Interrogation Unit

FBGUARD 1550 FAST



powered by SAFIBRA

Item Number

FBGuard-1550-FAST- X

Number of channels
1 – 1 channel
2 – 2 channels
4 – 4 channels
8 – 8 channels

Description

The FBGuard 1550 FAST is a compact, field proven, industrial grade FBG interrogation unit designed for reliable, long term field operation (24/7) which can be used for a broad field of applications. It is designed for high accuracy static and dynamic measurements of Fiber Bragg Grating (FBG) sensors. The device covers a wide wavelength range and provides simultaneous measurements at very fast response rates and excellent wavelength resolution. The system can measure up to 8 optical channels with 40 FBG sensors per channel. This provides a cost-effective solution for industrial measurements.

The FBGuard 1550 FAST contains a broadband light source and performs spectral analysis by means of a linear array detector and a spectrometer platform. The system is a fully autonomous unit with an embedded PC and a web server and is independent from a range of external devices. The configuration of alarms, frequency of measurements, data logging on the integrated SSD et cetera is possible by SSH and the web interface of the FBGuard 1550 FAST. An Ethernet interface allows remote connection to any standard PC through the TCP/IP protocol. Additionally two USB 2.0 ports (serial communication is also supported at lower speeds) are available for data exchange. The system is equipped with four direct relays for immediate alarms. Additionally notifications can be sent via email and SMS.

The system is supplied with an analysis and configuration software, which is used to visualize the spectral information, calculate the peak wavelengths and convert the wavelength data into measurement data (strain, temperature, etc.).

Features

- Up to 8 parallel optical channels (1,2,4,8)
- Maximum scan frequency (up to 11 kHz)
- 40 FBG sensors per channel (with the measuring range 1nm/FBG sensor)
- Static and dynamic measurements
- Compact and robust design for 24/7 operation
- Self data logging
- Event detection (direct alarm relays,
- Embedded processing board with all decision functions
- Excellent wavelength precision and accuracy
- Ethernet or RS-485 interface (for communication)
- User friendly web based interface
- Large distance between the object and the measurement unit

Applications

- Civil structures: Tunnels, bridges, mines, buildings, dams
- Transportation: Railways, trains, roadways, specialty vehicles, cranes
- Energy: Wind turbines, pipelines, nuclear reactors, solar panel farms, electricity pylons
- Homeland security: Perimeter intrusion, vehicle detection and classification, security gate monitoring
- Aerospace vehicles: Airframes, composite structures, wind tunnels, dynamic tests
- Marine vessels: Hull, mast, rudder, deck, cargo containers
- Medical devices: Probes, catheters

Sensor Types

- Strain
- Temperature
- Displacement
- Vibration
- Acceleration
- Inclination
- Pressure
- Load

Specifications

Optical	
Wavelength range *	1510 - 1590 nm
Number of channels	1,2,4 or 8
Wavelength resolution	≤ 1 pm
Wavelength repeatability	±5 pm
Absolute wavelength accuracy (EOL)	±30 pm
Scan frequency	Up to 11 kHz for single channel Up to 1 kHz for two channels Up to 500 Hz for four channels Up to 250 Hz for eight channels
Dynamic range	30 dB
Optical connector **	FC/APC
Durability of optical switch	> 10^{11} cycles
Electrical, Environmental and Mechanical	
Power supply	12 V (adaptor to 230 V included)
Power consumption	< 50 W
Operating temperature	0 °C to 40 °C
Operating humidity	< 80%, non-condensing
Dimensions	482 x 415 x1 40 mm^3 (3U, 19“ rack) (18.9 x 16.3 x 5.5”)
Weight	7.5 kg
Embedded PC	
Processor	Intel Core i3
Memory	4 GB
Hard disk	120 GB SSD Disk (no moving parts)
Communication protocol	TCP/IP MODBUS ***
Interface	Ethernet, USB 3.0 host port, 1x VGA 4x alarm relays RS-485 *** RS-232 ***
External trigger	TTL, 2CH
Remote Control	Full control

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