Your solution source for pro-active maintenance and monitoring instruments since 1977

- Tachometers
- Totalizers
- Timers
- Stroboscopes
- Vibration Meters
- Speed Sensors
- Fiberscopes
- Ultrasonic Leak Detectors
- Recording Tachometers

MONARCH INSTRUMENT

PORTABLE TACHOMETERS/TOTALIZERS (Contact/Non-Contact)

Pocket Laser Tach PLT200

RoHS NIST CE

Example Applications:
- Centrifuges
- Saw blades
- Grinders
- Elevators/escalators
- Engines
- Motors
- Conveyor belts
- Fans
- Propellers
- Vibration Studies

Pocket Laser Tach 200

"Safety First"
Safe and Accurate Non-Contact Measurements-View Target & Display Simultaneously, a Monarch Exclusive.

The rugged and versatile Pocket Laser Tach is ideally suited for non-contact, contact and linear speed measurements.

Pocket Laser Tach 200 (PLT200) is a digital, battery-powered portable optical tachometer, which operates up to 25 feet (8 meters) from a reflective target using a class 2 laser light source. The ergonomic design allows safe, direct line-of-sight viewing of both the target and the display at the same time, while providing a non-slip rubber surface for single hand operation.

Multi-Function For Pro-Active Maintenance

PLT200 is a 32 function Tachometer/Ratemeter, Totalizer/Counter and Timer (stopwatch), which is programmable in both Imperial and Metric rates. Two phono plug connectors for our optional Remote Contact Assembly (RCA) or remote sensors. The PLT200 also has a TTL compatible pulse output to trigger devices like vibration data collectors or stroboscopes. The KIT is supplied complete with a Remote Contact Assembly including concave and convex tips and a 10 cm linear speed wheel all in a latching carrying case.

Pocket Laser Tach 200 Kit includes: Tachometer, RCA, Contact Tips, 10cm Linear Contact Wheel, 5 feet of Reflective Tape and a Latching Carrying Case.

PLT200 Kit

Two Tachs in One ... the only portable laser tachometer available with both Remote Contact and Remote Sensors.

Optional plug-in Remote Sensors with 8 foot cable. (25 foot cables available). See page 9 for details.

Remote Optical Sensor (ROS-P) Gap 36 inches

Remote Magnetic Sensor (MT-190-P) Gap 0.25 inches

Remote Infrared Sensor (IRS-P) Gap 0.50 inches

Remote Contact Assembly (RCA) with 6 foot (1.82m) cable, Contact Tips and 10 cm Linear Contact Wheel (Shows optional 12 inch circumference Linear Contact Wheel)

Optional RCA

Specifications PLT200

- Display: 5 Digits, 5 Alphanumeric LCD
- Range(s) *Optical: 5 to 200,000 RPM
  **Contact:0.5 to 20,000 RPM

Rates	10cm Contact Wheel	12 inch circumference Contact Wheel
Inch/min	1.969 to 78,740 IPM	6.000 to 144,000 IPM
Feet/min	0.164 to 6,561.7 FT/M	0.500 to 12,000 FT/M
Yard/min	0.055 to 2,187.2 YPM	0.167 to 4,000.0 YPM
Cm/min	5.000 to 200,000 cm/M	15.240 to 365,760 cm/M
M/min	0.050 to 2,000.0 M/M	0.153 to 3,657.6 M/M

- Totalizer: 1-999,990 (events or length)
- Timer: 99:59.9 Min, sec, tenths
- Accuracy Optical:±0.01% of reading
  Contact: ±0.05% of reading (rpm)
- Resolution: 0.001 to 10 RPM (range dependent)
- Operating Distance: 2" to 25' (5cm to 7.62m), ±70° from perpendicular
- Memory: Maximum, Minimum and Last
- Power: (2) "AA" 1.5 VDC batteries (30 hours)
- Environmental: 5° to 40°C (40° to 105°F)
  80% RH up to 31°C (88°F)
- Dimensions: 6.92 "H x 2.4"W x 1.6"D
  (17.58 x 6.10 x 4.06cm)
- Weight: 7 oz. (210 g)

*** performance subject to intensity of ambient light irradiation.**
**** also reads units per second and per hour.**

N.I.S.T. INCLUDED CALIBRATION

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
1mW max @ 650nm
CLASSIFIED TO IEC60825-1:2001

TTL pulse Input/output cable with BNC connector

Protective Carry Pouch with belt loop (optional)

PLT200 shown with optical sensor and TTL output cable

PLT200 and PT99 have a 1/4 20 threaded bushing for tripod mounting

Ordering Information

Pocket Laser Tach 200 Tachometer, N.I.S.T. traceable certificate of calibration, 12 inches of Reflective Tape.
Pocket Laser Tach 200 Kit Tachometer with Latching Carrying Case, RCA, Tips and Linear Speed Wheel, Battery, 5 foot roll Reflective Tape, N.I.S.T. traceable certificate of calibration.
ROS-P Remote Optical Sensor with Mounting Bracket and 8 foot cable for Pocket Laser Tach 200 only.
ROS-P-25 Same as above with 25 foot cable.
T-5 Reflective Tape, 5 foot roll, 1/2" wide.
TTL pulse output cable
Latching Carrying Case

PORTABLE TACHOMETERS (Non-Contact)

Pocket-Tach PT99

RoHS CE

Pocket Tach 99 (PT99) is a digital, battery-powered portable non-contact optical tachometer, which operates up to 36 inches from a reflective target using a bright red LED light source. The ergonomic design allows safe, direct line-of-sight viewing of both the rotating target and the display at the same time, while providing a non-slip rubber surface for single hand operation. Pocket Tach 99 is the value-leader of the world-class Pocket Tach Series from Monarch.

Protective Carry Pouch with belt loop (optional)

T-5 Reflective Tape 5' x 1/2" wide roll

PLT200 and PT99 have a 1/4 20 threaded bushing for tripod mounting

Specifications PT99	
• Display:	5 Digits, 5 Alphanumeric LCD
• Range:	5 to 99,999 RPM
• Accuracy:	±0.01% or ±1 Digit
• Resolution Autoranging:	0.001 to 1.0 RPM
Fixed:	1 Digit RPM
• Operating Range:	2 inches to 36 inches, ±45°
• Memory:	Maximum, Minimum and Last
• Power:	(2) "AA" 1.5 VDC batteries (60 hours)
• Environmental:	5° to 40°C (40° to 105°F) 80% RH up to 31°C (88°F)
• Dimensions:	6.92 "H x 2.4"W x 1.6"D (17.58 x 6.10 x .06cm)
• Weight:	7 oz. (210 g)

Pocket Tach 99

Example Applications:
- Grinders
- Abrasives
- Motors
- Engines
- Pumps

Ordering Information
Pocket-Tach 99 Tachometer, Battery & 6 inches Reflective Tape.
Carry Pouch
T-5 Reflective Tape, 5 foot roll, 1/2" wide.

