

## TECHNICAL DATA

# Fluke 810 Vibration Tester



### Features and benefits

- On-board identification and location of the most common mechanical faults (bearings, misalignment, unbalance, looseness) focus maintenance efforts on root cause, reducing unplanned downtime
- Overall vibration level allows you to quickly assess overall machine health directly from the diagnosis screen
- Fault severity scale with four severity levels help you prioritize maintenance work
- Repair recommendations advise technicians on corrective action
- Detailed diagnostic reports and spectral diagrams help confirm data quality, and narrow down the root cause of failures
- On-board context sensitive help provide real-time tips and guidance to new users
- Flexible machine speed configurations gives the ability to test a broad range of assets including belt drives, gear boxes, and bevel gears
- 2 GB expandable on-board memory provides enough space for your machinery's data
- Self-test function ensures optimal performance and more time on the job
- Laser tachometer for accurate machine running speed promotes confident diagnoses
- Tri-axial accelerometer reduces measurement time by 2/3 over single axis accelerometers
- Viewer PC Software expands data storage and tracking capacity

The most advanced troubleshooting tool for mechanical maintenance teams who need an answer now. The unique diagnostic technology helps you quickly identify and prioritize mechanical problems, putting the expertise of a vibration analyst in your hands.

You take pride in your facility, your team, and your work. You do what it takes to keep things up and running, but sometimes there is not enough time or resources to keep up with the workload, let alone be proactive about mechanical maintenance. The Fluke 810 Vibration Tester puts you one step ahead by coupling a powerful diagnostic engine with a simple step-by-step process to report on specific machine faults and their severity the first time measurements are taken, without prior measurement history. Overall vibration measurements and spectral diagrams give technicians the ability to quickly assess overall machine health, while enhanced reporting and actionable recommendations give you the confidence you need to address critical problems first.

### Use the Fluke 810 Vibration Tester to:

- Troubleshoot problem equipment and understand the root cause of failure
- Survey equipment before and after planned maintenance and confirm the repair
- Commission new equipment and ensure proper installation
- Provide quantifiable proof of equipment condition and drive investment in repair or replacement
- Prioritize and plan repair activities and operate more efficiently
- Anticipate equipment failures before they happen and take control of spare parts inventories
- Train new or less-experienced technicians and build confidence and skill across the team



