

Vibration Signal Conditioning, Alarm, and Control Instrumentation

for Industrial Machinery Vibration Monitoring

- Monitor Bearing Condition, Gearbox Health, Imbalance, and Misalignment
- Implement Vibration Monitoring with Process PLC, DCS, Alarm, Control, and SCADA Systems
- Monitor and Control the Performance of Vibrating Feeders and Separators
- Utilize HMI Software to Monitor Vibration Data Alongside Other Process Variables

Vibration monitoring of plant and process machinery can provide crucial information that will lead to increased productivity and profitability. When the vibration of bearings, gears, and running speed is monitored, excessive wear and potential failure can be recognized. Maintenance of machinery can then be scheduled at a convenient time and catastrophic failure or unscheduled downtime can be prevented.

IMI's DIN rail devices are designed to facilitate vibration monitoring with equipment that is familiar to the process control technician. Signals representing overall vibration levels are monitored with threshold points providing the judgment for alarm, control, or shutdown. Data may easily be scrutinized by existing PLC, DCS, alarm, control, and SCADA equipment. Most devices support the ability of further investigation, by a qualified vibration analyst, when signal analysis for root cause determination or diagnostics is necessary.

As with all equipment from IMI, these devices are complemented with toll-free applications assistance, 24-hour customer service, and a Total Customer Satisfaction guarantee.



Model 682A03 Vibration Transmitter shown with **Model 607A11 Industrial ICP® Accelerometer** (the Swiveler®)

The 4 to 20 mA output signal provides early warning of impending failure and analog vibration output offers diagnostic analysis capability.



Model 682A03 Vibration Transmitter — This 24 VDC powered unit operates with ICP® accelerometers. It provides the appropriate, current-regulated, excitation voltage for the accelerometer and converts the voltage measurement signal into a suitable 4 to 20 mA signal for interface with PLC, DCS, alarm, and SCADA systems. The 4 to 20 mA output signal can be formatted to represent RMS or peak acceleration, velocity, or displacement measurements. A BNC output connector provides the analog acceleration signal for data collection or signal analysis purposes. The unit also has filtering options to permit narrow band measurements and can deliver a second 4 to 20 mA signal, which is proportional to temperature, for use with accelerometers that feature an on-board temperature sensor (sensor option “TO”).



- Converts dynamic ICP® accelerometer signals into 4 to 20 mA signals representing RMS or peak values
- Provides current-regulated excitation for ICP® accelerometers
- Provides selectable RMS or peak acceleration, velocity, or displacement output signal
- Provides analog acceleration signal, on a BNC output connector, for data collection or signal analysis
- Provides optional filtering for narrow band measurements
- Provides a second 4 to 20 mA signal, proportional to temperature, for use with accelerometers that feature on-board temperature sensors
- Slim, DIN rail mounted package
- 24 VDC, 125 mA power required
- 0.9 in (22.9 mm) w × 3.9 in (99.1 mm) h × 5 in (127 mm) d

Model 682A04 Alarm Module — This 24 VDC powered unit accepts any 4 to 20 mA signal and provides two (2), time-delayed, Form C, 5 amp, relay outputs. The time delay feature is especially well suited for vibration signals to eliminate false alarm trips due to momentary upsets, as may be encountered during startup, run-down, an accidental bump, or a momentary drive-by.



- Provides two (2), 5 amp, Form C, relay outputs
- Adjustable threshold limit for each relay
- Accommodates normally open (NO) or normally closed (NC) wiring schemes
- Programmable, 0 to 45 second time delay eliminates false alarm trips
- Latching relay action with local reset button and remote reset capability
- Slim, DIN rail mounted package
- 24 VDC, 150 mA power required
- 0.9 in (22.9 mm) w × 3.9 in (99.1 mm) h × 4.5 in (114.3 mm) d

Model 682A01 Power Supply

- Provides 24 VDC, 650 mA power
- Powers transmitters, signal conditioners, and alarm modules
- Operates from 120 to 230 VAC line power
- 0.9 in (22.9 mm) w × 3.9 in (99.1 mm) h × 4.5 in (114.3 mm) d





Enclosures with DIN Rail

Model 682A00 DIN Rail Enclosure

IMI offers enclosures, with installed DIN rail, to accommodate signal conditioning, alarm, and power supply modules. These NEMA 4X rated fiberglass enclosures include all hardware required for wall mounting. Options include drilled entry ports, cord grips, cable ties, and locks to facilitate an organized and secure system installation.