PORTABLE TACHOMETERS (Non-Contact with Pistol Grip)

Phasar-Laser Tach Series

NIST CE

Phasar-Laser combines the accuracy and safety of a non-contact optical tachometer with the convenience and ease of operation of a pistol grip instrument, housed in a rugged steel enclosure. The tachometer provides a convenient visible red laser for easy targeting along with a latching trigger for hand held operation and a mounting bushing for tripod mounted use.

Phasar-Laser-R provides for an optional remote sensor for difficult to reach locations in addition to the standard internal measurement optics.

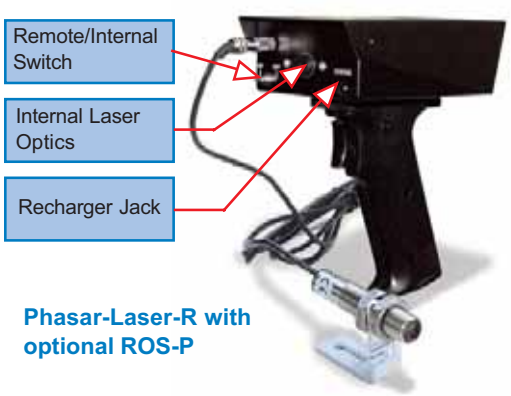
Features
- Convenient pistol grip design
- Rugged steel enclosure
- Safe non-contact operation to 10 feet (3 m) and 45 degrees from reflective tape
- On-target and low battery indicators
- Last measurement memory

Phasar-Laser

Example Applications:
- Engines
- Dynamometers
- Pumps
- Fan blades
- Centrifuges
- Motors

N.I.S.T. INCLUDED CALIBRATION

LASER RADIATION
DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT
1mW max @ 650nm
CLASSIFIED TO IEC60825-1:2001



Phasar-Laser-R with optional ROS-P

Specifications	Phasar-Laser and Laser-R
Range	5-100,000 RPM
Accuracy	±1 RPM or 0.01% of reading
Resolution	1 RPM
Display	6 digit, 0.5" high Liquid Crystal Display
Power On	Pistol grip trigger with latching "on" Switch
Operating Range	10 feet (3m) and 45° from reflective tape
Power	(4) "AA" (LR6) Alkaline batteries or *optional NiCad batteries and AC recharger

Ordering Information
Phasar-Laser Tachometer, 12" of Tape, and Alkaline Batteries
Phasar-Laser Kit Tachometer, Recharger, 5 foot roll of Tape, NiCad Batteries in Latching Case
Phasar-Laser-R Kit Tachometer, Recharger, Remote Optical Sensor, 5 foot roll of Tape, NiCad Batteries in Latching Carrying Case

PORTABLE STROBOSCOPES (Deluxe and Basic)

Nova-Strobe x Series

RoHS NIST CE

Nova-Strobe dbx

Common Applications:
- Non-contact RPM
- Diagnostic Inspection
- Bent blades/shafts
- Slipping/worn belts
- Printing Press
- Stop-action Inspection
- Textiles

Nova-Strobe x - The standard for high intensity multi-function portable stroboscopes. Models are available with digital displays, battery or AC power, and a useful range of features which provide unmatched performance and value. Four models range from the Nova-Strobe **dbx** Deluxe the most versatile battery powered digital stroboscope with internal phase shifting, down to the Nova-Strobe **bax** Basic, the most cost effective AC powered digital stroboscope.

Both the battery powered Nova-Strobe **dbx** and AC powered Nova-Strobe **dax** provide a range of 30 to 20,0000 flashes per minute and an accuracy of ±0.002 of setting. Flash rates are easily adjusted to fractional RPM by a coarse/fine control knob. Individual TTL compatible input and output jacks are provided for 'daisy chaining' of multiple strobes, triggering from an external source, or providing a trigger signal to external equipment.

Both dbx and dax provide internal phase shifting to keep the target precisely in view. Both provide x2 and ÷2 capability for distinguishing actual RPM from harmonic frequencies. In addition, 9 user presetable memory flash rates for repetitive measurements and storage of the last flash rate measured are included.

Features All Nova-Strobes, Deluxe and Basic:
- Internal rechargeable batteries or AC powered models
- Weighs less than 2.0 Lbs. for easy handling
- More than 20% brighter Xenon light than competitors
- Electronic switching provides continuous cool operation
- Tripod mounting bushing in handle

In addition, Nova-Strobe **dbx** and **dax** Plus models have:
- N.I.S.T. Traceable Certificate of Calibration included
- Internal phase shifting for easy reference target viewing
- Tachometer mode, speed measurement up to 250,000 RPM
- Power for optional sensors
- Low battery indicator

Nova-Strobe dbx Deluxe

Ordering Information
Nova-Strobe bax 115 Stroboscope, AC powered
Nova-Strobe bax 230 Stroboscope, AC powered
Nova-Strobe dax 115 Stroboscope, AC powered
Nova-Strobe dax 230 Stroboscope, AC powered
Nova-Strobe bbx 115/230 Stroboscope, battery Powered, universal PSC-2U (115/230 VAC) recharger (USA, UK, AUS, EURO plug)
Nova-Strobe dbx 115/230 Stroboscope, battery powered, universal PSC-2U (115/230 VAC) recharger (USA, UK, AUS, EURO plugs)
Also available in Kit form including; Stroboscope Recharger, spare lamp and carrying case.

Select optional sensors for tachometer mode (see page 9)

TTL compatible input/output 1/8" (3.5mm) phone plugs

Nova-Strobe bbx/bax Basic Digital LCD Display

Nova-Strobe dbx Kit

Specifications	Nova-Strobe dbx, Deluxe Battery Powered	Nova-Strobe dax, Deluxe AC Powered	Nova-Strobe bbx, Basic Battery Powered	Nova-Strobe bax, Basic AC Powered
Range Flashes/Minute	30-20,000 FPM (Flashes Per Minute)		30-10,000 FPM (Flashes Per Minute)	
Display	6 Digit Numeric and 5 digit Alphanumeric LCD			
Accuracy/Resolution	0.002% of setting or +/- 1 lsd /0.01 FPM			
Flash Energy/Duration	230 mJoule up to 3450 FPM / 8-20 µsec			
Average Power-Watts	>13W above 3450 FPM			
Flash Tube & Life	High Power Xenon - 100 million flashes typical			
External Triggers - in/out 1/8" (3.5mm) Phone Jacks	TTL (24Vdc Max) Input. Provides 3.3 Vdc TTL output		N/A	
Tachometer Mode	5-250,000 RPM - Use with Optional Remote Sensor		N/A	
Programmable Memory	Yes	Yes	N/A	
Internal Phase Shift	Yes	Yes	N/A	
Operating Time	2 hours typical @ 1800 FPM	Continuous	2 hours typical @ 1800 FPM	Continuous
Power Supply	Internal NiMH rechargeable batteries	115 Vac, 50-400 Hz or 230 Vac, 50-400 Hz	Internal NiMH rechargeable batteries	115 Vac, 50-400 Hz or 230 Vac, 50-400 Hz
Weight	1.9 Lbs. (.86 kg)	1.5 Lbs. (0.68 kg)	1.9 Lbs. (.86 kg)	1.5 Lbs. (0.68 kg)
Size (L x W x H)	Body: 9" x 3.66" x 3.56" (229 x 93 x 90 mm); Reflector Housing: 4.8" (122 mm) diameter; Handle: 4.25" (108 mm) long			

