Condition Based Monitoring Brochure

Smart Vibration Analyzers
ANALYZE • INTERPRET • SAVE

- **Pumps:** This style pump can have bearing problems or balancing issues. The motor is bolted directly to the pump and does not normally have alignment issues.
- **Fans:** Fans can also have bearing and balancing problems. A fan can be out of balance due to damage, dirt, or thrown weight. A bent shaft will also create a balance issue.
- **Motors:** The motor and pump are bolted to the fame and attached with a coupling. This can present bearing problems in the motor and pump, balancing issues due to damaged impellers, and also shaft misalignment between the two.
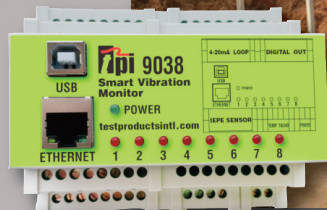
The TPI Model 9041 Ultra II represents the very latest in easy to use high specification maintenance tools, offering extremely high levels of functionality and capability at a very affordable price!

As a high spec CBM data collector and Dynamic 2 plane rotor balancer designed for plant and asset inspections, the Ultra II does it all.

Smart Vibration Monitor 9034 & 9038: Online/Fixed Vibration Monitoring.

Single low-cost unit monitors plant with local alarms, connects to high functionality PC analysis software AND connects to cloud-based monitoring and analysis software.

Extremely cost effective: lowest cost/channel industrial vibration monitor/analyzer.

Test the TPI Advantage

www.testproductsintl.com

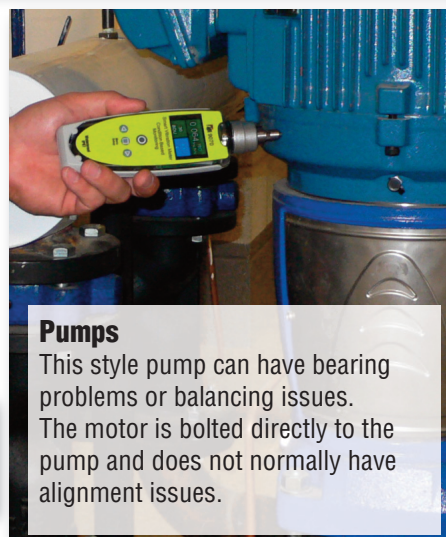# If you have Pumps, Motors and Fans you need TPI Vibration Analyzers

TPI 9070 Vibration analysis simply at the touch of a button!

TPI 9070 analyzes & interprets readings:

- ISO machine alarms and Bearing Damage Units (BDU) reading indicate overall machine and bearing condition

- Clear picture of 1X, 2X & 3X machine problems detects imbalance, misalignment and looseness

- 800-line spectrum with zoom and cursor to identify complex issues

Vibration Analysis is used to detect signs of machine failure, allowing machinery to be repaired or replaced before an expensive failure occurs.

TPI 9071 Smart Vibration Analyzer with BNC Cabled Accelerometer with Magnet for consistent readings

TPI 9071 analyzes, interprets, and stores readings;

Everything the 9070 can do plus:

- BNC cabled accelerometer with magnet for hard to reach test points and repeatable results

- Collect and store readings; 10 memory blocks with 20 readings per block for a total storage of 200 readings.

- Stored data is easily recalled and displayed.

TPI Vibration Analyzers can detect worn bearings, faulty gearboxes, unbalance, misalignment and looseness.

TPI 9080 Smart Trend Analyzer

TPI 9080 analyzes interprets & trends readings

Everything the 9071 can do plus:

- Asset management and trending with included VibTrend software. Ten assets with ten readings per asset.

