



VIBRATION MONITORING

NEAR FIELD VIBRATION MONITOR

ShotTrack ViB 1000 is a compact vibration monitor designed for use in the tough environment of mine sites. This is especially important for near field monitoring.

VIBRATION MONITORING

NEAR FIELD

ShotTrack Pty Ltd have developed a series of new vibration monitors designed to address the needs of users who require cost effective time synchronized vibration monitoring solution.

Position and timing is effected using a GPS receiver. Providing there is a GPS fix the trigger events are time stamped to UTC time and date and a one second marker (*accurate to +/-50ns RMS*) is recorded along with the vibration information. This embedded time signal is displayed on output graphs and reports. The last PPS Marker captured indicates the exact second recorded in the event data, so the precise timing can be measured (*accurate to the sample rate chosen e.g. 16.625 microseconds at 64,000 s/s*)

The optional remote wireless charged units are designed especially for the extreme high G vibration monitors that will be sited temporarily and very close to the blast. These units come with their own wireless charging docking station.

Each unit has a sophisticated battery condition monitor that provides an accurate fuel gauge facility.

These units can be pre-configured for sample rate, trigger level and record time at any point prior to being deployed and the On/Off button simply pressed to start the unit. The unit will wait for a trigger event and record for the duration set, after the event is stored the unit waits for the next trigger event. The data includes 1/4 second pre-trigger. The unit can be reconfigured using a smart phone, PDA or Laptop at any point.

UNIT CONTROL AND CONFIGURING

Control and downloading of data is achieved using a Bluetooth port and the supplied PC Software. This control can be from any windows based PDA or Laptop.

The Bluetooth link is capable of distances up to 1000 metres if the master device uses the optional "Long Range Dongle" or a "ShotTrack Base Station" *under development*

RECORD AND STORAGE SPECIFICATIONS

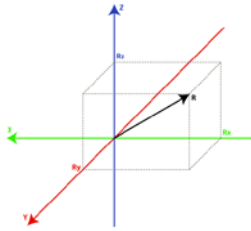
The storage options for the ShotTrack ViB allows for a maximum of 4 seconds @ 64,000 s/s or 64 seconds @ 4000 s/s per event

64 Separate events can be recorded in a single session before the data needs to be downloaded and the files deleted.



TECHNICAL SPECIFICATIONS:

ACCELEROMETERS



DYNAMIC

Range (g)	±6000	±2000	±500	±200	±100	±50	±25	
Sensitivity (mV/g)	0.20	0.62	2.5	6.25	12.5	25.0	50.0	±30%
Frequency Response (Hz)	2-6000	2-6000	2-6000	2-6000	2-6000	2-6000	2-6000	±2dB
Natural Frequency (Hz)	>30000	>30000	>10000	>10000	>10000	>10000	>10000	
Non-Linearity (%FSO)	±2	±2	±2	±2	±2	±2	±2	
Transverse Sensitivity (%)	<8	<8	<10	<10	<10	<10	<10	
Shock Limit (g)	10000	10000	5000	5000	5000	5000	5000	

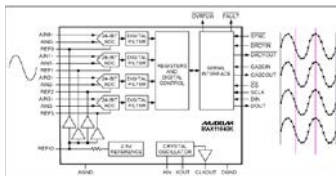
ELECTRICAL

Broadband Noise (µV)	30	60	50	40	50	90	110	2Hz-10kHz
Spectral Noise (ug/√Hz)	5000	4500	600	160	160	160	120	@ 10Hz
Spectral Noise (ug/√Hz)	1000	650	160	40	40	40	40	@ 100Hz
Spectral Noise (ug/√Hz)	500	250	80	16	16	16	20	@ 1000Hz

Temperature Response (%) -20/+30 from -40°C to +125°C

DIGITAL SPECIFICATIONS

ADC



- 106dB SNR at 16ksps
- 117dB SNR at 1ksps
- 0.25% Error Over a 1000:1 Dynamic Range - Processed Over 16.7ms
- OUTPUT RESOLUTION
 - X axis 24 Bits – Used 16 Bits
 - Y axis 24 Bits – Used 16 Bits
 - Z axis 24 Bits – Used 16 Bits
- A/D Sampling rates programmable to
 - 64, 32, 16, 8, 4 KHz
- Bandwidth @

○ 64 KHz	-3 dB = 13.56 KHz	-0.1 dB = 6.78 KHz
○ 32 KHz	-3 dB = 6.78 KHz	-0.1 dB = 3.38 KHz
○ 16 KHz	-3 dB = 3.38 KHz	-0.1 dB = 1.69 KHz
○ 8 KHz	-3 dB = 1.69 KHz	-0.1 dB Bandwidth 850 Hz
○ 4 KHz	-3 dB = 850 Hz	-0.1 dB Bandwidth 425 Hz

COMMUNICATION MODULES



® BLUETOOTH

Features:

- *Bluetooth* v.2.1 + EDR
- *Bluetooth* class 1 radio
- Transmit power: +20 dBm
- Receiver sensitivity: -90 dBm
- Range: 1000+ metre line-of-sight

GPS:



Features

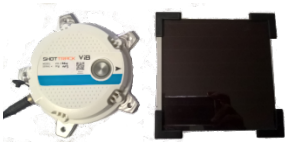
- GPS/QZSS L1 C/A
- GLONASS L10F
- BeiDou B1SBAS L1 C/A
- WAAS, EGNOS, MSAS
- Position accuracy 2.0 m CEP
- Sensitivity, Tracking & Navigation: -167 dBm
- Cold start: -148 dBm
- Hot start: -156 dBm

CHARGING/REMOTE SUPPLY



Standard ShotTrack ViB monitors use a 2.5mm plug and socket combination that provides an IP rating of IP68/ NEMA 250 (6P) when mated. When the charger or external power is not in use the unit has a cap that provides IP68 protection.

This connector can be used to charge and supply external power for the units. The IP68 rating allows the unit to be operated with external supply/charging in extremely harsh environments.



All ShotTrack ViB monitors use a System Load Sharing and Li-Ion/Li-Polymer Battery Charge scheme that allows for the unit to be used with external supply options such as "ShotTrack Solar Panel". The battery will charge when the supply current is sufficient to run the unit and has excess available for charging.

When the unit is in standby mode the batteries will charge at the fastest rate.

OPTIONAL WIRELESS CHARGER



The ShotTrack ViB charger incorporates a Texas Instruments bq500210 Wireless Power dedicated digital controller that integrates the logic functions required to control Wireless Power Transfer in a single channel WPC compliant contactless charging base station.

The charger periodically checks for a ShotTrack ViB unit to be inserted into the cradle, monitors all communication from the unit, and adjusts power applied to the transmitter coil per feedback received from the unit.

The charger checks to make sure that there are no foreign metallic objects placed into the cradle and protects itself and the power receiver from excessive power loss and heat associated with parasitic metal objects placed in the power transfer path.

The cradle and ViB monitor housings are keyed to position the charger in the correct place for maximum efficient power transfer.

The charger can supply a maximum of 1 Amp power transfer which typically will fully charge the unit's batteries in 6 hours.

PLUG PACK



A standard 2.5mm type DC Power socket connects to any compatible (middle pin +ve) plug pack that can supply 6 volts at 1 Amps. For outside use and IP68 compatibility the correct plug must be used. However any standard long reach plug can be used for inside charging.

MECHANICAL SPECIFICATIONS

UNIT

- Size 135 x 40 mm
- Mounting lugs extend 15 mm from case
- Weight 505 grams



CHARGER

- Size 120 x 120 x 25 mm
- Cradle to fit unit
- Weight 400 grams



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