

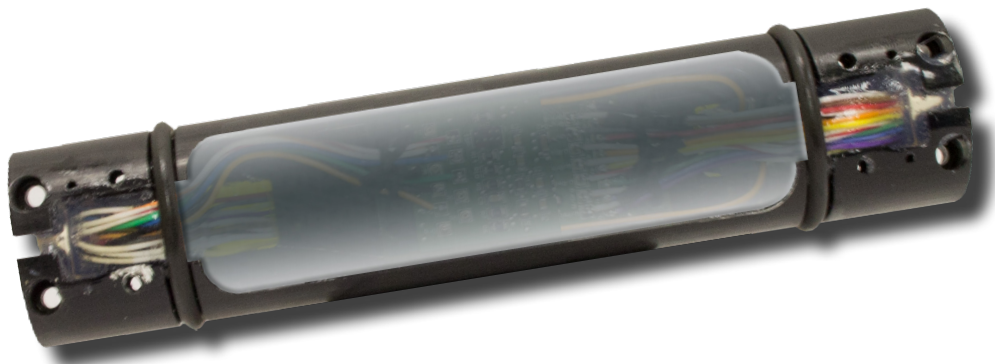
Vibration Monitoring Tool

Extend the down-hole lifespan of tools and reduce vibration damage resulting in premature failures. The 3-axis Vibration Monitoring Tool (VMT) can accurately measure and record shock and vibration in the full range of dynamic motion. It can be easily installed in a pressure housing or integrated into another part of the tool such as a pulser driver or directional module. Onboard memory stores high density readings for detailed post-well logs and real-time data can be transmitted to the surface using generic variables.

Optional display software can be installed on most MWD surface systems and configured to alert operators of dangerous drilling conditions. Telemetry can be configured to display exact shock and vibration values or just severity flags with adjustable thresholds. Changes can then be made to optimize drilling parameters before severe damage occurs to the MWD tool or Bottom Hole Assembly.

FEATURES

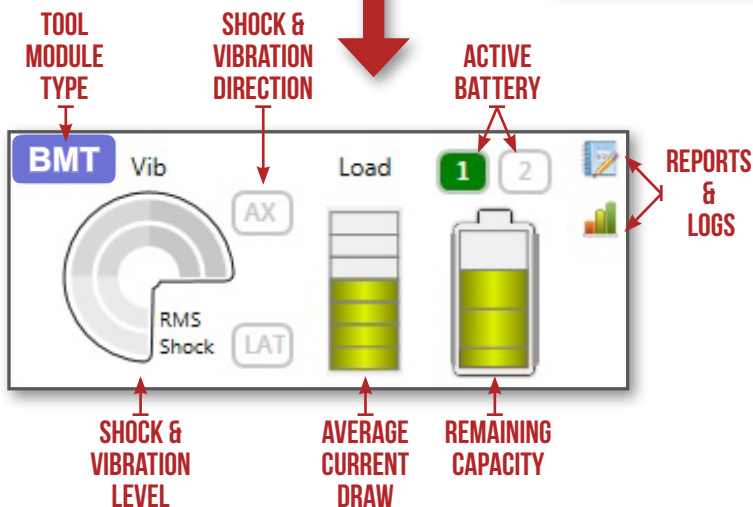
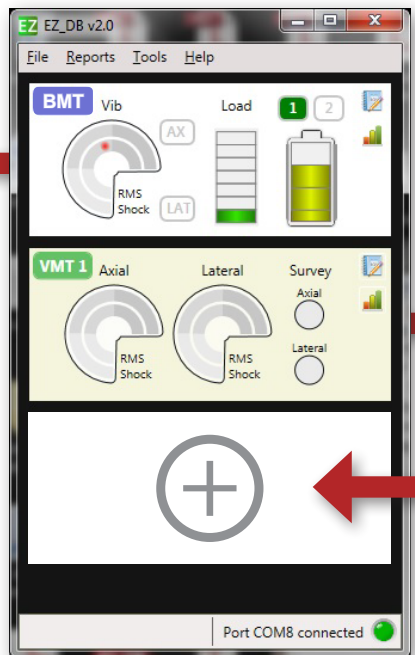
- ✓ 3-axis accelerometer with +/- 100g range
- ✓ Configurable Shock Averaging Period and Maximum Shock thresholds
- ✓ Sampling rates up to 660Hz and vibration frequency response from 2Hz to 80Hz
- ✓ Over 600 hours of logging memory depending on the configured averaging period
- ✓ Internal memory clock is synchronized with the Q-Bus so log data always matches the set tool time
- ✓ High operating temperature (175 °C) and pressure (20,000 psi)
- ✓ Helps reduce BHA and MWD tool failures
- ✓ Increase efficiency through optimization of drilling parameters maximizing energy transfer to the bit



Dashboard - Real-Time Display

The Dashboard is an all-in-one system designed to display real-time battery and vibration information from the MWD tool down-hole. The display can be easily installed on any compatible PC and will listen to the on-site WITS stream for generic variables containing MWD specific information.

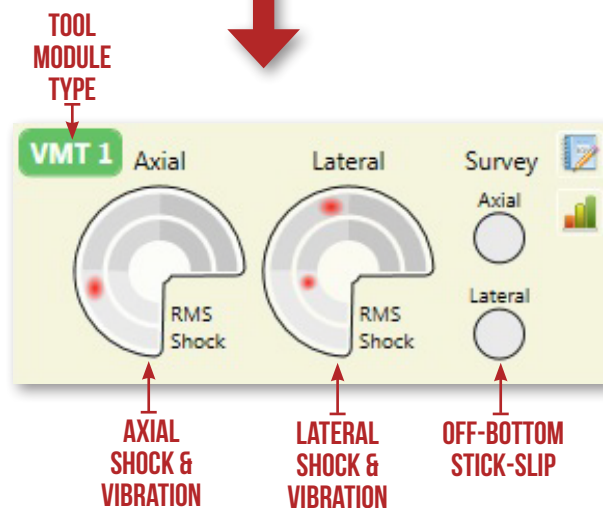
The application is modular and can be configured to present information based on the instruments installed in the down-hole tool. Additional modules can be added to the display, increasing functionality and supplying the operator with even more information at their fingertips.



Down-hole Battery Status

The battery chip measures and records 2-axis shock and vibration data as well as other useful battery information such as **active battery status**, **remaining battery capacity** and **average current draw**.

Detailed battery logs can help field operators make more informed decisions for their tool before it arrives on the surface after a run.



Shock & Vibration Monitoring

The Dashboard can also display shock and vibration data from a Vibration Monitoring Tool (VMT) if it is installed in the tool.

The 3-axis VMT shock evaluation system can be used in conjunction with shock mitigation technology to help increase MWD tool longevity and optimize BHA performance.