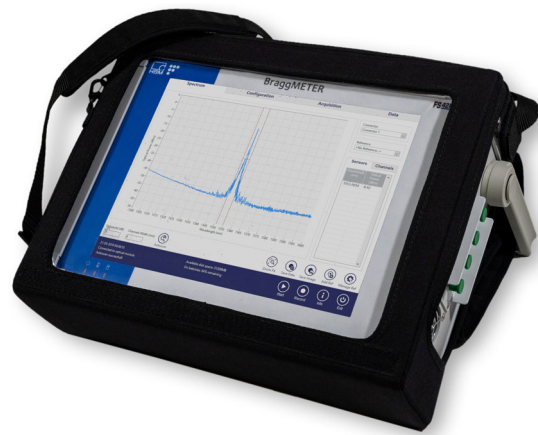DATA SHEET

FS42PI
Portable BraggMETER PI

SPECIAL FEATURES

- 4 optical connectors with parallel acquisition
- Smart Peak Detection (SPD)
- 5 hours of autonomy per charge
- Replaceable batteries
- Intuitive embedded software with data logging capability
- Data streaming and remote control via Ethernet

DESCRIPTION

FS42PI Portable BraggMETER Interrogator is a high-end, unique instrument designed to measure Fiber Bragg Grating (FBG) sensors, being most suited for supporting installations on field or for short measurement tasks as seen on laboratory applications. It runs on batteries or plugged to an external power source and is supplied with an easily removable bag for protection and transport. The dedicated embedded software and touch screen interface provide an easy and effective way to control the unit without any further devices. It is also possible to control the unit remotely via the Ethernet port by using SCPI commands or stream measurement data in real time. The interrogator is based on continuous swept laser scanning technology, with a NIST traceable wavelength reference that provides continuous calibration and ensures system accuracy over long term operation. The combination of high dynamic range and high output power allow high resolution to be attained even for long fiber leads and/or lossy connections.

## BENEFITS AND APPLICATIONS

Interrogator

- Portability with battery operation and built in PC with touch screen interface
- Changeable batteries for longer usage periods without power connection
- Intuitive and powerful software with all features needed for field and laboratory measurements
- Perfect for use in Civil, Aeronautics, Energy and R&D applications

Fiber Bragg grating technology

- Absolute reference measurement
- Insensitive to EM/RF interferences
- Passive (can be used in Ex-areas)
- Intrinsic multiplexing capability reducing cabling complexity
- Compatible with long distances between sensors and interrogators
- Interrogation of all FBG sensor measurands

DIMENSIONS
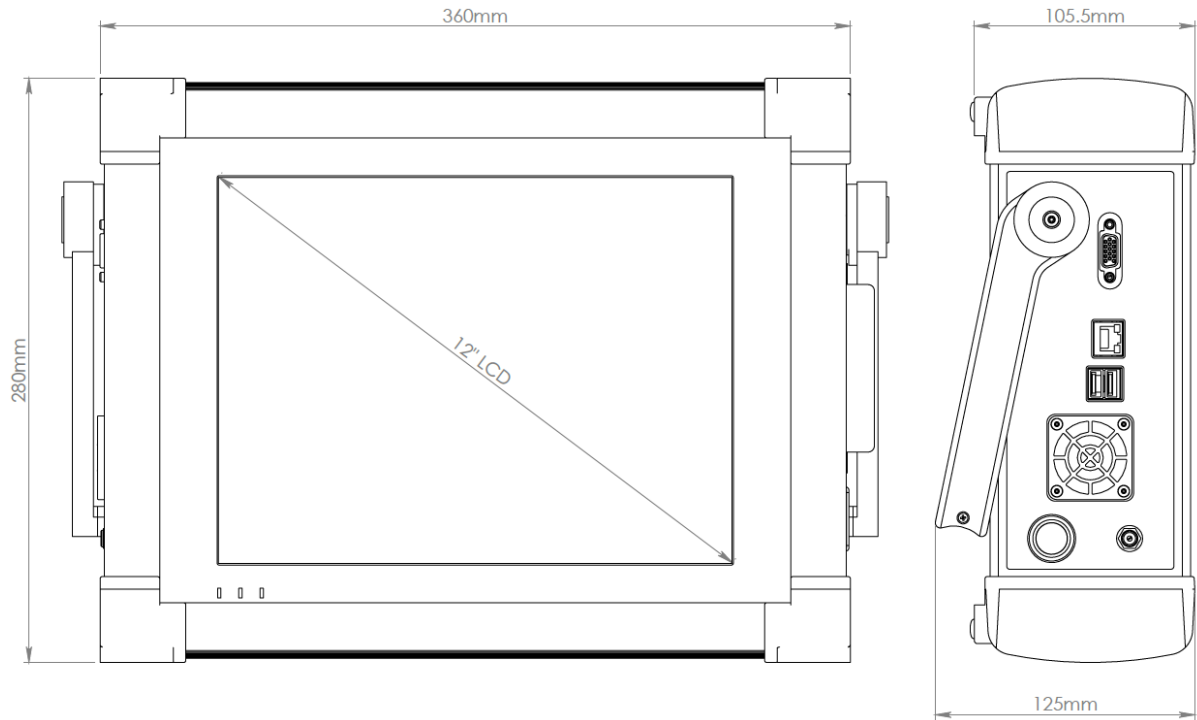
BLOCK DIAGRAM
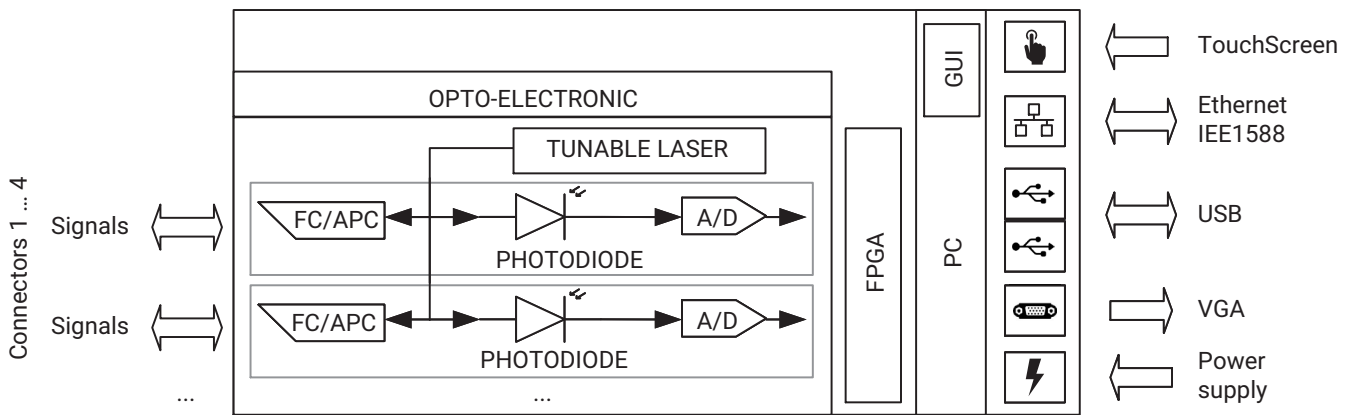
SPECIFICATIONS

