

# vbBalancer®

# vbBalancer+®

Two and four-channel  
unbalance correction packages



Lightweight and extremely portable, the vbBalancer+® 4 channel and vbBalancer® 2 channel instruments are easily carried onsite to any problematic machine. Their 10 hour battery life and 1 GB of internal memory ensure progress is uninterrupted, practically eliminating the need to pause in order to connect to a PC or power supply. The vbBalancer® instruments also carry the legendary 5 year warranty and free lifetime support.

Unbalance causes high levels of mechanical stress and vibration that is transferred directly to the bearings resulting in a proportional reduction in normal bearing life. With a few basic parameters, the vbBalancer® instruments calculate acceptable unbalance levels to ensure machinery operates within international ISO 1940 guidelines.

#### Setup

vbBalancer® instrument setup is minimal, quick, and easy. Only a few calibration runs are required, with or without removing your trial weight.

#### Memory

The vbBalancer® instrument stores your previous balance run data. No need to waste valuable time performing calibration runs on repetitive or routine balance jobs.

#### Balance

Unbalance is computed quickly, with the large backlit LCD display and user-friendly interface indicating the angular position for weight correction.

The vbBalancer+® instrument enables full 4-sensor monitoring of both horizontal and vertical axes on each bearing. This ability provides confidence that a balance on any one axis has not worsened vibrations on the other.

SPECIFICATIONS	vbBalancer®	vbBalancer+®	NOTES
<b>Sensors</b>			
Channels (simultaneous)	2	4	Simultaneous sampling
Compatible sensor types	Accelerometer	Accelerometer, velocity, displacement	
AC coupled range	16 V peak-peak	16 V peak-peak	Allows for ± 8 V sensor output swing (± 80 g)
Connectors	2 x BNC (CH1/CH2)	1 x BNC (CH1) 1 x LEMO (CH2/CH3/CH4)	Safety feature: Break-free inline connector
Analog to digital conversion	24-bit ADC	24-bit ADC	
Sensor excitation current	0 mA or 2.2 mA (configurable) 24 V maximum	0 mA or 2.2 mA (configurable) 24 V maximum	2.2 mA required for IEPE/ICP®-type accelerometer
Sensor detection	Warns if short circuit or not connected	Warns if short circuit or not connected	

<b>Tachometer</b>			
Sensor	Laser sensor with reflective tape	Laser sensor with reflective tape	Sensor triggers on beam reflection
Laser sensor range	10 cm to 2 m nominal	10 cm to 2 m nominal	Dependent on size of reflective tape
Other sensor types supported	Contact, TTL pulse	Contact, TTL pulse, Keyphasor®	Optically isolated input
Power supply to sensor	5 V, 50 mA	5 V, 50 mA	
TTL pulse rating	3.5 V (4 mA) min, 28 V (5 mA) max, off-state 0.8 V	3.5 V (4 mA) min, 28 V (5 mA) max, off-state 0.8 V	
Keyphasor® thresholds	-	7.7 ± 0.5 V 13.2 ± 0.8 V 18.5 ± 1 V	Nominally 8 V, 13 V, 18 V
Speed range	10 RPM to 300 000 RPM (0.2 Hz to 5 kHz)		Pulse width at least 0.1 ms
Accuracy	+/- 0.1%	+/- 0.1%	

<b>Parameter Indication</b>			
Maximum levels	>1000 g (10 000 m/s <sup>2</sup> ), >1000 in/sec (25 000 mm/s), >100 in (2500 mm)	>1000 g (10 000 m/s <sup>2</sup> ), >1000 in/sec (25 000 mm/s), >100 in (2500 mm)	Effective limit is sensor sensitivity and output voltage
Dynamic signal range	>95 dB	>95 dB	Typical at 400 line resolution
Harmonic distortion	Less than -70 dB typical	Less than -70 dB typical	Other distortions and noise are lower
Units	g or m/s <sup>2</sup> or adB in/s or mm/s or vdB mil or mm or µm	g or m/s <sup>2</sup> or adB in/s or mm/s or vdB mil or mm or µm	0-peak, peak-peak or RMS. Auto-scale by 1000x when required. US & SI options for adB & vdB.
Magnitude & cursors	Overall RMS value, waveform true pk-pk, dual cursors, harmonics	Overall RMS value, waveform true pk-pk, dual cursors, harmonics	Digital readouts on chart
Base accuracy	± 1% (approx. 0.1 dB)	± 1% (approx. 0.1 dB)	% of reading
High frequency attenuation	≤ 0.1 dB 100 Hz to 5 kHz	≤ 0.1 dB 100 Hz to 5 kHz	Attenuation tolerances are in addition to base accuracy
AC coupling attenuation	≤ 0.1 dB 10 Hz to <100 Hz ≤ 3 dB 1 Hz to <10Hz	≤ 0.1 dB 10 Hz to <100 Hz ≤ 3 dB 1 Hz to <10Hz	
Attenuation due to Integration	≤ 0.1 dB 10 Hz to <100 Hz ≤ 1.5 dB 1 Hz to <10 Hz	≤ 0.1 dB 10 Hz to <100 Hz ≤ 1.5 dB 1 Hz to <10 Hz	Values apply to single integration (accel. to veloc.). Double the values for double integration (accel. to displ.).

