

TRIO™

DATA PROCESSORS | CONTROLLERS | SENSORS



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POWERFUL · SAFE
RUGGED
FAST · EASY · EFFICIENT
LIGHTWEIGHT
ERGONOMIC



Azima DLI's proven methodology and diagnostic automation offers the user many new benefits.

TRIO™

CX-SERIES

DIAGNOSTIC DATA COLLECTOR / EXPERT ANALYZER

CA-SERIES

VIBRATION DATA COLLECTOR / FIELD ANALYZER

Finally, your ideas for improving data collection become reality.

TRIO™ demonstrates that there is a better way to implement machine condition monitoring. TRIO is more than a vibration data collector; it is a powerful computerized system in a mobile industrial package that sets aside the traditional data collection model and brings forth a new focus on ergonomics, efficiency, and safety. TRIO will improve the effectiveness of your condition monitoring program, allow you to get more done in less time with a high degree of success, and lower the overall cost of your program.

CHOOSE THE PERFECT DESIGN FOR YOU



TRIO™ DP-1
Bluetooth® enabled data processor /
acquisition device



TRIO™ CA6 / CX7
7" lightweight, portable and safest
collector on the market



TRIO™ CA8 / CX8
10" thin and durable w/ 2-year accidental
damage protection



TRIO™ CA10 / CX10
10" powerful, rugged and ready
for your demands

FEATURE HIGHLIGHTS

- Unique, modular design separates changing tablet technology from instrumentation
- 4 simultaneous channels of data plus dedicated tachometer provides advanced data acquisition
- Robust Bluetooth® connection creates the safest working environment
- Expert Automated diagnostic integration delivers solutions to managers and other decision makers

Uniquely designed to provide a safer and more efficient way to collect data.

THE SAFEST DEVICE AROUND DANGEROUS MACHINES

There is no safer vibration data collector than TRIO™ on the market. Azima DLI has decades of experience providing predictive maintenance services to the industry. We understand that climbing around running machines is dangerous and know risk to safety increases when managing sensors and cables while operating your data collector. TRIO applies wireless acquisition and voice recognition technology allowing users to collect data from safe distances up to 30' from dangerous machine locations.

COLLECTOR AUTOMATION

TRIO's collector automation is proven to be more efficient when compared to competitive collectors. TRIO automatically queues multiple frequency ranges of FFT, time, overall, and demodulation vibration tests for a single machine location and collects all three axes of data simultaneously with a single command. You'll get more quality data in less time with TRIO.

DATABASE SETUP WIZARDS

Creating vibration and process point tests are simplified with ALERT's Database Setup Wizards. Answer some basic questions and ExpertALERT will create and organize the machine test locations, define the best test parameters, and configure the automated rulebase for comparison to a synthesized average baseline. Within minutes of approaching the machine, the TRIO in the field is ready to produce accurate diagnostics results.

POWERFUL USER INTERFACE



The TRIO line of industrial tablets includes the powerful Windows 7 operating system. TRIO is ready for IT configuration for local connections to printers, networks, or the Watchman Reliability Portal.

TRIO's user interface is easy to use and offers the user the ability to bring other Windows applications, PdM applications, or office productivity applications into the field. You can do more with TRIO.