General		
Measurement range	nm	100 [1500 … 1600]
Resolution/Repeatability[1]	pm	<0.5
Stability/Reproducibility[1]	pm	1
Optical connectors (simultaneous acquisition)	n.a.	4
Connector type	n.a.	FC/APC or SC/APC
Sample Rate	S/s	1

Maximum number of sensors[2]
    Per connector
    Total
		
		125
		500

Optical detection method	n.a.	Logarithmic amplification
Dynamic Range[3]	dB	> 50
OSA[4]	n.a.	Yes

Optical Output Power
    Typical
    Maximum
	dBm	
		-1
		1

Operating System[5]	n.a.	Windows 10 IoT Enterprise LTSC 2019
Processor	n.a.	Intel® Celeron®, CPU N2930, Regular formatting 1.83 GHz, RAM 4 GB
Available memory for data saving	GB	30
Software	n.a.	BraggMONITOR PI
Power supply	VDC	19 … 20 (20 V; 6 A)
Power connector	n.a.	2.5 x 5.5 DC socket panelmount[6]

Maximum Consumption[7]
    Charging, power off
    Charging, power on
	W	
		40
		70

Battery type	n.a.	RRC2054-2S 14.4 V 6800 mAh
Battery autonomy[8]	h	5
Charging time[9]	h	3

Interfaces
    Touch screen
    Ethernet (RJ45[10])
    USB 2.0
    VGA
	n.a.	
		12"
		1 Gigabit
		2 ports
		1 connector

Remote communication
    Protocol
    Syntax
	n.a.	
		TCP/IP;
		SCPI[11] (ASCII textual strings)

[1] Measurements carried out using calibrated instrument against a NIST traceable gas cell. Accuracy as per NIST Technical Note 1297. Further details on HBK FiberSensing technical notes.
[2] The maximum number of sensors corresponds to a processing capacity limit for FBG peaks.
[3] Considered as the ratio between the optical power emitted at an optical channel and the minimum detectable optical power reflected by a fiber Bragg grating.
[4] Optical Spectral Analysis (1 S/s refresh rate; 20000 points per sample, 5 pm resolution).
[5] Protection provided by Windows Defender and System integrity supported by Unified Write Filter (UWF).
[6] Supplied with 100-230 V power adapter and international cable plugs.
[7] Typical values. Peak consumption may reach 50 W (during start up).
[8] Typical battery duration (5 h under continuous operation). Critical battery level is reached at 7% and shutdown is forced.
[9] Maximum charging time using the maximum 2A current.
[10] Connection with twisted-pair cable (CAT-5) and maximum 30 m length.
[11] Standard Commands for Programmable Instruments.

Environmental and mechanical		
Operation temperature	°C	0 … 40
Storage temperature	°C	-20...70
Operation humidity	%	< 90 % (at 40 °C)
Storage humidity	°C	< 95 % (non-condensing)
Mechanical tests[12] Sinusoidal vibration resistance (EN60068-2-6)		
Acceleration	g0-pk	2.5
Duration per axis	min	30
Frequency	Hz	5 … 65
Random vibration (EN60068-2-64)		
Acceleration	g0-pk	9
Power Spectral Density	g2/Hz	1
Frequency	Hz	10 … 500
Shock resistance (EN60068-2-27)		
Acceleration	g0-pk	20
Pulse duration	ms	11
Dimensions (width x height x depth)	mm	360 x 280 x 125
Weight	kg	6
Enclosure	n.a.	Aluminum; Cordura® fabric carrying bag
Degree of protection (EN60529; IEC529)	n.a.	IP20
EMC requirements	n.a.	Per EN61326

[12] During tests the interrogator is powered off. The correct functioning of the equipment is confirmed after the test (transport simulation).

ORDERING INFORMATION

Standard Item	
1-FS42PI-4FC	FS42PI Portable BraggMETER with 4 FC/APC Connectors
1-FS42PI-4SC	FS42PI Portable BraggMETER with 4 SC/APC Connectors