Condition Based Monitoring
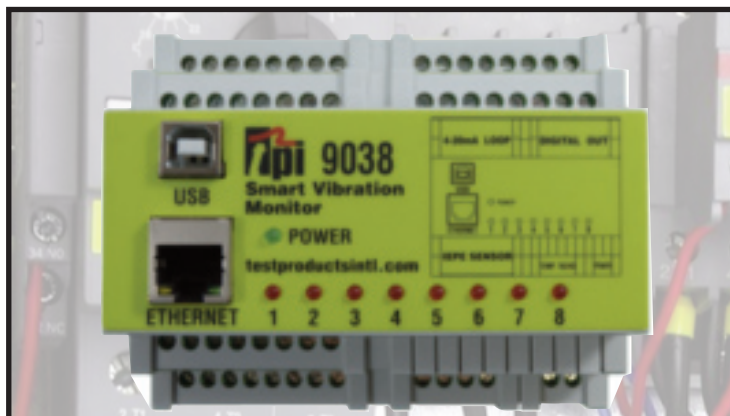
Intelligent tools to monitor, analyse & interpret vibration, bearing condition, temperature and overall machine health.

Intelligent Vibration Analysers Analyse • Interpret • Save

Condition based maintenance (CBM) is not just a technique for avoiding breakdowns. By identifying faults such as out of balance, misalignment, worn bearings etc. you can significantly reduce operating costs:

- Lower energy costs (out of balance and misaligned machines need a lot more unnecessary energy)

- Prolong component lifetimes (e.g. by reducing bearing wear)

- Lower repair costs (replacing worn bearings before they fail is a lot cheaper and much safer!)

- Reduce downtime (increase profitability)

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

Multi-channel 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 per channel" industrial vibration monitor/analyser.

tpieurope.com
+44 (0) 1293 530196

TPI Europe p12.v05.23

MEASURE ● MANAGE
Solutions for Pumps, Fans & Motors

If you have Pumps, Fans and Motors you need TPI Vibration Analysers!

- Traditionally, vibration analysis has been a specialist field and typically performed by vibration consultants using very expensive equipment.
- Vibration analysers from TPI allow anyone to perform meaningful vibration analysis at an unexpectedly low cost.
- Easily and affordably detect worn bearings, faulty gearboxes, unbalance, misalignment and looseness.
- Identify the vibration problem: 2/10Hz to 1kHz for a clearer understanding of unbalance, misalignment or looseness
- 1kHz to 10kHz covers the Bearing Condition to identify bearing wear, damage, lubrication issues etc.
- Identify complex issues: 800-line spectrum with zoom and cursor.
- By detecting early signs of machine failure, machinery can be repaired or replaced before an expensive breakdown occurs.

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.

Motors
The motor and pump are bolted to the frame 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.

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.

9070 Vibration & Bearing Condition Analyser: analysis simply at the touch of a button!

TPI 9070 analyses & 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

9071 Intelligent Vibration& Bearing Condition Analyser with BNC cabled accelerometer with magnet for consistent readings

TPI 9071 analyses, 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.
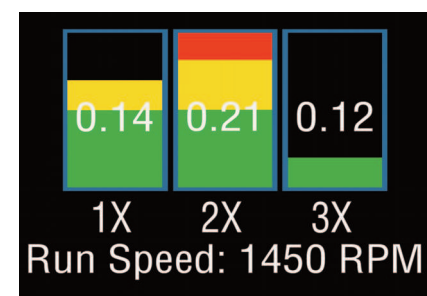
- Stored data is easily recalled and displayed.

9070 & 9071 Intelligent Vibration & Bearing Condition Analysers

Attach industry standard magnet (optional A9073 on the 9070) with 1/4"x28 thread. Provides faster, more reliable and repeatable readings.