TRIO™ HAS A VARIETY OF CONFIGURATION OPTIONS



HARD CASE



UTILITY BELT



COURIER BAG



SHOULDER WORN

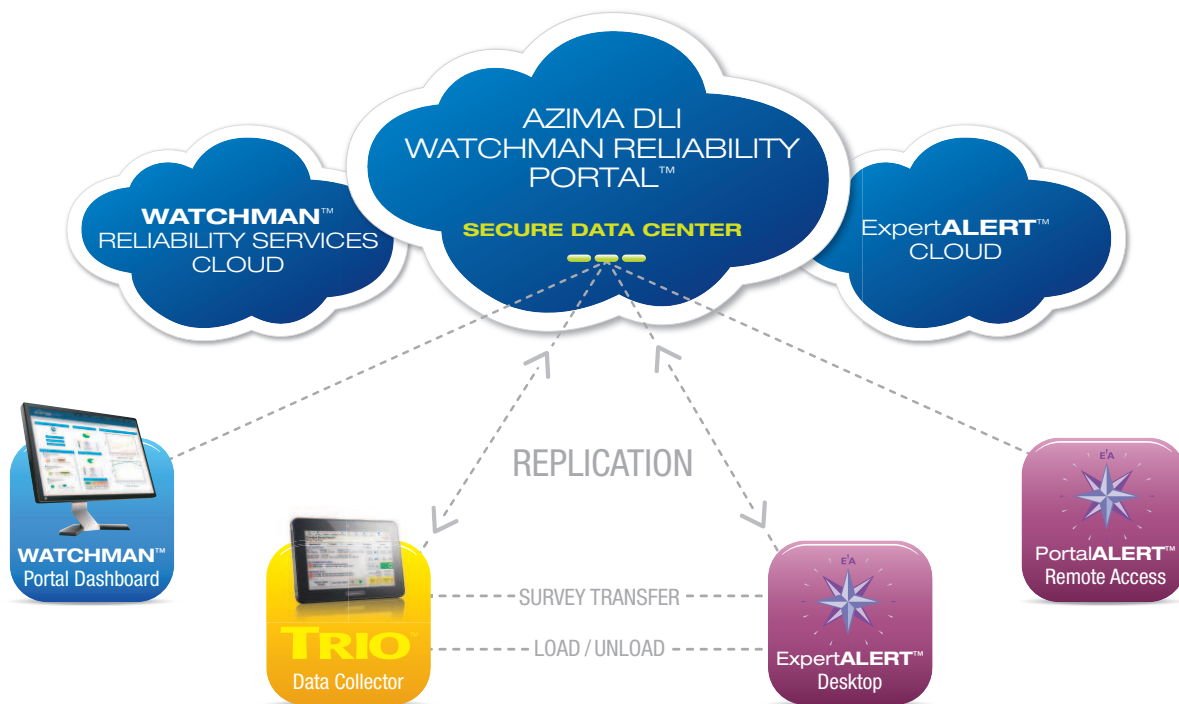


COMPLETE PROGRAM SUSTAINABILITY

We built TRIO™ to offer you better choices in data collection, but just as important is it's power for program sustainability. As your plant grows its operation, we can assist in getting it up and running in a short amount of time. As resources are stretched and a plant needs short term or long term analytical staff, Azima DLI has over 40 seasoned analysts capable of stepping in.

Easy communication from TRIO™ to PC... and anywhere else.

Azima DLI offers a variety of ways to communicate between the TRIO and the ALERT software. From a local control of the database, import and export of data, survey transfer file exchange, or full replication, the communication method is straight forward, easily manageable, and scalable for any business need.



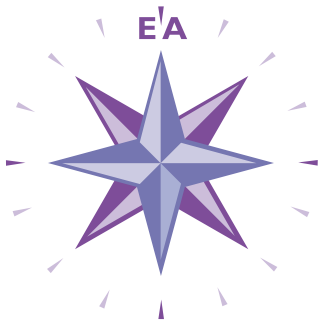
TRIO™ IS WATCHMAN™ PORTAL ENABLED

The WATCHMAN Portal isn't a mere filing cabinet of reports or a viewer of just data but rather it offers trendable, actionable results in multiple technologies. PortalALERT is our full software through the web.



- Dashboard metrics for managers and executives to make informed decisions without needing to decipher technical data.
- Historical information allows users to understand the true risks and readiness of their plants.
- Event tracking to get more involved to ensure priorities are set, maintenance is planned, and repairs are successful.
- Cloud-based access to the full ExpertALERT software to remove IT expenditures and software management.

Unmatched capabilities with ExpertALERT™ Automated Diagnostic Software.



THE ALERT™ FAMILY

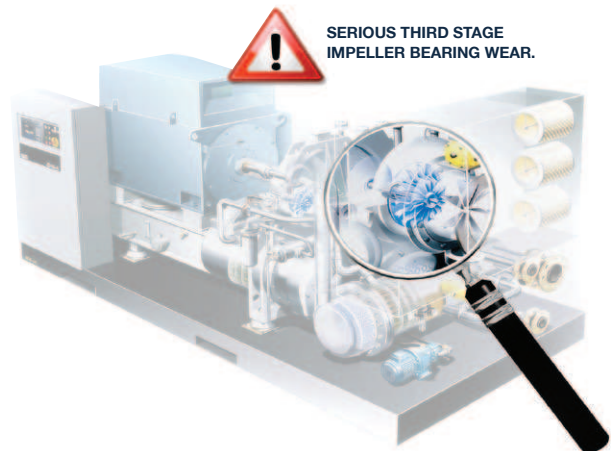
Azima DLI is the leader in routine condition-based or predictive-based monitoring. Our ExpertALERT Automated Diagnostic Software can rapidly screen vibration data, applying over 4,500 unique rules to identify over 650 individual faults in a wide variety of machines. It is designed to allow users to get through large amounts of data quickly and efficiently. Immediate diagnostic results give users and other decision makers' information faster so decisions can be made and the right problems are solved.

