltage signal for differential mode.
  Blue : Signal(-) Negative, analog output voltage signal for differential mode.

WARNING
Never connect the power supply and/or the power ground to yellow and/or blue cables.
Never connect the power supply to the power ground. Always use a clean power source and check the voltage range.

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 sensitivity value of 1000LN series sensors is used with the data acquisition system, the sensor shows +1 g with the effect of gravity in the direction of the arrow sign.

- When the sensor is in the opposite direction of the arrow, it shows -1 g with 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.

Declaration of Conformity

CE

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.

Murat Aykan, Technical Manager Ankara, 15.07.2021

Documents / Resources

DynaLabs	DynaLabs DYN-C-1000-LN Uniaxial Capacitive Accelerometers [pdf] User Manual DYN-C-1000-LN Uniaxial Capacitive Accelerometers, DYN-C-1000-LN, Uniaxial Capacitive Accelerometers, Capacitive Accelerometers, Accelerometers