- **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

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

9070, 9071: 3 Year Limited Warranty

Clear picture of:
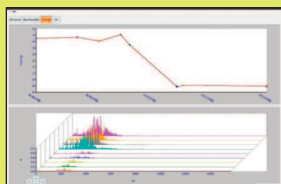1X, Unbalance
2X, Misalignment
3X, Looseness

9080 Intelligent Trending Vibration & Bearing Condition Analyser.....with various kit options available

Analyses, Interprets and TRENDS Machine Condition

- Identify the vibration problem: 2/10Hz to 1kHz for a clearer understanding of unbalance, misalignment or looseness
- Vibration values are displayed with color coded alarm levels for ISO values
- User settable Alarm Levels for easy identification of the bearing condition displayed as a BDU (Bearing Damage Unit) value
- 1kHz to 10kHz covers the Bearing Condition to identify bearing wear, damage, lubrication issues etc.
- Identify complex issues: 800-line spectrum with zoom and cursor.
- Load up routes for operatives to follow and trend lines show problems before they happen when using the accompanying VibTrend PC Software

VibTrend PC Software - **Supplied as Standard with 9080 Kits**
with NO ongoing subscription fees
See Page 6 for more details

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

Create Routes for operatives to follow for easy vibration point & machine identification then send out e-mail notifications automatically once docked

9080-Standard Includes:

A9018 accelerometer, curly cable & magnet & A9081A USB docking cradle in the A9087 carrying case with VibTrend Standard PC software (up to ten assets with ten measurement points per asset) WITHOUT any ongoing subscription fees

9080-Pro:

As 9080-Standard
PLUS
A9084 VibTrend Pro Unlimited PC software (up to 1,000 assets with ten measurement points per asset) WITHOUT any ongoing subscription fees

9080-Plus:

As 9080-Pro
PLUS
A9086 protective boot,
A9082 tacho strobe, &
A9072 100mm extended stinger
A9084 VibTrend Pro Unlimited PC software (up to 1,000 assets with ten measurement points per asset) WITHOUT any ongoing subscription fees

9080-Standard, 9080-Pro, 9080-Plus: 3 Year Limited Warranty

9080-Ex Intrinsically Safe Intelligent Trending Vibration & Bearing Condition Analyser.....

Analyses, Interprets and TRENDS Machine Condition

BENEFITS

- Find machine faults before they stop your machine
- Increase productivity and lower maintenance costs

FEATURES

- Collect data
- Trend data using VibTrend software
- Intrinsically Safe cable mounted accelerometer with magnet
- Built-in Bluetooth communication capability
- USB docking station to download to a PC
- ISO built-in Alarms
- Easily identify bearing problems with BDU Reading
- Easily identify problems with built-in band filters:
  1X (unbalance)
  2X (misalignment)
  3X (looseness)
- 800 line FFT (spectrum)
- Ruggedized IP67 case
- 1-year Limited Warranty

PUT THE TPI 9080-Ex TO WORK:

Commercial & Industrial HVAC

Food Processing

Manufacturing

Mining

Packaging

Petrochemical

Pulp and Paper

Power Plants

Utilities

Automotive

VibTrend PC Software Included as Standard

Intrinsically Safe
IEC Ex/ATEX
Ex ib IIC T4 Gb
(-20°C $\leq$ Ta $\leq$ +40°C)

TPI -Ex

7.5 ISO mm/s

23 BDU

0.4 g

Smart Trend Meter

Identify the vibration problem: unbalance, misalignment or looseness; in addition to the bearing condition

Intrinsically Safe
Certificate Numbers: IECEx BAS 16. 0131X Baseefa 16ATEX0182X

9084 Intelligent Trending Analyser.....
Analyses, Interprets and TRENDS Machine Condition.....including Bearing Condition with **Wireless Charging**

BENEFITS
- Find machine faults before they stop your machine
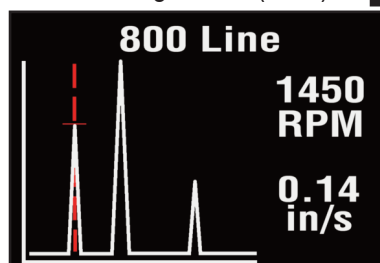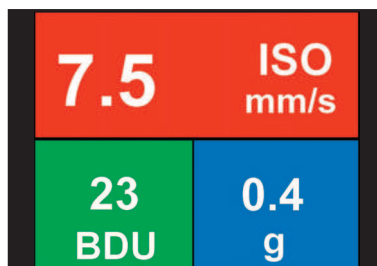- Increase productivity and lower maintenance costs

FEATURES
- Collect vibration data
- Trend data using VibTrend PC software
- Standard Cable mounted accelerometer with magnet
- USB docking station to download to a PC
- ISO built-in Alarms
- Easily identify bearing problems with BDU (Bearing Damage Unit) Reading
- Easily identify problems with built-in band filters:
    - 1X (unbalance)
    - 2X (misalignment)
    - 3X (looseness)
- 800 line FFT (spectrum)
- Wireless charging
- Ruggedized IP67 case
- 3-year Limited Warranty

