Industrial Vibration Sensors, Switches and Instrumentation

IMI SENSORS
A PCB PIEZOTRONICS DIV.

The IMI Sensors division of PCB Piezotronics (PCB®) is pleased to provide this catalog of our broad spectrum of standard products. Within this publication are sensors, switches, accessories, and signal conditioning equipment, which have been specifically designed for industrial machinery vibration measurements, condition based monitoring, process control, and predictive maintenance requirements.

In 1990, PCB® formed the IMI Sensors division to focus on the design of robust accelerometers for demanding industrial machinery monitoring applications. Today, IMI Sensors has grown into a world-class manufacturer of industrial accelerometers with a product offering that also includes piezo-velocity sensors, 4-20 mA sensors and transmitters, accelerometers with on-board temperature sensors, portable vibration meters, switches, bearing fault detectors, signal conditioners, switching junction boxes, and accessories to support data collection and machinery diagnostic applications. IMI's customers encompass many industries:

ALCOA
Caterpillar
Champion Paper
Eastman Kodak
El DuPont
Ford Motor Company
General Motors
Georgia Pacific
LTV Steel
Praxair
Procter & Gamble
US Navy
Valmet

Since 1967, PCB® has been a supplier of precision, piezoelectric sensors for dynamic acceleration, acoustic, pressure and force measurements. Recently, the addition of capacitive, piezoresistive, and strain-gage sensing technologies has propelled the company into DC acceleration, static pressure, load, and torque measurement applications. Unmatched customer service, state-of-the-art manufacturing capabilities, and worldwide distribution have contributed to the steady growth and success of PCB®. Customers from industrial, government, commercial, education, aerospace, automotive, medical, and R&D disciplines have all relied on PCB® to deliver products and solutions for many demanding requirements.

IMI Sensors is an integrated team created to address the specific sensor needs of those involved with the measurement of acceleration, motion, shock, and vibration under harsh factory conditions. Together, Design, Engineering, Sales, Customer Service, and Marketing personnel draw upon the vast manufacturing resources within PCB® to continually provide new, more powerful, sensing solutions. Please do not hesitate to call upon us to assist with your measurement requirements and extend our guarantee of Total Customer Satisfaction.

In the interest of continuing product improvement, catalog specifications are subject to change without notice.

Before machining tapped holes for installation, please request a copy of the item's detailed installation drawing.

IMI Sensors Catalog
IMI-600E-0907

PCB is ISO 9001:2000 Certified
A2LA Accredited to ISO 17025
AS9100:2004 Certified

PCB is an EOE/AAP Employer

Printed in USA

Total Customer Satisfaction — The IMI Sensors division of PCB® guarantees Total Customer Satisfaction. If, at any time, for any reason, you are not completely satisfied with a product, IMI Sensors will repair, replace, or exchange it at no charge. You may also choose to have your purchase price refunded.

☎ Toll-free Customer Service 800-959-4464 — IMI Sensors offers a direct, toll-free telephone number for customer use. Feel free to call to discuss application requirements, request product literature or price quotations, place orders, inquire about order status, expedite orders, troubleshoot equipment, or arrange for returns. International customers are invited to call 716-684-0003. In addition, we can be reached by e-mail at imi@pcb.com. Our fax number is 716-684-3823. We look forward to hearing from you.

24-hour SensorLine℠ — IMI Sensors offers to all customers, at no charge, 24-hour emergency phone support. This service makes product and application support available to our customers, day or night, seven days per week. To reach an IMI Sensors SensorLine℠ customer service representative, call 716-684-0003.

Web site - www.imi-sensors.com — Products are featured on the IMI Sensors web site at www.imi-sensors.com. The web site offers customers educational and technical information, as well as the latest product releases. Additionally, industrial sensors may be ordered on-line. You may also contact us via our general e-mail address at: imi@pcb.com.

IMI® Sensors Contact Guide

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ISO 9001:2000 Certification — PCB Piezotronics is registered by Underwriters Laboratories, Inc. as an ISO 9001 facility and maintains a quality assurance system dedicated to resolving any concern to ensure Total Customer Satisfaction. PCB® also conforms to the former MIL-STD-45662 and MIL-Q-9858.

ISO 10012-1 Compliant Calibration Facility — IMI Sensors division accelerometers are calibrated with full traceability to NIST (National Institute of Standards & Technology) to ensure conformance to published specifications. Certificates of calibration are furnished that include actual measured data. Calibration systems utilized are kept in full compliance with ISO 9001:2000 and ISO 10012-1 standards. Calibration methods are accredited by A2LA to ISO 17025 standards.

Delivery Policy — IMI Sensors is committed to making every effort possible to accommodate all delivery requests. Our extensive in-house production capabilities permit us to manufacture most products to order in a timely fashion. In the event that a specific model is unavailable in the time frame needed, we can usually offer a comparable unit, for sale or loan, to satisfy urgent requirements. Many products are available from stock for immediate shipment. Standard cable assemblies and accessory hardware are always stocked for immediate shipment and IMI Sensors never requires a minimum order. If you have urgent requirements, call a factory representative and every effort will be made to fulfill your needs.

Custom Products — IMI Sensors prides itself on being able to respond to customer needs. Heavy investment in machinery, capabilities, and personnel allow us to design, test, and manufacture products for specialized applications. Please contact an IMI Sensors customer service representative to discuss your special needs.

CE Marking CE — Many IMI Sensors products are designed, tested, and qualified to bear CE marking in accordance with European Union EMC Directives. Products that have earned this qualification are so indicated by the CE logo.

Accuracy of Information — IMI Sensors has made a reasonable effort to ensure that specifications contained in this catalog were correct at the time of printing. In the interest of continuous product improvement, IMI Sensors reserves the right to change product specifications without notice at any time. Dimensions and specifications in this catalog may be approximate and for reference purposes only. Before installing sensors, machining surfaces, or tapping holes, contact an IMI Sensors application specialist to obtain a current installation drawing and the latest product specifications.

Routine Modification of Standard Models — In addition to the list of options noted in this section, customers from all business sectors regularly request adjustments for their specific implementation and measurement needs. PCB® has accommodated customers by making numerous standard adjustments to thousands of sensors as well as to associated electronics. These adjustments to sensitivity, range, frequency response, resolution, grounding issues, mounting, cabling, and electrical requirements can often be made for a certain premium over the base model.

Numerical Model Number Index

This index provides page references for accelerometers, signal conditioners, and test equipment. For cables, mounting hardware, and accessory items, please check the appropriate sections listed in the table of contents.

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A Word About Special Models...

The products in this IMI Sensors catalog reflect the most current technology, best performance, broad representation of popular features, and excellent value. Many specialty options and custom products are not included in this publication.

Customers are encouraged to make known their special requests, particularly for products that have served faithfully in the past. Consult an IMI Sensors factory application engineer for assistance in handling specialty or custom applications.

Industrial Vibration Sensors, Switches, & Instrumentation

Typical Industrial Vibration Sensor Applications

- Aluminum Plants
- Automotive Manufacturing
- Balancing
- Bearing Analysis and Diagnostics
- Bearing Vibration Monitoring
- Bridges and Civil Structures
- Coal Processing
- Cold Forming Operations
- Concrete Processing Plants
- Condition Based Monitoring
- Compressors
- Cooling Towers
- Crushing Operations
- Diagnostics of Machinery
- Engines
- Floor Vibration Monitoring
- Food, Dairy and Beverage
- Foundations
- Gearbox Monitoring
- Geological Exploration
- Heavy Equipment and Machinery
- Helicopters
- Hull Vibration Monitoring
- HVAC Equipment
- Impact Measurements
- Impulse Response
- Machine Tools
- Machinery Condition Monitoring
- Machinery Frames
- Machinery Mount Monitoring
- Machinery Vibration Monitoring
- Manufacturing
- Mining
- Modal Analysis
- Motor Vibration
- Off-Road Equipment
- Paper Machinery Monitoring
- Petrochemical
- Pharmaceutical
- Power Generation
- Predictive Maintenance
- Printing
- Pulp and Paper
- Pumps
- Quality Control
- Reciprocating Compressor Monitoring
- Seismic Monitoring
- Shipboard Machinery
- Shock Measurements
- Shredding Operations
- Site Vibration Surveys
- Slurry Pulsation Monitoring
- Spindle Vibration and Imbalance
- Squeak and Rattle Detection
- Steel and Metals
- Structure-Borne Noise
- Structural Testing
- Submersible Pumps
- Transportation Equipment
- Turbines
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- Underwater Pumps
- Vibrating Feeders
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- Vibration Control
- Vibration Isolation
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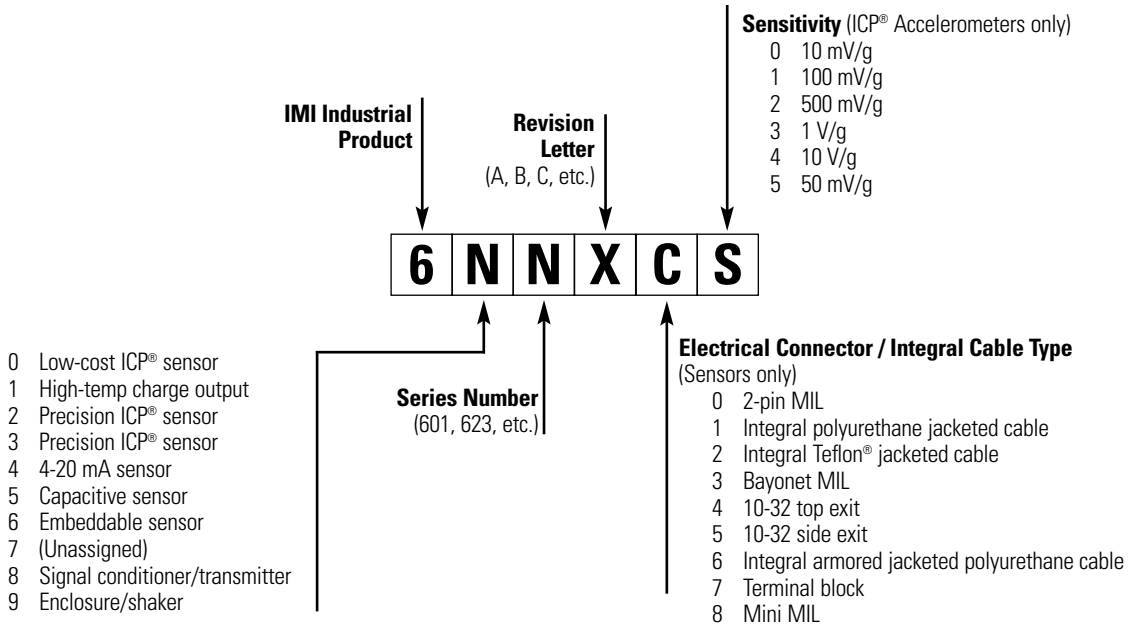
IMI SENSORS

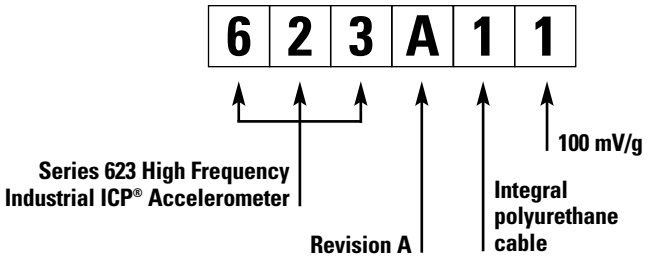
IMI Sensors Model Number Guide

Generic IMI Sensors Model Number Example:



Example

Model 623A11



How to Specify an Option

It is often desirable to incorporate various options in an accelerometer to enhance or improve performance for a given application. To designate an option for a specific model, first check to ensure it is available by finding the option prefix in the model specification chart. The prefix letter is inserted in front of a model number to designate the option (e.g.,TO622A01).

Note: More than one option may be designated (e.g., FMVO622A01). The following descriptions address the impact any option might have on specifications and performance. If in doubt about the compatibility of any option for the accelerometer model of interest, or effects any option might introduce for your application, please call an application engineer for assistance.

Brief Description of Option Letters

The tables on the following pages (vi-viii) describe each of the options listed below in greater detail.

CS —
Canadian Standards Association Approved Intrinsically Safe

EP —
Explosion Proof Condulet Enclosure

EX —
Atex Approved Intrinsically Safe

F —
Operation from 220 VAC Power

FM —
Factory Mutual Approved Intrinsically Safe

HT —
High Temperature Operation

LB —
Low Bias Operation

M —
Metric Installation

MO —
Multiple Output

MS —
Mine Safety Administration Approved Intrinsically Safe

MX —
Atex Approved Intrinsically Safe for Mining per I M2 EEx ia I

PS —
Painted Steel Enclosure

RV —
Raw Vibration (Analog Acceleration) Output Signal

R —
Rechargeable (includes AC powered recharger and rechargeable batteries)

SS —
Stainless Steel Enclosure

TO —
Temperature Output Signal

VO —
Velocity Output Signal

XSS —
316L Stainless Steel Enclosure

* EX prefix on Series 60X & Series 64X sensors represents both CSA and Atex approvals.

Option "CS" —

Canadian Standards Association Approved Intrinsically Safe (e.g., CS622A01)

For use in hazardous areas, the CS option designates a vibration sensor certified by the Canadian Standards Association as intrinsically safe, when used with a properly installed, intrinsic safety barrier in environments shown on the table to the right.

CSA Approved Hazardous Environments	
Division 1	**Continuous or Intermittent Hazards**
Class 1	**Gases and Vapors**
Group A	Acetylene
Group B	Hydrogen
Group C	Ethylene
Group D	Methane
Temperature Code T4	**+ 135 °C -maximum surface temperature**

Option "EP" —

Explosion Proof Condulet Enclosure (e.g., EP640B01)

For use in hazardous areas, the EP option designates a condulet enclosure atop the vibration sensor to protect the electrical connection of the sensor and furnish a threaded connection for interface to conduit.

The housing of the vibration sensor is physically altered with threads for connection of the condulet enclosure.

Option "EX" —

Atex Approved Intrinsically Safe (e.g., EX622A01)

For use in hazardous areas, the EX option designates a vibration sensor that has been certified by Atex, the European Committee for Electrotechnical Standardization as intrinsically safe, when used with a properly installed, intrinsic safety barrier in environments shown on the table to the right.

Atex Approved Hazardous Environments	
Division 1	**Continuous or Intermittent Hazards**
EEx	**Code Letter**
ia	Same as Zone 0, 1, and 2
Zone 0	Continuous Hazard
Zone 1	Intermittent Hazard
Zone 2	Hazards under abnormal conditions
Class IIC	**Acetylene**
Temperature Code T4	+ 135 °C -maximum surface temperature

Option "FM" —

Factory Mutual Approved Intrinsically Safe (e.g., FM622A01)

For use in hazardous areas, the FM option designates a vibration sensor certified by Factory Mutual as intrinsically safe, when used with a properly installed, intrinsic safety barrier in environments shown in the table on the right.

FM
APPROVED

FM Approved Hazardous Environments

Division 1	Continuous or Intermittent Hazards
Class 1	**Gases and Vapors**
Group A	Acetylene
Group B	Hydrogen
Group C	Ethylene
Group D	Methane
Class 2	**Dusts**
Group E	Metal Dust
Group F	Coal Dust
Group G	Grain Dust
Class 3	**Fibers (no sub groups)**
Temperature Code T4	+ 135 °C -maximum surface temperature

Option "HT" —

High-temperature Operation (e.g., HT622A01)

An adjustment to the built-in microelectronic circuitry permits sensor operation to temperatures that exceed normal operating temperature range. Typically, the frequency range of the sensor is somewhat compromised and the output impedance is raised to <500 ohm. Check with the factory to determine the allowable high-temperature capability for a specific model and the impact this option will have on frequency range.

Option "LB" —

Low Bias Operation (e.g., LB622A01)

An adjustment to the built-in microelectronic circuitry reduces the output bias voltage to approximately 4.5 to 6.5 VDC. This permits the sensor to operate from a reduced, minimum, excitation voltage of 9 VDC. This may be desirable when incorporating an accelerometer into an OEM system and the voltage available for excitation is limited. Also, some vibration data collectors, readout devices, or analyzers, that incorporate excitation power, may provide only a lower voltage than the 18 VDC normally recommended for standard sensors. The low bias option limits the amplitude range of the sensor to ± 3 volts output. For example, a 100 mV/g accelerometer, with low bias operation, becomes limited to a ± 30 g range.

Option "M" —

Metric Installation (e.g., M603C01)

This option permits installation of the vibration sensor into a tapped hole having a metric thread. It simply designates a change in the supplied mounting stud, screw, or bolt. Metric mounting studs are adaptor studs that have an English thread on the end that screws into the sensor base, and a metric thread on the other end that screws into the test specimen. Metric screws or bolts are used for through-hole mounted sensors.

Options for Industrial Vibration Sensors

Option "MS" —

Mine Safety Administration Approved Intrinsically Safe (e.g., MS622A01)

For use in hazardous areas, the MS option designates a vibration sensor that has been certified by the United States Department of Labor, Mine Safety and Health Administration as intrinsically safe, when used with a properly installed, intrinsic safety barrier in the environments shown on the table to the right.

MSHA

MSHA Approved Hazardous Environments	
Division 1	**Continuous or Intermittent Hazards**
Class 1	**Gases and Vapors**
Group D	Methane
Class 2	**Dusts**
Group F	Coal Dust

Option "MX" —

Atex Approved Intrinsically Safe for Mining per I M2 EEx ia I (e.g., MX622A01)

For hazardous area use, the MX option designates a vibration sensor certified by Atex as intrinsically safe, when used with a properly installed, intrinsic safety barrier in environments shown on the table to the right.

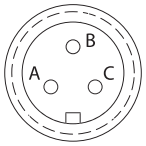
Ex

Atex for Mining Approved Hazardous Environments	
Division 1	**Continuous or Intermittent Hazards**
EEx	**Code Letter**
ia	Same as Zone 0, 1, and 2
Zone 0	Continuous Hazard
Zone 1	Intermittent Hazard
Zone 2	Hazards under abnormal conditions
Group I	**Methane**
Equipment Group I	Category M-2
Temperature Code T4	**+ 135 °C -maximum surface temperature**

Option "RV" —

Raw Vibration (Analog Acceleration) Output Signal (e.g., RV640A01)

For 4-20 mA vibration sensing transmitters, the RV option provides a third connector pin, or integral cable lead, upon which the analog acceleration signal is present and available for readout, recording, frequency analysis, and diagnostic purposes.

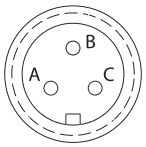


(Sensor connector shown)

Option "TO" —

Temperature Output Signal (e.g., TO622AX1)

This option adds a built-in temperature sensor and third connector pin, or integral cable lead, upon which a 10 mV/°C temperature output signal is present.



(Sensor connector shown)

Option "VO" —

Velocity Output Signal (e.g., VO622A01)

This option adds a built-in signal integrator for converting the analog acceleration signal into an analog velocity signal. Often, velocity is the vibration measurement parameter of choice for machinery vibration monitoring applications.

Low-cost, ICP® Industrial Accelerometers

Highlights

- Intrinsically safe models
- Low-profile designs
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Top or side exit connector
- Hermetically sealed construction
- Long distance signal transmission
- Swiveler®, Spindler®, ring, and through-hole styles for ease of connector orientation
- Single frequency NIST traceable calibration
- Optional temperature output signal
- 2-pole filter minimizes "ski-slope" effect

For Permanent Installation

IMI Sensors offers two signature series of low-cost industrial ICP® accelerometers: Swiveler® and Spinder®. Each is recommended for permanent installation onto machinery to satisfy vibration trending requirements in Predictive Maintenance and Condition Monitoring applications. Lower cost is achieved by relaxing the tolerance on sensitivity from unit to unit, and by calibrating at only one reference frequency point, typically 100 Hz. Measurement accuracy is compromised only if a sensor's nominal sensitivity is used. If provided single-point sensitivity is used, accuracy is very good.

Since low-cost sensors carry a wider sensitivity tolerance, the actual measurement obtained using the nominal sensitivity value may not be as accurate as could be achieved if one uses the supplied reference sensitivity value. This disparity, however, may be irrelevant, since when trending, the user is primarily interested in recognizing changes in the overall measured vibration amplitude, or frequency signature of the machinery. When comparing against previously acquired data obtained with the same sensor in the same location, the excellent repeatability of these piezoelectric vibration sensors becomes the vital attribute for successful trending requirements. The user can thus employ a lower-cost sensor, which in turn, makes monitoring additional measurement points a more attractive undertaking.

Within this category, the Swiveler® series of accelerometers is offered. The unique mounting capability of these sensors permits the cable or connector to be oriented in any direction, which simplifies installation and reduces overall size. When small size is paramount, you will want to consider Swiveler®.

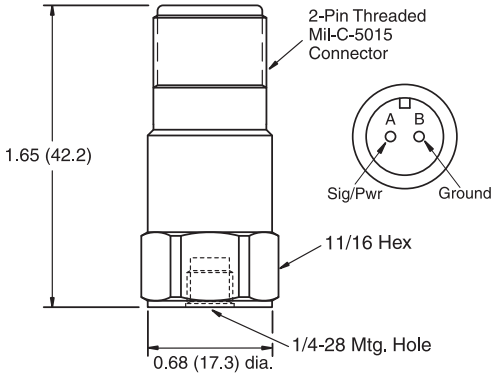
The Spindler® accelerometer offers unique advantages for high-speed spindle vibration monitoring. Offering swivel mounting for ease of installation, the Spindler® also includes an armored, integral cable which stands up against cutting fluids and flying metal chips. In addition, electronic filtering prevents saturation problems while maintaining the ability to respond to high-frequency vibrations.

Model 603C01 — top exit, MIL-type connector

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Intrinsically safe options available

Recommended cables and accessories ❶❼ – see section 5

Options: M, TO, EX– see pages v-viii for option information

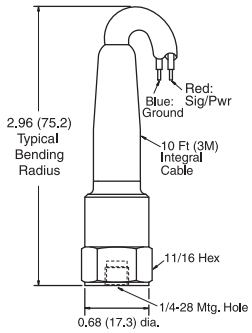


Model 603C11 — top exit, integral polyurethane cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Intrinsically safe options available

Recommended cables and accessories ❼ – see section 5

Options: M, TO, EX– see pages v-viii for option information

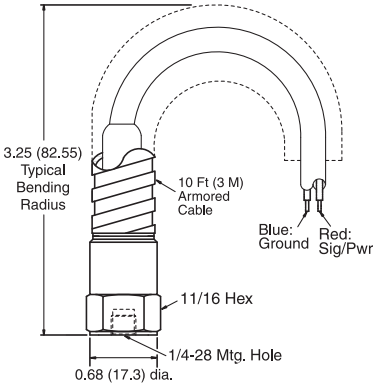


Model 603C61 — top exit, integral armored cable

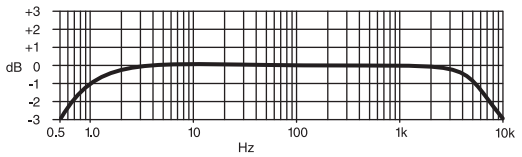
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Intrinsically safe options available

Recommended cables and accessories ❼ – see section 5

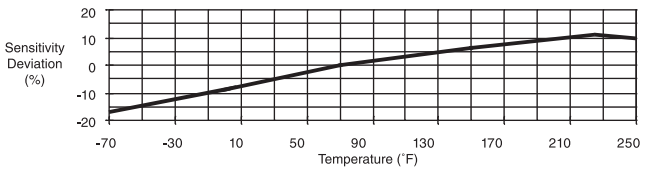
Options: M, TO, EX– see pages v-viii for option information



Low-cost ICP® Accelerometers for Permanent Installation						
Model Number	**603C01**		**603C11**		**603C61**	
Dynamic Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 10%)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range (± 3 dB)	30 to 600kcpm	0.5 to 10k Hz	30 to 600kcpm	0.5 to 10k Hz	30 to 600kcpm	0.5 to 10k Hz
Resonant Frequency	1500k cpm	25k Hz	1500k cpm	25k Hz	1500k cpm	25k Hz
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 7 %		≤ 7 %		≤ 7 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 2.0 sec		≤ 2.0 sec		≤ 2.0 sec	
Discharge Time Constant	≥ 0.3 sec		≥ 0.3 sec		≥ 0.3 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 150 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Mechanical						
Size (Hex x Height)	11/16 x 1.65 in	11/16 in x 42.2 mm	11/16 x 2.96 in	11/16 in x 75.2 mm	11/16 x 3.25 in	11/16 x 82.6 mm
Weight	1.8 oz	51 gm	1.8 oz	51 gm	1.8 oz	51 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Top		Top		Top	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Intrinsically Safe	EX		EX		EX	
Metric Installation	M		M		M	
Temperature Output	T0		T0		T0	
Supplied Accessories						
Model 081A40 Mounting Stud (Model 081A61, 1/4-28 to M6 x 1.0 for Metric Mount)						
Model ICS-2 NIST-traceable single axis single-point amplitude response calibration at 6000 cpm (100 Hz)						



Series 603CX1
Frequency Response



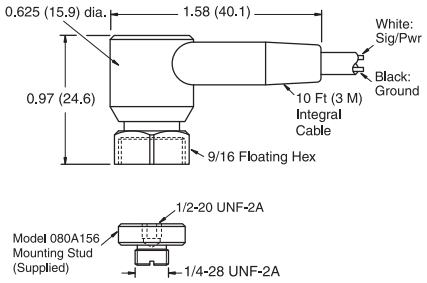
Series 603CX1
Sensitivity Deviation vs. Temperature

Model 607A11 — Swiveler® (U.S. patent number 6,435,902)

- Swivel mount simplifies installation
- Cable may be positioned in any direction
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Side exit integral polyurethane cable

Recommended cables and accessories ❼
- see section 5

Options: M, TO, EX- see pages v-viii for option information

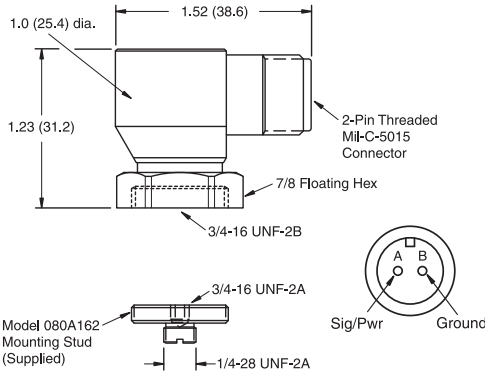


Model 607A01 — Swiveler® (U.S. patent number 6,435,902)

- Swivel mount simplifies installation
- Cable may be positioned in any direction
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Side exit, MIL–type connector

Recommended cables and accessories ❷❼
- see section 5

Options: M, TO, EX- see pages v-viii for option information

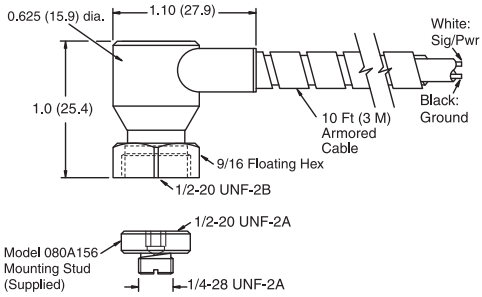


Model 607A61 — Spindler® (U.S. patent number 6,435,902)

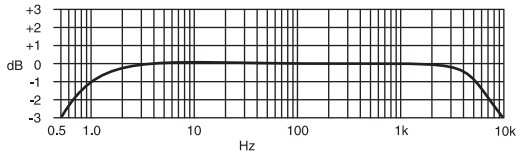
- Ideal for high-speed spindle vibration monitoring
- Cable may be positioned in any direction
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Armored cable prevents damage from flying metal chips
- Internal electronic filter prevents high frequency saturation problems

Recommended cables and accessories ❼
- see section 5

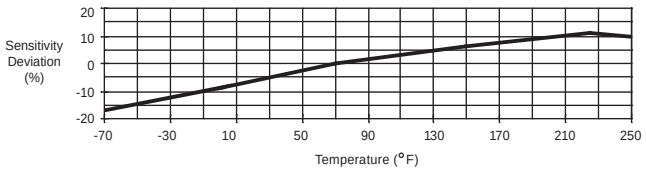
Options: M, TO, EX- see pages v-viii for option information



Low-cost ICP® Accelerometers for Permanent Installation						
Model Number	**607A11**		**607A01**		**607A61**	
Dynamic Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 15%)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range (± 3 dB)	30 to 600k cpm	0.5 to 10k Hz	30 to 600k cpm	0.5 to 10k Hz	30 to 600k cpm	0.5 to 10k Hz
Resonant Frequency	1500k cpm	25k Hz	1080k cpm	18k Hz	1500k cpm	25k Hz
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 7 %		≤ 7 %		≤ 7 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 2.0 sec		≤ 2.0 sec		≤ 2.0 sec	
Discharge Time Constant	≥ 0.3 sec		≥ 0.3 sec		≥ 0.3 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 150 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical						
Size (Hex x Height)	9/16 x 0.97 in	9/16 in x 24.6 mm	7/8 x 1.23 in	7/8 in x 31.2 mm	9/16 x 1.0 in	9/16 in x 25.4 mm
Weight (without cable)	1.1 oz	31 gm	3.7 oz	105 gm	1.1 oz	31 gm
Mounting	Stud		Stud		Stud	
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque (stud)	7 to 8 ft-lb	9.5 to 10.8 N-m	7 to 8 ft-lb	9.5 to 10.8 N-m	7 to 8 ft-lb	9.5 to 10.8 N-m
Mounting Torque (hex nut)	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	Molded Integral Cable		2-pin MIL-C-5015		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Cable Length	10 ft	3.0 m	n/a		10 ft	3.0 m
Cable Type	Polyurethane (Model 042)		n/a		Polyurethane (Model 067)	
Optional Versions						
Intrinsically Safe	EX		EX		EX	
Metric Installation	M		M		M	
Temperature Output	TO		TO		TO	
Supplied Accessories						
Mounting Hardware	Model 080A156 Mounting Stud		Model 080A162 Mounting Stud		Model 080A156 Mounting Stud	
Metric Mounting Hardware	Model M080A159 Mounting Stud		Model M080A163 Mounting Stud		Model M080A159 Mounting Stud	



Series 607AX1
Frequency Response



Series 607AX1
Sensitivity Deviation vs. Temperature

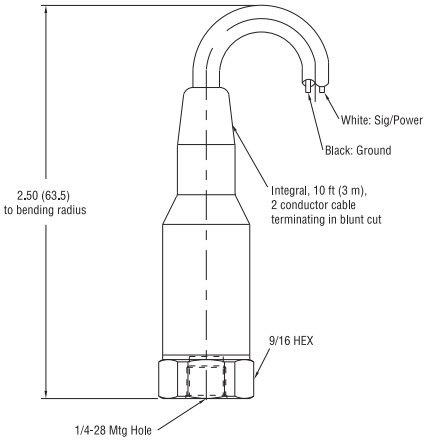
Model 608A11 — with integral, 10 ft (3 m) polyurethane cable

- 100 mV/g (10.2 mV/(m/s²)) dual sensitivity
- Small size
- Ideal for submersible installations
- Molded, integral top exit cable

Recommended cables and accessories ❻ - see section 5

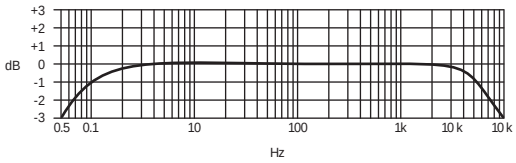
Options: M, TO, EX- see pages v-viii for option information

Dimensions shown are in inches (millimeters).

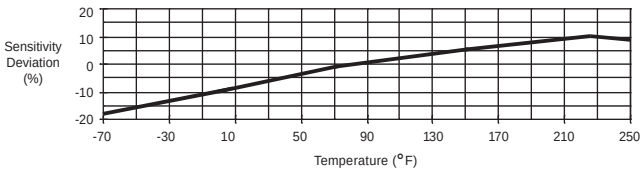


Model 080A165 floating hex nut slides over integral cable and engages with **Model 080A162 mounting stud.** Permits installation and removal of sensor without turning or twisting integral cables.

Model 080A162 mounting stud installs onto machine surface and engages with **Model 080A165 floating hex nut.**

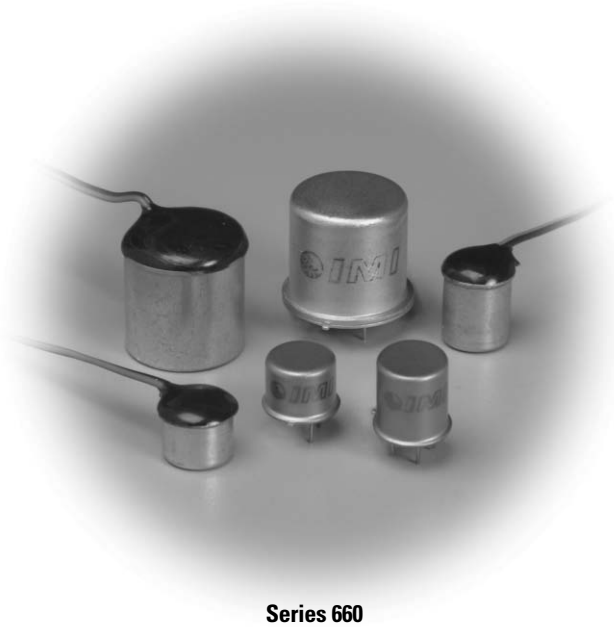


Series 608A11
Frequency Response

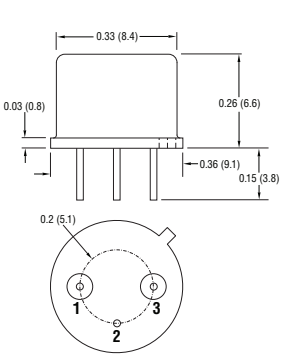


Model 608A11
Sensitivity Deviation vs. Temperature

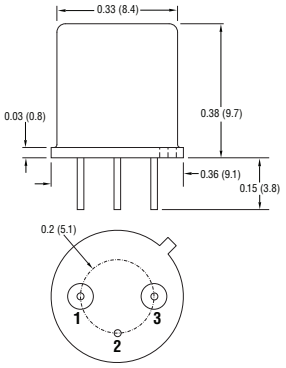
Low-cost ICP® Accelerometer for Permanent Installation		
Model Number	**608A11**	
Dynamic Performance	**English**	**SI**
Sensitivity (± 15%)	100 mV/g	10.2 mV/(m/s²)
Measurement Range	± 50 g	± 490 m/s²
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s²
Frequency Range (± 3 dB)	30 to 600k cpm	0.5 to 10k Hz
Mounted Resonant Frequency	1320k cpm	22k Hz
Non-linearity	± 1%	
Transverse Sensitivity	≤ 7%	
Environmental		
Overload Limit (shock)	5,000 g pk	49,050 m/s² pk
Temperature Range	-65 to +250 °F	-54 to +121 °C
Electrical		
Settling Time	≤ 2 sec	
Discharge Time Constant	≥ 0.3 sec	
Excitation Voltage	18 to 28 VDC	
Excitation Constant Current	2-20 mA	
Output Impedance	< 150 ohm	
Output Bias Voltage	8 to 12 VDC	
Electrical Case Isolation	> 10^8 ohm	
Physical		
Size (hex × height)	9/16 × 2.5 in	9/16 in × 63.5 mm
Weight (including 10 ft (3 m) cable)	3.5 oz	99 gm
Mounting Thread	1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear	
Housing Material	Stainless Steel	
Sealing (molded)	Welded Hermetic	
Electrical Connector, 2-cond. (top)	10 ft int. cable (Model 042)	3 m int. cable (Model 042)
Supplied Accessories		
Model 081A40 Mounting Stud (1)		
Model ICS-2 NIST-traceable single axis single-point amplitude response calibration at 6000 cpm (100 Hz)		
Optional Accessories		
Model 080A165 Floating Hex Nut	Model 080A162 Mounting Stud	
Available Versions		
Model 608A11/020BZ — 20 ft (6.1 m) integral cable length		
Model 608A11/030BZ — 30 ft (9.1 m) integral cable length		
Optional Versions (indicate using prefix letter shown)		
M — Metric installation via supplied M081A61 stud, 1/4-28 to M6 × 1.0		
TO — Temperature Output		
EX — Intrinsically Safe		



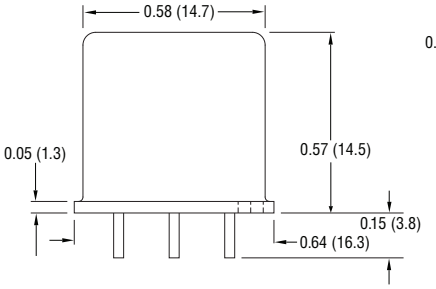
Series 660
Low-cost Embeddable Accelerometers

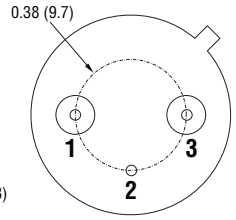


Low Profile TO-5



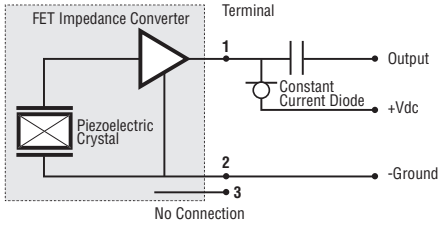
TO-5



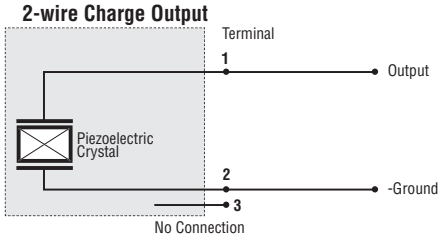


TO-8

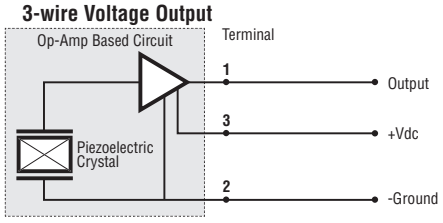
2-wire ICP®



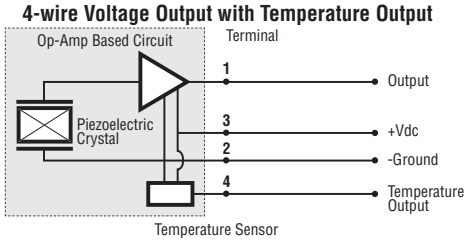
2-wire Charge Output



3-wire Voltage Output



4-wire Voltage Output with Temperature Output



How To Order

66 Low-cost, Embeddable Accelerometer

Package Size and Sensitivity

10	Low-profile TO-5 with 10 mV/g, ± 20% sensitivity (Use "40" for ± 10%)
16	Low profile TO-5 with 1 mV/g, ± 20% sensitivity (Use "46" for ± 10%) **must select **2A** below**
19	Low-profile TO-5 with 5 pC/g, ± 20% sensitivity (Use "49" for ± 10%) **must select **2C** below**
21	TO-5 with 100 mV/g, ± 20% sensitivity (Use "51" for ± 10% or "81" for ± 5%) **± 5% option requires **2A** below**
29	TO-5 with 11 pC/g, ± 20% sensitivity (Use "59" for ± 10%) **must select **2C** below**
31	TO-8 with 100 mV/g, ± 20% sensitivity (Use "61" for ± 10%)
32	TO-8 with 500 mV/g, ± 20% sensitivity (Use "62" for ± 10%)
33	TO-8 with 1000 mV/g, ± 20% sensitivity (Use "63" for ± 10%)
39	TO-8 with 120 pC/g, ± 20% sensitivity (Use "69" for ± 10%) **must select **2C** below**

Sensor Configuration and Excitation Scheme

2A	2-wire ICP® (power/signal, ground), current regulated power
2C	2-wire charge output (signal, ground) for options 19, 29, 39, 49, 59 or 69 above
3L	3-wire voltage output (power, signal, ground); low power
4T	4-wire voltage output with temperature output (power, signal, ground, temperature)

Orientatio/Polarity

PZ	Positive output for acceleration along z-axis (in upward direction when pin mounted)
NZ	Negative output for acceleration along z-axis (in upward direction when pin mounted)

Electrical Connection

1	Header pins
2	Integral 1 foot (0.3 meter) cable

Options

XX	Overall integral cable length in "XX" feet. (other than 1 foot standard)
MXX	Overall integral cable length in "XX" meters (other than 0.3 meter standard)

Example

66 21 2A PZ 1 Embeddable accelerometer, TO-5, 100 mV/g sensitivity, 2-wire ICP®, positive output with header pins

Options available for low output bias voltage, temperature output, and RoHS compliant sensors. Contact factory for details.

Series 607AXX — Swiveler® mounting concept

- Permits cable to be oriented into any desired position
- Permits mounting and dismounting without twisting sensor and integral cable
- Speeds sensor dismount for routine sensitivity verification or system troubleshooting

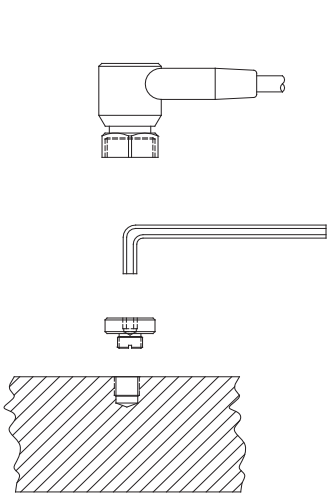


Figure 1 — Mounting hole is prepared into machine surface to accept sensor's mounting stud.

