

WAVECAPTURE FBG ANALYZER-IRS SERIES

Integrated spectral analyzer with an internal reference source (IRS) that serves as the heart of precise, fast, and reliable FBG sensing systems requiring increased precision. The addition of the IRS enables greater repeatability for systems requiring repeatability better than 2 pm.

The WaveCapture™ Fiber Bragg Grating Analyzers with an Internal Reference Source (FBGA-IRS) series fiber sensing products offer excellent wavelength accuracy, low power consumption, fast sub-ms response time, solid-state electronics, and lifetime calibration. Devices interrogate multiple wavelengths for precise Fiber Bragg Grating (FBG) sensor system strain or temperature measurements.

PRODUCT HIGHLIGHTS

- Ultra-reliable grating with no moving parts
- Excellent wavelength repeatability and resolution
- Ultra-fast response time (up to 5000 Hz)
- Athermal (no TEC) enabling battery operated portable operation
- Solid-state electronics
- Hermetically sealed
- High reliability for use in harsh environments
- Lifetime calibration

APPLICATIONS

- Real-time fault detection and isolation in fiber optic sensing systems
- OEM module for portable field test equipment for oil & gas pipelines
- Mining
- Energy (wind and tidal)
- Marine vessels



AT A GLANCE

Standard Wavelength Ranges

40 nm Model: 1525 to 1565

80 nm Model: 1510 to 1590

Others available on request

Wavelength Repeatability

± 2 pm

Wavelength Readout Resolution

1 pm

Frequency Response Time (Typ.)

~ 5000 Hz (USB 2.0)

Channel Input Power Range

~60 to -20 dBm

Compliance

Telcordia GR-63/1209/1221-CORE qualified

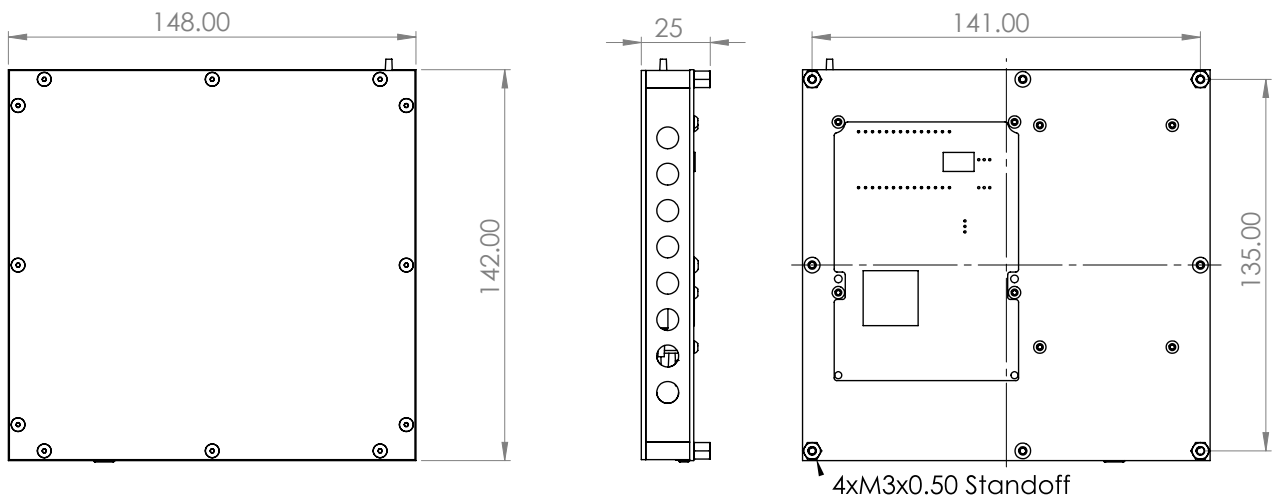
WAVECAPTURE FBGA-IRS SERIES

TECHNICAL DATA

FBG Analyzer-IRS Specifications	
Wavelength Ranges ¹	40 nm Model: 1525 to 1565 nm 80 nm Model: 1510 to 1590 nm
Wavelength Repeatability	±2 pm
Frequency Response Time (typ)	~5000 Hz
Interface	USB 2.0
Internal Reference Source for Field Calibration	Yes
Optical Interface	FC/APC connector (or specified)
Channel Input Power Range	-60 to -20 dBm or specify
Power Resolution	0.1 dB
Size	148 x 142 x 25 mm (5.83 x 5.59 x 0.98 in)
Operating Temperature	-5 to 75°C
Storage Temperature	-20 to 85°C
Software	WaveCapture Sense 20/20 software, WaveCapture Sense 20/20 SDK for development (optional)