<b>Spectrum Display</b>			
Fmax possible ranges	25, 50, 100, 125, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000, 4000, 5000 Hz	25, 50, 100, 125, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000, 4000, 5000 Hz	Or equivalent CPM values Or orders-based from 1X to 999X
Fmin possible range	0 to Fmax	0 to Fmax	Instrument zeroes all spectral lines below Fmin
Resolution	800 lines	800 lines	
Frequency scale	Hz, CPM, Orders	Hz, CPM, Orders	Linear scale with zooming
Amplitude scale	Acceleration, velocity or displacement	Acceleration, velocity or displacement	Linear or log scales, auto or manual scaling
Window, overlap, averaging	Hanning, 50%, 4 x Linear	Hanning, 50%, 4 x Linear	

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<b>Waveform Display</b>			
Number of samples	2048	2048	
Time scale	160 ms to 32 seconds	160 ms to 32 seconds	Or orders based from
<b>Data Logging</b>			
Data storage	1 GB	1 GB	
Data storage structure	Folders / Machines	Folders / Machines	No limits are applied, 50 character names
Max. folder size	10 000 measurement locations	10 000 measurement locations	

<b>Balancing</b>			
Planes	2 planes, 2 sensors	2 planes, 4 sensors	
Speed range	30 to 60 000 RPM	30 to 60 000 RPM	
Measurement type	Acceleration, velocity, displacement	Acceleration, velocity, displacement	
Weight modes	Angle 0° to 360°, fixed position, circumference arc	Angle 0° to 360°, fixed position, circumference arc	E.g. weights on fan blades, linear dist. around circumference
Remove trial weights	Yes, No	Yes, No	Removed weight automatic recalculation
Manual data entry	✓	✓	Allows re-entry of previous balance jobs
Storage	Against machines in data structure	Against machines in data structure	No limits applied
Channel selection	Single or dual channel	Up to 4 channels simultaneous	

<b>Display &amp; Communication</b>			
Display	Graphic Grayscale LCD	Graphic Grayscale LCD	White LED Backlight
Resolution & size	480 x 320 (HVGA), 5.5" (140 mm)	480 x 320 (HVGA), 5.5" (140 mm)	Readable in direct sunlight
Supported Languages	Eng, Chi, Fre, Ger, Jap, Por, Rus, Spa	Eng, Chi, Fre, Ger, Jap, Por, Rus, Spa	Firmware releases in English, translations
Communication with PC	USB and Ethernet	USB and Ethernet	PROFLASH to upgrade instrument firmware
USB host port	USB 2.0, supplying 5V, 250mA	USB 2.0, supplying 5V, 250mA	Save folders to USB flash drive

<b>Battery &amp; Charger</b>			
Battery type	Custom Lithium Ion pack, 7.4 V, 4500 mAh	Custom Lithium Ion pack, 7.4 V, 4500 mAh	
Operating time	10 hours	10 hours	Backlight on (60 second time-out)
Charger type	Internal charging, automatic control	Internal charging, automatic control	External Power pack 12 V DC, 3 A output
Charge rate	3 A nominal	3 A nominal	3 hours for complete charge

<b>Mechanical</b>			
Size	9.9" W x 5.8" L x 2.4" H (252 x 148x 60) mm	9.9" W x 5.8" L x 2.4" H (252 x 148x 60) mm	
Weight	2.7 lb (1.2 kg)	2.7 lb (1.2 kg)	Includes battery and strap

<b>Environmental</b>			
Operating temperature	14 °F to 122 °F (-10 to 50) °C	14 °F to 122 °F (-10 to 50) °C	
Storage temperature & humidity	-4 °F to 140 °F (-20 to 60) °C, 95% RH	-4 °F to 140 °F (-20 to 60) °C, 95% RH	If storage exceeds 1 month: Up to 95 F (35 C), 85% RH
EMC	EN61326	EN61326	
Ruggedness	4' (1.2 m) drop onto concrete, IP65	4' (1.2 m) drop onto concrete, IP65	Procedure: 26 drops following MIL-STD-810F-516.5-IV
Hazardous locations	CSA Class I, Division 2 (Groups A, B, C, D)	CSA Class I, Division 2 (Groups A, B, C, D)	
Certification	CE	CE	