Industrial Monitoring Instrumentation

- Predictive Maintenance
- Energy & Power Generation
- Process Monitoring & Protection
Industrial Monitoring Instrumentation

Predictive Maintenance

World-Class Innovation & Construction:
- Durable, stainless-steel housing
- Welded, hermetic sealing
- Electrical case isolation
- 10 mV/g, 100 mV/g, 500 mV/g sensitivities available
- Integral, armored integral, & submersible cable options
- Hazardous area approved versions available

Low-Cost Industrial ICP® Accelerometers
- Ideal for permanent installations & use with continuous, on-line monitoring systems
- Promote safety when installed in hazardous or inaccessible locations
- Connect through switch or junction box for route-based data collection schemes
- NIST traceable, single-point calibration at 100 Hz

Small Size, Low Cost
Model 602D01
Most popular side-exit accelerometer
Low profile casing
Ceramic shear, hermetically sealed

Small Size, Low Cost
Model M602D01
Our most popular accelerometer
Compact & low cost
0.5 to 10,000 Hz

Small Size, Low Cost
Model 603C01
Our most popular accelerometer
Compact & low cost
0.5 to 10,000 Hz

Small Size, Low Cost
Model M603C01
Our most popular accelerometer
Compact & low cost
0.5 to 10,000 Hz

Small Size, Low Cost
Excellent sensor for submersible applications
Small size (9/16” footprint)
Integral cable easily connects to boxes

Precision Industrial ICP® Accelerometers
- Ideal for roving use with route-based data collectors
- Utilize for effective machinery analysis & fault diagnostics
- Velocity output, temperature output, hazardous area approved versions available
- NIST traceable calibration through full frequency range

Ceramic, General Purpose
Model 625B01
5% sensitivity tolerance
Through-hole mounting
Intrinsically safe, velocity output versions

Ceramic, General Purpose
Model M625B01
5% sensitivity tolerance
Through-hole mounting
Intrinsically safe, velocity output versions

Ceramic, General Purpose
Model 622B01
5% sensitivity tolerance
Through-hole mounting
Intrinsically safe, velocity output versions

Ceramic, General Purpose
Model M622B01
5% sensitivity tolerance
Through-hole mounting
Intrinsically safe, velocity output versions

Quartz, General Purpose
Model 624B01
5% sensitivity tolerance
Through-hole mounting
Excellent high frequency energy (HFE) response
Intrinsically safe, velocity output versions

Quartz, General Purpose
Model M624B01
5% sensitivity tolerance
Through-hole mounting
Excellent high frequency energy (HFE) response
Intrinsically safe, velocity output versions

Quartz, General Purpose
Model 628F01
5% sensitivity tolerance
Excellent for transient temperature applications
Intrinsically safe, velocity output versions

Quartz, General Purpose
Model M628F01
5% sensitivity tolerance
Excellent for transient temperature applications
Intrinsically safe, velocity output versions

High Temp Industrial ICP® Accelerometers
- Can survive elevated surface or ambient temperatures (up to 325 °F)
- Ideal for monitoring paper machines, plastics manufacturing, engines and in steel mills

Ceramic, General Purpose
Model HT602D01
Through-hole mounting
Temperatures to 325 °F (163 °C)
Ceramic sensing element

Ceramic, General Purpose
Model HT602D01
Through-hole mounting
Temperatures to 325 °F (163 °C)
Ceramic sensing element

Ceramic, General Purpose
Model HT622A01
Low noise
Temperatures to 325 °F (163 °C)
Ceramic sensing element

Ceramic, General Purpose
Model M622A01
Low noise
Temperatures to 325 °F (163 °C)
Ceramic sensing element

Quartz, General Purpose
Model HT624B01
Quartz sensing element
Temperatures to 325 °F (163 °C)
Through-hole mounting

Quartz, General Purpose
Model M624B01
Quartz sensing element
Temperatures to 325 °F (163 °C)
Through-hole mounting

Quartz, General Purpose
Model HT628F01
Quartz sensing element
Temperatures to 325 °F (163 °C)
Welded hermetic

Quartz, General Purpose
Model M628F01
Quartz sensing element
Temperatures to 325 °F (163 °C)
Welded hermetic

500-1200 °F accelerometers available on page 7

Ceramic Sensors = Lower Noise
Quartz Sensors = Improved Temperature Stability

Gearboxes Motors Bearings Machine Tools

For complete product specifications, visit us online at www.imi-sensors.com
Toll-Free in the USA 800-959-4464    716-684-0003
Featured Product

