

ASSET CONDITION MONITORING & SERVICES

SEISMIC · PROXIMITY · SWITCHES · MONITORS · METERS · SYSTEMS



SHORT FORM BROCHURE 6.0
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METRIX
Experience Value

To our valued customers...

Thank you for considering Metrix products and services for your vibration monitoring needs. We are an industry leader, filling the need for simple, local machinery protection with our transmitters, switches, proximity probes, cables and portable meters. Our product lines have been developed over 45 years of experience on monitoring and protecting different types of machines in all types of service and global industries.



In addition to our broad range of products, we also have a Global Services team that will help you with the installation and commissioning of Metrix or other condition monitoring equipment. Our experienced team can assist with rotating and reciprocating machinery commissioning, balancing, alignment, machinery diagnostic services, and troubleshooting for those tough machinery behavior problems.

We want to be your partner in your efforts to better manage your machinery assets. Whether you are a looking for simple hardware solutions or world class services, Metrix has what you are searching for. Our products and services will provide you with long term solutions that reduce your machinery downtime and maintenance cost. Again, thank you for considering us and we look forward to servicing you.

METRIX

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Applications

Fans & Blowers

- Axial Fans
- Centrifugal Fans
- Cooling Tower Fans
- Fin Fans
- Heat Exchanger Fans
- High Temp Furnace Fans
- Industrial Blower Fans

Compressors

- Centrifugal
- Reciprocating
- Screw
- Turbo

Turbines

- Gas Turbines
- Steam Turbines
- Industrial Frames
- Aero & Marine Derivatives
- Rotor-Blade Pass Sensing

Pumps

- Process Pumps
- Centrifugal Pumps
- Hot Oil Pumps
- Mud Pumps
- Boiler Feed Pumps
- Booster Pumps

Machines & Other Assets

- Centrifuges
- Diesel & Recip Engines
- Electric Motors
- Extruders
- Gear Boxes
- Generators
- Mixers
- Paper Machines
- Piping Vibration
- Turbochargers/Turbo Expanders

Proximity Products

Trendsetter®
TXR (Radial) or
TXA (Axial)
Transmitter



5533
Probe Driver



Signal Conditioners
5510 (Radial) or
5516 (Axial)
Dynamic Signal



Proximity Probes



Extension Cables



Seismic Products

ST5484E Loop-powered,
4-20 mA Transmitters



ST5491E Loop-powered,
Indicating 4-20 mA
Transmitters



ST6900 Series
Compact Transmitters



IT6810
Impact Transmitters



5485C High Temp,
Velocity Sensor



SV6300
Piezoelectric Sensor



SA6200A
Accelerometers



5534/5535/5544/5545
Signal Conditioner and
Transmitter



Switches

Mechanical Switches



5550
Switch

Electronic Switches



PRO440 Series



440 Series



Hardy
HI 5800



5477B
Indicating and Non-Indicating

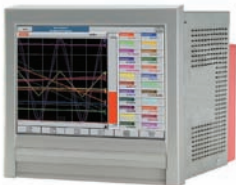
Systems



AM3030
Single-Channel
Alarm Monitor



DATAWATCH® 7100
configurable to 12 channels



DATAWATCH® 8100
configurable to 48 channels



Data Physics SignalCalc® Turbo
configurable to 32 channels

Portable Products



VM2800/VM3800 &
5500 Vibration Meters



6850 Impact Meter



HI 803 & HI 813
Hardy Portable Shakers

Services



Machinery Diagnostics

- Post Outage Machinery Health Documentation
- Field Balancing
- Machinery Alignment
- Torsional Vibration Analysis
- Rotordynamic Analysis
- 3rd Party Audit of Engineering Data

Product Service

- Transducer Installation
- Transducer System Verification
- Runout Check (rotor repair facility or on-site)
- Installation and Commissioning of Vibration Monitoring and Protection Systems Best Practices for Specifying the Correct Transducer and Vibration Monitoring Protection System

Technical Training

- Machinery Diagnostic Training
- Advanced Machinery Diagnostic Training
- Alignment Training
- Transducer Operation & Maintenance Training
- Offered Regionally and On-site
- Tailored to meet customer specific Needs

Metrix features a complete line of Proximity solutions including probes, cables and drivers that allows you to extend the life of your existing system.