Pumps
This style pump can have bearing problems or balancing issues. The motor is bolted directly to the pump and does not normally have alignment issues.
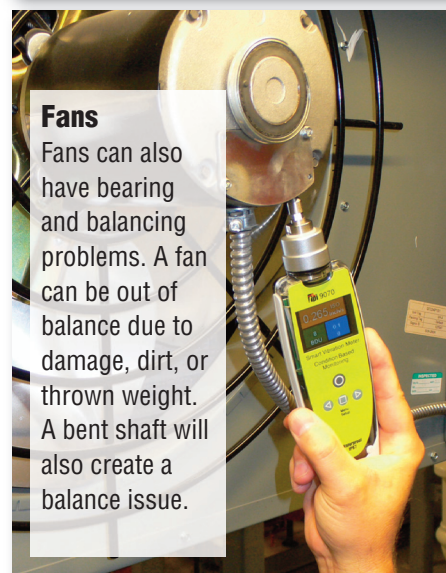
Fans
Fans can also have bearing and balancing problems. A fan can be out of balance due to damage, dirt, or thrown weight. A bent shaft will also create a balance issue.
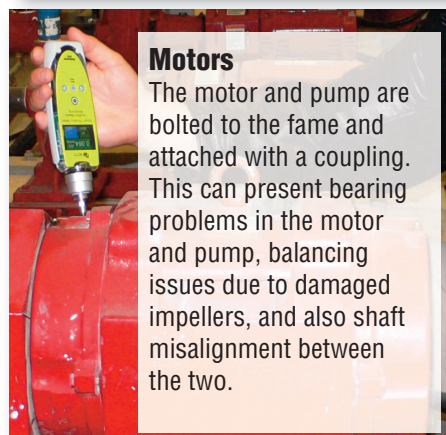
Motors
The motor and pump are bolted to the fame and attached with a coupling. This can present bearing problems in the motor and pump, balancing issues due to damaged impellers, and also shaft misalignment between the two.

9070 & 9071 Smart Vibration Analyzer
9080 & 9080-Ex Smart Trending Vibration Analyzer

9070 & 9071 Smart Vibration Analyzer

Vibration Analysis at the touch of a button!

- **Affordable and easy to use**
  - **9070** – Removable stinger to attach industry standard magnet with 1/4 28 thread; optional A9073. Provides faster, more reliable and repeatable readings.
  - **9071** – Features BNC cable mounted accelerometer with magnet. Useful for hard to reach machines and test points.

- **Built to last: rugged, reliable, IP67 waterproof, long battery life**
  Not only does the rugged design and waterproof case keep the 9070 & 9071 working in demanding environments, but advanced technology ensures a long battery life - with 1,500 measurements (50 hours of normal use).

- **Helps prevent downtime and reduce maintenance costs**

0.14 | 0.21 | 0.12
1X | 2X | 3X
Run Speed: 1450 RPM

1X, Unbalance
2X, Misalignment
3X, Looseness

**9070 & 9071
3 Year Limited Warranty**

9070
0.473 ISO in/s
25 BDU | 0.4 g
Smart Vibration Meter
Condition Based Monitoring
Menu Setup
Waterproof IP67

9080 & 9080-Ex Smart Trend Analyzer, Interprets and TRENDS

- **9080 Includes:** A9081A USB docking cradle & VibTrend standard software (up to ten assets with ten measurement points per asset), A9089 accelerometer with magnet and A9087 carrying case
- **9080-Ex Includes:** Intrinsically safe version of the 9080 with A9095 intrinsically safe boot, A9081A USB docking cradle & VibTrend Pro software (up to 1,000 assets with ten measurement points per asset), A9093 intrinsically safe accelerometer with magnet and A9087 carrying case
- **9080K1 Includes:** 9080 with A9086 protective boot, A9081A USB docking cradle & VibTrend Pro software (up to 1,000 assets with ten measurement points per asset), A9089 accelerometer with magnet, A9082 strobe and A9087 carrying case
- **9080K2 Includes:** 9080 with A9086 protective boot, A9081A USB docking cradle & VibTrend Pro software (up to 1,000 assets with ten measurement points per asset), A9089 accelerometer with magnet, A9082 strobe, A9080 headphones and A9087 carrying case
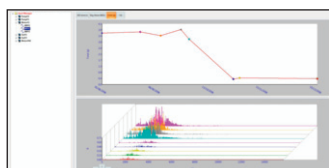- Clear picture of 1X (unbalance), 2X (misalignment) and 3X (looseness) machine/bearing problems

VibTrend standard software gives you greater ease of use and flexibility. Windows 7™ and 8™ compatible
- Store, analyze and report on all your vibration parameters in one place; unlimited assets with ten readings per asset.