VibTrend software gives you greater ease of use and flexibility.
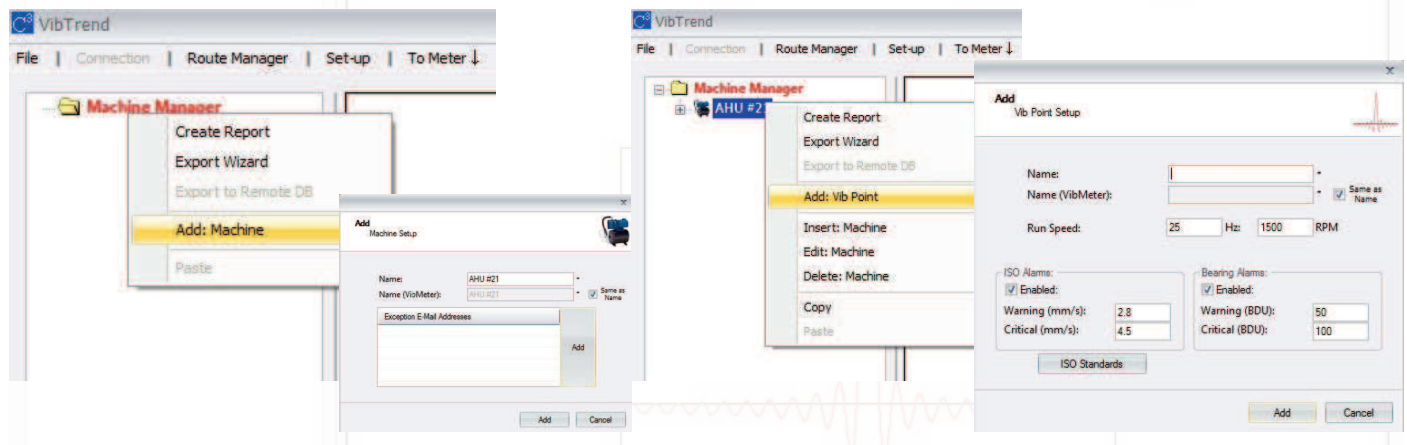- Store analyse and report on all your vibration parameters in one place.
- See Page 6 for further details

Supplied in Soft Carry Case with space for 9084, charger, cord, Accelerometer Cable & Accelerometer, Docking Cradle & USB Cable

Overall machine and bearing conditions: vibration values are displayed with colour coded alarm levels for ISO values and Bearing Damage Units (BDU).

Identify complex issues: 800-line spectrum with zoom and cursor.
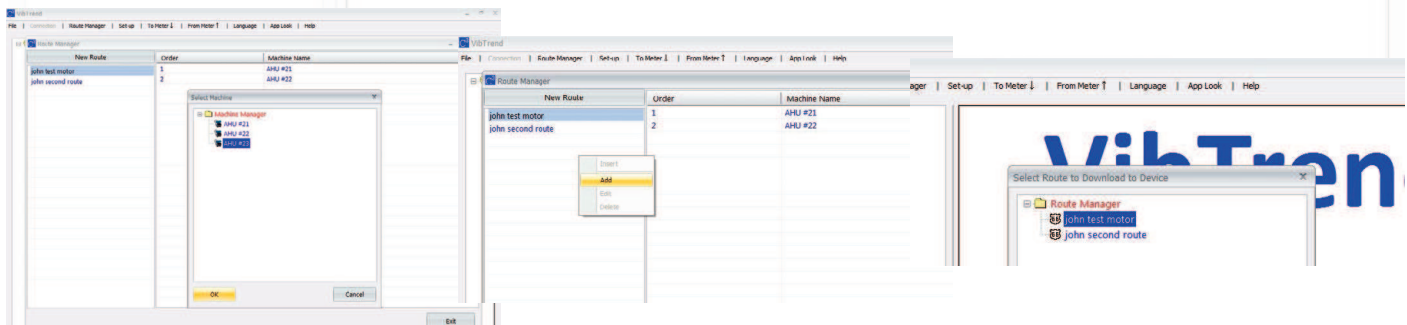
VibTrend Software included with 9080 Kits, 9084 and 9080-Ex.

