



## Description

The vb5 instrument is a portable single channel vibration data collector. It is ergonomically designed and lightweight for all day comfort. You can use this device for on-route as well as off-route data collection.

The vb5 data collector provides recordings with up to 6,400 lines of resolution and up to 40 kHz Fmax. Our patented adaptive settling algorithm and 6Pack recording system offer quick, one-step data recording.

The data collector has plenty of storage and long battery life. This device is backed by five years of warranty.

The vb5 data collector is one of Bently Nevada hardware monitoring assets that work with System 1\* Evolution and Ascent\* Level 1 software.

### The vb5 data collector offers the following features:

- Single channel recordings
- 6,400 lines FFT resolution
- Supports 40 kHz Fmax
- 1 GB memory
- $\geq 95$  dB dynamic range
- Spectrum and waveform recordings
- Demodulation for early detection of rotating machinery problems such as bearing faults
- Unique 6Pack recording system
- Cable test mode
- Option to add flex features such as balancing and Remote Comms
- Optional Wi-Fi support
- Upgradable Proflash system and free firmware updates for 5 years
- Five-year warranty on the instrument hardware



# Specifications

## Sensors

Sensor input	One channel
Compatible sensor types	Accelerometer
AC coupled range	16 V peak-peak Allows for $\pm 8$ V sensor output swing ( $\pm 80$ g)
Connectors	1 x BNC (CH1) 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 <sup>®</sup> type accelerometer
Sensor detection	Warns if short circuit or not connected

## Tachometer Sensor (Optional)

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 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
Speed range	10 RPM to 300,000 RPM (0.2 Hz to 5 kHz)  Pulse width at least 0.1 ms
Accuracy	$\pm 0.1$ %

## Parameter Indication

Maximum levels	> 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  typical at 400 line resolution
Harmonic distortion	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 $\mu$ m  0-peak, peak-peak or RMS Auto-scale by 1000x when required  US and SI options for amps and volts
Magnitude & cursors	Overall RMS value Waveform True pk-pk Dual cursors Harmonics  Digital readouts on chart
Base accuracy	$\pm 1$ % of readings approximately 0.1 dB  % of reading
High frequency attenuation	$\leq 0.1$ dB 100 Hz to 10 kHz $\leq 3$ dB >10 kHz to 40 kHz  Attenuation tolerances are in addition to base accuracy.
AC coupling attenuation	$\leq 0.1$ dB 10 Hz to <100 Hz $\leq 3$ dB 1 Hz to <10 Hz
Attenuation due to Integration	$\leq 0.1$ dB 1 Hz to <100 Hz $\leq 1.5$ dB 0.2 Hz to <1 Hz  Values apply to single integration. (Acceleration to velocity)  Double the values for double integration (Acceleration to displacement)

## 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 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 lines
Frequency scale	Hz, CPM, Orders Linear scale with zooming
Amplitude scale	Acceleration, velocity, displacement  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
Demodulation bandwidths	23 bandwidth options  From 125 Hz to 1250 Hz Up to 16 kHz to 20 kHz
6Pack	Up to 40 kHz & 3200 lines (1 channel)  Spectrum and waveform for low-frequency, high-frequency and demodulation

## Waveform Display

Number of samples	1024, 2048, 4096, 8192, 16,384
Time scale	10 ms to 256 seconds or orders based from 1 to 999 revs

## Logging & Analysis

Output formats	Instrument screen, transfer to Ascent or System 1 Evolution, XML
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

## Display & 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, Ethernet, Wi-Fi optional  Use PROFLASH to upgrade instrument firmware
USB host port	USB 2.0, supplying 5V, 250mA Save folders to USB flash drive

## Battery & 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

## Compliance & Certifications

For a detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide** (108M1756) at [www.GEmeasurement.com](http://www.GEmeasurement.com).

EMC	EN61326-1 EN 61326-2-3 European Community Directive: EMC Directive 2014/30/EU
Electrical Safety	EN 62133 European Community Directive: LV Directive 2014/35/EU
Hazardous Locations	North America Class I, Division 2, Groups A B C D

# Ordering Information

For a detailed listing of country and product specific approvals, refer to the **Approvals Quick Reference Guide** (108M1756) at [www.GEmeasurement.com](http://www.GEmeasurement.com).

## VB5-AXX

A: Agency Approval  
01 CSA

## Basic Kit

We offer the vb5 instrument in a basic kit with the option to purchase the System 1 Evolution or Ascent software and license separately.

Part Number	Description	Quantity
	vb5 single channel portable data collector	1
108M4049-01	USB flash drive contains vbX Manager and installation guide together with reference guides and brochures for vbSeries and other products.	1
ACCL0547 or 200350	Straight accelerometer	1
CBCC0027	Coiled cable	1
MAGF0104	Accelerometer magnetic base	1
CABB0560	BNC to BNC cable, 1m	1
CABU0213	USB data transfer cable	1
TTL70259	LEMO-BNC TTL Tach/Keyphasor cable	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
NKST0553	vbX neck strap with Sensor Keeper	1

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

## Additional Accessories

## Software

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

## Hardware

Part Number	Description
100M5828	The vbSeries hard case
DTC70262	The vbSeries dust cover
DGWF0591	USB Wi-Fi dongle
BATT0575	Replacement battery pack, Li-Ion 7.4 V 5 Ah
108M4069	Laser Tach powered by vb5
CBL50216	Five-meter laser Tach cable for 108M4069
113M5529-01	Reflective tape One roll, 60 cm (23.7 in)

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