330505 Low Frequency Velocity Sensor

Datasheet

Bently Nevada Machinery Condition Monitoring

169872 Rev. F

Description

The Bently Nevada 330505 Low Frequency Velocity Sensor is specifically designed for hydroelectric turbines where slow rotating speeds require detecting a low signal to noise ratio. It detects vibration of the stator core, stator frame, and bearing housing supports. It is designed to provide early warning of pending machinery problems and to help you diagnose problems before they become serious.

The sensor measures absolute vibration within the 0.5Hz to 1.0kHz range. Its two-wire design uses moving-coil technology and embedded signal conditioning circuitry to provide a voltage output directly proportional to the vibration velocity.

Stator core and stator frame vibration can cause fretting and damage to the winding insulation. To detect these problems before serious damage occurs, mount a 330505 sensor on the outer diameter of the stator core and frame.

Bearing housing vibration can distort levels of vibration measured by shaft-observing proximity probes. To detect premature failure of machine components and prevent significant machine problems, place 330505 sensors in locations that measure both shaft-relative and bearing-absolute vibration signals. You can mount 330505 sensors to the bearing housing either as a stand-alone measurement or in the same orientation as existing proximity sensors.

The 330505 Transducer connects to the 3500/46M Hydro Monitor, meeting the requirements of International Organization for Standardization (ISO) Standard 10816-5 for mechanical vibration on non-rotating parts in hydraulic power and pumping plants.

Due to the nature of high amplitude, low frequency velocity events, the 330505 Low Frequency Velocity Sensor is not recommended for automated machinery protection. Due to capacitance constraints, this sensor is not approved for hazardous areas.

CE

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Specifications

Parameters are specified from +20 to +30°C (+68 to +86°F) and 80Hz unless otherwise indicated.

Operation outside the specified limits may result in false readings or loss of machine monitoring.

Electrical

Sensitivity	20 mV/mm/s (508mV/in/s) ±10%
Frequency Response	0.5—1000 Hz (30—60,000 cpm) ±3.0 dB; 1—200 Hz (60—12,000 cpm) ±0.9 dB
Velocity Range	102 mm/s (4 in/s) peak
Amplitude Range	See 330505 Vibration Nomograph on page 6.
Amplitude Linearity	±3%—102 mm/s (4 in/s) peak
Output Bias Voltage	-12 ±1 VDC
Maximum Cable Length	305 metres (1000 feet) with no degradation of signal, when used with 3500/46M

Environmental Limits

Operating and storage temperature range	Maximum mounted surface temperature -40°C to +100°C (-40°F to +212°F)
Shock Survivability	981 m/s2 (100g) peak
Relative Humidity	To 100% non-submerged; case is hermetically sealed.

Physical

Weight	< 375grams (13.2oz) (typical)
Mounting	See 330505 System Dimensional Drawing on page 7.
Case material	300 series stainless steel.
Connector	2-pin Mil-C-5015 receptacle, hermetically sealed, 300 series stainless steel.
Mounting Torque	46 kg cm (40 in-lb) max.
Polarity	Pin A becomes positive with respect to Pin B when the applied velocity is from the base to the top of the transducer.

Compliance and Certifications

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

EMC

EMC Directive 2014/30/EU

RoHS

RoHS Directive 2011/65/EU