PORTABLE STROBOSCOPES (external phase-shifting)

Phaser-Strobe pbx

RoHS NIST CE

The Phaser-Strobe pbx incorporate the unique design features of the Nova-Strobe dbx with an increased operating range of 30 to 50,000 flashes per minute, as well as external phase- shifting. The unique digital adjustment knob can select the decade for adjustments, so coarse and fine adjustments of flash rates are made quickly and with significantly better resolution than competitive units. The memory feature of the **Phaser-Strobe pbx** allows nine flash rates to be stored - displayed in flashes per minute or flashes per second. **Phaser-Strobe pbx** operates with internal rechargeable batteries or continuously from AC line power with the power supply/recharger.

Features:

- N.I.S.T. Traceable Certificate of Calibration included
- Phase Shift adjustable as phase angle or time with resolution to 0.01° and 0.01 msec
- Virtual RPM mode provides slow motion viewing for high speed events
- Backlit alphanumeric LCD shows flash rate, degrees, time
- Store and recall nine memory settings
- TTL compatible input/output jacks, power for optional sensors
- Tachometer mode from Remote Sensors (see page 9)

Specifications	Phaser-Strobe pbx
Flash Range	30-50,000 FPM (Flashes/Minute) 0.5-830 FPS (Flashes/Sec) (Hz)
Accuracy	±0.002% of Setting +/- least significant digit
Digital Adjustment Knob	36 detents per revolution and blinking decade selection
Flash Rate Resolution (Internal Triggering)	0.01 to 1.0 FPM (Menu Selectable)
Operating Time	2 hours typical @ 1800 FPM or continuos AC power
Phase Delay - Degrees	0.1 to 359.9 degrees
Time Delay - Seconds	0.01 to 1000 msec.
Virtual RPM (Slow Motion)	0-200 VRPM
Flash Energy (Typical)	230mJoule up to 3450 FPM
Flash Duration (Typical)	8-20 usec
Average Power - Watts	11W @ 3000 FPM; >13W @ 3450 FPM
Tachometer Mode	5-250,000 RPM from external trigger
External Input	Input Pulse - 0.5 usec min, TTL to 24V max (1/8" phone plug)
Trigger Output/Remote Sync	3.3V TTL Compatible 40 usec pulse-Positive/Negative
Power	Internal rechargeable batteries with AC power supply/recharger
Weight	1.9 Lbs. (0.85 kg) including batteries

Phaser-Strobe pbx

Common Applications:
- Calibration of Tachometers
- Diagnostic Inspection
- Engine R&D
- Textiles
- Centrifuges
- Shaker Tables

Compatible with Remote Sensors (see page 9).

Ordering Information

Phaser-Strobe pbx 115/230 - Stroboscope with PSC-pbxU (115/230 Vac) Power Supply/ Recharger

Phaser-Strobe pbx Kit 115/230 - Same as above with Spare Lamp and Latching Carrying Case

PORTABLE STROBOSCOPES (for use with Vibration Data Collectors)

Vibration-Strobe vbx

RoHS NIST CE

The vbx vibration strobe is uniquely designed to provide precise, instantaneous synchronization to a number of data collectors and FFT Analyzers triggered by an accelerometer. Built for portable applications, the **vbx** is the perfect lightweight phase analysis tool. **vbx** allows for the measurement of phase without stopping the machinery to install reflective tape. Phase analysis is quick and accurate using the Filter Bandwidth Selector and the Relative Phase Adjustment. Unique "Tracking Filter" maintains phase lock to input pulse. **vbx** can power and be triggered by accelerometers with or without data collectors.

Kit includes: Strobe, interface cable, universal p.s./recharger, spare lamp in carry case.

Specifications	Vibration-Strobe vbx
Flash Range	30-50,000 FPM (Flashes/Minute) 0.5-830 FPS (Flashes/Sec) (Hz)
Accuracy	±0.002% of Setting +/- least significant digit
Digital Adjustment Knob	36 detents per revolution and blinking decade selection
Flash Rate Resolution (Internal Triggering)	0.01 to 1.0 FPM (Menu Selectable)
Indicators	Battery Level, On Target, Time, Auto, Alt, Tach, Lock, and EXT icons
Operating Time	2 hours typical @ 1800 FPM or continuos AC power
Phase Delay - Degrees	0.1 to 359.9 degrees
Tracking Filter	Selectable Wide and Narrow Bandwidths. Filter may not lock below 100 fpm
Time Delay - Seconds	0.01 to 1000 msec.
Virtual RPM (Slow Motion)	0-200 VRPM
Flash Energy (Typical)	230mJoule up to 3450 FPM
Flash Duration (Typical)	8-20 usec
Average Power - Watts	11W @ 3000 FPM; >13W @ 3450 FPM
Tachometer Mode	5-250,000 RPM from external trigger
External Input	Input Pulse - 0.5 usec min, TTL to 24V max (1/8" phone plug)
Trigger Output/Remote Sync	3.3V TTL Compatible 40 usec pulse-Positive/Negative
Power	Internal rechargeable batteries with AC power supply/recharger
Weight	1.9 Lbs. (0.85 kg) including batteries

Vibration Strobe vbx

Ordering Information

Contact Factory for available Models.

PORTABLE STROBOSCOPES

Palm Strobe x (psx)

RoHS NIST CE

Palm Strobe x

Common Applications:
- Data Collectors
- Fans
- Printing Presses
- R&D
- Utilities
- Felt Belts/Conveyor
- Vibration Studies
- Textiles

PALM STROBE x Offers excellent brightness, exceptional features and extra long battery life. Unique one-touch joystick-type button allows single hand operation for fast fractional RPM tuning. Select mode of operation for internal tuning, external TTL input, tachometer display and x2 ÷2 functions. Eight memory positions provide rapid recall of user defined frequencies.

Features:
- **Removable Plug-in Battery Pack**
- **Easy One Hand Operation**
- **Light weight, Pocket Size**
- **Flash Rates to 12,500 FPM**
- **Tachometer Mode from Remote Sensors**
- **TTL Compatible Input/Output**

Unlimited Power
World's First Stroboscope with removable, rechargeable battery pack (patented).

