



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



**FLUKE**®

**810**

Vibration Tester

Users Manual

January 2010, Rev.1, 3/10

© 2010 Fluke Corporation. All rights reserved. Specifications are subject to change without notice.  
All product names are trademarks of their respective companies.

### **LIMITED WARRANTY AND LIMITATION OF LIABILITY**

Your Fluke Vibration Tester is warranted to be free from defects in material and workmanship under normal use and service for three years from the date of shipment to you. The same warranty applies to the Tachometer and the Sensor but for one year from the date of shipment. Parts, product repairs, and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries, or to any product which, in Fluke's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

Fluke authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke. Warranty support is available only if product is purchased through a Fluke authorized sales outlet or Buyer has paid the applicable international price. Fluke reserves the right to invoice Buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

Fluke's warranty obligation is limited, at Fluke's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB Destination). Fluke assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke determines that failure was caused by neglect, misuse, contamination, alteration, accident, or abnormal condition of operation or handling, including overvoltage failures caused by use outside the product's specified rating, or normal wear and tear of mechanical components, Fluke will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

**THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FLUKE SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY.**

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

Fluke Corporation  
P.O. Box 9090  
Everett, WA 98206-9090  
U.S.A.

Fluke Europe B.V.  
P.O. Box 1186  
5602 BD Eindhoven  
The Netherlands

# ***Table of Contents***

<b>Chapter</b>	<b>Title</b>	<b>Page</b>
<b>1</b>	<b>Overview .....</b>	<b>1-1</b>
	Introduction .....	1-3
	Features .....	1-3
	How to Contact Fluke .....	1-4
	Safety .....	1-4
	Rotating Equipment .....	1-4
	Tachometer .....	1-5
	Heat Sink .....	1-5
	Symbols .....	1-5
	Unpack and Inspect .....	1-6
	Storage .....	1-8
	Battery .....	1-8
	Accessories .....	1-10

<b>2</b>	<b>Specifications .....</b>	<b>2-1</b>
	810 Vibration Tester Specifications .....	2-3
	Diagnostic Specifications .....	2-3
	Electrical Specifications .....	2-3
	General Specifications .....	2-4
	Sensor Specifications .....	2-5
	Tachometer Specifications .....	2-6
	Viewer Software Requirements .....	2-6
<b>3</b>	<b>Getting Started.....</b>	<b>3-1</b>
	Introduction.....	3-3
	Navigation and User Interface .....	3-3
	How to Use the Dial .....	3-4
	How to Use the Function Softkeys .....	3-4
	Accessory Connectors.....	3-5
	Start the Tester .....	3-6
	Sensor Setup.....	3-7
	Compatible Sensors.....	3-7
	How to Connect the Fluke Sensor .....	3-7
	Sensor Care and Handling.....	3-8
	Tachometer Setup.....	3-9
	How to Measure RPM with the Tachometer .....	3-9
	Laser Safety Precautions.....	3-10
	How to Access Help.....	3-11
	Instrument Setup .....	3-11
	Self Test.....	3-12
	Settings.....	3-12
	Clear Memory .....	3-15

<b>4</b>	<b>Operation .....</b>	<b>4-1</b>
	Start the Tester .....	4-3
	Create a New Machine Setup .....	4-4
	Machine Setup .....	4-5
	Motor Input (Driver) Information.....	4-6
	RPM Entry .....	4-8
	Coupling Information .....	4-8
	Transmission with Closed Coupling.....	4-9
	Transmission without Closed Coupling.....	4-10
	Driven Component.....	4-11
	Pump .....	4-11
	Fan .....	4-12
	Compressor .....	4-13
	Blower.....	4-14
	Spindle.....	4-14
	Transmission Component.....	4-14
	Gearbox.....	4-14
	Belt Drive .....	4-17
	Copy an Existing Machine Setup.....	4-19
	Edit the Saved Machine Setup .....	4-22
	Before You Measure .....	4-24
	Select Measurement Locations .....	4-24
	Total Number of Measurement Locations.....	4-25
	Sensor Orientation.....	4-26
	Sensor Mounting .....	4-27
	How to Measure Vibration .....	4-29
	How to Diagnose.....	4-38
	Fault Types.....	4-38

