FABRY-PERUS
Universal Hybrid Fiber Optic Interrogator
Advanced Conditioning for EFPI Pressure & FBG Temperature Sensors

Key features

Dual-Technology Engine: Simultaneous interrogation of EFPI (Pressure) and FBG (Temperature).

Optimized for Hybrid Sensing: Native support for integrated P+T fiber sensors.

Smart Spectrum Normalization: Internal channels dedicated to real-time noise floor and spectral referencing.

High-Stability Thermal Control: Integrated RTD on I-MON 256 C spectrometer for precise compensation.

Flexible Integration: Native Ethernet communication + Legacy Analog output (Sub-D9).

Open-Source Philosophy: Dedicated GUI included or custom integration via provided API/Protocols.

DESCRIPTION

The **FABRY-PERUS** is a high-performance optical interrogator designed for high-frequency measurements in environments where traditional electronic sensors fail. It is uniquely optimized for **Extrinsic Fabry-Perot Interferometer (EFPI)** sensors, providing a robust solution for high-precision pressure monitoring.

Driven by a powerful **5mW SLD source** (1550 nm) and a high-resolution I-MON 256 C spectrometer, the unit delivers laboratory-grade performance with an optical input range of **-70 to -22 dBm**. Its internal 8-way optical switch uses 2 channels for continuous self-calibration and background noise normalization, ensuring exceptional long-term stability.

Whether used for integrated P+T probes or complex FBG arrays, the Fabry-Perus offers the speed and flexibility required for advanced R&D and industrial monitoring.

BENEFITS AND APPLICATIONS

Performance & Integration

- Versatile Sampling: Up to 3 kHz for capturing fast dynamic phenomena.
- Multi-Output Connectivity: High-speed Ethernet for digital streaming and a Sub-D9 connector for 8-channel analog integration.
- OEM & Custom Ready: Provided communication protocols allow users to retrieve raw spectra and develop their own algorithms.
- Compact & Reliable: Passive cooling and integrated thermal compensation via internal RTD.

Optical Flexibility

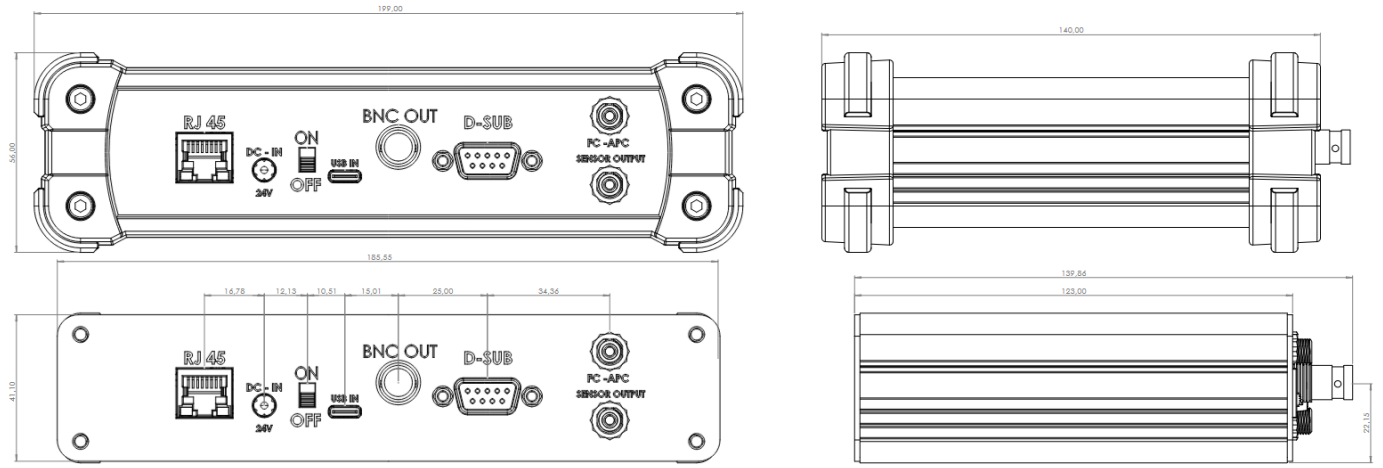
- Advanced EFPI Decoding: Specifically tuned for high-resolution pressure measurements.
- FBG Multiplexing: Supports multiple FBGs per fiber