Palm Strobe x Deluxe Kit

Remote Trigger
Supports optional SPSR(self-powered sensor) trigger. See page 10.

Universal Power 115/230Vac
Universal Power Supply allows you to recharge anywhere in the world.

Portable Inspection Light
Unique Field Holster gives you true mobility.

TTL Pulse input/Output Cable
Input/output cable with BNC connector.

Ordering Information

Palm Strobe x 115/230 - Stroboscope with PSC-2U (115/230Vac) recharger *

Palm Strobe x Pak 115/230 - Same as above with spare battery and holster

Palm Strobe x Kit 115/230 - Stroboscope with PSC-2U (115/230 Vac) recharger *, Spare Lamps and Latching Carrying Case

Palm Strobe x Deluxe Kit - Stroboscope and Battery with PSC-2U (115/230 Vac) recharger *, Spare Lamps & Battery, Holster and Latching Carrying Case

* Includes USA, Australian, UK and Euro plug adapters.

Specifications	Palm Strobe x Series
Internal Mode Range	100 - 12,500 FPM (Flashes per Minute)
Light Power	7.9 watts @ 6000 FPM, 150 mJoules up to 3100 FPM
Flash Lamp Life	100 million flashes typical
Flash Duration	10 - 30 microseconds typical
Display	6-digit alphanumeric backlit LCD display
Flash Rate Resolution	0.1 FPM
Flash Rate Accuracy	Greater of ±0.01% of reading or ±0.5 FPM
Tachometer Mode	5 to 250,000 RPM
External Input	0 to 5 Vdc (12 Vdc max.) TTL compatible, positive edge triggered
Output Pulse	0 to 5 Vdc typical- 350 µsec positive pulse
Run Time	2 Hours typical @ 1800 FPM >1 Hour typical @ 6000 FPM
Memory	8 programmable flash rates and last flash rate at power down
Adjustment	Four quadrant tuner button with blinking decade select for flash rate up and down, multiply by 2 and divide by 2
Modes	Internal, External, Tachometer, Preset, x or ÷2, Locked On
Battery Power	Removable 6Vdc rechargeable battery pack
Recharger(s)	PSC-2U Recharger, 100-240Vac, 50/60Hz, includes 4 adapters
Weight	1.2 lbs. (0.55 kg) including battery
Strobe Dimensions	3.04 x 9.34" (77 x 237 mm)

VIBRATION METER AND TRENDING SOFTWARE

Examiner 1000 and OnTime Software

Examiner 1000 overall vibration meter and electronic stethoscope is the ideal tool for cost-effective predictive maintenance. This meter is simple to operate with only one button and volume adjustment. Troubleshoot bearings and lubrication with the digital LCD and stethoscope features to enhance machinery reliability. Compare your vibration results by using the ISO 10816 Severity Chart right on the meter. **N.I.S.T. traceable calibration is available.**

Features:

- Electronic Stethoscope-troubleshoot while listening to the bearing
- Measure vibration in:
  - **Acceleration**- perfect for high-speed applications
  - **Velocity-** in English or Metric per ISO 10816
  - **Acceleration Envelope**-high-pass filter method

SPECIFICATIONS		EXAMINER 1000
Amplitude Ranges	Acceleration: Velocity: Envelope:	0.01 to 19.99g (RMS) 0.01 to 19.99 in/sec (RMS) 0.1 to199.9 mm/sec (RMS) 0.01 to 19.99 ge (PEAK)
Frequency Ranges		Overall: 10 Hz to 10 kHz Envelope: 0.5 kHz to 10 kHz
Display Indications		LCD 3.5 digit with Measurement, Hold and Low Battery
Vibration Sensor		Piezoelectric Accelerometer 100 mV/g
Output		Audio: (3.5 mm) mini plug Sensor Power: 12 Vdc @ 2 mA
Power		(2) "AA" cell batteries
Operating Time		20 hours continuous without phones
Environmental		-14 to 122 °F (-10 to 50 °C)
Dimensions		6.3 x 3.3 x 1.25" (152 x 83 x 32 mm)
Weight		2.85 lbs (1.30 kg)

Example Applications:
- **Bearings**
- **Gearboxes**
- **Lubrication**
- **Pumps**
- **Motors**
- **Fans**

Examiner 1000

VIBRATION SEVERITY PER ISO 10816-1

Machine		Class I small machines	Class II medium machines	Class III large rigid foundation	Class IV large soft foundation
in/s	mm/s				
Vibration Velocity Vrms					
0.01	0.28				
0.02	0.45				
0.03	0.71		good		
0.04	1.12				
0.07	1.80				
0.11	2.80		satisfactory		
0.18	4.50				
0.28	7.10		unsatisfactory		
0.44	11.2				
0.70	18.0				
1.10	28.0		unacceptable		
1.77	45.9				

Overall Vibration Severity Chart, located on the front panel of the Examiner 1000, provides instant status of measured machinery.

Examiner 1000 Kit with OnTime Trending Software

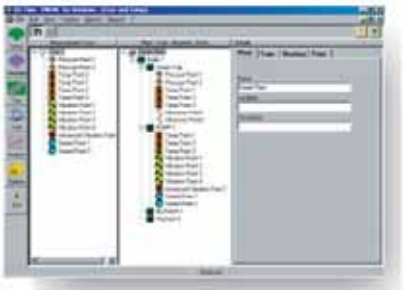
OnTime Trending Software is a simple-to-use, graphical program designed for condition-based maintenance through the routine trending of vibration and process information. Trending is the best method to judge the dynamic operating conditions of your machinery. **OnTime** helps you to manage all key machinery operating conditions.

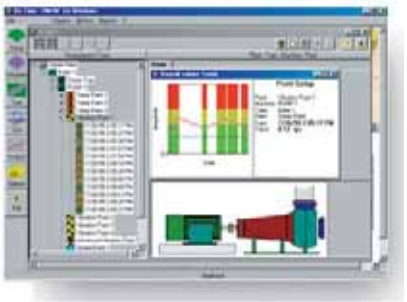
Trend:

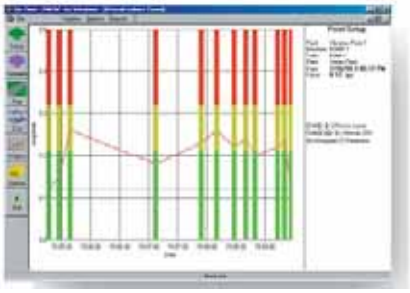
- **overall vibration readings**
- **temperature**
- **speed**
- **process measurements of any type**

OnTime is easy to set-up. Building the user-defined database of collection points is simple and intuitive. Construct entire Plants with complex machines and data collection points in minutes. Cut, paste, copy and edit-all the familiar windows features are here.