Trendsetter® Digital Transmitters TXR (Radial) and TXA (Axial) and TXR5521 (RPM)

Two-wire loop-powered transmitter that combines an eddy current probe driver and signal conditioner in a single package

- Compatible with 4 major probe systems and easily factory-calibrated to non-standard shaft material
- Provides 4-20 mA signal proportional to vibration level or shaft axial position
- Buffered dynamic signal for analysis
- Sensing to 177°C with proximity probes



Probe Driver Model 5533

- Proximity transducers comply with API 670
- All proximity transducers have hazardous area approvals
- Rugged polymer with internal RFI/EMI spray shielding potted for long life
- Does not require field back plate drilling
- DIN rail mounting is optional
- Buffered dynamic signal for analysis



Signal Conditioners Models 5510/5516 Radial and Position/Thrust

- Gives output proportional to vibration or position
- Single channel signal conditioners
- Convert proximity transducer measurements to a 4-20 mA signal for connection to a PLC or DCS
- Buffered dynamic signal for analysis



Proximity Probes and Cables

- Extend life of installed transducers by replacing individual components - direct replacements for 7200®, 3000®, 3300®, 3309®, NSv® and RAM® Series
- Keep your installed base running longer to avoid obsolescence
- Avoid mismatching probes and cables with ProxMatch Color Coding
- Latest technology design including gold hex connectors, Tefzel insulation, ProbeSeal and VerniGap for easy installation
- Protect critical machinery at lower cost
- Extend the life of legacy systems
- Metrix Proximity Transducer System components (probes, cables & drivers) are also interchangeable with many legacy transducer systems, giving you a cost-effective alternative to keeping older systems operational.

ProxMatch® Color Coding System

Series 7200® / 10000
 Metrix 10000 Series
 (Gold color)

5 M 5 M 9 M 9 M

5 M 7200 series label X

9 M 7200 series label Y

Extension Cable

X or Y

Series 3300® & 3300XL
 Model Nos. MX3301XX
 (Baby Blue color)

5 M 5 M 9 M 9 M

5 M 3300 series label X

9 M 3300 series label Y

Extension Cable

X or Y

Series 3309 RAM® & NSv®
 Model Nos. MX3309XX
 (Light Purple color)

5 M 5 M 7 M 7 M

5 M 3309 series label X

7 M 3309 series label Y

Extension Cable

X or Y

Series 3000®
 Model Nos. 7386-01/2789
 (no armor);
 7386-01/4454 (w/armor)
 (White Color)

15 ft 15 ft 20 ft 20 ft

15 ft 3000 series label X in.

20 ft 3000 series label Y in.

Extension Cable

X or Y in.

Metrix has a wide range of seismic solutions to meet your vibration monitoring requirements. Our transmitters, accelerometers, sensors and accessories protect your machinery and stay within your budget.

Vibration Transmitters (4-20 mA, Loop-Powered)



ST5484E Velocity Transmitter

- Loop terminals with IPT® (Independent Polarity Terminal) to prevent incorrect wiring
- Temperature shock protected and widest frequency range available
- Available options: flying leads, terminal block or 2-pin MS connector



ST5491E Indicating Velocity Transmitter

- Built-in protection against temperature shock and “ski slope” problem
- Different mounting studs and high and low pass filters available
- Most stable detection circuit



ST6900 Compact Transmitter Series

- 4-20 mA proportional to acceleration (ST6911)
- 4-20 mA proportional to velocity (ST6917)
- Interfaces with PLC, DCS and 4-20 mA monitors
- Widest operating temperature in its class

Impact Transmitter and Meters



IT6810/IT6811/IT6812

- Measures mechanical looseness such as loose rod nuts, broken or loose bolts, liquids in the process, excessive clearance in slipper, loose or worn pins, etc.
- 4-20 mA output, 2-pin MS connector
- Loop-powered, self-contained sensor
- Available options: flying leads, terminal block or 2-pin MS connector



6850-001 Impact Meter

- Select transmitter's Pulse-Time, 4-20 mA or Peak Detect mode
- One device for transmitter checkout and setup, eliminates need for oscilloscope and voltmeters
- Battery-powered with digital display
- Waveform access through BNC connector



6850-003 Impact Meter Kit

- Hard shell carrying case with protective, form fitting foam inside
- Will store and protect one IT6810 transmitter, one 6850 meter, mounting hardware, screw driver and manual.
- Comes standard with extra Impact Transmitter mounting bolt, sealing screws and screw driver.

