LUBRICANTES TRADING, C.A.

Listado de Equipos y Certificaciones.

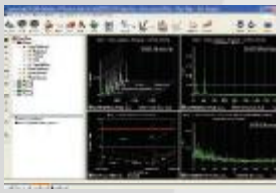
Analisis de vibraciones.

LUBRICANTES TRADING, C.A.

COMMTEST VB 2000

vb2000™

EASY AND EFFICIENT TWO-CHANNEL CAPABILITY



supplied with **Ascent** software

The **vb2000** offers the extra power and convenience of dual-channel measurement and two accelerometers. It enables quick diagnosis and correction of dynamic imbalance, the most common form of imbalance. Combined with the ability to print reports and spectral data on site the **vb2000** delivers a premium return on investment.

Included with the **vb2000** is **Ascent®** vibration analysis software. **Ascent** Level 1 enables you to program the **vb** instrument with up to 780 separate machine definitions covering up to 240 different route choices. A library of over 200 customizable parameter sets is also available enabling a vast array of measurement options.

- **Ascent** Level 1 Software
- Route enabled – build routes in **Ascent** and send to the **vb** instrument
- CBDb – Commtest Bearing Database with over 30,000 bearings
- Efficient two-channel operation
- Dual-plane balancing with printable reports
- Two accelerometers – included in the purchase price
- Laser speed sensor – for automatic capture of machine running speed
- 8 MB memory – store up to 8000 spectra in the **vb** instrument
- ≥ 95 dB dynamic range
- 20 kHz Fmax
- 3200 Line FFT capability
- "Commtest Care" including 5 year warranty on the **vb** instrument

On-site printing requires the purchase of an optional thermal printer. Please see your local Commtest reseller for details.

Revised 25 November 2004. As a result of Commtest's product development program, these specifications are subject to change without notice.

