DLI Watchman®

DCX$^\hat{O}$ Hammerhead

New Generation of Intelligent Portable Diagnostic Data Collector/Real Time Analyzer

DLI is pleased to introduce the DLI Watchman® DCX™ Hammerhead Diagnostic Data Collector / Real Time Analyzer. The DCX Hammerhead is an EXTREMELY RUGGED, four channel, vibration data collector; it supports both triaxial and single axis sensors for acquiring data and performing spectrum analysis as applied to:

- **Machinery Condition Monitoring**
- **Automatic Condition Diagnostics**
- **Bearing Detection**
- **Process Parameter Monitoring**

The Software

Embedded in the DCX is a Windows® 98 operating system and DLI's popular ExpertALERT™ vibration data management and machine diagnostic software. All traditional host system functionality is integral to the DCX. This means that at the point of data collection, you have all of your machinery history, trend data, analysis tools and automatic diagnostic results available to you!

The Hardware

The new DCX-HH employs a touch screen computer build by Walkabout Computers, Singer Island, Florida. Walkabout is well-known for its "industrial strength" tablet computers. The new Hammerhead is extra-rugged; its enclosure is milled from billet aluminum. It can withstand the toughest plant environment up to 55 degrees C and can even be submersed in water! Data collection is performed by simply selecting the equipment/test location from a hierarchical tree, or by pressing a graphical button on a displayed machine image or drawing. Select tri-axial data and see all three axes update simultaneously.

Standard Features

- Four (4) Channel, simultaneous data Acquisition
- Embedded ExpertALERT™ for Voyager®
- Database Setup Wizards
- Real Time Analysis
- Envelop Demodulation for Bearing Detection
- Run-up / Coast Down Measurements
- 128 megabytes RAM
- Shock Mounted 12 gigabyte internal hard drive

Optional Features

- ExpertALERT Enterprise™ Upgrade
- Multi-plane Field Balancing
- Advanced Cross Channel Analysis With 3D Animation Software
- Online Data Acquisition
- Multi-technology Integration and Advanced Report Generation
- Database Replication
- Stroboscope / Tachometer for Motion/Speed Analysis
- Motor Current Analysis
- Temperature / Pressure Monitoring

253 Winslow Way West
Bainbridge Island WA 98110
206-842-7656 / 800-654-2844

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DLI Watchman® DCX™ Hammerhead
Specifications

Digital Signal Processing
- Texas Instruments TMS320C51 Digital Signal Processor (DSP), running @ 40 MHz
- Four 16 Bit delta-sigma A/D converters
- Simultaneous sampling of all four inputs up to 41 KHz
- Anti-aliasing via an analog RC filter plus a 64th order digital FIR filter
- Dynamic range greater than 85 dB
- Signal to noise ratio greater than 76 dB
- Overall RMS amplitude detection from 10 Hz to 1 kHz per ISO 2954-1975 (E)

Spectral Analysis
- Four channel, simultaneous FFT analysis of the analog input channels up to 16 kHz span
- FFT Resolution of: 50, 100, 200, 400, 800, 1600, and 3200 lines
- Spectral Windows: Hanning, Hamming, Flat top, and Uniform
- Averaging Types: Linear, Exponential, Peak-hold, and Peak-hold continuous
- Overlap processing; selectable overlaps of 0%, 25%, 50%, and 75%

Time Domain Analysis
- Long time record capture greater than 50k samples per channel (more if RAM is available), four channels simultaneously
- Sample rates from 1 Hz to 41 kHz

Inputs
- Four single-ended analog inputs
- Selectable ICP accelerometer sources
- Cable fault detection
- Input signal clipping detection (25 Volts maximum input signal amplitude)
- TTL-level tachometer input

Analog Signal Processing
- Selectable DC coupling or 0.2 Hz or 10 Hz high pass analog filtering
- Selectable single stage analog integration
- No more than -76 dB inter-channel cross talk

Triggering
- Internal
- Selectable from any analog input channel
- Level, slope, rising or falling edge
- External TTL trigger, rising or falling edge
- Pre or Post-triggering: 0 to 100% of capture

Physical
- Size: 11.25" x 8" x 1.5"
- Weight: 4.6 lbs including battery
- Fully machined from aircraft grade aluminum
- Sealed airtight and dust proof (vacuum tested)
- Chemically strengthened display cover glass
- Unique system for clamping circuit boards into position for improved durability
- Easy grip matte finish

Processor System Memory
- Intel® Pentium® III 400 MHz processor
- 128 MB RAM (optional 256 MB RAM)
- 256 KB L2 cache

Video & Display
- 10.4" 800x600 active matrix TFT color display
- Rich color saturation and good contrast even in direct sunlight
- Full 32 bit local bus video and flat panel controller 1MB
- 2 MB video memory
- High visibility display glass

Hard Disk Storage
- Standard 12 GB shock mounted hard drive
- Drives use Ultra ATA interface with transfer rate up to 33.3 MB/sec
- All hard disk drives are shock mounted for maximum field reliability