Velocity Sensors



5485C High-Temp. Sensor

- Provide accurate, repeatable vibration measurements over wide ranges of amplitude and frequency by employing zero friction coil suspension
- Self-generating, no power required
- Stainless steel housing
- Constructed for continuous operation at elevated temperatures



SV6300 Piezoelectric Sensor

- Replace a moving coil velocity transducer with this solid-state sensor
- Consists of a temperature stabilized piezoelectric sensor and amplifier packaged in stainless steel case
- Immune to cross axis vibration, mount in any axis
- Provides high-level, low impedance output for connection to a 4-20 mA transmitter

Accelerometers



SA6200A Industrial Accelerometer

- High-accuracy and repeatability yet priced within budget
- Eliminate false indications caused by high frequency noise rectified as low frequency using patented anti-ski slope technology
- Highest accuracy and widest frequency response



SA6350 High-Temp Accelerometer

- Ideally suited for vibration monitoring of gas turbines and other high-temperature machines
- When used with 5535/5545 transmitter, a 4-20 mA signal proportional to acceleration or velocity is available
- Accelerometer electrically isolated from the stainless steel case and cable

Signal Conditioners



5534/5544/5535/5545 Signal Conditioner and Transmitter

- 4-20 mA proportional to vibration level
- Significant savings over rack mount monitors
- Sensor/cable input "OK" light
- Available Options: display, filter and/or galvanic isolation

Metrix offers both electronic and mechanical vibration switches with many of the features of high-end monitoring systems but at a lower cost. Our new state-of-the-art Electronic Switches are programmable to suit user needs.

Mechanical Vibration Switches



5550 Mechanical Switch

- Meets all requirements for mechanical switch in a single, affordable package
- Weatherproof and optional hazardous area rating
- Local and optional remote reset with startup delay
- SPDT or DPDT switch output contacts

Electronic Vibration Switches



PRO440

PRO6000

PRO440 / PRO6000 Electronic Switch

- Microprocessor design, USB or keypad configurable
- Multiple sensor type input
- Sensitivity is not affected by rotating speed of machinery
- Solid-state relay contacts used for alarm and/or shutdown



440

6000

440 / 6000 Electronic Switch

- Built-in alarm time delays
- Analog dial for setting limits
- Field selectable for N.O. or N.C.
- 4-20 mA available output
- Explosion-proof models (450 Series) available



5477 Electronic Switch

- Accelerometer based - velocity response
- Single setpoint
- Separate startup and monitor trip delays
- External setpoint adjustment
- Available option: built-in vibration LCD indicator



Hardy Instruments HI 5800 Switch

- Adjustable vibration set point and time delay
- Local LEDs for alarm and OK indication
- Trip bypass for equipment start-up
- Fail safe operation through on-board delay

Monitors - Single, Dual Channel

Metrix DATAWATCH™ Monitors feature high-quality signal conditioning, a high-resolution color touch screen interface and onboard historical review capability. The AM3030 Alarm Monitor consolidates excitation, display and protection into a single compact package.



Datawatch® 7100 & 8100

- Provides high-quality signal trending with a sampling rate of 125 msec
- 6 to 48 inputs including TC & RTD
- 3 to 27 output relays with adjustable time delays
- Removable flash memory



AM3030 Alarm Monitor

- Three-color, 30 segment bar graph display with numerical indicator
- 4-20 mA process monitor with 2 or 4 adjustable relays
- Compatible with Metrix transmitters: ST5484E, TXR/TXA, ST6917

Analyzers



Data Physics SignalCalc® Turbo provides an all in one data acquisition system that is portable and easy to use. The system contains from 1 to 4 data acquisition cards, with each data acquisition card consisting of 8 Input channels, 2 output channels and 2 tachometer channels. Depending on the number of data acquisition cards installed, SignalCalc® Turbo allows from 8 to 32 channels of data acquisition.

