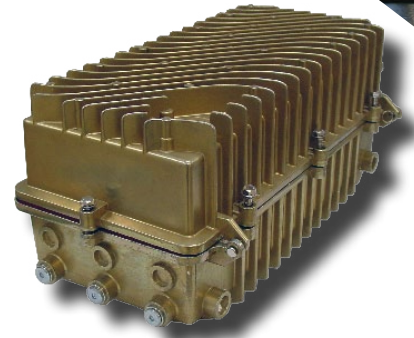


FSI-OD | FBG Sensor Interrogator for Outdoor

The Optilab FSI-OD Fiber Bragg Grating (FBG) Sensor Interrogator is a rugged, weather resistant interrogator system designed for demanding outdoor applications. The FSI-OD is a fully-integrated, high-resolution measurement system, features a high power, high speed swept wavelength laser, state-of-art embedded system for signal processing. The FSI-OD interrogator core employs advanced hardware peak detection, optimized for rapid data processing of many simultaneous FBG sensors. The FSI-OD is designed to provide measurements with wide range of acquisition rates for various SHM applications outdoor. The combination of high speed and excellent repeatability enables a single FSI-OD to simultaneously monitor dynamic sensors. The FSI-OD responds directly to the user commands and output sensor wavelength data via Ethernet port and our standard protocol.



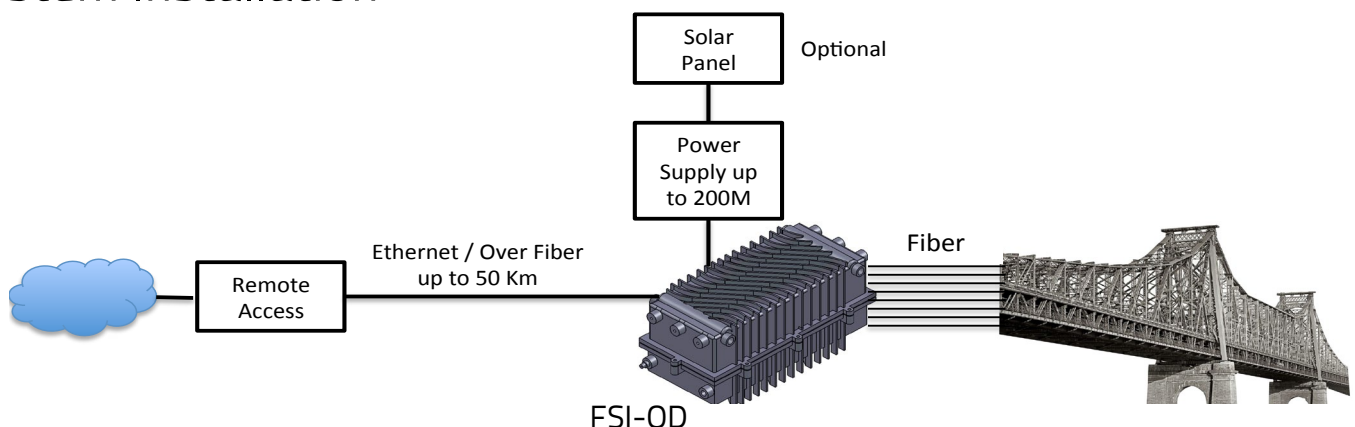
Features

- Outdoor weather proof -40°C to 60°C
- All fiber input/output interface
- Embedded system design for continuous, uninterrupted operation, no PC required
- Complete system for outdoor insulation
- Ethernet over the fiber output, allow cloud operation
- Sweep rate from 1Hz to 1 kHz
- 8 channels sensor detection standard
- Outdoor power supply (solar panel optional)

Applications

- Civil: bridges, dams, tunnels, mines, buildings, containers, subway, trains, roadways, cranes
- Industrial: oil & gas, electrical, well reservoir, platform, pipeline
- Outdoor short-term installation during construction phase
- Remote area projects for SHM
- Railroad, subway and tunnel monitoring

System Installation



Specifications | FSI-OD

Technical Specifications	
Sweep Frequency	1 Hz to 1 kHz (2 kHz optional)
Number of Optical Channels	4 - 8 (Standard; Can be customized)
Wavelength Range	Up to 70 nm
Wavelength Accuracy	± 2.5 pm
Wavelength Repeatability	± 1 pm
Dynamic Range ¹	> 30 dB
Laser Output Power	10 mW - 40 mW
Minimum FBG Wavelength Separation	0.3 nm
FBG Detection	Proprietary DSP
Optical Connectors	FC/APC
FBG Requirements	Standard FBG ²

