Agate TECHNOLOGY

Portable Calibrator
With Signal Simulator

AT2040

Portable Vibration Test Set

Overview

The 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.
- Control AT2040 from a remote location using a Wi-Fi-connected computer.
- 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.

Applications

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

[1] Vibration simulator not part of A2LA scope.

Specifications

AT2040

Portable Vibration Test Set

Performance		
Frequency Range (operating)[1]	5 Hz to 10 kHz	360 to 600000 CPM
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 Test Method	Automatic sweep or manual operation	
Test Types	Manual sensitivity Automatic sweep	Sensor simulation Certification
Sensor Select	Built-in transducer library	
Calibration Sheets	Automatic creation to memory Export to USB drive in PDF or CSV format No spreadsheet or user input required Certificate includes test point with graph	
Memory	16GB (internal storage) MicroSD slot for additional storage	

Vibration Signal Accuracy	
Acceleration (5 Hz to 9 Hz)	±4 %
Acceleration (10 Hz to 10 kHz)	±2.5%
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

Simulation Performance [4]		
Frequency Range	1 to 11,000 Hz	
Maximum Amplitude Examples:	1 V 100 g at 10 mV/g 10 g at 100 mV/g	1000 pF 10 pF/g @ 100 g 100 pF @ 10 g
Test Type	Manual	
Accuracy	< 1 % error at 10 g	
Simulator Sensor Types Supported	Accelerometer: • Charge • Voltage • IEPE Velocity 4-20 mA vibration transmitters Proximity probes	

Input/Output		
Test Sensor Inputs	Accelerometer: • Charge • Voltage • IEPE Velocity 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 output supply 5–10 V	
External Source In (Max)	1 V AC RMS	

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	CPM

Power		
Internal Battery (sealed solid gel lead acid)	12 V DC	6 amp hours
AC Power (for recharging battery)	100–240 V	50–60 Hz
Operating Battery Life 100 gram payload, 100 Hz 1 g pk 100 gram payload, 100 Hz 10 g pk	 12 hours 3 hours	

Physical		
Sensor Connectors	BNC Terminal strip	DIN
Display	4.3" TFT LCD with 480 × 272 resolution	
Controls	2 dials with touch screen	
Dimensions (H × W × D)	8.5 × 12 × 10 in	22 × 30.5 × 28 cm
Weight	15.2 lb	6.9 kg
Sensor Mounting Platform Thread Size	¼-28	
Operating Temperature	32–122 °F	0–50 °C
Agency Requirements and Certifications	A2LA Accredited NIST Traceable EMC: EN61326-1 LVD: EN61010-1 ISO/IEC 17025:2017 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 [3]	• Proximity Probe Adapter Kit (digital or manual micrometer) • Chadwick-Helmuth Velocimeter Cable • Triaxial Accelerometer Adapter	
Warranty	2 years (includes drift/accuracy)	
Tech Support	Training webinars, email support	

[1] 100 gram payload.

[2] Maximum weight recommendations:

Frequency	0-100 Grams	100–250 Grams	250–500 Grams	500–800 Grams
10–100 Hz	10 g	4 g	2 g	1 g
100–1000 Hz	7 g	4 g	2 g	1 g
1000–10000 Hz	3 g	1.5 g	0	0

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

[4] Vibration simulator not part of A2LA scope.

(951) 719-1032
sales@agatetechnology.com
agatetechnology.com
Temecula, California
United States of America