	Severity Scale .....	4-40
	Fault Details and Vibration Spectrum.....	4-42
	How to Access the Memory .....	4-45
	View by Machine Setup .....	4-45
	View by Measurement Date.....	4-46
	View by Last Diagnosis.....	4-48
<b>5</b>	<b>Viewer Software .....</b>	<b>5-1</b>
	Introduction .....	5-3
	System Requirements .....	5-3
	PC Connections.....	5-3
	Install the Viewer Software .....	5-5
	Microsoft .Net Framework 2.0 .....	5-5
	Microsoft .Net Framework 3.5 SP1 .....	5-5
	Microsoft SQL Server 2005 Express.....	5-6
	Microsoft ActiveSync 4.5.....	5-6
	Microsoft SQL Server Compact 3.5 SP1.....	5-6
	Microsoft SQL Server Compact 3.5 SP1 for Devices.....	5-6
	Viewer Software.....	5-7
	Uninstall the Viewer Software .....	5-8
	Navigation.....	5-9
	Preferences .....	5-11
	Application Settings .....	5-11
	Upgrades .....	5-12
	Data Transfer .....	5-12
	Import Machine Setup .....	5-14
	Export Machine Setup.....	5-15
	Import Diagnostic Data.....	5-18
	Export Diagnostic Data .....	5-19

Export Faults Data .....	5-22
Machine Setup .....	5-24
Set Up a New Machine .....	5-26
View Machine Setups .....	5-28
View Diagnosis .....	5-31
View Other Data Files .....	5-34
Time Waveform .....	5-34
Spectra .....	5-36
<b>6 Maintenance .....</b>	<b>6-1</b>
Introduction .....	6-3
How to Clean .....	6-3
Sensor Care .....	6-3
Battery Replacement .....	6-3
External SD Memory Card Installation .....	6-5
Vibration Tester Upgrades .....	6-7
How to Troubleshoot .....	6-8
<b>Appendices</b>	
A Frequently Asked Questions .....	A-1
B Warning and Error Messages .....	B-1
C Glossary .....	C-1





# List of Tables

<b>Table</b>	<b>Title</b>	<b>Page</b>
1-1.	Symbols.....	1-5
1-2.	Accessories.....	1-10
3-1.	Front Panel.....	3-4
3-2.	Navigation Softkey Functions.....	3-5
3-3.	Accessory Connectors.....	3-6
3-4.	Tester Settings.....	3-14
4-1.	New Machine Setup Functions.....	4-5
4-2.	Motor Input Options.....	4-7
4-3.	Closed Coupling Transmission Options.....	4-9
4-4.	Transmission without Closed Coupling Options.....	4-10
4-5.	Pump Options for Driven Components.....	4-11
4-6.	Fan Options for Driven Components.....	4-12
4-7.	Compressor Options for Driven Components.....	4-13
4-8.	Blower Options for Driven Components.....	4-14

4-9. Gearbox Options for the Transmission .....	4-15
4-10. Driven Component Options.....	4-16
4-11. Drive Options for the Transmission.....	4-17
4-12. Change Machine Name .....	4-18
4-13. Saved Machine Setup Functions .....	4-19
4-14. Copy Machine Setup Functions .....	4-21
4-15. Change Machine Name Functions.....	4-23
4-16. Sensor Placement Functions .....	4-32
4-17. Measurement Functions .....	4-34
4-18. Measurement Complete Functions .....	4-35
4-19. Sensor Placement Functions .....	4-37
4-20. Diagnosis Faults .....	4-39
4-21. Cited Peak Details .....	4-43
4-22. Diagnosis Spectra Functions .....	4-44
4-23. Existing Machine Setup Functions .....	4-46
4-24. Measurement Date Functions.....	4-46
4-25. View by Measurement Date Functions .....	4-47
5-1. Viewer Software Navigation Menus .....	5-10
5-2. Application Settings .....	5-12
5-3. View Machine Setup Utilities.....	5-30
6-1. Troubleshooting .....	6-8