Swiveler® & Spindler® Accelerometers

This industry exclusive product is innovative in both its small size and its convenient swiveling mounting method:

- 360° swivel mount allows for convenient cable orientation
- Lower cost alternative to through-bolt sensors
- Small footprint & very low profile for installation in tight spaces

Mounting Procedures:

1. Mounting hole is prepared into machine surface to accept sensor's mounting stud (A). Stud is then tightened to recommended torque w/ hex Allen key. Sensor (B) floating hex nut (C) is threaded onto mounting stud.

2. Using the 360° capabilities of the Swiveler®, the cable is positioned into desired orientation & temporarily hand tightened. Using a wrench, the hex nut is tightened to the recommended torque while holding the cable or connector in the desired location.

Low Frequency Industrial ICP® Accelerometers

- Ideal for permanently installed vibration measuring on slow-speed rotating machinery & structural monitoring
- Engineered to combine low-frequency response with high output sensitivity
- Common applications for these sensors include:
  - Large fans & air handling equipment
  - Paper machine rolls
  - Structural monitoring

High Frequency Industrial ICP® Accelerometers

- Ideal for permanently installed vibration measuring on high-speed rotating machinery
- A variety of casing-sizes ensures the best product for your applications
- Common applications for these sensors include:
  - Gear mesh studs & diagnostics
  - Bearing monitoring
  - Small mechanisms

Multi-Axis Industrial ICP® Accelerometers

- Measure acceleration simultaneously in up to three axes
- Through-bolt mounting for simplified alignment
- Simultaneous radial and axial bearing vibration measurements
- Interface directly with vibration data collectors and FFT analyzers

Our Platinum products represent some of our most popular models and can be used in a wide range of applications. As you browse this brochure, you will find Platinum products indicated with the “Platinum Shield” icon (right).

For complete information, visit www.imi-sensors.com/platinum
IMI’s 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. Scaled in velocity or acceleration output signals, these 4-20 mA industrial vibration sensors provide 24/7 online protection for critical plant machinery.

All IMI sensors and vibration switches are designed to withstand the rigors of harsh industrial environments.

**Why Use 4-20 mA Monitoring Systems:**
- Cost effective
- Provides 24 / 7 protection
- Operates from loop power
- Outputs acceleration, velocity, or displacement
- Works with PLC, DCS, & SCADA systems
- Intrinsically safe versions available for all models

**4-20 mA Industrial Vibration Sensors & Transmitters**

- **4-20 mA Vibration Sensors Series 640B**
  - Available in top or side exit casings
  - Peak or RMS, acceleration or velocity
  - Intrinsically safe / explosion proof versions available

- **ICP® In-Line Transmitter Model 682A09**
  - Converts ICP® sensors to loop powered transmitters
  - Outputs 4-20 mA proportional to vibration plus analog raw vibration output
  - Interfaces directly with control plant systems

- **Ultra Low Frequency Displacement Sensor Model 653A01**
  - Ideal for slow rotating equipment
  - Measures absolute peak to peak displacement
  - Accurate down to 1.5 Hz

- **Hazardous Area Approved 4-20mA Vibration Sensors Series EX640B71 (pictured)**
  - Explosion proof conduit elbow
  - Outputs 4-20 mA proportional to vibration
  - Interfaces directly with plant control systems

**4-20 mA USB Programmable Smart Sensors**

- **Reciprocating Machinery Protector Model 640A01**
  - Detects faults / mechanical looseness in reciprocating compressors
  - Outperforms impact transmitters
  - Continuous trending, with alarm & alert levels for early warning

- **Bearing Condition Transmitter Model 649A03**
  - Provides early warning of Rolling Element Bearing faults
  - Works on constant & variable speed drives
  - Normalizes output using compensated peak

- **Programmable 4-20 mA output Sensor Model 649A04**
  - Outputs acceleration, velocity, or displacement
  - Selectable low & high pass filters
  - Integral or armored integral options

- **USB Programming Kit Model 600A21**
  - Kit includes 2-Pin MIL to USB cable, terminal block adapter, and software disc
  - Program various parameters in IMI sensors
  - Free software updates available at www.imi-sensors.com

**Cooling Towers**
**Pumps**
**Reciprocating Machinery**
**Bearing Condition**
**Air separators**
Featured Product

Vibration Switches
Model 686B & Model 685B

Vibration switches are primarily used to protect critical machinery by initiating an alarm or shutdown when excessive vibration is detected. IMI offers various vibration switch options – traditional mechanical switches, as well as higher precision electronic switches.