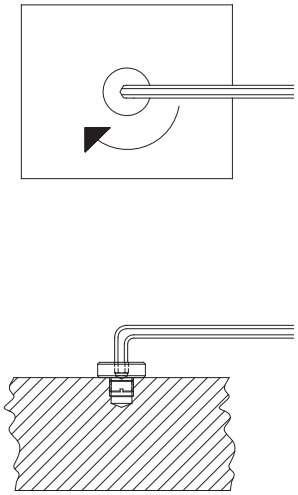


Figure 2 — Mounting stud is tightened to recommended torque with appropriately sized hex Allen key.

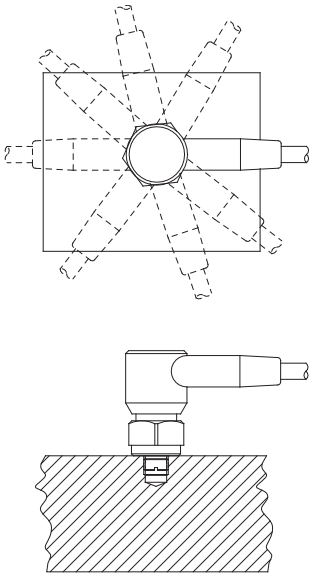


Figure 3 — Sensor floating hex nut is threaded onto mounting stud. The cable or connector is positioned into desired orientation and hex nut is hand-tightened.

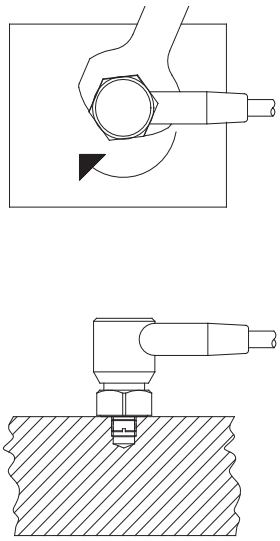


Figure 4 — Using a torque wrench, hex nut is tightened to the recommended torque while holding cable or connector in desired location.

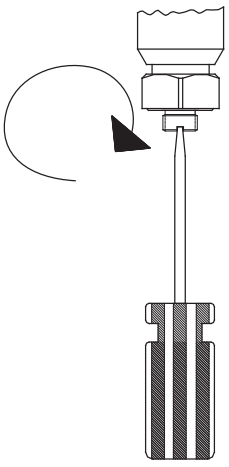


Figure 5 — Upon removal, if mounting stud does not disengage from sensor, use a flat head screwdriver to hold stud, while turning hex nut counter-clockwise with a wrench.

Model 608A11 — Instructions for use of optional mounting hardware

- Permits mounting and dismounting without twisting sensor and integral cable
- Speeds sensor dismount for routine sensitivity verification or system troubleshooting

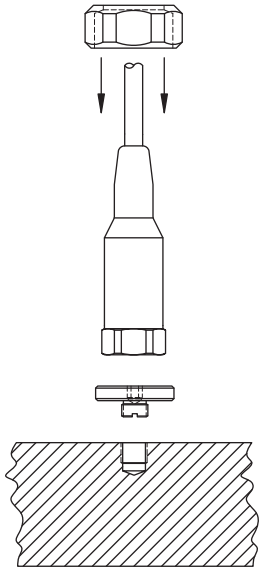


Figure 1 — Mounting hole is prepared into machine surface to accept sensor's mounting stud. Sensor integral cable is threaded through the floating hex nut.

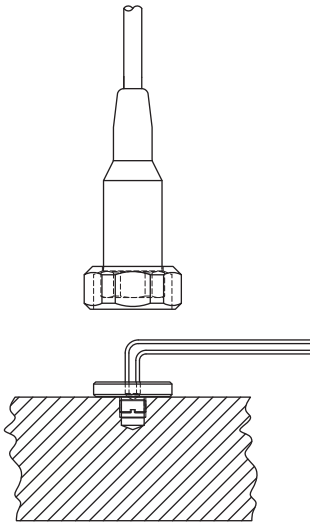


Figure 2 — Mounting stud is tightened to recommended torque with appropriately sized hex Allen key.

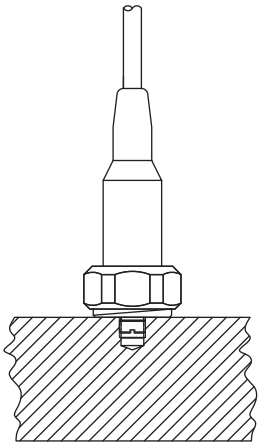


Figure 3 — Sensor floating hex nut is threaded onto mounting stud and tightened to recommended torque.

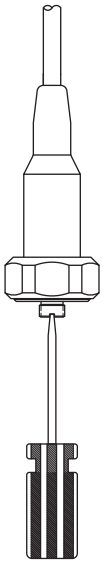


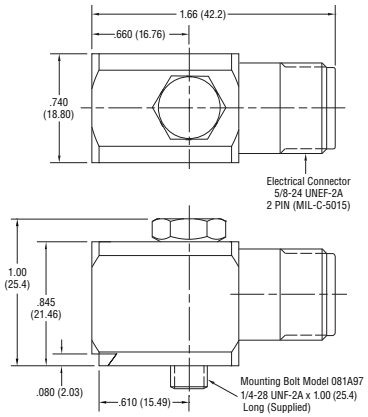
Figure 4 — Upon removal, if mounting stud does not disengage from sensor, use a flat head screwdriver to hold the stud while turning the hex nut counter-clockwise with a wrench.

Model 602D01 — side exit, MIL-type connector

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- Connector may be positioned in any direction
- 30 to 480k cpm (0.5 to 8000 Hz) frequency range
- Intrinsically safe options available

Recommended cables and accessories ❶❽
- see section 5

Options: M, TO, EX- see pages v-viii for option information

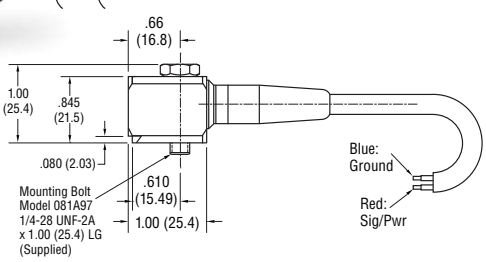


Model 602D11 — side exit, integral polyurethane cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- Connector may be positioned in any direction
- 30 to 480k cpm (0.5 to 8000 Hz) frequency range
- Intrinsically safe options available

Recommended cables and accessories ❽
- see section 5

Options: M, TO, EX- see pages v-viii for option information

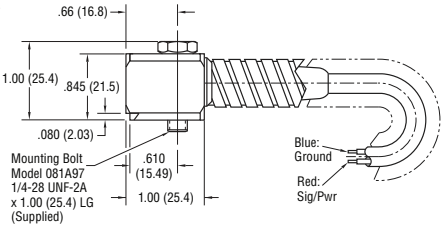


Model 602D61 — side exit, integral armored cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Small size
- Connector may be positioned in any direction
- 30 to 480k cpm (0.5 to 8000 Hz) frequency range
- Intrinsically safe options available

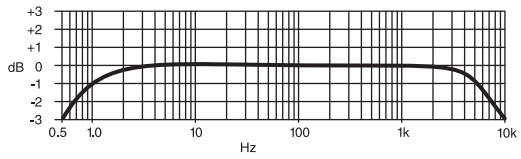
Recommended cables and accessories ❽
- see section 5

Options: M, TO, EX- see pages v-viii for option information

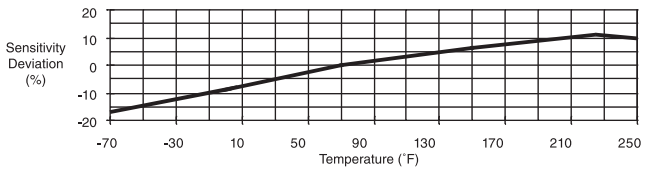


Low-cost ICP® Accelerometers for Permanent Installation

Model Number	602D01		602D11		602D61	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 10 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range (± 3 dB)	30 to 480k cpm	0.5 to 8000 Hz	30 to 480k cpm	0.5 to 8000 Hz	30 to 480k cpm	0.5 to 8000 Hz
Resonant Frequency	1500k cpm	25k Hz	1500k cpm	25k Hz	1500k cpm	25k Hz
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 7%		≤ 7%		≤ 7%	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 2.0 sec		≤ 2.0 sec		≤ 2.0 sec	
Discharge Time Constant	≥ 0.3 sec		≥ 0.3 sec		≥ 0.3 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 150 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical						
Size (Length x Width x Height)	1.65 x 0.74 x 0.845 in	41.9 x 18.8 x 21.5 mm	3.70 x 0.74 x 0.845 in	94 x 18.8 x 21.5 mm	4.0 x 0.74 x 0.845 in	102 x 18.8 x 21.5 mm
Weight	2.61 oz	74.0 gm	2.61 oz	74.0 gm	2.61 oz	74.0 gm
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Intrinsically Safe	EX		EX		EX	
Metric Installation	M		M		M	
Temperature Output	TO		TO		TO	
Supplied Accessories						
Model 081A97 Thru bolt 1/4-28 (Model M081A97 Captive mounting bolt, M6 x 1 x 25.4 mm long for Metric Mount)						
Model ICS-2 NIST-traceable single axis single-point amplitude response calibration at 6000 cpm (100 Hz)						



Series 602DX1
Frequency Response



Series 602DX1
Sensitivity Deviation vs. Temperature

Low-cost, Industrial ICP® Accelerometers for Permanent Installation

Model 601AX1
Low-noise
CE

Model 606BX1
Through-hole Mount
CE CSA Ex

Model 627AX1
Quartz Element
CE

Additional Low-cost, Industrial ICP® Accelerometers

Model Number	601AX1		606BX1		627AX1	
Dynamic Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity	100 mV/g (± 20%)	10.2 mV/(m/s^2)	100 mV/g (± 20%)	10.2 mV/(m/s^2)	100 mV/g (± 15%)	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Broadband Resolution (1to10kHz)	50 µg	491 µm/s^2	350 µg	3434 µm/s^2	1000 µg	9800 µm/s^2
Frequency Range (± 3 dB)	16 to 600k cpm	0.27 to 10k Hz	30 to 600k cpm	0.5 to 10k Hz	20 to 600k cpm	0.33 to 10k Hz
Mounted Resonant Frequency	960k cpm	16k Hz	1500k cpm	25k Hz	1080k cpm	18k Hz
Non-linearity	± 1%		± 1%		± 1%	
Transverse Sensitivity	≤ 7%		≤ 7%		≤ 5%	
Environmental						
Overall Limit (shock)	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time	≤ 4.0 sec		≤ 2.0 sec		≤ 10 sec	
Discharge Time Constant	≥ 0.6 sec		≥ 0.3 sec		≥ 0.5 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Excitation Constant Current	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Case Isolation	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	n/a		n/a		RFI/ESD	
Mechanical						
Size	7/8 hex × 1.94 in	7/8 hex × 49.3 mm	1.38 x 1.00 in	35.1 x 25.4 mm	7/8 hex × 2.06 in	7/8 hex × 52.3 mm
Weight	2.8 oz	80 gm	4.4 oz	124 gm	3.3 oz	94 gm
Mounting Thread	1/4-28 Female		1/4-28 Male		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Quartz Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector, 2-pin	MIL-C-5015 (top)		MIL-C-5015 (top)		MIL-C-5015 (top)	
Supplied Accessories						
Mounting Stud or Bolt	Model 081A40 (1)		Model 081A68 (1)		Model 081A40 (1)	
Calibration (NIST- traceable)	Single Point at 100 Hz		Single Point at 100 Hz		Single Point at 100 Hz	
Available Versions						
Two-pin, Threaded MIL-type Connector	601A01		606B01		627A01	
Integral, 10 ft (3 m) Polyurethane Cable	601A11		606B11		627A11	
Integral, 10 ft (3 m) Teflon® Cable	601A21		606B21		627A21	
Three-pin, Bayonet MIL-type Connector	601A31		606B31		627A31	
Integral, 10 ft (3 m) Steel-armored Cable	601A61		606B61		627A61	
Two-socket Terminal Block	601A71		n/a		627A71	
Options (indicate using prefix letter shown)						
Metric Installation	M*		M†		M*	
Temperature Output	TO§		n/a		n/a	
Intrinsically Safe	n/a		EX		n/a	

Dimensional drawings on page 1.20

Notes:

* via supplied M081A68 stud, 1/4-28 to M6 x 1.0

† via supplied M081A97 bolt, M6 x 1.0 thread

§ TO606B01, TO606B11, TO606B61 versions only

Precision Industrial ICP® Accelerometers

Highlights

- Interface directly with vibration data collectors
- Ideal for FFT analysis of vibration frequencies
- Measurements for machinery diagnostics
- Versions with velocity output, temperature output, and hazardous area approvals

Precision industrial ICP® accelerometers are recommended for route-based vibration data collection and quantitative diagnostic measurements on industrial machinery. These sensors are directly compatible with most commercially available vibration data collectors and FFT analyzers that supply excitation power for ICP® sensors.

These precision, shear-structured sensors offer tighter sensitivity tolerances than low-cost series units and are supported with full NIST-traceable calibration data that encompasses an extensive frequency range. All units are laser welded and leak tested to ensure a truly hermetic seal. Shock protection to 5000 g (49k m/s^2) guards against damage due to accidental overloads.

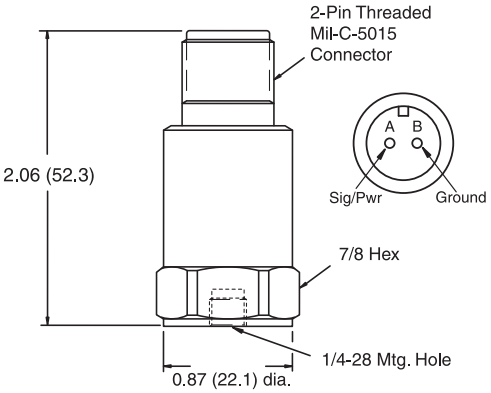
A host of available options, including velocity and temperature outputs, and hazardous area approvals adapt units for virtually any machinery vibration monitoring requirement.

Model 622A01 — top exit, MIL-type connector

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 50 µg (490 µm/s²) resolution
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- Intrinsically safe options available
- Velocity output versions available

Recommended cables and accessories ❶❽
- see section 5

Options: EX, CS, MS, MX, FM, HT, LB, M, TO, VO
- see pages v-viii for option information

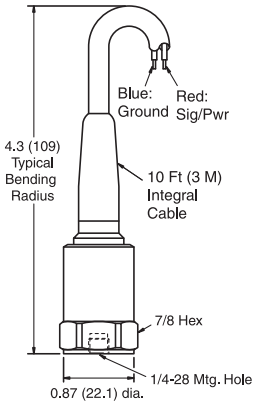


Model 622A11 — top exit, integral polyurethane cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 50 µg (490 µm/s²) resolution
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- Intrinsically safe options available
- Velocity output versions available

Recommended cables and accessories ❽
- see section 5

Options: EX, CS, MS, MX, FM, HT, LB, M, TO, VO
- see pages v-viii for option information

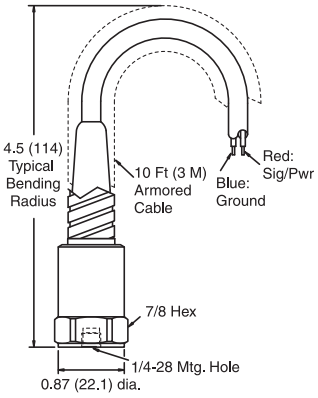


Model 622A61 — top exit, integral armored cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 50 µg (490 µm/s²) resolution
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- Velocity output versions available

Recommended cables and accessories ❽
- see section 5

Options: HT, LB, M, TO, VO
- see pages v-viii for option information



Precision Industrial ICP® Accelerometers for Route-based Measurements

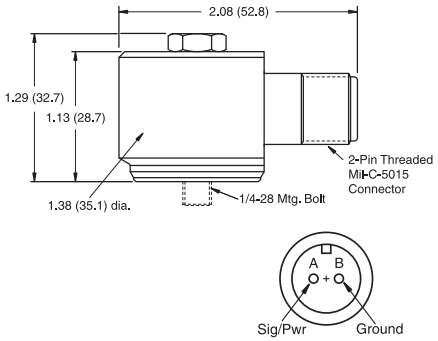
Model Number	622A01		622A11		622A61	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range: (± 5 %) 240k (± 10 %) 300k (± 3 dB) 600k	35 to 240k cpm 25 to 300k cpm 12 to 600k cpm	0.58 to 4000 Hz 0.42 to 5000 Hz 0.2 to 10k Hz	35 to 240k cpm 25 to 300k cpm 12 to 600k cpm	0.58 to 4000 Hz 0.42 to 5000 Hz 0.2 to 10k Hz	35 to 240k cpm 25 to 300k cpm 12 to 600k cpm	0.58 to 4000 Hz 0.42 to 5000 Hz 0.2 to 10k Hz
Resonant Frequency	1200k cpm	20k Hz	1200k cpm	20k Hz	1200k cpm	20k Hz
Broadband Resolution (1 to 10k Hz)	50 µg	490 µm/s^2	50 µg	490 µm/s^2	50 µg	490 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 5.0 sec		≤ 5.0 sec		≤ 5.0 sec	
Discharge Time Constant	≥ 0.8 sec		≥ 0.8 sec		≥ 0.8 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Hex x Height)	7/8 x 2.06 in	7/8 in x 52.3 mm	7/8 x 4.3 in	7/8 in x 109 mm	7/8 x 4.5 in	7/8 in x 114 mm
Weight	3.3 oz	94 gm	3.3 oz	94 gm	3.3 oz	94 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Top		Top		Top	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Intrinsically Safe	EX, MS, MX, FM, CS		EX, MS, MX, FM, CS		n/a	
Metric Installation	M		M		M	
Temperature Output	TO		TO		TO	
High Temperature	HT		n/a		n/a	
Low Bias Electronics	LB		LB		LB	
Velocity Output	VO		VO		VO	
Supplied Accessories						
Model 081A40 Mounting Stud (Model M081A61 Mounting Stud 1/4-28 to M6 x 1 for Metric Mount)						
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						

Model 625B01 — ring style side exit, MIL-type connector

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 50 µg (491 µm/s²) resolution
- 12 to 630k cpm (0.2 to 10.5k Hz) frequency range
- Intrinsically safe options available
- Velocity output versions available

Recommended cables and accessories ❶❾
- see section 5

Options: CS, FM, M, TO, VO
- see pages v-viii for option information

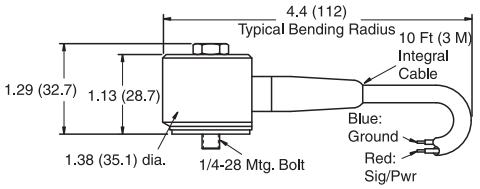


Model 625B11 — ring style side exit, integral polyurethane cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 50 µg (491 µm/s²) resolution
- 12 to 630k cpm (0.2 to 10.5k Hz) frequency range
- Velocity output versions available

Recommended cables and accessories ❾
- see section 5

Options: M, TO, VO
- see pages v-viii for option information

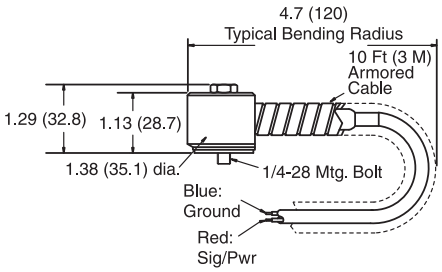


Model 625B61 — ring style side exit, integral armored cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 50 µg (491 µm/s²) resolution
- 12 to 630k cpm (0.2 to 10.5k Hz) frequency range
- Velocity output versions available

Recommended cables and accessories ❾
- see section 5

Options: M, TO, VO
- see pages v-viii for option information



Dimensions shown are in inches (millimeters).

Precision Industrial ICP® Accelerometers for Route-based Measurements

Model Number	625B01		625B11		625B61	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range: (± 5 %) 390k (± 10 %) 450k (± 3 dB) 630k	30 to 390k cpm 22 to 450k cpm 12 to 630k cpm	0.5 to 6500 Hz 0.37 to 7500 Hz 0.2 to 10,500 Hz	30 to 390k cpm 22 to 450k cpm 12 to 630k cpm	0.5 to 6500 Hz 0.37 to 7500 Hz 0.2 to 10,500 Hz	30 to 390k cpm 22 to 450k cpm 12 to 630k cpm	0.5 to 6500 Hz 0.37 to 7500 Hz 0.2 to 10,500 Hz
Resonant Frequency	1500k cpm	25k Hz	1500k cpm	25k Hz	1500k cpm	25k Hz
Broadband Resolution (1 to 10k Hz)	50 µg	491 µm/s^2	50 µg	491 µm/s^2	50 µg	491 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 8.0 sec		≤ 8.0 sec		≤ 8.0 sec	
Discharge Time Constant	≥ 1.0 sec		≥ 1.0 sec		≥ 1.0 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Diameter x Height)	1.38 x 1.13 in	35.1 x 28.7 mm	1.38 x 1.13 in	35.1 x 28.7 mm	1.38 x 1.13 in	35.1 x 28.7 mm
Weight	5.1 oz	145 gm	4.7 oz	133 gm	4.7 oz	133 gm
Mounting	Through Hole		Through Hole		Through Hole	
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Intrinsically Safe	CS, FM		n/a		n/a	
Metric Installation	M		M		M	
Temperature Output	TO		TO		TO	
Low Bias Electronics	LB		LB		LB	
Velocity Output	VO		VO		VO	
Supplied Accessories						
Model 081A73 Mounting Bolt (Model M081A73 Mounting Bolt, M6 x 1.0 thread for Metric Mount)						
Model 080B45 Thermal Boot						
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						

Precision Industrial ICP® Accelerometers for Route-based Measurements

Model 625BX0
High Range

Model 628FX1
Quartz Element

Model 624BX1
Quartz Element

Additional Precision Industrial ICP® Accelerometers

Model Number	625BX0		628FX1		624BX1	
Dynamic Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5%)	10 mV/g	1.02 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 500 g	± 4900 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s^2	1000 µg	9800 µm/s^2	1000 µg	9800 µm/s^2
Frequency Range: (± 5%) (± 10%) (± 3 dB)	30 to 390k cpm 22 to 450k cpm 12 to 630k cpm	0.5 to 6500 Hz 0.37 to 7500 Hz 0.2 to 10.5k Hz	60 to 240k cpm 40 to 390k cpm 20 to 720k cpm	1 to 4000 Hz 0.67 to 6500 Hz 0.33 to 12k Hz	144 to 300k cpm 102 to 420k cpm 48 to 600k cpm	2.4 to 5000 Hz 1.7 to 7000 Hz 0.8 to 10k Hz
Mounted Resonant Frequency	1500k cpm	25k Hz	1080k cpm	18k Hz	1080k cpm	18k Hz
Non-linearity	± 1%		± 1%		± 1%	
Transverse Sensitivity	≤ 5%		≤ 5%		≤ 5%	
Environmental						
Overall Limit (shock)	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time	≤ 8.0 sec		≤ 10 sec		≤ 10 sec	
Discharge Time Constant	≥ 1.0 sec		≥ 0.5 sec		≥ 0.2 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Excitation Constant Current	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Case Isolation	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Mechanical						
Size	1.38 dia × 1.13 in	35.1 dia × 28.7 mm	7/8 hex × 2.0 in	7/8 in hex × 50.8 mm	1.38 dia × 1 1/8 in	34.9 dia × 28.6 mm
Weight	5.1 oz	145 gm	3.2 oz	91 gm	5.1 oz	145 gm
Mounting Thread	1/4-28 Male		1/4-28 Female		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector, 2-pin	MIL-C-5015 (side)		MIL-C-5015 (top)		MIL-C-5015 (side)	
Supplied Accessories						
Mounting Stud or Bolt	081A73 (1)		081A40 (1)		081A67 (1)	
Thermal Boot	080B45		n/a		n/a	
Calibration (NIST- traceable) range	600 to 390k cpm		600 to 240k cpm		600 to 300k cpm	
Available Versions						
Two-pin, Threaded MIL-style Connector	625B00		628F01		624B01	
Integral, 10 ft (3 m) Polyurethane Cable	625B10		628F11		624B11	
Integral, 10 ft (3 m) Teflon® Cable	625B20		628F21		624B21	
Three-pin, Bayonet MIL-style Connector	625B30		628F31		624B31	
Integral, 10 ft (3 m) Steel-armored Cable	625B60		628F61		624B61	
Two-socket Terminal Block	n/a		628F71		n/a	
Options (indicate using prefix letter shown)						
High-Temperature	n/a		HT		HT	
Low Bias Electronics	LB		LB		LB	
Metric Installation	M*		M†		M§	
Intrinsically Safe	n/a		CS, EX, FM**		n/a	
Temperature Output	TO‡		n/a		TO‡	

Dimensional drawings on page 1.20

Notes:

* via supplied M081A73 bolt, M6 x 1.0 thread

† via supplied M081A61 stud, 1/4-28 to M6 x 1.0

§ via supplied M081A58 bolt , M6 x 1.0 thread

‡ TO625B00, TO625B10, TO625B60, TO624A01, TO624A11, TO624A61 versions only. Models TO625B00 and TO624A01 feature a 3-pin, threaded MIL-type connector to accommodate additional temperature output signals

** Intrinsically safe options available for CS, EX, or FM628F01; CS, EX, or FM628F11; and CS, EX, or FM628F31 versions only

Series VO622AX1
High Frequency Velocity Output

Series VO625AX1
Velocity Output

Series VO626AX1
Velocity Output

Precision Industrial ICP® Velocity Sensors

Model Number	VO622AX1		VO625AX1		VO626AX1	
Dynamic Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 10%)	100 mV/in/sec	3937 mV/m/sec	100 mV/in/sec	3937 mV/m/sec	100 mV/in/sec	3937 mV/m/sec
Measurement Range	± 50 in/sec	± 1.27 m/sec	± 50 in/sec	± 1.27 m/sec	± 50 in/sec	± 1.27 m/sec
Broadband Resolution (1 to 10k Hz)	450 µin/sec	11.4 µm/sec	400 µin/sec	10.6 µm/sec	300 µin/sec	7.62 µm/sec
Frequency Range: (± 10%) (± 3 dB)	240 to 270k cpm 180 to 540k cpm	4 to 4500 Hz 3 to 9000 Hz	120 to 150k cpm 90 to 360k cpm	2 to 2500 Hz 1.5 to 6000 Hz	120 to 150k cpm 90 to 360k cpm	2 to 2500 Hz 1.5 to 6000 Hz
Mounted Resonant Frequency	1200k cpm	20k Hz	600k cpm	10k Hz	600k cpm	10k Hz
Amplitude Linearity	± 1%		± 1%		± 1%	
Transverse Sensitivity	≤ 5%		≤ 8%		≤ 7%	
Environmental						
Overall Limit (shock)	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time	≤ 30 sec		≤ 30 sec		≤ 30 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Excitation Constant Current	2-10 mA		2-10 mA		2-10 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Case Isolation	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Mechanical						
Size	7/8 hex × 2.06 in	7/8 in hex × 52.3 mm	1.38 dia × 1.13 in	35 dia × 29 mm	1-3/16 hex × 2.30 in	1-3/16 hex × 58.4 mm
Weight	3.3 oz	93 gm	7.6 oz	215 gm	7.8 oz	221 gm
Mounting Thread	1/4-28 Female		1/4-28 Male		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector, 2-pin	MIL-C-5015 (top)		MIL-C-5015 (side)		MIL-C-5015 (top)	
Supplied Accessories						
Mounting Stud or Bolt	Model 081A40 (1)		Model 081A57 (1)		Model 081A40 (1)	
Thermal Boot	n/a		Model 085A34 (1)		Model 085A31 (1)	
Calibration (NIST-traceable) range	300 to 270k cpm		300 to 150k cpm		300 to 150k cpm	
Available Versions						
Two-pin, Threaded MIL-style Connector	VO622A01		VO625A01		VO626A01	
Integral, 10 ft (3 m) Polyurethane Cable	VO622A11		VO625A11		VO626A11	
Integral, 10 ft (3 m) Teflon® Cable	VO622A21		VO625A21		VO626A21	
Three-pin, Bayonet MIL-style Connector	VO622A31		VO625A31		VO626A31	
Integral, 10 ft (3 m) Steel-armored Cable	VO622A61		VO625A61		VO626A61	
Options (indicate using prefix letter shown)						
Metric Installation	M*		M†		M*	
Intrinsically Safe	CS, EX, FM, MX**		n/a		n/a	

Dimensional drawings on page 1.20

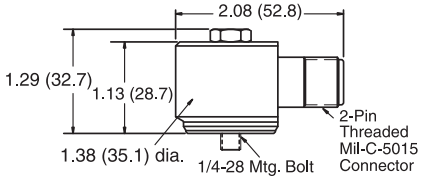
Notes:

* via supplied M081A61 stud, 1/4-28 to M6 x 0.75

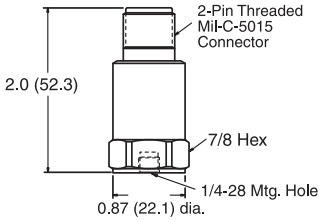
† via supplied M081A58 bolt, M6 x 1.0 thread

** Intrinsically safe options available for CS, EX, MX, or FMVO622A01; and CS, EX, MX, or FMVO622A11 versions only

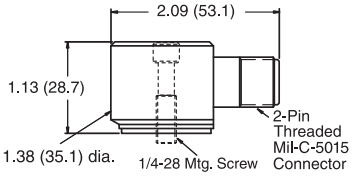
Dimensional Drawings for Additional Precision Sensors



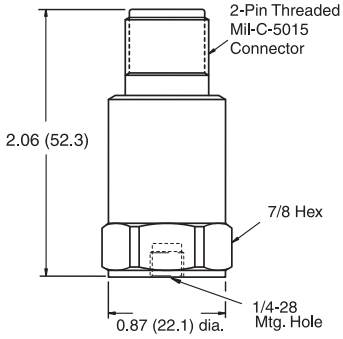
Model 625B00
with 2-pin, threaded MIL-type connector



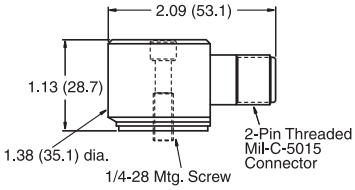
Model 628F01
with 2-pin, threaded MIL-type connector



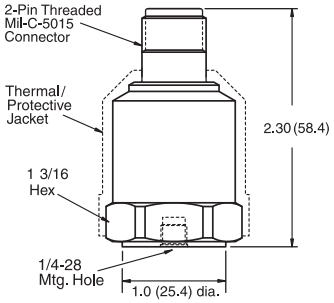
Model 624B01
with 2-pin, threaded MIL-type connector



Model VO622A01
with 2-pin, threaded MIL-type connector

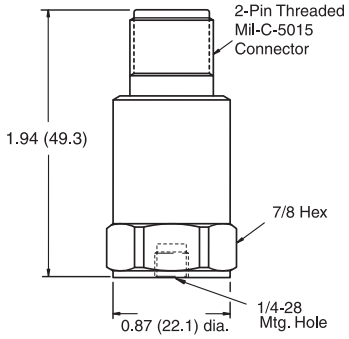


Model VO625A01
with 2-pin, threaded MIL-type connector

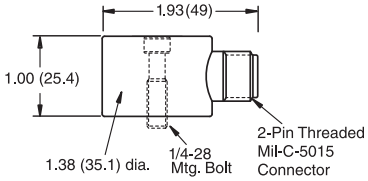


Model VO626A01
with 2-pin, threaded MIL-type connector

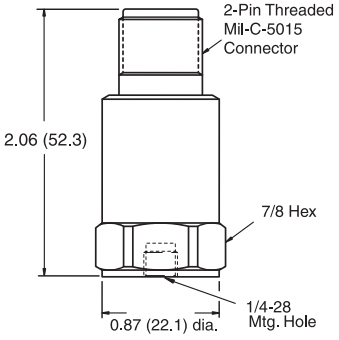
Dimensional Drawings for Additional Low-cost Sensors



Model 601A01
with 2-pin, threaded MIL-type connector



Model 606B01
with 2-pin, threaded MIL-type connector



Model 627A01
with 2-pin, threaded MIL-type connector

Dimensions shown are in inches (millimeters).

High-frequency Industrial ICP® Accelerometers

Highlights

- Vibration measurements on high-speed rotating machinery
- Gear mesh studies and diagnostics
- Bearing monitoring
- Small mechanisms
- High-speed spindles

Successful vibration measurements begin with sensors with adequate capabilities for the requirement. If a sensor's frequency response characteristics are inadequate, a user risks corrupted or insufficient data to achieve a proper analysis and diagnosis. For vibration monitoring, testing, and frequency analysis of high-speed rotating machinery, spindles, and gear mesh, it is imperative to utilize a sensor with sufficiently high frequency range to accurately capture vibration signals within the bandwidth of interest.

Precision, high-frequency ICP® accelerometers meet the requirements of high frequency signal analysis. Miniature sized units are also suitable for vibration measurements on small mechanisms, where sensor size and weight are important factors.

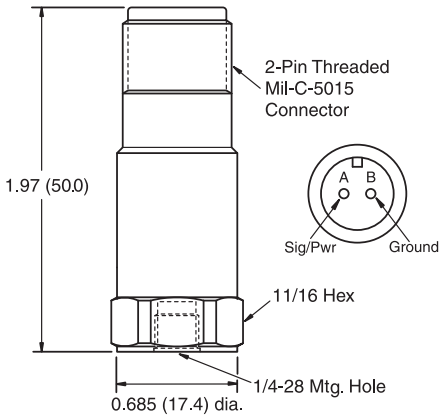
Models 623C00 & 623C01 — top exit, MIL-type connector

- 10 or 100 mV/g (1.0 or 10.2 mV/(m/s²)) sensitivity
- Small size
- 48 to 900k cpm (0.8 to 15k Hz) frequency range
- Intrinsically safe models available

Recommended cables and accessories ❶❼
- see section 5

Options: EX, CS, FM, LB, M
- see pages v-viii for option information

Model 623C00 with 2-pin, threaded MIL-type connector



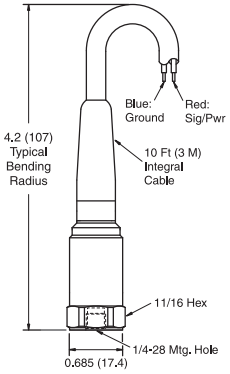
Models 623C10 & 623C11 — top exit, integral polyurethane cable

- 10 or 100 mV/g (1.0 or 10.2 mV/(m/s²)) sensitivity
- Small size
- 48 to 900k cpm (0.8 to 15k Hz) frequency range
- Intrinsically safe models available

Recommended cables and accessories ❼
- see section 5

Options: EX, FM, LB, M
- see pages v-viii for option information

Model 623C11 with integral, 10 ft (3 m) polyurethane cable



Models 623C60 & 623C61 — top exit, integral armored cable

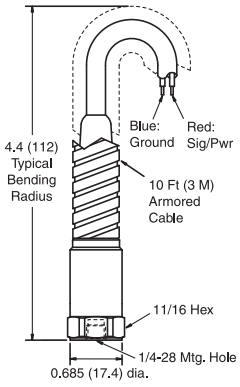
- 10 or 100 mV/g (1.0 or 10.2 mV/(m/s²)) sensitivity
- Small size
- 48 to 900k cpm (0.8 to 15k Hz) frequency range

Recommended cables and accessories ❼
- see section 5

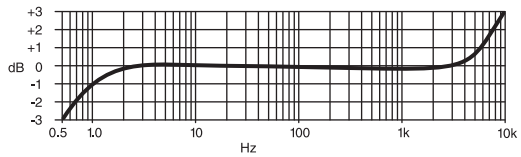
Options: LB, M
- see pages v-viii for option information

Dimensions shown are in inches (millimeters).

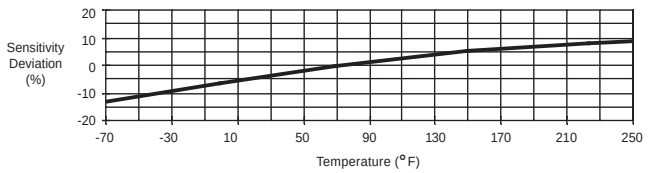
Model 623C61 with integral, 10 ft (3 m) steel-armored, polyurethane cable



High-frequency Industrial ICP® Accelerometers						
Model Number	**623C00 & 623C01**		**623C10 & 623C11**		**623C60 & 623C61**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	10 mV/g [100 mV/g]	1.0 mV/(m/s^2) [10.2 mV/(m/s^2)]	10 mV/g [100 mV/g]	1.0 mV/(m/s^2) [10.2 mV/(m/s^2)]	10 mV/g [100 mV/g]	1.0 mV/(m/s^2) [10.2 mV/(m/s^2)]
Measurement Range	± 500 g [± 50 g]	± 4905 m/s^2 [± 490 m/s^2]	± 500 g [± 50 g]	± 4905 m/s^2 [± 490 m/s^2]	± 500 g [± 50 g]	± 4905 m/s^2 [± 490 m/s^2]
Frequency Range: (± 5 %) (± 10 %) (± 3 dB)	144 to 480k cpm 102 to 600k cpm 48 to 900k cpm	2.4 to 8000 Hz 1.7 to 10k Hz 0.8 to 15k Hz	144 to 480k cpm 102 to 600k cpm 48 to 900k cpm	2.4 to 8000 Hz 1.7 to 10k Hz 0.8 to 15k Hz	144 to 480k cpm 102 to 600k cpm 48 to 900k cpm	2.4 to 8000 Hz 1.7 to 10k Hz 0.8 to 15k Hz
Resonant Frequency	2400k cpm	40k Hz	2400k cpm	40k Hz	2400k cpm	40k Hz
Broadband Resolution (1 to 10 Hz)	300 µg [100 µg]	2943 µm/s^2 [981µm/s^2]	300 µg [100 µg]	2943 µm/s^2 [981 µm/s^2]	300 µg [100 µg]	2943 µm/s^2 [981 µm/s^2]
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 3.0 sec [2.0 sec]		≤ 3.0 sec [2.0 sec]		≤ 3.0 sec [2.0 sec]	
Discharge Time Constant	≥ 0.2 sec		≥ 0.2 sec		≥ 0.2 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Hex x Height)	11/16 x 1.97 in	11/16 in x 50 mm	11/16 x 4.2 in	11/16 in x 107 mm	11/16 x 4.4 in	11/16 in x 112 mm
Weight	1.80 oz	51 gm	1.80 oz	51 gm	1.80 oz	51 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Top		Top		Top	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Intrinsically Safe	EX, FM, CS		EX, FM, CS		n/a	
Metric Installation	M		M		M	
Low Bias Electronics	LB		LB		LB	
Supplied Accessories						
Model 081A40 Mounting Stud						
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						



Series 623CX0 & 623CX1
Frequency Response



Series 623CX0 & 623CX1
Sensitivity Deviation vs. Temperature

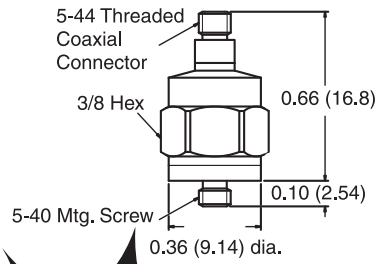
30k Hz — Even With A Magnet

IMI Sensors Model 621B40 high-frequency accelerometer works with online or portable monitoring systems. It operates to 30k Hz, even with a magnet; and captures high frequency gear mesh faults, often missed during routine route based measurements. This sensor is ideal for measurements on high-speed compressors and gear boxes, for early detection of impending problems.

Model 621B40

- 10 mV/g (1.02 mV/(m/s²)) sensitivity
- Small size
- High frequency range to 30k Hz, even with attached magnet
- Top exit connector

Model 621B40
with 5-44 coaxial connector



Dimensions shown are in inches (millimeters).

