vb8 Portable Data Collector, Analyzer and Balancer
Datasheet

Description

The vb8 Portable Data Collector, Analyzer and Balancer instrument is a four-channel vibration data collector, analyzer and balancer. You can use this device for on-route and off-route data collection, machine-side analysis and diagnosis as well as on-site dynamic balance correction.

The vb8 Portable Data Collector, Analyzer and Balancer is certified for Class 1 Division 2 hazardous areas. It is ergonomically designed and lightweight for all day comfort.

The vb8 provides recordings with up to 12,800 lines of resolution and up to 80 kHz Fmax. Our patented adaptive settling algorithm and 6Pack recording system offer quick, one-step data recording.

The vb8 Portable Data Collector, Analyzer and Balancer has plenty of storage and long battery life, and is backed by a five year warranty.

The vb8 is one of Bently Nevada hardware monitoring assets that work with System 1 software.

The vb8 Portable Data Collector, Analyzer and Balancer offers the following features:

- Four channel simultaneous recordings
- Two-plane balancing with up to 4 sensors
- Support for acceleration, velocity, displacement, DC-coupled, current and voltage output sensors
- Triax-enabled
- 12,800 lines FFT resolution
- Supports 80 kHz Fmax
- 1 GB memory
- Spectrum and waveform recordings

- Demodulation for early detection of rotating machinery problems such as bearing faults
- Unique 6Pack recording system
- Full analysis capabilities such as time synchronous averaging, coastdown and runup, bump test, cross-channel phase, orbit plot, and long time waveform
- Modal Impact Testing and Cross Channel Spectrum (ODS)
- Ability to export data in Universal File Format (UFF) for additional analysis in ODS software such as Vibrant Technology ME'scope
- Numeric parameter input via keypad with trend and alarm capability
- Sensor cable self-test feature
- Flex feature to add Remote Comms
- USB host port for data transfer to external USB drive
- Upgradable Proflash system and free firmware updates for 5 years
- Five-year warranty on the instrument hardware

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Specifications

Sensors

Sensor input	Four channels simultaneous sampling
Compatible sensor types	Accelerometer, velocity, displacement, current, voltage output and 4 to 20 mA
AC coupled range	16 V peak-peak Allows for ± 8 V sensor output swing (± 80 g)
DC coupled ranges	0 V to 20 V, -10 V to 10 V, -20 V to 0 V E.g. For reading prox-probe gap
Connectors	1 x BNC (CH1) 1 x LEMO (CH2/CH3/CH4) Safety feature: Break-free inline connector
Analog to digital conversion	24-bit ADC
Sensor excitation current	0 mA or 2.2 mA (configurable), 24 V maximum 2.2 mA required power for IEPE/ICP type accelerometer
Sensor detection	Warns if short circuit or not connected

Tachometer Sensor

Sensor type	Laser sensor with reflective tape Sensor triggers on beam reflection
Laser sensor range	10 cm to 2 m nominal Range depends on size of reflective tape

Tachometer Input

Supported sensor types	Laser Tach, Contact, TTL Pulse, Keyphasor Instrument has optically isolated input
Power supply to sensor	5 V, 50 mA
TTL pulse rating	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 %
Output to drive strobe	Up to 140 Hz (8400 CPM) Typical Depends on strobe type Special cable required

Parameter Indication

Maximum levels (peak)	> 1000 g (10,000 m/s2) > 1000 in/sec (25,000 mm/s) > 20 in (500 mm) > 10,000 amps Effective limit is sensor sensitivity and output voltage
Dynamic signal range	> 95 dB typical at 400 line resolution
Harmonic distortion	Less than -70 dB typical Other distortions and noise are lower
Units	g or m/s2 or adB in/s or mm/s or vdB mil or mm or µm adB, vdB, amps, user defined 0-peak, peak-peak or RMS Auto-scale by 1000x when required US and SI options for adB and vdB
Magnitude & cursors	Overall RMS value Waveform True pk-pk Dual cursors Harmonics Digital readouts on chart
Base accuracy	± 1% of readings approximately 0.1 dB For AC signal: % of reading For DC signal: % of full scale
High frequency attenuation	≤ 0.1 dB 100 Hz to 10 kHz ≤ 3 dB >10 kHz to 40 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 <10 Hz
Attenuation due to Integration (normal mode)	≤ 0.1 dB 10 Hz to <100 Hz ≤ 1.5 dB 1 Hz to <10 Hz Values apply to single integration. (Acceleration to velocity) Double the values for double integration (Acceleration to displacement)
Attenuation due to Integration (low frequency	≤ 0.1 dB 1 Hz to <100 Hz ≤ 1.5 dB 0.2 Hz to <1 Hz Applies when coupling = DC and Fmax ≤ 100 Hz

