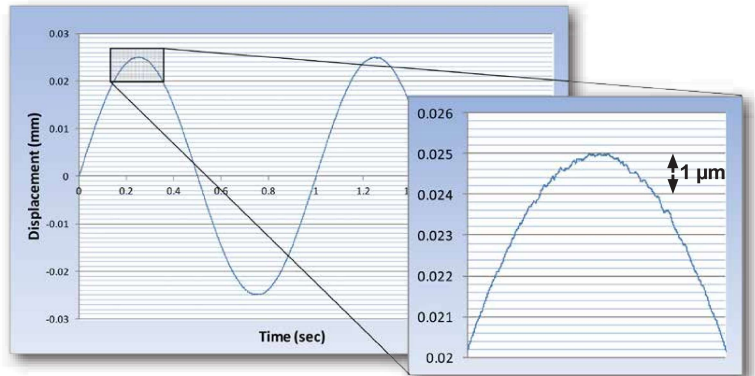


# Introduction to ElectroForce® 3200 and 3330 Series II Test Instruments

## First in the Material Testing Industry

Bose has introduced two high accuracy test systems that achieve the highest measured displacement resolution and accuracy among electrodynamic test systems. The ElectroForce® 3200 Series II and 3330 Series II Test Instruments extend the ElectroForce Advantage to even more test applications. These instruments combine the benefits of WinTest® 7 advanced controls and Bose's new High Accuracy Displacement Sensor.

The Bose High Accuracy Displacement Sensor is the first use in the material testing industry of a new technology that provides displacement resolution of a nanometer and accuracies in the range of microns. This allows for reliable tests of 10x smaller displacement amplitudes over the full range of motion of the system with no additional sensors required.



50 µm peak-to-peak waveform with an  
ElectroForce® Series II 3200 Test Instrument

## Applications Overview

Low amplitude testing accuracy is a growing need for research and product development applications such as:

- Low-amplitude material fatigue characterization
- Tissue/biomaterial and small bone characterization
- Microelectronics
- Dynamic material analysis (DMA) of elastomers and films.

## Series II Features

**Accuracy** – Exceeds ASTM E-2309's toughest standard, Class A

**Resolution** – Unparalleled 1 nm resolution

**Noise** – Over 10x improvements in noise

**Responsiveness** – Reduced signal latency results in significantly improved controls responsiveness

**Absolute displacement measurement** – High resolution and absolute measurement with a single sensor



ElectroForce® 3330 (left) and 3200 (right)  
Series II Test Instruments

**BOSE**®

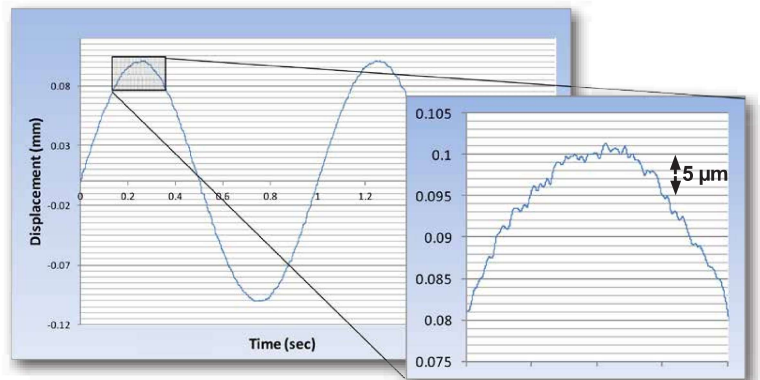
# Series II Instrument Benefits

## Improved Data Quality

**Accuracy** – Precision components, processing and calibration exceed ASTM E-2309's toughest standard, Class A. Typical calibrated errors are less than 2  $\mu\text{m}$  for the 3200 Series II and 5  $\mu\text{m}$  for the 3330 Series II test instruments.

**Resolution** – 1 nm resolution is unparalleled in dynamic test systems. Improved resolution improves the quality of data analysis techniques.

**Noise** – With over 10x noise reduction, there is no need to filter the channels due to sensor noise which can often compromise data integrity by masking actual motion.



100  $\mu\text{m}$  peak-to-peak waveform with an ElectroForce® 3330 Test Instrument

## Improved Dynamic Performance

**Responsiveness** – In addition to the ability to accurately measure the high velocities of the Bose® ElectroForce® Linear motors, the sensor technology communicates this information quickly, with minimal delay, to the control systems.

## Improved Ease of Use

**Absolute displacement measurement** – Previous industry standard for obtaining high accuracy and resolution was through an additional channel, sensor, or apparatus that was always duplicate to the traditional LVDT sensor. Now, all the benefits above are delivered with a simple to use single channel.

**Better organized test flow and setup** - The ElectroForce Series II test instruments incorporate the latest version of the WinTest® 7 control system and software with new user windows that better organize test flow and test setup.

**Advanced Block Waveform generation** - WinTest 7 controls incorporate new conditional branching functions that allow the creation of complex test programs, providing more intelligent test control.

**Advanced Security Suite** - The new software includes an optional Advanced Security Suite to facilitate compliance with current industry standards for data security in the medical device industry and product development.

## Availability

### New Products

Series II capabilities, including the WinTest 7 control system and software and the Bose High Accuracy Displacement Sensor, are currently available on both the 3200 test instrument, for tests up to 450 N, and on the table-top and floor-standing 3330 test instrument, providing testing levels up to 3000 N.

### New Capabilities for Existing Customers

Existing ElectroForce 3200 and 3300 test systems can be upgraded to leverage the new Bose High Accuracy Displacement Sensor and WinTest 7 technology and benefits.

For more information visit the ElectroForce website at [www.bose-electroforce.com](http://www.bose-electroforce.com), or contact your Bose representative today.