LONG RANGER™

Distributed Vibration Sensor for Point Intrusion Detection

A major breakthrough in perimeter protection technology

Increased concern to protect critical resources against terrorism, intrusion, and vandalism has previously been cost prohibitive for long distance perimeters – until now.

The Fibersonics LONG RANGER™ Model LR50 Distributed Vibration Sensor (DVS) System is the most cost-effective, high-performance solution for protection of long perimeters and other infrastructure.

Applications:

- Transportation
  - Rail, Aviation and Ports
- Corrections
- Energy and Utilities
- Petroleum and Chemical
- Military and Government
- Borders
- Tunneling detection

Deploying the LONG RANGER™ system provides reliable perimeter security for up to 50 km through a single fiber-optic cable, detecting and locating within 20 meters over the entire perimeter. Daisy-chaining additional controllers provide unlimited reach. Up to seven different levels of actual physical sensitivity, through the cable configuration, optimizes system performance for different media requirements, including chain link fence, weld-mesh fence or buried cable. Additionally, because of the extreme sensitivity, the cable can be used with protective conduit without affecting required sensitivity and allowing greater installation flexibility, convenience and system longevity.

Return on your investment

Based on single-mode fiber-optic cable, the LONG RANGER™ system is the most economically competitive technology currently available in the world for this application. Requiring only a single alarm processing unit (APU) to cover up to 50 km, combined with a rugged fiber-optic sensing cable, results in the most cost-effective solution for large perimeters.

- Monitors up to 50 km of cable on a single channel, the LONG RANGER™ system offers the longest reach of any single controller in the world
- Detects and locates in real-time within 10-20 meters over the entire perimeter length
- No electronics required in the field
- Continuous optical self-calibration, 24x7
- Enables true remote control of monitoring system over a TCP/IP network
- Straightforward integration with any alarm or video management system, including Milestone, VDG, Network Harbor and others

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Features and Benefits of the LONG RANGER™ - DVS System for Point Intrusion Detection

The LONG RANGER™ system can be employed for real-time, precise detection and location of perimeter security threats on fences, walls or other types of perimeter barriers. The core Ranger™ technology acts as a continuous microphone designed to "monitor" over a quasi-DC to 500 kHz bandwidth, to very distinctive frequencies and energy profiles generated by intrusion events, while discriminating between normal and ambient conditions.

The LONG RANGER™ system can be easily integrated with video camera networks and other third party devices over TCP/IP, utilizing the LONG RANGER™ straightforward SDK.

Advantages of the LR50 LONG RANGER™ DVS System for Point Intrusion Detection

- 3RU, 19-inch, rack-mount, alarm processing unit (APU) reduces costs and electronics footprint in control room
- Hardware based on dedicated programmable microprocessor and DSP chips
- The longest range of real-time precision monitoring capability in the world with a single APU using single fiber-optic cable up to 50 km; daisy-chaining controllers provides unlimited reach
- Permits true remote control of monitoring system and integration with third-party alarm management systems
- Extreme sensitivity; can be used with protective conduit
- Flexibility in configuration and actual physical sensitivity of the cable for unlimited number of customized zones
- Capable of pinpointing intrusion over the entire length of a perimeter to within 20 m, with unlimited zones
- Immune to electromagnetic or radio frequency interference (EMI/RFI)
- No energy requirement in the field reduces infrastructure and maintenance costs
- Optical self-calibration occurs continuously; requiring almost no maintenance
- Minimal communications bandwidth required; can operate on modern TCP/IP networks of any speed
- Robust with low energy consumption – APU produces nominal heat, eliminating need for air conditioned racks
- Field upgradeable firmware ensures equipment software can be brought up to the latest version on the spot, even over TCP/IP

LR50 Technical Specifications

Alarm Processing Unit (APU)

- Dimensions: 5.25"x 16.5" x 22" Weight: 12kg
- Power requirements: 80 W maximum
- Number of channels: 1
- Maximum cable monitoring range: 11dB maximum optical power loss, typically covering 50km of cable
- Detection is realized within very broad frequency bandwidth from 3Hz to 500 kHz
- Hardware platform: dedicated reprogrammable FPGA and DSP chips
- Programming input: firmware upgrading via TCP/IP
- Operating temperature range of 0-50°C – no air-conditioned rack is required
- Real-time self-calibration of optical system keeps system in optimum operating condition
- Advanced processing software operates automatically, in real-time, for minimizing nuisance alarms

Fiber-Optic Cable

- Type of sensor cable: single-mode, providing up to seven different levels of actual physical sensitivity of the cable in order to optimize system performance for different fence, barrier, ground and environmental conditions
- More sensitive than traditional cable, permitting use of protective jackets and conduits without affecting required sensitivity
- Robust design includes protection against insects and rodents
- Sensing cable length per APU: MIN 500 m, MAX 50 km
- Maximum passive lead-in length per APU: unlimited to MAX range
- Maximum number of zones: unlimited, software adjustable
- Flexible unlimited zonal configuration, permitting flexibility in sensitivity for every zone
- Smaller diameter of cable and robust protective jackets permit additional installation flexibility and convenience