**9080, 9080K1, 9080K2
3 Year Limited Warranty**

**9080-Ex
1 Year Limited Warranty**

9080
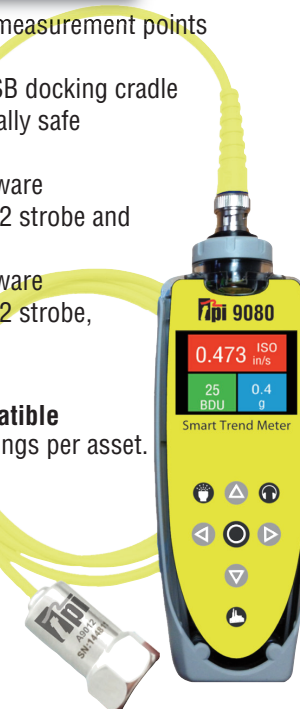0.473 ISO in/s
25 BDU | 0.4 g
Smart Trend Meter

A9082 stroboscope, tachometer and flashlight comes with 9080K1 and 9080K2 kits.

VibTrend Pro Software powerful and easy to use asset management and fault diagnosis software

Bluetooth Headset

A9080 Bluetooth® Headset
Industry approved ear defenders with built-in-Bluetooth headphones that allow you to listen to the bearing noise. You can also use with your smart phone. Comes with the 9080K2 kit and can be ordered separately.

A9080
$594.95

Not for use with 9080-Ex

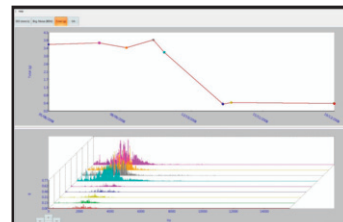## VibTrend Pro Software comes with the 9080K1 and 9080K2.

Unlimited assets……
All information is just a click away. Color coded alarms highlight problems. Trend lines show problems before they happen.

A9084
$495.00

The 9041 Ultra II does it all...
9041 Ultra II: vibration analyzer, balancing, inspections (plant and asset) and data collection

BENEFITS
Analyzes, interprets and trends vibration data. Automatically detects out of balance, misalignment, looseness and bearing defects

Predictive analysis capabilities that accurately calculate time frame to failure

Condition based monitoring analyzes bearing wear and gear degradation

Built-in single plane balancing enables correction of the most common cause of vibration. (Dual plane balancing with additional accelerometer)

FEATURES
Additional features include inspection, lube and remote/server database

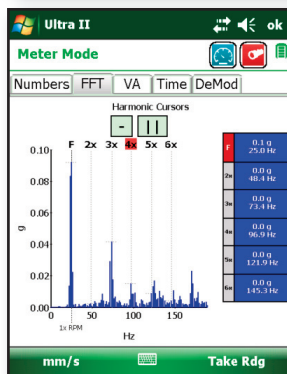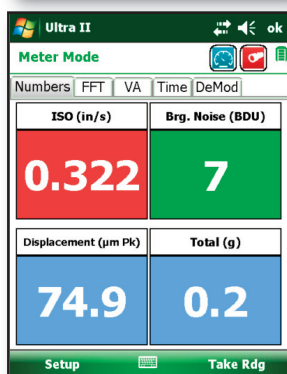User selectable defined envelope filters and demodulation functionality

True simultaneous 3 channel capture

High resolution (0.2 Hz) frequency spectra from 2 Hz to 10 kHz

Rugged fully waterproof construction meets IP68 and MIL-STD-810F requirements.

C-Trend II Software gives you greater ease of use and flexibility.

• Store, analyze and report on all your vibration, lube and process parameters (e.g. oil pressures, lube volume, temperature, run hours, etc.) in one place.

• All information is just a click away. Color coded alarms highlight problems. Trend lines show problems before they happen.

• Data can be accessed anywhere on any machine, with networking software. Plant history is everything and C-Trend II turns it into useful information with the click of a mouse!

