



ReferenceMate[®] handheld shaker

Applications and specifications

Product overview

- **1g vibration reference source**
 - Portable, battery powered, handheld accelerometer shaker
- **Simplifies troubleshooting, verification, and system check for vibration test systems**
 - allows verification and adjustment (in the field) of the entire measurement chain: sensor, connector and cabling integrity, signal conditioning, DAQ
 - provides confidence in accelerometer performance before running expensive tests
 - checks warning and alarm trip points in condition monitoring equipment, PLC, DCS or SCADA control systems

Key features

- Three different frequency set points (industry exclusive)
 - convenient to verify acceleration, velocity, or displacement without conversions or calculations
 - Imperial or metric units
 - RMS or peak
- State-of-the-art electronic design offers superior stability with low total harmonic distortion at each test frequency
- Independent control loop circuitry for precise RMS and peak control
- Multiple features give the end user confidence in product performance
 - high stability and accuracy
 - low battery indicator, overload indicator, reference test points
- Simple user interface – front-panel push button operation
- Extended battery life
 - up to 40 hours continuous run time

Key features

- Consistent, 1 g acceleration regardless of sensor weight
 - Up to 250 grams
 - Integral precision IEPE reference accelerometer provides superior performance over a wide weight range of test sensors
- Integrates a stable three frequency sine wave generator and NIST-traceable reference accelerometer
- Ingress protection rating: IP54
 - dust and water resistant
- DC operation
 - protected from reverse polarity input
 - overvoltage protection
- Mechanical stops for shaker head protection
 - prevents damage to internal shaker structure
- Cost-effective addition to monitoring system

Industrial markets and applications

- Energy and power generation
 - Gas turbines
 - Compressors
 - Oil and gas
 - Wind turbines
- Process monitoring and protection
 - Cooling towers
 - Pumps
 - Reciprocating machinery
- Predictive maintenance
 - Gearboxes
 - Motors
 - Bearings
 - Machine tools
- Applications
 - Online monitoring systems
 - Permanent mount sensors
 - Spot check of route based sensors
 - Verification of cable connections



Test and measurement applications and markets

- General laboratory vibration
- Automotive (NVH, component reliability)
- University/research
- Aerospace component reliability
- Defense systems
- Consumer electronics

Key specifications

Operating frequency, $\pm 1.6\%$, user selectable

Acceleration output, $\pm 3\%$
 Velocity output
 Displacement output

61.4 Hz

1.0 g (9.81 m/s²)
 1.0 ips (25.4 mm/s)
 2.6 mils (65.9 μm)

100 Hz

1.0 g (9.81 m/s²)
 0.61 ips (15.6 mm/s)
 0.98 mils (24.8 μm)

159.2 Hz

1.0 g (9.81 m/s²)
 0.39 ips (9.8 mm/s)
 0.39 mils (9.8 μm)