Series 686B, IMI’s revolutionary USB programmable smart switch, is an ideal replacement for traditional mechanical switches. It features the accuracy and a small footprint of a piezoelectric accelerometer along with the simplicity of a two-wire switch.

- Programmable delays eliminate false trips
- Competitive price compared to mechanical switches
- Explosion proof options available

A vibration switch with choice of built-in or remote accelerometer, Model 685B features dual output relays, time delays, 4-20 mA retransmit, and analog vibration output.

- Lower cost than competitive models
- Dual set points (relays)
- Explosion proof options available

Mechanical Vibration Switches:

Traditional, mechanical vibration switches provide nominal vibration protection utilizing a spring-loaded, magnetically coupled switch. High vibration causes the spring force to overcome the magnet, tripping the switch.

- Linear Adjust Mechanical Vibration Switch Series 685A
- Patented spring-loaded, magnetically coupled mechanism
- Cost effective protection for less-critical applications
- Provides better control over trip sensitivity
- Remote reset models available

- Mechanical Vibration Switch Series 685A08
- Weatherproof & CSA/UL approved, explosions proof
- Cost effective protection for less-critical applications
- Requires no power

4-20 mA DIN Rail Modules

Vibration Transmitter
Model 682B03
- Outputs 4-20 mA signal proportional to acceleration, velocity, or displacement
- ICP® accelerometer input
- Analog vibration output via front BNC

Bearing Fault Detector
Model 682B05
- Powers ICP® accelerometers
- Dual 4-20 mA output
- Overall vibration plus high frequency bearing fault signal

Universal Transmitter
Model 682A06
- 24 VDC loop power for 4-20 mA sensors
- Offers 2 set points with form A relay outputs
- Optional, removable programming / output module

Universal Transmitter
Model 682A16
- ICP® power
- Offers 2 set points with form A relay outputs
- Optional, removable programming / output module

Embeddable Accelerometers

- Mountable via adhesive or soldering and choice of either integral cable or solder pin electrical connections
- Variety of sensitivities to accommodate a wide range of applications
- Charge output piezoelectric, voltage output ICP®, & 3-wire low power options

Alarm Modules

Indicator/Alarm
Series 683A
- Loop power for two-wire 4-20 mA sensors or ICP® power for ICP® accelerometers
- Fully programmable
- Dual setpoint annunciators and relays

Indicator/Alarm Enclosure
Series 684A
- Designed for use with 683A modules
- Available with up to 24 channels
- Rugged, NEMA 4X enclosure, available in fiberglass, stainless steel, or painted steel

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IMI Sensors specializes in the design and manufacture of innovative sensors and associated signal conditioning instrumentation to meet the demanding requirements of the energy, power generation, reciprocating equipment, oil & gas, and petrochemical industries. Whether involved with design evaluations, field testing, critical component or process monitoring, IMI provides comprehensive condition monitoring solutions for all rotating machinery applications.

**Gas Pipeline - Pumps & Motors**

- 4-20 mA Vibration Sensor Model EX04XB71
  - Available in velocity or acceleration output
  - ATEX / CSA approved with explosion proof conduit
  - Top exit, 2-pole terminal block

**Natural Gas / Petrochemical Pressure Sensors (Hazardous Area)**

- Detect / monitor dynamic pressure spikes on gas & oil well heads, supply lines, natural gas power engines, multi-stage gas compressors, & other machinery
- Control engine balancing & emissions
- Suitable for walk-around or permanent monitoring applications

**Wind Turbine Monitoring & Maintenance**

- Ideal for permanent installation on wind turbine bearings, gear boxes & generators
- Diagnose potential problems at an early stage to increase life of the system
- Sensors can also be used for monitoring the motor in the yaw assembly

**Torque Wrenches, Model HT7000**

IMI Sensors offers a wide range of electronic hand torque wrenches, from The RS Technologies Division of PCB Load & Torque, Inc., designed for wind turbine tensioning applications.