Includes C-Trend II powerful and easy to use asset management and fault diagnosis software

9041 Ultra II Included:
• Tacho, accelerometer (one) and cables
• Carrying case with shoulder strap
• The 9041 has a 1 year limited warranty

Features	9041	9080	9080-Ex	9070	9071
Analyzes and displays ISO vibration levels, bearing wear, unbalance, misalignment and looseness	✓	✓	✓	✓	✓
Color coded display with alarm status (red, amber, and green)	✓	✓	✓	✓	✓
Fully zoom-able frequency spectrum	✓	✓	✓	✓	✓
True simultaneous three channel capture	✓	-	-	-	-
USB computer interface	✓	✓	✓	-	-
C-Trend software to store analyze and report vibration, lube, and inspection parameters (temperature, oil pressures, run hours, etc.)	✓	-	-	-	-
VibTrend software for data trending and analysis	-	✓	✓	-	-
Automatic reporting and email generation of alerts for any parameter	✓	✓	✓	-	-
Bluetooth enabled	✓	✓	-	-	-
Bluetooth headphones (optional, p/n A9080)	-	✓	-	-	-
Strobe accessory (optional, p/n A9082)	✓	✓	-	-	-
Optional RFID asset management (RFID tags p/n A9007 required)	✓	-	-	-	-
Built-in single plane balancing	✓	-	-	-	-
Optional dual plane balancing with additional accelerometer	✓	-	-	-	-
Includes laser tachometer for balancing	✓	-	-	-	-
Accelerometer connection	BNC, uses IEPE accelerometers	BNC, uses IEPE accelerometers	BNC, uses IEPE accelerometers	Built-in with stinger (magnet optional)	BNC, uses IEPE accelerometers
Input range	+/- 50g	+/- 50g	+/- 50g	+/- 50g	+/- 50g
Frequency ranges	2Hz to 1KHz 2Hz to 10KHz	2Hz to 1KHz 2Hz to 10KHz	2Hz to 1KHz 2Hz to 10KHz	2Hz to 1KHz 2Hz to 10KHz	2Hz to 1KHz 2Hz to 10KHz
Frequency resolution	400, 800, 1600, 3200, 6400, 12,800, 25,600, 51,200 lines FFT	100, 800, lines FFT	100, 800, lines FFT	100, 800 lines FFT	100, 800 lines FFT
Displayed frequency units	Hertz (Hz), RPM, CPM	Hertz (Hz), RPM, CPM	Hertz (Hz), RPM, CPM	Hertz (Hz), RPM, CPM	Hertz (Hz), RPM, CPM
Displayed amplitude units	Acceleration in g Velocity in mm/s or inches/s Displacement in microns or mils	Acceleration in g Velocity in mm/s or inches/s Displacement in microns or mils	Acceleration in g Velocity in mm/s or inches/s Displacement in microns or mils	Acceleration in g Velocity in mm/s or inches/s	Acceleration in g Velocity in mm/s or inches/s
Dynamic range	96dB	96dB	96dB	72dB	72dB
User interface	Numeric keypad and touch screen	Keypad	Keypad	Keypad	Keypad
Environmental rating	IP68 Waterproof	IP67 Waterproof	IP67 Waterproof	IP67 Waterproof	IP67 Waterproof
Operating temperature	-22ºF to 149ºF (-30ºC to 65ºC)	32ºF to 122ºF (0ºC to 50ºC)	32ºF to 122ºF (0ºC to 50ºC)	32ºF to 122ºF (0ºC to 50ºC)	32ºF to 122ºF (0ºC to 50ºC)
Power supply	Rechargeable battery (charger included)	AA Batteries (2)	AA Batteries (2)	AA Batteries (2)	AA Batteries (2)
Battery life	20 hours typical	50 hours typical	50 hours typical	50 hours typical	50 hours typical
Size	8.7" x 3.7" x 1.8" (220mm x 95mm x 45mm)	8" x 2.4" x 1.3" (203mm x 61mm x 33mm)	8" x 2.4" x 1.3" (203mm x 61mm x 33mm)	8" x 2.4" x 1.3" (203mm x 61mm x 33mm)	8" x 2.4" x 1.3" (203mm x 61mm x 33mm)
Weight (unit only)	1.1lb (500g)	9.8oz (280g)	9.8oz (280g)	9.8oz (280g)	9.8oz (280g)
Intrinsically Safe	-	-	✓	-	-
Price	$7,995.00	$995.00	$3,995.00	$495.00	$695.00

Smart Vibration Monitor 4 channel & 8 channel
Online/Fixed Vibration Monitoring

Features:
- 4 accelerometer channel & 8 accelerometer channel versions
- 24VDC (relay drive) switched output for each channel (warning/critical, g or velocity)
- 4 to 20mA output for each channel (g or velocity)
- Temperature input
- Tacho Input
- USB or Ethernet connection to Smart Vibration Monitor PC software and optional Vibration Analysis software

Advantages:
- Extremely cost effective – lowest cost/channel industrial vibration monitor/analyzer
- Very easy to set up using Smart Vibration Monitor PC software
- 24/7 monitoring of critical plant operations

Benefits:
Single low-cost unit monitors plant with local alarms and connects to optional C-Trend II high functionality PC analysis software.