Model 080A157
High-strength Magnet

Operates to 30k Hz
Even with a magnet

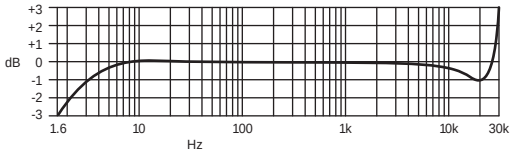
Model 600A12 — High-frequency ICP® Accelerometer Sensor Kit

Contains:

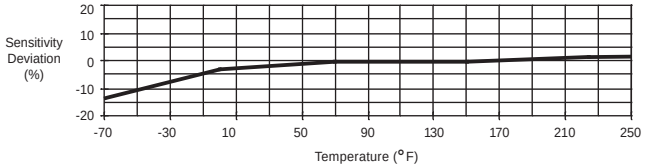
- Model 621B40 10 mV/g (10.2 mV/(m/s²)) ICP® accelerometer
- Model 080A157 high strength magnet
- Model 080A157 cable assembly with BNC plug output. Units are calibrated together to provide accurate frequency response

Model 621B40 Specifications

Model Number	621B40	
Dynamic Performance	**English**	**SI**
Sensitivity (± 10%)	10 mV/g	1.02 mV/(m/s^2)
Measurement Range	± 500 g	± 4900 m/s^2
Broadband Resolution (1 to 10k Hz)	1200 µg	1176 µm/s^2
Frequency Range: (± 10%) (± 3 dB)	204 to 1080k cpm 96 to 1800k cpm	3.4 to 18k Hz 1.6 to 30k Hz
Mounted Resonant Frequency	5100k cpm	85k Hz
Non-linearity	± 1%	
Transverse Sensitivity	≤ 5%	
Environmental		
Overall Limit (shock)	10k g pk	98k m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C
Electrical		
Settling Time	≤ 3 sec	
Discharge Time Constant	≥ 0.1 sec	
Excitation Voltage	18 to 28 VDC	
Excitation Constant Current	2-20 mA	
Output Impedance	< 100 ohm	
Output Bias Voltage	8 to 12 VDC	
Mechanical		
Size (hex × height)	3/8 × 0.66 in	3/8 in × 16.8 mm
Weight	0.1 oz	2.8 gm
Mounting Thread	5-40 Male	
Mounting Torque	18 to 20 in-lb	2.1 to 2.2 N-m
Sensing Element	Ceramic Shear	
Case Material	Titanium	
Sealing	Welded Hermetic	
Electrical Connector (top)	Coaxial 5-44	
Supplied Accessories		
Full calibration from 600 to 1800k cpm		
Optional Accessories		
Model 080A157 Magnet		
Model 018C05 cable assembly		
Model M081A57 magnet with female M3 × 0.5 thread substituted		
Options (indicate using prefix letter shown)		
M — Metric installation via integral M3 × 0.5 male mounting thread		



Model 621B40 Sensor with Model 080A157
Magnet Frequency Response



Model 621B40
Sensitivity Deviation vs. Temperature

Because of its wide frequency range, Model 621B40 can be used to diagnose a variety of machinery fault conditions, including bearing and gear problems. **Photo courtesy of Praxair.**

Model 621B51

Model 631A80

Model 635A01

High-frequency Industrial ICP® Accelerometers

Model Number	621B51		631A80		635A01	
Dynamic Performance	**English**		**SI**	**English**	**SI**	**English**
Sensitivity (± 5%)	100 mV/g	10.2 mV/(m/s^2)	10 mV/g	1.02 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 500 g	± 4900 m/s^2	± 50 g	± 490 m/s^2
Broadband Resolution (1 to 10k Hz)	100 µg	981 µm/s^2	450 µg	4415 µm/s^2	240 µg	2354 µm/s^2
Frequency Range: (± 5%) (± 10%) (± 3 dB)	144 to 600k cpm 102 to 900k cpm 48 to 1200k cpm	2.4 to 10k Hz 1.7 to 15k Hz 0.8 to 20k Hz	n/a 68 to 840k cpm 32 to 960k cpm	n/a 1.1 to 14k Hz 0.53 to 16k Hz	n/a 68 to 720k cpm 32 to 900k cpm	n/a 1.1 to 12k Hz 0.53 to 15k Hz
Mounted Resonant Frequency	2100k cpm	35k Hz	2100k cpm	35k Hz	1800k cpm	35k Hz
Amplitude Linearity	± 1%		± 1%		± 1%	
Transverse Sensitivity	< 5%		< 5%		< 5%	
Environmental						
Overload Limit (Shock)	5000 g pk	49 k m/s^2 pk	5000 g pk	49 k m/s^2 pk	5000 g pk	49 k m/s^2 pk
Temperature Range	-65 to +250 ºF	-54 to +121 ºC	-65 to +250 ºF	-54 to +121 ºC	-65 to +250 ºF	-54 to +121 ºC
Electrical						
Settling Time	< 5 sec		< 3 sec		< 2 sec	
Discharge Time Constant	> 0.2 sec		> 0.4 sec		> 0.3 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Excitation Constant Current	2- 20 mA		2- 20 mA		2- 20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 150 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Mechanical						
Size (hex x height)	11/16 x 1.03 in	11/16 in x 26.2 mm	1 x 0.77 in	1 in x 19.6 mm	1.13 x .82 in[4]	28.7 mm x 20.8 mm[4]
Weight	1.06 oz	30 gm	2.12 oz	60 gm	3.0 oz	86 gm
Mounting Thread	10-32 Female		10-32 Male		1/4-28 Male	
Mounting Torque	10 to 20 in-lb	1.2 to 2.2 N-m	25 to 30 in-lb	2.8 to 3.4 N-m	2 to 5 in-lb	2.8 to 3.4 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Case Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector (side)	Coaxial 10-32		7/16-27 Mini MIL		MIL-C-5015	
Supplied Accessories						
Mounting Stud or Bolt	081A39		081A76		081A97	
Calibration (NIST-traceable) range	600 to 600k cpm	10 to 10k Hz	600 to 840k cpm	10 to 14k Hz	600 to 720k cpm	10 to 12k Hz
Options (indicate using prefix letter shown)						
Metric Installation	M[1]	M[1]	M[2]	M[2]	M[3]	M[3]

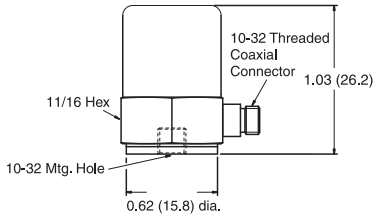
Notes:

[1] Metric installation via supplied M081B05 stud, 10-32 to M6 x 0.75

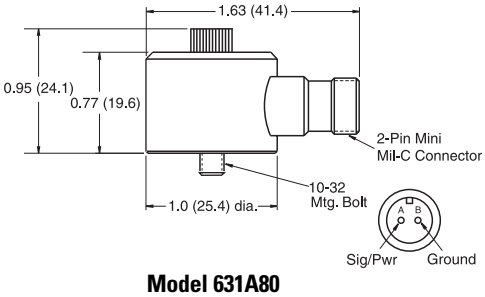
[2] Metric installation via supplied M081A76 screw

[3] Metric installation via supplied M081A97 screw, M6 x 1.0 thread

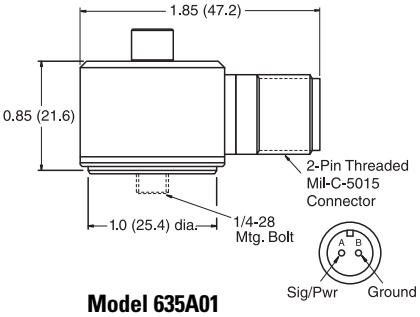
[4] Diameter x Height



Model 621B51
with 10-32 coaxial connector



Model 631A80
with 2-pin, threaded MIL-type connector

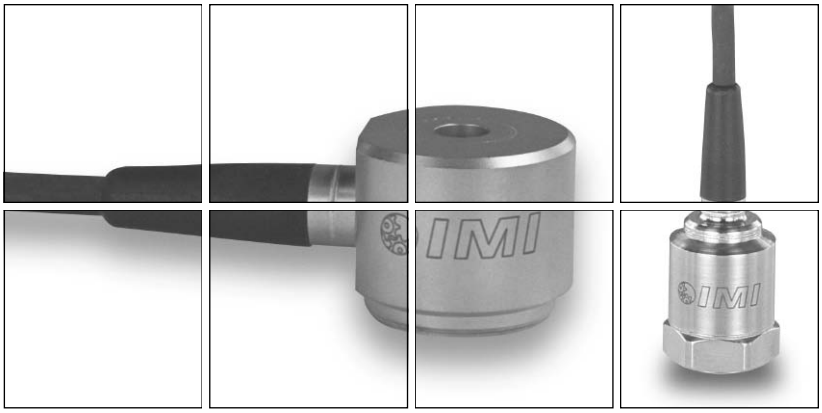


Model 635A01
with 2-pin, threaded MIL-type connector

Low-frequency Industrial ICP® Accelerometers

Highlights

- Vibration measurements on slow rotating machinery
- Paper machine rolls
- Large structures & machine foundations
- Large fans & air handling equipment
- Cooling towers
- Buildings, bridges, foundations, & floors



Low-amplitude, vibration levels go hand-in-hand with low-frequency vibration measurements. For this reason, IMI Sensors offers accelerometers combining extended low-frequency response with high output sensitivity, in order to obtain desired resolution characteristics and strong output signal levels, necessary for conducting low-frequency vibration measurements and analysis.

The most sensitive of IMI Sensors low-frequency accelerometers are known as seismic accelerometers. These models are larger in size to accommodate their larger seismic, internal masses necessary to generate a stronger output signal. These sensors have limited amplitude range, which renders them unsuitable for many general purpose industrial vibration measurement applications. However, when measuring vibration of slow, rotating machinery, buildings, bridges and large structures, these low-frequency, low-noise accelerometers will provide characteristics required for successful results.

Low-frequency industrial ICP® accelerometers benefit from the same advantages offered by IMI Sensors general purpose industrial accelerometers: rugged, laser-welded, stainless steel housing with ability to endure dirty, wet, or harsh environments; hermetically sealed military connector or sealed integral cable; and a low-noise, low-impedance, voltage output signal with long-distance, signal transmission capability.

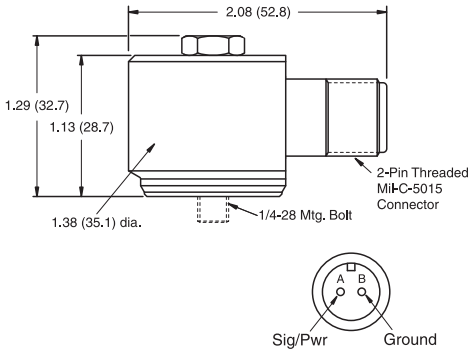
Model 625B02 — ring style side exit, MIL-type connector

- 500 mV/g (51 mV/(m/s²)) sensitivity
- 15 µg (147 µm/s²) resolution
- 12 to 360k cpm (0.2 to 6000 Hz) frequency range
- Temperature output & low bias versions available

Recommended cables and accessories ❶❾
- see section 5

Options: LB, M, TO - see pages v-viii for option information

Model 625B02 with 2-pin, threaded MIL-type connector



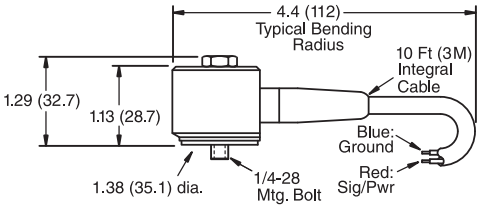
Model 625B12 — ring style side exit, integral polyurethane cable

- 500 mV/g (51 mV/(m/s²)) sensitivity
- 15 µg (147 µm/s²) resolution
- 12 to 360k cpm (0.2 to 6000 Hz) frequency range
- Temperature output & low bias versions available

Recommended cables and accessories ❾
- see section 5

Options: LB, M, TO - see pages v-viii for option information

Model 625B12 with integral, 10 ft (3 m) polyurethane cable



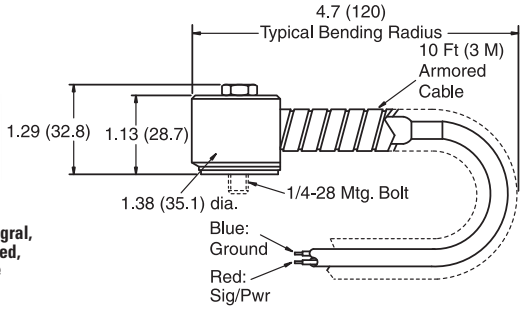
Model 625B62 — ring style side exit, integral armored cable

- 500 mV/g (51 mV/(m/s²)) sensitivity
- 15 µg (147 µm/s²) resolution
- 12 to 360k cpm (0.2 to 6000 Hz) frequency range
- Temperature output & low bias versions available

Recommended cables and accessories ❾
- see section 5

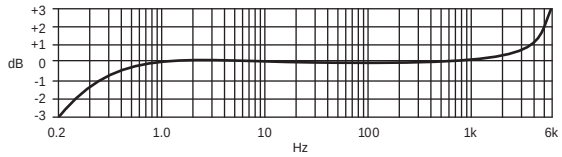
Options: LB, M, TO - see pages v-viii for option information

Model 625B62 with integral, 10 ft (3 m) steel-armored, polyurethane cable

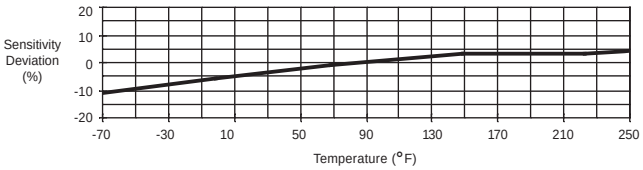


Precision Industrial ICP® Accelerometers for Route-based Measurements

Model Number	625B02		625B12		625B62	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	500 mV/g	51 mV/(m/s^2)	500 mV/g	51 mV/(m/s^2)	500 mV/g	51 mV/(m/s^2)
Measurement Range	± 10 g	± 98 m/s^2	± 10 g	± 98 m/s^2	± 10 g	± 98 m/s^2
Frequency Range: (± 5 %) / (± 10 %) / (± 3 dB)	30 to 120k cpm 22 to 240k cpm 12 to 360k cpm	0.5 to 2000 Hz 0.37 to 4000 Hz 0.2 to 6000 Hz	30 to 120k cpm 22 to 240k cpm 12 to 360k cpm	0.5 to 2000 Hz 0.37 to 4000 Hz 0.2 to 6000 Hz	30 to 120k cpm 22 to 240k cpm 12 to 360k cpm	0.5 to 2000 Hz 0.37 to 4000 Hz 0.2 to 6000 Hz
Resonant Frequency	720k cpm	12k Hz	720k cpm	12k Hz	720k cpm	12k Hz
Broadband Resolution (1 to 10 Hz)	15 µg	147 µm/s^2	15 µg	147 µm/s^2	15 µg	147 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 7 %		≤ 7 %		≤ 7 %	
Environmental						
Overload Limit (Shock)	2500 g pk	24.525 m/s^2 pk	2500 g pk	24.525 m/s^2 pk	2500 g pk	24.525 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 4.5 sec		≤ 4.5 sec		≤ 4.5 sec	
Discharge Time Constant	≥ 1.0 sec		≥ 1.0 sec		≥ 1.0 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Diameter x Height)	1.36 x 1.13 in	35.1 x 28.7 mm	1.36 x 1.13 in	35.1 x 28.7 mm	1.36 x 1.13 in	35.1 x 28.7 mm
Weight	6.1 oz	173 gm	6.1 oz	173 gm	6.1 oz	173 gm
Mounting	Through-hole		Through-hole		Through-hole	
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Metric Installation	M		M		M	
Temperature Output	TO		TO		TO	
Low Bias Electronics	LB		LB		LB	
Supplied Accessories						
Model 081A73 Mounting Bolt (Model M081A73 Mounting Bolt, M6 x 1.0 thread for Metric Mount)						
Model 080B45 Thermal Boot						
Modle ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						



Series 625BX2
Frequency Response



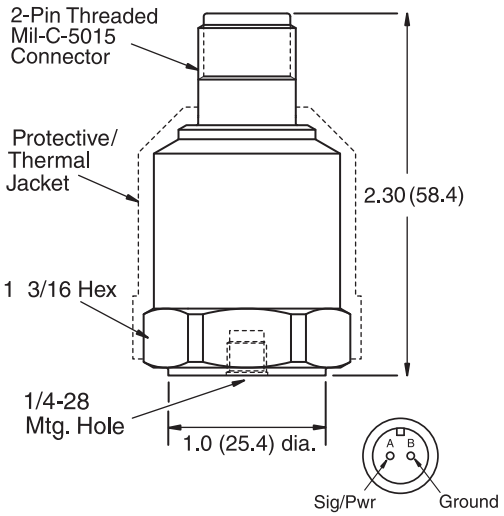
Series 625BX2
Sensitivity Deviation vs. Temperature

Model 626B01 — top exit, MIL-type connector

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 100 µg (981 µm/s²) resolution
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- Temperature output versions available
- Velocity output versions available

Recommended cables and accessories ❶❽
- see section 5

Options: M, TO, LB - see pages v-viii for option information

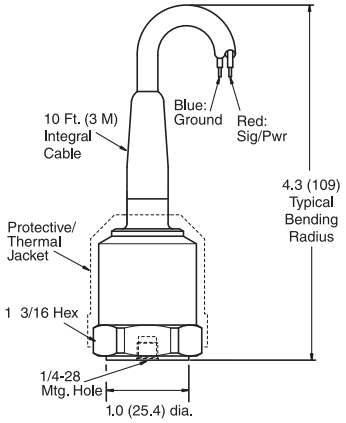


Model 626B11 — top exit, integral polyurethane cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 100 µg (981 µm/s²) resolution
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- Temperature output versions available

Recommended cables and accessories ❽
- see section 5

Options: M, TO, LB- see pages v-viii for option information

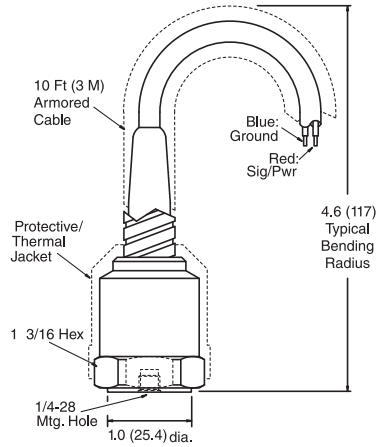


Model 626B61—top exit, integral armored cable

- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 100 µg (981 µm/s²) resolution
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- Temperature output versions available

Recommended cables and accessories ❽
- see section 5

Options: M, TO, LB- see pages v-viii for option information



Low-frequency Industrial ICP® Accelerometers

Model Number	626B01		626B11		626B61	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range: (± 5 %) (± 10 %) (± 3 dB)	30 to 300k cpm 22 to 420k cpm 12 to 600k cpm	0.5 to 5000 Hz 0.37 to 7000 Hz 0.2 to 10k Hz	30 to 300k cpm 22 to 420k cpm 12 to 600k cpm	0.5 to 5000 Hz 0.37 to 7000 Hz 0.2 to 10,000 Hz	30 to 300k cpm 22 to 420k cpm 12 to 600k cpm	0.5 to 5000 Hz 0.37 to 7000 Hz 0.2 to 10k Hz
Resonant Frequency	1380k cpm	23k Hz	1380k cpm	23k Hz	1380k cpm	23k Hz
Broadband Resolution (1 to 10k Hz)	100 µg	981 µm/s^2	100 µg	981 µm/s^2	100 µg	981 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 5.0 sec		≤ 5.0 sec		≤ 5.0 sec	
Discharge Time Constant	≥ 1.0 sec		≥ 1.0 sec		≥ 1.0 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Hex x Height)	1 3/16 x2 3/16 in	30.2 x 55.6 mm	1 3/16 x 4.3 in	1 3/16 x 109 mm	1 3/16 x 4.6 in	1 3/16 x 117 mm
Weight	5.3 oz	150 gm	5.3 oz	150 gm	5.3 oz	150 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	316L Stainless Steel		316L Stainless Steel		316L Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Top		Top		Top	
Electrical Connections (Blue) (Red)	n/a n/a		Ground Acceleration Output		Ground Acceleration Output	
Cable Length	n/a		10 ft	3 m	10 ft	3 m
Cable Type	n/a		Polyurethane (Model 052)		Polyurethane (Model 047)	
Optional Versions						
Metric Installation	M		M		M	
Temperature Output	TO		TO		TO	
Low Bias Electronics	LB		LB		LB	
Velocity Output	n/a		n/a		n/a	
Supplied Accessories						
Model 081A40 Mounting Stud (1)						
Model 085A31 Protective Thermal Jacket (1)						
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						

Model 626A04

Model 626BX2

Model 626BX3

Additional Low-frequency Industrial ICP® Accelerometers

Model Number	626AX4		626BX2		626BX3	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	10 V/g	1.02 mV/(m/s^2)	500 mV/g	51 mV/(m/s^2)	1000 mV/g	102 mV/(m/s^2)
Measurement Range	± 0.5 g	± 4.9 m/s^2	± 10 g	± 98 m/s^2	± 5 g	± 49.1 m/s^2
Frequency Range: (± 5 %)	6 to 12k cpm	0.1 to 200 Hz	30 to 120k cpm	0.5 to 2000 Hz	30 to 120k cpm	0.5 to 2000 Hz
(± 10 %)	4 to 18k cpm	0.07 to 300 Hz	22 to 240k cpm	0.37 to 4000 Hz	22 to 240k cpm	0.37 to 4000 Hz
(± 3 dB)	2 to 30k cpm	0.04 to 500 Hz	12 to 360k cpm	0.2 to 6000 Hz	12 to 360k cpm	0.2 to 6000 Hz
Resonant Frequency	60k cpm	1000 Hz	720k cpm	12k Hz	720k cpm	12k Hz
Broadband Resolution (1 to 10k Hz)	0.5 µg	5.0 µm/s^2	20 µg	196 µm/s^2	11 µg	107.9 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 7 %		≤ 7 %	
Environmental						
Overload Limit (Shock)	± 40 g	± 392 m/s^2	2500 g pk	24,525 m/s^2 pk	2500 g pk	24,525 m/s^2 pk
Temperature Range	0 to +150 °F	-18 to +65 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 5 min		≤ 3.0 sec		≤ 5.0 sec	
Discharge Time Constant	≥ 5 sec		≥ 1.0 sec		≥ 1.0 sec	
Excitation Voltage	24 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 500 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Hex x Height)	2 1/4 x 2.8 in	2 1/4 in x 53.3 mm	1 3/16 x 2 3/16 in	1 3/16 in x 55.6 mm	1 3/16 x 2 3/16 in	1 3/16 in x 55.6 mm
Weight	22 oz	624 gm	7.0 oz	199 gm	7.0 oz	199 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Flexural		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		2-pin MIL-C-5015		2-pin MIL-C-5015	
Electrical Connection Position	Top		Top		Top	
Available Options						
Two-pin, Threaded MIL-type Connector	626A04		626B02		626B03	
Integral, 10 ft (3 m) Polyurethane Cable	626A14		626B12		626B13	
Integral, 10 ft (3 m) Steel-armored Cable	626A64		626B62		626B63	
Supplied Accessories						
Mounting Stud	081A40 [1]		081A40 [1]		081A40 [1]	
Protective Thermal Jacket	n/a		085A31		085A31	
Calibration (NIST traceable)	Single axis from 600 cpm (10 Hz) to upper 5% frequency		Single axis from 600 cpm (10 Hz) to upper 5% frequency		Single axis from 600 cpm (10 Hz) to upper 5% frequency	
Optional Versions						
Metric Installation	M [1]		M [1]		M [1]	
Low Bias Electronics	n/a		LB		LB	
Temperature Output	n/a		TO		TO	

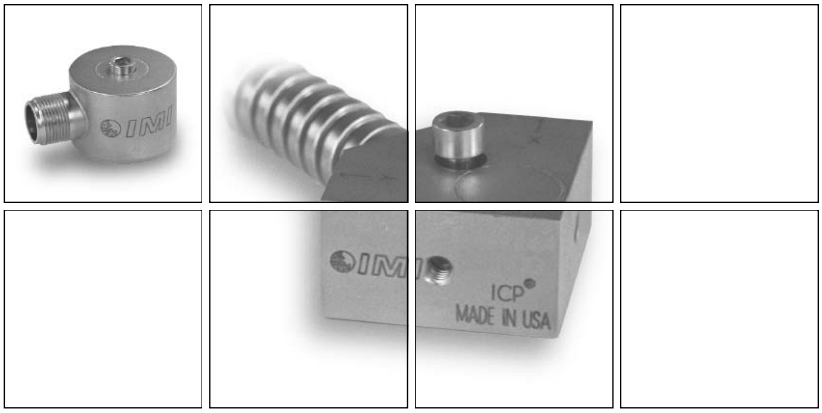
Notes: [1] Metric installation via supplied M081A61 stud, 10-32 to M6 x 0.75

Dimensional drawings for above models can be found on pg 1.42.

Multi-Axis Industrial ICP® Accelerometers

Highlights

- Biaxial or triaxial simultaneous measurement capabilities
- Through-bolt mounting for simplified alignment
- Simultaneous radial & axial bearing vibration measurements
- Interface directly with vibration data collectors and FFT analyzers



Multi-axis accelerometers contain two or three independent acceleration sensing elements within one housing. The sensing elements are oriented in mutually perpendicular geometries in order to respond to vibration in independent, orthogonal directions. Biaxial accelerometers contain two sensing elements, whereas triaxial versions contain three. Each sensing axis contains a dedicated, built-in, low-noise, microelectronic signal amplifier whose output signal is delivered to an independent cable lead or connector pin.

Multi-axis measurements are useful for radial vs. axial bearing vibration monitoring, machinery foundation troubleshooting, and structural impulse and response studies. Styles for low-cost and precision requirements are differentiated by their sensitivity tolerances and extent of supplied NIST-traceable calibration.

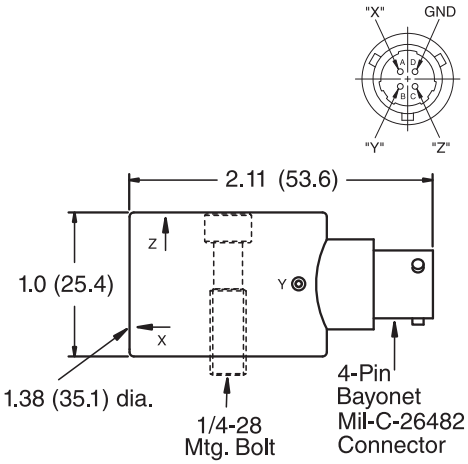
Model 604B31— side exit, Bayonet MIL-type connector

- Triaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Simple connector orientation
- 350 µg (3434 µm/s²) resolution
- 30 to 300k cpm (0.5 to 5000 Hz) frequency range
- Intrinsically safe option available

Recommended cables and accessories ❺❾
- see section 5

Options: M, CS - see pages v-viii for option information

Model 604B31 with 4-pin, Bayonet MIL-type connector



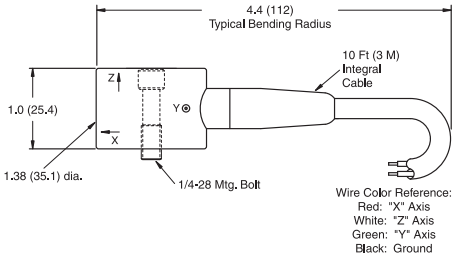
Model 604B11 — side exit, integral polyurethane cable

- Triaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 350 µg (3434 µm/s²) resolution
- 30 to 300k cpm (0.5 to 5000 Hz) frequency range
- Intrinsically safe option available

Recommended cables and accessories ❾
- see section 5

Options: M, CS- see pages v-viii for option information

Model 604B11 with integral, 10 ft (3 m) polyurethane cable



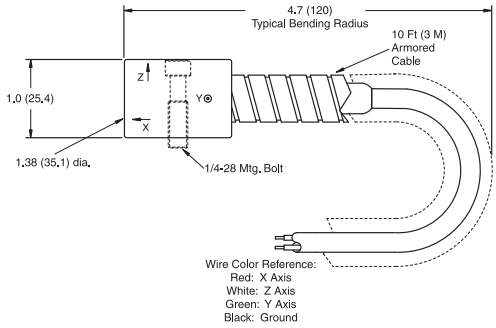
Model 604B61 — side exit, integral armored cable

- Triaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 350 µg (3434 µm/s²) resolution
- 30 to 300k cpm (0.5 to 5000 Hz) frequency range
- Intrinsically safe option available

Recommended cables and accessories ❾
- see section 5

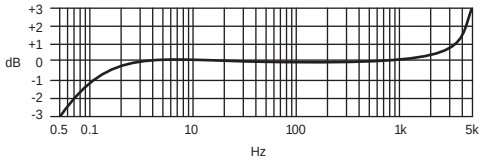
Options: M, CS - see pages v-viii for option information

Model 604B61 with integral, 10 ft (3 m) steel-armored, polyurethane cable

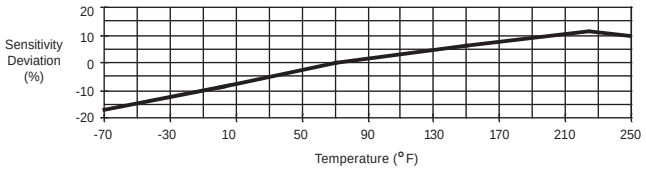


Dimensions shown are in inches (millimeters).

Triaxial Industrial ICP® Accelerometers						
Model Number	**604B31**		**604B11**		**604B61**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 20 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/^{2})	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range (± 3 dB)	30 to 300k cpm	0.5 to 5000 Hz	30 to 300k cpm	0.5 to 5000 Hz	30 to 300k cpm	0.5 to 5000 Hz
Resonant Frequency	600k cpm	10k Hz	600k cpm	10k Hz	600k cpm	10k Hz
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 2.0 sec		≤ 2.0 sec		≤ 2.0 sec	
Discharge Time Constant	≥ 0.3 sec		≥ 0.3 sec		≥ 0.3 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 150 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical						
Size (Diameter x Height)	1.38 x 1.00 in	35.1 x 25.4 mm	1.38 x 1.00 in	35.1 x 25.4 mm	1.38 x 1.00 in	35.1 x 25.4 mm
Weight	4.4 oz	124 gm	4.0 oz	113.3 gm	4.4 oz	124 gm
Mounting	Through-hole		Through-hole		Through-hole	
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	4-pin MIL-C-26482		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Electrical Connections (Pin A, Red) (Pin B, Green) (Pin C, White) (Pin D, Black)	 X-axis Y-axis Z-axis Ground		 X-axis Y-axis Z-axis Ground		 X-axis Y-axis Z-axis Ground	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 059)		Polyurethane (Model 043)	
Optional Versions						
Intrinsically Safe	CS		CS		CS	
Metric Installation	M		M		M	
Supplied Accessories						
Model 081A68 Captive Mounting Stud (Model M081A68 Captive Mounting Bolt M6 x 1 for Metric Mount)						
Model ACS-2T NIST-traceable single point Calibration at 100 Hz Each Axis						



Series 604BX1
Frequency Response



Series 604BX1
Sensitivity Deviation vs. Temperature

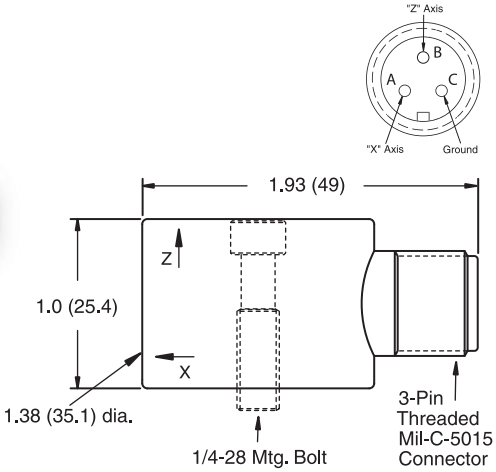
Model 605B01 — side exit, MIL-type connector

- Biaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Simple connector orientation
- 350 µg (3434 µm/s²) resolution
- 30 to 300k cpm (0.5 to 5000 Hz) frequency range

Recommended cables and accessories ❹❾
- see section 5

Options: M - see pages v-viii for option information

Model 605B01 with 3-pin, threaded MIL-type connector



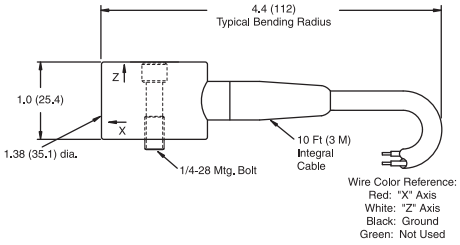
Model 605B11 — side exit, integral polyurethane cable

- Biaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 350 µg (3434 µm/s²) resolution
- 30 to 300k cpm (0.5 to 5000 Hz) frequency range

Recommended cables and accessories ❾
- see section 5

Options: M - see pages v-viii for option information

Model 605B11 with integral, 10 ft (3 m) polyurethane cable



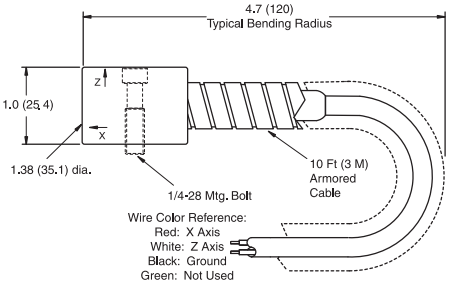
Model 605B61 — side exit, integral armored cable

- Biaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- 350 µg (3434 µm/s²) resolution
- 30 to 300k cpm (0.5 to 5000 Hz) frequency range

Recommended cables and accessories ❾
- see section 5

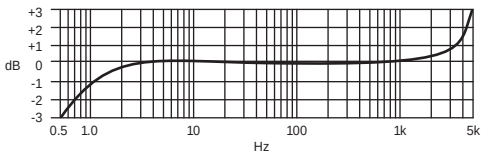
Options: M - see pages v-viii for option information

Model 605B61 with integral, 10 ft (3 m) steel-armored, polyurethane cable

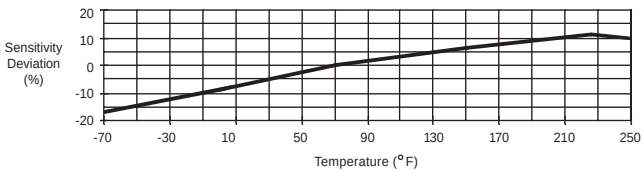


Dimensions shown are in inches (millimeters).

Biaxial Industrial ICP® Accelerometers						
Model Number	**605B01**		**605B11**		**605B61**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 20 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range (± 3 dB)	30 to 300k cpm	0.5 to 5000 Hz	30 to 300k cpm	0.5 to 5000 Hz	30 to 300k cpm	0.5 to 5000 Hz
Resonant Frequency	600k cpm	10k Hz	600k cpm	10k Hz	600k cpm	10k Hz
Broadband Resolution (1 to 10k Hz)	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2	350 µg	3434 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 2.0 sec		≤ 2.0 sec		≤ 2.0 sec	
Discharge Time Constant	≥ 0.3 sec		≥ 0.3 sec		≥ 0.3 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 150 ohm		< 150 ohm		< 150 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical						
Size (Diameter x Height)	1.38 x 1.00 in	34.9 x 25.4 mm	1.38 x 1.00 in	35.1 x 25.4 mm	1.38 x 1.00 in	35.1 x 25.4 mm
Weight (without cable)	3.9 oz	110.6 gm	4.0 oz	113.3 gm	4.0 oz	113.3 gm
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	3-pin MIL-C-5015		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Electrical Connections (Pin A, Red) (Pin B, White) (Pin C, Black) (Green)	 X-axis Z-axis Ground n/a		 X-axis Z-axis Ground Ground		 X-axis Z-axis Ground Ground	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 059)		Polyurethane (Model 043)	
Optional Versions						
Metric Installation	M		M		M	
Supplied Accessories						
Model 081A68 Captive Mounting Stud (Model M081A68 Captive Mounting Bolt M6 x 1 for Metric Mount)						
Model ACS-2T NIST-traceable single point Calibration at 100 Hz for Each Axis						



Series 605BX1
Frequency Response



Series 605BX1
Sensitivity Deviation vs. Temperature

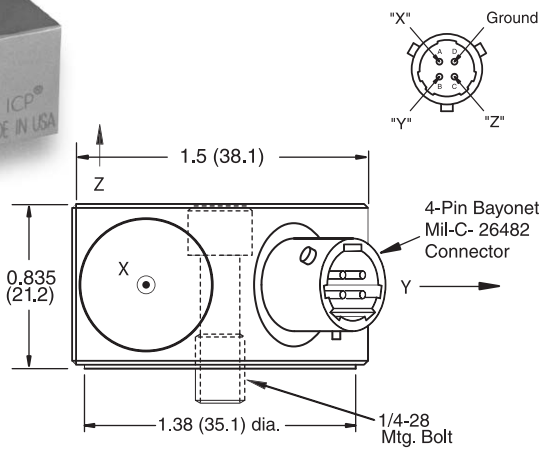
Model 629A31 — side exit, Bayonet MIL-type connector

- Triaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Block style, 3-axis mounting ability for calibration
- Simple connector orientation
- 100 µg (981 µm/s²) resolution
- 48 to 480k cpm (0.8 to 8000 Hz) frequency range

Recommended cables and accessories ❺❾
- see section 5

Options: M, LB - see pages v-viii for option information

Model 629A31 with 4-pin, Bayonet MIL-type connector



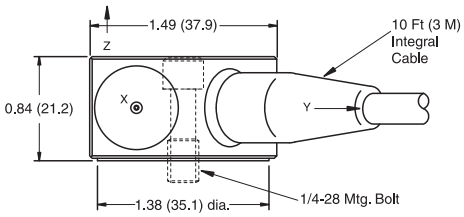
Model 629A11 —side exit, integral polyurethane cable

- Triaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Block style, 3-axis mounting ability for calibration
- 100 µg (981 µm/s²) resolution
- 48 to 480k cpm (0.8 to 8000 Hz) frequency range

Recommended cables and accessories ❾
- see section 5

Options: M, LB- see pages v-viii for option information

Model 629A11 with integral, 10 ft (3 m) polyurethane cable



Wire Color Reference:
Red: "X" Axis White: "Z" Axis
Green: "Y" Axis Black: Ground

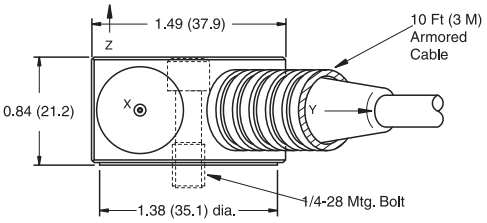
Model 629A61 — side exit, integral armored cable

- Triaxial measurement capability
- 100 mV/g (10.2 mV/(m/s²)) sensitivity
- Block style, 3-axis mounting ability for calibration
- 100 µg (981 µm/s²) resolution
- 48 to 480k cpm (0.8 to 8000 Hz) frequency range

Recommended cables and accessories ❾
- see section 5

Options: M, LB- see pages v-viii for option information

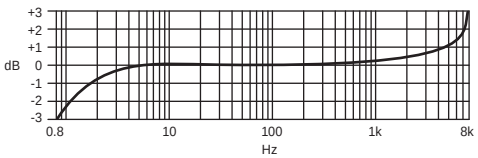
Model 629A61 with integral, 10 ft (3 m) steel-armored, polyurethane cable



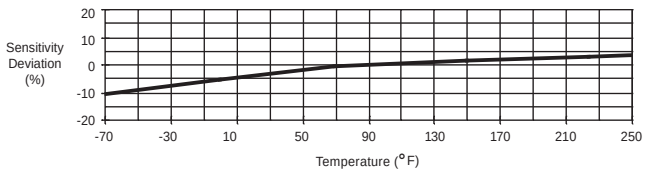
Wire Color Reference:
Red: "X" Axis White: "Z" Axis
Green: "Y" Axis Black: Ground

Dimensions shown are in inches (millimeters).

Triaxial Industrial ICP® Accelerometers						
Model Number	**629A31**		**629A11**		**629A61**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Frequency Range: (± 5 %) (± 10 %) (± 3 dB)	144 to 120k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 2000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz	144 to 120k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 2000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz	144 to 120k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 2000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz
Resonant Frequency	1200k cpm	20k Hz	1200k cpm	20k Hz	1200k cpm	20k Hz
Broadband Resolution (1 to 10k Hz)	100 µg	981 µm/s^2	100 µg	981 µm/s^2	100 µg	981 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical						
Settling Time (within 1% of bias)	≤ 3.0 sec		≤ 3.0 sec		≤ 3.0 sec	
Discharge Time Constant	≥ 0.2 sec		≥ 0.2 sec		≥ 0.2 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Length x Width x Height)	1.5 x 1.5 x 0.82 in	38.1 x 38.1 x 20.8 mm	1.5 x 1.5 x 0.82 in	38.1 x 38.1 x 20.8 mm	1.5 x 1.5 x 0.82 in	38.1 x 38.1 x 20.8 mm
Weight	4.9 oz	139 gm	4.9 oz	139 gm	4.9 oz	139 gm
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	4-pin MIL-C-26482		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Electrical Connections (Pin A, Red) (Pin B, Green) (Pin C, White) (Pin D, Black)	 X-axis Y-axis Z-axis Ground		 X-axis Y-axis Z-axis Ground		 X-axis Y-axis Z-axis Ground	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 059)		Polyurethane (Model 043)	
Optional Versions						
Metric Installation	M		M		M	
Low Bias Electronics	LB		LB		LB	
Supplied Accessories						
Model 081A56 Captive mounting bolt 1/4-28 x 0.75 in (Model M081A59 Captive Mounting Bolt M6 x 1 for Metric Mount)						
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						



Series 629AX1
Frequency Response



Series 629AX1
Sensitivity Deviation vs. Temperature

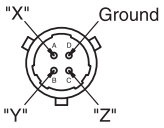
Model 629A32 — side exit, Bayonet MIL-type connector

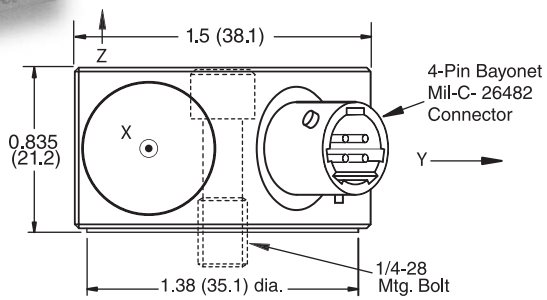
- Triaxial measurement capability
- 500 mV/g (51 mV/(m/s²)) sensitivity
- Block style, 3-axis mounting ability for calibration
- Simple connector orientation
- 120 µg (1177 µm/s²) resolution
- 48 to 480k cpm (0.8 to 8000 Hz) frequency range

Recommended cables and accessories ❺❾
- see section 5

Options: M, LB - see pages v-viii for option information

Model 629A32 with 4-pin, Bayonet MIL-type connector



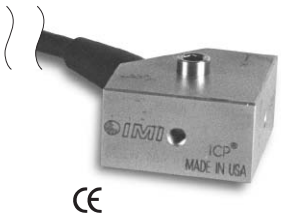


Model 629A12 — side exit, integral polyurethane cable

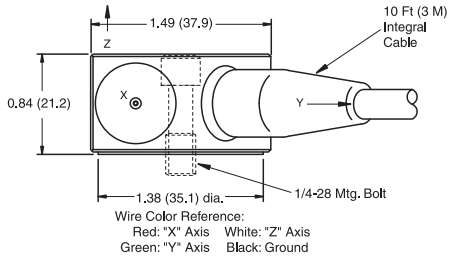
- Triaxial measurement capability
- 500 mV/g (51 mV/(m/s²)) sensitivity
- Block style, 3-axis mounting ability for calibration
- 120 µg (1177 µm/s²) resolution
- 48 to 480k cpm (0.8 to 8000 Hz) frequency range

Recommended cables and accessories ❾
- see section 5

Options: M, LB- see pages v-viii for option information



Model 629A12 with integral, 10 ft (3 m) polyurethane cable

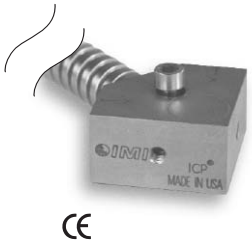


Model 629A62 — side exit, integral armored cable

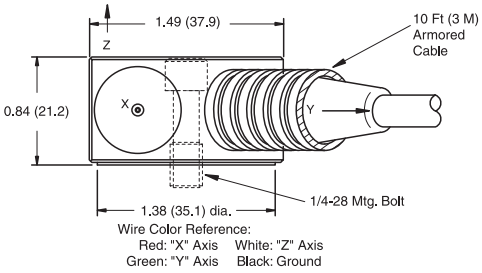
- Triaxial measurement capability
- 500 mV/g (51 mV/(m/s²)) sensitivity
- Block style, 3-axis mounting ability for calibration
- 120 µg (1177 µm/s²) resolution
- 48 to 480k cpm (0.8 to 8000 Hz) frequency range

Recommended cables and accessories ❾
- see section 5

Options: M, LB- see pages v-viii for option information



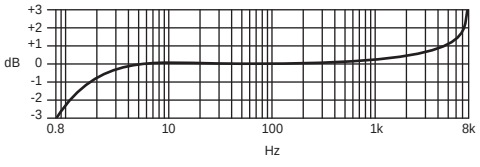
Model 629A62 with integral, 10 ft (3 m) steel-armored, polyurethane cable



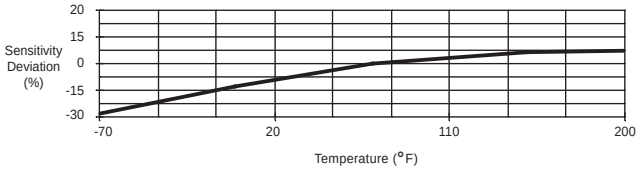
Dimensions shown are in inches (millimeters).