This fully featured high-quality software design helps machinery diagnostic engineers make fast and accurate data driven decisions. The Turbo data acquisition system operates via machinery vibration analysis / rotordynamic software. SignalCalc® software supports both steady state and transient (startup/shutdown) data acquisition and a wide variety of data display plots including:

- Orbit
- Orbit / Timebase
- Timebase
- Trend
- Polar
- Forward 1x Polar (Advanced Balancing Technology)
- Bode
- Shaft Average Centerline
- Full Spectrum
- Spectrum
- Cascade
- Waterfall

MONITORING SYSTEM

We offer a distributed asset condition monitoring solution for essential and balance of plant machines. Model DVT8 is a permanently installed, network enabled, asset condition management program.



System characteristics

- Network access to machinery condition data
- Leverage machinery analysis knowledge across the enterprise
- OPC 3 output from PC to SCADA and DCS
- Quick deployment using WiFi and existing plant networks
- Scalable, distributed machinery condition monitoring
- Battery powered - time based, periodic data acquisition
- Permanently powered - short interval periodic monitoring
- Powers IEPE sensors, 3.6mA constant current at +20 Vdc
- IP-67 rated/rugged fiber polycarbonate housing
- Hazardous area rated: ATEX Zone 2, CSA Class I Div2 (pending) CE mark

Addressing familiar monitoring challenges with next generation technology

- Personnel at risk around operating machinery
- Machines in hazardous or toxic environments
- Machines that are inaccessible or in remote locations
- Eliminate data repeatability and accuracy issues
- Allows for monitoring non-stationary equipment
- Timely machinery information with less manpower
- Enhance the value of installed protection systems
- Less signal corruption due to short cable runs

For use with the following Metrix products:



5485C
Sensors



5553
Prox Probe Driver



SV6300
Piezoelectric Sensor



ST5484E



SA6200A
Accelerometer



Proximity Probes
and Cables



TXR (Radial) or
TXA (Axial)



5510 (Radial) or
5516 (Axial)



AM3030



ST5491E



ST6900 Series
Compact Transmitters



IT6810



5534/5535/5544/55545



PRO440 Series



Hardy
HI 5800



5477B



440 Series

Meters

Metrix portable vibration meters are ideal for obtaining spot measurements of machinery vibration. Includes a carrying case so the meter is always ready for use.

Hand-Held Vibration Meters



Vibra-Check® VM2800/VM3800 Portable Meter

- Accurate, industrial standard piezoelectric accelerometer sensor
- Microprocessor-based measurements
- Backlit LCD readout in acceleration, velocity and displacement
- Display peak or RMS units
- Standard or Metric units



5500 Portable Meter

- Simply hold the probe tip against machine and observe reading on LCD indicator
- Includes reading "hold" feature
- Intrinsically-safe for use in hazardous areas
- Includes alkaline 9V battery; auto power-off extends battery life

Shakers

Hardy Instruments' portable shakers allow for compliance with OSHA 1910, ISO 9000 or API 670 by providing a means for verification of sensors and associated indicators. These units are programmable with built-in display and self-test features.

Portable Shakers



HI 803 and HI 813 Portable Calibration Shakers

- Meet most of the frequency and amplitude requirements for compliance with API 670
- Built-in reference accelerometer and indicator features calibration traceable to National Institute of Standards and Technology (NIST)
- Test seismic sensors up to 1.65 lbs (750 grams).
- Portable design allows for minimal disruption during system checks

The Metrix Services Support Structure

The Metrix Global Services organization provides customers technical support in a broad array of services. The focus of this organization can be broken into three broad categories of support staffed with experienced personnel in their respective areas of expertise.

Machinery Diagnostic Services – The accurate and timely diagnosis of machinery problems is critical to any operation involving rotating and reciprocating machinery. With machinery experience found in the primary industries of Oil, Gas, Petrochemical and Power Generation as well as numerous secondary industries, our engineers can provide the support needed.

