metrO™ B6012

VIBRATIONS SIMPLIFIED...

Product brochure

version 2.2

Easiest portable vibration analyzer and balancer

SIGNASIS™
TECHNOLOGIES PVT. LTD.

Easiest vibration analyzer and balancer

metrO™ B6012 is a reliable, precise and easy to use vibration analyzer and balancer with patented Automatic 2-round single plane field balancing method designed for preventive maintenance tasks like machine condition monitoring using vibration measurement, vibration analysis, bearing and gearbox analysis and on-field dynamic balancing

Exclusive features

➢ Patented Automatic 2-round field balancing method
- ✔ Automatic machine speed (RPM) determination from vibration unbalance signal when unbalance is the major cause of machine vibrations
- ✔ Vibration sensor (accelerometer) is always the zero reference point for locating point of unbalance and adding or removing trial weight
- ✔ Automatic external stroboscope trigger synchronization with accelerometer (zero reference) for visual indication of point of unbalance, in line with the accelerometer
- ✔ Visual indication of point of unbalance and no need to measure angle in degrees
- ✔ No manual tuning, adjustment or external input of machine speed (RPM) and/or peak vibration amplitude required for field balancing

➢ Know where to add or remove trial weight in first round
- ✔ No need to worry about increasing vibrations due to unbalance in second round because operation is performed at point of unbalance in first round.

➢ 3 methods of field balancing to suit customer operating preferences
- ✔ We designed 3 types of field balancing modes based on how to determine machine speed for field balancing
  1. Automatically from vibration unbalance signal using patented automatic 2-round field balancing method
  2. Using in-built tachometer and measure angle of unbalance location in degrees
  3. Manual entry using numeric keys

Application areas

metrO™ B6012 is designed for every technician in the maintenance, production or quality control department from beginners to experienced users to confidently, accurately and easily accomplish the task of vibration monitoring, analysis and field balancing.

Faults

Unbalance
Bearing analysis
Gearbox analysis
Misalignment: coupling, shaft fault
Mechanical looseness
Motor or pump faults

Machines

Industrial fans: blowers, impellers, cooling tower fans, HVAC systems
Different types of rotors
Turbines
Compressors
Generators
Shaft: Automotive, Industrial
Propeller
Spindles: HMC, VMC, CNC, grinding machines, engraving machines, wood working machines, PCB drilling
Grinders
Mixers
Crushers
Pulleys
...and similar industrial rotating machines

Customizable on request

Country specific customization
- Metric or Imperial units
- 230V AC or 120V AC or battery operated stroboscope

Our modular design allows space for application specific customization. Let us know what you need...

Hassle free worldwide shipping

Worldwide on-site training and demonstration on request
Quick service and support

Vibration analysis

Vibration analysis can be performed in two frequency bands:

1. Narrow band	:	3 Hz to 1 KHz
2. Wide band	:	12 Hz to 5 Khz

Improved FFT performance with in-built Hanning window, overlapping and averaging techniques.

Overall vibration measurement and analysis

Levels mode is an easy to understand vibration analysis feature. It performs 2 significant functions:

1. Calculate true RMS amplitude of vibration signal. Peak and peak-to-peak values are derived from this value
2. Calculate top 6 contributing frequencies at which vibration exists in descending order of their vibration severity.

Advanced FFT bin interpolation techniques offer better frequency resolution derived from spectrum mode.

Vibration spectrum analysis

Spectrum mode provides real-time FFT frequency spectrum of vibration signal for determining root cause of problem. View, navigate, pause, frequency zoom in/out and save data for report generation.

Spectral resolution offered is:

Narrow band	:	3 Hz / 180 RPM
Wide band	:	12 Hz / 720 RPM

Amplitude zooming is possible while viewing saved data by pressing OK key.