Carrying Case
- Durable, shock-absorbing, insulating, molded foam case
- Computer fully dockable without removing case
- Shoulder and hand straps
- Rugged carrying handle
- Will not absorb fluids, fully washable

Power Consumption & Battery Life
- 2 1/4 hours continuous data collection (data acquisition card energized)
- 4 - 5 hour battery life with power management (without data acquisition card energized)
- Full MS Advanced Power Management
- Photo sensor automatically turns off back light
- Will accept 12V DC direct input from vehicle
- Battery fast charge from empty in 2 hours
- Uses long-lasting low memory Lithium batteries
- Universal AC power adapter 110-250 volts,
- 50-60 Hz

BIOS & Software Compatibility
- Software compatibility assured using SystemSoft(tm) BIOS
- Source code maintained by WalkAbout Computers
- Standard with Windows(r) 98 and CIC HRS(r) 5.0

Digitizer Technology
- Proximity sensing high resolution electromagnetic digitizer
- No surface coatings can be damaged or wear with use
- More than 1000 dpi resolution
- Proximity sensing pen with right mouse button
- Highly transmissive tempered glass for superior viewing
- Finger or passive pen stylus input

Environmental Specifications
- Temperature:
  Operating 0°C to 55°C
  Operating -20°C with optional LCD heater
  Storage -40°C to 70°C
- Shock: 100 G, 2 ms
- Three foot drop with rotating drive (in case)
- Vibration: 17 Grms (random vibration 6 axis)
- Enclosure:
  Sealed against rain & dust
  Submersible to six inches for five minutes
- Humidity: 0 to 100% condensing humidity

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PORTABLE DIAGNOSTIC DATA COLLECTOR / REAL TIME ANALYZER

ORDERING INFORMATION

Standard Package (Item 2703)

- DCX Hammerhead Diagnostic Data Collector/Real Time Analyzer with pen (field use) and mouse (office use)
- Sybase SQL Anywhere Database (Item 1090)
- Embedded ExpertALERT™ for Voyager (EAV) software (Item 1110)
- ExpertALERT™ User Manual (Item 1119)
- Four (4) Channel PCMCIA (Type III) Card with DSP (Item 2721)
- DCX User Manual (Item 2772)
- Triaxial Accelerometer with integral 4 foot cable (Item 6007)
- Ball Driver for Triaxial Accelerometer (Item 8573)
- AC Power Adapter/Internal Battery Charger (Item 8832)
- Two (2) Lithium Ion Batteries (Item 8835)
- DCX Protective Cover with Shoulder Strap (Item 8837)
- Port Replicator with VGA, PS2, Serial and Parallel ports (Item 8844)
- Direct Cable Connecting Cable for Parallel Port (Item 2754)
- Keyboard for DCX (Item 8804)
- Carrying Case for DCX (Item 2765)

Training / Service / Support

- iLearn EAV/Vibration Interactive Training CD (Item 8670)
- On-site Training and System Setup (Item 9431)
- Vibration Analysis I and Field Balancing Training Course - 4 days (Item 9401)
- Vibration Analysis II and Laser Alignment Training Course - 4 days (Item 9403)
- ExpertALERT™ for Voyager (EAV) Training Course - 4 days (Item 9405)
- Off site Database Audit/Review with analysis of machine condition (Item 9462)
- One or three year Extended Warranty Support Plans for DCX and/or EAV (Items 1310/1311/3470/3471)

Optional Accessories

- Voyager Reporting and Technology Integration software (Item 1100)
- Additional ExpertALERT™ for Voyager software for desktop PC (Item 1114)
- Replication Software
  Note: one copy required for each database to be replicated (Item 1123)
- ExpertALERT™ for Voyager, Enterprise upgrade for LAN/WAN (Item 1129)
- DCX Online Data Acquisition software (Item 1150)
- Signal AQ Advanced Multi-channel Analysis software (Item 1160)
- Visual ODS Pro™ for animating machine deflection patterns (Item 1180)
- Four (4) Channel Signal Input Cable with BNC plugs (Item 2719)
- PR-2 Precision Reference Source with external controls (Item 4020)
- Digital Strobe Tachometer 115V (Item 4100-DCXHH) or 230V (Item 4105-DCXHH)
- Infrared Thermometer (Item 4200-DCXHH)
- Attachment Pads for Triaxial Accelerometer - Qty: 100 (Item 4300-1)
- Barcode Labels - Qty: 100 (Item 4320-1)
- Adhesive Kit for attachments pads and barcode labels (Item 4350)
- Infrared Tachometer Pickup with power supply for DCX (Item 4401-DCXHH)
- Infrared Tachometer extension cable -- specify cable length in feet, XX (Item 4430-XX)
- Single Axis Accelerometer, general purpose (Item 6040)
- Keyphasor Buffer Cable (Item 6355)
- Clamp on AC Current Transducer for motor current analysis (Item 8525-DCXHH)
- Magnetic Mounting Base for Triaxial or single axis accelerometers (Item 8591)
- Multi-plane Balancing Kit with software & hardware accessory package (Item 8800)
- USB/Ethernet Adapter (Item 8848)

www.DLIengineering.com
(800) 654-2844 • (206) 842-7656
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