Product and Installation Services – For any hardware to provide accurate and reliable monitoring and/or protection as well as access to the diagnostic information, it is imperative that the systems be properly installed, verified and maintained. Our experienced support team can insure the integrity of these systems.

Training – Two aspects of training are key to operating and maintaining rotating and reciprocating machinery. First, the instrumentation must be understood and maintained and secondly, the technical knowledge associated with the machinery must be understood. The training provided by Metrix covers both of these critical issues.



The key to being able to provide this support starts with the personnel. Metrix engineers are highly skilled with a broad knowledge base with many being registered Professional Engineers. The nature of solid support is 24/7 availability – a cornerstone of our support along with reasonable competitive rates.

Machinery Diagnostic Services (MDS)

The Machinery Diagnostic Services group solves customers' machinery problems with expert advice based on sound engineering principles, our knowledge of modern rotordynamics and years of practical experience. Our MDS organization is recognized as a leader in machinery diagnostics and a trusted repository of machinery knowledge. Customized diagnostic service programs are offered based on your needs. Our capabilities include:

- Machinery Malfunction Diagnostics
- Rotordynamic Modeling and Design Consultation
- Field Balancing
- Remote Diagnostics
- Alignment Services
- Torsional Vibration Analysis
- Piping and Structural Vibration Analysis
- Predictive Maintenance (PdM)
- Bearing Design Evaluation and Diagnostics
- Shop Acceptance Testing
- Field Commissioning Services
- Root Cause Analysis and Corrective Action Determination
- Post Failure Analysis
- On-site Data Collection and Evaluation
- Thermodynamic Performance Analysis

Product And Installation Services (P&IS)

Our Product Service organization has the knowledge and experience to deliver world class service ensuring reliable operation of machinery protection and management systems. We can help you install and maintain your monitoring systems so you can focus on your core business. Product Service can help you:

- Install, optimize and maintain transducer and monitoring systems to published specifications and certification requirements
- Manage and coordinate product updates
- Verify transducer and monitoring system performance
- Diagnose and correct product hardware/software problems
- Manage your spare parts program for transducer and monitoring systems
- Document mechanical and electrical run-out checks in the shop or on-site
- Complete turnkey services of retrofitting existing OEM products
- Generate, assist or perform 3rd party factory acceptance tests



Training

Metrix training seminars are designed to give students the knowledge and skills required to perform more effectively. The seminar content and design is based on over 30 years of MD and product training experience and can be customized to meet specific needs. All seminars are structured for:

- Small student-to-instructor ratio for maximum interaction (8-12 per instructor)
- Extensive hands-on practice using full-featured lab equipment
- Instruction by registered professional field engineers (P.E.)

For more information on our training seminars see our Technical Training Brochure.

Turnkey Service

Metrix Turnkey Service provides custom engineered systems that fit your specific needs. We can assist you with every type of machine.

- Project management
- Electrical and mechanical designs
- Sub-contractor management
- Installation
- Commissioning and optimization
- As-built documentation
- System training

About Us

Metrix, a business unit within Roper Industries, was founded in 1965. We were the first company in the market to manufacture 4-20 mA vibration transmitters, which greatly simplified vibration monitoring and reduced its cost. Our products and services include proximity systems, transmitters, switches, monitors, portable meters and global technical services which include machinery diagnostics, commissioning, balancing and troubleshooting.

Our solutions can be found on gas and steam turbines, motors, compressors, pumps, generators, gear boxes, paper machines and cooling towers. Industries we serve include air separation, chemical, oil and gas, pipelines, power generation, water/wastewater treatment and many more.

About Roper Industries

Roper Industries is a market-driven, diversified growth company and is a constituent of the S&P 500, Fortune 1000 and the Russell 1000 indices. Roper provides engineered products and solutions for global niche markets, including water, energy, radio frequency and research/medical applications. Additional information about Roper Industries is available on the company's website at www.roperind.com.

For more information about our products and services, please visit us at www.metrix1.com.

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ISO9001:2000 Certified Since 1992

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