Powerful but incredibly easy-to-use for asset management and fault diagnosis.
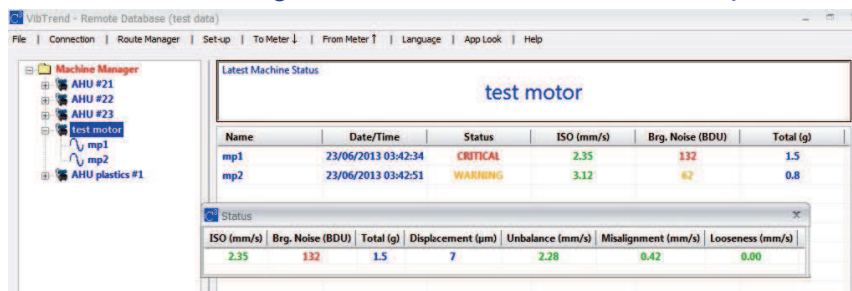
Add Machines & Vibration Points and using choice of pre-defined ISO and/or user-defined Alarm Levels for e-mail notifications
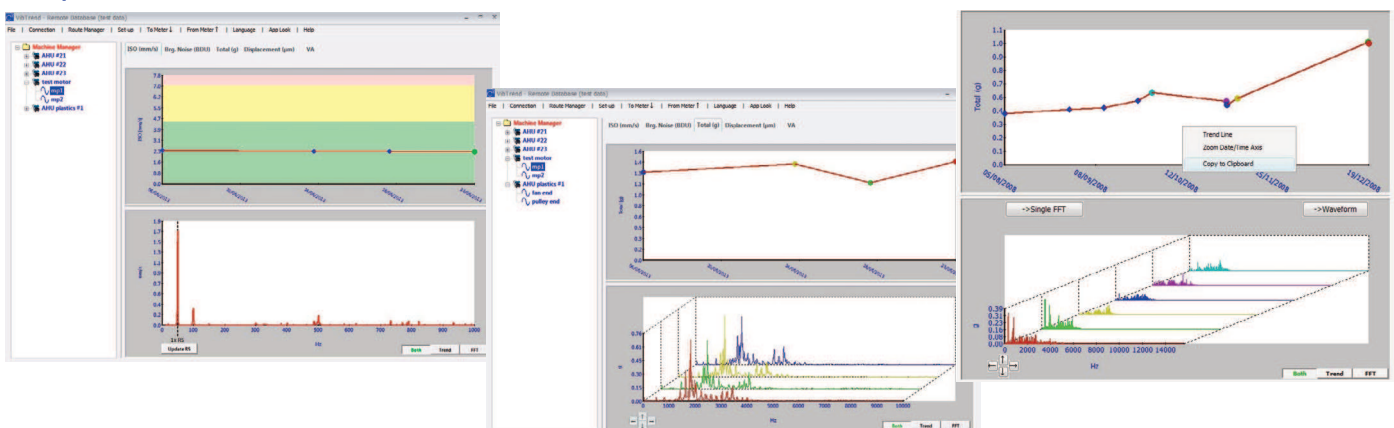

Create routes for operatives to follow and send these "To" and "From" the Meter to easily identify the measuring point and record the Vibration & Bearing Condition of the Machine

View Colour-Coded Status Warnings of Machines on measured points

Perform further diagnosis of Machine Measuring points using Trend Plots & Waterfall Graphs

9085 Intelligent Trending Analyser.....

Analyses, Interprets and TRENDS Machine Condition.....including Bearing Condition & **Temperature** with **Wireless Charging**

Vibration, Bearing Condition & TEMPERATURE Analyser

BENEFITS
- Find machine faults before they stop your machine
- Increase productivity and lower maintenance costs
- Measure temperature to determine if a bearing requires lubrication, preventing wear and failure.
- Use temperature measurement to confirm a high BDU reading (bearing noise) is caused by a worn bearing and not noise from pump cavitation, gearbox noise, or a nearby noisy bearing.
- Temperature measurement aids in diagnosing a tight or loose housing or shaft fit on a bearing.
- Measuring temperature assists with potential electrical issues on motors such as winding insulation deterioration, single phasing, broken rotor bars etc.

