Agate TECHNOLOGY

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AT2040

Portable Vibration Test Set

Portable Calibrator With Signal Simulator

Applications

- Troubleshoot cabling and wiring
- Simulate vibration signals for accelerometers and velocity probes
- Simulate machinery-speed signals
- Calibrate:
  - Accelerometers
  - Monitoring systems
  - Proximity probes and drivers
  - Analyzers
  - Avionics equipment

Advanced Features

- High-accuracy sensor simulation
- Built-in charge converter
- Automatic low-battery shutdown
- Built-in power supplies
- Automatic mass-load correction
- Networking capabilities
- Fully-automated testing
- Data exports to PDF certificate or CSV
- Advanced computer algorithms for accurate readout

Lithium Iron Phosphate Battery

- Longer lifespan & longer cycle life of up to 5,000 cycles at 80% depth of discharge, or 10 years.
- Lighter weight
- More environmentally friendly than lead-acid batteries
- Higher constant power ensures full battery power at low charge
- Ten times faster charging than lead-acid batteries
- Can withstand high temperatures without decomposing, and is non-flammable and non-toxic

Overview

AT2040 portable vibration test set is specifically designed to calibrate and verify the working conditions of accelerometers and vibration meters, and to simplify vibration system installs.

AT2040 features direct signal inputs for IEPE, charge (piezoelectric), 4-20mA transmitters, coil, and proximity probe sensors. It can also supply power to sensors using on-board positive and negative variable-voltage power supplies. This includes voltage supplies for 4-20mA transmitters, Bently Nevada® powered sensors, proximity probe driver power, and adjustable power output for common aviation sensors such as Wilcoxon®, Honeywell®, Aces®, and Chadwick-Helmuth®.

The built-in signal simulator and function generator streamline end-to-end system and analyzer checkouts. Artificial transducer signals can perform over a wider amplitude range and are far more accurate than using an electrodynamic shaker and accelerometer setup.

The superior accuracy of the AT2040 is ensured using a laser-calibrated primary reference, a precision quartz reference accelerometer, and closed-loop control employing distortion compensation algorithms. Calibration of the AT2040 and its accuracy has been accredited to ISO 17025 by a 3rd party, A2LA.[1]

Functionality

- Create calibration certificates for vibration instruments.
- Test all types of vibration sensors and transducers from a variety of accelerometer and proximity probe manufacturers.
- Test and verify performance of vibration meters, portable data collectors, and cabling using an accurate and traceable signal generator to simulate a variety of sensors.
- Rapidly identify and solve issues in vibration system setup using comprehensive, user-friendly software tools.
- Control AT2040 from a remote location.

agatetechnology.com

[1] Vibration simulator not part of A2LA scope.

Specifications

AT2040

Portable Vibration Test Set

Electrodynamic Shaker Performance		
Frequency Range (operating) [1]	5 Hz to 10,000 Hz	300 to 600,000 RPM
Maximum Amplitude (100 Hz, with no payload)	20 g pk 15 in/s pk 50 mils p-p	196 m/s² pk 380 mm/s pk 1270 µm p-p
Maximum Payload [2]	800 grams	
Sensor Input Connections	IEPE, Charge, velocity, voltage, MEMS [3], piezoresistive [3], capacitive [3], 4-20 mA vibration transmitters, proximity probes (AC and DC)	
Sensor Test Method	Manual sensitivity Automatic sweep, with sensitivity and deviation relative to reference frequency. Includes phase data.	
Sensor Select	Built-in transducer library	
Calibration Sheets	Automatic creation to memory Export to PDF or CSV Certificate includes test point with graph	
Memory	16 GB (internal storage) MicroSD slot for additional storage	

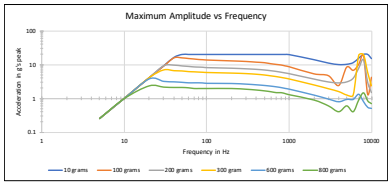
Simulation Performance [4]	
Frequency Range	1 to 11,000 Hz
Maximum Simulation Amplitude	150 g pk @ 10 mV/g
Test Type	Manual
Simulator Sensor Types Supported	• Accelerometer: • Charge • Voltage • IEPE • Velocity • 4-20 mA vibration transmitters • Proximity probes

Accuracy	
Acceleration (5 Hz to 9 Hz)	±5%
Acceleration (10 Hz to 10 kHz)	±3%
Velocity (10 Hz to 1,000 Hz)	±3%
Displacement (30 Hz to 150 Hz)	±3%
Amplitude Linearity (100 gram payload, 100 Hz)	<1% up to 10 g pk
Waveform Distortion (100 gram payload, 30 Hz to 2 kHz)	<5% THD (typical) up to 5 g pk

Input/Output	
Test Sensor Inputs	• Accelerometer: • Charge • Voltage • IEPE • Velocity • MEMS [3] • Piezoresistive [3] • Capacitive [3] • 4-20 mA vibration transmitters • Proximity probes
Bias Measurement	Yes
Built-in Excitation Current and Supply Voltages for Transducers	IEPE current source –24 V proximity driver source +24 V 4-20 mA supply Variable voltage supply

[1] 100 gram payload.

[2] Maximum weight recommendations (click here to visit our website for a larger chart). Limited at lower frequencies to 0.1 inch (2.54mm) Peak displacement.



Readout		
Acceleration	g pk m/s² pk	g RMS m/s² RMS
Velocity	mm/s pk in/s pk	mm/s RMS in/s RMS
Displacement (peak to peak)	mils p-p	µm p-p
Frequency	Hz	RPM

Power		
Internal Battery	12 V DC	6 amp hours
Battery Type [5]	LiFePO4	
Battery Charge Time	1 hour	
Battery Life Expectancy	5,000 cycles @ 80% depth-of-discharge, or 10 years	
AC Power (for recharging battery)	100–240 V, 50–60 Hz, internal, standard plug	
Operating Battery Life 100 gram payload, 100 Hz 1 g pk 100 gram payload, 100 Hz 10 g pk	 10 hours 1 hours	

Physical		
Sensor Connectors	BNC, DIN, terminal strip	
Display	4.3" TFT LCD with 480×272 resolution	
Controls	2 dials with touch screen	
Dimensions (H × W × D)	10.6 × 9.7 × 6.9 in	27 × 24.6 × 17.4 cm
Weight	14.4 lb	6.5 kg
Sensor Mounting Platform Thread Size	¼-28	
Operating Temperature	32–122 °F	0–50 °C
Agency Requirements and Certifications [3]	A2LA Accredited NIST Traceable EMC:EN61326-1 LVD:EN61010-1 ISO/IEC17025:2017 RoHS	

Accessories		
Included Accessories	• Power cable • Micro dot (10-32) • ¼-28 stud • 2-56 UNC adapter • Universal Velocity Adapter Disc • Universal Accelerometer Adapter Disc	• Short-handle wrench • 10-32 UNF stud • 6-32 UNC adapter • 10-32 UNF adapter • USB drive: loaded with setup software for custom sensor
Optional Accessories [6]	• Proximity Probe Adapter Kit (digital or manual micrometer) • Chadwick-Helmuth® Velocimeter Cable • Triaxial Accelerometer Adapter • MEMS Adapter	
Warranty	2 years (includes drift/accuracy)	
Tech Support	Training webinars, email support	

[3] Sensors require a MEMS-100 MEMS Adapter.

[4] Vibration simulator not part of A2LA scope.

[5] Lead-acid battery is an available option.

[6] For comprehensive list, please consult the Product Spec Sheet or contact sales.

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