| Tester specifications               |                                                                                                                                                                                                                                                                                          |                                       |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| Diagnostic specifications           |                                                                                                                                                                                                                                                                                          |                                       |
| Standard faults                     | Unbalance, looseness, misalignment and bearing failures                                                                                                                                                                                                                                  |                                       |
| Analysis for                        | Motors, fans, blowers, belts and chain drives, gearboxes, couplings, centrifugal pumps, piston pumps, sliding vane pumps, propeller pumps, screw pumps, rotary thread/gear/lobe pumps, piston compressors, centrifugal compressors, screw compressors, closed coupled machines, spindles |                                       |
| Machine rotational speed range      | 200 rpm to 12000 rpm                                                                                                                                                                                                                                                                     |                                       |
| Diagnosis details                   | Plain-text diagnosis, fault severity (slight, moderate, serious, extreme), repair details, cited peaks, spectra                                                                                                                                                                          |                                       |
| Electrical specifications           |                                                                                                                                                                                                                                                                                          |                                       |
| Ranging                             | Automatic                                                                                                                                                                                                                                                                                |                                       |
| A/D converter                       | 4 channel, 24 bit                                                                                                                                                                                                                                                                        |                                       |
| Usable frequency bandwidth          | 5 Hz to 20 kHz                                                                                                                                                                                                                                                                           |                                       |
| Digital signal processing functions | Automatically configured anti-alias filter, high-pass filter, decimation, overlapping, windowing, FFT, and averaging                                                                                                                                                                     |                                       |
| Sampling rate                       | 2.56 kHz to 51.2 kHz                                                                                                                                                                                                                                                                     |                                       |
| Dynamic range                       | 128 dB                                                                                                                                                                                                                                                                                   |                                       |
| Signal to noise ratio               | 100 dB                                                                                                                                                                                                                                                                                   |                                       |
| FFT resolution                      | 800 lines                                                                                                                                                                                                                                                                                |                                       |
| Spectral windows                    | Hanning                                                                                                                                                                                                                                                                                  |                                       |
| Frequency units                     | Hz, orders, cpm                                                                                                                                                                                                                                                                          |                                       |
| Amplitude units                     | in/sec, mm/sec, VdB (US), VdB* (Europe)                                                                                                                                                                                                                                                  |                                       |
| Non-volatile memory                 | SD micro memory card, 2 GB internal + user accessible slot for additional 2 GB storage                                                                                                                                                                                                   |                                       |
| General specifications              |                                                                                                                                                                                                                                                                                          |                                       |
| Dimensions (HxDxW)                  | 18.56 cm x 7.00 cm x 26.72 cm (7.30 in x 2.76 in x 10.52 in)                                                                                                                                                                                                                             |                                       |
| Weight (with battery)               | 1.9 kg (4.2 lb)                                                                                                                                                                                                                                                                          |                                       |
| Display                             | ¼ VGA, 320 × 240 Color (5.7 inch diagonal) TFT LCD with LED backlight                                                                                                                                                                                                                    |                                       |
| Input/Output connections            | Triaxial sensor connection                                                                                                                                                                                                                                                               | 4 pin M12 connector                   |
|                                     | Single axis sensor connection                                                                                                                                                                                                                                                            | BNC connector                         |
|                                     | Tachometer connection                                                                                                                                                                                                                                                                    | Mini DIN 6 pin connector              |
|                                     | PC connection                                                                                                                                                                                                                                                                            | Mini 'B' USB (2.0) connector          |
| Battery                             | Battery type                                                                                                                                                                                                                                                                             | Lithium-ion, 14.8 V, 2.55 Ah          |
|                                     | Battery charging time                                                                                                                                                                                                                                                                    | Three hours                           |
|                                     | Battery discharge time                                                                                                                                                                                                                                                                   | Eight hours (under normal conditions) |
| AC adapter                          | Input voltage                                                                                                                                                                                                                                                                            | 100 V ac to 240 V ac                  |
|                                     | Input frequency                                                                                                                                                                                                                                                                          | 50/60 Hz                              |
| Operating system                    | WinCE 6.0 Core                                                                                                                                                                                                                                                                           |                                       |
| Language support                    | English, French, German, Italian, Japanese, Portuguese, Simplified Chinese, Spanish                                                                                                                                                                                                      |                                       |
| Warranty                            | Three-years                                                                                                                                                                                                                                                                              |                                       |
| Environmental                       |                                                                                                                                                                                                                                                                                          |                                       |
| Operating temperature               | 0 °C to 50 °C (32 °F to 122 °F)                                                                                                                                                                                                                                                          |                                       |
| Storage temperature                 | -20 °C to 60 °C (-4 °F to 140 °F)                                                                                                                                                                                                                                                        |                                       |
| Operating humidity                  | 10 % to 95 % RH (non-condensing)                                                                                                                                                                                                                                                         |                                       |
| Agency approvals                    | CHINA RoHS, CSA, CE, C TICK, WEEE                                                                                                                                                                                                                                                        |                                       |
| Electromagnetic compatibility       | EN 61326-1:2006, EN 61010-1:2001 2nd ed.                                                                                                                                                                                                                                                 |                                       |

## Sensor specifications

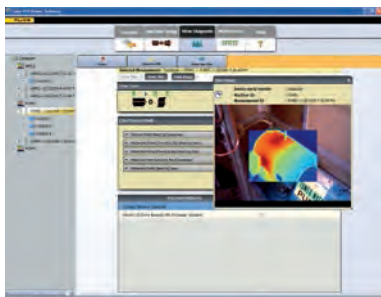
|                                           |                                                                                 |                          |
|-------------------------------------------|---------------------------------------------------------------------------------|--------------------------|
| Sensor type                               | Accelerometer                                                                   |                          |
| Sensitivity                               | 100 mV/g ( $\pm 5\%$ , 25 °C)                                                   |                          |
| Acceleration range                        | 80 g peak                                                                       |                          |
| Amplitude nonlinearity                    | 1 %                                                                             |                          |
| Frequency response                        | Z                                                                               | 2 to 7,000 Hz $\pm 3$ dB |
|                                           | X, Y                                                                            | 2 to 5,000 Hz $\pm 3$ dB |
| Power requirement (IEPE)                  | 18 V dc to 30 V dc, 2 mA to 10 mA                                               |                          |
| Bias output voltage                       | 12 V dc                                                                         |                          |
| Grounding                                 | Case grounded                                                                   |                          |
| Sensing element design                    | PZT ceramic / shear                                                             |                          |
| Case material                             | 316L stainless steel                                                            |                          |
| Mounting                                  | 10–32 captive socket head screw, 2-pole rare earth magnet (48 lb pull strength) |                          |
| Output connector                          | 4-Pin, M12                                                                      |                          |
| Mating connector                          | M12 - F4D                                                                       |                          |
| Non-volatile memory                       | TEDS 1451.4 compatible                                                          |                          |
| Vibration limit                           | 500 g peak                                                                      |                          |
| Shock limit                               | 5000 g peak                                                                     |                          |
| Electromagnetic sensitivity, equivalent g | 100 $\mu$ g/gauss                                                               |                          |
| Sealing                                   | Hermetic                                                                        |                          |
| Temperature range                         | -50 °C to 120 °C (-58 °F to 248 °F) $\pm 7\%$                                   |                          |
| Warranty                                  | One-year                                                                        |                          |

