

# Emodumeter®

**NDT**  
**JAMES INSTRUMENTS**  
Non Destructive Test Equipment

Test Well. Build Well.

For the determination of the Resonant Frequency of materials.



## Product Information

### Principle

The principle used in the Emodumeter® is based upon the determination of the fundamental resonant frequency of vibration of a specimen generated by an impact and sensed by an accelerometer. The frequency spectrum is computed and displayed by the meter.

### System

The Emodumeter® has an automatic feature that computes the maximum amplitude, which eliminates cumbersome frequency scanning. Frequencies are automatically shown in the display and a cursor allows the user to move along the frequency spectrum. Also the time domain signal

and the frequency spectrum can be stored and uploaded to a PC for further analysis and inclusion in reports.

### Resonance Frequency

The Emodumeter® performs a Fast Fourier Transform that allows the identification of the resonance frequency in the Frequency Spectrum.

### Durability of Concrete

The determination of flexural resonance is very important when studying the degradation of concrete under accelerated freezing and thawing cycles and aggressive environments on concrete specimens.

**Strength**

**Locators**

**Ultrasonics**

**Corrosion**

**Moisture**

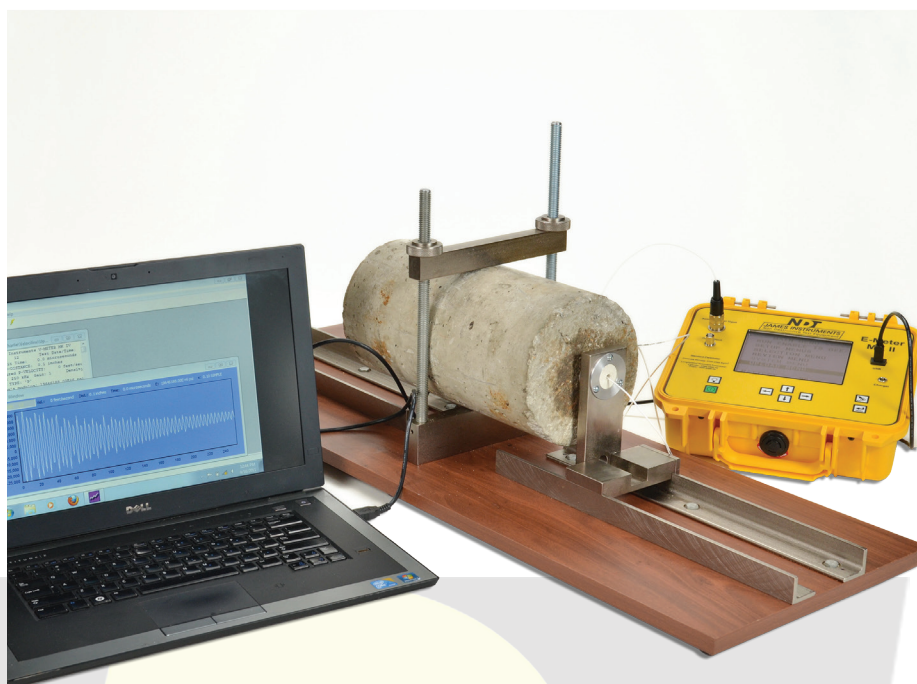
# Emodometer®



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## Features & Benefits

- Conforms to ASTM C-215 and C-666.
- The only method of calculating the following material parameters non destructively:
  - Young's Modulus of Elasticity,
  - Modulus of Rigidity,
  - Poissons Ratio,
  - Damping Constant.
- Available for specimen sizes up to 6 inches (150mm) cross section dimension and from 1.75 inches (45mm) to 28 inches (700mm) in length.
- Automatic identification of the resonance frequency. Large easy to view display for data analysis of time domain and frequency spectrum signals.
- Data can be stored and uploaded to a PC for further analysis and inclusion in reports.
- Fast and easy to use system.



## Applications

- Freeze Thaw Analysis
- Young's Modulus Determination
- Damping
- Coefficient Analysis

The **Emodulinx® Software** has been designed to help the engineer manage and interpret the huge amount of data available when utilizing the Emodometer®. The Emodulinx® software enables the user to upload data from the V-Meter device to a PC. The Emodulinx® software also can be used to control the Emodometer® remotely.

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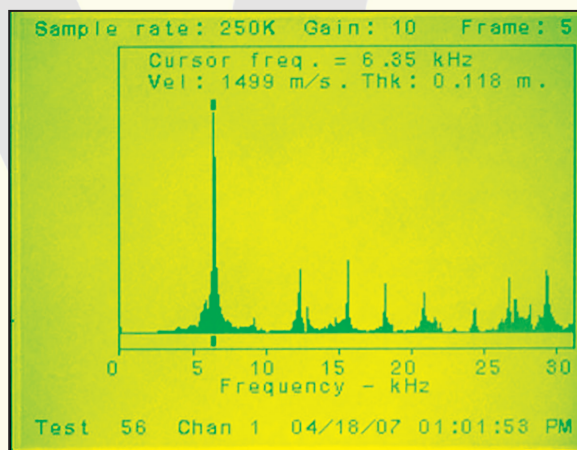
## Advantages of Resonance Methods

1. Tests can be repeated over a very long period on the same specimen; the number of test specimens required is therefore greatly reduced.
2. The results obtained with the resonance method on the same specimen are more reproducible than those obtained with destructive tests and groups of specimens.

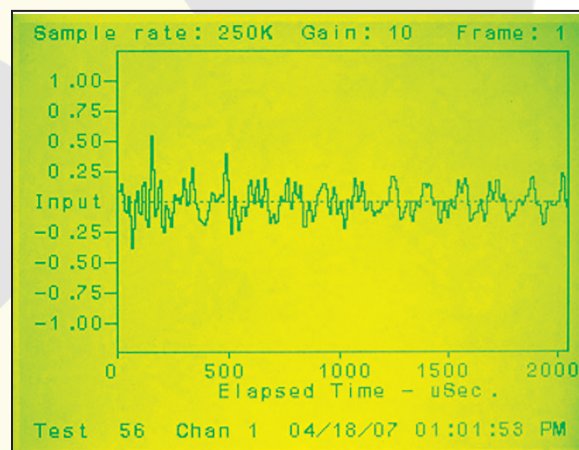
For the determination of the resonant frequency of materials, the Emodumeter® measures the resonant frequencies of the three different modes of vibration Longitudinal, Transverse (Flexural) and Torsional.

From these the following material characteristics can be calculated:

- Young's Modulus of Elasticity
- Modulus of Rigidity
- Poisson™ Ratio.



E-meter Mk II Frequency Domain Spectrum



E-meter time domain signal allows user to visualize the vibration of the specimen

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## Specifications

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Frequency range:             | from 10 Hz to 40 kHz                                        |
| Sampling frequency:          | 10, 20, 40 or 80 kHz                                        |
| Frequency resolution:        | from 4.9 to 78.1 Hz                                         |
| Record length                | 1024 or 2048 points                                         |
| Output bias level:           | 9.2 V                                                       |
| Accelerometer sensitivity:   | 9.60 mV/g (0.979 mV/m/s <sup>2</sup> )                      |
| Battery:                     | 12 Volt. 4-10 hours - continuous use                        |
| Display:                     | 320 by 240; backlit for daylight use                        |
| Storage:                     | 200 plus readings                                           |
| Software:                    | Emodulinx® - Windows PC Compatible / USB Interface Required |
| Impactors:                   | Set of 6 hardened steel balls.                              |
| Operating Temperature Range: | 0°C to 40°C                                                 |



## Sales Number

**V-E-400** Emodumeter® Complete System

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