Triaxial Industrial ICP® Accelerometers

Model Number	629A32		629A12		629A62	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (± 5 %)	500 mV/g	51 mV/(m/s^2)	500 mV/g	51 mV/(m/s^2)	500 mV/g	51 mV/(m/s^2)
Measurement Range	± 10 g	± 98 m/s^2	± 10 g	± 98 m/s^2	± 10 g	± 98 m/s^2
Frequency Range: (± 5 %) (± 10 %) (± 3 dB)	144 to 120k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 2000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz	144 to 120k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 2000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz	144 to 120k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 2000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz
Resonant Frequency	1200k cpm	20k Hz	1200k cpm	20k Hz	1200k cpm	20k Hz
Broadband Resolution (1 to 10k Hz)	120 µg	1177 µm/s^2	120 µg	1177 µm/s^2	120 µg	1177 µm/s^2
Non-linearity	± 1 %		± 1 %		± 1 %	
Transverse Sensitivity	≤ 5 %		≤ 5 %		≤ 5 %	
Environmental						
Overload Limit (Shock)	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk	5000 g pk	49,050 m/s^2 pk
Temperature Range	-65 to +200 °F	-54 to +94 °C	-65 to +200 °F	-54 to +94 °C	-65 to +200 °F	-54 to +94 °C
Electrical						
Settling Time (within 1% of bias)	≤ 2.0 sec		≤ 2.0 sec		≤ 2.0 sec	
Discharge Time Constant	≥ 0.2 sec		≥ 0.2 sec		≥ 0.2 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current Excitation	2-20 mA		2-20 mA		2-20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC		8 to 12 VDC	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		RFI/ESD	
Physical						
Size (Length x Width x Height)	1.5 x 1.5 x 0.82 in	38.1 x 38.1 x 20.8 mm	1.5 x 1.5 x 0.82 in	38.1 x 38.1 x 20.8 mm	1.5 x 1.5 x 0.82 in	38.1 x 38.1 x 20.8 mm
Weight	4.9 oz	139 gm	4.9 oz	139 gm	4.9 oz	139 gm
Mounting Thread	1/4-28 Male		1/4-28 Male		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	4-pin MIL-C-26482		Molded Integral Cable		Integral Armored Cable	
Electrical Connection Position	Side		Side		Side	
Electrical Connections (Pin A, Red) (Pin B, Green) (Pin C, White) (Pin D, Black)	 X-axis Y-axis Z-axis Ground		 X-axis Y-axis Z-axis Ground		 X-axis Y-axis Z-axis Ground	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m
Cable Type	n/a		Polyurethane (Model 059)		Polyurethane (Model 043)	
Optional Versions						
Metric Installation	M		M		M	
Low Bias Electronics	LB		LB		LB	
Supplied Accessories						
Model 081A56 Captive mounting bolt 1/4-28 x 0.75 in (Model M081A59 Captive Mounting Bolt M6 x 1 for Metric Mount)						
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency						

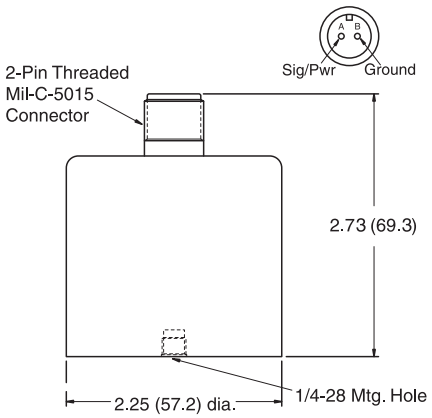


Series 629AX2
Frequency Response

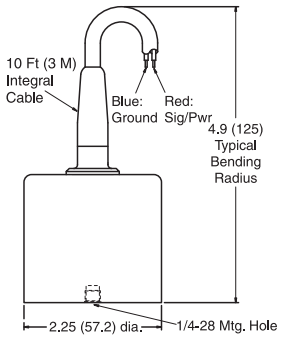


Series 629AX2
Sensitivity Deviation vs. Temperature

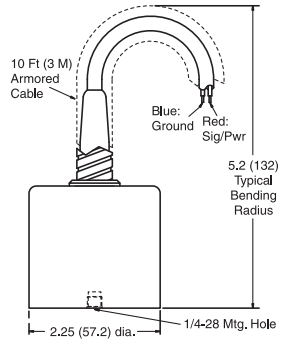
Outline Drawings for Additional Industrial ICP® Accelerometers



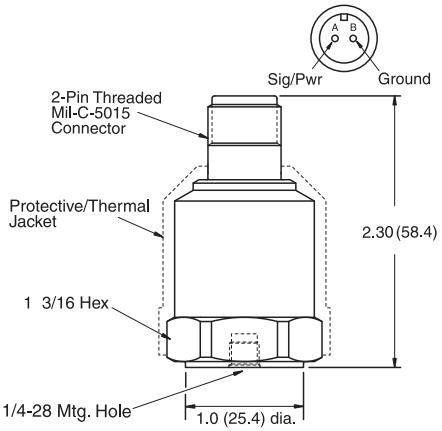
Model 626A04
with 2-pin, threaded MIL-type connector



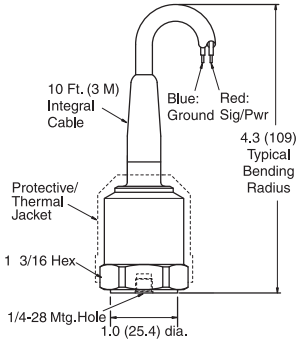
Model 626A14
with integral, 10 ft (3 m)
polyurethane cable



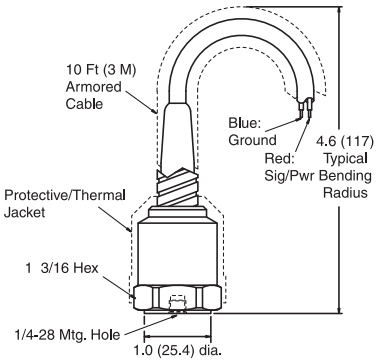
Model 626A64
with integral, 10 ft (3 m)
steel-armored, polyurethane cable



Model 626B02 & 626B03
with 2-pin, threaded MIL-type connector



Model 626B12 & 626B13
with integral, 10 ft (3 m)
polyurethane cable



Model 626B62 & 626B63
with integral, 10 ft (3 m) steel-armored,
polyurethane cable

Dimensions shown are in inches (millimeters).

High-temperature Industrial Accelerometers to +900 °F (+482 °C)

Highlights

- Food processing equipment
- Hot conveyor systems
- Paper machine dryer sections
- Petrochemical pumps
- Power generation
- Reactors & digesters
- Turbines

It is often necessary to monitor vibration levels of rotating machinery operating at elevated temperatures or in high temperature environments. Such circumstances place extreme demands on vibration sensors and require use of accelerometers with special design characteristics that extend their useable temperature range beyond that of other conventional units. For these demanding situations, IMI Sensors offers two styles of high-temperature industrial vibration sensors.

A variety of ICP® piezoelectric industrial accelerometers are available with high-temperature "HT" option, which extends their usable range to +325 °F (+163 °C). This option replaces their standard, internal signal conditioning circuitry with circuitry specifically designed and tested to reliably withstand elevated temperatures. These accelerometers, though equipped with the "HT" option, will operate in the same manner and with the same cabling, data collection, and signal conditioning equipment as standard, ICP® industrial accelerometers.

For extreme, high-temperature requirements, charge output accelerometers are recommended. Designed to withstand temperatures to +900 °F (+482 °C), charge output accelerometers do not contain internal signal conditioning circuits which impose temperature limits on standard piezoelectric ICP® accelerometers. However, since there is no signal conditioning circuitry within charge output accelerometers, alternative cabling and signal conditioning equipment are required. To simplify installation of these sensors, IMI Sensors offers complete kits that include the necessary low-noise cabling and in-line charge converter to adapt a charge output accelerometer to conventional ICP® sensor signal conditioners and data collection equipment.

Model HT622A01
Low-noise
CE

Model HT623C01
High-frequency
CE

Model HT625B01
Through-hole Mount
CE

High Temperatures to +325 °F (+163 °C)

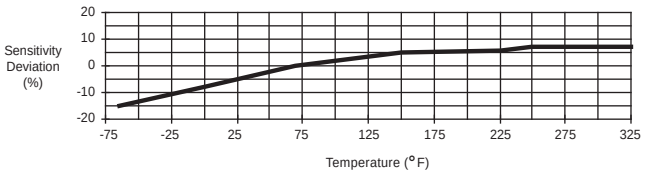
High-temperature Industrial ICP® Accelerometers with Ceramic Sensing Element

Model Number	HT622A01		HT623C01		HT625B01	
Dynamic Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (5%)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Broadband Resolution (1 to 10k Hz)	150 µg	1472 µm/s^2	300 µg	2943 µm/s^2	200 µg	1962 µm/s^2
Frequency Range: (± 5%) (± 10%) (± 3 dB)	35 to 240k cpm 25 to 300k cpm 12 to 480k cpm	0.58 to 4000 Hz 0.42 to 5000 Hz 0.2 to 8000 Hz	144 to 480k cpm 102 to 540k cpm 48 to 900k cpm	2.4 to 8 kHz 1.7 to 9 kHz 0.8 to 15 kHz	30 to 240k cpm 22 to 360k cpm 12 to 600k cpm	0.5 to 4000 Hz 0.37 to 6000 Hz 0.2 to 10k Hz
Mounted Resonant Frequency	1200k cpm	20k Hz	2400k cpm	40k Hz	1380k cpm	23k Hz
Non-linearity	± 1%		± 1%		± 1%	
Transverse Sensitivity	≤ 5%		≤ 5%		≤ 5%	
Environmental						
Overload Limit (shock)	5000 g pk	49k m/s^2 pk	5000 g pk	49k m/s^2 pk	2000 g pk	19.6k m/s^2 pk
Temperature Range	-65 to +325 °F	-54 to +163 °C	-65 to +325 °F	-54 to +163 °C	-65 to +325 °F	-54 to +163 °C
Electrical						
Settling Time	≤ 5 sec		≤ 1 sec		≤ 8 sec	
Discharge Time Constant	≥ 0.8 sec		≥ 0.2 sec		≥ 0.1 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current	2-10 mA		2-10 mA		2-10 mA	
Output Impedance	< 700 ohm		< 700 ohm		< 250 ohm	
Output Bias (at 4 mA)	8 to 14 VDC		7 to 14 VDC		11 to 14 VDC	
Case Isolation	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD		n/a	
Mechanical						
Size	7/8 hex × 2.0 in	7/8 in hex × 50.8 mm	11/16 hex × 1.97 in	11/16 in hex × 50 mm	1.36 dia. × 1.13 in	35 dia. × 29 mm
Weight	3.3 oz	93 gm	1.80 oz	51 gm	5.1 oz	145 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element/Geometry	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Connector Type (2-pin)/Position	MIL-C-5015/Top		MIL-C-5015/Top		MIL-C-5015/Side	
Supplied Accessories						
Mounting Stud or Bolt	Model 081A40		Model 081A40		Model 081A73	
Calibration (NIST-traceable) range	600 to 240k cpm		600 to 480k cpm		600 to 240k cpm	
Optional Versions						
Metric Installation	M*		M*		M†	

Notes:
*Metric installation via supplied M081A61 stud, 1/4-28 to M6 x 1.0

†Metric installation via supplied M081A73 bolt, M6 x 1.0 thread

Dimensional drawings on pages 1.14, 1.22, & 1.16



Models HT622A01, HT623C01, and HT625B01
Sensitivity Deviation vs. Temperature

Model HT628F01
High-temperature Industrial ICP® Accelerometers
CE

Model HT624B01
High-temperature Industrial ICP® Accelerometers
CE

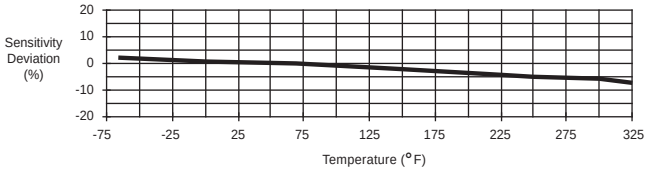
High-temperature Industrial ICP® Accelerometers with Quartz Sensing Element

Model Number	HT628F01		HT624B01	
Dynamic Performance	**English**	**SI**	**English**	**SI**
Sensitivity (± 5%)	100 mV/g	10.2 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)
Measurement Range	± 50 g	± 490 m/s^2	± 50 g	± 490 m/s^2
Broadband Resolution (1 to 10k Hz)	1000 µg	9800 µm/s^2	1000 µg	9810 µm/s^2
Frequency Range: (± 5%) (± 10%) (± 3 dB)	144 to 180k cpm 102 to 300k cpm 48 to 480k cpm	2.4 to 3000 Hz 1.7 to 5000 Hz 0.8 to 8000 Hz	144 to 120k cpm 102 to 180k cpm 48 to 300k cpm	2.4 to 2000 Hz 1.7 to 3000 Hz 0.8 to 5000 Hz
Mounted Resonant Frequency	1080k cpm	18k Hz	1080k cpm	18k Hz
Non-linearity	± 1%		± 1%	
Transverse Sensitivity	≤ 5%		≤ 5%	
Environmental				
Overload Limit (shock)	1000 g pk	981 m/s^2 pk	1000 g pk	981 m/s^2 pk
Temperature Range	-65 to +325 °F	-54 to +162 °C	- 65 to +325 °F	- 54 to +162 °C
Electrical				
Settling Time	≤ 3 sec		≤ 3 sec	
Discharge Time Constant	≥ 0.5 sec		≥ 0.2 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC	
Excitation Constant Current	2-10 mA		2-10 mA	
Output Impedance	< 500 ohm		< 500 ohm	
Output Bias Voltage	8 to 12 VDC		8 to 12 VDC	
Electrical Case Isolation	> 10^8 ohm		> 10^8 ohm	
Electrical Protection	RFI/ESD		RFI/ESD	
Mechanical				
Size	7/8 hex × 2.05 in	7/8 hex × 52.1 mm	1.375 dia. × 1.125 in	34.9 dia. × 28.6 mm
Weight	3.2 oz	91 gm	5.1 oz	145 g
Mounting Thread	1/4-28 Female		1/4-28 Male	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element	Quartz Shear		Quartz Shear	
Housing Material	Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic	
Electrical Connector, 2-pin/Position	MIL-C-5015/Top		MIL-C-5015/Side	
Supplied Accessories				
Mounting Stud or Bolt	Model 081A40		Model 081A67	
Calibration (NIST- traceable) range	600 to 300k cpm		600 to 120k cpm	
Optional Versions				
Metric Installation	M*		M†	

Dimensional drawings on page 1.20

Notes:
*Metric installation via supplied M081A61 stud, 1/4-28 to M6 x 1.0

†Metric installation via supplied M081A58 bolt, M6 x 1.0 thread



Models HT628F01 and HT624A01
Sensitivity Deviation vs. Temperature

Series 600AXX Industrial Charge Output Accelerometer Kits

- Sensor operating temperature range up to +500 °F (+260 °C)
- Choice of several sensitivities to suit specific measurement requirements
- Frequency ranges to 10k Hz

High Temperatures to +500 °F (+260 °C)

The Model 612A01 charge output industrial accelerometer offers the capability of surviving the highest ambient and surface temperatures of any of IMI Sensors industrial vibration sensors. This is accomplished by utilizing a stainless steel, hermetically sealed, welded housing and eliminating active electrical signal conditioning components within the unit. The built-in signal conditioning electronics of ICP® industrial accelerometers impose a limiting factor on the temperature range for those units.

Charge output accelerometers possess unique signal conditioning requirements. Their output signal is at a very high-impedance, which is more susceptible to extraneous noise influences. To minimize such noise, a short, low-noise cable should be used between the sensor and signal conditioner. The required signal conditioner, also called a charge converter or charge amplifier, converts the high-impedance charge signal into a low-impedance voltage signal that can then be transmitted over long cable lengths and interrogated by vibration data collectors, readout, recording, and analysis instruments.

For seamless connectivity to vibration data collectors and analysis instruments, IMI Sensors offers charge output sensor kits, which include Model 612A01 accelerometer, along with an appropriate short length of low-noise cable and charge converter which provides the desired, system voltage sensitivity. The charge converters operate from any standard ICP® sensor signal conditioner; however, they must be located in an environment characterized by a moderate, ambient temperature.

For ease of set-up and implementation, charge sensor kits are furnished with a system calibration certificate, which provides voltage sensitivity of the sensor/cable/charge converter system over a specified frequency range.

Model 612A01 Industrial Charge Output Accelerometer with 2-pin threaded MIL-type connector

Series 422E2X In-line Charge Converter

Model 045M06 High-temperature, Armored Teflon® Cable 10 ft (3 m) length

Model 045ER010CJ High-temperature Teflon® Cable 10 ft (3 m) length

Model 612A01
Charge Output Industrial Accelerometer

Series 422E2X
In-line Charge Converter

Model 045M06
Armored Teflon® Cable

Model 045ER010CJ
Teflon® Cable

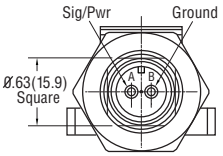
High-temperature Charge Output Industrial ICP® Accelerometer Kits

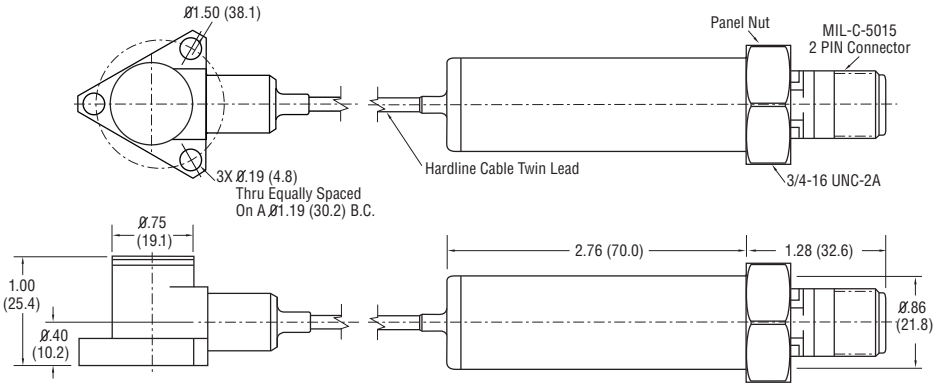
	10 mV/g (1.02 mV(m/s²)) Kits		100 mV/g (10.2 mV(m/s²)) Kits		1000 mV/g (102 mV(m/s²)) Kits	
Available Kit Models						
with 10 ft (3 m) 045ER010CJ Teflon® Cable with 10 ft (3 m) 045M06 Armored Cable	**Model 600A06** **Model 600A08**		**Model 600A02** **Model 600A03**		**Model 600A07** **Model 600A09**	
Dynamic Performance (Kits)	**English**	**SI**	**English**	**SI**	**English**	**SI**
Sensitivity (15%)	10 mV/g	1.02 mV/(m/s^2)	100 mV/g	10.2 mV/(m/s^2)	1000 mV/g	102 mV/(m/s^2)
Measurement Range	250 g	2452 m/s^2	25 g	245 m/s^2	2.5 g	24.5 m/s^2
Broadband Resolution (1 to 10k Hz)	410 µg	4020 µm/s^2	120 µg	1180 µm/s^2	120 µg	1180 µm/s^2
Frequency Range: (± 10%) (± 3 dB)	100 to 180k cpm 60 to 600k cpm	1.67 to 3000 Hz 1 to 10k Hz	100 to 180k cpm 60 to 600k cpm	1.67 to 3000 Hz 1 to 10k Hz	100 to 180k cpm 60 to 600k cpm	1.67 to 3000 Hz 1 to 10k Hz
Mounted Resonant Frequency (sensor)	1800k cpm	30 kHz	1800k cpm	30 kHz	1800k cpm	30 kHz
Non-linearity	± 1%		± 1%		± 1%	
Transverse Sensitivity	≤ 5%		≤ 5%		≤ 5%	
Environmental						
Shock Limit (sensor)	5000 g pk	49k m/s² pk	5000 g pk	49k m/s² pk	5000 g pk	49k m/s² pk
Temperature Range (sensor)	-65 to +500 °F	-54 to +260 °C	-65 to +500 °F	-54 to +260 °C	-65 to +500 °F	-54 to +260 °C
Temperature Range (charge converter)	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C	-65 to +250 °F	-54 to +121 °C
Electrical (Charge Converter)	**(422E21)**		**(422E20)**		**(422E22)**	
Settling Time (sensor at +70 °F (+21 °C))	≤ 15 sec		≤ 15 sec		≤ 15 sec	
Settling Time (sensor at +500 °F (+260°C))	≤ 240 sec		≤ 240 sec		≤ 240 sec	
Discharge Time Constant	≥ 0.5 sec		≥ 0.5 sec		≥ 0.5 sec	
Excitation Voltage	18 to 28 VDC		18 to 28 VDC		18 to 28 VDC	
Constant Current	2- 20 mA		2- 20 mA		2- 20 mA	
Output Impedance	< 100 ohm		< 100 ohm		< 100 ohm	
Output Bias	12 to 15 VDC		12 to 15 VDC		12 to 15 VDC	
Base Isolation (sensor)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Mechanical (Model 612A01 Sensor)						
Size (hex × height)	7/8 × 2.12 in	7/8 × 53.9 mm	7/8 × 2.12 in	7/8 × 53.9 mm	7/8 × 2.12 in	7/8 × 53.9 mm
Weight	2.95 oz	83.6 gm	2.95 oz	83.6 gm	2.95 oz	83.6 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female	
Mounting Torque	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m	2 to 5 ft-lb	2.7 to 6.8 N-m
Sensing Element/Geometry	Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Connector Type (2-pin)/Position	MIL-C-5015/Top		MIL-C-5015/Top		MIL-C-5015/Top	
Mechanical (Series 422E2x In-Line Charge Converter)						
Size (diameter × length)	0.62 × 3.62 in	16 × 92 mm	0.62 × 3.62 in	16 × 92 mm	0.62 × 3.62 in	16 × 92 mm
Weight	2.46 oz	69.7 gm	2.46 oz	69.7 gm	2.46 oz	69.7 gm
Case Material	Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic	
Input Connector Type (2-pin)	MIL-C-26482		MIL-C-26482		MIL-C-26482	
Output Connector Type (2-pin)	MIL-C-5015		MIL-C-5015		MIL-C-5015	
Supplied Accessories						
Mounting Stud	Model 081A40		Model 081A40		Model 081A40	
Calibration (NIST-traceable) range	600 to 180k cpm		600 to 180k cpm		600 to 180k cpm	
Optional Versions						
Metric Installation	M*		M*		M*	

Notes: * Metric installation via supplied M081A61 stud, 1/4-28 to M6 x 1.0

Model 600A13 — Side exit, integral hardline cable

- 100 mV/g sensitivity (10.2 mV/(m/s²))
- Sensor head rated to +900 ˚F (+482 ˚C)
- Amplifier rated to +248 ˚F (+120 ˚C)
- Integral hardline cable
- 2-pin MIL-type connector
- 10 mV/g model available (Model 600A14)





High Temperatures to +900 ˚F (+482 ˚C)

Model 600A13 Specifications		
Model Number	**600A13**	
Dynamic Performance	**English**	**SI**
Sensitivity (± 5 %)	100 mV/g	10.2 mV/(m/s²)
Measurement Range (Peak)	± 50 g	± 490 m/s²
Broadband Resolution (1 to 10k Hz)	450 µg	4415 µm/s²
Frequency Range: (± 5 %) (± 10 %)	282 to 240k cpm 204 to 360k cpm	4.7 to 4000 Hz 3.4 to 6000 Hz
Resonant Frequency	1380k cpm	23k Hz
Non-linearity	± 1%	
Transverse Sensitivity	< 5%	
Environmental		
Overload Limit (shock)	1000 g pk	9810 m/s² pk
Temperature Range	-65 to +900 ˚F	-54 to +482 ˚C
Electrical		
Settling Time (within 1% of bias)	< 1 sec	
Excitation Voltage (Not Polar Sensitive)	22 to 28 VDC	
Constant Current Excitation	2.2 to 20 mA	
Output Impedance	< 1000 ohm	
Output Bias Voltage	12 to 16 VDC	
Electrical Isolation (Case)	> 10^8 ohm	
Physical		
Size (Diameter x Height)	1.5 x 1.0 in	38.1 x 25.4 mm
Weight (with Cable)	9.5 oz	270 gm
Mounting	Through Holes	
Sensing Geometry	Compression	
Housing Material	Inconel®	
Sealing	Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015	
Electrical Connection Position	Side	
Cable Length	10 ft	3 m
Cable Type	Integral Hardline	
Optical Versions		
Metric Installation	M	
Supplied Accessories		
Model 081A99 Cap Screws (3)		
Model ICS-1 NIST-traceable single axis amplitude response calibration from 600 cpm (10 Hz) to upper 5% frequency		

Model 600A13 is ideal for monitoring vibration levels on turbine generators.

Continuous Vibration Monitoring Sensors and Transmitters

Highlights

- Cost-effective
- Provides continuous protection
- Operates from loop power
- Outputs acceleration or velocity
- Works with PLC, DCS, & SCADA systems
- Intrinsically safe versions available for all models

IMI Sensors 4-20 mA industrial vibration sensors integrate an accelerometer and vibration transmitter within a standard robust accelerometer housing. This provides a more compact and cost-effective solution than a conventional accelerometer with separate vibration transmitter. These sensors are loop powered and output a 4-20 mA signal that is proportional to the overall vibration level of the machine. They are directly compatible with a large array of standard monitoring equipment found in most facilities, including: PLC, DCS, SCADA systems, alarms, and recorders.

The vibration sensing transmitters capitalize on the use of existing process control equipment and HMI software for monitoring machinery vibration and alarming of excessive vibration levels. This practice offers the ability to continuously monitor machinery and provide early warning detection of impending failure. With this approach, existing process control technicians may be utilized for monitoring vibration levels while skilled vibration specialists are called upon only in the event that the vibration signal warrants more detailed signal analysis.

A choice of velocity or acceleration measurement signals is offered with a variety of amplitude and frequency ranges to suit particular applications. All models feature an optional analog output signal connection (RV option) for conducting frequency analysis and machinery diagnostics. Intrinsically safe models allow for simple installation in most environments.

4-20 mA / 0 to 0.5 ips peak (0.0 to 12.7 mm/s)

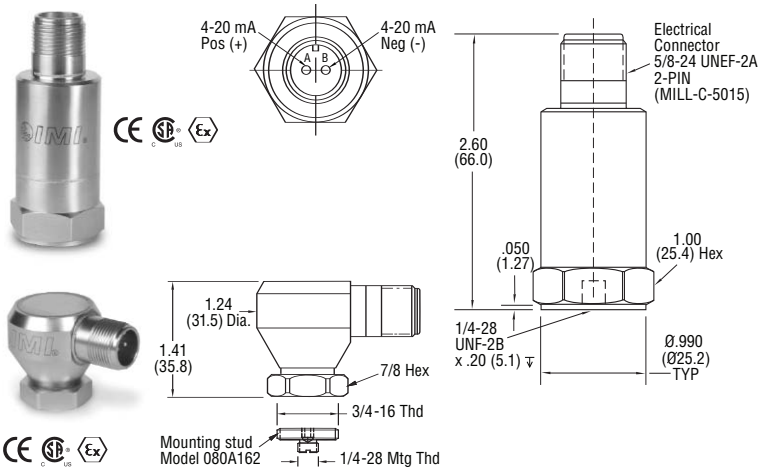
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 0.5 ips (0.0 to 12.7 mm/s) peak velocity

Models 640B00 & 642A00 — MIL-type connector

- 0 to 0.5 ips (0.0 to 12.7 mm/s) peak velocity output signal
- 180 to 60k cpm (3 to 1000 Hz) frequency range
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

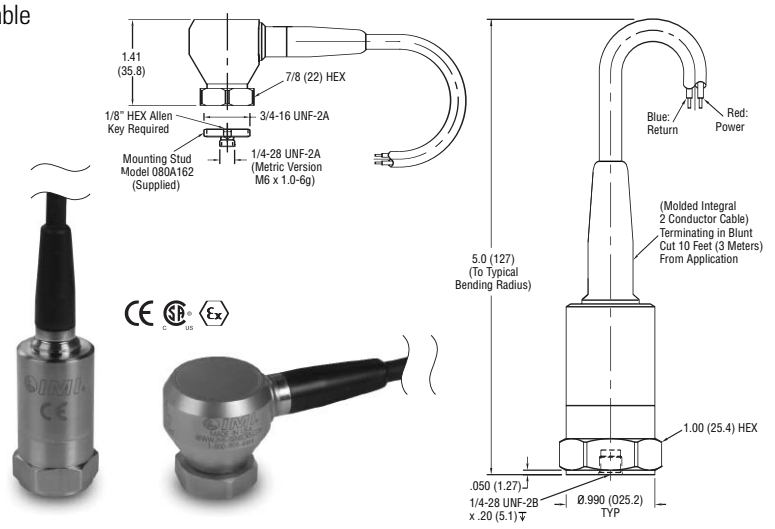
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 640B10 & 642A10 — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

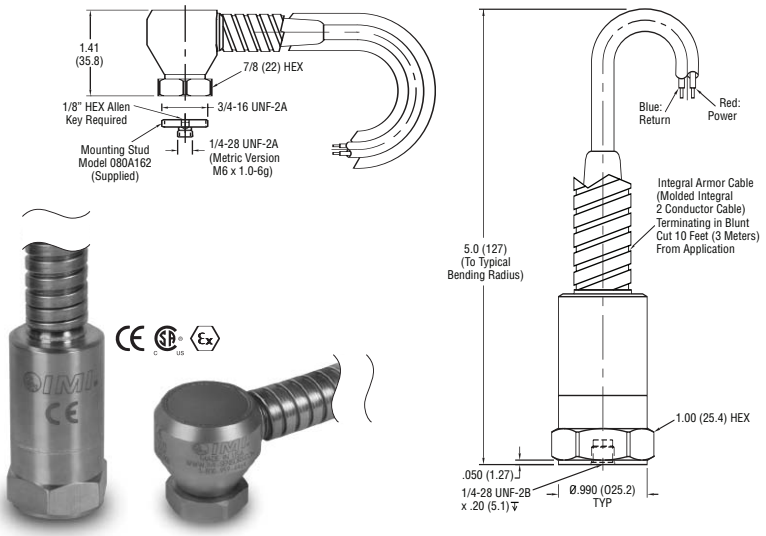
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 640B60 & 642A60 — Integral armored cable

Recommended cables and accessories ❾
- see section 5

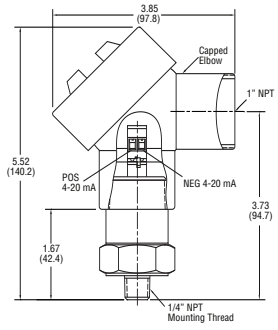
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensors / 0 to 0.5 ips peak (0.0 to 12.7 mm/s)								
Model Number	**640B00 & 642A00**		**640B10 & 642A10**		**640B60 & 642A60**		**640B70**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 0.5 in/s pk	0.0 to 12.7 mm/s pk	0.0 to 0.5 in/s pk	0.0 to 12.7 mm/s pk	0.0 to 0.5 in/s pk	0.0 to 12.7 mm/s pk	0.0 to 0.5 in/s pk	0.0 to 12.7 mm/s pk
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range (± 10 %)	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz
Broadband Resolution	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to 176 °F	-40 to 80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 640BX0 (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in [2]	98 x 140 mm [2]
Weight- 640BX0	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 642AX0 (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 642AX0	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (640B00)/ Side (642A00)		Top (640B10)/ Side (642A10)		Top (640B60)/ Side (642A60)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP [1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 640B70 — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 1.0 ips peak (0.0 to 25.4 mm/s)

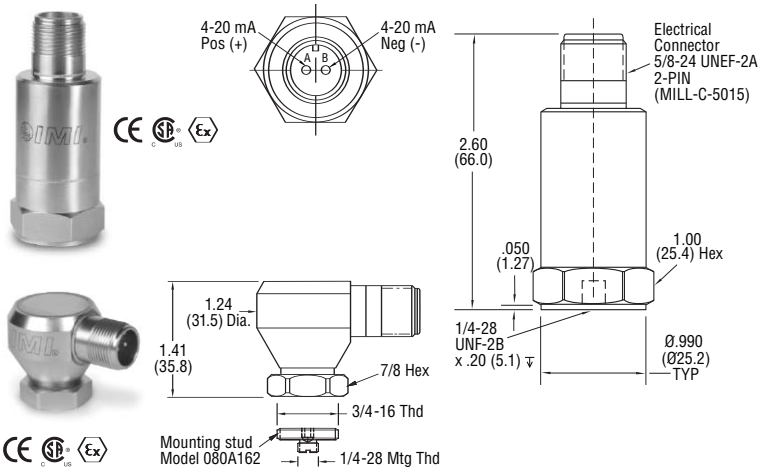
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 1.0 ips (0.0 to 25.4 mm/s) peak velocity

Models 640B01 & 642A01 — MIL-type connector

- 0 to 1.0 ips (0.0 to 25.4 mm/s) peak velocity output signal
- 180 to 60k cpm (3 to 1000 Hz) frequency range
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

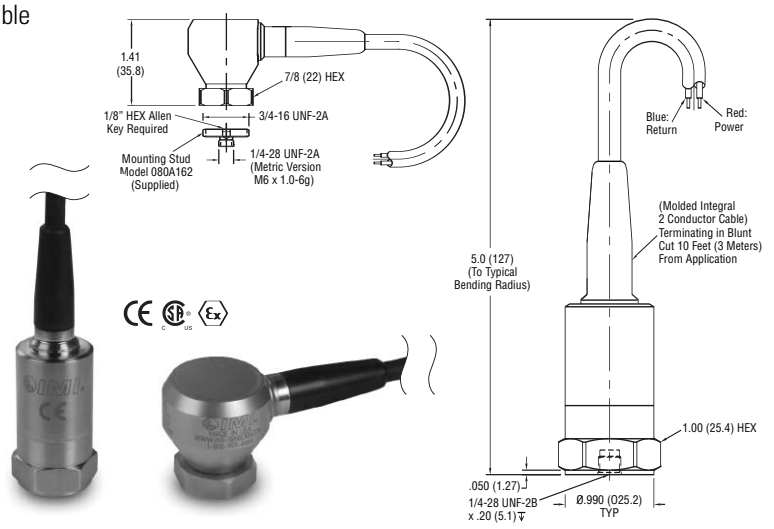
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 640B11 & 642A11 — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

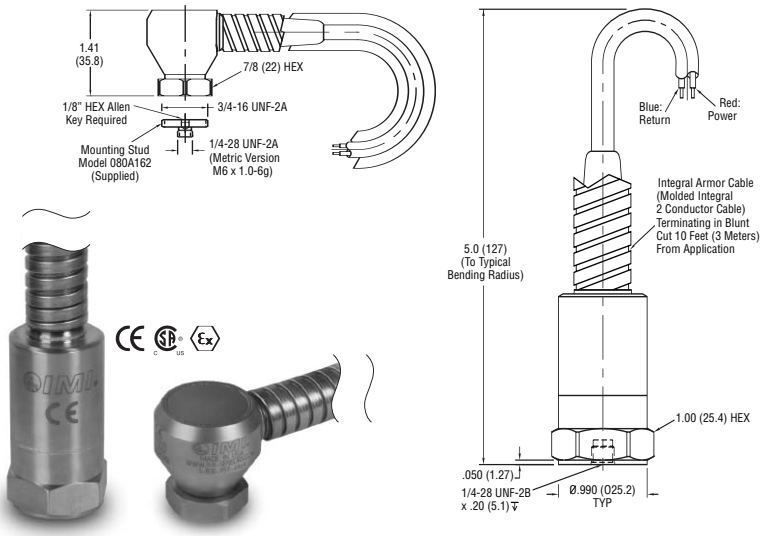
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 640B61 & 642A61 — Integral armored cable

Recommended cables and accessories ❾
- see section 5

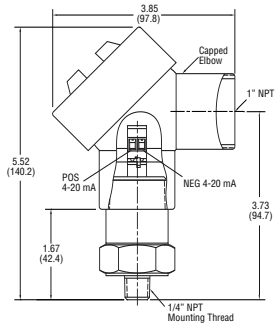
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensing Transmitters / 0 to 1.0 ips peak (0.0 to 25.4 mm/s)								
Model Number	**640B01 & 642A01**		**640B11 & 642A11**		**640B61 & 642A61**		**640B71**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 1 in/s pk	0.0 to 25.4 mm/s pk	0.0 to 1 in/s pk	0.0 to 25.4 mm/s pk	0.0 to 1 in/s pk	0.0 to 25.4 mm/s pk	0.0 to 1 in/s pk	0.0 to 25.4 mm/s pk
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range (± 10 %)	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz
Broadband Resolution	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to 176 °F	-40 to 80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 640BX1 (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 640BX1	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 642AX1 (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 642AX1	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (640B01)/ Side (642A01)		Top (640B11)/ Side (642A11)		Top (640B61)/ Side (642A61)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 640B71 — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 2.0 ips peak (0.0 to 50.8 mm/s)

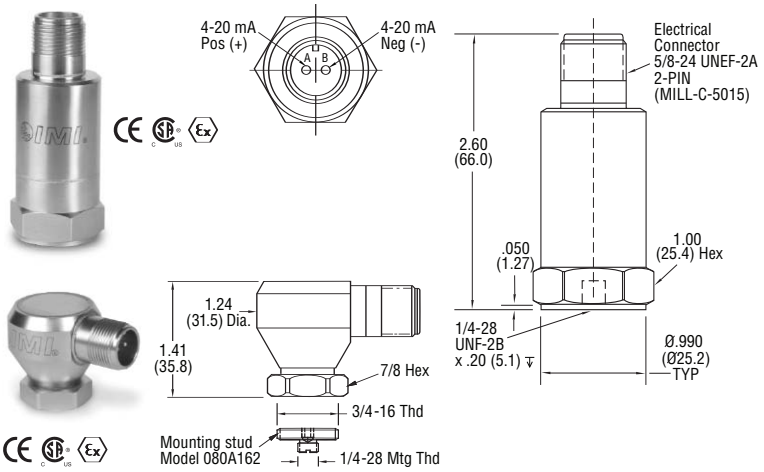
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 2.0 ips (0.0 to 50.8 mm/s) peak velocity

Models 640B02 & 642A02 — MIL-type connector

- 0 to 2.0 ips (0.0 to 50.8 mm/s) peak velocity output signal
- 180 to 60k cpm (3 to 1000 Hz) frequency range
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

