

LOW FREQUENCY PORTABLE VIBRATION CALIBRATOR



The 9210D Low Frequency Portable Vibration Calibrator is the world's first and only ISO 17025-accredited, NIST-traceable portable vibration calibrator capable of creating calibration certificates for critical instrumentation used to protect slow speed rotating equipment. Until now, technicians were required to remove moving coil velocity sensors, low frequency accelerometers and proximity probes during an outage and send these instruments to a separate lab for calibration. Battery-powered, rugged and portable, the 9210D brings low frequency calibration to the plant floor, allowing users to verify all aspects of their measurement chain, confirm correct operation of critical alarm thresholds, and create a printable, traceable calibration records.

Immediate instrument verification is available via sensitivity display on the brightly lit LCD screen. The test sensor input supplies ICP® power or can be toggled to voltage mode, allowing the unit to calculate sensitivity and create calibration certificates for Eddy current probes and moving coil velocity sensors. ISO 17025-compliant calibration certificates are created via Microsoft® Excel macro for both linearity and frequency response.

An internal high-resolution quartz reference accelerometer provides unparalleled accuracy while the rugged carbon fiber composite armature supports heavy payloads. A durable Pelican® Storm Case and long battery life make it ideal for use on the plant floor. Closed-loop control shortens calibration time. The 9210D can be scaled in displacement, velocity or acceleration (metric or English units) with 0.7 Hz to 2 kHz frequency range (42 to 120,000 CPM).

BENEFITS:

- Verify alert and alarm settings on vibration monitoring systems protecting slow speed machinery such as turbines used in hydro power plants
- Create and save ISO 17025-compliant calibration certificates for both linearity and frequency response
- Simulate vibration in velocity, displacement or acceleration scales at actual machine running speeds
- High payload capability allows for calibration of moving coil velocity transducers
- Proximity probe adaptor kit ensures proper cabling and operation of non-contact displacement sensors





MODEL 9210D

SPECIFICATIONS

GENERAL

Frequency Range (operating, 100 gram payload)	0.7 Hz to 2 kHz (42 to 120k CPM)
Maximum Acceleration Amplitude (100 Hz with no payload)	2 g pk (19.6 m/s ² pk) 12 in/s pk (305 mm/s pk) 200 mils pk-pk (5 mm pk-pk)
Maximum Payload ^[1]	800 grams

ACCURACY OF READOUT

Acceleration and Velocity (2 Hz to 2 kHz) ^[2]	±3%
Acceleration and Velocity (0.7 Hz to 2 kHz) ^[2]	±10%
Displacement (3 Hz to 15 Hz) ^[3]	±3%
Displacement (1 Hz to 150 Hz) ^[3]	±10%
Displacement (0.7 Hz to 150 Hz) ^[3]	±2 dB
Amplitude Linearity (100 gram payload, 100 Hz)	< 1% up to 2 g pk
Waveform Distortion (1 Hz to 5 Hz)	Typically < 15%
Waveform Distortion (>5 Hz to 20 Hz)	Typically < 10%
Waveform Distortion (>20 Hz to 2 kHz)	Typically < 7%

UNITS OF READOUT

Acceleration (peak and RMS)	g, m/s ²
Velocity (peak and RMS)	in/s, mm/s
Displacement (peak to peak)	mils, μm
Frequency	Hz, CPM
Test Sensor Sensitivity	mV/EU ^[4]

INPUT/OUTPUT

Test Sensor In	Voltage/ICP [®] ^[5]
Bias Fault Indication (ICP [®] Sensors)	Yes
External Source In (Max)	1V AC RMS
Monitor Reference Out	100 mV/g (nominal), buffered internal reference output

POWER REQUIREMENTS

Internal Battery (sealed solid gel lead acid)	12 VDC, 4 amp hours
AC Power (for recharging battery)	110-240 Volts, 50–60 Hz
Operating Battery Life ^[6]	
100 gram payload, 100 Hz, 1 g pk	14 hours
100 gram payload, 1 Hz, 0.02 g pk	7 hours

PHYSICAL

Dimensions (H x W x D)	8.5 in x 12 in x 10 in (22 cm x 30.5 cm x 28 cm)
Weight	18 lbs (8.2 kg)
Sensor Mounting Platform Thread Size	¼-28
Integral Armature Lock	Supplied
Operating Temperature	32° – 122° F (0° – 50° C)

[1] Operating range reduced at higher payloads. Reference manual for full details.

[2] Measured with 30 gram quartz reference accelerometer.

[3] Measured with laser displacement interferometer.

[4] EU can be [g], [m/s²], [in/s], [mm/s], [mils] or [μm].

[5] 5mA constant current excitation to ICP[®] (IEPE) sensor.

[6] As shipped from factory in new condition.

INCLUDED ACCESSORIES

Accessory Pouch Includes: Power Supply and Plug Adaptors, ¼-28 to ¼-28 Adaptor, 10-32 to ¼-28 Adaptor and Mounting Pad. Product ships with shipping lock installed (remove before use). USB Flash Drive with Calibration Report Generation.

OPTIONAL ACCESSORY PRODUCTS FOR 9210D

9105C	Transfer standard reference accelerometer and ICP [®] sensor signal conditioner, for calibration and system verification of the 9200 Series Calibrators.
9100-MPPA01	Proximity probe adaptor kit, supports probes with common case threads ranging from M6 to 3/8 in. Includes Mitutoyo micrometer (metric) and 9100-PPA02 nickel-plated 4140 steel target.
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