

# DLI Watchman® DCA-31

Handheld Data Collector / Real Time Analyzer

DLI is pleased to introduce the DLI Watchman® DCA-31™ Handheld Data Collector / Real Time Analyzer. The DCA-31 is a very small, rugged data collector capable of capturing a wide range of vibration and process data as applied to:

- **Bearing Fault Detection**
- **Machinery Condition Monitoring**
- **Process Parameter Monitoring**
- **Vibration Data Analysis**

Coupled with AdvancedALERT® or ExpertALERT™ software, the DCA-31 provides complete machine condition monitoring data management, collection, and analysis capabilities. Its lightweight and small form factor means that it is easy and convenient to use. The DCA-31 incorporates a high-resolution screen for easy reading and route navigation as well as comprehensive data presentation and interpretation. The DCA-31 comes standard with enough memory onboard to load large routes that can include literally hundreds of machines. Its enclosure is well sealed so that you don't need to worry about using it in wet or dirty locations. In addition, the DCA-31 offers CSA International Certification for Class 1, Division 2, Groups A, B, C & D Hazardous Environments.



## Latest Technology

The DCA-31 incorporates the latest advances in analog and digital electronics, including 20-bit digital signal processing (DSP) and the industry's highest resolution Sigma-Delta A/D converter to provide both speed and accuracy in the data collection process. The DCA-31 is available in single or two channel configurations. Should you decide to upgrade your DCA-31 later, only a firmware upgrade is required to enable its two-channel capability. This two-channel analysis upgrade offers dual channel time and frequency formats, cross channel phase and orbit displays.



### Standard Features

- **Windows CE™ operating system**
- **Intuitive hierarchical tree route & off-route data collection format**
- **Real time overall vibration, time and frequency**
- **Envelop demodulation for bearing detection**
- **Sealed to IP 65 rating (dust and splash proof)**

### Optional Features

- **Single & Two Plane Field Balancing**
- **Firmware upgrade to two channels for dual time and frequency formats, cross channel phase and orbits**
- **CSA rated (Class 1, Division 2, Groups A, B, C, D) for explosive environments**
- **Stroboscope/Tachometer for motion/speed analysis**
- **Motor Current Analysis**
- **Temperature/Pressure Monitoring**