FEATURES
- Collect vibration and temperature data
- Practically instantaneous readout of actual surface temperature
- Trend data using C-Trend II PC software
- Standard Cable mounted accelerometer with Built in magnet and temperature sensor
- USB docking station to download to a PC
- ISO built-in Alarms
- Easily identify bearing problems with BDU (Bearing Damage Unit) Reading
- Easily identify problems with built-in band filters:
    - 1X (unbalance)
    - 2X (misalignment)
    - 3X (looseness)
- 800 line FFT (spectrum)
- Wireless charging
- Ruggedized IP67 case
- 3-year Limited Warranty

C-Trend II powerful PC software gives you greater ease of use and flexibility.
- Store, analyse and report on all your vibration parameters in one place.
- See Page 8 for further details

Supplied in Soft Carry Case with space for 9085, charger, cord, Accelerometer Cable & Accelerometer, Docking Cradle & USB Cable

Vibration, Balancing, Inspections.

Benefits

- Analyses, 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 analyses 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)
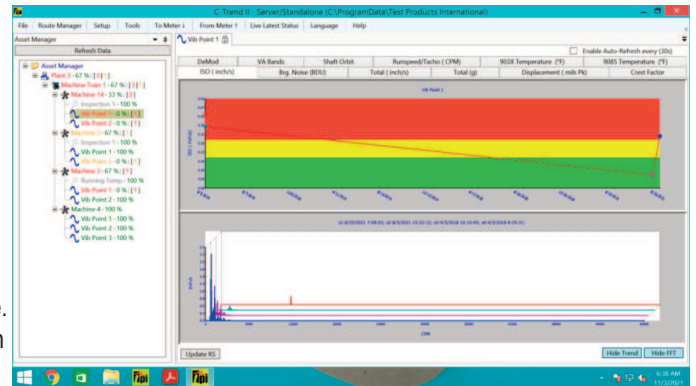
Features

- Set up routes that include inspections
- 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
- Wireless Transfer to Android Tablet

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

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

- Store, analyse and report on all your vibration and process parameters (e.g. oil pressures, 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!
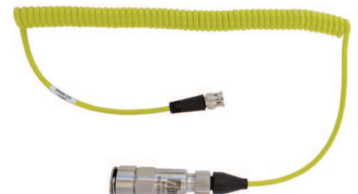

Optional, Additional or Replacement Accelerometers & Cables for 9071, 9080 & 9041

A9013 BNC to 2 Pin Cable

A9014 2 Pin Accelerometer
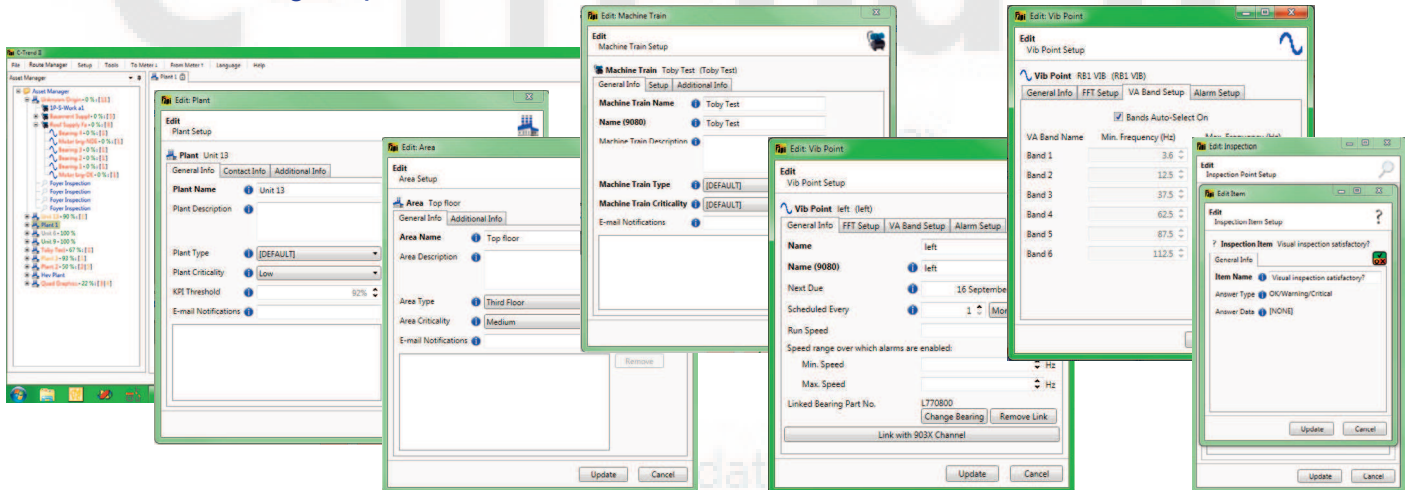
A9017 BNC to 2 Pin Cable & Accelerometer