SPECIFICATIONS	MODEL vb2000	REMARKS
Accelerometer Input		
Number of channels	2	
Type	2-wire, low impedance piezoelectric	Commonly termed 'ICP® type'
Sensitivity	100 mV/g nominal	Calibration adjustable 8.5 mV/g to 2300 mV/g
Connector	BNC	Safety feature: break-free inline connector
Input impedance	>100 kΩ	
Voltage swing	16 V peak-to-peak	AC coupled input, allows for ± 8 V sensor output swing (± 80 g)
Sensor excitation current	0 mA or 2.2 mA (configurable)	2.2 mA required for ICP® type accelerometer
Sensor excitation voltage	24 V maximum	At sensor terminals with sensor attached
Sensor detection	Warns if short circuit or not connected	Channel 1 only
Tachometer Input		
Sensor	Laser sensor with reflective tape included in kit	Sensor triggers when the tape reflects its beam
Laser sensor range	10 cm to 2 m nominal	Dependent on size of reflective tape
Sensor supply	7.2 V nominal 6.0 V to 9.5 V instrument battery	Available to power sensor. Protected by 0.1 A PTC
Input type	Optically isolated, accepts TTL pulse	
Pulse rating	2.5 V (4 mA) min, 10 V (27 mA) max, off-state < 0.8 V	Triggers on negative edge
Speed range	30 RPM to 65 000 RPM (0.5 Hz to 1.08 kHz)	
Parameter Indication		
Displays	Acceleration, velocity, displacement, demodulation	User selectable
Maximum levels	± 80 g (800 m/s²), ± 4 in/sec (100 mm/s) ± 400 mil (10 mm/s)	Zero-to-peak. Approximate, dependent on individual calibration
Dynamic signal range	≥ 95 dB (typical at 400 line resolution)	Acceleration and velocity. Greater with higher resolution and averaging
Harmonic distortion	Less than -70 dB typical	Dependent on input level and type. Other distortions and noise are lower
Units	g or m/s², in/s or mm/s, mil or mm or µm	Zero-to-peak, peak-to-peak or rms
	AdB, VdB	AdB ref. 1 µg rms, VdB ref. configurable 1.0e-5 mm/s rms or 1.0e-6 mm/s rms
Graph types	Spectrum (freq domain), waveform (time domain)	Solid histogram for spectrum, line graph for waveform
Magnitude display	Overall rms value, cursor-position value	Digital readout on graph
Warnings	% change in overall since baseline	Tolerances: Tight 50% to 150%, relaxed 25% to 200%
Cursors	Standard cursor	Vary x position to display x and y values
	Dual cursors	Lock standard cursor as reference and display difference
	Harmonic cursor	Up to 32 whole-number multiples of standard-cursor frequency
Accuracy	± 1% (0.1 dB)	Measured at 100 Hz, 23 ± 5 °C, 400 lines, 400 Hz range
Frequency response	± 0.1 dB from 10 Hz to 15 kHz;	From value measured at 100 Hz
	± 0.5 dB from 3 Hz to 20 kHz	
Spectrum Display		
Fmax possible ranges	0 to (100, 125, 150, 200, 300, 400, 500, 600, 800) Hz	Or equivalent CPM values
	0 to (1, 1.2, 1.6, 2, 2.5, 3, 4, 5, 6, 8, 10, 15, 20) kHz	Or orders-based from 1X to 30 000X
Fmin possible range	0 to Fmax	**vb** instrument zeroes all spectral lines below Fmin
Resolution	400, 800, 1600, 3200 lines (configurable)	1600 lines maximum if tachometer or more than 50% overlap used. 800 lines maximum for dual channel measurements
Frequency scale	Hz, CPM, orders	Linear scale. Can zoom in to display individual spectral lines
Amplitude scale	Acceleration, velocity or displacement	Linear or log scale
Window shapes	Hanning, rectangular	
Overlap	(0, 12.5, 25, 37.5, 50, 62.5, 75, 87.5) %	Dependent on Fmax and number of lines
Number of averages	1, 2, 4, 8, 16, 32, 64, 128	Increases sampling time proportionally
Averaging types	Linear, exponential, peak hold, synchronous	
Demod bandwidths	20 bandwidth options	From 125 Hz to 1250 Hz up to 16 kHz to 20 kHz
Tachometer Display		
Displays	RPM, Hz, 1X amplitude and phase angle	For selected amplitude type, phase angle in degrees
Range	30 RPM (0.5 Hz) to 65 000 RPM (1.08 kHz)	
Time Intervals		
Measuring time in seconds (example ranges)	**Range** / LINES: 400 / 800 / 1600 / 3200	Dependent on number of lines and number of averages (values shown in table for no overlap, no averaging, maximum display update rate of 4 per second)
	0 Hz to 100 Hz: 4 / 8 / 16 / 32	
	0 Hz to 800 Hz: 0.5 / 1 / 2 / 4	
	0 kHz to 4 kHz: 0.1 / 0.2 / 0.4 / 0.8	
	0 kHz to 20 kHz: 0.02 / 0.04 / 0.08 / 0.16	
Typical measure and record	5 s for 1600 lines, 1600 Hz, 8 averages, 50% overlap	Not including initial startup and settling time
Trigger Modes	Single (key press), free run	Trigger status displayed (busy, done, run, stop)
Logging Features		
Output formats	**vb** screen, transfer to **Ascent** PC-based software	
Data storage	8.5 MB non-volatile	Total of 8000 spectra at 400 line resolution or 1000 spectra at 3200 line resolution
Data storage format	Up to 30 folders	User-specified machine, point, and axis names (16 characters) entered from PC or keypad. Each recording has a unique time/date stamp
	Up to 200 named machines per folder	
	Up to 780 named machines for all folders	
	Up to 30 multi-axial points per machine	
	Up to 8 routes per folder	
Balancing		
Planes	1, 2	
Speed range	30 RPM to 60 000 RPM	
Measurement type	Acceleration, velocity, displacement	
Min and Max values	0.0004 in/s and 4 in/s (0.01 and 100) mm/s	Zero-to-peak. Approximate, dependent on calibration
Weight modes	Angle 0° to 360°, fixed position, circumference arc	e.g. attach weights on fan blades, linear distance around circumference
Remove trial weights	Yes, No	
Filter bandwidths	15 CPM, 150 CPM	
Manual data entry	Yes	Allows re-entry of previous balance jobs
Storage	10 balance jobs total	
Display	Graphic LCD	
Resolution	240 x 128 pixels	
Viewing area	4.3" x 2.3" (110 x 60) mm	
Backlight	Electro-luminescent	
PROFLASH	Allows **vb** firmware to be upgraded via built-in serial port	Download firmware service packs via the Internet
Communications	RS232	15 kV ESD protected. Cable with DB9 connector.
Baud rate	57 600 bits per second	
Battery		
Type	Custom Nickel-Cadmium pack	
Voltage	7.2 V nominal	
Capacity	1500 mAh nominal	
Operating time (typical)	12 hours with backlight off, 7 hours with backlight on	Depends on mode and setup
Charger and Conditioner	Integral charger – automatic and manual control	Power transformer with 13.5 V ± 1.5 V DC, 1 A output included in kit.
Charge rate	0.7 A nominal	2.5 hours for complete charge nominal
Discharge rate	0.5 A nominal	Combats NiCad battery memory effect
Mechanical		
Size	9.7" W x 6.1" L x 3.0" H (247 x 154 x 75) mm	Including protective boot
Weight	4.4 lb (2 kg)	Including protective boot and strap
Environmental		
Temperature/Humidity		
Operating	32 °F to 122 °F (0 to 50) °C	
	80% RH 32 °F to 86 °F	Non-condensing
	70% RH 86 °F to 122 °F	Non-condensing
Storage	14 °F to 140 °F (-10 to 60) °C	
	95% RH	
EMC	EN55022, CISPR22	Radiated and conducted emissions
	EN55024, CISPR24	RF field, ESD and fast transient immunity

