VIBRATION MONITORING

NEAR FIELD VIBRATION MONITOR

ShotTrack ViB 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. 31.25 microseconds at 32,000 s/s).* If GPS signals are not available, then a Real-Time Clock chip provides a depreciated accuracy based on the last GPS time update.

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

These units can be pre-configured for sample rate, record time, pre-trigger time, trigger type and level at any point prior to being deployed and the On/Off button simply pressed to start the unit. The unit will wait for either a wire-break or trigger level depending on trigger mode and record for the duration set, after the event is stored the unit resets itself and waits for the next trigger level event. The data includes a programable pre-trigger time. 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.

## RECORD AND STORAGE SPECIFICATIONS

The storage options for the ShotTrack ViB allows for a maximum of 524,288 samples or 12 seconds @ 32,000 s/s or 384 seconds @ 1000 s/s per event

30 Separate events can be recorded in a single session before the data needs to be downloaded and the files deleted. If the 30-event limit is reached in a session the oldest dataset is overwritten.

TECHNICAL SPECIFICATIONS:

ACCELEROMETERS
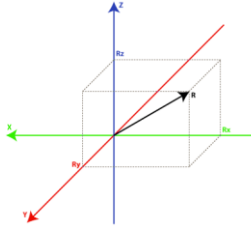
Standard values are 2000g, 500g, 100g, 25g special request for 6000g, 200g and 50g

DYNAMIC

Accelerometer Range (g)	±2000	±500	±200	±100	±50	±25	
Nominal system Range (g)	±1500	±350	±160	±80	±40	±20	
Sensitivity (mV/g)	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	±2dB
Natural Frequency (Hz)	>30000	>10000	>10000	>10000	>10000	>10000	
Non-Linearity (%FSO)	±2	±2	±2	±2	±2	±2	
Transverse Sensitivity (%)	<8	<10	<10	<10	<10	<10	
Shock Limit (g)	10000	5000	5000	5000	5000	5000	
ELECTRICAL							
Broadband Noise (µV)	60	50	40	50	90	110	2Hz-10kHz
Spectral Noise (ug/√Hz)	4500	600	160	160	160	120	@ 10Hz
Spectral Noise (ug/√Hz)	650	160	40	40	40	40	@ 100Hz
Spectral Noise (ug/√Hz)	250	80	16	16	16	20	@ 1000Hz

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

DIGITAL SPECIFICATIONS
ADC
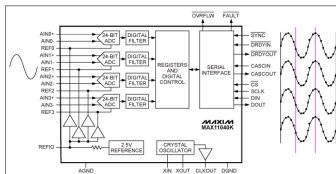
- o 106dB SNR at 16ksps
- o 117dB SNR at 1ksps
- o 0.25% Error Over a 1000:1 Dynamic Range - Processed Over 16.7ms
- o OUTPUT RESOLUTION
  - o X axis 24 Bits – Used 16 Bits
  - o Y axis 24 Bits – Used 16 Bits
  - o Z axis 24 Bits – Used 16 Bits
- o A/D Sampling rates programmable to
  - o 32, 16, 8, 4, 2, 1 KHz
- o Bandwidth @
  - o 32 Khz   -3 dB Bandwidth = 6.78 KHz   -0.1 dB Bandwidth = 3.38 KHz
  - o 16 KHz   -3 dB Bandwidth = 3.38 KHz   -0.1 dB Bandwidth = 1.69 KHz
  - o 8 KHz   -3 dB Bandwidth = 1.69 KHz   -0.1 dB Bandwidth 850 Hz
  - o 4 KHz   -3 dB Bandwidth = 850 Hz   -0.1 dB Bandwidth 425 Hz
  - o 2 KHz   -3 dB Bandwidth = 425 Hz   -0.1 dB Bandwidth 212.5 Hz
  - o 1 KHz   -3 dB Bandwidth = 212.5 Hz   -0.1 dB Bandwidth 106.25 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$_1$ Tracking & Navigation: –167 dBm
- Cold start: –148 dBm
- Hot start: –156 dBm

CHARGING

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.

PLUG PACK

A standard USB 5v 1A power supply with international plug fittings is supplied.

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.

MECHANICAL SPECIFICATIONS

UNIT

- Size 140 Diameter x 40 mm deep
- Weight < 500 grams

TRADEMARKS

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DISCLAIMER