Hazloc HX10 & ExpertALERT™

Delta-3N Ltd.

Vibration monitoring system – Automated fault detection in HAZARDOUS areas

HAZLOC CX10 és ExpertALERTTM: Portable vibration monitoring system with automated fault detection and reporting, in HAZARDOUS areas.

Lower Cost and Flexibility of Ownership

TRIO™ recognizes that computer technology is rapidly changing. Its distributed system con guration allows the tablet PC component to be replaced or upgraded for a small fraction of the cost of replacing a traditional vibration data collector.

The experts' choice... Built for safety, durability, and performance in hazardous locations.

- HAZLOC-Rated for Class 1, Division 2, Group A, B, C, D, T4 A up to 96% accuracy in fault detection, severity and recommendations AUTOMATICALY
- text reports instead of overhalming data
- modell based fault detection with 6000 unique rules
- More than 1200 possible faults
- Automated peak-finding algorithm: normalization, sidebands, forcing frequences
- Automated bearing fault detection
- Embedded bearing database with more than 75000 uniq bearing type
- Embedded motor database with more than 15000 motor
- Envelope analisys
- Broad- and narrow band analisys
- Orbits, filtered orbits
- Bode and Nyquist plots
- Demodulation and impact demod
- Spectrum, Cepstrum, Demod Spectrum, Impact Demod, Crest Factor, etc.
- FFT Window functions: Hanning, Hamming, Rectangular, Flattop
- Run-up / coast-down measurements
- 4 channel simultaneous data collection
- Time-synchronous sampling
- Bandwidth Ranges - 0.5Hz–25Hz to 0.5Hz–40 kHz, protected by anti-alias filters
- TRIO's Bluetooth® modular integration with the TRIO DP-2 acquisition device for the safest in-field operation
- Triaxial sensor: 100 mV/g sensitivity
- MaxViewTM 10.1" resistive single touch LED screen with automatic backlighting

DP-2H Data Acquisition Module - 4 channel simultaneous data collection

The Data Acquisition Module (DP-2H) and the controller tablet communicates via Bluetooth®. So the TRIO controller can operate at safe distances giving distance between the operator and rotating machinery.

ExpertALERT™ Automated Diagnostic Software

Analysts can get more done with the automation provided in the ALERT application. Machine assets follow a logical process to setup through a serious of questions. Each measurement location is a collective of the three orthogonal axes and multiple data types to provide the simplest visualization of high and low frequency excitation. Vibration data are processed through over 6000 feature extraction rules, applying the same techniques as a human analyst to recognize unique fault patterns. Displayed results utilize any number of the over 1250 fault conditions ranked by severity for analytical confirmation.

Powerful User Interface

The TRIO™ line of data acquisition products includes the powerful, Windows OS industrial tablet computers. TRIO uses a robust Bluetooth® connection and includes a solid state hard drive, bright sunlight readable touch screen and Wi-Fi access allowing TRIO to communicate with your desktop or networked PCs and servers. TRIO's user interface provides you more capabilities, better ease of use, and allows you to bring your other Windows PdM and Office productivity applications into the field.

Improved Ergonomics and Safety

There is no safer vibration data collector on the market. TRIO's ergonomic design allows more efficient and safer use of the data collector around dangerous and di cult to access machinery. Machines can be tested from safe and secure distances from rotating machine locations using the integral Bluetooth® communication. Its modular design helps keep technicians hands-free and untethered from the machine for improved safety.

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Specifications*

HAZLOC COMPLIANCE SPECIFICATIONS

Controller:
- Ex protection type
- ATEX II 3G Ex ic IIA/IIC T5 Gc,
- ATEX II 3D Ex ic IIIB T90 °C Dc IP 54»» (IIA when using hand strap)
- IECEx: Ex ic IIA/IIC T5 Gc, Ex ic IIIB T90 °CDc IP 54
- »» (IIA when using hand strap)
- UL Class I Div. 2 Groups A, B, C, D T4 A

Data Processor:
- Class 1, Division 2, Groups A, B, C, D, T6
- Conforms to UL STD 61010-1 & ISA STD 1212.01
- Certified to CSA STD C22.2 Nos. 61010-1 &213

Triaxial Accelerometer:
- CSA: Ex ic IIC T4 Class I, Div.2, Groups A, B, C, D
- CSA: AEx ic IIC T4 Class I, Div.2, Groups A, B,C, D
- ATEX: Ex ic IIC T4 Gc, Ex nA IIC T4 Gc