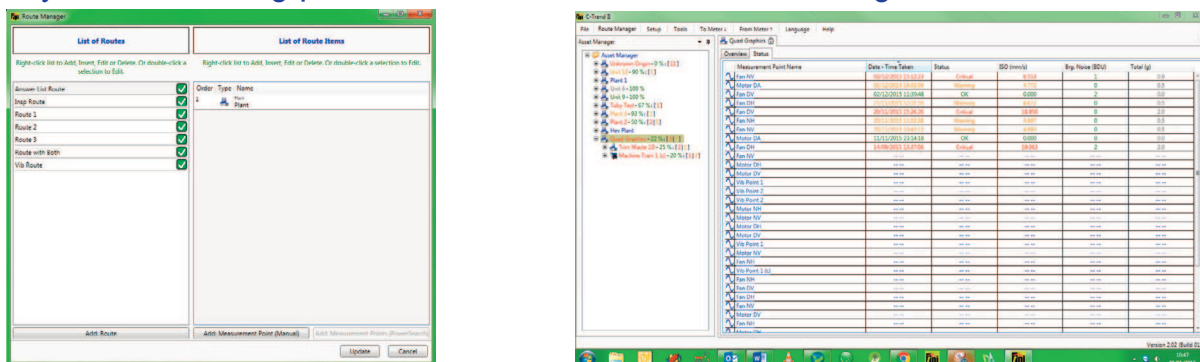**A9018** BNC to 2 Pin Cable & Accelerometer inc. Magnet

C-Trend II Software included with 9085 and 9041

Powerful but incredibly easy-to-use for enhanced asset management and high level fault diagnosis including DEMOD, Shaft Orbit & Inspections.
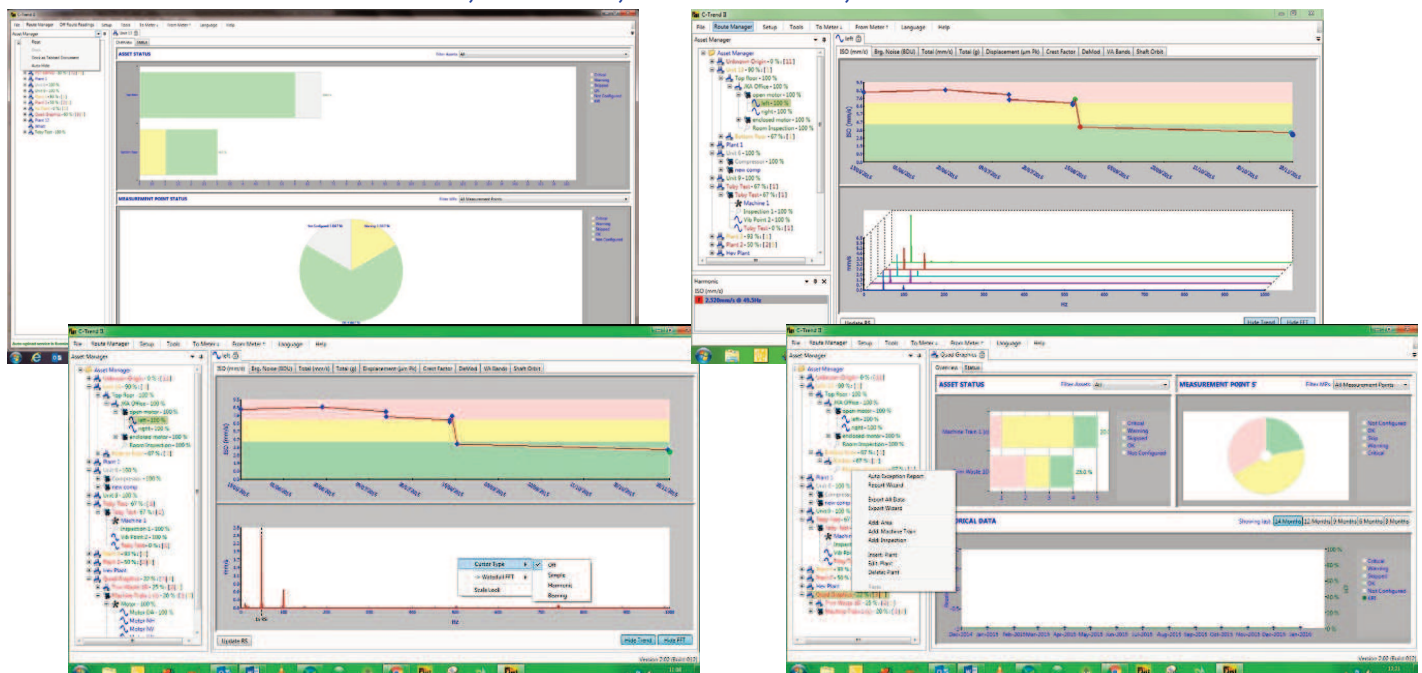
Create Plants, Areas, Machine Trains & Vibration Points and using choice of pre-defined ISO and/or user-defined Alarm Levels, Vibration Point Fault Frequencies from Bearing Database including Inspection Alerts for e-mail notifications
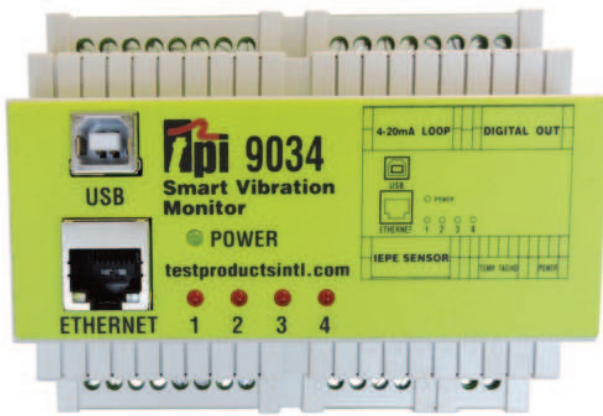