Revised 25 November 2004. As a result of Commtest's product development program, these specifications are subject to change without notice.

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Customer Copy

vb

CALIBRATION CERTIFICATE

Model	vb 2000	**Serial #**	12022
		Module Serial #	12022
		PROFLASH **Version #**	5.50

CALIBRATION

vb channel 1	60.03	60 +/- 0.60 mm/sec
vb channel 2	60.04	60 +/- 0.60 mm/sec

vb settings: Fmax 400 Hz, sensor sensitivity 100 mV/g
Input signal: 100 Hz, 0.3844 V AC, 12 V DC offset

TESTING INFORMATION

Manufacturer	Model	Serial Number	Calibration Due Date
Keithley	2000	0579112-2	April 2007
SRS	DS360	61256	April 2007

The calibration of the vb instrument is traceable to national standards maintained by the National Institute of Standards and Technology (NIST).

Calibrated by : AM.

Date : 12 / June / 06
DD MM YY

File Ref: Calibration Card vb 290306

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~ Calibration Certificate ~

Per ISO 16063-21

Model Number: 603M56

Serial Number: 95606

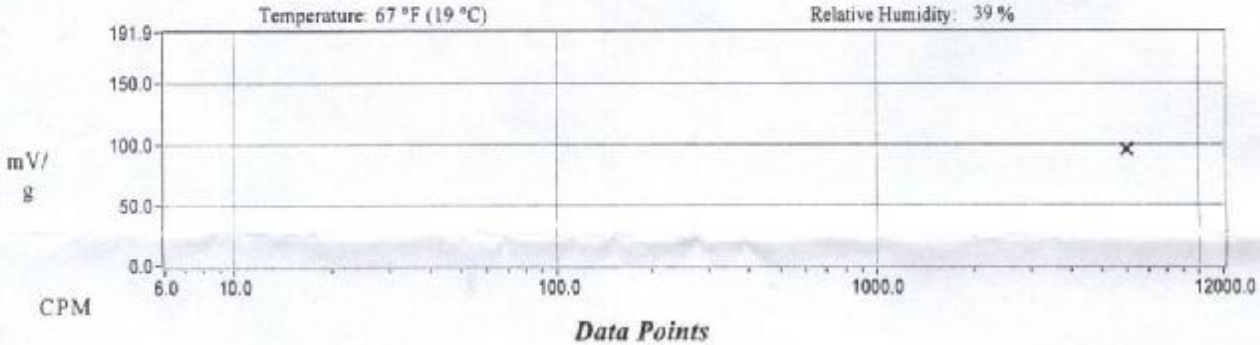
Description: ICP® Accelerometer Method: Back-to-Back Comparison Calibration