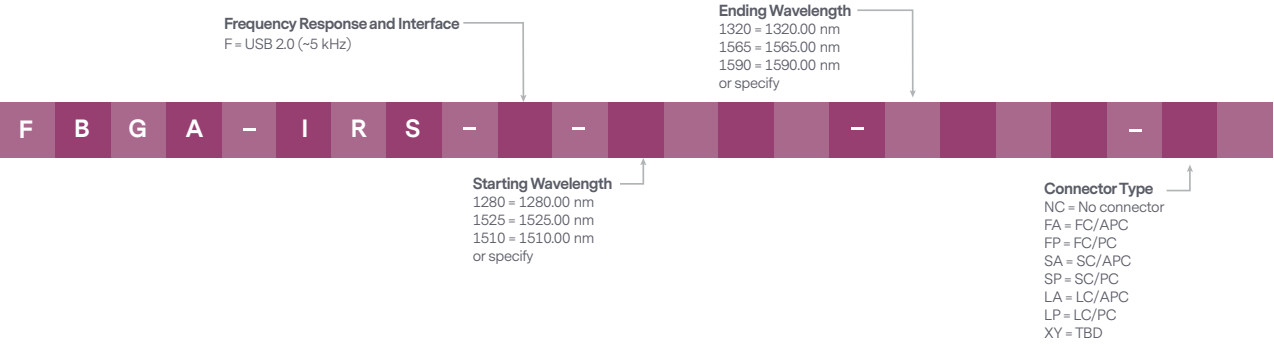
¹ Other wavelengths available on request