# List of Figures

Figure	Title	Page
1-1.	Items Included with the Tester.....	1-7
1-2.	How to Charge the Battery .....	1-9
3-1.	Front Panel.....	3-3
3-2.	Accessory Connectors .....	3-5
3-3.	Sensor Setup and Connection.....	3-8
3-4.	Tachometer Setup and Connection.....	3-9
4-1.	Sensor Location .....	4-25
4-2.	Axes Orientation .....	4-26
4-3.	Sensor Mounting Options .....	4-27
5-1.	Tester to PC Connections .....	5-4
6-1.	Battery Replacement.....	6-4
6-2.	Memory Card Installation.....	6-6



# Chapter 1 Overview

<b>Title</b>	<b>Page</b>
Introduction .....	1-3
Features .....	1-3
How to Contact Fluke .....	1-4
Safety .....	1-4
Rotating Equipment .....	1-4
Tachometer .....	1-5
Heat Sink .....	1-5
Symbols .....	1-5
Unpack and Inspect.....	1-6
Storage.....	1-8
Battery.....	1-8
Accessories.....	1-10



## Introduction

The Fluke 810 Vibration Tester with diagnostic technology (the Tester) helps you quickly identify and prioritize mechanical problems. With the Tester, you can make decisions about mechanical maintenance and use it as a supplement to your own judgment based on machine knowledge. The expertise of a trained vibration analyst is in your hands.

The Fluke 810 uses a simple step-by-step process to report on machine faults the first time measurements are taken without prior measurement history. The diagnostic technology analyzes your machinery and provides text-based diagnoses, severity levels and possible repair recommendations. Faults are identified by comparing vibration data gathered by the Fluke 810 to an extensive set of rules gathered over years of field experience.

Primarily used for troubleshooting problem equipment, the Tester can also be used to survey equipment before or after planned maintenance. The combination of diagnoses, severity and possible repair recommendations help you make more informed maintenance decisions and address critical problems first.

### Warning

**Read “Safety Information” before using this Tester.**

## Features

- On-board diagnosis and location of the four most common standard mechanical faults: bearings, looseness, misalignment, unbalance and other (non-standard faults)
- Fault severity scale with four severity levels: Slight, Moderate, Serious, and Extreme
- Prioritized repair recommendations
- Diagnostic details include cited peaks and vibration spectra
- Context Sensitive Help
- 2 GB expandable on-board memory
- Data export (via USB connection) for more detailed analysis
- Self-test function
- Laser tachometer for accurate machine running speed
- 100 mV/g TEDS triaxial accelerometer
- Data storage and tracking with included Viewer Software
- Color LCD display
- Languages: English, French, German, Italian, Portuguese, Spanish, Japanese, Simplified Chinese



## How to Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-3-3434-0181
- Singapore: +65-738-5655
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at [www.fluke.com](http://www.fluke.com).

To register your product, visit <http://register.fluke.com>.

To view, print, or download the latest manual supplement, visit <http://us.fluke.com/usen/support/manuals>.

## Safety

The Tester complies with:



In this manual, a **Warning** identifies hazardous conditions and actions that could cause bodily harm or death. A **Caution** identifies conditions and actions that could damage the Tester, the equipment under test, or cause permanent loss of data.

### Warning

To avoid personal injury, follow these guidelines for the Tester:

- Use only as specified in this manual or the protection provided by the Tester might be impaired.
- Do not use if damaged. Before you use the Tester, inspect the case. Look for cracks or missing plastic.
- Make sure the battery is securely in place before operation.
- Do not operate around explosive gas, vapor, or dust.
- Use proper protective equipment, as required by local or national authorities, when working in hazardous areas.
- Comply with local and national safety requirements when working in hazardous locations.

