TRIO CX10 & ExpertALERT™

Portable vibration monitoring system with automated foult detection and reporting

Delta-3N Ltd.

DP-2H Data Acquisition Module

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.

ExpertALERTTM – 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 TRIOTM 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.

Lower Cost and Flexibility of Ownership

TRIOTM 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.

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.

30 years experience and knowledge of 40 diagnostic engineers on one software gives the best automatic diagnostic system available today

This is ExpertALERT™ software.

Reports of hundreds of assets in 2 seconds

- up to 96% accuracy in fault detection, severity and recom mendations 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

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TRIO CX10 & ExpertALERT™

DIAGNOSTIC DATA COLLECTOR / EXPERT ANALYZER

Delta-3N Ltd.

SPECIFICATIONS*

SYSTEM OVERVIEW

- Triaxial vibration data collector
- Industrial Windows® 7 Ultimate tablet PC controller
- Wireless, modular-designed data acquisition unit (DP-1)
- Optional handheld laser tachometer
- Flexible carrying options
- CX10 includes embedded ExpertALERT™ (no host software required)
- CA10 includes embedded ALERT™ onboard analysis software (requires hosted ExpertALERT, StandardALERT™, or WATCHMAN Reliability Portal™)
- 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, 12 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: 10.8” x 6.7” x 1.2” (275mm x 177mm x 32mm)
- Weight: 2.9 lbs (1.3 kg)

Environmental
- Operating: -20C to +60C; Storage: -40C to +60C
- Humidity: Spec to MIL-STD-810G, Method 507.5
- Altitude: 15,000 feet at 23C

Durability
- MIL-STD-810G (516.6, IV) drop spec to 4’
- IP65 rated; water, dust, water protection
- SSD storage

Processor/Operating System
- Intel® Atom™ N2600 Dual Core processor (1.86 GHz)
- 4 GB DDR3 System Memory
- 64 GB Solid State Drive (SSD), SATA 2.0 at 3.0Gb/s
- Genuine Windows® 7 Ultimate (32-bit)

Battery1
- Hot-swappable Lithium-Ion battery: 38.5 Whr capacity
  – Battery capacity: up to 6 hours
- Optional Extended-life battery: 77Whr capacity
  – Battery capacity: up to 12 hours
- 80W charging adapter (100-240V, 2.5A, 50-60Hz)

Communication
- Wireless LAN 802.11 (b/g/n)
- Integrated Bluetooth® 4.0

Inputs / Outputs
- Resistive single-touch screen
- Stylus input
- 2 USB ports: 1 waterproof 2.0, 1 standard 2.0
- 1 waterproof 9-pin RS-232 port
- 1 waterproof VGA Video Out
- 1 microSD Card
- 1 RJ-45 10/100/1000 LAN
- Waterproof Power jack
- Speaker, Audio / Microphone jack
- 4+1 Navigation / Directional keys, 3 user-programmable buttons
- Rear-facing 5.0 megapixel built-in camera
- On-screen QWERTY soft keyboard
- 10.1” Wide (LED backlit, 1366x768) Display

TRIO DATA ACQUISITION / PROCESSOR (DP-1, DP-2)

Inputs
- 4 simultaneous sampled, fully phase matched, ICP programmable
- Other Coupling - AC (for proximity probe connection)
- AC Input Voltage Range - ±5V
- AC Bandwidth 0.5Hz to 40kHz
- DC Bias/Gap Measurement - ±25V range for ICP bias voltage check and proximity probe gap measurement
- Measurements - Acceleration, velocity (by h/w integration), bearing demodulation (all from accelerometers), and displacement (from proximity probes)
- Gain Ranges - Gain steps 1, 2, 5, 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 to 0.5Hz–40 kHz, 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 µ-volts per root Hz from 0.5-1000 kHz

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

Analysis Capabilities
- Dynamic Analysis - Overall, Spectra, Waveform, Phase & Speed
- Cross-Channel1 - Cross-power, Transfer Function, Coherence, Phase and Magnitude
- Demodulation Function - Digital amplitude demodulator and Impact Demodulation or 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

Communications with Host Tablet PC/Controller
- Wireless - Bluetooth v2.0 with EDR (1.5Mbps max), backward compatible to Bluetooth v1
- Interface Port - USB user port (includes data stream and remote power to DP-1)

Power
- Charging rate - 0.5A from USB PC input (4 hrs)
- Battery Life - 8 hours between charges

Physical
- Dimensions - 15cm (6.0”) x 9cm (3.5”) x 4cm (1.5”) approx Weight - 450g
- Operating Temperature - -10ºC to +60ºC (14ºF to +140ºF)
- Sealing - IP-65, 4’ drop, 95% humidity per MIL-STD-810G
- Compliance - CE, RoHS
- Carrying options – Belt worn holster or shoulder worn soft pack

***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.

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