¹ Defined as external optical insertion loss (from FSI to FBG sensors)

² FBG 3 dB bandwidth >0.15 nm, sidelobe <-10 dB from peak

Data Processing Capabilities	
Interface	Ethernet over fiber
Protocol	TCP/IP
Client Server Software	Included, can be customized
Synchronization	One pulse per second (Optional)
Data Format	Standard format included; Can be customized

Mechanical, Environment, Electrical Properties	
Dimensions	20" x 10.5" x 9.125"
Shipping Weight	40 lbs (without fiber)
Operating Temperature	-40°C to 60°C
Storage Temperature	-50°C to 70°C
Internal Power Supply	Dual 60 V AC (auto switch)
Power Consumption	120 W max.
Control / Monitoring	Optical Input/Output
Optical Connectors	FC/APC
Housing Material	Cast Aluminum
Running Time at Backup	> 12 hours

Accessories	
Outdoor Power Supply	110/220 VAC, 5A 60 VAC
Optical Fiber	12 ports
Solar Panel	110/220 VAC, 3A

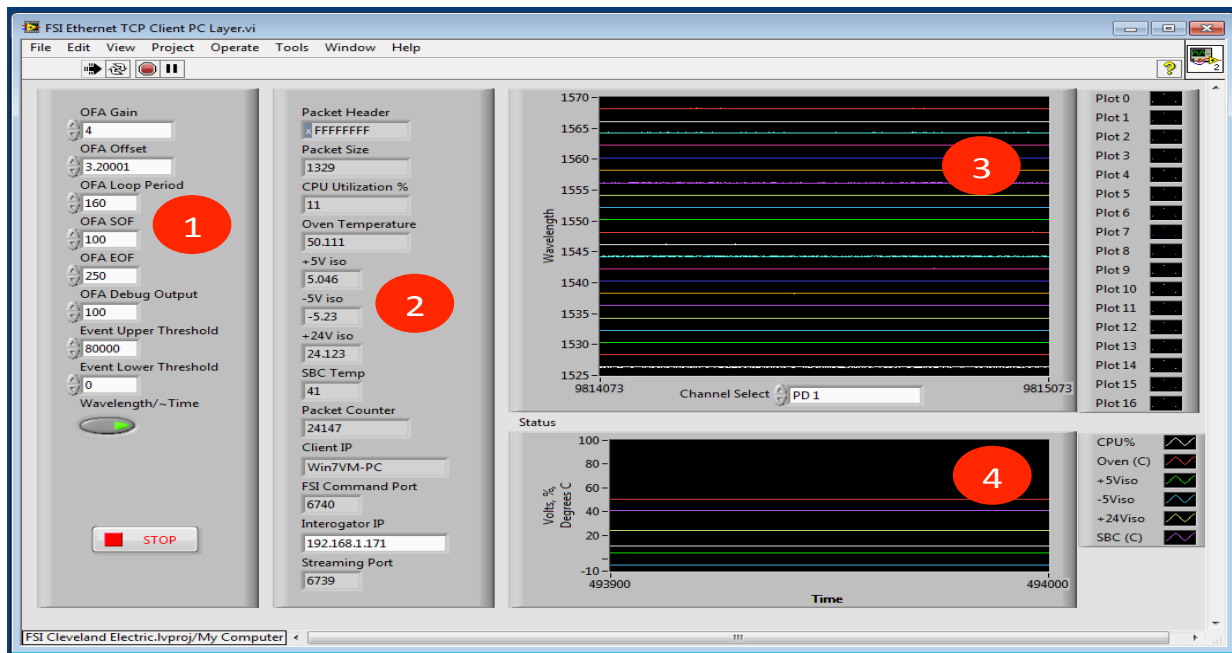
Other Options	
Optical Channels	4-8 channels (up to 16 channels)
Laser Power	Up to 100 mW
Sweeping Speed	2 kHz available upon request

Features and Information of FSI-OD

ENVIRONMENTAL TESTING & QUALIFICATION

- High Temperature / Low Temperature (-40°C to 60°C)
- Temperature Cycle Aging Qualification 2,000 hours (on going)
- Damp Heat (Humidity)

CLIENT SERVER SOFTWARE



1. Control parameters
2. System status parameters
3. FBG wavelength real time display window
4. System status parameters real time display window

MECHANICAL DRAWING