The Smart Vibration Monitor-04 and Smart Vibration Monitor-08 are the new generation of low price-high performance installed vibration analyzers from TPI. With up to 8 accelerometer inputs, 8 digital outputs, 8 analog outputs, temperature and tacho inputs as well as USB and Ethernet connectivity the Smart Vibration Monitor-04 and Smart Vibration Monitor-08 modules offer unrivalled price/per channel performance. The analyzers can be used in several different ways:

- **Standalone Operation** – Connect up to 8 accelerometers and up to 8 relays and instantaneously monitor and alarm on-key vibration points. Using the included Smart Vibration Monitor PC software the alarms can each independently be set to trigger on/either a velocity level or a g level. If a tacho is connected, a speed range can be set so as not to activate during machine start-up or shut-down.

- **Legacy Systems Operation** – for each connected accelerometer, the Smart Vibration Monitor units can also output levels of vibration (g or velocity) as 4 to 20mA signals for connection to existing monitoring systems such as PLCs, etc.
- **PC Operation** – If a laptop/PC is connected via a USB or Ethernet, up to 64 modules can be monitored and the vibration levels displayed on screen. With the PC connected more detailed vibration analysis can be carried out with optional C-Trend II software.
- **C-Trend II** – By purchasing optional C-Trend II software it's possible to view and analyze the long term trend of all readings as well as being able to see FFT's of all logged data.

The Smart Vibration Monitor-04 and Smart Vibration Monitor-08 modules are supplied to work in any, or all, modes right out of the box so it truly is a system that will grow with your requirements.

The Smart Vibration Monitor modules are perfect for extremely cost-effective monitoring of critical plants operations and when used in conjunction with the TPI 9070, 9080 and 9041, vibration analyzers provide the complete CBM solution.

Smart Vibration Monitor 4 channel & 8 channel
Online/Fixed Vibration Monitoring

	Smart Vibation 4 channel		Smart Vibation 8 channel
Measurement			
IEPE Accelerometer Input Channels	4		8
Accelerometer Sampling Frequency		25.6kHz	
4-20mA Output Channels	4		8
24VDC Digital Outputs	4		8
24VDC Dig. Output Current Max		100mA	
Digital Output Alarm		Acceleration or Velocity (Channel Selectable)	
Tachometer Input		1 (0V to any voltage upto +24VDC)	
Frequency Dependent Alarms		Yes (using Tachometer)	
Temperature Input		1 (Typically 10mV/°C)	
PC Connection		USB	
Internet Connection		Ethernet	
PC Software			
Vibration Alarms	4	Vibration	8
Temperature Alarm	1	Temperature	1
Alarm Choice		Acceleration AND/OR Velocity (channel selectable)	
FFT		Up to 12,800 lines	
Time Waveform		Yes, with optional C-Trend II Software	
Electrical			
Supply Voltage		USB or 24VDC	
Supply Current		500mA	
Mechanical			
Environmental		IP50	
Operating Temperature °C		0-55°C (32-151°F)	
Storage Temperature °C		0-55°C (32-151°F)	
Mounting		DIN Rail	
Limited Warranty		3 Year	
Part Number	9034		9038
Price	$1,295.00		$1,695.00

377BT Infrared Thermometer

- Bluetooth Communication

- Laser Sighting to confirm target.

- Adjustable emissivity for maximum accuracy on all surfaces.

- °F or °C Selectable

- 11.5:1 Distance to Spot Ratio

- 3 Year Limited Warranty

- K-Type thermocouple input for optional K-Type probe measurement.

- Temperature Ranges from -58 to 1,832 degrees Fahrenheit.

- 0.1 Degree Resolution pro vides increased accuracy of reading.