### Rotating Equipment

#### Warning

To avoid personal injury:

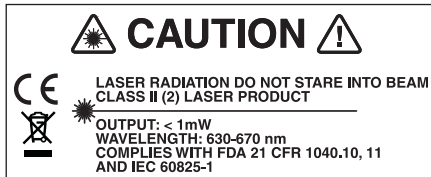
- Use caution around rotating equipment.
- Keep cords and straps contained.

## Tachometer

### Warning

To avoid personal injury or damage to the Tachometer:

- Do not point laser beam directly at eyes.
- Do not operate around explosive gas, vapor or dust.
- Do not open. The Tachometer does not contain any user-serviceable parts.
- When not in use, always place in protective cover.



gbk15.eps

## Heat Sink









### Caution

- The heat sink may feel warm to the touch, this is normal.
- To avoid overheating, do not cover the heat sink while the Tester is on.

## Symbols

Table 1-1 lists and describes the symbols used on the Tester and in this manual.

**Table 1-1. Symbols**

Symbol	Description
	Important Information; refer to manual
	Battery condition
	This product contains a Lithium-ion battery. Do not mix with the solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler per local regulations. Contact your authorized Fluke Service Center for recycling information.
	Conforms to relevant Canadian and US standards
	Conforms to relevant Australian standards
	Conforms to European Union directives
	Warning. Class 2 Laser Product. Laser radiation. Do not stare into beam.
	Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.

## **Unpack and Inspect**

Carefully unpack and inspect all the items in Figure 1-1. The items that follow are included in your purchase of the Tester:

- ① Fluke 810 Vibration Tester
- ② Storage Case
- ③ Smart Battery Pack
- ④ Smart Battery Pack Charger and Adapters
- ⑤ Shoulder Strap
- ⑥ Tachometer and Pouch
- ⑦ Sensor
- ⑧ Sensor Magnet Mount
- ⑨ Sensor Quick Disconnect Cable
- ⑩ Sensor Mounting Pads (10-pack)
- ⑪ Adhesive
- ⑫ Mini USB to USB Cable
- ⑬ Getting Started Guide
- ⑭ Quick Reference Guide
- ⑮ User Documentation / Viewer Software CD-ROM
- ⑯ Training DVD