Manufacturer: IMI

Calibration Data

Sensitivity @ 6000 CPM 96 mV/g (9.79 mV/m/s²) Output Bias 10.5 VDC

Sensitivity Plot



Data Points

Mounting Surface: Stainless Steel Fastener: Stud Mount Fixture Orientation: Vertical

Acceleration Level (rms)¹: 1.00 g (9.81 m/s²)

¹The acceleration level may be limited by shaker displacement at low frequencies. If the listed level cannot be obtained, the calibration system uses the following formula to set the vibration amplitude: Acceleration Level (g) = 9.010 x (freq)²

²The gravitational constant used for calculations by the calibration system is: 1 g = 9.80665 m/s²

Condition of Unit

As Found: n/a

As Left: New Unit, In Tolerance

Notes

1. Calibration is NIST Traceable thru Project 822/271196 and PTB Traceable thru Project 5399.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540-1-1994 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Measurement uncertainty (95% confidence level with coverage factor of 2) for frequency ranges tested during calibration are as follows: 5-9 Hz; +/- 2.0%, 10-99 Hz; +/- 1.5%, 100-1999 Hz; +/- 1.0%, 2-10 kHz; +/- 2.5%.

Technician: Tammy Haskins Date: 03/30/06

ACCREDITED
Cert No 1662.02

IMI SENSORS
A PCB PIEZOTRONICS DIV.
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~ Calibration Certificate ~

Per ISO 16063-21

Model Number: 603M56

Serial Number: 95607

Description: ICP® Accelerometer Method: Back-to-Back Comparison Calibration

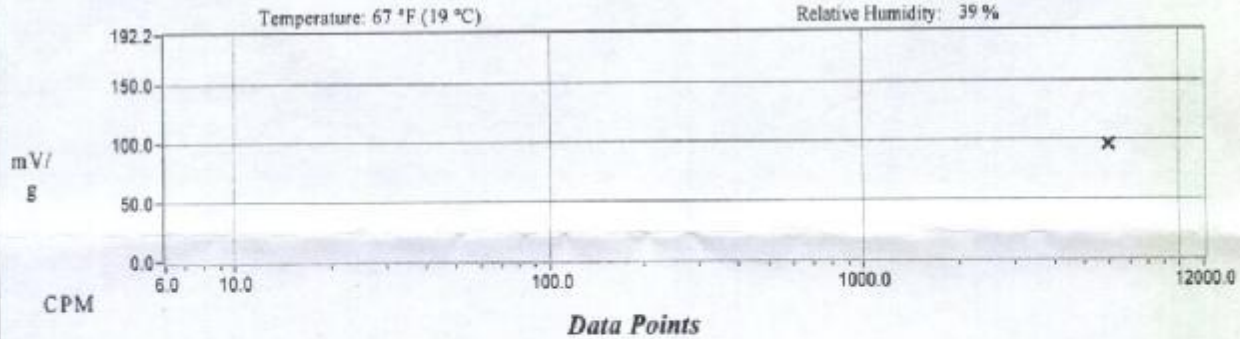
Manufacturer: IMI

Calibration Data

Sensitivity @ 6000 CPM 96 mV/g (9.80 mV/m/s²) Output Bias 10.4 VDC

Sensitivity Plot

Temperature: 67 °F (19 °C) Relative Humidity: 39 %



Data Points

Mounting Surface: Stainless Steel Fastener: Stud Mount
Acceleration Level (rms)*: 1.00 g (9.81 m/s²)²
*The acceleration level may be limited by shaker displacement at low frequencies. If the listed level cannot be obtained, the calibration system uses the following formula to set the vibration amplitude: Acceleration Level (g) = 0.000 x (freq)².

Fixture Orientation: Vertical
²The gravitational constant used for calculations by the calibration system is: 1 g = 9.80665 m/s².

Condition of Unit

As Found: n/a

As Left: New Unit, In Tolerance

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