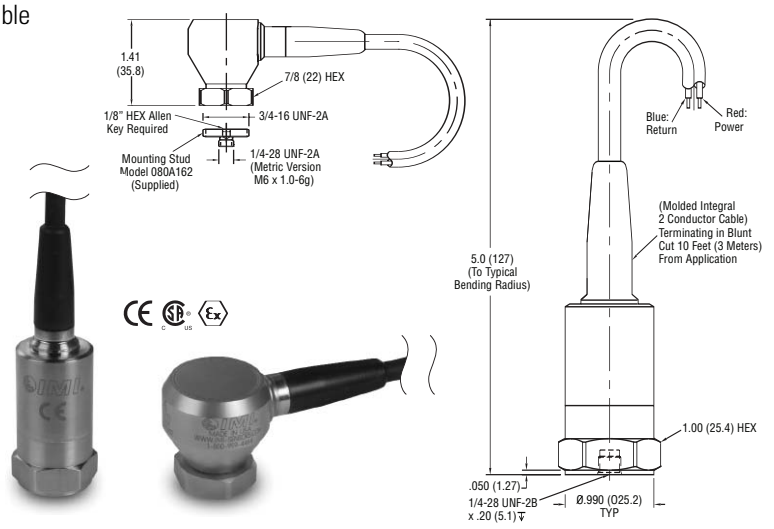
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 640B12 & 642A12 — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

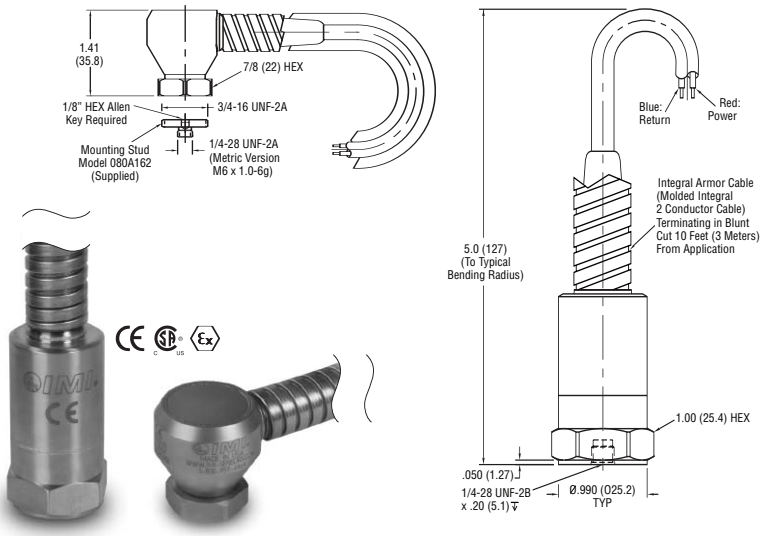
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 640B62 & 642A62 — Integral armored cable

Recommended cables and accessories ❾
- see section 5

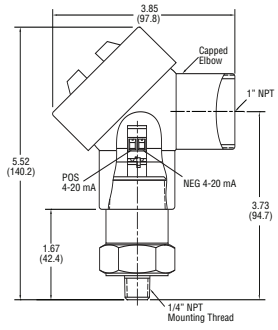
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensing Transmitters / 0 to 2.0 ips peak (0.0 to 50.8 mm/s)								
Model Number	**640B02 & 642A02**		**640B12 & 642A12**		**640B62 & 642A62**		**640B72**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 2 in/s pk	0.0 to 50.8 mm/s pk	0.0 to 2 in/s pk	0.0 to 50.8 mm/s pk	0.0 to 2 in/s pk	0.0 to 50.8 mm/s pk	0.0 to 2 in/s pk	0.0 to 50.8 mm/s pk
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range (± 10 %)	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60,000 cpm	3 to 1000 Hz
Broadband Resolution	0.01 in/s pk	0.26 mm/s pk	0.01 in/s pk	0.26 mm/s pk	0.01 in/s pk	0.26 mm/s pk	0.01 in/s pk	0.26 mm/s pk
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to 176 °F	-40 to 80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 640BX2 (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 640BX2	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 642AX2 (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 642AX2	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (640B02)/ Side (642A02)		Top (640B12)/ Side (642A12)		Top (640B62)/ Side (642A62)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 640B72 — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 0.5 ips rms (0.0 to 12.7 mm/s)

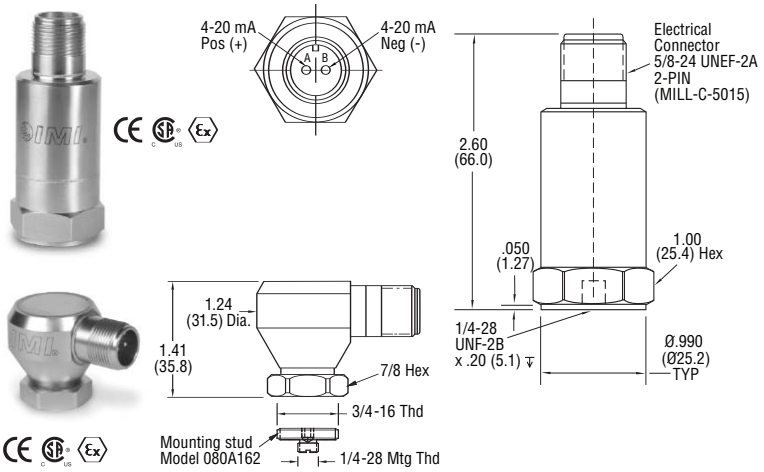
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 0.5 ips (0.0 to 12.7 mm/s) rms velocity

Models 641B00 & 643A00 — MIL-type connector

- 0 to 0.5 ips (0.0 to 12.7 mm/s) rms velocity output signal
- 180 to 60k cpm (3 to 1000 Hz) frequency range
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

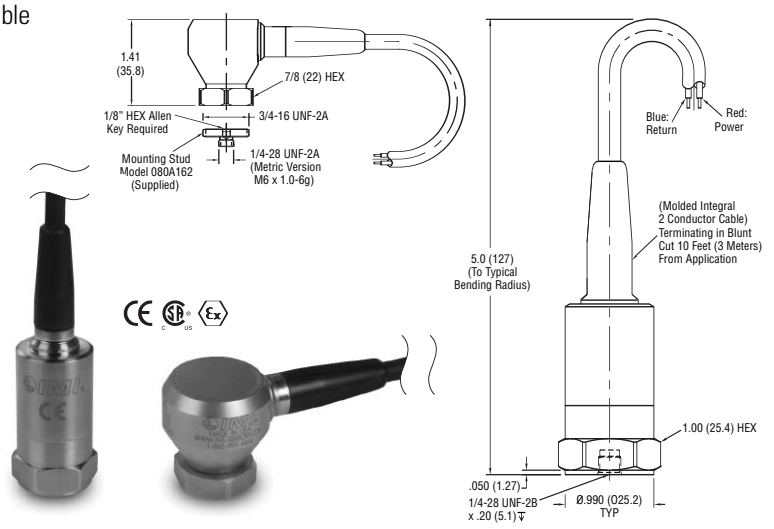
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 641B10 & 643A10 — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

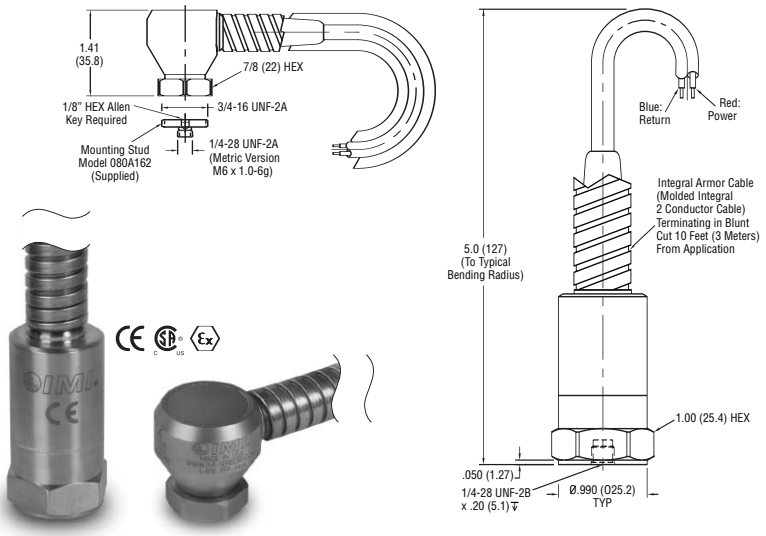
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 641B60 & 643A60 — Integral armored cable

Recommended cables and accessories ❾
- see section 5

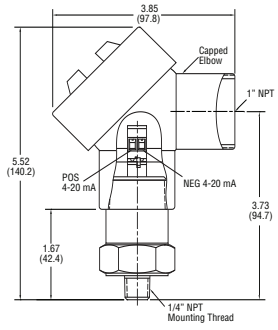
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensors / 0 to 0.5 ips rms (0.0 to 12.7 mm/s)								
Model Number	**641B00 & 643A00**		**641B10 & 643A10**		**641B60 & 643A60**		**641B70**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 0.5 in/s rms	0.0 to 12.7 mm/s rms	0.0 to 0.5 in/s rms	0.0 to 12.7 mm/s rms	0.0 to 0.5 in/s rms	0.0 to 12.7 mm/s rms	0.0 to 0.5 in/s rms	0.0 to 12.7 mm/s rms
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range (± 10 %)	600 to 60k cpm	10 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz
Broadband Resolution	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk	0.005 in/s rms	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to 176 °F	-40 to 80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 641BX0 (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 641BX0	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 643AX0 (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 643AX0	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		1 in NPT Conduit Seal	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (641B00)/ Side (643A00)		Top (641B10)/ Side (643A10)		Top (641B60)/ Side (643A60)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 641B70 — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 1.0 ips rms (0.0 to 25.4 mm/s)

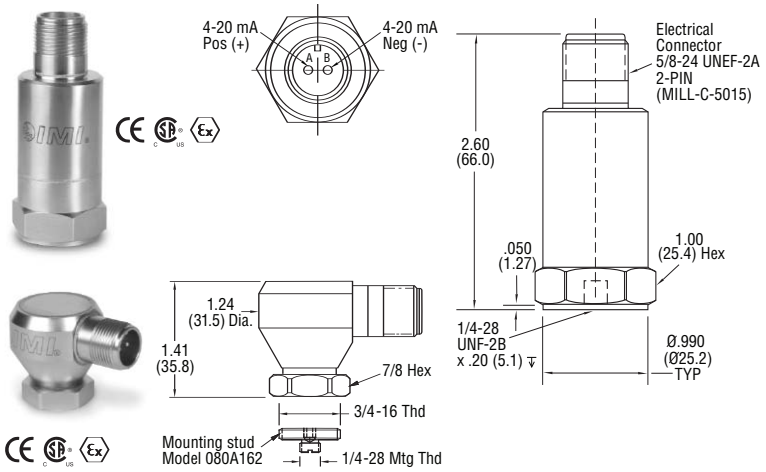
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 1.0 ips (0.0 to 25.4 mm/s) rms velocity

Models 641B01 & 643A01 — MIL-type connector

- 0 to 1.0 ips (0.0 to 25.4 mm/s) rms velocity output signal
- 180 to 60k cpm (3 to 1000 Hz) frequency range
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

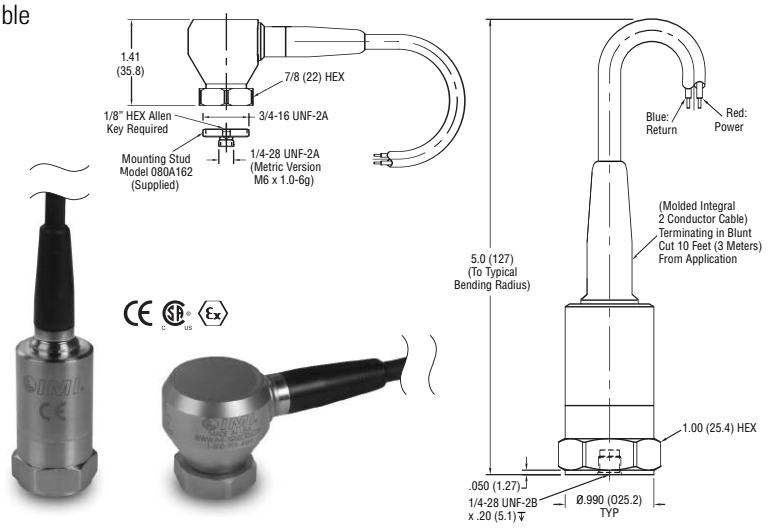
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 641B11 & 643A11 — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

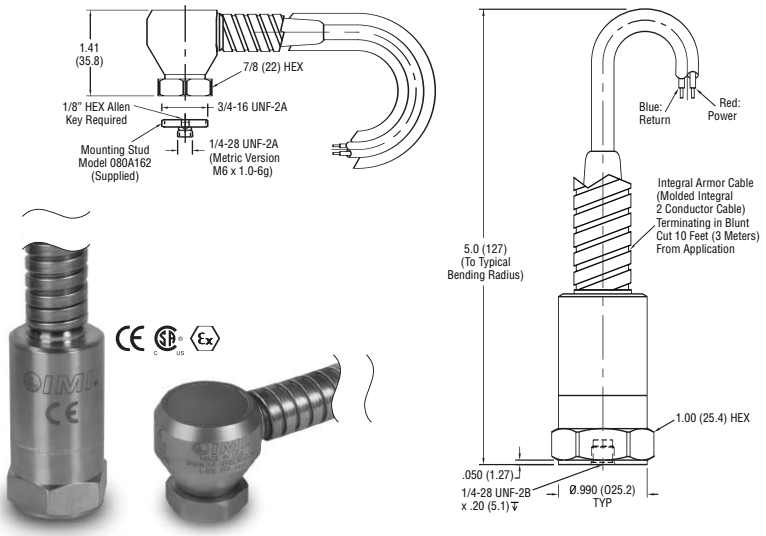
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 641B61 & 643A61 — Integral armored cable

Recommended cables and accessories ❾
- see section 5

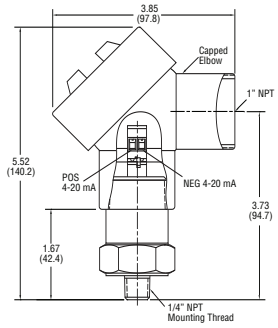
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensors / 0 to 1.0 ips rms (0.0 to 25.4 mm/s)								
Model Number	**641B01 & 643A01**		**641B11 & 643A11**		**641B61 & 643A61**		**641B71**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 1 in/s rms	0.0 to 25.4 mm/s rms	0.0 to 1 in/s rms	0.0 to 25.4 mm/s rms	0.0 to 1 in/s rms	0.0 to 25.4 mm/s rms	0.0 to 1 in/s rms	0.0 to 25.4 mm/s rms
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range (± 10 %)	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	180 to 60k cpm	3 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz
Broadband Resolution	0.005 in/s rms	0.13 mm/s rms	0.005 in/s rms	0.13 mm/s rms	0.005 in/s pk	0.13 mm/s pk	0.005 in/s pk	0.13 mm/s pk
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to 176 °F	-40 to 80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 641BX1 (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 641BX1	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 643AX1 (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 643AX1	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		1 in NPT Conduit Seal	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (641B01)/ Side (643A01)		Top (641B11)/ Side (643A11)		Top (641B61)/ Side (643A61)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 641B71 — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 2.0 ips rms (0.0 to 50.8 mm/s)

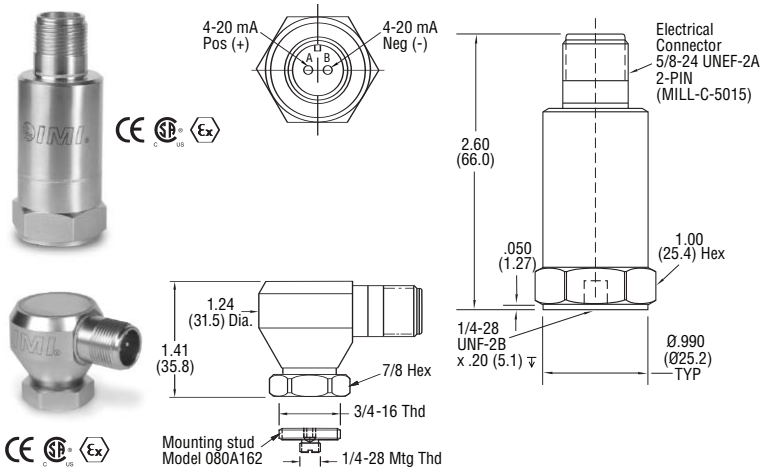
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 2.0 ips (0.0 to 50.8 mm/s) rms velocity

Models 641B02 & 643A02 — MIL-type connector

- 0 to 2.0 ips (0.0 to 50.8 mm/s) rms velocity output signal
- 180 to 60k cpm (3 to 1000 Hz) frequency range
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

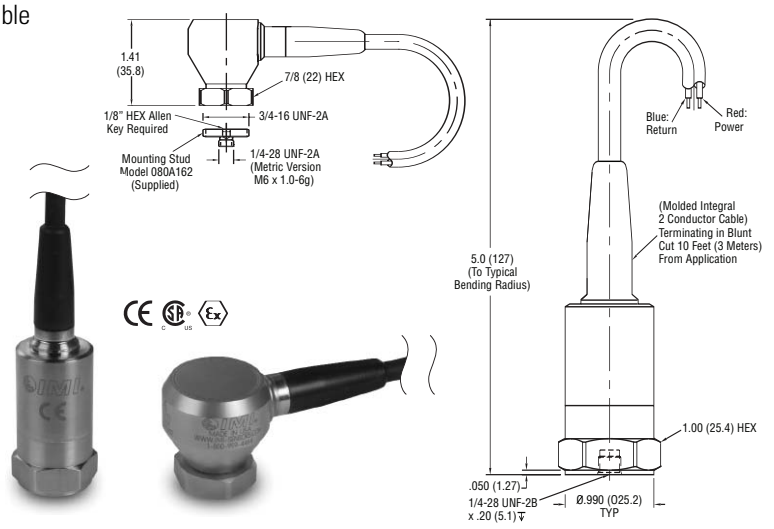
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 641B12 & 643A12 — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

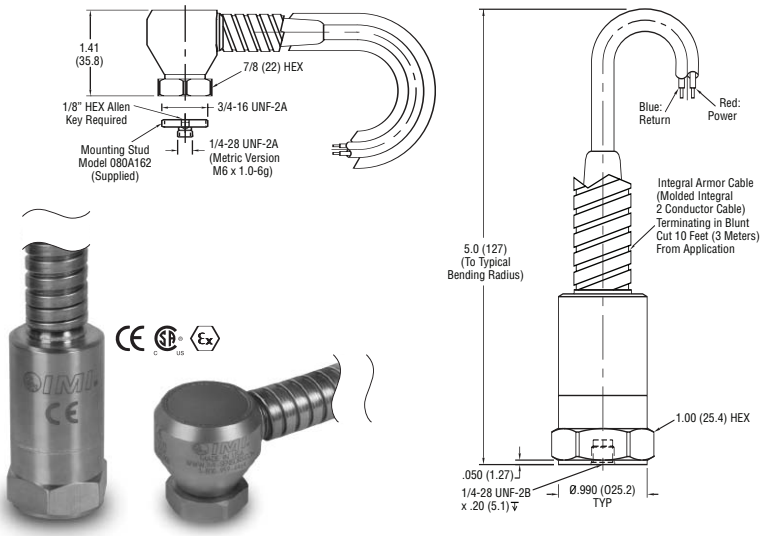
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 641B62 & 643A62 — Integral armored cable

Recommended cables and accessories ❾
- see section 5

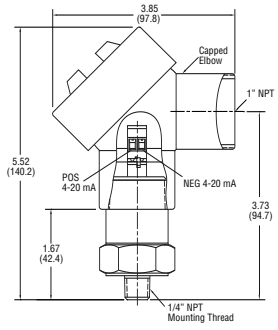
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensors / 0 to 2.0 ips rms (0.0 to 50.8 mm/s)								
Model Number	**641B02 & 643A02**		**641B12 & 643A12**		**641B62 & 643A62**		**641B72**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 2 in/s rms	0.0 to 50.8 mm/s rms	0.0 to 2 in/s rms	0.0 to 50.8 mm/s rms	0.0 to 2 in/s rms	0.0 to 50.8 mm/s rms	0.0 to 2 in/s rms	0.0 to 50.8 mm/s rms
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range (± 10 %)	600 to 60k cpm	10 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz	600 to 60k cpm	10 to 1000 Hz
Broadband Resolution	0.01 in/s rms	0.26 mm/s rms	0.01 in/s rms	0.26 mm/s rms	0.01 in/s rms	0.26 mm/s rms	0.005 in/s pk	0.13 mm/s pk
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to 176 °F	-40 to 80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 641BX2 (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 641BX2	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 643AX2 (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 643AX2	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		1 in NPT Conduit Seal	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (641B02)/ Side (643A02)		Top (641B12)/ Side (643A12)		Top (641B62)/ Side (643A62)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 641B72 — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 5 g rms (0.0 to 49 mm/s)

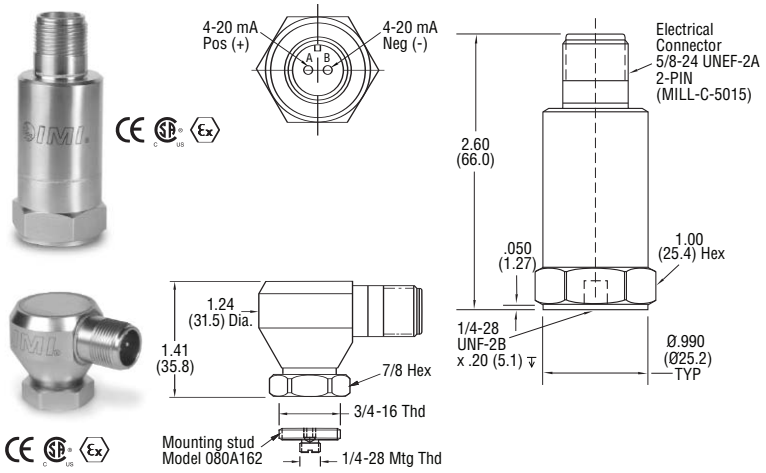
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 5 g rms (0.0 to 49 mm/s) low range rms acceleration

Series 645B0X & 647A0X — MIL-type connector

- 0 to 5 g (0.0 to 49 mm/s) rms acceleration output signal
- Various frequency ranges (see spec table)
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

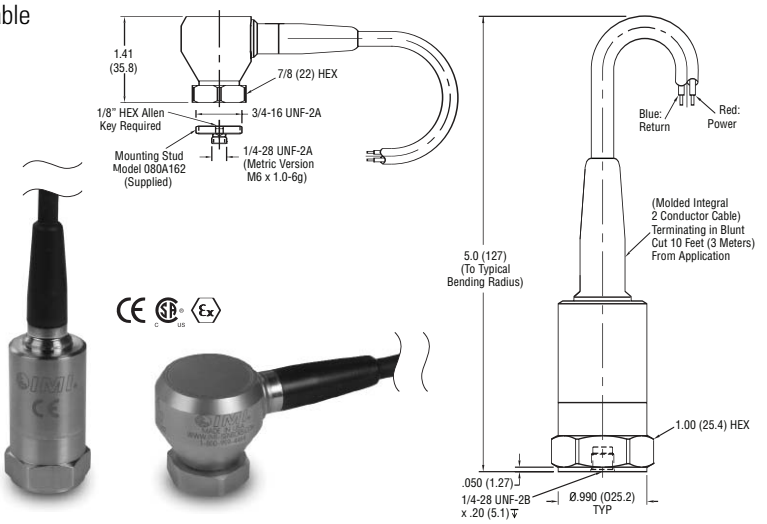
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Series 645B1X & 647A1X — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

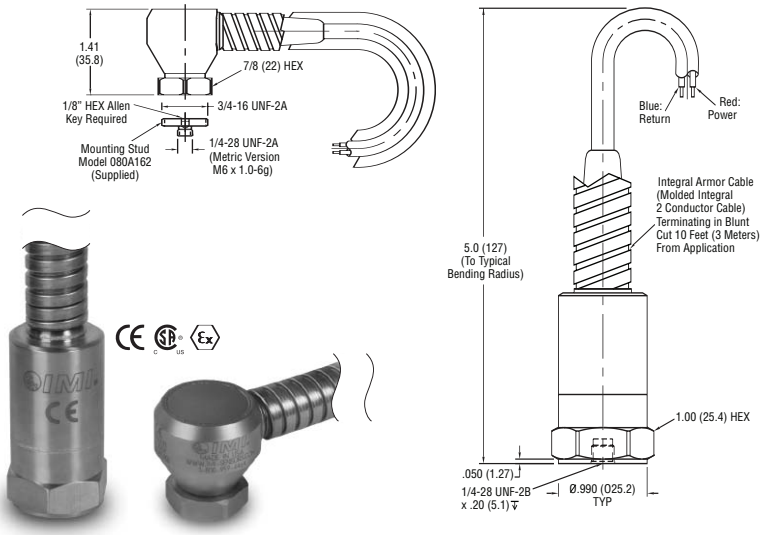
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 645B6X & 647A6X — Integral armored cable

Recommended cables and accessories ❾
- see section 5

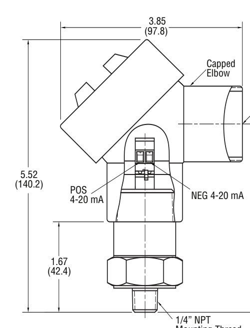
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA Vibration Sensors / 0 to 5 g rms (0.0 to 49 mm/s)								
Model Number	**645B0X & 647A0X**		**645B1X & 647A1X**		**645B6X & 647A6X**		**645B7X**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 5 g rms	0.0 to 49 m/s^2 rms	0.0 to 5 g rms	0.0 to 49 m/s^2 rms	0 to 5 g rms	0.0 to 49 m/s^2 rms	0 to 5 g rms	0.0 to 49 m/s^2 rms
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range 645BX0/ 647BX0 (± 10 %) 645BX1/ 647BX1 (± 10 %) 645BX2/ 647BX2 (± 3 dB)	600 to 60k cpm 180 to 300k cpm 180 to 600k cpm	10 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz	600 to 60k cpm 180 to 300k cpm 180 to 600k cpm	10 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz	600 to 60k cpm 180 to 300k cpm 180 to 600k cpm	10 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz	600 to 60k cpm 180 to 300k cpm 180 to 600k cpm	10 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz
Broadband Resolution	0.025 g rms	0.24 m/s^2 rms	0.025 g rms	0.24 m/s^2 rms	0.025 g rms	0.24 m/s^2 rms	0.025 g rms	0.24 m/s^2 rms
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +176 °F	-40 to +80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 645BXX (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 645BXX	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 647AXX (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 647AXX	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		1 in NPT Conduit Seal	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (645B0X)/ Side (647A0X)		Top (645B1X)/ Side (647A1X)		Top (645B6X)/ Side (647A6X)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)		4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 645B7X — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



4-20 mA / 0 to 10 g rms (0.0 to 49 mm/s)

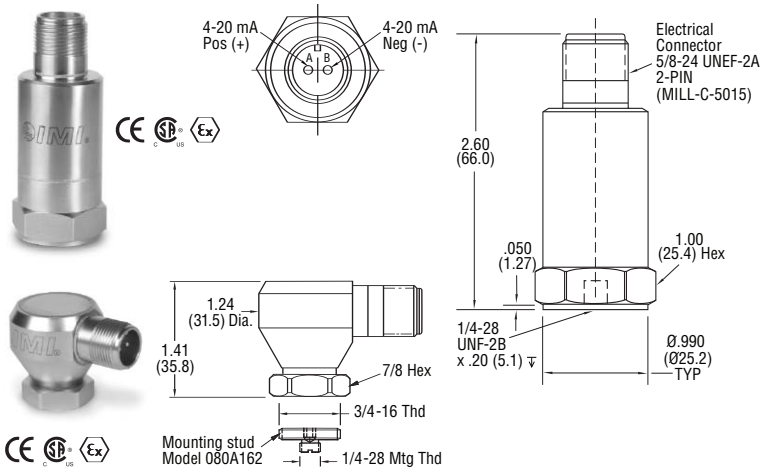
Two-wire, loop-powered, 4-20 mA industrial vibration sensors with output signal proportional to 0 to 10 g rms (0.0 to 49 mm/s) low range rms acceleration

Series 646B0X & 648A0X — MIL-type connector

- 0 to 10 g (0.0 to 98.1 mm/s) rms acceleration output signal
- Various frequency ranges (see spec table)
- Raw vibration or temperature output signal options available
- Intrinsically safe options available

Recommended cables and accessories ❺❾
- see section 5

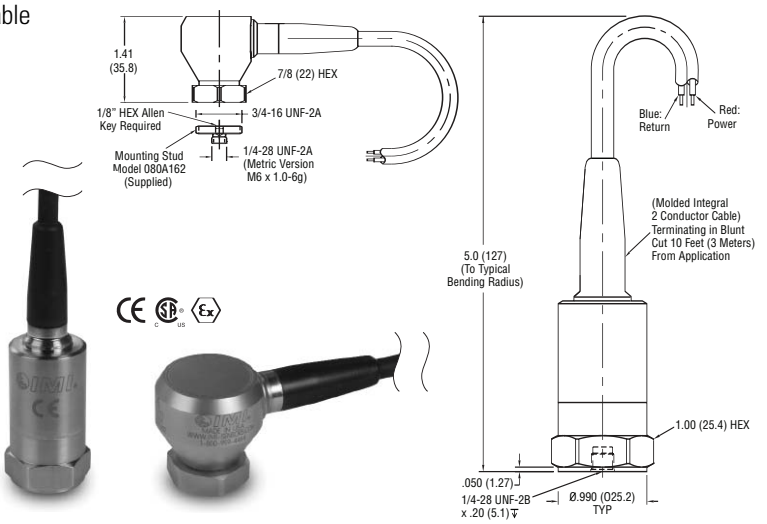
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Series 646B1X & 648A1X — Integral polyurethane cable

Recommended cables and accessories ❾
- see section 5

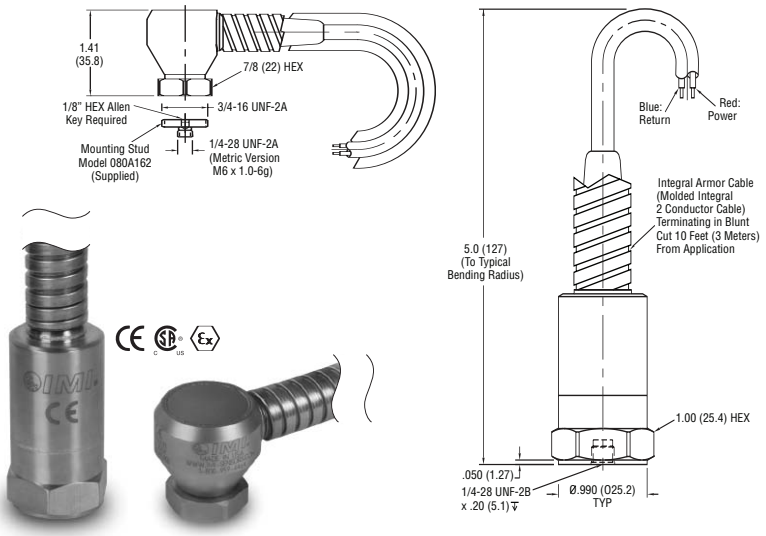
Options: EX, HT, M, RV, TO
- see pages v-viii for option information



Model 646B6X & 648A6X — Integral armored cable

Recommended cables and accessories ❾
- see section 5

Options: EX, HT, M, RV, TO
- see pages v-viii for option information

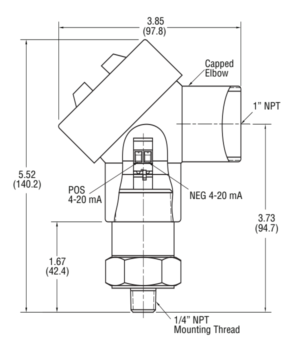


4-20 mA Vibration Sensors / 0 to 10 g rms (0.0 to 49 mm/s)

Model Number	646B0X & 648A0X		646B1X & 648A1X		646B6X & 648A6X		646B7X	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**	**English**	**SI**
Measurement Range	0.0 to 10 g rms	0.0 to 98.1 m/s² rms	0.0 to 10 g rms	0.0 to 98.1 m/s² rms	0.0 to 10 g rms	0.0 to 98.1 m/s² rms	0.0 to 10 g rms	0.0 to 98.1 m/s² rms
Output	4-20 mA		4-20 mA		4-20 mA		4-20 mA	
Frequency Range 646BX0/ 648BX0 (± 10 %) 646BX1/ 648BX1 (± 10 %) 646BX2/ 648BX2 (± 3 dB)	 180 to 60k cpm 180 to 300k cpm 180 to 600k cpm	 3 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz	 180 to 60k cpm 180 to 300k cpm 180 to 600k cpm	 3 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz	 180 to 60k cpm 180 to 300k cpm 180 to 600k cpm	 3 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz	 180 to 60k cpm 180 to 300k cpm 180 to 600k cpm	 3 to 1000 Hz 3 to 5000 Hz 3 to 10k Hz
Broadband Resolution	0.05 g rms	0.49 m/s² rms	0.05 g rms	0.49 m/s² rms	0.05 g rms	0.49 m/s² rms	0.05 g rms	0.49 m/s² rms
Non-linearity	± 1 %		± 1 %		± 1 %		± 1 %	
Environmental								
Temperature Range	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +185 °F	-40 to +85 °C	-40 to +176 °F	-40 to +80 °C
Electrical								
Excitation Voltage	12 to 30 VDC		12 to 30 VDC		12 to 30 VDC		12 to 30 VDC	
Settling Time (within 2% of value)	< 15 sec		< 15 sec		< 15 sec		< 15 sec	
Electrical Isolation (Case)	> 10^8 ohm		> 10^8 ohm		> 10^8 ohm		> 10^8 ohm	
Physical								
Size- 646BXX (Hex x Height)	1.0 x 2.6 in	1.0 in x 66 mm	1.0 x 4.2 in	1.0 in x 107 mm	1.0 x 4.2 in	1.0 in x 107 mm	3.85 x 5.52 in[2]	98 x 140 mm[2]
Weight- 646BXX	4.7 oz	131 gm	4.7 oz	131 gm	4.7 oz	131 gm	1.2 lb	544 gm
Size- 648AXX (Hex x Height)	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	7/8 x 1.41 in	7/8 in x 35.8 mm	n/a	
Weight- 648AXX	3.8 oz	108 gm	3.8 oz	108 gm	3.8 oz	108 gm	n/a	
Mounting Thread	1/4-28 Female		1/4-28 Female		1/4-28 Female		1/4 NPT	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Shear		Ceramic Shear		Ceramic Shear		Ceramic Shear	
Housing Material	Stainless Steel		Stainless Steel		Stainless Steel		Stainless Steel	
Sealing	Welded Hermetic		Welded Hermetic		Welded Hermetic		1 in NPT Conduit Seal	
Electrical Connector	2-pin MIL-C-5015		Integral Polyurethane Cable (Model 052)		Integral Armored Polyurethane Cable (Model 047)		Removable Screw Terminals	
Electrical Connection Position	Top (646B0X)/ Side (648A0X)		Top (646B1X)/ Side (648A1X)		Top (646B6X)/ Side (648A6X)		Top	
Electrical Connections (Pin A/ Red) (Pin B/ Blue)	 4-20 mA Pos (+) 4-20 mA Neg (-)		 4-20 mA Pos (+) 4-20 mA Neg (-)		 4-20 mA Pos (+) 4-20 mA Neg (-)		 4-20 mA Pos (+) 4-20 mA Neg (-)	
Cable Length	n/a		10 ft	3.0 m	10 ft	3.0 m	n/a	
Optical Versions								
Intrinsically Safe	EX		EX		EX		EX, EP[1]	
High Temperature	HT		HT		HT		HT	
Metric Installation	M		M		M		M	
Raw Vibration Output	RV		RV		RV		RV	
Temperature Output	TO		TO		TO		TO	
Supplied Accessories								
Model 081A40 mounting stud for top exit sensors (Model 080A162 for side exit sensors)								
Model ICS-4 NIST-traceable single axis amplitude response calibration from 0 cpm (0 Hz) to upper 10% frequency for 4-20 mA output vibration sensor								
[1] All specifications listed for models with EX & EP are identical. EX versions include Atex & CSA approvals, and EP versions do not. See pages v-viii for further option information.								
[2] Dimensions indicated are width x height								

Model 646B7X — 1-inch NPT conduit connection

Options: EX, HT, M, RV, TO
- see pages v-viii for option information



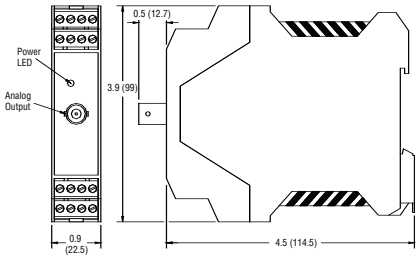
Model 682A05
Bearing Fault Detector
(US Patent 6,889,553)

Model 682A05 - Bearing Fault Detector (US Patent Number 6,889,553)

- Detects bearing faults
- Provides 24/7 machine protection
- Outputs raw vibration for diagnostic analysis
- Accepts input from ICP® accelerometers
- Operates with PLC, DCS, SCADA, alarm, and control systems

IMI Sensors Model 682A05 Bearing Fault Detector (US Patent 6,889,553) senses impacts within rolling element bearings caused by bearing faults. Typical bearing faults, such as cracked races, spalling, brinelling, fatigue failure, looseness, and loss of lubrication result in impacts and high frequency vibrations inside the bearing. The impacts are represented as high amplitude, narrow peaks on the acceleration time waveform and add very little energy to the overall vibration level. As a result, they are often missed in normal trending analysis. The Bearing Fault Detector accurately measures these impacts and other high frequency vibrations, providing early warning of potential problems. This unit is also effective for monitoring other problems that produce similar impacts and vibrations data, such as a chipped tooth on a gear.

The Bearing Fault Detector is a DIN rail mount vibration transmitter that works with in conjunction with a typical ICP® accelerometer. It supplies the constant current power required by the accelerometer, processes data, and has the following three outputs: 4-20 mA proportional to peak amplitude, 4-20 mA proportional to overall vibration level, and raw vibration signal via BNC connector for diagnostic analysis.



Model 682A05
Bearing Fault Detector
Dimensions shown are in inches (millimeters)

Model 682A05 Specifications		
Model Number	**682A05**	
Dynamic Performance	**English**	**SI**
Power Supply Voltage	24 VDC	
Power Supply Current	150 mA max	
ICP® Input Signal	100 mV/g	10.2 mV/(m/s^2)
ICP® Sensor Excitation	24 VDC/ 4 mA (± 1V/ ± 1 mA)	
Overall Vibration Output (Linear Scale)	4-20 mA[1]	
Fault Vibration Output (Log Scale)	4-20 mA	
Span	16 mA ± 5%	
Frequency Response (Overall)	600 to 60k cpm	10 to 1000 Hz
Frequency Response (Fault)	6000 or 300k to 6000k cpm[2]	1000 or 5000 to 100k Hz[2]
Fault Sample Time Constant	7 seconds	
Fault Detector Range	50 g peak	
Raw Vibration Output	± 0.01% of Input Vibration	
Maximum Load Resistance	500 ohm	
Environmental		
Warm Up Time	< 2 minutes	
Operating Temperature Range	+32 to +158 °F	0 to +70 °C
Storage Temperature Range	-40 to +257 °F	-40 to +125 °C
Relative Humidity	< 95% (Non-condensing)	
Physical		
Size (Width x Height x Depth)	0.9 x 3.9 x 4.5 in	22.5 x 99 x 114.5 mm
Weight	5.2 oz	145.2 gm
Material	Polyamide	
Input/Output Electrical Connectors	Removable Screw Terminals	
Raw Vibration Connector	BNC Jack	
Screw Terminal Wire Size	24 to 14 AWG	0.2 to 2.5 mm2
Din Rail Mount	1.38 in	35 mm
Power LED Indicator	Green	

To obtain peak amplitude (measured in a seven-second window) the signal is passed through a high-pass filter, rectified, and run through a high-speed peak detection circuit. To obtain overall vibration level, the signal is passed through a low pass filter, integrated when velocity is required, processed through a true rms circuit, and scaled, depending on the desired output type (rms or calculated peak).

Bearing Fault Detector output is compatible with any vibration monitoring device or plant equipment that accepts a 4-20 mA signal. It can provide 24/7 protection when used with a PLC, DCS, or SCADA system. It can also be used with numerous off-the-shelf meters, alarms, and recorders.