OnTime graphically displays automatically built trends of the data entered. User defined alarms are set and if violated, an immediate visual alarm is displayed in the software. This allows for instant identification of machines which require corrective action. Compare any type of data.







OnTime software does not work with Windows 2000 OS.

Ordering Information

Examiner 1000 System Vibration Meter, Sensor Pak, Headphones, Carrying Case, OnTime GP Software

Examiner 1000 Kit Vibration Meter, Sensor Pak, Headphones, Carrying Case and OnTime GPlite Software

Examiner 1000 Vibration Meter with Sensor Pak, Headphones, Carrying Case, No OnTime Software included

OnTime GP Software for Windows 95/98, XP and NT 4.0

PANEL TACHOMETERS / TOTALIZERS / RATE METERS

ACT Series

ACT-3 Panel Tachometer/Ratemeter/Totalizer

Example Applications:
- Control rooms
- Alarm shutdowns
- Field testing
- Data acquisition
- R&D testing

The ACT Series consists of three models -one tachometer and two tachometer/ratemeter/totalizers. All feature universal input for two and three wire sensors providing signals of 0-5V TTL or 0-1.1Vac to 0-50 Vac. All models operate from optical, infrared, laser, proximity or magnetic sensors (see Page 9) and display in fixed or floating decimal point format (ACT-1B does not offer a floating decimal point). The ACT-3 provides the best user benefits of any panel instrument available today.

Features:

ACT-1B (5-99,999 RPM) CE
- One pulse/revolution (ACT-1B) or 60 pulses/revolution (ACT-1B-60)
- Output options: 4-20 mA (12 bit), 0-5 Vdc (12 bit) or TTL pulse

ACT-2A (5-999,990 RPM)
- Front panel programmable
- One or multiple pulses/revolution, scaling or totalizing
- Minimum and maximum memory recall

ACT-3 (5-999,990 RPM)
- N.I.S.T. Traceable Certificate of Calibration included
- Simultaneous 4-20 mA, 0-5 Vdc (12 bit), TTL pulse and 2 Alarm outputs and RS232.
- Single event speed capture from start and stop pulses, in units such as MPH, cm/sec, etc. Using one sensor - rotational, loop or reciprocating motion. Using two sensors - linear travel.

ACT-1B Panel Tachometer CE

ACT-3 Panel Tachometer/Ratemeter/Totalizer

Specifications	ACT-1B	ACT-1B-60	ACT-2A	ACT-3
Speed Range	5-99,999 RPM	1-7,000 RPM	5-999,990 RPM (Speeds below 5 RPM possible with multiple pulses/revolution)	
Accuracy	±1 RPM or 0.005% of reading		RANGE	RESOLUTION (autoranging mode) ACCURACY (±0.0015%) of reading
Resolution	1 RPM		5.000-9.9999 10.000-99.999 100.00-999.99 1000.0-9999.9 10,000-99,999 100,000-499,999 500,000-999,990	0.0001 0.001 0.01 0.1 1 10 10
Input Configuration	1 pulse/rev	60 pulses/rev	1 or multiple pulses/rev. Front panel push button programmable	
Alarm Output	N/A			Form C relay contacts rated 1A at 115 Vac
Alarm Capability	N/A			Two alarm set points each, front panel programmable as either high or low, latching or non-latching. Hysteresis and low limit lockout are programmable.
Analog Outputs	Optional: Current Output (IO): 4-20mA (12 bit) OR Analog Output (AO): 0-5Vdc (12 bit) *MUST SPECIFY FULL SCALE RPM FOR EITHER OPTION		N/A	Voltage Output 0-5Vdc and Current Output 4-20mA. Panel programmable for common full scale RPM or offset ranges. Example: 0V=3600 RPM and 5V=5000 RPM
Output Update Rate	Up to 2x per second		N/A	Standard up to 25 times/second. Programmable up to 233 times/second.
Pulse Repeater Output (PO)	Optional: Pulse Output 0-5 V TTL compatible. Pulses out per rev equal pulses in per rev		N/A	Pulse Output 0-5V TTL compatible. Pulses out per revolution equal pulses in per revolution
Scale Factor	N/A		0.0001-9999.9	
Totalize/Count	N/A		1-99,999	
Display	5 digits, 0.56" (14 mm) high red LED			
Display Update	2x per second above 120 RPM			
Dimensions	1/8 DIN by 4.5" (114 mm) deep		1/8 DIN by 7" (178 mm) deep	
Power	Must Specify 115V, 230V (50/60 Hz) or 12Vdc input power - Tachometer provides 5-8 Vdc power to sensors			

for Tachometers & Stroboscopes or stand alone use

Optical LED (1-250,000 RPM) *Most popular.*

ROS (Remote Optical Sensor): Threaded stainless steel remote optical sensors have a visible red LED light source and green LED 'On Target' indicator. Performs over a wide speed range and operating envelope. Modulated and High Temperature versions available (to 257°F). **Common usage**: Wide range of general purpose applications in relatively clean environments.

Operating Distance	3 feet (1 m) and 45° from reflective tape
Speed Range	1-250,000 RPM
Operating Temperature	-14° to 158°F (-10° to 70°C)
Power Required	3.3 to 15 Vdc @ 45 mA
Output Signal	TTL same as source
Standard Cable	8 feet (2.4 m)
Dimensions	2.9" (L) x 0.625" diameter (73 x 16mm)

Optical Laser (1-250,000 RPM) *Distances to 25 feet.*

ROLS (Remote Optical Laser Sensor): Threaded stainless steel remote optical laser sensors have a visible red laser light source and green LED 'On Target' indicator. Performs over a wide speed range and operating envelope.

Operating Distance	Up to 25 feet (7.62 m) and 60° offset from target
Speed Range	1-250,000 RPM
Operating Temperature	-40° to 180° F -40° to 80° C
Power Required	3.3-15 Vdc @ 35mA
Output Signal	TTL Same as Source
Standard Cable	8 Feet (2.4 m)
Dimensions	3.12" (L) x 0.71" (M16 x 18 x 79.4mm)

Proximity (1-60,000 RPM) *Rugged industrial sensor.*

P5-11: A two wire probe style inductive sensor for use up to 0.2 inches (5 mm) from 0.5 inch (12 mm) metallic target such as bolt head or shaft locking key. **Common usage:** Permanent installation in harsh industrial environments.