$295.00

505L Digital Handheld Tachometer

The 505L is a combination photo and contact tachometer that also measures surface speeds of belts and wheels. Up to 25 feet in photo target mode.

Use Your 505L For These Applications

- Measure motor input and output shaft speed
- Determine conveyor belt speed
- Confirm fan, motor, and gear RPM
- Measure RPM of flywheels and pumps
- Monitor pulley rotation RPM and turbine speeds

Features:

$249.95

- Target (Photo mode) is 25 feet
- Multifunction's: Photo Tach & Contact Tach & Surface Speed
- Wide Measuring Range: 6 to 30,000 RPM
- Last Value, Max Value, Min Value: Automatically Saved and Recalled
- 3 Year Limited Warranty

TPI Connected CBM

After people, information is a company's greatest asset. TPI's Connected CBM products help grow that information by providing the essential data to leverage its true value. Our continually expanding range of connected products already includes two portable vibration analyzers, an Infra-Red & contact thermometer, and now the 9034/38 Smart Vibration Monitor online vibration analyzers.

Whether the readings are collected by a maintenance technician using the simple to operate 9080 VibMeter, or by a vibration analyst on a 9041 Ultra II, or 24/7 on a 9034/38 Smart Vibration Monitor, all of the data will be available on the same analysis and reporting platform. The only question is which platform to choose – local PC or remote Cloud? Or Both! – With TPI's solution the PC based C-Trend II and the Cloud based DataDecypher can share and synchronize all data for a truly connected solution.

PC Analysis Software
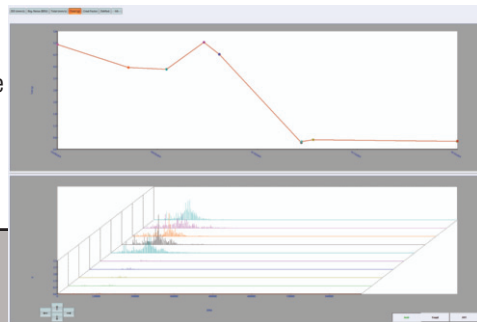### Analyze / Trend / Alarm / Report on ALL connected products

C-Trend II powerful easy to use asset management and fault diagnosis software

C-Trend II standard software gives you greater ease of use and flexibility. Windows 8™ compatible

Store, analyze and report on all your vibration parameters in one place.

Perform and track compliance rates of on-site inspections which includes forms and pre-built safety checklists.

- Upload your own checklists or utilize existing pre-built checklists based on OSHA safety regulations.
- Reduce and eliminate paper forms.
- Conduct inspections on multiple mobile devices including iPhone, Android, and more.
- Improve safety and gather real time inspection analytics.

9041 Ultra II
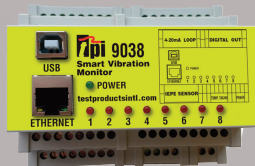### High Performance Vibration Analysis & Two Plane Balancing

1 Detect out of balance, misalignment, looseness and bearing defects.
2 Detects faults by identifying the cause preventing breakdowns from happening.
3 Trending and bearing analysis with C-Trend II software

Vib Analyzer 9080 & 9080-Ex
High Performance / Low Cast Vibration Analyze

1 Detect out of balance, misalignment, looseness and bearing defects.
2 Detects faults by identifying the cause, preventing breakdowns from happening.
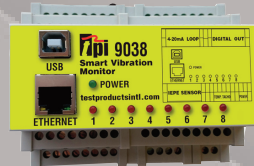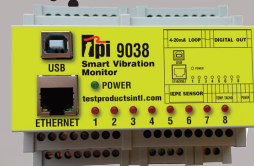
377BT
IR Temp with Bluetooth

- Non-Contact IR
- Adjustable Emissivity
- Laser Sighting
- Contact temperature with optional "K" type thermocouple probes
- Bluetooth Connectivity to data collectors

Smart Vibration Monitor
4/8 Accelerometers + 1 Tacho + Temperature Permanent Installation

Smart Vibration Monitor
4/8 Accelerometers + 1 Tacho + Temperature Permanent Installation

Smart Vibration Monitor
4/8 Accelerometers + 1 Tacho + Temperature Permanent Installation

Knowledge may be power, but knowledge needs data – TPI gives you the data!