



Vibration Signal Conditioning, Alarm, and Control Instrumentation

For Industrial Machinery Vibration Monitoring

Highlights

- 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



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.

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 – 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



Models 682A06 & 682A16 Universal Transmitter – DIN rail mounted, relay module with optional detachable front panel LCD display and programmer (**Model 070A80**) for industrial monitoring, control, and alarm requirements. The universal transmitter is ideal for vibration monitoring applications with IMI’s 4-20 mA overall vibration sensors or IMI’s ICP® accelerometers. It also accepts a variety of sensor input signals including Thermocouple and RTD. Relays feature programmable set-points and time delays. It also supports password protection for security purposes and memory retention of all set up parameters.

- Model 682A06** – provides 24 VDC loop-power for 4-20 mA sensors
- Model 682A16** – provides ICP® excitation for analog 100 mV/g accelerometers
- Model 070A80** – optional detachable display and programmer

- Accepts mA, VDC, RTD, TC, Linear Resistance, and Potentiometer Inputs
- Delivers Re-transmit Output Signals in Current or Voltage
- Offers Two Set Points with Form A Relay Outputs (2 amp AC, 1 amp DC)
- Fully Programmable via Detachable Pushbutton Display
- Operates from 19.2 to 300 VDC or 21.5 to 253 VAC power



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 × 8 in (203 mm) w × 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



Model 682A09

Model 682A09 In-line Vibration Transmitter — Another IMI Sensors industry-first, Model 682A09 installs in-line with any industrial accelerometer and converts the vibration signal to a 4-20 mA velocity output that can be trended with today's PLC, DCS and SCADA systems. Its sleek design installs right into the cable run, no DIN rails, cabinets or special power required. With a three pin output connector you can still gather dynamic vibration signals with a vibration analyzer while the PLC monitors overall trends. Now you can take your existing accelerometers and turn them into 24/7 vibration monitoring devices for your most critical machinery.

- Simple Installation
- Adapts Easily to Accelerometers
- Low-cost
- Interfaces Directly with Control Systems



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



Low Cost ICP® Accelerometer
Model 608A11



- Submersible
- 100 mV/g sensitivity
- 30 to 600,000 cpm (0.5 to 10 kHz) frequency range
- Integral 10 ft (3 m) cable
- Small size
- Most economical industrial accelerometer on the market



Low Cost ICP® Accelerometer
Model 607A11



- Submersible
- 100 mV/g sensitivity
- 30 to 600,000 cpm (0.5 to 10 kHz) frequency range
- Swivel mount simplifies installation
- Integral, 10 ft (3 m) cable may be positioned in any direction
- Smallest right angle industrial accelerometer on the market



Low Cost ICP® Accelerometer
Model 602D01



- 100 mV/g sensitivity
- 30 to 480,000 cpm (0.5 to 8000 Hz) frequency range
- 2-pin MIL connector
- Through-hole mounting



Low Cost ICP® Accelerometer
Model 603C01



- 100 mV/g sensitivity
- 30 to 600,000 cpm (0.5 to 10 kHz) frequency range
- 2-pin MIL connector
- Economical



Low Cost ICP® Accelerometer
Model 603C01



- 100 mV/g sensitivity
- 30 to 600,000 cpm (0.5 to 10 kHz) frequency range
- 2-pin MIL connector
- Economical

High-Temperature, Charge Mode Industrial Accelerometer Kits



Model 600A02

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



3425 Walden Avenue, Depew, NY 14043-2495 USA

Toll-Free in USA 800-959-4464

24-hour SensorLineSM 716-684-0003

Fax 716-684-3823 E-mail imi@pcb.com

Web Site www.imi-sensors.com

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IMI Sensors designs and manufactures a full line of accelerometers, sensors, vibration switches, vibration transmitters, cables and accessories for predictive maintenance, continuous vibration monitoring, and machinery equipment protection. Products include rugged industrial ICP® accelerometers, 4-20 mA industrial vibration sensors and transmitters for 24/7 monitoring, electronic and mechanical vibration switches, the patented Bearing Fault Detector, high temperature accelerometers to +900 °F (+482 °C), 2-wire Smart Vibration Switch, and the patented Reciprocating Machinery Protector. CE approved and intrinsically safe versions are available for most products.

Visit www.imi-sensors.com to locate your nearest sales office