SYSTEM OVERVIEW

- Triaxial vibration data collector
- Industrial Windows 7 Professional tablet PC controller
- Wireless, modular-designed data acquisition unit (TRIO DP-2H)
- Optional handheld laser tachometer (non-HAZLOC rated)
- Flexible carrying options
- HX10 includes embedded ExpertALERT (no host software required)
- HA10 includes embedded ALERT™ onboard analysis software (requires hosted ExpertALERT, ExpertALERT Cloud-subscription, or StandardALERT)
- Sybase® 12 SQL database engine
- Survey File Transfer Exchange or optional ALERT replication for synchronization over multiple devices or ALERT systems
- Battery life up to six hours on the controller,13 hours with extended option
- Ergonomic design for efficient and safer use over traditional data collectors
- 4-plane machine in-place balancing and advanced analysis options available

USER INTERFACE / DURABLE TABLET CONTROLLER

Physical
- Size: 10.7" x 7.76" x 0.75" (271.8mm x 197.2mm x 19mm)
- Weight: 2.6 lbs (1.5 kg)

Environmental
- Operating Temperature (non-Hazardous): -20C to +60C;
- Operating Temperature (Hazardous areas): -20C to +50C
- Storage Temperature: -30C to +70C
- Humidity: 30% ~ 90% (non-condensing)

Durability
- MIL-STD-810G (516.6, IV), Protection class IEC 60529
- IP65 rated; water, dust, water protection

Processor/Operating System
- Intel® quad-core BayTrail-M 1.8 GHz Processor
- 8 GB SODIMM DDR3L-1600 System Memory
- 128 GB MLC Solid State Drive (SSD), mSATA
- Genuine Windows® 7 Professional (64-bit)

Battery
- Lithium-polymer battery: 5300 mAh capacity
- »» Battery capacity: up to 6 hours
- Optional Extended-life battery: 10600 mAh capacity
- »» Battery capacity: up to 13 hours
- Charging: 100-240V, 50-60Hz,/DC 19V

Communication
- Wireless LAN IEEE802.11ac a/b/g, n
- Integrated Bluetooth® 4.0

Under protective cover - for use only in safe area:
- 1 x Micro HDMI
- 1 x 30 pin Combo connection (Giga-LAN or RS232)
- 1 x USB 3.0
- 1 x Audio Combo connection (Mic in/Line Out)
- 1 x Power Jack (DC)
- 1 x Micro SD Slot

Keys:
- 1 x power, 1 x home, 2 x programmable
- function keys, 2 x volume keys

Cameras:
- Rear 5 MP camera + LED flash, Front 2.0 MP

Display:
- Bonded and Touch, 10.1", 1920 x 1200 pixels

TRIO DATA ACQUISITION / PROCESSOR (DP-2H)

Inputs
- 4 simultaneous sampled, fully phase matched, ICP programmable
- Other Coupling: AC (for proximity probe connections)
- AC Input Voltage Range: +/- 10V
- AC Bandwidth: 0.5Hz to 40 kHz
- DC Bias/Gap Measurement: +/- 25V range for ICP bias voltage check and proximity probe gap measurement
- Measurements: Acceleration, velocity (by hw integration), bearing demodulation (accelerometers), and displacement (proximity probes)
- Gain Ranges: Gain steps 1, 2, 4, 10, 20, and 50
- Digital trigger input: External trigger, tachometer speed, ordered data (by phase-lock-loop)

Processing

AC Measurements
- ADC: 24-bit sigma-delta, simultaneous on four AC channel inputs, better than 104 dB dynamic range
- Sampling Rates: 64Hz to 102.4kHz
- Bandwidth Ranges: 0.5Hz-25Hz, 0.5Hz-40kHz, protected by anti-alias filters
- Data Block Lengths: 64 to 400,000 samples
- Spectral Lines: Up to 25,600
- Noise Floor: Less than 0.2 micro-volts per root Hz from 0.5 to 1000kHz

DC Measurements
- ADC: 16-bit multiplexed for bias voltage, process, and probe gap measurements, 0 - 10kHz Bandwidth

Analysis Capabilities
- Dynamic Analysis: Overall, Spectra, Waveform, Phase and Speed
- Cross-channel: Cross-power, Transform Function, Coherence, Phase and Magnitude
- Demodulation Function: Digital amplitude demodulator and Impact Demodulation for low speed detection
- Averaging: RMS, Exponential, Peak Hold, Order Tracking, Synchronous Time, and Negative Averaging
- Number of averages: 1–1000
- FFT Window Function: Hanning, Hamming, Rectangular, Flattop

Communication with TRIO Tablet Controller
- Wireless: Bluetooth v2.0 with EDR (1.5Mbps max)
- Wired: USB user port (includes data stream and remote power to DP)

Power
- Charging rate: 0.5A from USB PC input,
- Battery life: 10 hours, normal use

Physical
- Dimensions: 6.18" x 3.62" x 1.81"

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* Specifications are subject to change without notice

(1) Battery life varies by configuration, application, features utilized, and operating conditions. Maximum battery life decreases with time and use. Battery life estimated by average use.