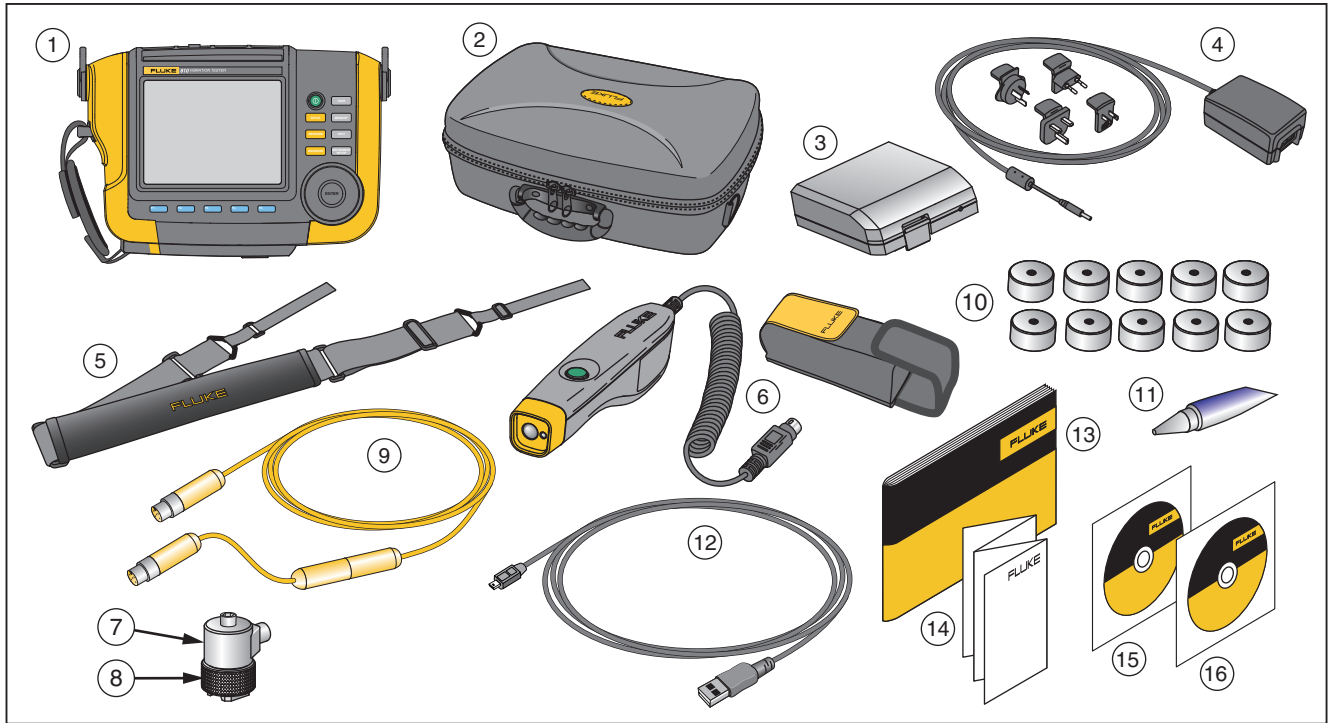


Figure 1-1. Items Included with the Tester

gbk10.eps

## Storage

When not in use, keep the Tester in the protective storage case. The case has sufficient space for the Tester and all accessories.

## Battery

The Tester operates on an internal rechargeable Lithium-ion battery. After you unpack and inspect the Tester, fully charge the battery before the first use. Afterwards, charge the battery when the battery icon on the screen indicates that power is low. To charge the battery with the battery in place on the Tester:

1. Connect the ac adapter to the ac input socket on the Tester.
2. Connect the adapter to a power source.

Or, to charge the battery outside the Tester:

1. Remove the battery from the Tester, see Figure 1-2.
2. Connect the ac adapter to the ac input socket of the battery.
3. Connect the adapter to a power source.

### Note

*Three hours are necessary for a full battery charge.*

The color of the battery status LED shows:

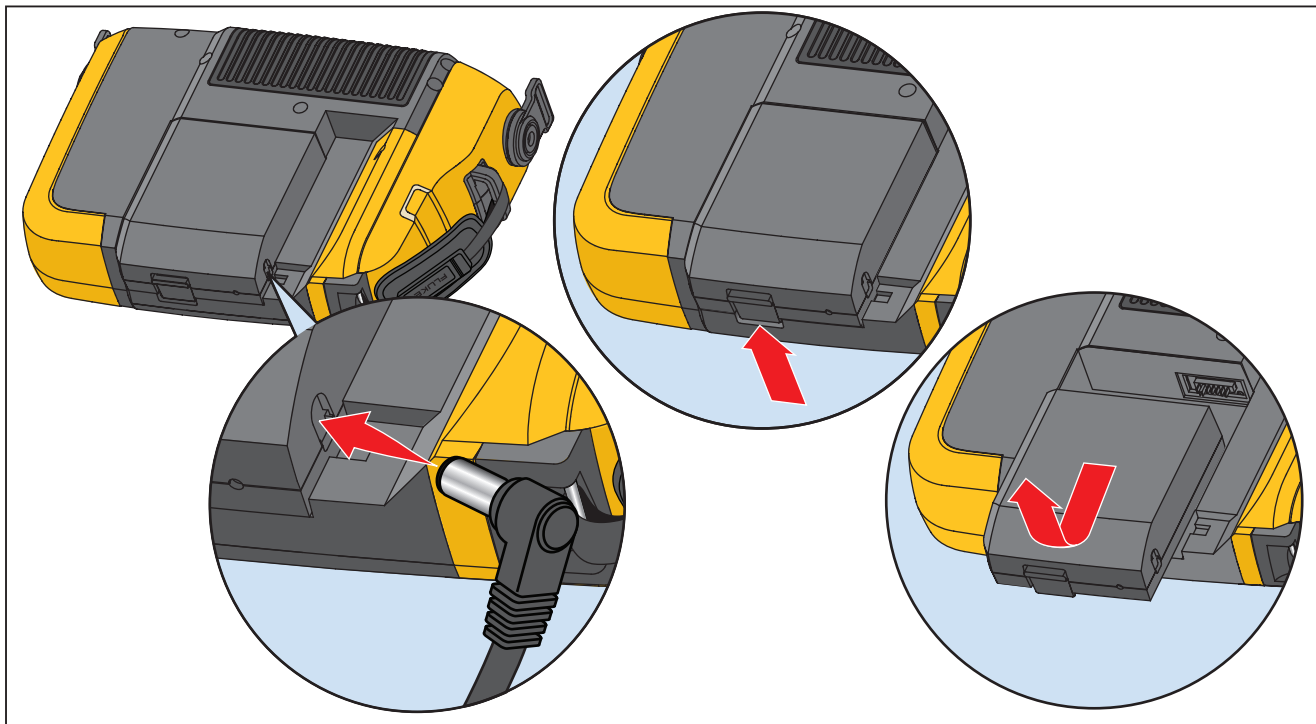
**Red** - battery is connected to the power source and charging.