Notes:

[1] Internal DIP Switches Selection for Overall Vibration:
- Acceleration: 5 g, 10 g, 20 g
- Velocity: 0.5 in/sec,1.0 in/sec, 2.0 in/sec

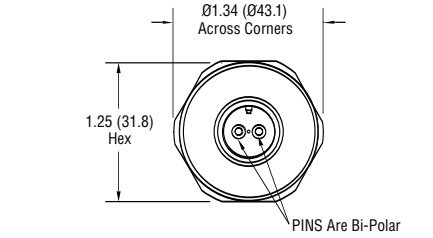
[2] Internal DIP Switch Selection for Fault Detector
- 1,000 Hz (6,000 cpm) or 5,000 Hz (300k cpm) high pass filter

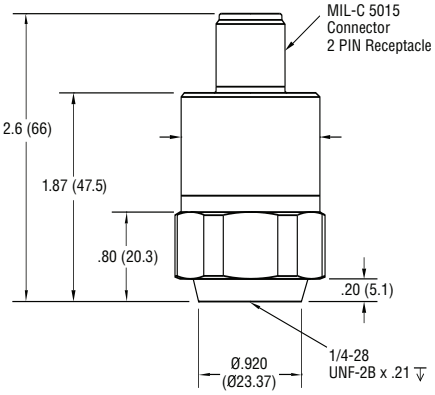
Model 649A01 - Reciprocating Machinery Protector (RMP)

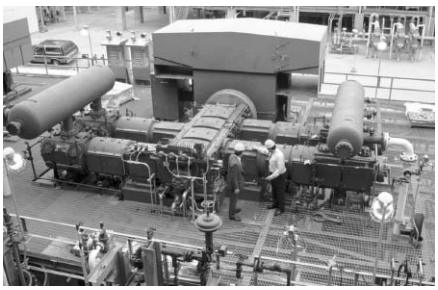
- Detects faults and mechanical looseness in reciprocating compressors
- Improves on existing impact monitoring technology
- Provides continuous trending, with alarm and alert levels for early warning
- Field programmable set points & alarm levels optimize performance
- Hermetically sealed, loop powered, USB programmable

(pending)

Model 649A01
Reciprocating Machinery Protector
(US Patent No 7,171,313)







Model 649A01 offers unique protection for reciprocating compressors. **Photo courtesy of Dresser Rand.**

Although overall vibration trending is an excellent tool for monitoring the health of rotating machinery, it is not generally effective for monitoring reciprocating machinery. Since impacts generally have little effect on overall vibration level, common faults are not detected at an early stage. As a result, abnormalities are not diagnosed until damage has occurred and it is too late to take simple corrective measures. There are several reciprocating machinery faults which do not significantly increase a machine's overall vibration level until damage has reached a severe level, including:

- Loose or broken bolts
- Loose or cracked rod nuts
- Cracked connecting or piston rod
- Excessive crosshead/slipper clearance
- Excessive clearance in connecting pins
- Liquid or debris in the cylinder
- Scoring in the cylinder
- Other broken parts

Model 649A01 Specifications

Model Number	649A01	
Dynamic Performance	**English**	**SI**
Feature Adjustments	Fully Programmable[1]	
Output	4-20 mA[2]	
Machinery Frequency Range	150 to 4800 cpm	2.5 to 80 Hz
Sampling Time	0.2 to 6.4 sec	
Lower Shock Threshold Level	2 to 50 g	
Upper Shock Threshold Level	2 to 50 g	
Weighting Factor (Lower & Upper)	0.1 to 20 mA	
Maximum Peak Trading Current	4-20 mA	
Cross Axis Response	< 3%	
Excitation Voltage	15-30 VDC	
Maximum Load Resistance	50 ohm	
Environmental		
Operating Temperature Range	-40 to +212 °F	-40 to +100 °C
Storage Temperature Range	-40 to +257 °F	-40 to +125 °C
Overload Limit (Shock)	5000 g pk	49,050 m/s² pk
Physical		
Size (Hex x Height)	1.25 in x 2.60 in	1.25 in x 66 mm
Weight	7 oz	198 gm
Mounting Thread	1/4-28 Female	
Mounting Torque	3 to 5 ft-lb	4 to 7 N-m
Sensing Element	Ceramic Flexural	
Housing Material	Stainless Steel	
Sealing	Welded Hermetic	
Electrical Connector	2-pin MIL-C-5015	
Electrical Connections (Pin A) (Pin B)	4-20 mA (Bi-polar) 4-20 mA (Bi-polar)	
Optional Versions		
Metric Installation	M	
Supplied Accessories		
Model 081A40 mounting stud for top exit sensors (Model M081A61 for metric installation)		
[1] Field programmable features available using USB programmer Model 070A82		
[2] Output proportional to peak of acceleration and number of impacts over two thresholds with specific weight in sample time		

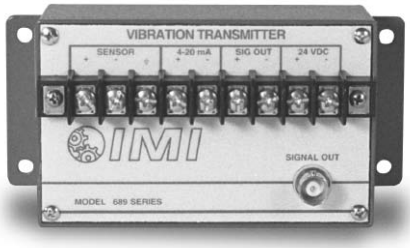
The patented IMI Sensors Reciprocating Machinery Protector (RMP) Model 649A01, is very sensitive to these faults in their early stages of development. For this reason, the RMP is particularly effective in monitoring reciprocating compressors. Model 649A01 is a loop-powered device which detects mechanical shock events occurring in or near the machine's cylinder assembly. The Reciprocating Machinery Protector continuously outputs the peak acceleration value, as long as there is no fault condition detected. When a threshold is exceeded, the RMP recognizes a potential fault condition and accurately outputs a computed Reciprocating Fault Index (RFI) proportional to the severity of the fault. With configurable speed parameters, adjustable sampling time, and ability to customize alarm levels, the RMP is a powerful tool for reciprocating machinery protection.

Model 682A03 — ICP® Sensor to 4-20 mA Transmitter

- Provides constant current ICP® sensor excitation
- Adjustable low-pass and high-pass filtering
- Selectable acceleration, velocity, or displacement output signal
- Analog vibration output signal for fault diagnostics (through BNC or terminals)
- Additional 4-20 mA output proportional to temperature sensor option input (TO)
- 24 VDC powered, DIN rail mount
- 3.9 in (h) x 0.88 in (w) x 4.5 in (d) (99 mm x 22.4 mm x 114.5 mm)

Model 689B01 — ICP® Sensor to 4-20 mA Transmitter

- Provides constant current ICP® sensor excitation
- Integrates acceleration signals and provides a 4-20 mA output signal proportional to peak velocity
- Provides access to analog acceleration signal for fault diagnostics
- 20-30 VDC powered
- Surface mount aluminum enclosure



Model 682A08 — Vib Transmitter

- Provides excitation for ICP® sensors
- Low pass filter at 1k Hz or 10k Hz (selectable)
- High pass filter at 3 Hz or 10 Hz (selectable)
- Outputs 4-20 mA signal proportional to acceleration or velocity (peak or rms)
- Dual Semiconductor relay alarm
- 24 VDC powered, DIN rail mount
- 3.94 in (h) x 0.91 in (w) x 4.72 in (d) (100 mm x 23 mm x 120 mm)

Model 682A06— Universal Transmitter

- Provides loop power for two-wire, 4-20 mA sensors and transmitters
- Accepts mA, VDC, RTD, TC, linear resistance, and potentiometer inputs
- Delivery current and voltage output signals
- Offers two set points with relay outputs (2 amp AC, 1 amp DC)
- Fully programmable via detachable push button display (Model 070A80, sold separately)

Model 682A06
shown with optional programmable display Model 070A80

Series 683A — Indicator/ Alarm

- Provides excitation for ICP® sensors or 4-20 mA sensors
- Highly visible, fully scalable LED display
- Up to four, programmable, set point relays
- Time delay eliminates false alarm trips
- Optional 4-20 mA retransmission
- 1/8 DIN panel mounting
- User friendly, menu-driven, setup
- 1.89 in (h) x 3.93 in (w) x 5.27 in (d) (48 mm x 99.9 mm x 134.1 mm)

CE

Series 683 Model Matrix

683A	Indicator / alarm with two, time-delayed, Form A, set-point relays						
	Input						
	0	4-20 mA DC with 24 VDC excitation delivered to sensor / transmitter					
	1	100 mV/g (10.2 mV/(m/s²)) ICP® accelerometer with 24 VDC @ 4 mA delivered to sensor					
		Power Required					
		0	85 to 265 VAC or 95 to 370 VDC				
		1	18 to 48 VAC or 10 to 72 VDC				
			Analog Output				
			0	None			
			1	Isolated 16 bit user scalable 4-20 mA retransmit			
				Additional Relay Outputs			
				0	None (supplied standard with 2 Form A relays)		
				1	Dual 10 amp Form C relays (not time-delayed)		
				2	Dual 5 amp Form A relays (not time-delayed)		
					Frequency Response		
					0	3 Hz to 10k Hz (must be used for 4-20 mA versions)	
					1	3 Hz to 1000k Hz	
					2	10 Hz to 10k Hz	
					3	10 Hz to 1000 Hz	
						Accessories	
						0	None
						1	NEMA 4X, clear, lockable, splash-proof front cover
						2	Metal surround case — includes screw mounting clips
						3	NEMA 4X, clear front cover and metal surround case

Example

683A	**1**	**0**	**0**	**0**	**0**	**1**	Indicator / alarm for 100 mV/g ICP® accelerometer input, includes optional NEMA 4X front cover

Note: ICP® input version features field-selectable pk or rms acceleration, pk or rms velocity, or pk-pk displacement units for display and signal retransmission option.

Series 684A — Alarm Module

- Economical solution to machine shutdown protection
- Available with up to eight channels in NEMA 4X fiberglass or stainless steel enclosures

CE

Model 682A01 — 24 VDC Power Supply

- 120 to 230 VAC powered
- DIN rail mount
- 3.75 kV isolation
- 650 mA maximum
- 3.9 in (h) x 0.88 in (w) x 4.5 in (d) (99 mm x 22.4 mm x 114.5 mm)

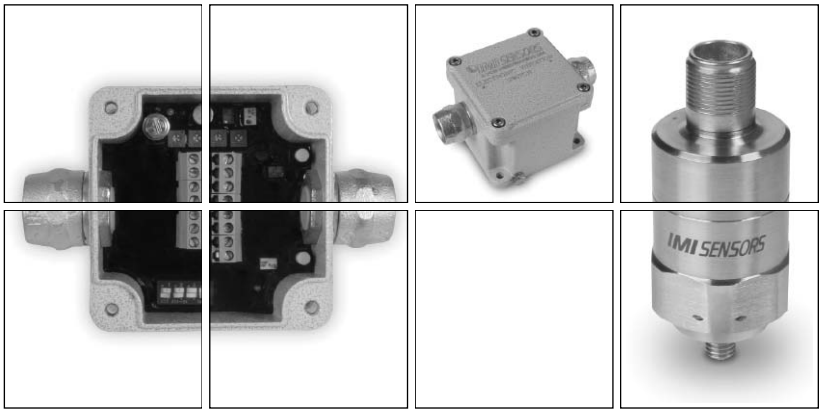
Series SDC002 — VibeAlarm

- Provides excitation for ICP® sensors
- Adjustable band pass filtering
- Outputs acceleration, velocity, or displacement
- 2 levels of alarm with latching or non-latching options
- Adjustable time delay eliminates false alarm trips
- 4-20 mA retransmission of conditioned, filtered signal
- LCD output display with LED indicators for alarms and bias voltage
- DIN rail mountable with BNC connector for raw signal
- 1.89 in (h) x 3.93 in (w) x 5.27 in (d) (48 mm x 99.9 mm x 134.1 mm)

Model 699A05 — Portable 4-20 mA Loop Calibrator

- Provides transmitter readout and transmitter simulation functionality
- Powers 2-wire transmitters and displays transmitter output current
- Simulates a 2-wire transmitter for testing readout or control devices
- Easy to read, high-contrast display
- Pocket sized portability and includes belt clip

Vibration Switches



Highlights

- Provides continuous machinery protection
- Electronic & mechanical switches available
- Single or dual relay versions
- Responds to acceleration, velocity, or displacement
- Adjustable time delays to prevent false trips
- Works with PLC, DCS, & SCADA systems for data trending
- Intrinsically safe versions available

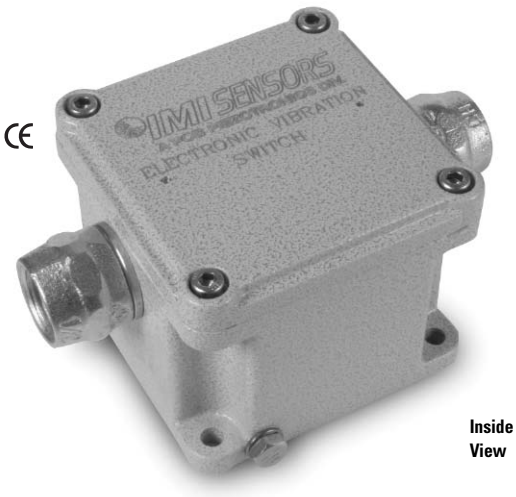
A vibration switch is a simple protection device that senses vibration and triggers an alarm or shuts down a machine if the vibration exceeds a preset threshold level. The vibration switch can sense vibration due to faults such as unbalance, misalignment, looseness, worn bearings, cracked gears, or lack of lubrication. IMI Sensors offers a complete selection of electronic and mechanical vibration switches to suit many applications and installations.

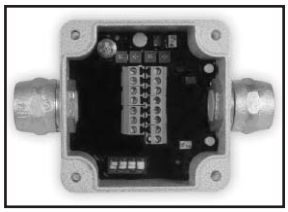
Mechanical switches provide basic protection at a low cost for less critical machinery. These switches are easy to install, do not require power to operate, and are the most basic type of vibration switch protection available.

For more critical machinery, electronic vibration switches use a built-in precision accelerometer to accurately monitor vibration levels. An electronic switch consists of an accelerometer, circuit board, and one or more electro-mechanical or solid state relays for alarm and shutdown protection. The internal circuitry monitors the sensor's vibration level and compares it to a preset threshold or alarm value. When the vibration level exceeds this threshold, the relay is then activated. A typical electronic vibration switch has several advantages over a mechanical unit. It has no moving parts, is more reliable, and has a much higher degree of accuracy and repeatability. Time delays can be used to avoid false trips during switch power up, equipment start-up, operational changes, and the chance occurrences of short term vibration increases.

Series 685B — Electronic Vibration Switch

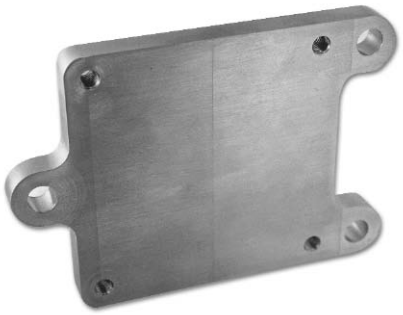
- Offers two set points with individual alert and alarm relays
- Adjustable time delays to prevent false trips
- 4-20 mA output signal proportional to overall vibration level
- Analog, 100 mV/g (10.2 mV/(m/s²) output signal for fault diagnostics
- Utilizes built in or remote accelerometer
- Choice of AC or DC supply power
- Unique 4-20 mA calibration feature for accurate relay set-up
- Model 080A209 adaptor plate available to retrofit obsolete installations
- Explosion-proof options available (contact factory for details)





Inside View

Series 685B electronic vibration switch monitoring a boiler feed pump.



Model 080A165
to retro-fit existing installation bolt patterns.

Series 685B Model Matrix

685B Electronic Vibration Switch with two set point relays, internal reset pushbutton, remote reset via contact closure, 4-20 mA test/calibration insertion signal capability, and both 4-20 mA and analog 100 mV/g output signals available on screw terminals.

Vibration Sensor Option

0	Built-in accelerometer
1	No sensor built-in, requires remote, 100 mV/g (10.2 mV/(m/s²)) ICP® accelerometer (not supplied)

Measurement Range

0	0 to 1.5 in/sec peak velocity
1	0 to 5 g peak acceleration
2	0 to 15 mil peak to peak displacement
3	0 to 50 mil peak to peak displacement

Power Required

0	85 to 245 VAC, 50/60 Hz
1	24 VDC ± 10%

Relay Type (two provided)

0	Triac, 5 amp, 230 VAC
1	Electromechanical Relay 10 amp Form C, SPDT, 30 VDC / 240 VAC

Enclosure Type

A1	NEMA 4X (IP66) enclosure, with no hazardous area approvals.
A2	Same as A1 plus external reset pushbutton
A3	Same as A1 plus external BNC jack for analog vibration signal output
A4	Same as A1 plus A2 and A3
C1	CSA approved explosion proof **must select option **4** below

Enclosure Connection Ports and Hardware

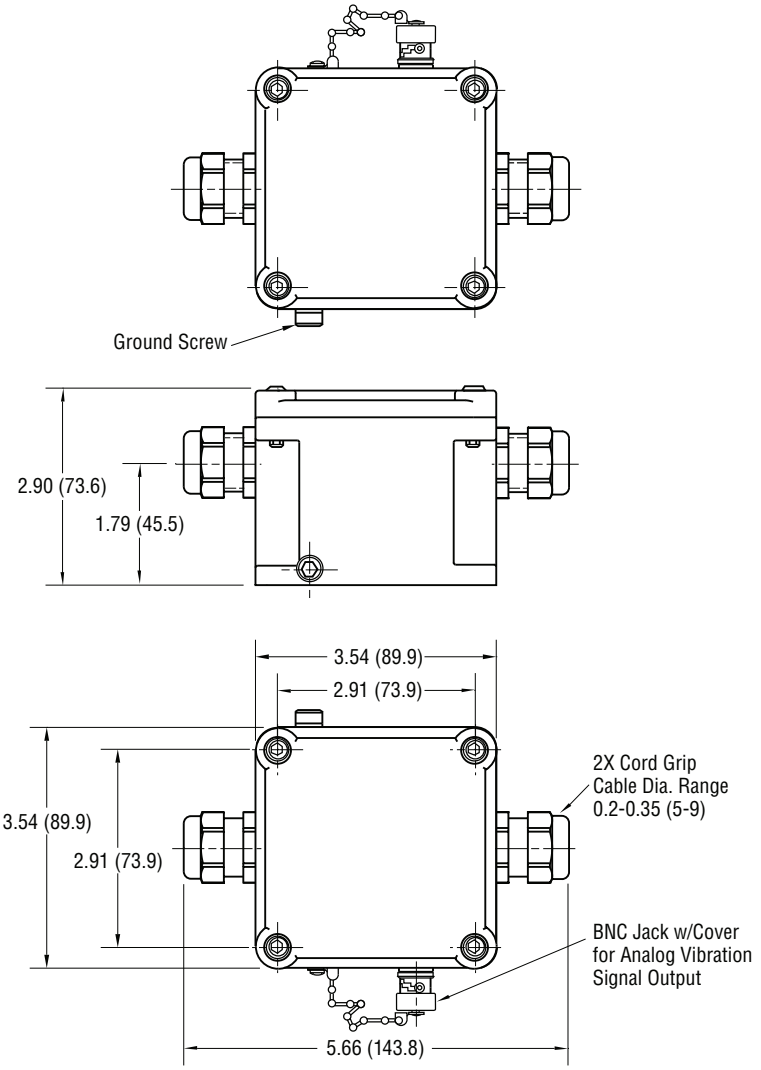
0	Two Ports with Cord Grips
1	Two Ports with 1/2 inch NPT Conduit Hubs
2	One Port with Cord Grip
3	One Port with 1/2 inch NPT Conduit Hub
4	Two 1/2 inch NPT ports **must select **C1** above

Example

685B	**0**	**0**	**0**	**0**	**A1**	**1**	Electronic vibration switch with built-in vibration sensor, 0 to 1.5 in/sec pk velocity measurement range, 85 to 245 VAC powered, two triac relays, and NEMA 4X enclosure with two ports and cord grips.

Model 685B Specifications

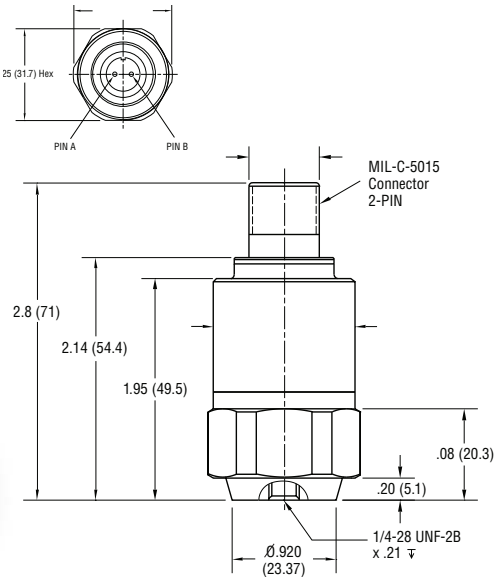
Model Series	685B	
Performance	**English**	**SI**
Measurement Range	See Model Matrix	
Frequency Range (± 3 dB)	120 to 60k cpm	2 to 1000 Hz
Threshold Set Point (alarm)	10 to 100% of Full Scale Measurement Range	
Threshold Set Point (alert)	10 to 100% of Alarm Set Point	
Relay Time Delay (both relays)	0 to 45 Seconds	
Start-up Delay	20 Seconds	
Relay Action (both relays)	Latching or Non-latching	
Output (Analog Vibration Signal)	100 mV/g	10.2 mV/(m/s²)
Output (Proportional to Range)	4-20 mA	
Environmental		
Operating Temperature Range	-22 to +158 °F	-30 to +70 °C
Storage Temperature Range	-40 to +257 °F	-40 to +125 °C
Enclosure Rating	NEMA 4X	IP66
Electrical		
Power Supply Requirement	See Model Matrix	
Current Draw	< 150 mA	
Integral Sensor Type	Piezoelectric Acclerometer	
Remote Sensor Option	100 mV/g	10.2 mV/(m/s²)
Relay Type & Contact Capacity	See Model Matrix	
Calibration Input Signal	4-20 mA	
Physical		
Size (w x h x d)	3.5 x 2.8 x 3.5 in	90 x 70 x 90 mm
Weight	1.85 lb	839 gm
Housing Material	Aluminum Alloy	
Internal Electrical Connectors	Screw Terminals	
Optional External Analog Connector	BNC Jack	
Wire Size for Screw Terminals	24 to 14 AWG	0.2 to 2.5 mm
Enclosure Ports	See Model Matrix	
Mounting Holes	0.21 in	5.4 mm
Indicators/Controls		
Power-on LED	Green	
Alert LED	Yellow	
Alarm LED	Red	
Alarm Set Point Adjustment	Single Turn Potentiometer	
Time Delay Adjustment	Single Turn Potentiometer	
Reset Function	Internal Pushbutton or Remote Contact Closure	
Relay Latch Selection Option	Internal Slide Switch	
Normally Open Normally Closed Option	Internal Slide Switch	
Optional Accessory		
Model 080A209 adaptor plate for retrofit of existing switch installations		

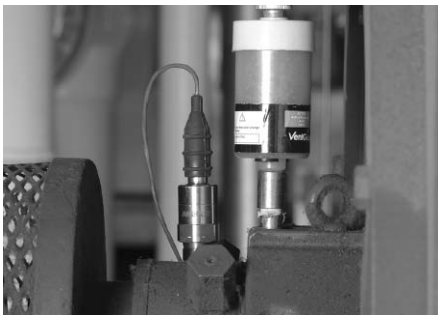


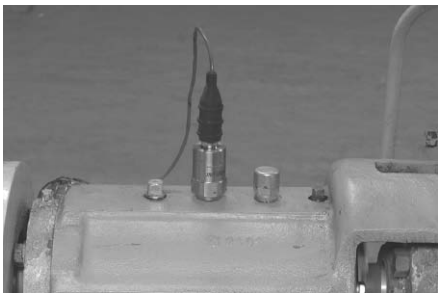
Series 685B
Explosion-proof electronic vibration switch.

Series 686A — Smart Vibration Switch

- Ideal for reliable vibration protection on cooling towers
- Smallest footprint of any vibration switch-mounts like a sensor
- Offers one set point with solid-state relay
- Utilizes built in vibration sensor
- Microprocessor controlled, hermetically sealed design
- Universal AC or DC powered (24-240 VAC or VDC)
- Magnetically Adjustable Vibration Threshold (MAVT™) automatically configures trip point
- Connects with industry standard MIL-C-5015 2-pin connector or integral cable
- USB programmable (contact factory for details)







Series 686A electronic vibration switches monitor motors and pumps for increased vibration levels.

Series 686A Model Matrix

686A Smart, two-wire, electronic vibration switch

Threshold Adjustability

0	Fixed threshold value - factory set
1	Field adjustable threshold value with MAVT™ or USB interface

Threshold Value - Factory Setting

00	Field adjustable (unit shipped with factory default setting of 0.6 in/sec)
01	0.25 in/sec pk (4.5 mm/sec rms)
02	0.4 in/sec pk (7.1 mm/sec rms)
03	0.6 in/sec pk (11.2 mm/sec rms)
04	1.0 in/sec pk (18.0 mm/sec rms)
05	1.6 in/sec pk (28.2 mm/sec rms)
06	2.5 in/sec pk (45 mm/sec rms)
07	4.0 in/sec pk (71 mm/sec rms)
08	6.0 in/sec pk (112 mm/sec rms)

Time Delay for Relay Activation

03	3 second delay
06	6 second delay
09	9 second delay
12	12 second delay

Relay Action and Startup Delay

1	Non-latching, Normally Open with 20 second Startup Delay
2	Non-latching, Normally Closed with 20 second Startup Delay
3	Latching, Normally Open with 20 second Startup Delay
4	Latching, Normally Closed with 20 second Startup Delay
5	Non-latching, Normally Open without Startup Delay
6	Non-latching, Normally Closed without Startup Delay
7	Latching, Normally Open without Startup Delay
8	Latching, Normally Closed without Startup Delay

Electrical Connector

1	2-pin MIL-C-5015
2	Integral, 10 ft. Polyurethane Cable (Model 052)
3	Integral, 10 ft. Armored Polyurethane Cable (Model 047)
4	Integral, 10 ft. Teflon® Cable (Model 053)
5	Integrated, 10 ft. Armored Teflon® Cable (Model 048)

Example

686A	**1**	**00**	**06**	**3**	**1**	Smart, two-wire, electronic vibration switch

Model 686A Specifications

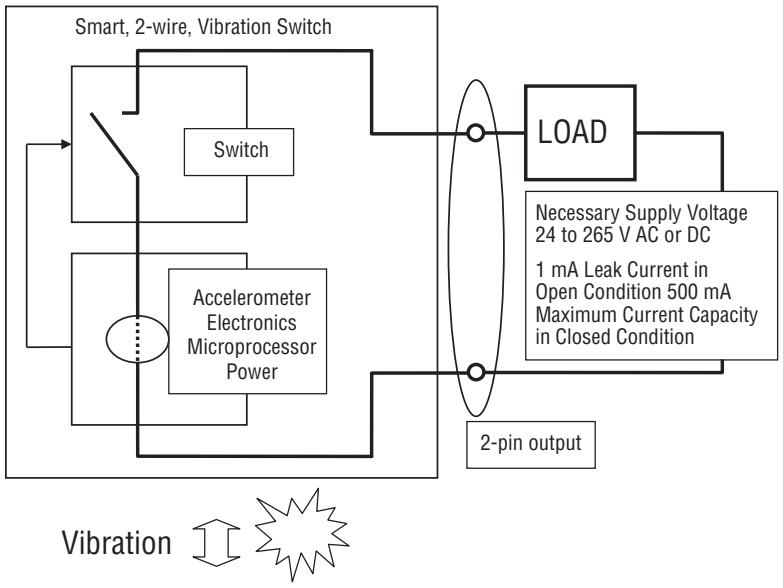
Model Series	686A	
Performance	**English**	**SI**
Measurement Range	See Model Matrix for Options	
Frequency Range (± 3 dB)	180 to 60k cpm	3 to 1000 Hz
Threshold Range	0.25 to 6.0 ips pk	4.5 to 112 mm/sec rms
Threshold Hysteresis	6 %	
Relay Time Delay	3 to 12 Seconds	
Start-up Delay	20 Seconds (± 5)	
Power-up Delay	20 Seconds (± 5)	
Relay Action	Latching or Non-latching	
Transverse Sensitivity	< 3%	
Environmental		
Operating Temperature Range	-40 to +185 °F	-40 to +85 °C
Enclosure Rating	IP68[1]	
Electrical		
Power Required	24 to 240 VAC or VDC	
Leak Current in Open Condition	1 mA	
Sensor Type	Piezoelectric Acclerometer	
Relay Type (See Matrix)	SPST Form A or B, Normally Open or Closed	
Contact Capacity	500 mA	
Physical		
Size (Hex x Height)	1.25 x 2.5 in	1.25 x 63.5 mm
Weight	7 oz	198 gm
Housing Material	316 Stainless Steel	
Electrical Connectors	See Model Matrix for Options	
Mounting Thread	1/4-28 Female	
Optional Versions		
Metric Installation	M	

Supplied Accessory

Model 081A40 Mounting Stud
(Model 081A61, 1/4-28 to M6 x 1.0 for Metric Mount)

[1] IP68 rating is for 2-pin MIL connector. Contact factory for rating on integral cable versions.

Series 686A electronic vibration switches are ideal for cooling tower installations because of their compact, hermetically sealed design.



What is MAVT™?

Magnetically Adjustable Vibration Threshold (MAVT) is an optional feature of the Series 686A smart vibration switch that permits the relay trip point to be adjusted at the installation location or in a calibration laboratory. The Series 686A has no accessible mechanical adjustments, such as screw pots, which are found in other electronic vibration switches; however, when fitted with the MAVT™ option the 686A becomes adjustable through magnetic actuation. By exposing a targeted location on the housing to a strong magnetic field, a calibration process is initiated within the unit's microprocessor. For a 30-second period of time, the unit will measure the vibration amplitude to which it is exposed and then determine the average vibration value (x). This average is then doubled (2x) and the trip value is then automatically set to this 2x value. This convenient feature permits any machine to become vibration switch protected within seconds and without hassle. For a precise adjustment to the trip point, the same feature can be utilized on a variable amplitude vibration shaker for pin point accuracy.

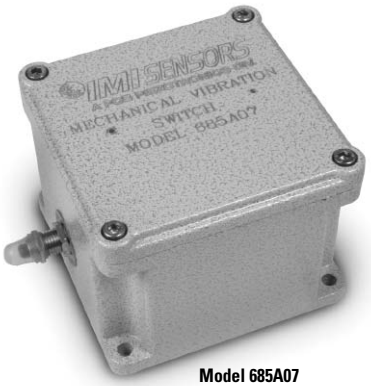
Series 685AX1 — Electronic Vibration Switch

- Offers one set point for alarm or shutdown
- 5 second time delays to prevent false trips
- 24 VDC powered
- Built in piezoelectric accelerometer
- Acceleration or velocity measurement range (factory set)
- Options available with 1 amp or 5 amp Form C relays
- Options available with 10 g or 20 g vibration limits

Model 685A01

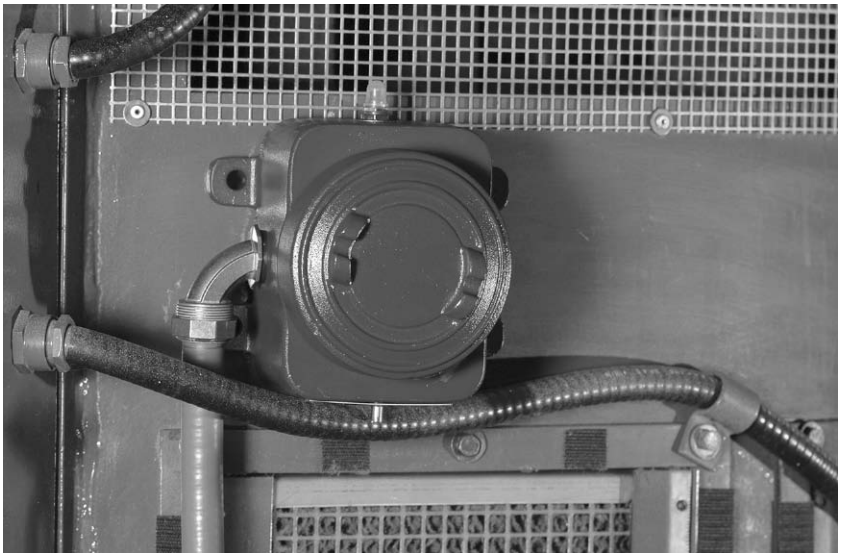
Models 685A07 & 685A08 — Mechanical Vibration Switches

- Offers cost effective protection for less critical applications
- Utilizes spring-loaded, magnetically coupled sensor
- Provides single set point electromechanical relay
- Requires no power
- Weatherproof and CSA/ UL approved explosion proof versions



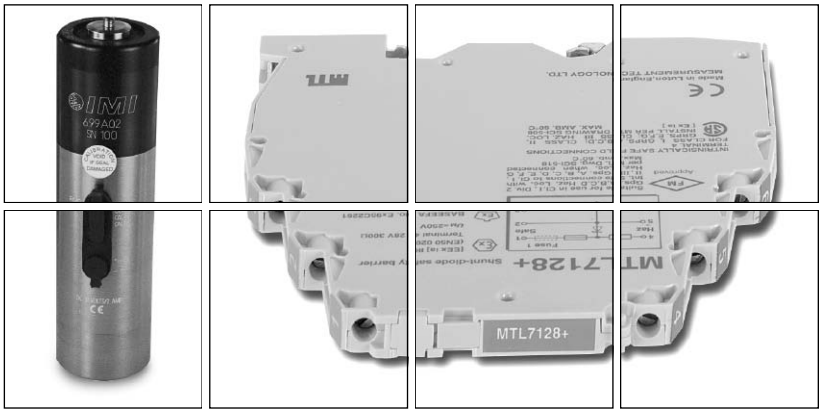
Model 685A07

Model 685A08



Model 685A08
Installed on an electric motor

Specialty Products & Accessories



Highlights

- Portable calibration shakers
- Handheld vibration meter kit
- Modally Tuned® ICP® impact hammers for modal testing
- Intrinsic safety barriers
- ICP® sensor signal conditioners

IMI Sensors offers a variety of specialty products which can be used in association with industrial sensors. Calibration shakers are a very useful tool for troubleshooting field installations, as well as setting thresholds and alarm levels for vibration switches. These devices provide a controlled, known input for system diagnostics.

For trending overall acceleration or velocity levels, IMI Sensors also offers a handheld vibration meter. This device is simple to use and provides an LED readout of vibration levels. It works with 100 mV/g (10.2 mV/(m/s^2)) ICP® accelerometers and verifies sensor bias voltage at the push of a button.

Also included in this section are Modally Tuned® impact hammers for testing resonance and performing modal analysis. When used with a two-channel data collector, the ratio of the vibratory response to the input force identifies problem resonances through a frequency response function.

Intrinsic safety barriers and ICP® signal conditioners are often needed for different installation requirements. Very often, the use of an intrinsic safety barrier is required to meet the hazardous area installation requirements of certified accelerometers. Signal conditioners offer the ability to provide excitation power for ICP® accelerometers and can also provide selectable gain for the signal. These devices can help tailor standard sensors for each application requirement.

Model 699A02

This handheld, portable shaker delivers a controlled, 1.0 g rms or 1 g pk vibration, at 159.2 Hz, for verifying vibration sensor operation and sensitivity. The unit accommodates sensors weighing up to 250 grams and is powered by four standard "AA" type batteries. An auto-shutoff feature preserves battery life, however, continuous operation is switch selectable and an external DC power supply (Model 073A16) is available. Included is a nylon carry pouch with carry strap/belt loop.

CE

Model 699A02 Specifications		
Model Number ▶	**699A02**	
Dynamic Performance	**English**	**SI**
Frequency (fixed, ± 1%)	159.2 Hz	
Acceleration (± 3%)	1 g rms or pk	9.81 m/s^2 rms or pk
Velocity	0.39 in/sec rms or pk	9.81 mm/s rms or pk
Displacement (pk setting)	0.39 mils pk	9.81 µm pk
Displacement (rms setting)	0.55 mils pk	13.97 µm pk
Transverse Amplitude	≤ 3%	
Distortion (0 to 250 gm load)	≤ 7%	
Amplitude Control	Closed Loop	
Maximum Sensor Weight	8.8 oz	250 gm
Environmental		
Temperature Range	+15 to +130 °F	-10 to +55 °C
Electrical		
Ramp-up Time	< 3 sec	
Battery Type (4 required)	1.5 VDC Type "AA"	
Battery Life (with 250 gm load)	2.2 hours	
Auto shut-off cycle	60 to 150 sec	
Mechanical		
Sensor Mounting Thread	1/4-28 UNF Female	
Maximum Mounting Torque	10 in-lb	112 N-cm
Size (diameter x height)	2.2 x 7.8 in	56 x 198 mm
Weight	31 oz	900 gm
Options		
M - Metric acceleration, 10.0 m/s^2, (1.02 g) rms or pk		

Model 699A04

- Fully integrated vibration exciter with adjustability and digital readout
- Choice of acceleration, velocity, or displacement modes
- Variable frequency
- Variable amplitude
- Built-in NIST-traceable reference accelerometer
- 110-220 VAC, 50 to 60 Hz powered

The Model 687A01 Vibration Meter Kit puts predictive maintenance into the hands of machinery operators. Simple enough to use with minimal training, it conveniently measures the vibration levels of bearings, gears, and spindles for predictive maintenance requirements.

The kit is supplied with headphones for audible monitoring; an industrial accelerometer; a cable assembly; and a high-strength mounting magnet. The portable, lightweight, battery powered meter provides both overall acceleration and velocity measurements.

Ideal for measuring the vibration severity of fans, motors, and pumps, it also verifies DC bias voltage of industrial accelerometers for troubleshooting permanently installed sensors and cables.

Model 687A01 — Handheld Vibration Meter Kit

- Provides portable velocity and acceleration measurements
- Complies with ISO 2954 and ISO 10816 standards
- Measures the vibration severity of fans, motors, and pumps
- Verifies bias voltage of industrial accelerometers for troubleshooting permanently installed sensors and cables

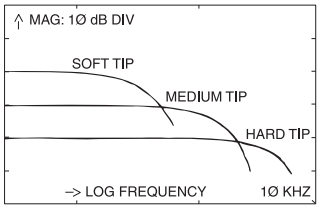
Model 687A01 Handheld Vibration Meter Kit Specifications

Model Number	687A01	
Electrical	**English**	**SI**
Excitation Voltage (± 1 VDC)	24 VDC	
Excitation Current (± 0.6 mA)	2 mA	
Frequency Response: Velocity (+ 10%, - 20%) Acceleration (± 3 dB)	 600 to 60k cpm 3,000 to 300k cpm	 10 to 1000 Hz 50 to 50k Hz
Acceleration Range	0.01 to 19.99 g rms	n/a
Velocity Range	0.001 to 1.999 in/sec rms	n/a
DC Bias Range	0 to 19.99 VDC	
Accelerometer Sensitivity (± 20%)	100 mV/g	10.2 mV/(m/s²)
Meter Resolution	± 2 counts	
Accuracy	± 3%	
Battery Life (alkaline)	10 hours	
Battery Life (rechargeable)	3 hours	
Environmental		
Temperature Range Accelerometer Meter	 -65 to +250 °F +32 to +122 °F	 -54 to +121 °C 0 to +50 °C
Mechanical		
Complete Kit: Size (l x w x h) Weight	 15 x 11 x 4.4 in 3.90 lb	 381 x 279 x 111 mm 1.77 kg
Sensor: Size (hex x height) Weight Mounting Thread (female)	 7/8 x 1.9 in 2.8 oz 1/4-28 UNF	 7/8 in x 48.3 mm 80 gm 1/4-28 UNF
Meter: Size (l x w x h) Weight (with battery) Input Connector Headphone Connector	 5.9 x 3.15 x 1.2 in 0.57 lb BNC Jack 1/8" Stereo Jack	 150 x 80 x 30 mm 258 gm BNC Jack 1/8" Stereo Jack
Supplied Components		
Model 687A02 Meter Model 603C01 Sensor Model 050BQ006AC Cable		Model 070A47 Headphones Model 080A131 Magnet
Supplied Components		
Model R687A01 —	Rechargeable Version: includes Model 073M12 External Charger and Model 073A09 Ni-Cad battery replaces alkaline battery.	
Model M687A01 —	Metric version supplied with Model M687A02 meter sealed for velocity range of 0.01 to 19.99 mm/sec rms.	

Model 086C40 — Modally Tuned®, general purpose, tests medium structures such as car frames, engines and machine parts at low to medium frequencies.

- 8000 Hz frequency range
- 500 lbf (2200 N) amplitude range
- 10 mV/lbf (2.3 mV/N) sensitivity
- 0.3 lb (0.14 kg) hammer mass
- 0.6 inch (1.5 cm) head diameter

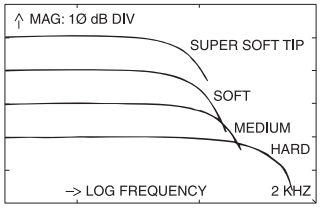
Model 086C40



Model 086C41 — Modally Tuned®, small sledge, tests medium to heavy structures such as tool foundations and storage tanks at low to medium frequencies.

- 1000 Hz frequency range
- 5000 lbf (22k N) amplitude range
- 1 mV/lbf (0.23 mV/N) sensitivity
- 2.4 lb (1.1 kg) hammer mass
- 2 inch (5 cm) head diameter

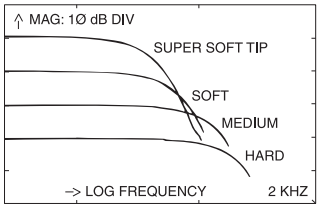
Model 086C41



Model 086C42 — Modally Tuned®, large sledge, tests very heavy structures such as buildings, locomotives, ships, and foundations at low to very low frequencies.

