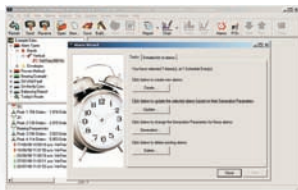


# vb2000™



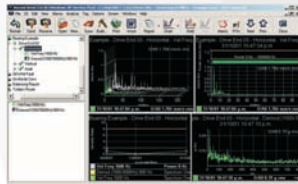
## EASY AND EFFICIENT TWO CHANNEL CAPABILITY



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
- $\geq 95$  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.

Supplied with **Ascent** software



SPECIFICATIONS	MODEL vb2000	REMARKS					
<b>Accelerometer Input</b>							
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-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					
<b>Tachometer</b>							
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]						
Display	RPM, Hz, 1X amplitude and phase angle	For selected amplitude type, phase angle in degrees					
<b>Parameter Indication</b>							
Displays	Acceleration, velocity, displacement, demodulation	User selectable					
Maximum levels	± 80 g (800 m/s <sup>2</sup> ), ± 4 in/sec (100 mm/s), ± 400 mil (10 mm)	0-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/s <sup>2</sup> , in/s or mm/s, mil or mm or μm	0-peak, peak-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 chart					
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; ± 0.5 dB from 3 Hz to 20 kHz	From value measured at 100 Hz					
<b>Spectrum Display</b>							
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, displacement or current	Linear or log scales					
Window shapes	Hanning, rectangular						
Overlap	[0, 12.5, 25, 37.5, 50, 62.5, 75, 87.5] %	Dependent on Fmax and number of samples					
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					
<b>Waveform Display</b>							
Number of samples	1024, 2078, 4096, 8192						
Time scale	ms, revs						
Time synchronous averages	1, 2, 4, 8, 16, 32, 64, 128	Only available when tachometer triggered					
<b>Keypad Entry</b>							
Prompt and unit strings	16 characters each						
Input value range	± 59 999						
<b>Time Intervals</b>							
	Range	400	Lines	800	1600	3200	
Measuring time in seconds	0 Hz to 100 Hz	4	8	16	32		Dependent on number of lines and number of averages (values shown in table for no overlap, no averaging, maximum display update of 4 per seconds)
(example ranges)	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 seconds for 1600 lines, 1600 Hz, 8 averages, 50% overlap						Not including initial startup and settling time
<b>Trigger Modes</b>	Single (key press), free run						Trigger status displayed (busy, done, run, stop)
<b>Logging Features</b>							
Output formats	vb screen, transfer to Ascent PC-based software						Total of 8 000 spectra at 400 line resolution or 1000 spectra at 3200 line resolution User-specified machine, point, and axis names (16 characters) entered from PC or keypad. Each recording has a unique time/date stamp
Data storage	8.5 MB non-volatile						
Data storage format	Up to 30 folders						
	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						
<b>Balancing</b>							
Planes	1, 2						0-peak. Approximate, dependent on calibration e.g. attach weights on fan blades, linear distance around circumference
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						
Weight modes	Angle 0° to 360°, fixed position, circumference arc						
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						
<b>Display</b>							
Resolution	Graphic LCD						
Viewing area	240 x 128 pixels						
Backlight	4.3" x 2.3" [110 x 60] mm						
<b>PROFLASH</b>	Allows vb firmware to be upgraded via built-in serial port						Download firmware service packs via the Internet
<b>Communications</b>							
Baud rate	RS232						15 kV ESD protected. Cable with DB9 connector
	57 600 bits per second						
<b>Battery</b>							
Type	Custom Nickel-Cadmium pack						Depends on mode and setup
Voltage	7.2 V nominal						
Capacity	1500 mAh nominal						
Operating time [typical]	12 hours with backlight off, 7 hours with backlight on						
<b>Charger and Conditioner</b>							
Charge rate	Integral charger – automatic and manual control						Power transformer with 13.5 V ± 1.5 V DC, 1 A output included in kit
Discharge rate	0.7 A nominal						2.5 hours for complete charge nominal
	0.5 A nominal						Combats NiCad battery memory effect
<b>Mechanical</b>							
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
<b>Environmental</b>							
Temperature/Humidity	32 °F to 122 °F [0 to 50] °C						Non-condensing
Operating	80% RH 32 °F to 86 °F						Non-condensing
	70% RH 86 °F to 122 °F						
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