DRAWINGS



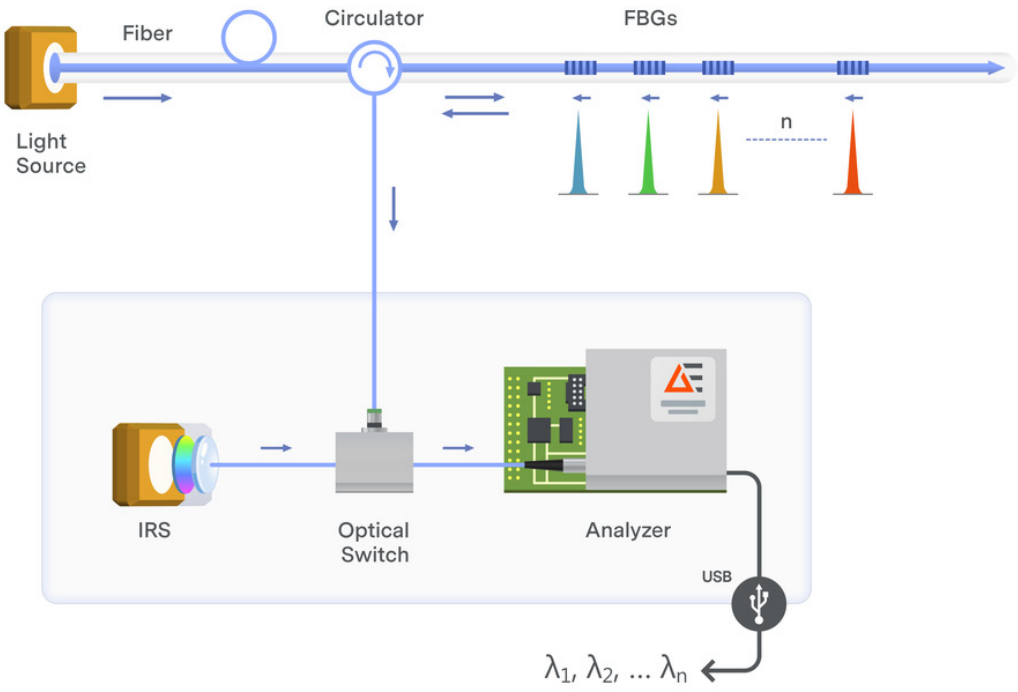
Dimensions in mm

ORDERING INFORMATION



WAVECAPTURE FBGA-IRS OVERVIEW

Advanced Energy's WaveCapture Fiber Bragg Grating Analyzer (FBGA) is an integrated spectral engine that serves as the heart of precise, fast, and reliable FBG interrogator systems. The FBG Analyzer employs a proprietary optical design that features high-efficiency dispersive optics, an ultrasensitive detector array, and innovative numerical algorithms to provide high speed, high-resolution spectral measurements in challenging environments. The figure below shows an FBG analyzer integrated into an FBG sensing system. A broadband light source illuminates an optical fiber which features an array of "N" fiber bragg grating sensors. The FBG array reflects "N" spectral bands of light back down the fiber, where an optical circulator directs the light to the FBG Analyzer. Inside the analyzer, the light is dispersed and the diffracted spectrum is measured by a detector array. Numerical algorithms are used to extract each "Bragg wavelengths" from the raw data, which are sent to the host and converted to temperature, strain, acceleration, or other measured parameter. Both raw and processed data are available to the host.



SOFTWARE

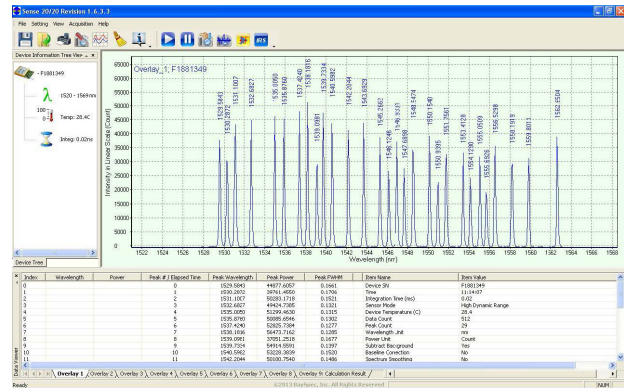
WaveCapture Sense 20/20

The WaveCapture™ Sense 20/20 software is a Windows-based program for interfacing with WaveCapture FBG analyzers and systems via USB, RS232, or Ethernet. The software is designed to run on Windows 7 and 10 operating systems. The software provides the following features:

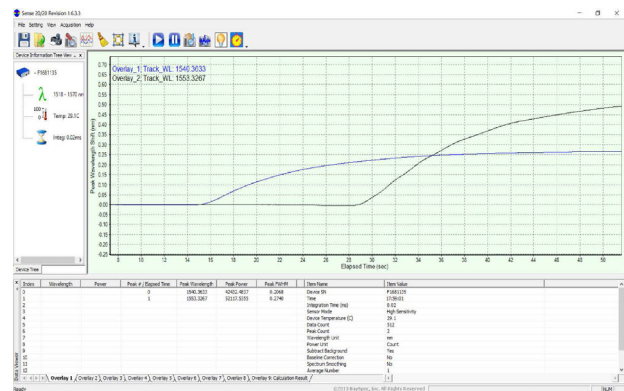
- Setup acquisition mode and parameters
- Acquire spectrum and display into multiple overlays
- Post-process spectrum data such as peak search, background subtraction, spectrum smooth and baseline correction, save and load spectrum data
- Record and replay spectrum data in the fast acquisition mode
- Track the wavelength shift of the selected peaks
- Control SLED light source
- Control optical switch and GPIO output

WaveCapture Sense 20/20 SDK

WaveCapture Sense 20/20 software development kit (SDK) provides the interface for software developers to access the WaveCapture FBG Analyzer spectrometers. The Dynamic Link Library (DLL) in the SDK can be used under different programming environments, including C, C++, Visual Basic, and LabVIEW. The SDK provides a set of functions that allow users to configure and control the FBG Analyzer spectrometer as well as acquire and post-process the spectrum data.



WaveCapture™ Sense 20/20 software



WaveCapture™ SDK



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PRECISION | POWER | PERFORMANCE

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