- 500 Hz frequency range
- 5000 lbf (22k N) amplitude range
- 1 mV/lbf (0.23 mV/N) sensitivity
- 12 lb (5.4 kg) hammer mass
- 3 inch (8 cm) head diameter

Model 086C42

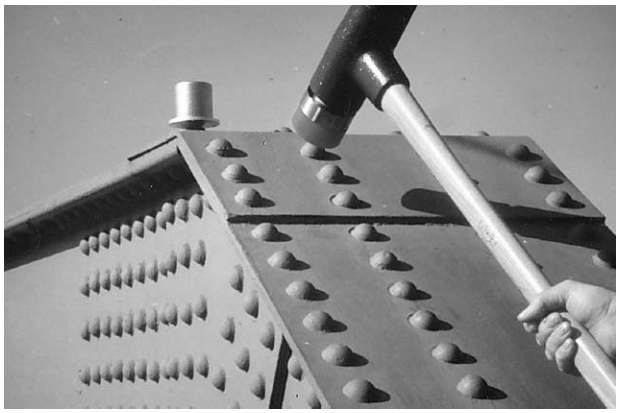


Modally Tuned® ICP® Impact Hammers						
Model Number	**086C40**		**086C41**		**086C42**	
Performance	**English**	**SI**	**English**	**SI**	**English**	**SI**
Frequency Range	8000 Hz		1000 Hz		500 Hz	
Amplitude Range	500 lbf	2200 N	5000 lbf	22k N	5000 lbf	22k N
Voltage Sensitivity	10 mV/lbf	2.3 mV/N	1 mV/lbf	0.23 mV/N	1 mV/lbf	0.23 mV/N
Resonant Frequency	31k Hz		12k Hz		2700 Hz	
Mechanical						
Mass (without extender)	0.3 lb	0.14 kg	2.4 lb	1.1 kg	12.1 lb	5.4 kg
Head Diameter	0.6 in	1.5 cm	2 in	5 cm	3 in	8 cm
Tip Diameter	0.25 in	0.63 cm	2 in	5 cm	3 in	8 cm
Handle Length (nominal)	8 in	20.3 cm	14.5 in	36.8 cm	35 in	89 cm
Electrical Connector	BNC Jack		BNC Jack		BNC Jack	
Electrical						
Super Soft Tip Model	084B11		084A60		084A30	
Soft Tip Model	084B05		084A61		084A31	
Medium Tip Model	084B04		084A62		084A32	
Hard Tip Model	084B03		084A63		084A33	
Extender Model	084A08		—		—	
Extender Mounting Stud	081B05		—		—	
Carry Case Model	001A02		001A11		001A16	
NIST-traceable Calibration	to 10k Hz		to 2000 Hz		to 2000 Hz	

Resonance testing and modal analysis are excellent root-cause failure analysis techniques. Impacting a structure excites it with a broadband force. This excitation causes the structure or machine to vibrate at its natural or resonant frequencies. Through the use of a two-channel data collector that measures the ratio of the vibratory response (typically measured with an accelerometer) to the input force (generated and measured with an impact hammer), a frequency response function (FRF) results, which identifies problem resonances. Modally Tuned® ICP® impact hammers are ideally suited for this type of testing.

A selection of tips is included with each hammer. When used with an extender mass, the hammer can be tailored to deliver the desired frequency content of the impulse force waveform on the structure being tested.

Modally Tuned® ICP® impact hammers have been proven over thousands of requirements in such applications as automotive design, bridge health assessment, and aerospace vehicle development. Their design has been refined, through the selection of their material of construction, to deliver consistent, accurate results. This "modal tuning" of the hammer structure eliminates hammer resonances from corrupting the test data resulting in more accurate test results.



Modally Tuned® impact hammers are used for modal analysis and structural testing on bridges.

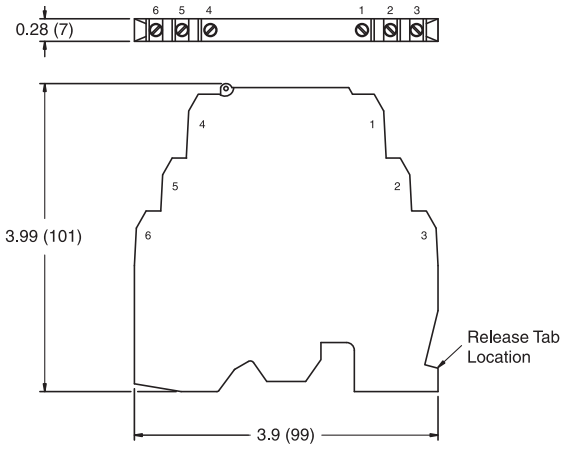
Series 691A6X — for ICP® Accelerometers

IMI Sensors offers Model 691A60 single-channel, DIN rail mountable, I.S. barrier module that is required for use with IMI Sensors hazardous area approved, ICP® vibration sensors. In addition, this series offers two NEMA-4X enclosures featuring the Model 691A61 that accommodates up to 12 of the Model 691A60 modules and the Model 691A62 that accommodates up to 24 of the Model 691A60 modules. Both models are available with as many modules installed as desired.

2/3 Actual Size

Series 691A7X — for 4-20 mA Transmitters

IMI Sensors offers Model 691A70 single-channel, DIN rail mountable, I.S. barrier module that is required for use with IMI Sensors hazardous area approved, 4-20 mA vibration sensors. In addition, this series offers two NEMA-4X enclosures featuring the Model 691A71 that accommodates up to 12 of the Model 691A70 modules and the Model 691A72 that accommodates up to 24 of the Model 691A70 modules. Both models are available with as many modules installed as desired.



Models 691A60 and 691A70
Single-channel Intrinsic Safety Barrier Modules
Dimensions shown are in inches (millimeters).

Models 691A60 and 691A70
Intrinsic Safety and Barrier Modules

Model Number ▶	**691A60 and 691A70**	
Electrical	**English**	**SI**
Channels	1	
Barrier Maximum Voltage	28 V	
Barrier Resistance	300 ohm	
Barrier Maximum Current	93 mA	
Mechanical		
Connectors	terminal strip	
Mounting	DIN rail	
Size (h x w x d)	4 x 3.9 x 0.28 in	101 x 99 x 7 mm
Wiring Code	**691A60**	**691A70**
Terminal 1 (signal conditioner side)	positive	
Terminal 2 (signal conditioner side)	negative	signal
Terminal 3 (signal conditioner side)	shield	negative
Terminal 4 (sensor side)	positive	negative
Terminal 5 (sensor side)	negative	positive
Terminal 6 (sensor side)	shield	signal

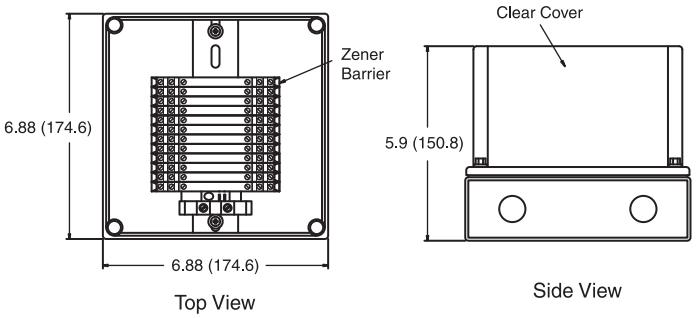
Series 691A61/XX and Series 691A71/XX Safety Barrier Enclosure		
Model Number ▶	**691A60 and 691A70**	
Electrical	**English**	**SI**
Enclosure Rating	Nema 4X	IP65
Mechanical		
Maximum Barrier Capacity	12	
Enclosure Material	Glass Reinforced Polyester with High-Strength, Polycarbonate Cover	
Size (h x w x d)	7 x 7 x 6 in	3.2 x 3.2 x 2.8 mm
Weight (at full capacity)	4.4 lb	2 kg
Mounting	Wall or Surface	
Available Models		
Enclosures Only	691A61, 691A71	
Enclosure with Installed Safety Barrier(s)	691A61/XX*, 691A71/XX*	

Notes: *Designate desired number of installed safety barriers in place of XX, up to a maximum of 12 barriers, e.g., 691A61/08 includes 8 Model 691A60 barriers, 691A71/10 includes 10 Model 691A70 barriers.

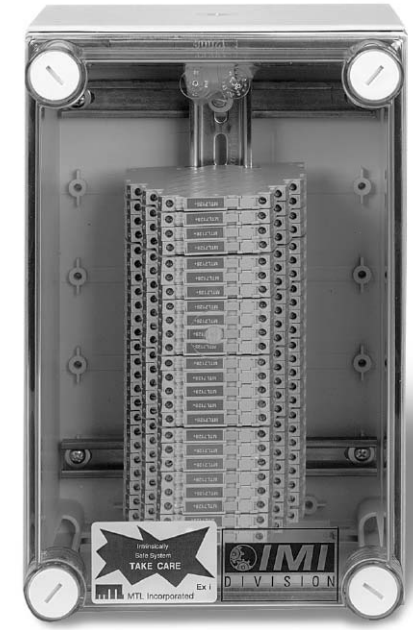
Series 691A62/XX and Series 691A72/XX Safety Barrier Enclosure		
Model Number ▶	**691A62 and 691A72**	
Electrical	**English**	**SI**
Enclosure Rating	Nema 4X	IP65
Mechanical		
Maximum Barrier Capacity	24	
Enclosure Material	Glass Reinforced Polyester with High-Strength, Polycarbonate Cover	
Size (h x w x d)	12.2 x 7.9 x 6.8 in	310 x 201 x 173 mm
Weight (at full capacity)	9.5 lb	4 kg
Mounting	Wall or Surface	
Available Models		
Enclosures Only	691A62, 691A72	
Enclosure with Installed Safety Barrier(s)	691A62/XX*, 691A72/XX*	

Notes: *Designate desired number of installed safety barriers in place of XX, up to a maximum of 24 barriers, e.g., 691A62/16 includes 16 Model 691A60 barriers, 691A72/20 includes 20 Model 691A70 barriers.

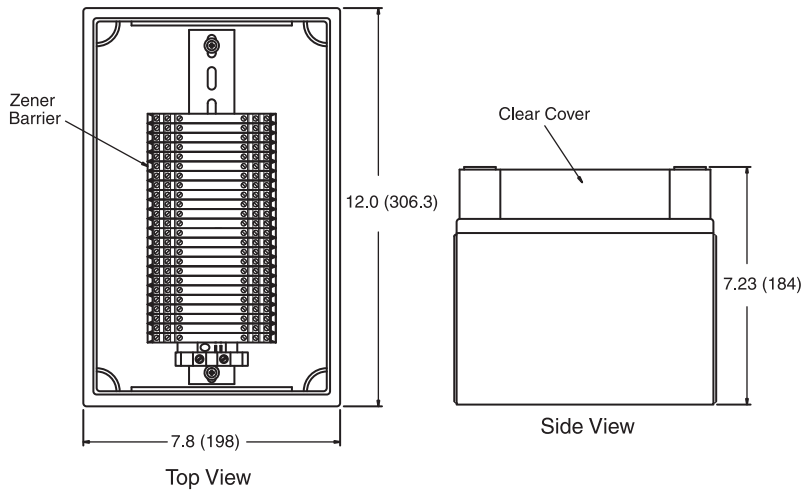
CE



Series 691A61/XX and 691A71/XX
Safety barrier enclosures for up to 12 barriers
Dimensions shown are in inches (millimeters).



CE



Series 691A62/XX and 691A72/XX
Safety barrier enclosures for up to 24 barriers
Dimensions shown are in inches (millimeters).

Model 682A02 — ICP® Sensor Signal Conditioner

- Provides constant current ICP® sensor excitation
- Provides selectable gain at 1x, 10x, or 100x
- 24 VDC powered
- DIN rail mountable
- 3.3 in (h) x 0.97 in (w) x 3.1 in (d) (83.8 mm x 24.6 mm x 78.7 mm)

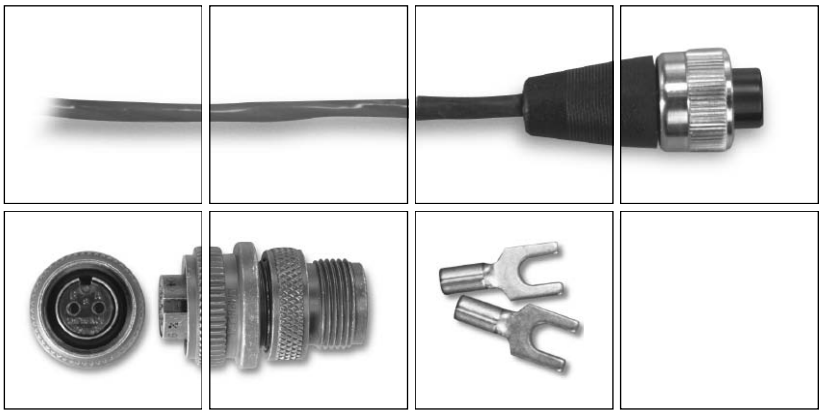
Model 480C02 — Battery Powered ICP® Sensor Signal Conditioner

- Provides constant current ICP® sensor excitation
- BNC input/ output connectors
- Operates on 9 V batteries (3)
- Unity gain, low noise, high frequency
- Optional AC powered re-charger with Ni-Cad batteries (Model 488A02)
- Optional AC power supply (Model 488A03)
- Can be used to calibrate Series 686A Smart Vibration Switches

Cables, Connectors, Hardware Accessories, and Junction Boxes

Highlights

- Cable assemblies
- Cable connectors
- Magnetic bases
- Mounting hardware
- Installation tools
- BNC termination boxes
- Switch boxes
- Interface boxes
- Junction boxes



IMI Sensors manufactures a multitude of accessory equipment to complement the use and installation of industrial vibration sensors. Many cables and mounting accessories are compatible not only with IMI Sensors, but also sensors and data collection devices from other manufacturers. Most accessory equipment is stocked to accommodate emergency needs.

It is important to recognize that cables are vulnerable to damage and should be installed out of harm's way. Armored cables offer further protection from flying machined chips, debris, or when cables may be located under foot. Having spare cables on hand is recommended, as they can help troubleshoot system performance and keep a measurement system up and running, in the event of cable failure.

BNC termination boxes, switch boxes, and junction boxes assist with data collection by terminating cables of permanently installed sensors at convenient and safe data collection locations.

Interface boxes aid in reducing cable costs by converting individual sensor wires to multi-conductor cables for longer distance cable runs. Interface boxes are typically installed in-between accelerometers and junction boxes.

Recommended Cables and Accessories

Code	Model #	Description
❶	052AEXXXBZ	Polyurethane jacket, twisted shielded pair, environmentally sealed MIL-type, 2 socket connector to blunt cut termination
	052AEXXXAC	Polyurethane jacket, twisted shielded pair, environmentally sealed MIL-type, 2 socket connector to BNC plug
	052BRXXXBZ	Polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector to blunt cut termination
	052BRXXXAC	Polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector to BNC plug
	052BQXXXBZ	Polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector right angle to blunt cut termination
	052BQXXXAC	Polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector right angle to BNC plug
❷	042BRXXXBZ	Polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector to blunt cut termination (Series 607 & 608)
	042BRXXXAC	Polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector to BNC plug (Series 607 & 608)
❸	050BRXXXAC	Coiled, polyurethane jacket, twisted shielded pair, composite MIL-type, 2 socket connector to BNC plug
❹	059EFXXXBZ	Polyurethane jacket, shielded 3-cond., 3-socket MIL-style to blunt cut termination (for biaxial sensors only)
❺	059ANXXXBZ	Polyurethane jacket, shielded 4-cond., 4-socket MIL-style (MS3116) to blunt cut termination
	059ANXXXAC	Polyurethane jacket, shielded 4-cond., 4-socket MIL-style (MS3116) to 3 BNC plugs
❻	053BRXXXBZ	High temp red FEP Teflon® jacket, twisted shielded pair, composite MIL-type, 2-socket connector to blunt cut termination
	053AEXXXBZ	High temp red FEP Teflon® jacket, twisted shielded pair, environmentally sealed MIL-type, 2 socket connector to blunt cut termination
	053BPXXXBZ	High temp red FEP Teflon® jacket, twisted shielded pair, high temp MIL-type, 2-socket connector w/ strain relief to blunt cut termination
	055BRXXXBZ	Heavy duty high temp orange FEP Teflon® jacket, twisted shielded pair, composite MIL-type, 2-socket connector to blunt cut termination
	055ECXXXBZ	Heavy duty high temp orange FEP Teflon® jacket, twisted shielded pair, environmentally sealed MIL-type, 2-socket connector w/ locking ring to blunt cut termination
	055BPXXXBZ	Heavy duty high-temp orange FEP Teflon® jacket, twisted shielded pair, high temp MIL-type, 2-socket connector w/ strain relief to blunt cut termination
❼	080A93	Sensor mounting pad, 0.75 in (19 mm) diameter, 1/4-28 tapped hole
	080A120	Magnetic mounting base (flat), 0.75 in (19 mm) diameter, 1/4-28 tapped hole, 15 lb (67 N) attraction force
	080A130	Magnetic mounting base (curved), 0.75 in (19 mm) diameter, 1/4-28 tapped hole, 15 lb (67 N) attraction force
❽	080A118	Sensor mounting pad, 1.00 in (25 mm) diameter, 1/4-28 tapped hole
	080A121	Magnetic mounting base (flat), 1.00 in (25 mm) diameter, 1/4-28 tapped hole, 35 lb (156 N) attraction force
	080A131	Magnetic mounting base (curved), 1.00 in (25 mm) diameter, 1/4-28 tapped hole, 35 lb (156 N) attraction force
❾	080A91	Sensor mounting pad, 1.375 in (35 mm) diameter, 1/4-28 tapped hole
	080A122	Magnetic mounting base (flat), 1.5 in (38 mm) diameter, 1/4-28 tapped hole, 50 lb (222 N) attraction force
	080A132	Magnetic mounting base (curved), 1.5 in (38 mm) diameter, 1/4-28 tapped hole, 55 lb (245 N) attraction force

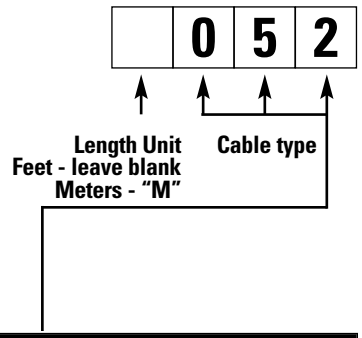
Note: "XXX" characters in cable model numbers above indicate the cable length in feet (in meters for metric cables). Although the preferred length can be specified by the customer, in many cases there are standard lengths available for immediate shipment. Contact the factory for availablility.

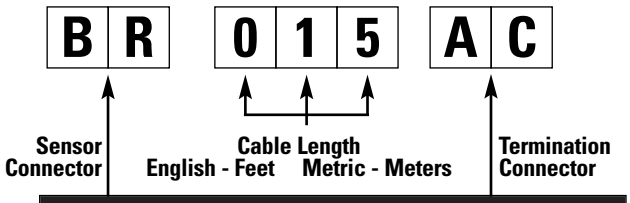
How To Order Order Custom Cables:

1. First determine whether the cable shall be ordered in English or Metric unit lengths.
2. Choose the desired cable. (See pages 5.8-5.17 for cable specifications).
3. Find the connector that mates to the sensor. (See pages 5.4-5.6 for connector photos).
4. Determine the length of cable required.
5. Choose the cable termination connector. (See pages 5.4-5.6).
6. Fill the squares with appropriate letter or number designation:

Example:

Model 052BR015AC defines a 15 ft, general purpose, polyurethane jacketed, shielded, twisted pair cable with a two-pin socket MIL-type MS3106 composite sensor connector and a BNC plug termination connector.





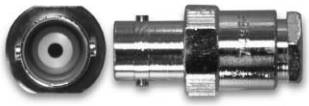
Standard Cable Types

Shielded, Twisted Pair			**Diameter**		**Max. Temp.**
CE	042	Lightweight, polyurethane jacket	0.160 in	(4.1 mm)	+ 250 °F (+121 °C)
	044	Coiled, polyurethane jacket	0.170 in	(4.6 mm)	+ 176 °F (+80 °C)
	045	High temperature, PFA Teflon® jacket	0.204 in	(5.2 mm)	+ 500 °F (+260 °C)
	047	Steel armored, polyurethane	0.410 in	(10.4 mm)	+ 250 °F (+121 °C)
	048	Steel armored, high temp. FEP Teflon®	0.268 in	(6.8 mm)	+ 392 °F (+200 °C)
	050	Coiled, lightweight, TPE jacket	0.210 in	(5.3 mm)	+ 176 °F (+80 °C)
CE	052	General purpose, polyurethane jacket	0.250 in	(6.4 mm)	+ 250 °F (+121 °C)
CE	053	High temperature, FEP Teflon® jacket	0.157 in	(4 mm)	+ 392 °F (+200 °C)
	055	High temperature, FEP Teflon® jacket	0.190 in	(4.8 mm)	+ 392 °F (+200 °C)
CE	058	Coiled, heavy duty, polyurethane	0.250 in	(6.4 mm)	+ 250 °F (+121 °C)
Shielded, Multi-Conductor					
	043	Steel armored, 4-cond., polyurethane	0.410 in	(10.4 mm)	+ 250 °F (+121 °C)
	046	16 pair (32-conductor), PVC jacket	0.70 in	(17.8 mm)	+ 221 °F (+105 °C)
	049	12 pair (24-conductor), PVC jacket	0.60 in	(15.2 mm)	+ 220 °F (+105 °C)
	056	3-conductor, FEP Teflon® jacket	0.190 in	(4.8 mm)	+ 392 °F (+200 °C)
	057	4-conductor, FEP Teflon® jacket	0.190 in	(4.8 mm)	+ 392 °F (+200 °C)
CE	059	4-conductor, polyurethane jacket	0.250 in	(6.4 mm)	+ 250 °F (+121 °C)
	062	3-conductor, polyurethane jacket	0.160 in	(4.1 mm)	+ 250 °F (+121 °C)
Coaxial					
CE	051	Heavy duty, RG-58/U, PVC jacket	0.193 in	(4.9 mm)	+ 176 °F (+80 °C)
	054	High temperature, FEP Teflon® jacket	0.140 in	(3.6 mm)	+ 392 °F (+200 °C)
	060	General purpose, FEP Teflon® jacket	0.075 in	(1.9 mm)	+ 400 °F (+204 °C)

Notes: * CE indicates that cable maintains CE conformance

Standard Connector Types

Code	Connector	Compatible Cables
Two-Socket Plugs		
AE	MIL-type MS3106 with environmental boot	
AM	MIL-type MS3106	
AP	MIL-type MS3106 with strain relief	
BC	MIL-type MS3106 for high temperatures	
BP	MIL-type MS3106 for high temperatures with strain relief	
BQ	MIL-type MS3108 right angle, composite	
BR	MIL-type MS3106, composite	
BS	MIL-type MS3108, right angle	
BT	MIL-type MS3108, right angle for high temperatures	
CJ	MIL-type MS3116 Bayonet style	
DN	MIL-type MS3106, composite, with stainless steel clamp ring	
EC	MIL-type MS3106 with environmental boot, lock ring and adaptor	
ER	MIL-type for high temperatures	
FV	MIL-type with environmentally sealed boot	
ET	MIL-type "mini MIL" 7/16-27 Thread	
Other Multi-Pin or Socket		
AN	4-socket, MIL-type MS3116	
BV	3-socket, MIL-type MS3106	
BY	28-pin Bayonet, for switch box MO option	
CD	MIL-type MS3101A	
CE	MIL-type with strain relief	
CS	3-socket MIL-type MS3116 bayonet style	
CV	25-pin D style for CSI data collector interface	
CW	25-pin D style for SKF data collector interface	
DP	7-pin LEMO style for Entek data collector interface	
DR	4-socket MIL-type MS3116 Bayonet style	
DS	3-pin MIL-type MS3106 with environmental boot	
EA	4-pin Bendix	
EF	3-socket, MIL-type MS3106, nylon	
EG	Multi-pin bayonet	
FY	3-socket, MIL-type with environmental boot	
GV	11-pin Fischer style for DLI data collector interface	
HC	4-socket, MIL-type MS3116	
HM	6-pin Fischer style for DLI data collector interface	
Coaxial		
AB	BNC jack	
AC	BNC plug	
EJ	10-32 plug (spring loaded)	
AG	5-44 plug	
Miscellaneous Terminations		
AD	Pigtail (leads stripped and tinned)	
BZ	Blunt cut	
AS	#10 spade lugs	



AB.
BNC Jack

AC.
BNC Plug
❶❷❸❹❺❻

AD.
Pigtail
(leads stripped and tinned).

AE.
2-socket, MIL-type MS3106 with environmental boot.
❶❻
Temperature range to +325 °F (+163 °C).

AN.
4-socket, MIL-type MS3116.
❺
Temperature range -67 to +257 °F
(-55 to +125 °C).

AP.
2-socket, MIL-type MS3106 with strain relief.
Temperature range to +250 °F (+121 °C).

AS.
#10 Spade Lugs

BP.
2-socket, MIL-type MS3106 for high temperatures with strain relief.
❻
Temperature range to +325 °F (+163 °C).

BQ.
2-socket, MIL-type MS3108 molded composite, right angle.
❶❷❻
Temperature range to +250 °F (+121 °C).

BR.
2-socket, MIL-type MS3106 molded composite.
❶❷❻
Temperature range to +250 °F (+121 °C).

BS.
2-socket, MIL-type MS3108 right angle.
Temperature range to +250 °F (+121 °C).

BT.
2-socket, MIL-type MS3108 right angle, for high temperatures.
Temperature range to +330 °F (+166 °C).

BV.
Nylon 3-socket, MIL-type MS3106 for units having "TO" option.
Temperature range to +250 °F (+121 °C).

BY.
28-pin, Bayonet for junction box multi output option.
Temperature range -67 to +257 °F
(-55 to +125 °C).

BZ.
Blunt Cut.

CD.
2-pin, MIL- type MS3101A.
Temperature range -67 to +257 °F
(-55 to +125 °C).

CE.
2-pin, MIL-type with strain relief.
Temperature range -67 to +257 °F
(-55 to +125 °C).

CJ.
2-socket, MIL-type MS3116 Bayonet.
Temperature range -67 to +257 °F (-55 to +125 °C).

CS.
3-socket, MIL-type MS3116 Bayonet.
Temperature range -67 to +257 °F (-55 to +125 °C).

DN.
2-socket, MIL-type MS3101A composite, with stainless steel clamp ring.
Temperature range -67 to +257 °F (-55 to +125 °C).

DR.
4-socket, MIL-type MS3116 Bayonet.
Temperature range -67 to +257 °F (-55 to +125 °C).

DS.
3-socket, MIL-type MS3106 with environmental boot.
Temperature range -67 to +257 °F (-55 to +125 °C).

EA
4-pin, Bendix, cylindrical straight plug.
Temperature range -67 to +257 °F (-55 to +125 °C).

EC.
2-socket, MIL-type MS3106 with environmental boot, stainless steel locking ring, and adaptor.
❻
Temperature range to +330 °F (+166 °C).

EF
Nylon 3-socket, MIL-type 3106 for biaxial sensors only.
❹
Temperature range to +250 °F (+121 °C).

EG.
35-pin, Bayonet with strain relief for multiple outputs.
Temperature range -67 to +257 °F (-55 to +125 °C).

EJ.
10-32 coaxial spring loaded.
Temperature range to +392 °F (+200 °C).

ER.
2-socket, MIL-type for high temperatures.
Temperature range to +500 °F (+260 °C).

ET. image needed
2-socket "mini MIL" plug with 7/16-27 thread
Temperature range to +325 °F (+163 °C).

FV.
2-socket, MIL-type MS3106 with environmental boot.
Temperature range -67 to +257 °F (-55 to +125 °C).

FY.
3-socket, MIL-type MS3106 with environmental boot.
Temperature range -67 to +257 °F (-55 to +125 °C).

GT.
3-socket, MIL-type MS3106
Temperature range -67 to +257 °F (-55 to +125 °C).

HC.
4 socket, MIL-type MS3116 for use with TO64X series sensors.
Temperature range -67 to +257 °F (-55 to +125 °C).

Data Collector Connectors

These connectors permit users to terminate their cable assemblies to unique data collector connection interfaces. Contact the factory for additional connectors not featured here.

CV.
25-pin, D-style for CSI data collector interface.
Temperature range -67 to +257 °F
(-55 to +125 °C).

CW.
25-pin, D-style for SKF data collector interface.
Temperature range -67 to +257 °F
(-55 to +125 °C).

DP.
7-pin, LEMO type for Entek data collector interface.
Temperature range -67 to +392 °F
(-55 to +200 °C).

GV
11-pin Fischer-style connector
Temperature range -85 to +266 °F
(-65 to +130 °C).

HM.
6-pin Fischer-style connector.
Temperature range -85 to +266 °F
(-65 to +130 °C).

HX.
5-pin, Turck.
Temperature range -40 to +185 °F
(-40 to +85 °C).

Field Installable Connector Kits

These connector kits permit users to fabricate their own cable assemblies or conduct cable repairs in the field. It is often desirable to install and cut cables to required lengths and then install the necessary sensor connectors.

CF.
2-socket, composite MIL-type MS3106 field installable kit.
Temperature range -67 to +257 °F
(-55 to +125 °C).

075A01.
2-socket, MIL-type MS3106 with environmental boot for 0.195 inch diameter cable.

075A02.
2-socket, MIL-type MS3106 with environmental boot for 0.250 inch diameter cable.

075A03.
2-socket, MIL-type MS3106 with environmental boot for 0.170 inch diameter cable.

075A04.
2-socket, MIL-type MS3106 with environmental boot for 0.140 inch diameter cable.

Cable Compatibility

Cables / Connectors	042	043	044	045	046	047	048	049	050	051	052	053	054	055	056	057	058	059	060	062	097
AB	■		■	■		■			■	■	■	■	■	■			■	■	■		
AC	■		■	■		■			■	■	■	■	■	■			■	■	■		
AD	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
AE	■					■	■		■	■	■	■	■	■			■				
AN		■								■						■		■			
AP	■		■				■		■	■	■			■			■				
AS	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
BP				■			■					■	■	■							
BQ									■		■	■									
BR	■					■			■	■	■	■		■							
BS									■	■	■										
BT												■	■								
BV											■				■	■		■		■	
BY								■													
BZ	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CD						■	■		■	■	■	■	■	■			■		■		
CE	■						■		■	■	■	■	■	■			■				
CF			■						■	■	■	■					■				
CJ									■	■	■	■	■	■							
CS										■	■	■	■					■		■	
CV	■		■						■		■						■				
CW									■		■										
DN												■									
DP	■		■						■		■	■									
DR																					■
DS		■														■		■		■	
EA																		■			
EC						■	■		■	■	■	■	■	■	■	■	■				
EF															■			■		■	
EG					■																
EJ																			■		
ER				■																	
ET				■								■									
FV	■		■				■		■		■	■	■	■			■				
FY											■			■	■			■			
GT																■		■			
GV																		■			■
HC		■														■		■			
HM	■										■										
HX	■								■	■	■						■				
075A01										■											
075A02											■										
075A03												■									
075A04													■								

■ Denotes connector compatability with available cables.

Cable Specifications and Standard Cable Models

The following tables provide specifications and configuration diagrams for the variety of available cable types. Where applicable, standard cable assembly model numbers are provided. Standard models can be less costly than custom cables and available for overnight shipment. For alternate cable lengths or custom model numbering, follow the guidelines provided on page 5.3. If there is an urgent need, please let us know. Most cables can be fabricated and shipped within 24 hours.

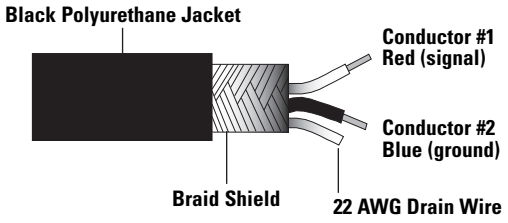
Series 052 General Purpose, Shielded, Twisted Pair

Usage

Recommended for general purpose use with industrial ICP® sensors having 2-pin connectors. Shielded construction protects against RFI and EMI noise. Maintains CE conformance.

Outer Jacket	Polyurethane, Black	
Diameter	0.25 in	6.35 mm
Capacitance	36 pF/ft	118 pF/m
Temperature Range	-58 to +250 °F	-50 to +121 °C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)	
052AE010AC	10 ft	3.0 m	
052AE010BZ	10 ft	3.0 m	
052AE020BZ	20 ft	6.1 m	
052AE030BZ	30 ft	9.1 m	
052AE050BZ	50 ft	15.2 m	
052BQ010AC	10 ft	3.0 m	
052BQ010BZ	10 ft	3.0 m	
052BQ020BZ	20 ft	6.1 m	
052BQ030BZ	30 ft	9.1 m	
052BQ050BZ	50 ft	15.2 m	
052BR010AC	10 ft	3.0 m	
052BR010BZ	10 ft	3.0 m	
052BR020BZ	20 ft	6.1 m	
052BR030BZ	30 ft	9.1 m	
052BR050BZ	50 ft	15.2 m	

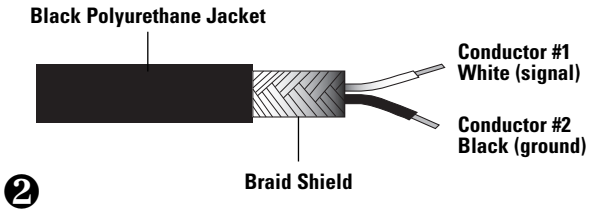
Series 042 Lightweight, Shielded, Twisted Pair

Usage

Recommended for general purpose use with industrial ICP® sensors having 2-pin connectors. Well suited for interface with LEMO-type connectors. Shielded construction protects against RFI and EMI noise.

Outer Jacket	Polyurethane, Black	
Diameter	0.160 in	4 mm
Capacitance	20 pF/ft	65 pF/m
Temperature Range	-58 to +250 °F	-50 to +121 °C
Conductors	26 AWG Tinned Copper, Stranded	

Construction



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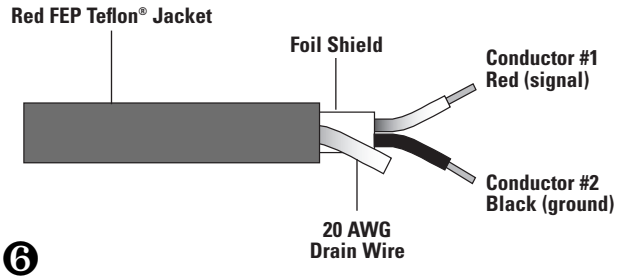
Series 053 High Temperature, Shielded, Twisted Pair

Usage

Recommended for high temperature use with industrial ICP® sensors having 2-pin connectors. Shielded construction protects against RFI and EMI noise. Maintains CE conformance.

Outer Jacket	FEP Teflon® (red tint)	
Diameter	0.157 in	4 mm
Capacitance between adjacent conductors	51 pF/ft	167 pF/m
Capacitance between conductor and shield	97 pF/ft	318 pF/m
Temperature Range	-90 to +392 °F	-70 to +200 °C
Conductors	18 AWG Tinned Copper, Solid	

Construction



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Standard Cable Assemblies

Model #	Length (feet)	Length (meters)	
053DN016BZ	16 ft	4.9 m	
053DN032BZ	32 ft	9.8 m	
053DN064BZ	64 ft	19.5 m	
053DN112BZ	112 ft	34.1 m	
053BQ050BZ	50 ft	15.2 m	
053BR010BZ	10 ft	3.0 m	
053BR020BZ	20 ft	6.1 m	
053BR030BZ	30 ft	9.1 m	
053BR050BZ	50 ft	15.2 m	

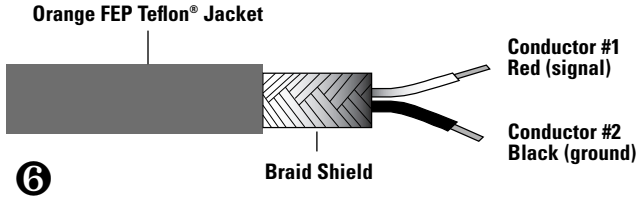
Series 055 High-temperature, Heavy Duty, Shielded, Twisted Pair

Usage

Recommended for use in dedicated installations of single axis sensors in high-temperature environments or where chemical resistivity is important.

Outer Jacket	Extruded FEP Teflon®, Bright Orange	
Diameter	0.190 in	4.8 mm
Capacitance	27 pF/ft	88.6 pF/m
Temperature Range	-85 to +392 ˚F	-65 to +200 ˚C
Conductors	20 AWG Tinned Plated Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
055EC016BZ	16 ft	4.9 m
055EC032BZ	32 ft	9.8 m
055EC064BZ	64 ft	19.5 m

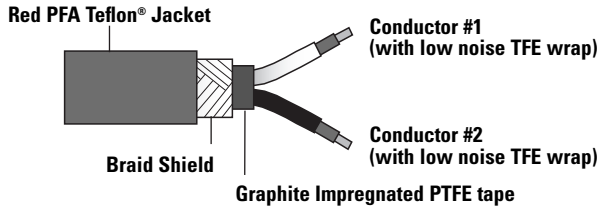
Series 045 Very High Temperature, Heavy Duty, Shielded, Twisted Pair

Usage

Recommended for use with high-temperature, charge output accelerometers. Connects accelerometer to the in-line charge converter.

Outer Jacket	Extruded PFA, Red	
Diameter	0.204 in	5.2 mm
Capacitance	30 to 40 pF/ft	98 to 131 pF/m
Temperature Range	-130 to +500 ˚F	-90 to +260 ˚C
Conductors	22 AWG Nickel Plated Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
045ER010CJ	10 ft	3.0 m
045ER015CJ	15 ft	4.5 m

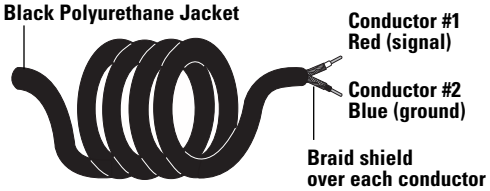
Series 044 Coiled, General Purpose, Lightweight, Shielded, 2-Conductor

Usage

Recommended for portable data collection use with smaller, lightweight accelerometers.

Outer Jacket	Polyurethane, Black	
Diameter	0.170 in	4.6 mm
Capacitance	40 pF/ft	131 pF/m
Temperature Range	-40 to +176 ˚F	-40 to +80 ˚C
Conductors	24 AWG Tinned Soft Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
044AP006DP	6 ft	1.8 m
044AP010DP	10 ft	3.0 m

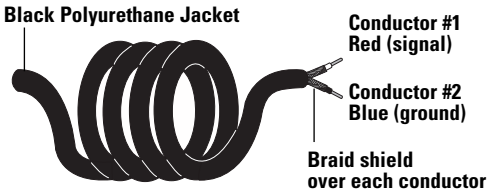
Series 058 Coiled, Heavy Duty, Shielded, Twisted

Usage

Recommended for interfacing industrial ICP® sensors having 2-pin connectors with portable, vibration data collectors. Shielded construction protects against RFI and EMI noise. Maintains CE conformance.

Outer Jacket	Polyurethane, Black	
Diameter	0.250 in	6.4 mm
Capacitance	36 pF/ft	118 pF/m
Temperature Range	-58 to +250 ˚F	-50 to +121 ˚C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
058AM006AC	6 ft	1.8 m
058AM010AC	10 ft	3.0 m
058AM015AC	15 ft	4.5 m

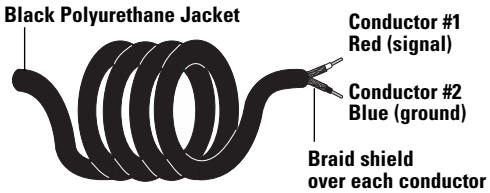
Series 050 Coiled, Lightweight, Shielded Pair

Usage

Recommended for interfacing industrial ICP® sensors having 2-pin connectors with portable, vibration data collectors. Shielded construction protects against RFI and EMI noise.

Outer Jacket	Thermal Plastic Elastimere (TPE), Black	
Diameter	0.210 in	5.3 mm
Capacitance	31 pF/ft	94 pF/m
Temperature Range	-22 to +176 °F	-30 to +80 °C
Conductors	23 AWG Tinned Copper, Stranded	

Construction



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Standard Cable Assemblies

Model #	Length (feet)	Length (meters)	
050AE006AC	6 ft	1.8 m	
050AE010AC	10 ft	3.0 m	
050BQ006AC	6 ft	1.8 m	
050BQ010AC	10 ft	3.0 m	
050BR006AC	6 ft	1.8 m	
050BR010AC	10 ft	3.0 m	
050FV006AC	6 ft	1.8 m	
050FV010AC	10 ft	3.0 m	
050FV006CV	6 ft	1.8 m	
050FV010CV	10 ft	3.0 m	

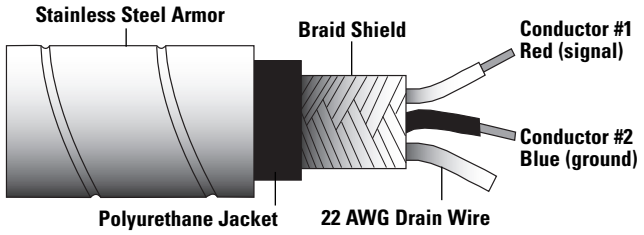
Series 047 Steel Armored, Shielded, Twisted Pair

Usage

Recommended for use with industrial ICP® sensors having 2-pin connectors and in harsh environments, especially where cable may get pinched or crushed. Shielded construction protects against RFI and EMI noise.

Outer Jacket	Stainless Steel Over Polyurethane	
Diameter	0.410 in	10.4 mm
Capacitance	36 pF/ft	118 pF/m
Temperature Range	-58 to +250 °F	-50 to +121 °C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)	
047AM010AC	10 ft	3.0 m	
047AM010BZ	10 ft	3.0 m	

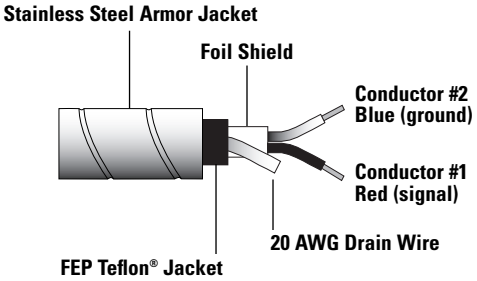
Series 048 Steel Armored, High Temperature, Shielded, Twisted Pair

Usage

Recommended for high temperature use with industrial ICP® sensors having 2-pin connectors and in harsh environments, especially where cable may get pinched or crushed. Shielded construction protects against RFI and EMI noise.