Operating Distance	0.2" (5mm) from 0.5" (12mm) metallic target
Speed Range	1-60,000 RPM
Operating Temperature	-4° to 140° F (-20° to 60° C)
Power Required	7.7 to 9 Vdc, 3mA
Output Signal	Namur (DIN 19 234)
Standard Cable	6 Feet (1.8 m)
Dimensions	1.3" (L) x 0.43" (32 x 11 mm)

Magnetic (1-99,999 RPM) *Self-powered gear sensor.*

M-190W or M-190P: Most popular sensor for use with 60 tooth 20 pitch gears. Sensor mounts within 0.005 inches (0.127 mm) of a minimum 0.1 inch (2.5 mm) target. Requires no power from the display module and self-generates an AC signal. **Common usage**: Ferrous metals, primarily gear teeth.

Operating Distance	0.005" (0.127 mm) gap with 0.1" target (2.5mm) min.
Speed Range	1-99,999 RPM
Operating Temperature	-100° to 225°F (-73° to 107°C)
Power Required	None (Self Generating)
Output Signal	190V P-P
Standard Cable	8 Feet (2.4 m)
Dimensions	2.0" (L) x 0.625" (50 x 16mm)

Magnetic with Amplifier Module (1-99,999 RPM) *Enhances performance of M-190 magnetic sensor.*

MT-190W or MT-190P: Amplifier extends operating gap to 0.25 inches (6.35 mm) from the target. Frequently used on gears as the M-190, but can also sense bolt heads or shaft keys and provides a 0-5V TTL output signal. **Common usage:** Ferrous metals including bolt heads or shaft keys in addition to gear teeth.

Operating Distance	0.25" (6.35mm) gap with 0.1" target (2.5mm) min.
Speed Range	1-99,999 RPM
Operating Temperature	-100° to 225°F (-73° to 107°C)
Power Required	3.3 to 24 Vdc, 4mA
Output Signal	TTL Same as Source
Standard Cable	8 Feet (2.4m)
Dimensions	2.0" (L) x 0.625" (50 x 16mm)

Inductive (200-20,000 RPM) *Gasoline Engine RPM.*

GE-200: Ideal sensor for gasoline engine RPM, working 0.5 to 4.0 inches (12 to 100 mm) from ignition coil or magneto.
Common usage: 2-cycle and 4-cycle gasoline engines.

Operating Distance	Up to 4 inches (100mm)
Speed Range	200-20,000 RPM
Operating Temperature	0° to 175°F (-18° to 80°C)
Power Required	3.3 to 24 Vdc, 4mA
Output Signal	TTL Same as Source
Standard Cable	15 Feet (4.5 m)
Dimensions	2.16" (L) x 0.82" (55 x 21 mm)

Infrared (1-999,990 RPM) *High speed sensor.*

IRS-W or IRS-P: Ideal sensor for working 0.5 to 1.0 inch (12 to 25 mm) from high speed equipment or other applications providing only contrasting light and dark surfaces or beam interruption by solid objects.
Common usage: Dentist and other high speed drills, slots or gear teeth. Does not require reflective tape.

Operating Distance	0.5 to 1.0" (12 to 25 mm)
Speed Range	1-999,990 RPM
Operating Temperature	-10° to 212°F (-23° to 100°C)
Power Required	3.3 to 15 Vdc
Output Signal	TTL Same as Source
Standard Cable	8 Feet (2.4 m)
Dimensions	2.9" (L) x 0.625" diameter (73 x 16mm)

NOTE: W = tinned wire leads, P = 1/8" (3.5mm) phone plug connector. ROS is available with 8 or 25 foot cable.

NOTE: Additional cable length for all sensors (up to 500 feet) can be purchased and added in the field.

SELF-POWERED SENSORS

SPSR Series and Smart Laser Sensor

RoHS CE

SPSR-115/230

Common Applications:
- Vibration Studies
- Fans/Blades
- Engines/Motors
- Balancers
- Tach Input
- Data Acquisition

The unique SPSR Series of Self-Powered Sensors provide a TTL compatible pulse output from any of four input sensors (see page 9 for details):

- A laser light source (ROLS-P)
- A visible optical red LED light source (ROS-P)
- An infrared light source (IRS-P)
- An amplified magnetic sensor (MT-190P)

See Page 9 for detailed sensor specifications

The TTL compatible pulse output is switch selectable as either positive going 0-5V pulses or negative going 5-0V pulses provided on a BNC connector. Internal rechargeable batteries provide 40 hours of operation between charges. For continuous operation, all SPSR configurations can be powered by 115Vac, 230Vac or 9-15Vdc.

Self-powered sensors are a critical element for providing one TTL pulse per revolution for vibration analyzers, spectrum analyzers, stroboscopes, data acquisition equipment, tachometers, balancers, waveform analyzers and magnetic tape recorders.

1 SPSR-IM with PSC-2U

2

Remote Optical Laser Sensor (ROSL-P)

Remote Optical Sensor (ROS-P)

Magnetic Trigger Sensor (MT-190P)

Infrared Sensor (IRS-P)

How to Select your custom SPSR and sensor

1. **Begin with the SPSR-IM Interface Module and PSC-2U**
2. **Select the sensor(s) best suited for your application**

Ordering Information
SPSR-115/230 includes: SPSR-IM, PSC-2U, ROS-P and 12 inches of reflective tape
SPSR-IM includes: PSC-2U, 115/230 Vac power supply/ re-charger (USA, AUS, UK and EURO plugs).
CA-DCSPSR: Cigarette Lighter DC Power adapter with 6 foot cable

Specifications	SPSR Series
Range (RPM)	Same as sensor
Output Signal	TTL compatible pulse, 0-5V or 5-0V
Pulse Width	Determined by size of target and rotational speed
Output Connector	BNC
Power	Built in rechargeable battery pack (NiMH), 4.8Vdc

Cigarette Lighter DC Power adapter with 6 foot cable (optional)

Smart Laser Sensor is an internal battery-powered optical speed sensor utilizing a visible Class 3R Laser for a TTL pulse output. Operating range up to 65 feet (19.8 m) with reflective tape and up to 3 feet* (1 m) from contrasting color targets, keyways, bolt heads or blades.

- "Smart" auto gain provides best performance in picking up target reflections.
- "On Target" indicator
- TTL pulse output signal inverter switch
- Manual sensitivity knob provides dynamic fine tuning of sensor response
- Signal/Pulse/RS232 Output DIN connector port
- External DC power or recharger port
- Tripod mounting bushing (¼ - 20 UNC)
- Optional RS232, DB9 Pin connector with tinned wire leads

* performance subject to intensity of ambient light irradiation.

Specifications	Smart Laser Sensor
Optical:	Class 3R (per IEC 60825-1) visible laser 650nm @ 3 mW peak power
Operating Range:	up to 65 feet (19.8 m) from T-5 reflective tape
Speed Range:	1-500,000 RPM
Output Signal:	TTL 5-0 VDC (user selectable polarity), RS232
Operating Temp:	32° to 104°F (0° to 40°C)
Dimensions:	5.41(L) x 2.35(W) x 2.14" (H) (13.74 x 6.43 x 5.43cm)
Mounting:	¼ - 20 UNC bushing for tripod

Ordering Information
SLS-115/230
Smart Laser Sensor with 115/230 VAC PR Universal recharger, SLS-CA-BNC cable and 12 inches of Reflective Tape.