## Tachometer specifications

|                        |                                                        |                                |
|------------------------|--------------------------------------------------------|--------------------------------|
| Dimensions (DxW)       | 2.86 cm x 12.19 cm (1.125 in x 4.80 in)                |                                |
| Weight                 | 96 g (3.4 oz) with cable                               |                                |
| Power                  | Powered by 810 Vibration Tester                        |                                |
| Detection              | Laser Diode Class 2                                    |                                |
| Range                  | 6.0 rpm to 99,999 rpm                                  |                                |
| Accuracy               | 6.0 rpm to 5999.9 rpm                                  | $\pm 0.01\%$ and $\pm 1$ digit |
|                        | 5999.9 rpm to 99999 rpm                                | $\pm 0.05\%$ and $\pm 1$ digit |
| Resolution             | 0.1 rpm                                                |                                |
| Effective range        | 1 cm to 100 cm (0.4 in to 39.27 in)                    |                                |
| Response time          | 1 second (> 60 rpm)                                    |                                |
| Controls               | Measure on/off transparent button                      |                                |
| Interface              | 6 Pin Mini DIN                                         |                                |
| Cable length           | 50 cm (19.586 in)                                      |                                |
| Warranty               | One-year                                               |                                |
| Tachometer accessories | Reflective tape: 1.5 cm x 52.5 cm (0.59 in x 20.67 in) |                                |

## Viewer PC Software

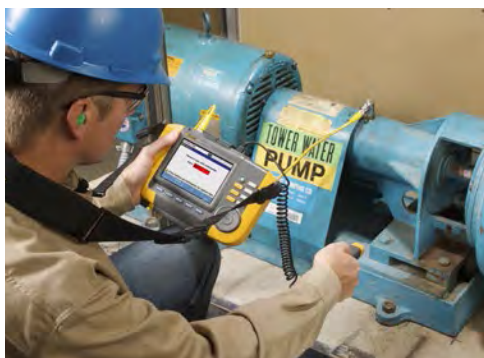
|                               |                              |
|-------------------------------|------------------------------|
| Minimum hardware requirements | 1 GB RAM                     |
| Operating system requirements | Windows XP, Vista, Windows 7 |



### Viewer PC Software

The Fluke 810 Vibration Tester includes Viewer PC software, expanding your data storage and tracking capability. With Viewer you can:

- Generate diagnostic reports and track the severity of your machine's condition
- Create machine setups with the convenience of your keyboard and mouse, and transfer the data to your 810 Vibration Tester
- View diagnosis and vibration spectra in greater detail
- Import and store JPEG images and Fluke IS2 thermal images for a more complete view of your machine's condition



### Industry-leading training...on your terms

The Fluke 810 Vibration Tester takes the guesswork out of diagnosing the most common mechanical problems, but a better understanding of vibration and its impact on your equipment will help you or your team be more aware of issues that may come up in the future. Fluke has partnered with Mobius Institute, an industry leader in vibration training, to provide you with a self-paced DVD training program using award-winning Mobius Institute interactive training tools. This DVD is available with purchase and will help you learn more about the basics of vibration and how to fully utilize the features and functionality of the Fluke 810 Vibration Tester.

### Ordering information

**Fluke-810** Vibration Tester

#### Included equipment

Vibration Tester with diagnostic technology, tri-axial TEDS accelerometer, accelerometer magnet mount, accelerometer mounting pad kit with adhesive, accelerometer quick-disconnect cable, laser tachometer and storage pouch, smart battery pack with cable and adapters, shoulder strap, adjustable hand strap, Viewer PC software, mini-USB to USB cable, getting started guide, illustrated quick reference guide, users manual CD-ROM, training DVD, and hard carrying case.



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