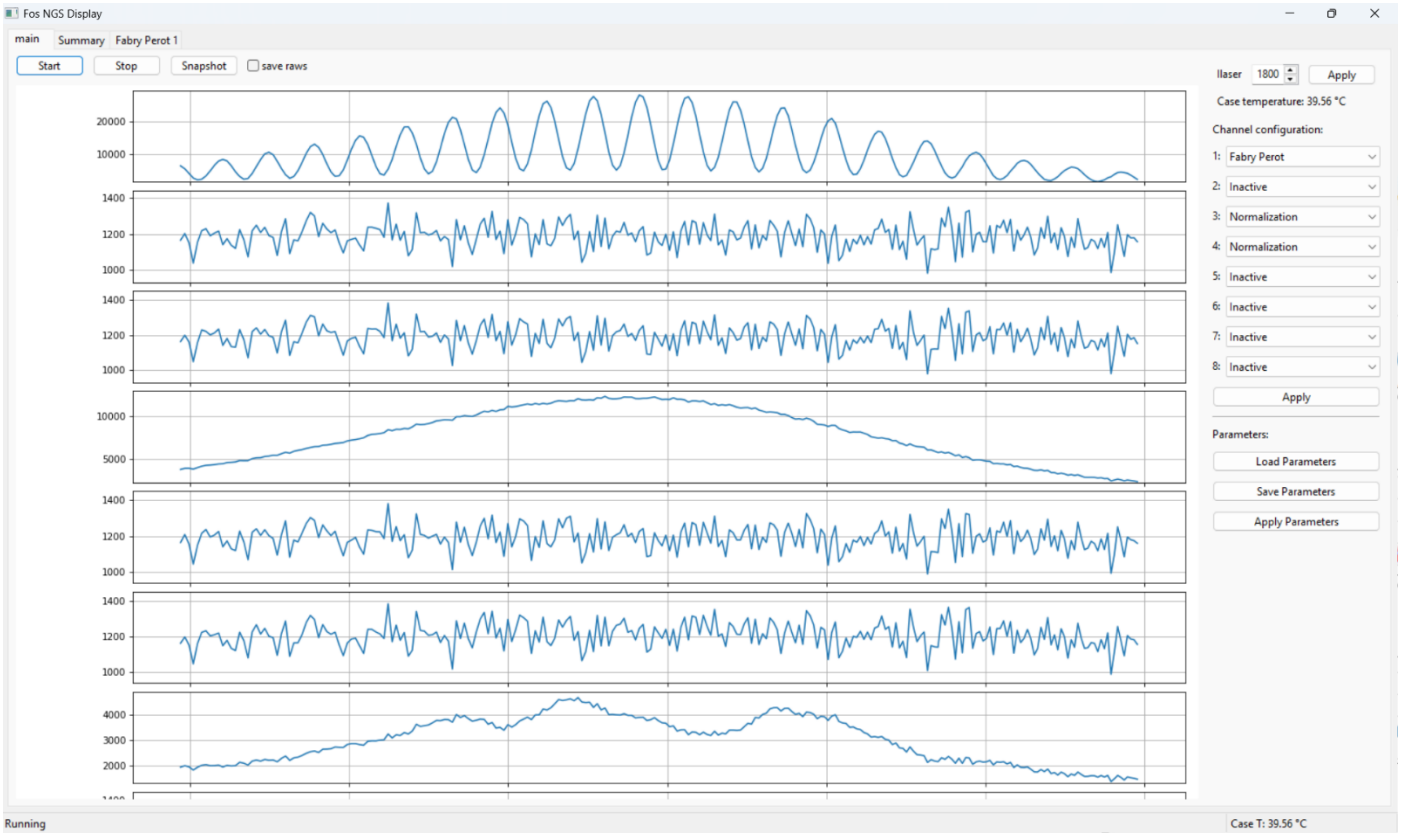
General specifications

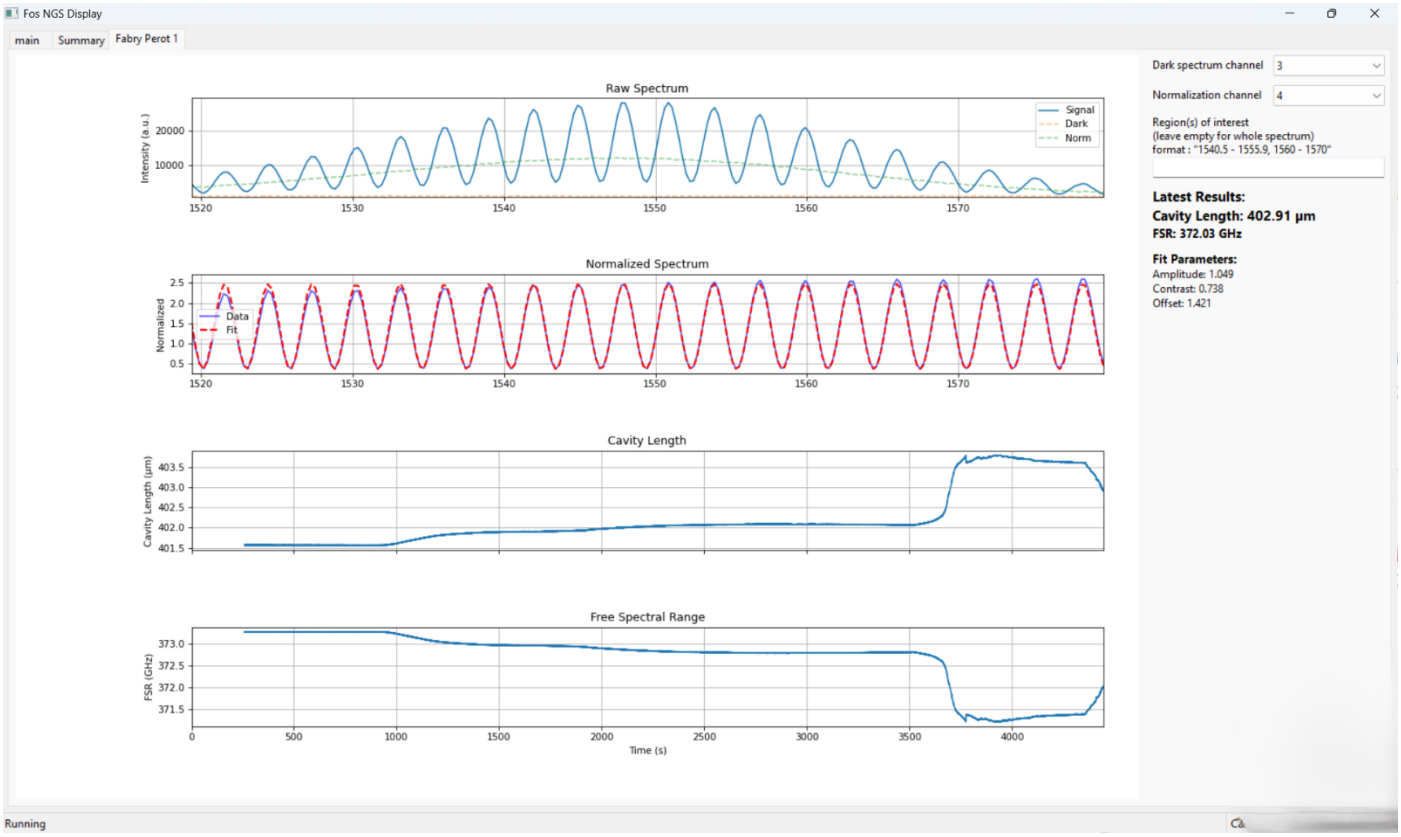
OPTICAL INTERFACE	Optical Channels	2 (up to 6 on demand)
	Connector Interface	FC/APC
	Sensor Compatibility	EFPI & FBG (FWHM>1nm)
	Multiplexing Capacity	1 Fabry-Perot/connector. 36 FBG
	Wavelength Range	1520 – 1579nm
MEASUREMENT PERFORMANCE	Sampling Frequency	Up to 3kHz
	FP Resolution	1nm typ.
	FBG Resolution	0.5pm typ.
	Absolute Accuracy	TBD
	Dynamic Range	100microns to 1mm for EFPI. 60nm for FBG.
SIGNAL CONDITIONING	Demodulation Scheme	Frequency-fit for FP; Peak-fit for FBG
	Internal Referencing	RTD
	Digital Filtering	None
	Thermal Compensation	Real-time polynomial correction
DATA & CONNECTIVITY	Digital Communication	Ethernet TCP/IP
	Streaming Protocol	Binary
	Analog Output	Sub-D9 0-3.3V
	Time Synchronization	Managed via PC/Host Controller
SYSTEM & ENVIRONMENT	Supply Voltage	5.5-36V
	Power Consumption	3 Watts @12V
	Operating Temperature	0 – 50° C
	Enclosure Rating	Indoor / Laboratory Use IP20
	Size	199x140x56 mm
	Weight	0.8kg

Based on **I-MON 256 C OEM**

Datasheet 2026-01 Rev0 Fabry-Perus






Fos NGS Display
main
Summary
Fabry Perot 1
Raw Spectrum
Intensity (a.u.)
Signal
Dark
Norm
Normalized Spectrum
Normalized
Data
Fit
Cavity Length
Cavity Length (µm)
Free Spectral Range
FSR (GHz)
Time (s)
Dark spectrum channel
3
Normalization channel
4
Region(s) of interest
(leave empty for whole spectrum)
format : "1540.5 - 1555.9, 1560 - 1570"
Latest Results:
Cavity Length: 402.91 µm
FSR: 372.03 GHz
Fit Parameters:
Amplitude: 1.049
Contrast: 0.738
Offset: 1.421
Running