- Ergonomic design for comfort
- Durable construction, yet light weight
- Excellent accuracy & compatible with data collectors

**Portable Recorders**

Torque wrenches also interface with RS Technologies Model 920 and Model 960 data collectors to measure and record torque, angle, and clamp load characteristics of threaded fastener joints used in wind turbines. Model 920 and 960 are also ideal for auditing and certifying hand torque wrenches.

**4-20 mA Pressure Sensor** Series 1503

- Mounts on the compressor & supply lines
- Rugged, case isolated sensor
- 1/4" NPT process fitting

**Low Cost ICP® Accelerometer Model EX04XB71**

- Unique 360° Swivel Design
- Integral or Armored Integral Cable options available

**ICP® Pressure Sensor Series 121A4X**

- Mounts on well head & supply lines
- Rugged, case isolated sensor
- 1/4" NPT process fitting

**Portable Transducer Model 920**

- Collects up to 300 peak data points
- Cost-effective & easy to operate
- Battery operated

**PCB Load & Torque, Inc.**

Toll Free in USA 888-684-7107
716-684-0001
Web Site www.pcbloadtorque.com

**For complete product specifications visit us online at www.imi-sensors.com**

Toll-Free in the USA 800-959-4464     716-684-0003

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**PCB LOAD & TORQUE**

A PCB GROUP COMPANY
**Featured Product**

**High Temp Pressure Sensor**

*Series 176*

When directly mounted to a gas turbine’s combustor, IMI’s Series 176 high-temperature pressure sensors provide 24/7, consistent, reliable combustion dynamics data monitoring to help control instability which can damage components in the combustion chamber as well as downstream equipment.

By mounting the Series 176 high temperature pressure sensors to the combustor, gas turbine operators can rely on critical diagnostics, part fatigue analysis, and the ability to continuously monitor and control emissions.

- Detect / Measure combustion instability
- Operates in extreme temperatures up to 1200 °F (649 °C)
- ATEX & CSA approved for hazardous areas

**Pressure Sensors for Gas Turbine Monitoring**

IMI’s high temperature pressure sensors have three basic applications for detecting and measuring dynamic pressure phenomena and combustion instability in gas turbines.

- Remote Sensors
- Close Coupled Sensors
- On-Turbine Instability Sensors

**Accelerometers for Gas Turbine Monitoring**

- Avoids machinery failure through early diagnosis of gas turbine problems
- Take vibration measurements in extreme heat environments
- Integral charge amplifiers allow usage of standard data acquisition equipment

**More high temp ICP® accelerometers available on page 2**
**Featured Product**

**Break Away Safety Cable**

Keep your personnel & equipment safe with this innovative safety feature

- Rugged & reliable with EMI / RFI shielding
- Connectors available for most major data collector manufacturers
- Coiled cables available in 6 or 10ft lengths, straight cables in custom lengths

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**Cables & Connectors**

- General purpose polyurethane or high-temperature FEP
- Rugged military-style connectors in metal or plastic
- Wide selection of sensor & data collector cables
- Custom cable assemblies available for permanent or portable applications

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**Enclosures**

- Consolidate up to 48 channels of outputs into a convenient, centralized location
- Helps extend cable life by reducing number of connections needed for measurements
- Improve efficiency with temperature & vibration outputs in the same enclosure

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**Accessories & Specialty Products**

**Epoxy Kits**

- Industrial grade adhesive for installing mounting pads
- Proven to withstand the demands of factory uses
- Applicator syringe helps decrease mess around measurement point

**Spot Face Tools**

- Do-it-yourself installation method to help keep costs low
- Multiple end-mill diameters to suit your specific application
- Easily use with any standard drill

**Magnetic Bases**

- Magnetic temporary installations during route data collection
- Mounting pads for permanent installation
- Styles for flat or curved surface mounting

**Mounting Pads**

- Easily mounts to most convenient measurement point
- Improves accuracy & consistency of readings
- Allows for easy switching of permanently mounted sensors

**Motor Fin Mounts**

- Easily take accurate measurements even in narrow spaces
- For use in both portable & permanent monitoring applications
- Multiple widths & lengths to fit your specific application

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**“Don’t Leave Home Without it!”**

**Portable Reference Shaker**

New Model 699A02

- Calibrates permanently mounted accelerometers at the machine
- Verifies system performance
- Confirms operation of cables, switching devices & monitoring systems
- Outputs 1g pk or rms; operates at 159.2 Hz
- Can perform up to 1,600 operating cycles without loss of battery power

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