DATACHART 1250 PAPERLESS RECORDER

Recording Tachometer

RoHS CE

The DC1250 is a feature rich data acquisition system offering 2 universally configurable isolated inputs for measuring DC voltage, DC current, thermocouples and RTD's as well as frequency and pulse inputs. 4 internal alarm setpoints, 2 alarm relay outputs and 1 digital control input are all standard. A maximum sample storage rate of 100 samples per second can be set for both channels allowing for capture of short duration process signal anomalies. CompactFlash™ cards up to 2 Gigabyte size can be used allowing many data points to be stored over long periods of time.

The DC1250 can be used in conjunction with many of Monarch's speed measurement sensors. Power for sensors is provided from the DC1250 rear terminals. Measure, display and record RPM ranges from 5 - 600,000. Choose the sensor best suited for your application or take your existing signal directly into the 1250.

Data Chart 1250

Remote Optical Sensor

Remote Magnetic Sensor

Remote Infrared Sensor

DataChart DC1250 Specifications (abbreviated)	
Input Power:	
Standard:	9 Vdc +/- 0.5Vdc @ 5VA (depends on external loads) provided by external AC wall transformer, non-isolated.100-240Vac50/60Hz
Option:	Isolated 12-24 Vdc input power available (not compatible with internal battery pack option below).
Option:	Internal battery pack provides uninterrupted operation and controlled shutdown during blackout. 6Vdc, 2400mAH NiMH Backup Time; 6 HRS. typical (depends on external Load).
Outputs:	2 outputs 5Vdc @ 50mA to power external sensors.
No. of Channels:	2 universal, user selectable.
Isolation:	300V AC/DC channel input to chassis ground
Input Types:	
DC Voltage	
Ranges:	0-250mV; 0-1.25V; 0-2.5V; 0-5V; 0-12.5V; 0-25V
Accuracy:	0.1% of reading
Resolution:	0.025% of full scale
DC Current	
Ranges:	0-20mA; 4-20mA; 0-50mA: 10-50mA
Accuracy:	0.1% of reading excluding 250 ohm external shunt (required).
Resolution:	0.025% of full scale
Frequency Input:	
Range:	0 - 10,000 Hz / 0 - 600,000 RPM
Accuracy:	Freq:±1 Hz: RPM: ± 1 RPM below 9,999 RPM: ±10 RPM above 9,999RPM
Input:	Low <1.0Vdc; High >3.0 <12.0Vdc
Pulse width:	10 microsecond minimum.
Input Impedance:	>100k ohms
Measure Rate:	Up to 100 samples/sec per channel.
Math Function:	Y = mx + b; average, hi peak, low peak and totalization.
Media:	Compact Flash to 2 GB.
Display:	LCD Graphics, 160 x 80 pixels, black FSTN with white LED backlight. User controlled backlight level and contrast adjust.
User Interface:	5 button keypad (dual function buttons).
Clock:	Auto leap year and daylight savings adjustment. Internal battery back-up.
Relay Output:	Two alarm outputs: 30V 0.25A Form A relays
Isolated Input:	One input, 5 to 12Vdc activation @ 10mA typical.
Audible:	Internal beeper (multiple tones).
Dimensions:	Front panel: 96mm x 96mm (1/4 DIN) x 152mm (3.78 x 3.78 x 6 inches).

Temperature Inputs

Thermocouple: **Accuracy:** 0.3% of full scale (typical).
Ambient Temperature Sensor Accuracy: ±1.5°C

Type	Range
J	-100 to 760°C ±2°C (-148 to 1400°F ±3°)
K[1]	-100 to 1000°C ±2°C (-148 to 1832°F ±3°)
K[2]	0 to 1370°C ±2°C (32 to 2498°F ±3°)
T	-240 to 400°C ±2°C (-400 to 750°F ±3°)
E	-80 to 400°C ±2°C (-112 to 750°F ±3°)

RTD: **Accuracy:** 0.3% of full scale (typical).
Resolution: 0.1°C
Internal current source: 1mA

Type	Range
100 Ohm Pt 385	-100 to 750°C (-148 to 1380°F)
100 Ohm Pt 392	-100 to 750°C (-148 to 1380°F)

2 or 3 wire.

Ordering Information

DC1250 - [ ] [ ] [ ]

Configure model # here

3 Choose Communications

0	None	
1	USB Comms.	Mini-USB port for downloading data directly to PC. Front access.
2	Ethernet 10/100BaseT Ethernet,	rear access RJ45 connector. Allows network access to recorder.

2 Choose Backup

0	None	
1	Battery Backup*	Rechargeable NiMH battery pack will operate recorder up to 6 hours in the event of power loss.

*Not Available with Option "D" DC Input Power

1 Choose Input Power

S	Standard AC Adapter	100-240Vac wall adapter with North American Plug
U	Universal AC Adapter	100-240Vac wall adapter with interchangeable Plug Set
D	DC Input Power	12-24Vdc input power Isolated

Accessories

Model No.	Description
Navigator	Windows Compatible Software for graphic analysis, printing transfer and exporting
CFCR	CompactFlash™ Card Reader USB 2.0 compatible

Model No.	Description
MAS250R	250 ohm Precision Resistor for current inputs. 0.1% 0.5 watt
NIST-1250	N.I.S.T. Calibration with data

Model No.	Description
THS-W	Temperature/Humidity Probe with 8 foot cable.

CompactFlash™ Memory Cards

MC256MBCF	256 Megabyte
MC512MBCF	512 Megabyte
MC1024MBCF	1 Gigabyte
MC2048MBCF	2 Gigabyte

ULTRASONIC LEAK DETECTOR

UltraPro AG500 Ultrasonic Meter and Stethescope

The **UltraPro AG500** is a powerful ultrasonic leak detector and electronic stethoscope for use in construction, maintenance and manufacturing wherever precision gaseous leak detection or diagnostics are required.

Ultrasound is composed of high-frequency sound waves above the range of human hearing. **UltraPro** uses this technology to sense frequencies ranging from 18 to 42 kilohertz, which are electronically translated down into the audible range. Predictive Maintenance uses airborne/structure-borne ultrasound technology to locate leaks in any gaseous systems and to troubleshoot bearings, injectors, solenoid or valve operations. **UltraPro** features a unique Automatic Gain Control which automatically filters the signal to provide the best signal-to-noise ratio, suppressing background noise and pinpointing leaks. The AG circuit simplifies operation, removing complicated adjustment knobs and filter switches. **UltraPro** offers superior electronics with rugged industrial packaging and a protective rubberized case in a simple-to-use ultrasonic meter.

