

# ORBIT 60 SERIES AC LVDT Input Module

## Datasheet

Bently Nevada Machinery Condition Monitoring

173M3153 Rev. -



## Description

The Orbit 60 Series AC LVDT Input Module provides inputs to interface with four AC Linear Variable Differential Transformers for position measurements. The module's primary use is the measurement of case expansion and valve position. The AC LVDT input module occupies a single slot.

The four AC LVDT configured channels can connect to a:

- 5-wire AC LVDT
- 6-wire AC LVDT

Note: To configure the 6-wire, 3 and 4 pins are shorted together.

The module's OK LED indicates when the module is functioning properly, and the LINK LED indicate when the module is communicating to the rest of the system. Four channel status LEDs, located on the utility side of the module, indicate that each AC LVDT sensor is connected and functioning properly.



## AC LVDT

Module Inputs		
Channels	4 differential AC signals from AC LVDT	
Power Consumption	5.7 W typical, 10 W maximum	
Standard Sensors		
AC LVDT (Linear Range - Inch)	Sensitivity mV/V/mm (mV/V/mil)	Linearity (% of Full Scale Range)
<b>18639-01</b> (+/- 0.5)	28.74 (0.73)	+/- 0.20
<b>18639-02</b> (+/- 1.0)	15.35 (0.39)	+/- 0.23
<b>18639-05</b> (+/- 2.0)	9.45 (0.24)	+/- 0.1
<b>18639-06</b> (+/- 3.0)	10.24 (0.26)	+/- 0.15
<b>18639-07</b> (+/- 5.0)	5.51 (0.14)	+/- 0.13
<b>18639-04</b> (+/- 6.0)	3.94 (0.10)	+/- 0.05
<b>18639-08</b> (+/- 10.0)	3.15 (0.08)	+/- 0.22

Module Outputs	
Module OK LED	Indicates when the AC LVDT module is functioning properly
Channel OK LEDs	Indicates when the AC LVDT channels are functioning properly
Signal Conditioning	
Accuracy:	Within $\pm 0.33\%$ of full scale. Typical: $\pm 1\%$ maximum.
Direct Filter:	-3 dB at 1.2 Hz
Gap Filter:	-3 dB at 0.4 Hz
Frequency Response:	35 KHz ( - 3 dB)
Transducer Excitation Voltage: (Sinusoidal)	V <sub>ac</sub> = 2.83 Vrms I <sub>ac</sub> = 40 mA <sub>rms</sub> (Max) Frequency = 2 KHz





AC LVDT Alarms	
Alarm Setpoints	Use configuration software to set alert levels for each value measured by the module and danger setpoints for any two of the values measured by the module.  Alarms are adjustable from 0 to 100% of full scale for each measured value. However, when the full scale range exceeds the range of the transducer, the range of the transducer will limit the setpoint.
Alarm Accuracy	Within 0.13% of the desired value

AC LVDT Measured Variables	
Case Expansion	Composite, direct, and position

**AC LVDT Measured Variables**


Valve Position	Direct and position
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**Environmental Limits**


Chassis Operating Temperature Range (indoor use only)	<p><b>3U Chassis:</b>          -30°C to +70°C          (-22°F to 158°F) </p> <p><b>6U Chassis:</b>          -30°C to +65°C          (-22°F to 149°F) </p>
Module Temperature Rating - Certification	<p>-30°C to +70°C          (-22°F to 158°F)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  You must still meet the Chassis Operating Temperature Range defined above.         </div>
Storage Temperature Range	-40°C to +85°C (-40° F to 185° F)
Relative Humidity	0% to 95% rH non-condensing operating and storage
Vibration	<p>Without Isolators:          0 g to 0.35 g @ 57-500 Hz</p> <p>With Isolators:          0 g to 5 g @ 57-500 Hz.</p>
Shock	2" Incline Drop
Altitude	<p>&lt; 2000 m (6,562 ft)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  Higher altitudes are possible but are site specific applications. Contact Bently Nevada support if you require higher altitudes.         </div>

**Environmental Limits**

Pollution Degree	Pollution Degree 2
Installation Category	Category II

 Verify that temperature ratings on the wiring cables match the operating temperature range.

 **CAUTION**



**LOCATION TEMPERATURE AND HUMIDITY**

If you install the hardware in a location where temperatures may exceed 40° C (104° F) or in excessive humidity, you should consider supplying environmental controls. High temperatures will reduce the operational life of the system.

## 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

European Community Directive:

EMC Directive 2014/30/EU

Standards:

EN 61000-6-2; Immunity for Industrial Environments  
EN 61000-6-4; Emissions for Industrial Environments

### Electrical Safety

European Community Directive:

LV Directive 2014/35/EU

Standards:

EN 61010-1;  
EN 61010-2-201;

### RoHS

European Community Directive:

RoHS Directive 2011/65/EU

### Cyber Security

Designed to meet IEC 62443-4-2

### \*Maritime

ABS Rules for Condition of Classification, Part 1

- Steel Vessels Rules
- Offshore Units and Structures

\* Approvals pending

### Functional Safety

SIL 2

### Hazardous Area Approvals



For the detailed listing of country and product-specific approvals, refer to the [Approvals Quick Reference Guide \(108M1756\)](#).

For additional technical documentation, please log in to [bntechsupport.com](http://bntechsupport.com) and access the Bently Nevada Media Library.

### cNRTLus

Class I, Zone 2: AEx/Ex ec nC IIC T4 Gc;  
Class I, Zone 2: AEx/Ex nA nC IIC T4 Gc;  
Class I, Division 2, Groups A, B, C, D T4;  
Class I, Division 2, Groups A, B, C, D T4 (N.I.);

T4 @ Ta= -30°C to +70°C (-22°F to +158°F)

### ATEX/IECEx



Ex II 3 G  
Ex ec nC IIC T4 Gc  
Ex nA nC IIC T4 Gc

T4 @ Ta= -30°C to +70°C (-22°F to +158°F)

## Ordering Information



For the detailed listing of country and product-specific approvals, refer to the [Approvals Quick Reference Guide \(108M1756\)](#).

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## AC LVDT Input Module

Ordering Option	Description
60R/INP10-AAA-B	
<b>AAA – Hazardous Area Certifications</b>	
00	No Hazardous Area
01	CSA/NRTL/C (Class I, Div 2)
02	Multi (CSA, ATEX, IECEx)
XXX	Country Specific Approvals
<b>B – SIL Level</b>	
0	No SIL
2	SIL 2

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1631 Bently Parkway South, Minden, Nevada USA 89423  
Phone: 1.775.782.3611 (US) or [Bentley.com/support](https://www.bentley.com/support)  
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