Field balancing

2 innovative steps toward field balancing

Proprietary Automatic field balancing combines the real time processing capabilities of digital world with the ease of use of visually locating point of unbalance of classical world

3 methods of field balancing

We designed 3 types of balancing modes based on how to determine machine speed for balancing

① Automatic	When unbalance dominates the vibration spectrum, automatic balancing determines machine speed from vibration signal
② Optical Tachometer	Built-in tachometer to get angle of unbalance in degrees
③ Manual strobe	Manual entry of machine speed is also allowed like the olden days

Types of field balancing	Automatic 2-round	Conventional 3-round
Total number of runs	2	3
Reference	Vibration sensor	Reflective tape as zero mark
First round	Exact location of unbalance	Initial amplitude & arbitrary angle
Second round	Final weight with exact location of unbalance	Add trial weight at arbitrary location. New amplitude and arbitrary angle
Third round	Not required	Final weight with exact location of unbalance
Removal of trial weight	Not required	Required
Location of unbalance	Exact with respect to reference	Relative with respect to reference
Removal of trial weight	Not required	Required
Location of unbalance	Exact with respect to reference	Relative with respect to reference

In the box

Additional features

1. Absolute measurement of vibration amplitude peak and peak to peak values in Automatic balancing mode. This information is useful for confirming bent shaft and similar faults which causes uneven vibration amplitude at machine speed and seem to be unbalance if not analyzed properly.
2. Instrument is calibrated according to NABL certified ISO 17025 international standard. 6-point calibration certificate is provided.
3. Reliable hardware integration for unit conversion: acceleration to velocity to displacement.
4. In-built optical tachometer (Infrared + Laser guided) for speed measurement and unbalance location indication in degrees.
5. Ensure reliable total vibration amplitude value with true digital RMS calculation at high sampling rate.
6. User friendly screen layout: Displays all data and information messages, which guides and warns the user throughout using the instrument, in a single screen.
7. Data is saved as a combination of 'job number' and 'trial number' with 'trial number' being automatically incremented, for example: 3 readings on a motor in horizontal, vertical and axial directions,

Technical specifications

Analysis frequency range	3 Hz to 5000 Hz (180 RPM to 3,00,000 RPM)
Measurement units	Customizable. Standard: mm/s, g, m/s², micron (μm)
Type of average	RMS, peak and peak-to-peak
Measurement range	Velocity : 0 to 300 mm/s RMS Acceleration : 0 to 15 g RMS Displacement : 0 to 2000 microns peak to peak
Total vibration measurement	True RMS
Unit conversion	Hardware integration
Fast Fourier Transform (FFT)	Vibration signal spectrum with 1024 lines of resolution. Sensitivity up to -26 dB
Analysis frequency bands	1. 3Hz to 1024 Hz with 3 Hz of resolution 2. 12 Hz to 5000 Hz with 12 Hz of resolution
Balancing frequency range	2 Hz to 1000 Hz (120 RPM to 60,000 RPM)
Method of field balancing	Proprietary 2-round field balancing method in different modes
Unbalance indication	1. Using stroboscope or strobe light 2. Measuring angle (in degrees) using in-built optical tachometer
Input signal level	4mV to 4.8V peak-to-peak with sensitivity: -40 dB
Accelerometer type	Constant current accelerometer, magnetic mount, 10 ft. cable
Accelerometer sensitivity	100 mV/g
Tachometer type	In-built optical tachometer with LASER pointing and LED indication
Tachometer measuring speed	10 to 30,000 RPM
Tachometer range	10 cm to 60 cm
Autoscale	Yes
Real time clock	Yes
Auto power-off	Yes
Processor	DSP controller @ 120 MHz
Display	128 x 64 graphic LCD with back-light adjustment
Keypad	Membrane keys
Power supply	11.1 V/3 mAH Li-ion battery with charger
Power usage	196 mA at 11.1V gives more than 7 hours of continuous usage
Overall dimensions	125 x 225 x 500 mm (approximately)
Weight	700 grams (approximately)

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