# Specifications

<p><b>Input Signal Types</b></p> <ul style="list-style-type: none"><li>• ICP Accelerometers</li><li>• Velocity Transducers</li><li>• Displacement Probes</li><li>• Infrared Temperature Sensors</li><li>• Photo-Optical Pickups</li><li>• Triaxial Transducers</li><li>• Acc/Vel Transducers</li><li>• DC Inputs</li><li>• Keypad</li></ul> <p><b>Signal Inputs</b></p> <ul style="list-style-type: none"><li>• 3 x ICP, AC Signals, DC Signals</li><li>• Tacho from Trigger</li><li>• TEDS (Technical Electronic Data Sheet)</li><li>• Power in Battery Charge</li><li>• Trigger Supply Output</li><li>• Trigger In</li></ul> <p><b>Input Channels</b></p> <ul style="list-style-type: none"><li>• 1 channel: Triaxial ICPTM/AC/DC</li><li>• 2 Simultaneous (Firmware upgradeable); Channel 1 - Triaxial ICPTM/AC/DC, Channel 2 - ICPTM/AC/DC</li></ul> <p><b>Input Signal Range</b></p> <ul style="list-style-type: none"><li>• +/- 40 Volts Max.</li></ul> <p><b>Signal</b></p> <ul style="list-style-type: none"><li>• RMS / Pk / Pk-Pk / dB</li></ul> <p><b>Measurement Parameters</b></p> <ul style="list-style-type: none"><li>• Acceleration, Velocity, Displacement, Demod, Temperature, Phase, Voltage, User Specified.</li></ul> <p><b>Measurement Types</b></p> <ul style="list-style-type: none"><li>• Overall, Spectrum, Time Waveform, Phase, Order Normalized, Spectral Band Alarm.</li></ul> <p><b>Transducer Check</b></p> <ul style="list-style-type: none"><li>• Bias Voltage Integrity</li></ul> <p><b>Auto Range</b></p> <ul style="list-style-type: none"><li>• Yes</li></ul> <p><b>Dynamic Range</b></p> <ul style="list-style-type: none"><li>• &gt;90 dB</li></ul> <p><b>Frequency Range</b></p> <ul style="list-style-type: none"><li>• DC to 40 kHz Max.</li></ul> <p><b>AC/ICP</b></p> <ul style="list-style-type: none"><li>• 0.16 Hz Min.</li></ul> <p><b>Integrated</b></p> <ul style="list-style-type: none"><li>• 0.24 Hz Min.</li></ul> <p><b>Filters</b></p> <ul style="list-style-type: none"><li>• High Pass - 2, 10, 70 Hz</li><li>• Demodulated Vibration: 0.6-1.25, 1.25-2.5, 2.5-5, 5-10, 10-20 kHz</li></ul> <p><b>Real Time Rate</b></p> <ul style="list-style-type: none"><li>• 40 kHz single channel</li></ul> <p><b>Windowing</b></p> <ul style="list-style-type: none"><li>• Hanning, Hamming, Rectangular</li></ul> <p><b>FFT Resolution</b></p> <ul style="list-style-type: none"><li>• 100 - 12,800 lines, single channel</li></ul>	<p><b>Time Block Length</b></p> <ul style="list-style-type: none"><li>• 256-32,768 samples, single channel</li></ul> <p><b>Averaging</b></p> <ul style="list-style-type: none"><li>• Time and Spectral</li></ul> <p><b>Power</b></p> <ul style="list-style-type: none"><li>• Rechargeable L-Ion</li></ul> <p><b>Operating System</b></p> <ul style="list-style-type: none"><li>• Windows CE™</li></ul> <p><b>Processors</b></p> <ul style="list-style-type: none"><li>• Main Processor - MIPS PR 31700</li><li>• DSP Processor - DSP 56303</li></ul> <p><b>Operating System Storage</b></p> <ul style="list-style-type: none"><li>• 8 Megabytes Flash</li></ul> <p><b>Internal Operating RAM</b></p> <ul style="list-style-type: none"><li>• 16 Megabytes RAM</li></ul> <p><b>FLASH Disk</b></p> <ul style="list-style-type: none"><li>• 4 Megabytes Flash</li></ul> <p><b>PCMCIA</b></p> <ul style="list-style-type: none"><li>• Type I and Type II</li></ul> <p><b>PC Communications</b></p> <ul style="list-style-type: none"><li>• Serial: 9 -Pin D-Type and IrDA 1.1</li></ul> <p><b>Machine Identification</b></p> <ul style="list-style-type: none"><li>• Plant, Area, Machine, Location, Point Description, Units, Alarm Levels, Previous Measurements and Alarm Types.</li></ul> <p><b>Alarms</b></p> <ul style="list-style-type: none"><li>• Overall and Spectrum</li></ul> <p><b>Physical</b></p> <ul style="list-style-type: none"><li>• Display - 240 x 160 pixels, Backlit</li><li>• Indicators - LED Red-Amber-Green</li><li>• Size - 8 in x 5 in x 2in. (200mm x 130mm x 50mm)</li><li>• CSA Certification (Hazardous Environments) – Class 1, Division 2, Groups A, B, C &amp; D.</li><li>• Drop Test - 6 Feet (2 Meters)</li><li>• Sealing - IP 65</li><li>• Weight - 1.5 lb. (700grams)</li><li>• Temperature - -100C to + 600C</li></ul> <p><b>Connectors</b></p> <ul style="list-style-type: none"><li>• Input - 6 Pin Fisher (Two Connectors)</li><li>• Power/Trigger - 7 Pin Fisher</li><li>• RS232 - 9 Pin Plug D-Type</li></ul> <p><b>Optional Accessories</b></p> <ul style="list-style-type: none"><li>• Transit Case</li><li>• Soft Carry Case</li><li>• Neck Strap</li><li>• Belt Clip</li><li>• Accelerometer Cable</li><li>• Transducer Loop</li><li>• Trigger Input Cable</li><li>• Utility Belt</li><li>• Spare Battery</li><li>• External Battery Charger</li><li>• SRAM Storage Card</li><li>• Flash Storage Card</li></ul>
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## ANSWERS NOT JUST DATA

ExpertALERT™ has a proven automated data screening and fault diagnostic system that can process hundreds of measurements in just a few minutes, leaving you with the machine severity, fault diagnosis and repair recommendations on each machine. Our diagnostic engine uses an empirical, rule based, logic system that utilizes order-normalized data as well as spectrum analysis, cepstrum analysis, demodulated data analysis and several advanced "proprietary" methods.