Outer Jacket	Stainless Steel Over FEP Teflon®	
Diameter	0.268 in	6.8 mm
Capacitance between conductors	51 pF/ft	167 pF/m
Capacitance between conductor and shield	97 pF/ft	318 pf/m
Temperature Range	-90 to +392 °F	-70 to +200 °C
Conductors	18 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)	
048BP010BZ	10 ft	3.0 m	
048BP010AC	10 ft	3.0 m	

Cable Specifications and Standard Models

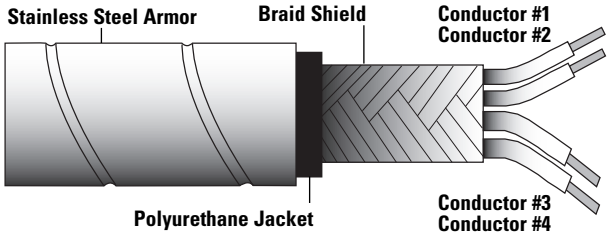
Series 043 Steel Armored, Shielded, Twisted 4-Conductor

Usage

Recommended for use with multi-axis industrial ICP® sensors in harsh environments, especially where cable may get pinched or crushed. Shielded construction protects against RFI and EMI noise.

Outer Jacket	Stainless Steel Over Polyurethane	
Diameter	0.410 in	10.4 mm
Capacitance	36 pF/ft	118 pF/m
Temperature Range	-58 to +250 ˚F	-50 to +121 ˚C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
043AN010BZ	10 ft	3.0 m
043AN020BZ	20 ft	6.1 m

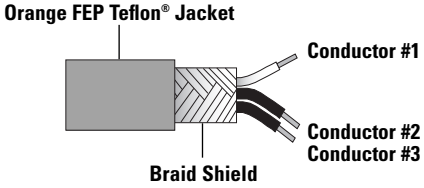
Series 056 High Temperature Shielded, Twisted 3-Conductor

Usage

Recommended for use in dedicated installations of dual output sensors in high temperature environments or where chemical resistivity is important.

Outer Jacket	Extruded FEP Teflon®, Bright Orange	
Diameter	0.190 in	4.8 mm
Capacitance	27 pF/ft	88.6 pF/m
Temperature Range	-85 to +392 ˚F	-65 to +200 ˚C
Conductors	20 AWG Tin Plated Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
056FY016BZ	16 ft	4.9 m
056FY032BZ	32 ft	9.8 m
056FY064BZ	64 ft	19.5 m

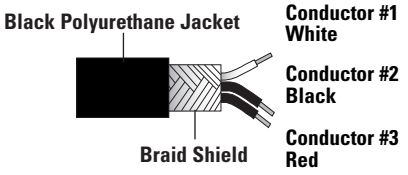
Series 062 Shielded, Twisted, 3-Conductor

Usage

Supplied as an integral cable with Series TO607 and TO608 sensors.

Outer Jacket	Polyurethane, Black	
Diameter	0.160 in	4.1 mm
Capacitance	20 pF/ft	65 pF/m
Temperature Range	-65 to +250 ˚F	-54 to +121 ˚C
Conductors	28 AWG Tinned Copper, Stranded	

Construction



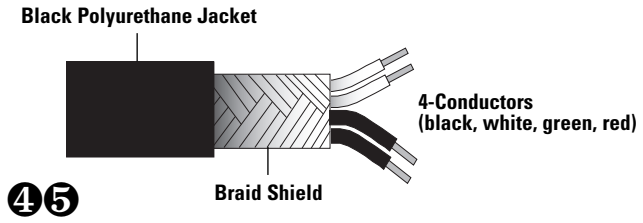
Series 059 Shielded, Twisted, 4-Conductor

Usage

Recommended for general purpose use with multi-axis industrial ICP® sensors having 4-pin connectors. Shielded construction protects against RFI and EMI noise. Maintains CE conformance.

Outer Jacket	Polyurethane, Black	
Diameter	0.250 in	6.4 mm
Capacitance	36 pF/ft	118 pF/m
Temperature Range	-58 to +250 °F	-50 to +121 °C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
059AN010AC	10 ft	3.0 m
059AN010BZ	10 ft	3.0 m
059AN020BZ	20 ft	6.1 m
059AN030BZ	30 ft	9.1 m
059AN050BZ	50 ft	15.2 m

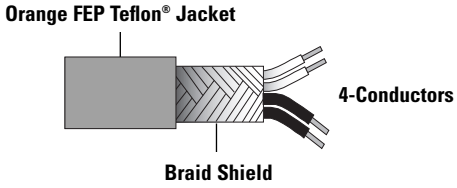
Series 057 High Temperature, Shielded, Twisted, 4-Conductor

Usage

Recommended for use in dedicated installations of triaxial sensors in high temperature environments or where chemical resistivity is important.

Outer Jacket	Extruded FEP Teflon®, Bright Orange	
Diameter	0.190 in	4.8 mm
Capacitance	24 pF/ft	79 pF/m
Temperature Range	-85 to +392 °F	-65 to +200 °C
Conductors	22 AWG Tin Plated Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
057AN010BZ	10 ft	3.0 m
057AN020BZ	20 ft	6.1 m
057AN030BZ	30 ft	9.1 m
057AN050BZ	50 ft	15.2 m

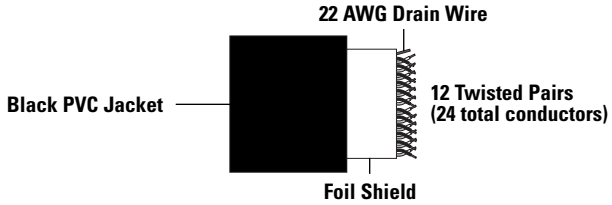
Series 049 Shielded, Twisted, 12-pair (24 Total Conductors)

Usage

Recommended for use with interface boxes. Shielded construction protects against RFI and EMI noise.

Outer Jacket	Polyvinyl Chloride, Black	
Diameter	0.610 in	15.5 mm
Capacitance	23 pF/ft	76 pF/m
Temperature Range	-40 to +221 °F	-40 to +105 °C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
049BY010AD	10 ft	3.0 m

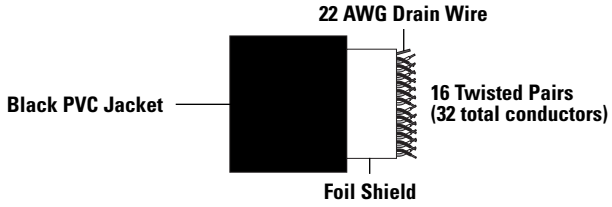
Series 046 Shielded, Twisted, 16-Pair (32 Total Conductors)

Usage

Recommended for use with 16-channel switch boxes that have a multiple output option. This approach is a cost effective method for connecting 16 measurement channels for continuous, on-line monitoring.

Outer Jacket	Polyvinyl Chloride, Black	
Diameter	0.70 in	17.8 mm
Capacitance	23 pF/ft	75 pF/m
Temperature Range	-40 to +221 °F	-40 to +105 °C
Conductors	20 AWG Tinned Copper, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
046EG010AD	10 ft	3.0 m

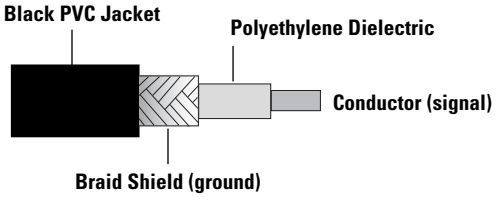
Series 051 Coaxial, Heavy Duty, Type RG58/U

Usage

Recommended for use as an output cable from signal conditioners and switch boxes.

Outer Jacket	Polyvinyl Chloride, Black	
Diameter	0.193 in	4.9 mm
Capacitance	29 pF/ft	95 pF/m
Temperature Range	-40 to +176 ˚F	-40 to +80 ˚C
Conductor	20 AWG Bare Copper, Solid	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
051AC010AC	10 ft	3.0 m

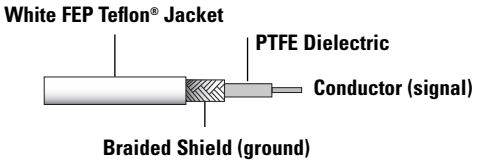
Series 060 General Purpose, Small Diameter Coaxial

Usage

Recommended for general purpose use with small size, high frequency ICP® sensors having coaxial connectors.

Outer Jacket	FEP Teflon®, White	
Diameter	0.075 in	1.9 mm
Capacitance	29 pF/ft	95 pF/m
Temperature Range	-130 to +400 ˚F	-90 to +204 ˚C
Conductor	30 AWG Silver Plated Copper, Stranded	

Construction



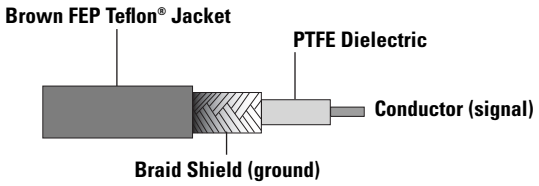
Series 054 High Temperature Coaxial

Usage

Recommended for use in high temperature or corrosive environments, with ICP® sensors having coaxial connectors.

Outer Jacket	FEP Teflon®, Extruded, Tinned, Brown	
Diameter	0.140 in	3.6 mm
Capacitance	15 pF/ft	49 pF/m
Temperature Range	-94 to +392 ˚F	-70 to +200 ˚C
Conductor	30 AWG Silver Plated, Copper Covered Steel, Stranded	

Construction



Standard Cable Assemblies

Model #	Length (feet)	Length (meters)
054BP010AC	10 ft	3.0 m

Vibration Sensor Mounting Pads

These mounting pads may be adhesively bonded or welded to machinery surfaces at specific vibration sensor installation points. The pads ensure that periodic measurements are always taken from the exact same location, lending to more accurate and repeatable measurement data.

Pads with tapped holes are for use with stud mounted sensors whereas the untapped pads are intended for use with magnetically mounted sensors.

For permanent installations, the pads facilitate mounting of sensors without actually machining the surface onto which they are to be installed. Also, the untapped pads may be utilized to achieve magnetic attraction on non-ferrous surfaces.

All mounting pads are manufactured from resilient, stainless steel.

Vibration Sensor Mounting Pad Models

For Stud Mounted Sensors	Diameter	Tapped Hole
Model 080A93* ❼	0.75 in (19 mm)	1/4-28 (M6 x 1.0) thread
Model 080A118* ❽	1 in (25 mm)	1/4-28 (M6 x 1.0) thread
Model 080A91* ❾	1.375 in (35 mm)	1/4-28 (M6 x 1.0) thread
For Magnetic Mounted Sensors		
Model 080A94	0.75 in	N/A
Model 080A92	1.375 in	N/A

Notes: * For models with metric dimensions, please use "M" prefix with model number listed above.

Magnetic Mounting Bases

Magnetic mounting offers the most convenient method of temporary sensor installation for route-based measurements and data collection.

IMI Sensors magnetic mounting bases feature rare-earth magnet elements to achieve high attraction forces to the test structure. This aids in high frequency transmissibility and assures attraction for weighty sensors and conditions of high vibration.

Rail mount styles are utilized for curved surfaces, such as motor housings and pipes. Knurled housings aid in gripping for removal. Hex shaped magnetic bases are designed for smaller high frequency sensors. All magnetic mounting bases are manufactured from resilient, stainless steel.

Note: Exercise caution when installing magnetically mounted sensors by engaging the edge of the magnet with the structure and carefully rolling the sensor/magnet assembly to an upright position. Never allow the magnet to impact against the structure as this may damage the sensor by creating shock acceleration levels beyond survivable limits.

Magnetic Mounting Base Models

For Flat Surfaces	Diameter	Thread	Pull Strength
Model 080A120* ❼	0.75 in (19 mm)	1/4-28 (M6 x 1.0) stud	15 lb (67 N)
Model 080A121* ❽	1 in (25 mm)	1/4-28 (M6 x 1.0) stud	35 lb (156 N)
Model 080A122* ❾	1.5 in (38 mm)	1/4-28 (M6 x 1.0) stud	50 lb (222 N)
For Curved Surfaces			
Model 080A130* ❼	0.75 in (19 mm)	1/4-28 (M6 x 1.0) stud	15 lb (67 N)
Model 080A131* ❽	1 in (25 mm)	1/4-28 (M6 x 1.0) stud	35 lb (156 N)
Model 080A132* ❾	1.5 in (38 mm)	1/4-28 (M6 x 1.0) stud	55 lb (245 N)
Model 080A133*	2 in (51 mm)	1/4-28 (M6 x 1.0) stud	85 lb (378 N)
For Small, High Frequency Sensors			
Model 080A157	0.375 in (9.5 mm)	5-40 female	2.5 lb (11 N)
Model 080A101	0.75 in (19 mm)	10-32 male	12 lb (53 N)

Notes: * For models with metric dimensions, please use "M" prefix with model number listed above.

Model 075A05
Small Epoxy Kit

Model 075A06
Large Epoxy Kit

Epoxy Kits

These epoxy kits provide a secure means for mounting accelerometers and adhesive mounting bases to machine structures. The small kit is intended for mounting approximately 10 sensors; and the large kit is intended for about 100 sensors.

Mounting Studs and Bolts

Although each sensor is supplied with a mounting stud or bolt, it is good practice to keep a few spares on hand for use in the event of an unforeseen failure. The following tables provide guidelines for selecting the stud or bolt for use with a particular sensor series. If in doubt, check the sensor specification sheet to determine the model of the recommended stud or bolt.

Mounting Studs

Model 080A165
Floating Hex Nut

Model 080A162
Mounting Stud

Mounting Stud Models		
Studs	**Thread**	**Comment**
Model 081A08	10-32 to 1/4-28	BeCu, no shoulder
Model 081A30	1/4-28 to 1/4-28	SS, with shoulder, 0.365 in length
Model 081B05	10-32 to 10-32	BeCu, with shoulder
Model 081B20	1/4-28 to 1/4-28	BeCu, with shoulder
Model 080A156	1/2-20 to 1/4-28	Use with 607A11, 607A61
Model 080A162	3/4-16 to 1/4-28	Use with 607A01, 608A11
Model 080A165	3/4-16 floating hex nut	Use with 608A11
Model M081B05	10-32 to M6 × 0.75	BeCu, no shoulder
Model M081A61	1/4-28 to M6 × 1.0	BeCu, no shoulder
Model M080A159	1/2-20 to M6 × 1.0	Use with M607A11, M607A61
Model M080A163	3/4-16 to M6 × 1.0	Use with M607A01
Set Screws	**Thread**	**Comment**
Model 081A39	10-32	SS with brass tip, socket head, 0.375 in length
Model 081A40	1/4-28	SS with brass tip, socket head, 0.5 in length
Model 081A41	1/4-28	SS with brass tip, socket head, 0.625 in length

Mounting Bolts

Mounting Bolt Models		
Studs	**Thread x Length**	**Useage**
Model 081A56	1/4-28 × 0.75 in	Series 629
Model 081A68	1/4-28 × 0.88 in	Series 604, 605, 606
Model 081A57	1/4-28 × 1.05 in	Series 624, 625A
Model 081A67	1/4-28 × 1.12 in	Captive style for Series 602
Model 081M85	1/4-28 × 1.25 in	Captive style for Series 624, 625A
Model 081A73	1/4-28 × 1.34 in	Series 625B
Model 081A97	1/4-28 × 1.0 in	Series 602, Model 635A01
Model 081A76	1/4-28 × 0.94 in	Model 631A80
Model M081A59	M6 × 1.0 × 20 mm	Series M629
Model M081A68	M6 × 1.0 × 22.9 mm	Series M604, M605, M606
Model M081A58	M6 × 1.0 × 25.4 mm	Series M624, M625A
Model M081A73	M6 × 1.0 × 34 mm	Series M625B
Model M081A97	M6 × 1.0 × 25.4 mm	Series M602, Model M635A01
Model M081A76	M5 × 1.0 × 23.8 mm	Model M631A80

Model 080A69
Mounting Base

Model 081A69
Mounting Pad

Quick-Connect Mounting System

This two-part system permits rapid mounting and dismounting of 1/4-28 threaded sensors with a quick, 3/4-turn engagement. The 1-inch hex shaped mounting pad is typically stud-mounted to machinery surfaces and left as a measurement point locator for route based measurements and data collection. The knurled, 1-inch (25 mm) diameter mounting base installs at the base of the stud or bolt-mounted sensor which is carried from point to point, engaged with the mounting pads for data collection, and then disengaged. The system permits greater high frequency transmissibility than magnetic mounted sensors. Both components are manufactured from resilient, stainless steel.

Model 080A62
Mounting Block

Model 080A57
Mounting Block

Triaxial Mounting Blocks

Adapts three individual accelerometers for conducting vibration measurements in three orthogonal axes. Hex size listed represents the maximum allowable hex size for installed uni-axial accelerometer

Triaxial Mounting Block Models

Model	Dimensions	Material	Mounting Via	Sensor Fasteners	Max. Hex
Model 080A62	1.23 in cube	stainless stl.	10-32 screws	1/4-28 screws	7/8 in
Model 080A57	1.48 in cube	stainless stl.	10-32 screws	1/4-28 screws	1-1/4 in

Spot Face Tools

Spot Face Preparation Tools

Spot face tools provide an economical, simple means for preparation of machinery surfaces for vibration sensor installation. These tools are used with a standard hand drill to produce a smooth, flat surface, with a perpendicular pilot hole, which can be tapped with appropriate sensor mounting thread.

Surface preparation, prior to installing sensors, is an important consideration. A smooth, debris-free surface will ensure high frequency vibrations are accurately transmitted to the installed sensor. A perpendicular, tapped hole for stud or bolt-mounting of the sensor is also important to avoid edge loading or the sensor base and inaccurate measurements.

All spot face tools are manufactured from high-speed steel and may be re-sharpened.

Spot Face Preparation Tools Models

Model	Dimensions
Model 080A138	0.75 in (19 mm)
Model 080A127	1 in (25 mm)
Model 080A128	1.25 in (32 mm)
Model 080A129	1.5 in (38 mm)
Model 080A134	2.25 in (57 mm)

Motor Fin Mounting Stems

Motor Fin Mounting Stems

These stems are designed to be either epoxied or welded in-between the cooling fins of large electric motors. The stems feature a flat mounting surface with a 1/4-28 tapped hole to facilitate either stud, bolt or magnetic mounting of vibration sensors. A variety of stem sizes accommodate different motor sizes and cooling fin geometries.

All stems are manufactured from resilient, stainless steel.

Motor Fin Mounting Stem Models

Model	Stem Thickness		Overall Length	
Model 080A123	0.25 in	(6.35 mm)	1.375 in	(40 mm)
Model 080A124	0.25 in	(6.35 mm)	2.125 in	(54 mm)
Model 080A125	0.5 in	(12.7 mm)	1.625 in	(41 mm)
Model 080A126	0.5 in	(12.7 mm)	2.375 in	(60 mm)

Probe Tips

Probe Tips

Probe tips install onto vibration sensors to enable their use as hand-held vibration probes. This technique is useful if installation space is severely limited or for determining installation locations where vibration is most prevalent. Caution is advised when using probe tips since inaccuracies may result by factors such as applied pressure and orientation of the probe.

All probe tips are manufactured from resilient, stainless steel and feature a tapped 1/4-28 threaded hole.

Motor Fin Mounting Stem Models

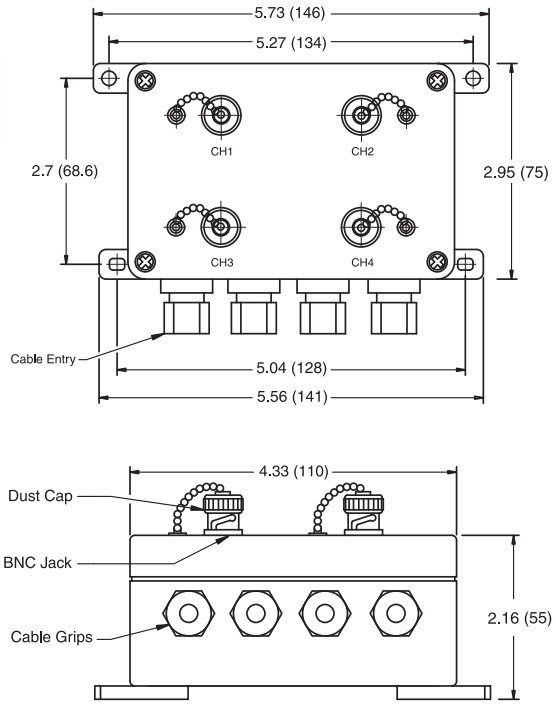
Model	Length	Tapped Hole
Model 080A107	2 in	1/4-28 thread
Model 080A105	4 in	1/4-28 thread
Model 080A108	8 in	1/4-28 thread

Series 691A51

Small BNC termination boxes offer a simple, economical, and safe method for accessing up to four sensors that are installed in remote locations. Each features a wall mountable, fiberglass, NEMA-4X (IP65) enclosure; an internal terminal strip for connection to pigtailed sensor cables; and externally mounted BNC jack connectors for interface to data collection equipment. BNC termination boxes do not supply sensor excitation power.

Simply connect a data collector, with sensor excitation power, to the BNC jack of the sensor channel of interest to access that sensor's measurement signal.

Model 691A51/04 shown
BNC Termination Box
Dimensions shown are in inches (millimeters).



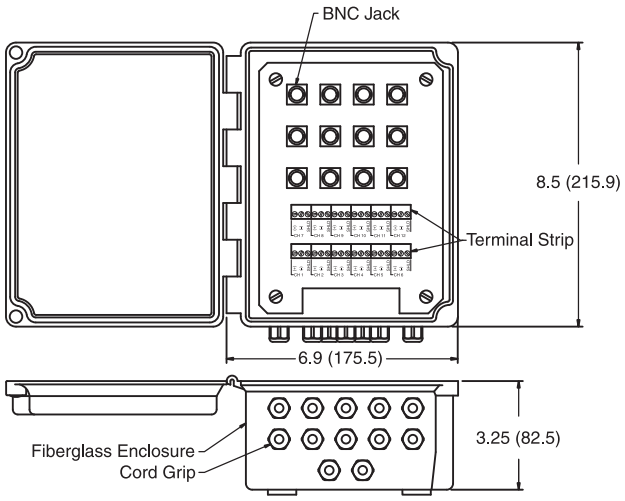
Series 691A51 Specifications		
Models Available in This Series	**Number of Channels**	
Model 691A51/01	1	
Model 691A51/02	2	
Model 691A51/03	3	
Model 691A51/04	4	
Mechanical	**English**	**SI**
Input Connector	Terminal Strip	
Output Connector(s)	BNC Jack	
Input Cable Cord Grip(s)	PGME7	
Enclosure Material	Fiberglass	
Size (Height x Width x Depth)	2.95 × 5.27 × 2.16 in	75 × 134 × 55 mm
Environmental		
Enclosure Environmental Rating	NEMA 4X	IP66

Series 691A50

BNC termination enclosures offer a simple, economical, and safe method for accessing up to 12 sensors that are installed in remote locations. Each features a wall mountable, fiberglass NEMA-4X (IP66) enclosure; an internal terminal strip for connection to pigtailed sensor cables; and internally mounted BNC jack connectors for interface to data collection equipment. BNC termination enclosures do not supply sensor excitation power.

Model 691A50/12 shown
BNC Termination Enclosure
Dimensions shown are in inches (millimeters).

Simply open the enclosure door and connect a data collector, with sensor excitation power, to the BNC jack of the sensor channel of interest to access that sensor's measurement signal. Optional painted steel NEMA-12 (IP65) and stainless steel NEMA-4X (IP66) enclosures are also available.



Series 691A50 Specifications

Models Available in This Series	Number of Channels	Models Available in This Series	Number of Channels
Model 691A50/01	1	Model 691A50/06	6
Model 691A50/02	2	Model 691A50/08	8
Model 691A50/03	3	Model 691A50/09	9
Model 691A50/04	4	Model 691A50/10	10
Model 691A50/05	5	Model 691A50/12	12

Mechanical	English	SI
Input Connector	Terminal Strip	
Output Connector(s)	BNC Jack	
Input Cable Cord Grip(s)	PGME7	
Enclosure Material	Fiberglass	
Size (Height x Width x Depth)	8 × 6 × 4 in	203 × 152 × 102 mm
Weight	2.5 lb	1.14 kg
Environmental		
Enclosure Environmental Rating	NEMA 4X	IP66
Supplied Accessories		
Mounting Hardware Kit		
Options (indicate using prefix letter shown)		
PS — Painted Steel Enclosure Type Weight	 NEMA 12 5 lb	 IP65 2.27 kg
SS — Stainless Steel Enclosure Type Weight	 NEMA 4x 5.5 lb	 IP66 2.5 kg

Notes: For PS and SS options, mounting hardware is not included. It is integral to the construction of the box.

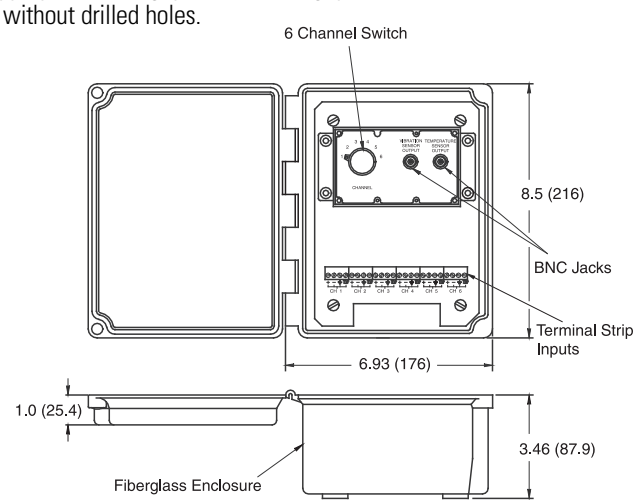
Model 691B41 & 691B42

Switch boxes assist with route-based data collection by terminating the cables of permanently installed sensors at convenient, safe, data collection locations.

The unit does not contain a power supply; rather it relies on transferring excitation power provided by the vibration data collector or signal conditioner to connected sensors. Since excitation power is presented to each sensor when its measurement channel is selected, the sensor's settling time (or turn-on time) must be overcome prior to taking measurements.

Models 691B41 and 691B42 are available with a variety of cord grip options. When cord grips are ordered, the enclosure will be provided with holes drilled for the appropriate cord grips. If no cord grips are ordered, the enclosure is provided without drilled holes.

Series 691B
12-channel Switch Box
Dimensions shown are in inches (millimeters).



Series 691B Specifications				
Electrical	**English**		**SI**	
Channels (691B41)	6			
Channels (691B42)	12			
Mechanical				
Input Connector	Terminal Strip			
Output Connectors (Vibration)	BNC Jack			
Output Connectors (Temparature)	BNC Jack			
Enclosure Material	Fiberglass			
Size (Height x Width x Depth)	8 x 6 x 4 in		203 x 152 x 102 mm	
Weight	5 lb		2.3 kg	
Environmental				
Enclosure Rating	NEMA 4X		IP666	
Optional Accessories for 691B41				
Model 691010	6 Individual Cord Grips, PGME07		Model 691012	1 Individual Cord Grip, PGME13
Model 691011	1 Individual Cord Grip, PGME29		Model 691013	1 Conduit Fitting, 1.5 in
Optional Accessories for 691B42				
Model 691020	12 Individual Cord Grips, PGME07		Model 691024	1 Individual Cord Grip, PGME21
Model 691021	2 Individual Cord Grips, PGME29		Model 691025	1 Conduit Fitting, 1.5 in
Model 691022	2 Individual Cord Grips, PGME13		Model 691026	2 Conduit Fittings, 1.5 in
Model 691023	1 Individual Cord Grip, PGME69		Model 691027	1 Individual Cord Grip, PGME29
Optional Versions				
Painted Steel Enclosure	PS			
Stainless Steel Enclosure	SS			
Supplied Accessories				
Mounting Kit & 4-socket Plug (100-3748-60)[1]				

[1] For PS & SS options, mounting hardware is not included. It is integral to the construction of the box.

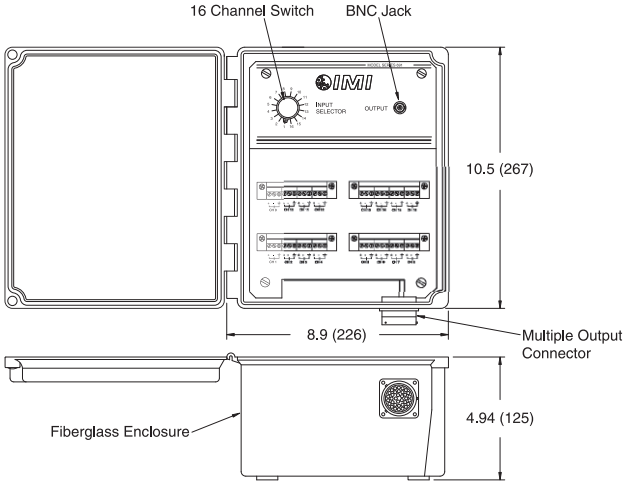
Model 691B47

This 16-channel switch box assists with route-based data collection by terminating cables of permanently installed sensors at convenient, safe, data collection locations.

The unit does not contain a power supply, rather it relies on transferring excitation power provided by the vibration data collector or signal conditioner to connected sensors. Since excitation power is presented to each sensor when its measurement channel is selected, the sensor's settling time (or turn-on time) must be overcome prior to taking measurements.

The Model 691B47 is available with a variety of cord grip options. When cord grips are ordered, the enclosure will be provided with holes drilled for the appropriate cord grips. If no cord grips are ordered, the enclosure is provided without drilled holes.

Model 691B47
16-channel Switch Box
Dimensions shown are in inches (millimeters).



Model 691B47 16-channel Switch Box		
Electrical	**English**	**SI**
Channels	16	
Mechanical		
Input Connectors	Terminal Strip	
Output Connectors (vibration)	BNC Jack	
Output Connectors	Multiple Output	
Enclosure Material	Fiberglass	
Size (h × w × d)	10 × 8 × 6 in	254 × 203 × 152 mm
Weight	4.4 lb	2.0 kg
Environmental		
Enclosure Environmental Rating	NEMA 4X	IP66
Supplied Accessories		
Mounting Kit		
3 Socket Plug (2)		
Optional Accessories (order separately with model shown)		
Model 691070	16 Individual Cord Grips, PGME07	
Model 691071	2 Individual Cord Grips, PGME29	
Model 046EG010AD	Multi-channel Output Cable	
Options (indicate using prefix letter shown)		
SS — 304 Stainless Steel Enclosure Size (h × w × d) Weight	10 × 8 × 4 in 8.4 lb	254 × 203 × 102 mm 3.9 kg
XSS — 316L Stainless Steel Enclosure Size (h × w × d) Weight	10 × 8 × 4 in 9.2 lb	254 × 203 × 102 mm 4.2 kg
Notes: For PS and SS options, mounting hardware is not included. It is integral to the construction of the box.		

Series 691B4X

This series of switch boxes offers a simple, economical, and safe method for accessing up to 48 sensors that are installed in remote locations.

The Model 691B40 switch box module (without enclosure) featured on this page is available separately, for field expansion of the switch boxes shown on the next two pages. Alternatively, any number of these modules may be installed in user supplied enclosures.

Model 691B46 48-channel Switch Box
with four Model 691B40 12-channel Switch Box Modules installed in a fiberglass enclosure

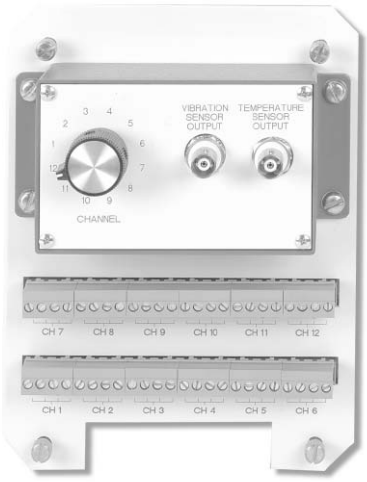
Each switch box features a wall mountable, fiberglass NEMA-4X (IP66) enclosure; internal terminal strip(s) for connection to pigtailed sensor cables; sensor location index chart; internal rotary selector switch(es); and internally mounted BNC jack connectors for interface to data collection equipment.

These units do not contain power supplies. They rely on transferring excitation power provided by the vibration data collector or signal conditioner to connected sensors. Since excitation power is presented to each sensor when measurement channel is selected, the sensor's settling time (or turn-on time) must be overcome prior to taking measurements.

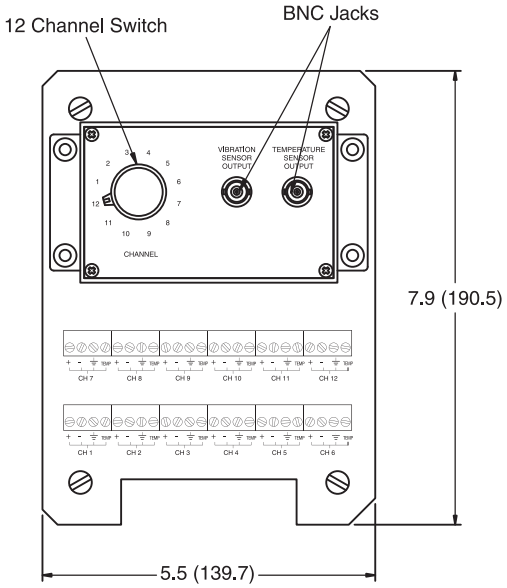
Optional painted steel NEMA-12 (IP65) and stainless steel NEMA-4X (IP66) enclosures are also available.

Model 691B40 Switch Box Module

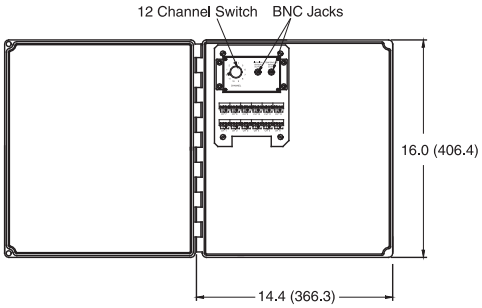
Electrical	English	SI
Channels	12	
Mechanical		
Input Connectors	Terminal Strip	
Output Connectors (vibration)	BNC Jack	
Output Connectors	Multiple Output	
Enclosure Material	Fiberglass	
Size (h × w × d)	7.3 × 5.5 × 3.3 in	186 × 140 × 54 mm
Weight	1.7 lb	0.8 kg



Model 691B40
12-channel Switch Box Module



Dimensions shown are in inches (millimeters).



Model 691B43
12-channel Switch Box

Model 691B43 12-channel Switch Box

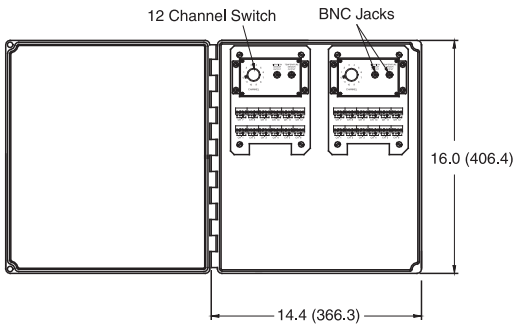
Optional Accessories (order separately with model shown)	
Model 691030	12 individual cord grips, PGME07
Model 691031	2 individual cord grips, PGME29
Model 691032	2 individual cord grips, PGME13
Model 691033	1 individual cord grip, PGME36
Model 691034	1 individual cord grip, PGME21
Model 691035	1 conduit ftting, 1.5 in
Model 691036	2 conduit fittings, 1.5 in

Options (indicate using prefix letter shown)		
PSS — Painted Steel Enclosure Type Size (h × w × d) Weight	NEMA 12 16 × 14 × 6 in 26 lb	IP65 406 × 356 × 152 mm 11.8 kg
SSS — Stainless Steel Enclosure Size (h × w × d) Weight	16 × 14 × 6 in 24 lb	406 × 356 × 152 mm 10.9 kg

Expandability

Expands to 24, 36, or 48 channels with additional Model 691B40 modules.

Notes: For PS and SS options, mounting hardware is not included. It is integral to the construction of the box.



Model 691B44
24-channel Switch Box

Model 691B44 24-channel Switch Box

Optional Accessories (order separately with model shown)	
Model 691040	24 individual cord grips, PGME07
Model 691041	4 individual cord grips, PGME29
Model 691042	4 individual cord grips, PGME13
Model 691043	2 individual cord grips, PGME36
Model 691044	2 individual cord grips, PGME21
Model 691045	2 conduit fittings, 1.5 in
Model 691046	4 conduit fittings, 1.5 in
Model 691047	1 conduit fitting, 1.5 in

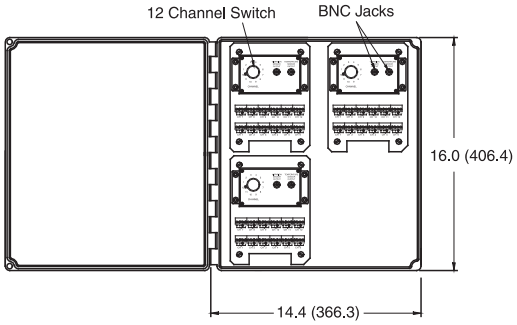
Options (indicate using prefix letter shown)		
PSS — Painted Steel Enclosure Type Size (h × w × d) Weight	NEMA 12 16 × 14 × 6 in 27 lb	IP65 406 × 356 × 152 mm 12.3 kg
SSS — Stainless Steel Enclosure Size (h × w × d) Weight	16 × 14 × 6 in 25 lb	406 × 356 × 152 mm 11.4 kg

Expandability

Expands to 36 or 48 channels with additional Model 691B40 modules.

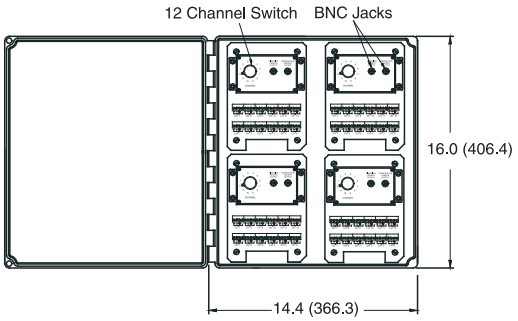
Notes: For PS and SS options, mounting hardware is not included. It is integral to the construction of the box.

Dimensions shown are in inches (millimeters).



Model 691B45
36-channel Switch Box

Model 691B45 36-channel Switch Box		
Optional Accessories (order separately with model shown)		
Model 691050	36 individual cord grips, PGME07	
Model 691051	6 individual cord grips, PGME29	
Model 691052	6 individual cord grips, PGME13	
Model 691053	3 individual cord grips, PGME36	
Model 691054	3 individual cord grips, PGME21	
Model 691055	3 conduit fittings, 1.5 in	
Model 691056	6 conduit fittings, 1.5 in	
Options (indicate using prefix letter shown)		
PSS — Painted Steel Enclosure Type Size (h × w × d) Weight	Nema 12 16 × 14 × 6 in 28 lb	IP65 406 × 356 × 152 mm 12.7 kg
SSS — Stainless Steel Enclosure Size (h × w × d) Weight	16 × 14 × 6 in 26 lb	406 × 356 × 152 mm 11.8 kg
Expandability		
Expands to 48 channels with an additional Model 691B40 module		
Notes: For PS and SS options, mounting hardware is not included. It is integral to the construction of the box.		



Model 691B46
48-channel Switch Box

Model 691B46 48-channel Switch Box		
Optional Accessories (order separately with model shown)		
Model 691060	48 individual cord grips, PGME07	
Model 691061	8 individual cord grips, PGME29	
Model 691062	8 individual cord grips, PGME13	
Model 691063	4 individual cord grips, PGME36	
Model 691064	4 individual cord grips, PGME21	
Model 691065	4 conduit fittings, 1.5 in	
Model 691066	8 conduit fittings, 1.5 in	
Options (indicate using prefix letter shown)		
PSS — Painted Steel Enclosure Type Size (h × w × d) Weight	Nema 12 16 × 14 × 6 in 29 lb	IP65 406 × 356 × 152 mm 13.2 kg
SSS — Stainless Steel Enclosure Size (h × w × d) Weight	16 × 14 × 6 in 27 lb	406 × 356 × 152 12.3 kg
Notes: For PS and SS options, mounting hardware is not included. It is integral to the construction of the box.		

Dimensions shown are in inches (millimeters).

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Highlights

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- Selection & implementation of industrial accelerometers
- Accelerometer design & operating characteristics
- Using the bias voltage as a diagnostic tool
- Mounting techniques
- Drilling & tapping instructions
- Driving long cables
- Unit conversions
- Article reprints
- Glossary of terms

Information to assist with machinery vibration analysis, predictive maintenance and condition based monitoring is readily available through the following:

Professional Organizations

CMVA/ACVM — Canadian Machinery Vibration Association
Suite 877, 105 - 150 Crowfoot Crescent NW
Calgary, AB T3G 3T2
Tel ☎ 403-208-9618 **Fax** 🖷 403-208-9619 **Web** 🌐 www.cmva.com

ISA — The Instrumentation, Systems and Automation Society
67 Alexander
Research Triangle Park, NC 27709
Tel ☎ 919-549-8411 **Fax** 🖷 919-549-8288 **Web** 🌐 ww.isa.org

MFPT — Machinery Failure Prevention Technology
1877 Rosser Lane
Winchester, VA 22601
Tel ☎ 540-678-8678 **Fax** 🖷 540-678-8799 **Web** 🌐 www.mfpt.org

Vibration Institute
6262 S. Kingery Highway
Suite 212
Willowbrook, IL 60527
Tel ☎ 630-654-2254 **Fax** 🖷 630-654-2271 **Web** 🌐 www.vibinst.org

Published Texts

Basic Machinery Vibrations
Ronald L. Eshleman, Ph.D.,P.E.
VIPress, Incorporated
ISBN 0-9669500-0-3

Shock and Vibration Handbook
Cyril M. Harris
McGraw-Hill, Inc.
ISBN 0-07-026801-0