Create routes for operatives to follow and send these "To" and "From" the Meter to easily identify the measuring point and view the Vibration & Bearing Condition of the Machine
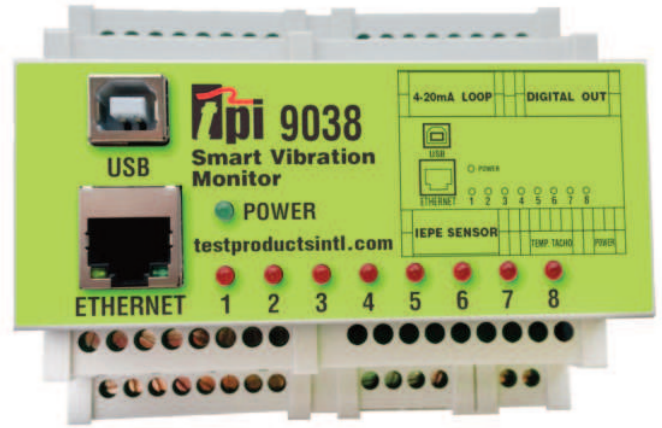

Perform further diagnosis of Machine Measuring points using a wide variety of additional features such as Crest Factor, DEMOD, Waterfall FFT, VA Bands etc...

9034 or 9038 Smart Vibration 4 and 8 Channels

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/analyser
- Very easy to set up using included Smart Vibration Monitor PC software (C-Trend II Software available as optional purchase)
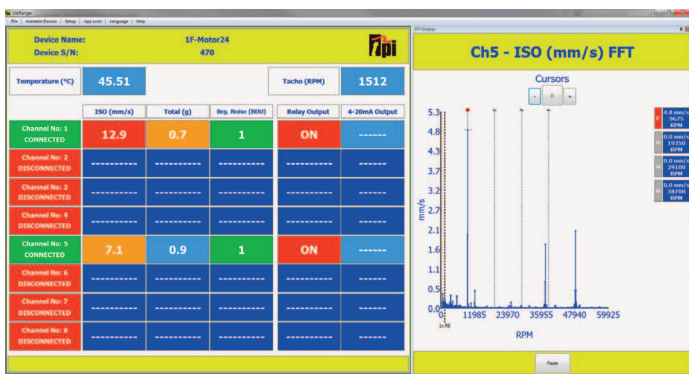- 24/7 monitoring of critical plant operations

TPI Intelligent 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 analysers provide the complete CBM solution.