TRIO™ CX-series Diagnostic Field Analyzers, desktop installed ExpertALERT, and cloud-based PortalALERT utilize Azima DLI's proven automated machine diagnostic technology that has been deployed in commercial industries and by the military for decades. For mature machine databases, the automated diagnostic accuracy can exceed that of a seasoned vibration engineer and can fully analyze a machine in mere seconds, allowing you to get the answers on the plant floor in near real time. Presented in plain-language, Azima DLI's automated diagnostics provides prioritized solutions to machinery problems.

FEATURE BENEFITS

- Most advanced automated diagnostic software available on the market
- Powerful rulebase gives users actionable plain-language results
- Advanced baseline criteria, not bands or probabilities
- Automated data interpretation as an engineer would
- Produces accurate, trendable diagnostic results prioritized by severity

See ALERT brochure for complete software details.



TRIO™ gives you the freedom to choose the right technology to fit your program's needs. Don't be stuck with an aging data collector, the modular TRIO controller gives you the ability to update your hardware as technology advances.

SPECIFICATIONS

OVERVIEW

- Triaxial vibration data collector system
- Industrial Windows 7 Ultimate or Windows 7 Professional Tablet PC controllers
- Wireless, Bluetooth, Data Acquisition Unit (DP-1)
- Handheld laser tachometer
- Flexible carrying options including utility belt, should straps, courier bags, hard transit case
- Sybase 12 SQL database onboard allows full PdM database to be mobile on unit
- Database replication option allows multiple units and networked host systems to automatically receive data collected, share analysis and routes
- Ergonomic designs allow more efficient and safer use
- 4-plane balancing and advanced analysis software options
- CX-Series includes embedded ExpertALERT onboard analysis software (no host software required)
- CA-Series includes embedded ALERT onboard software
 - Requires host system: ExpertALERT, StandardALERT, or PortalALERT

ALERT™ CAPABILITIES

- Intuitive graphical user interface that is simple to learn and operate
- Setup wizards reduce set up time and increase configuration accuracy
- Automated vibration data screening using narrow-band vibration techniques for early faults detection
- Automated bearing fault identification without requiring bearing make and model number
- Multi-level fault severity and prioritized repair recommendations improve repair planning
- Advanced reporting tools produce professional reports
- Better machine performance determination through ALERT's calculated process points feature
- Integration of multiple PdM technologies, reports, documents, spreadsheets, inspections, and data
- Online monitoring, walk-around vibration collection and operating log collection in one system

GRAPHICAL ANALYSIS

- ExpertALERT Routine Analysis
- Run-up / Coast-down plotting (Spectral Waterfall, Bode-Peak & Phase, Peak Hold)
- Single Axis, Triaxial, and Double-Triax Spectral and Waveform Displays
- Reference Cursor Delta Markers
- Harmonic Markers – Machine View Diagram
- Fault Frequency Calculation
- Sideband Markers
- Orbit, Filtered Orbit
- Bearing Database (>75,000 bearings)
- Polar Phase Plot
- Auto Normalization
- Integration & Differentiation
- Customizable Setup
- Order Tracking
- Time Synchronous Averaging
- Bump Test (Equipment running or secured)
- Long time Data Capture
- Cross Channel Phase Analysis

TRIO DATA ACQUISITION / DATA PROCESSOR (DP-1)

Inputs

- 4 simultaneous sampled, fully phase matched, ICP programmable
- Other Coupling - AC (for proximity probe connection)
- AC Input Voltage Range - $\pm 5V$
- AC Bandwidth 0.5Hz to 40kHz
- DC Bias/Gap Measurement - $\pm 25V$ 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 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

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 - -10°C to +60°C (14°F to +140°F)
- 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⁾ Requires optional ALERT RTA software

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TECHNOLOGY YOU CAN'T IGNORE

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KNOWING WHAT'S AHEAD™