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mode)	

Spectrum Display

Fmax ranges	25, 50, 100, 125, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1600, 2000, 2500, 3000, 4000, 5000, 6000, 8000, 10,000, 15,000, 20,000, 30,000, 40,000, 60,000, 80,000 Hz Or equivalent CPM values Or orders-based from 1X to 999X
Fmin possible range	0 to Fmax Instrument zeroes all spectral lines below Fmin.
Resolution	400, 800, 1600, 3200, 6400, 12,800 lines
Frequency scale	Hz, CPM, Orders Linear scale with zooming
Amplitude scale	Acceleration, velocity, displacement, current, voltage, user defined Linear or log scales, auto or manual scaling
Window shapes	Hanning Rectangular
Overlap	(0, 12.5, 25, 37.5, 50, 62.5, 75, 87.5) % Depends 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
Demodulation bandwidths	23 bandwidth options From 125 Hz to 1250 Hz Up to 16 kHz to 20 kHz
6Pack	Up to 40 kHz and 3200 lines (1 channel) Up to 20 kHz and 1600 lines (3 channels) Spectrum and waveform for low-frequency, high-frequency and demodulation
Order tracking	Up to 6 kHz Fmax Orders-based Tachometer required Mounted on high-speed shaft
Order tracking - Distortion	< -65 dB Within 50% to 200% speed variation during recording

Waveform Display

Number of samples	1024, 2048, 4096, 8192, 16,384, 32,768
Time scale	10 ms to 512 seconds or orders based

	from 1 to 999 revs
Time synchronous averages	1, 2, 4, 8, 16, 32, 64, 128 Only available when tachometer triggered
Long time waveform Fmax	25 Hz to 40 kHz 20 kHz max for two or more channels
Long time waveform duration	14.7 million samples (total over channels) E.g. for Fmax 1 kHz, Fsample = 2.56 kHz and Duration = 1.6 hrs

Logging and Analysis

Output formats	Instrument screen, transfer to Ascent or System 1, XML, UFF file export via USB
Data storage	Dual 1 GB non-volatile flash memories Database mirror copy on second flash memory
Data storage structure	Folders/machines/points/locations/routes No limits are applied 50 character names
Max folder size	10,000 measurement locations
Modal analysis	CH1 for hammer Up to 3 response channels ≤ 40 kHz Coherence and FRF (Accelerance / Mobility / Compliance)
Cross channel spectrum	1 reference Up to 3 other sensors Coherence and FRF for importing into ODS software

Balancing

Planes	Up to 2 planes 2 sensors
Speed range	30 to 60 000 RPM
Measurement type	Acceleration Velocity Displacement
Weight modes	Angle 0° to 360° Fixed position Circumference arc E.g. Weights on fan blades, linear dist. around circumference
Remove trial weights	Leave or remove trial weights for final balance Automatic recalculation
Manual data entry	Yes Allows re-entry of previous balance

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	jobs
Storage of balancing jobs	In the data structure where machine vibration readings are stored
	No limits applied

Display and Communication

Display	Graphic Grayscale LCD LED Backlight
Resolution & size	480 x 320 (HVGA), 5.5" (140 mm)
	Readable in direct sunlight
Supported Languages	English, Chinese, French, German, Japanese, Portuguese, Russian and Spanish
Communication with PC	USB and Ethernet
	Use PROFLASH to upgrade instrument firmware
USB host port	USB 2.0, supplying 5V, 250mA Save folders to USB flash drive
UFF export	Spectra, Coherence, FRF magnitude and phase
	Universal File Format for Modal and FRF data

Battery and Charger

Battery type	Custom Lithium Ion pack, 7.4 V, 5 Ah
Operating time	10 hours Backlight on — 60 second timeout
Charger type	Internal charging, automatic control External power pack 12 V DC, 3 A output
Charge rate	3 A nominal 3 hours for complete charge

Mechanical

Size	9.9" W x 5.8" L x 2.4" H (252 x 148 x 60 mm)
Weight	2.7 lb (1.2 kg) Including battery and strap

Environmental Limits

Operating temperature	14 °F to 122 °F (–10 to 50 °C)
Storage temperature & humidity	–4 °F to 140 °F (–20 to 60 °C), 95% RH
	Up to 95 F (35 C), 85% RH if storage exceeds 1 month
Ruggedness	IP65 sealed 4' (1.2 m) drop onto concrete Procedure: 26 drops following MIL-STD-810F-516.5-IV

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Hazardous Area Approvals

For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (108M1756) available from Bently.com.