TPI 9034, 9038 Benefits:

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

The 9034 and 9038 Smart Vibration Monitors are the new generation of low price-high performance installed vibration analysers from TPI. With up to 8 accelerometer inputs, 8 digital outputs, 8 analogue outputs, temperature and tacho inputs as well as USB and Ethernet connectivity the 9034 and 9038 offer unrivaled price per channel performance. The analysers 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 analyse the long term trend of all readings as well as being able to see FFT's of all logged data.

Selection Guide: 4 Channel or 8 Channel Fixed Vibration Monitoring

	9034 Smart Vibration 4 channel		9038 Smart Vibration 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 up to +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	
Part Number	9034		9038

A9031 Grub screw
¼"-28 UNF 1/2" Male to
¼"-28 UNF 1/2" Male

A9032 Grub screw
¼"-28 UNF Male to M6 Male

A9033 Glue face stud
¼"-28 UNF Male

A9034 Spot Facing Installation Kit
¼"-28 UNF thread

A9035 Spot Facing Installation Kit
M6 thread

A9014 Accelerometer with 2-pin connector

Straight 2 Pin MS Connector and Flying Leads

A9019: 5m (16ft) with straight 2 Pin MS connector and flying leads

A9028: 10m (32ft) with straight 2 Pin MS connector and flying leads

A9029: 15m (49ft) with straight 2 Pin MS connector and flying leads

A9036: 5m (16ft) with angled 2 Pin MS connector and flying leads

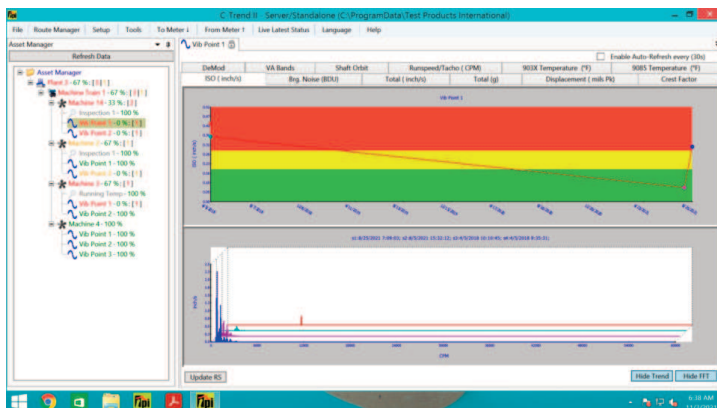**A9037:** 10m (32ft) with angled 2 Pin MS connector and flying leads

A9038: 15m (49ft) with angled 2 Pin MS connector and flying leads

TPI is Your Vibration Monitoring Source. Accessories and More.

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

- C-Trend II comes standard with the 9085 & 9041 and is available optionally for the 9080, 9084 and 9034/9038 series.
- Store, analyse and report on all your vibration, lube and process parameters
- All information is just a click away.
- Data can be accessed anywhere on any machine, with networking software.
- Allows the user to create Plants, Areas, Locations, Sub Locations, Machine Trains, Machines, Machine Components, Vibration Measurement Points, and Inspection Measurement Points.
- Vibration readings are uploaded to PC and synced up against the correct asset.
- Trending graphs are created and various vibration information can be viewed.
- Alarm levels can be set and e-mails sent if a reading triggers an alarm after docking and syncing data back to the PC.

A9091 with NO ongoing Subscription Fees

A9080 Bluetooth® Headset

Industry approved ear defenders with built-in-Bluetooth headphones allow you to listen to the bearing noise. Also use with your smart phone. Sold separately to work with 9080-Standard, Pro or Plus kits.

For use with 9080 only

A9082 Strobe

Stroboscope/flashlight attachment used to determine the speed of rotating equipment. Included with 9080 Plus kit. Also sold separately.

For use with 9080 only

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
- Temperature Range: -50 to 1,000°C
- K-Type thermocouple input for optional K-Type probe measurement.
- 0.1 Degree Resolution provides increased accuracy of reading.

505L Digital Handheld Tachometer

Combination photo and contact tachometer that also measures surface speeds of belts and wheels. Up to 25 feet in photo target mode.

- 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
- Target (photo mode) is 25 feet
- Multifunctions: 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

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