

# DLI Watchman® DCA-50

Vibration Data Collector / Analyzer



The DCA-50 is the newest DLI Watchman® data collector offering unmatched performance in its class. It has four simultaneous data inputs and a large 6.3" color screen, all at a price point similar to competitive single channel collectors with fewer features. It has a long battery life that will last a full 8 hour shift. The rugged enclosure measures 8" x 11" x 1.8" and weighs just 5 lbs. Its interfaces include connectors for 4 input channels, tachometer, power supply and DLI-USB peripherals.

## DCA-50 features:

- **Spectrum, waveform, envelope demodulation**
- **Time synchronous averaging**
- **Harmonic, sideband and reference cursors**
- **Waterfall, phase, Bode, orbit and Cepstrum plots**
- **FFTs up to 25,600 line for accurate troubleshooting**
- **Load digital imagery from your ALERT™ database**
- **Interfaces with all ALERT host software\***

The DCA-50 utilizes a combination keypad/touchpad which offers easy input of user commands and process

readings, as well as control of the mouse pointer and mouse buttons.

Its processing power comes from an industrial-grade single board computer that runs an Intel-based 800 MHz CPU and 256 MB of RAM. It has 1 gigabyte of solid state memory, of which over 500 megabytes are available for data storage.

## DCA-50 System

The DCA-50 software system runs on Microsoft® Windows® XP Embedded™ operating system. Its data collection software is very easy to use in either route-based or barcode collection modes. The integral analysis software is the same as used in DLI's host ALERT™ software systems. Statistical average baseline data is loaded into the collector allowing data overlays and easy comparisons with historical data.

## Standard Accessories

- Triaxial sensor with cable
- Leather/nylon protective cover with shoulder strap
- USB host interface cable assembly
- Ball driver
- 110-230 VAC mains charger
- User manual on CD

## Optional Accessories

- 1 to 4-plane balance software
- Transit case
- Accessory pouch
- Ethernet network adapter
- Barcode scanner
- Infrared tachometer
- Remote battery charging fixture for 110-230 VAC mains
- 12VDC car charging cable
- User manual – hardbound
- BNC input cable (4-channels)
- HP Deskjet 450ci mobile printer



## Specifications<sup>1</sup>

### 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, 3200, 6400, 12,800, 25,600 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

- 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" x 8" x 1.8"
- Weight: 5 lbs with 2-batteries
- Fully machined from aircraft grade aluminum
- Sealed IP-67 water and dust proof
- Anodized finish

### Processor System Memory

- Intel-based x86 processor - 800 MHz
- 256 MB RAM
- 1 GB Compact Flash Hard Drive (programs and data)
- Microsoft® Windows® XP Embedded OS

### Video & Display

- 6.3" 640 x 480 TFT VGA color display
- Rich color saturation and good contrast even in outdoors
- High visibility display glass

### Host Interface / Printing

- USB 1.1 PC interface
- Optional Ethernet network adapter
- Direct connect mobile printer (HP Deskjet 450ci mobile printer)
- Compatible with host software:
  - ExpertALERT v3.0 and later
  - AdvancedALERT v3.0 and later
  - StandardALERT v3.0 and later
  - ViewALERT v3.0 and later

### Protective Cover

- Durable, shock-absorbing, insulating, molded foam case
- Shoulder and hand straps
- Leather and nylon
- Accessory pouch

### Power Consumption & Battery Life

- 5 hours continuous data acquisition (no idle time between tests) with 4 batteries
- Approximately 8 hours of use with power management enabled
- Batteries are "hot-swappable" for uninterrupted use (two batteries are supplied as standard package)
- 4000 mAh Lithium batteries 2-4 batteries
- Universal AC power adapter 110-230 volts, 50-60 Hz

### Interfaces

- iGesture touchpad / keypad digitizer
- Power switch
- Connectors (IP-67)
  - Power supply
  - CH-4/Tachometer (BNC)
  - DLI-USB
  - Signal + ground (4 channel)

### Environmental Specifications

- Temperature:
  - Operating 0°C to 50°C
  - Storage -40°C to 70°C
- Six foot drop (in case)
- Vibration: 15 Grms (random vibration 6 axis)
- Humidity: 0-100% condensing

\* ALERT host software is required

<sup>1</sup>Specifications are subject to change without notice



253 Winslow Way West  
Bainbridge Island, WA 98110 U.S.A.  
Tel.: (206) 842-7656  
Fax: (206) 842-7667  
E-mail: sales@DLIengineering.com

Document DCA-50-release cutsheet  
© 2004 – DLI Engineering Corp. - All rights reserved.  
Printed in U.S.A.