- Strong, fiberglass construction
- NEMA 4X rating
- Hinged access doors
- Includes wall mount hardware
- 10 in (254 mm) h x 8 in (203 mm) w x 6 in (152 mm) d (other sizes available)
- Optional drilled entry ports, cord grips, cable ties, and locks



Model 682A00 Enclosure shown with six installed vibration transmitters



Series 684A Enclosures

The Series 684A Enclosures are available in two sizes and accommodate up to eight Series 683A Indicator / Alarms. Optional BNC output connectors provide analog vibration signals for data collection or analysis purposes.

Series 683A Indicator / Alarm

The Series 683A Indicator / Alarm is a 1/8 DIN, panel-mount, vibration meter with two (2), 5 amp, time-delayed, Form A relay contacts. Versions accommodate either a 4 to 20 mA or ICP® accelerometer input. The unit is fully programmable and scalable and operates from either AC or DC power.



- Provides either 24 VDC excitation for 2-wire, 4 to 20 mA, loop-powered vibration sensors or ICP® accelerometers
- High visibility, 4-digit, fully-scalable, LED display
- Provides two (2), 5 amp, Form A, relay outputs
- Adjustable HI or LOW threshold limit for each relay
- Programmable time delay eliminates false alarm trips
- Simple, menu-driven set-up
- Versions for ICP® accelerometers include filtering and selectable acceleration, velocity, or displacement outputs
- Options include a NEMA 4X faceplate, 4 to 20 mA retransmission, additional relays (up to 4 total), and a metal surround case

Two-Wire, Loop-Powered, 4 to 20 mA Vibration Sensors

Series 640

IMI offers an extensive line of loop-powered vibration sensors. Choose from a variety of signal formats in rugged connector, or integral cable styles.

- Versions with peak velocity, RMS velocity, or RMS acceleration output signals
- Connect directly to Series 683 indicator / alarm and PLC, DCS, alarm, and SCADA systems
- Intrinsically safe versions available





Industrial Accelerometers

IMI Sensors specializes in the manufacture of industrial duty accelerometers for machinery condition monitoring and predictive maintenance requirements. General purpose, precision, low frequency, high frequency, seismic, and multi-axis applications are supported with an extensive product offering. Only a few popular models are highlighted.

Key Features of IMI's Industrial Accelerometers Include

- Durable, stainless-steel housing
- All-welded, hermetically sealed construction
- Electrical case isolation
- High signal-to-noise ratio
- EMI, RFI, ESD, and miswiring protection
- Heavy-duty electrical connector or integral, submersible cable

ICP® or Integrated Circuit Piezoelectric Accelerometers contain on-board, signal-conditioning microelectronics. This technology provides low-noise operation, simplicity of use, and has contributed significantly to the widespread use of accelerometers in industrial vibration monitoring applications.

Low Cost Industrial ICP® Accelerometers

Model 608A11

- 100 mV/g sensitivity
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Integral, 10 ft (3 m) cable
- Small size
- Economical



Model 607A11 — The Swiveler®

- 100 mV/g sensitivity
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- Swivel mount simplifies installation
- Integral, 10 ft (3 m) cable may be positioned in any direction
- Small size



Model 603C01

- 100 mV/g sensitivity
- 30 to 480k cpm (0.5 to 8000 Hz) frequency range
- 2-pin MIL connector



Model 602D01

- 100 mV/g sensitivity
- 30 to 600k cpm (0.5 to 10k Hz) frequency range
- 2-pin MIL connector
- Through-hole mounting



Model 622A01

- 100 mV/g sensitivity
- 12 to 600k cpm (0.2 to 10k Hz) frequency range
- 2-pin MIL connector
- Intrinsically safe versions available



High-Temperature, Charge Mode Industrial Accelerometer Kits

Model 600A02

- Sensor operating temperature range to 500 °F (260 °C)
- 100 mV/g system sensitivity
- System includes charge-mode accelerometer, 10 ft (3 m) Teflon cable, and in-line charge converter
- Operates from ICP® sensor signal conditioners



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IMI-682-0308

Printed in U.S.A.

The IMI Sensors Division of PCB® Piezotronics, Inc. specializes in the development, application, and support of industrial vibration sensors, transmitters, meters, and accessories for machinery condition monitoring and predictive maintenance requirements. This product focus, coupled with the strengths and resources of PCB, permits the IMI Sensors Division to offer exceptional customer service, 24-hour technical assistance, and a **Total Customer Satisfaction** guarantee.

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