**Green** - battery is connected to the power source and is fully charged.

### Caution

**To prevent damage to the Tester:**

- **Use only the ac adapter that is included with the Tester.**
- **Make sure that the external power source is correctly rated for the Tester.**
- **Do not leave batteries unused for extended periods of time, either in the product or in storage.**
- **When a battery has not been used for six months, check the charge status and charge or dispose of the battery as appropriate.**



gbk03.eps

**Figure 1-2. How to Charge the Battery**

**Accessories**

Table 1-2 lists the accessories that are available and sold separately for the Tester.

**Table 1-2. Accessories**

<b>Model</b>	<b>Description</b>	<b>Part Number</b>
810T	Tachometer	3530819
810S	Sensor	3530828
810QDC	Quick Disconnect Cable	3530837
SBP810	Smart Battery Pack	3530843
810SMM	Sensor Magnet Mount	3530862
810SMP	Sensor Mounting Pads	3530855

# **Chapter 2**

## **Specifications**

<b>Title</b>	<b>Page</b>
810 Vibration Tester Specifications .....	2-3
Diagnostic Specifications .....	2-3
Electrical Specifications .....	2-3
General Specifications .....	2-4
Sensor Specifications .....	2-5
Tachometer Specifications .....	2-6
Viewer Software Requirements .....	2-6





## 810 Vibration Tester Specifications

Specifications are subject to change without notice.

### Diagnostic Specifications

<b>Standard Fault Detection</b> .....	Unbalance, Looseness, Misalignment and Bearing Failures
<b>Analysis for</b> .....	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
<b>Machine Rotational Speed Range</b> .....	200 RPM to 12,000 RPM
<b>Diagnosis Details</b> .....	Fault Severity (Slight, Moderate, Serious, Extreme), Repair Details, Cited Peaks, Spectra

### Electrical Specifications

<b>Ranging</b> .....	Automatic
<b>A/D Converter</b> .....	4 channel, 24 bit
Usable Bandwidth .....	2 Hz to 20 kHz
Sampling .....	51.2 Hz
<b>Digital Signal Processing Functions</b> .....	Automatically-configured anti-alias filter, High-pass filter, Decimation, Overlapping, Windowing, FFT and Averaging
<b>Sampling Rate</b> .....	2.5 kHz to 50 kHz
<b>Dynamic Range</b> .....	128 dB
<b>Signal-to-Noise Ratio</b> .....	100 dB
<b>FFT Resolution</b> .....	800
<b>Spectral Windows</b> .....	Hanning
<b>Frequency Units</b> .....	Hz, orders, cpm
<b>Amplitude Units</b> .....	in/sec, mm/sec, VdB (US), VdB* (Europe)
<b>Non-Volatile Memory</b> .....	SD micro memory card, 2 GB internal + user-accessible slot for additional storage