UltraPro AG500 Ultrasonic Leak Detector

Features:

- Automatic Gain Control
- Simple Operation
- 10 Element LED Bargraph Display
- Industrial Rubber Holster
- Air and Contact Probes
- Audio Out with volume Control

Common Applications:
- **Steam Traps**
- **Vacuum/Air Leaks**
- **Bearings/Valves**
- **Pressure Leaks**
- **Water Leaks**

Ordering Information

UltraPro AG500 System Detector, Air and Contact Probes, Headset, Tone Generator, 9v Batteries and Latching Carrying Case.

UltraPro AG500 Kit Same as above but without Tone Generator.

Tone Generator Generator and Battery

UltraPro AG500 System includes: Detector, Headset, Air and Contact Probes, Tone Generator, Batteries and Latching Carrying Case.

Monarch Ultrasonic Tone Generator is a battery-powered continuous tone source of 40 kHz. It effectively allows you to *"pressurize with noise"*. It is capable of 155 dB and transmits up to 40 feet. Ideal for enclosed vessels, tanks and buildings.

Locate Pin-Hole Leaks

Using the air probe you can locate pin-hole leaks up to 10 feet away. Find pressurized or vacuum leaks on all types of gases such as air, freon, nitrogen, propane, etc.

Listen to Bearings, Gear Boxes and Steam Traps

Use the contact probe to listen to bearings, gearboxes, valves, steam traps etc. Easily compare noise levels between like objects.

Water/Air Leaks in Vehicles and Vessels

Place the tone generator inside a vehicle, closed vessel, container or building and search for leaking seals and gaskets around doors and windows.

FIBERSCOPE VISUAL INSPECTION TOOLS

FSI and FSX Series Flexible Fiberscopes

Monarch Flexible Fiberscopes are perfect for inspecting interior areas which are difficult to view. Optical inspection can save thousands of dollars in preventing unnecessary disassembly of complex machines. With the **FSI** or **FSX Fiberscopes,** visual inspection can confirm your diagnosis, ensure proper assembly and welded joints or even locate a dropped component.

FSI and FSX Features:

- Superior Resolution 7400 Pixels
- Water/Chemical Resistant
- 40° Field of View
- 10mm and 6mm Diameters Available
- Bending Radius down to 3 inches

Common Applications:
- **Automotive/Marine**
- **Security**
- **Manufacturing**
- **Construction**
- **Maintenance**
- **HVAC**
- **Electrical**
- **Engines**
- **Gear Boxes**

FSI Flexible Fiberscope

Monarch FSI Series Flexible Fiberscopes are self-illuminating with either LED or Halogen lamps. Both 10mm and 6mm diameters are available in lengths of 24, 36 and 48 inches.

Monarch FSX Series Flexible Fiberscopes require an optional external light source. (Order the Scorpion Xenon flashlight). Only 6mm diameters are available in lengths of 24, 36, 48 and 60 inches.

Ordering Information

FSI-24-6-H Self-illuminating, 24" length, 6mm diameter, Halogen lamp.
FSI-36-6-H Same as above in 36" length.
FSI-36-6-L Same as above with LED lamp.
FSI-24-10-L Self-illuminating, 24" length, 10mm diameter, LED lamp.
FSI-36-10-L Same as above in 36" length.
FSI-48-10-L Same as above in 48" length.
FSX-24-6 External illumination, 24" length and 6mm diameter.
FSX-36-6 Same as above in 36" length.
FSX-48-6 Same as above in 48" length.
FSX-60-6 Same as above in 60" length.
FSX-72-6 Same as above in 72" length.
FSX-84-6 Same as above in 84" length.
FSX-96-6 same as above in 96" length.
Scorpion Halogen Flashlight for FSX series fiberscopes

Monarch FSI and FSX flexible fiberscopes include padded latching carry case with operation manual (optional clip on mirror shown).

Monarch FSI 10mm Series Flexible Fiberscope shown with powerful bright white LED illumination and optional clip on 45 degree mirror attachment. An optional clip on retrieval magnet is also available.

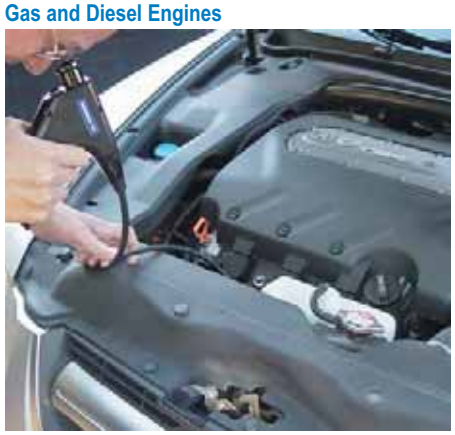
Plumbing and Construction

Inspect drains for blockages and lost items. Inspect behind walls for water or insect damage. Watertight tips eliminate worry of damage.

Electrical and HVAC

Inspect electrical wire routing and condition or HVAC ducts for leaks and dust buildup.

Gas and Diesel Engines



Inspect pistons, cylinder walls and T-belts. Look inside A/C ducts for mold and mildew buildup. Find oil and water leaks in hidden areas.

CORPORATE HISTORY

Innovation in Instrumentation

Monarch International, Inc. was founded in 1977 as a sales and service organization for a diverse range of instrumentation. In 1982, the Monarch Instrument Division was established to manufacture and market the first microprocessor based portable tachometers.

Monarch International's 30,000 square-foot facility in Amherst, New Hamp shire, U.S.A.

With the addition of new models of tachometers and the introduction of the Nova-Strobe Series of portable stroboscopes in 1990, Monarch rapidly became the worlds' largest supplier of rotational speed measuring instrumentation and stroboscopic inspection equipment.

In 1992, Monarch introduced the DataChart™ Paperless Recorder. Today, we offer a wide range of technical capabilities and competitive pricing throughout the DataChart™ product line to include color touchscreens and multi-channel recorders.

"Innovation in Instrumentation" is the Monarch design philosophy and in recent years we have introduced state-of-the-art products:

- **Pocket Laser Tachometer**
- **PALM STROBE x**
- **Nova-Strobe dbx Stroboscope**
- **Examiner 1000 Vibration Meter**
- **DataChart™ 1250 Paperless Recorder**

Monarch Instrument remains committed to innovations and quality in sales, customer service and manufacturing.

Thank you from all of us at Team Monarch

Our full service sales force and world-wide distribution force stands ready to answer purchase and applications questions Please feel free to contact us via our toll free telephone line, website, e-mail, fax or surface mail. We offer a comprehensive line of precision products and calibration services, all with the convenience of the Internet.

ISO9001:2000 Certified

Monarch Instrument also manufactures a full line of paperless recorders and compact data loggers please visit www.monarchinstrument.com for more information.

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