Max/min load

Testing cycles
 Operating temperature range
 Internal battery

8.8 oz (250 grams) / none

Up to 1,280
 -15 to +130°F (-10 to +55°C)
 4x standard AA batteries

Battery life

DC power
 Dimensions
 Case

up to 40 hours

6 VDC $\pm 5\%$, 1A
 Diameter: 2.10 in (5.33 cm), Height: 9.25 in (23.50 cm)
 Body: 6061 aluminum, hard-coat anodized

IP rating

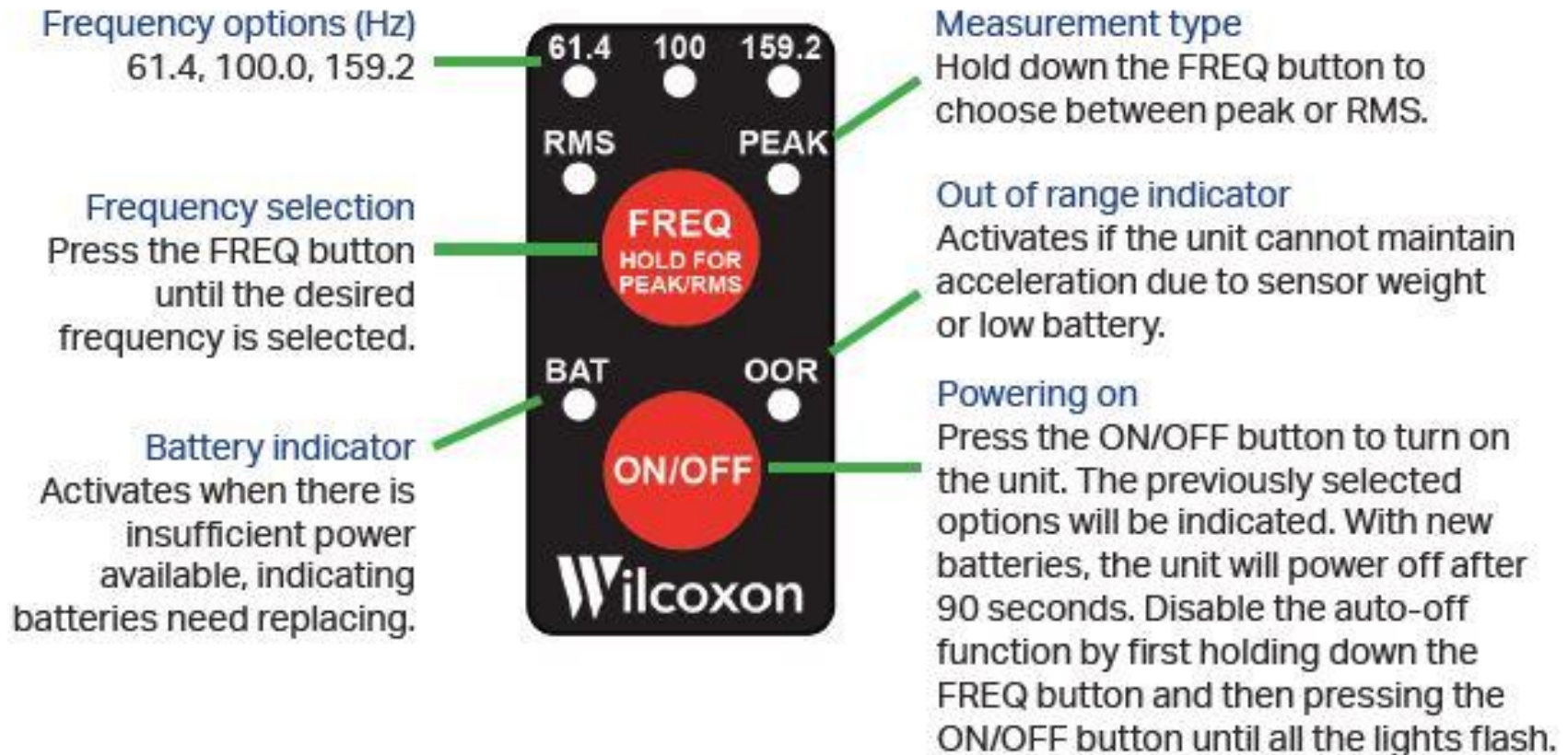
Mounting thread
 Certifications

IP54

1/4-28 female
 CE

Features

Keypad interface



Features

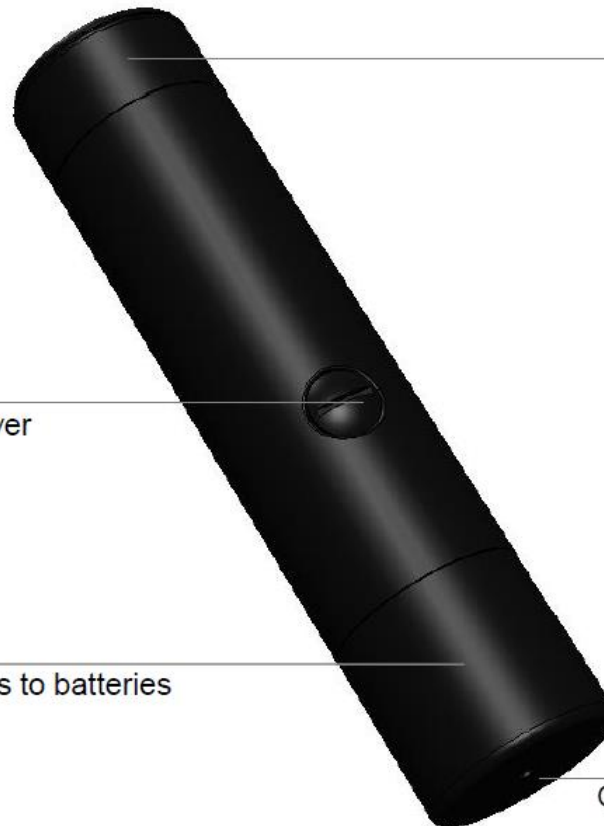
Rugged design

DC power input

Allows access to external DC power supply

Battery access

Separable cap allows easy access to batteries



Mechanical stops
Shaker head protection

Threaded hole for magnet
Optional magnet base available

Features

Reference test points

Reference test points

Verifies output of reference sensor

Connection points located in battery cavity

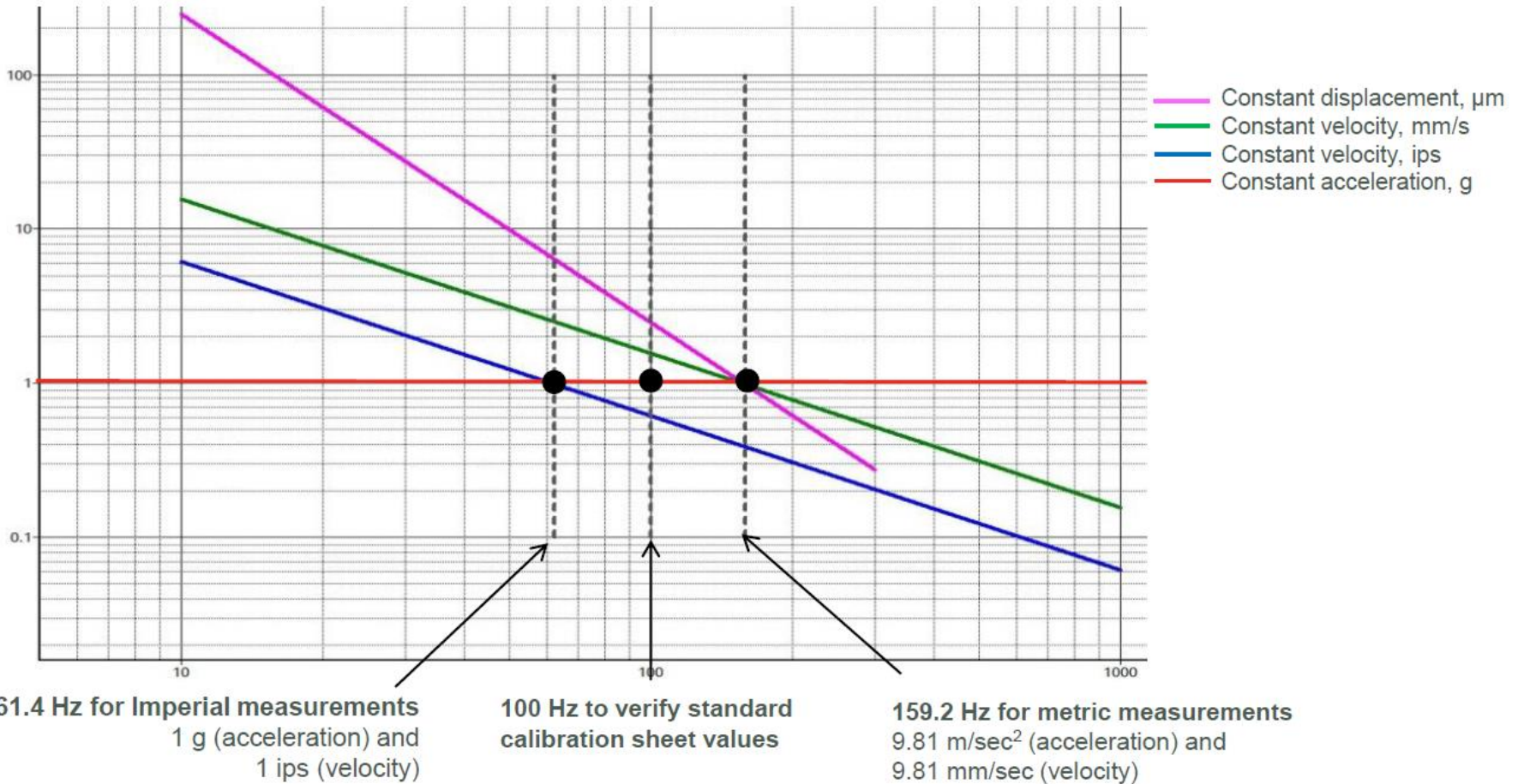


Features and advantages

Advantage	Features
<p>Ensures a lasting investment Multiple features designed to protect the unit from the most common failure point of competitive products: scratches, scrapes, drops, water/dust</p>	<ul style="list-style-type: none"> - mechanical stops - IP54 rating - overvoltage protection