CSA/NRTL/C (Approval Option 01)	Class I, Division 2, Groups A, B, C, D

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Ordering Information

✏️ For the detailed listing of country and product specific approvals, refer to the *Approvals Quick Reference Guide* (108M1756) available from Bently.com.

VB8-AA

A: Agency Approval	
01	CSA / NRTL / C (Class 1, Division 2)

Basic Kit

We offer the vb8 Portable Data Collector, Analyzer and Balancer instrument in a basic kit with the option to purchase System 1 or Ascent software and license separately.

✏️ * Kit items below with multiple part numbers listed have limited regional availability due to certification requirements.

Part Number	Description	Qty
	vb8 Portable Data Collector, Analyzer and Balancer four-channel portable data collector	1
ACCL0547 or 200350 *	Straight accelerometer	3
ACCL0561 or 200350 *	Right-angled accelerometer or straight accelerometer	1
138M7748	Transducer cable, 4 ft. straight	4
CBTB0278	Triple BNC adapter	1
MAGF0104	Accelerometer magnetic base	4
CABB0560	BNC to BNC cable, 1m	2
CABU0213	USB data transfer cable	1
110M8172-012	LEMO-BNC TTL Tach/Keyphasor	1
PLUS0230	Category A power plug, USA / Canada	1
PLSA0241	Category D power plug, South Africa / India	1
PLAU0228	Category M power plug, Australia / New Zealand / China	1
PLHK0245	Category G power plug, Hong Kong / UK	1
PLEU0229	Category C Power plug, Europe	1
CBVB0552	vbx instrument carry bag	1
109M2384-02	Neck strap with Sensor Keeper	1

Part Number	Description	Qty
108M4044	AC power adapter	1
DCCA0041	DC car adapter	1
108M3536	SCOUT100 Series and vbSeries Quick Start Guide	1
MVBX0250	Instrument Reference guide	1

Accessory Kits

Balancing Kit - 108M4050-04

Part Number	Description	Qty
113M5529-01	Reflective tape One roll, 60 cm	1
LASA0315	Laser Tach Kit Zone 2 rated	1
CBL50216	Laser cable Five meters	1
MAGA0063	Laser magnetic stand	1
CB5G0024	Sensor Cable Five meters, green	2
CB5R0025	Sensor Cable Five meters, red	2
CBBL0026	Carrying case for the kit	1

Zone 2 Laser Tach Kit - LASA0315

Part Number	Description	Qty
108M4064	Laser Tacho Holder	1
108M4066	Circlips - 20Mm Stainless	1
108M4067	Arp115 Oring	2
108M4069	Laser Tach Zone 2 rated	1

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Impact Hammer Kit

Impact_Hammer_Kit - AA-BB-CC-DD-EE-FF

A: 500lbf pk, 10mV/lbf, 0.3lbm (285570-01)	
00	None
01	Hammer Included
B: 1000lbf pk, 5mV/lbf, 0.3lbm (285570-02)	
00	None
01	Hammer Included
C: 5000lbf pk, 1mV/lbf, 2.4lbm (285570-03)	
00	None
01	Hammer Included
D: N/A	
E: N/A	
F: N/A	

Additional Accessories

Software

Part Number	Description
108M4051	ASCENT Level 1
108M4052	ASCENT Level 2
3071/01	System 1

Hardware

Part Number	Description
MAGM0064	Accelerometer magnetic base Male connection
VBMR0222	Stainless safety rings (1 pair)
KTTC0331	Triaxial sensor kit 100 mV/g +/- 20% Magnet 6 ft coiled cable, with breakaway connector Zone 2 and Class 1, Div 2 rating
100M5828	The vbSeries hard case
DTC70262	The vbSeries dust cover
BATT0575	Replacement battery pack, Li-Ion 7.4 V 5 Ah

> ✎ All accessories included in the basic kit, balancing kit and Laser Tach kit may also be ordered separately.

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