<p>Instills confidence in the reference source Several features showing the unit is operating as expected</p>	<ul style="list-style-type: none"> - low battery indicator - out of range indicator - reference test points
<p>Eliminates conversions Between imperial and metric units for acceleration, velocity and displacement</p>	<ul style="list-style-type: none"> - user-selectable frequency set points (61.4 Hz, 100.0 Hz, 159.2 Hz)
<p>Wide range of sensors Works with accelerometers up to 250 grams</p>	<ul style="list-style-type: none"> - digitally controlled frequency source for increased accuracy and stability - AGC (Automatic Gain Control) for consistent 1 g acceleration regardless of sensor weight
<p>Superior battery life Extends use in the field</p>	<ul style="list-style-type: none"> - automatically powers down after 90 seconds or user can disable for continuous operation - high efficiency class D power amplifier - DC power option eliminates downtime

Selectable frequency points

Why 61.4, 100.0 and 159.2 Hz?



Kits and accessories

Standard kit

REF2510R industrial kit

Handheld shaker REF2500

AA batteries

Calibration sheet

Belt clip

Wrench

Carrying case with foam insert

1/4-28 to 1/4-28 mounting stud

Kits and accessories

Optional kits

- **REF001 universal mounting kit**
 - 1/4-28 to 10-32 adaptor stud
 - 1/4-28 to 1/4-28 mounting stud
 - 1/4-28 to 8-32 adaptor plate for 997 and 712 sensors
 - 1/4-28 to 10-32 adaptor plate
- **REF022 metric mounting kit**
 - 1/4-28 to M6 adaptor stud
 - 1/4-28 to M8 adaptor stud
 - 1/4-28 to M4 adaptor plate for 997 and 712 sensors
 - 1/4-28 to M6 adaptor plate for captive screw sensors
 - 1/4-28 to M8 adaptor plate for captive screw sensors

Kits and accessories

Carrying case

- Conveniently stores and transports shaker and accessories
- Foam insert with cutouts safely stores unit and accessories
- Grips on bottom of case prevent sliding and keep it clean
- Internal sleeve stores manual
- Shoulder strap



Kits and accessories

AC adaptor kit


- AC adaptor kit
 - interchangeable blades for international compatibility
 - provides constant power source for extended testing



- Mounting for every application



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