

DATA SHEET

FS22SI Industrial BraggMETER SI

SPECIAL FEATURES

- Up to 8 optical connectors with parallel acquisition
- Smart Peak Detection (SPD)
- NTP synchronization
- Catman® compatibility



DESCRIPTION

FS22SI Industrial BraggMETER Interrogators are specifically designed to interrogate Fiber Bragg Grating (FBG) sensors. Based on continuous swept laser scanning technology, these interrogators include a NIST traceable wavelength reference that provides continuous calibration and ensures system accuracy over long term operation. The combination of high dynamic range, high output power and SPD improves overall accuracy and signal stability even in large/complex sensing networks as commonly found in field applications. Built-in SPD introduces individual and adaptive thresholds, referenced to the highest peak on each

sensor's configurable range making sensor readings possible also when low and high reflectivity FBGs coexist and/or signal losses are high. The SPD feature ultimately turns HBK FiberSensing interrogators into an extremely powerful solution.

HBK FiberSensing Industrial BraggMETER interrogators run on a real-time operating system for consistent and deterministic acquisition of a large number of sensors provided by the combination of a broadband tuning range and the simultaneous and parallel acquisition over 1, 4 or 8 optical connectors.

BENEFITS AND APPLICATIONS

Interrogator

- Laboratory and field deployment in Civil, Aeronautics, Energy and R&D applications
- Full control through SCPI Commands for integration in user's own software
- Smart Peak Detection for unbalanced sensing networks
- Multiple device or hybrid (electrical+optical) measurements possible by combining and synchronizing multiple interrogators and other HBK data acquisition devices

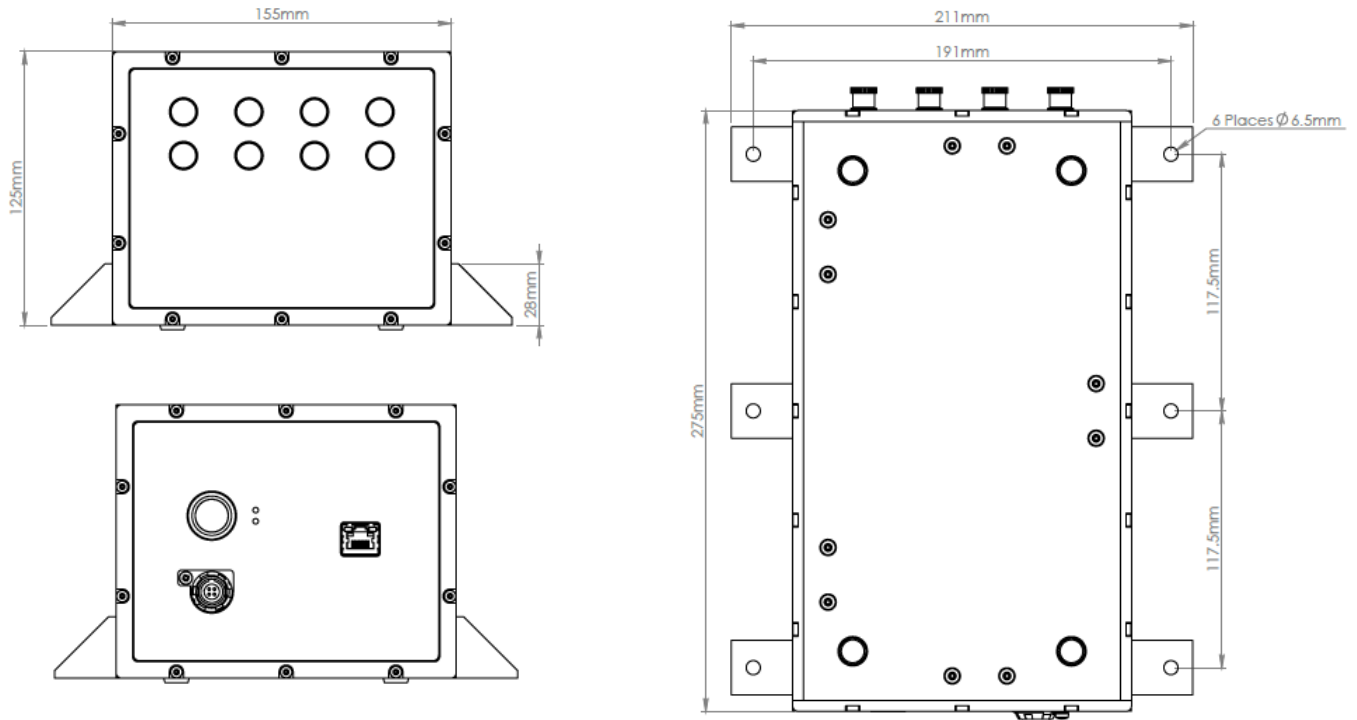
Fiber Bragg grating technology

- Absolute reference measurement
- Insensitive to EM/RF interferences
- Passive (can be used in Ex-areas)
- Intrinsic multiplexing capability reducing cabling requirements
- Long distances between sensors and the interrogators possible
- Combination of different sensor measurands

TECHNICAL DRAWING

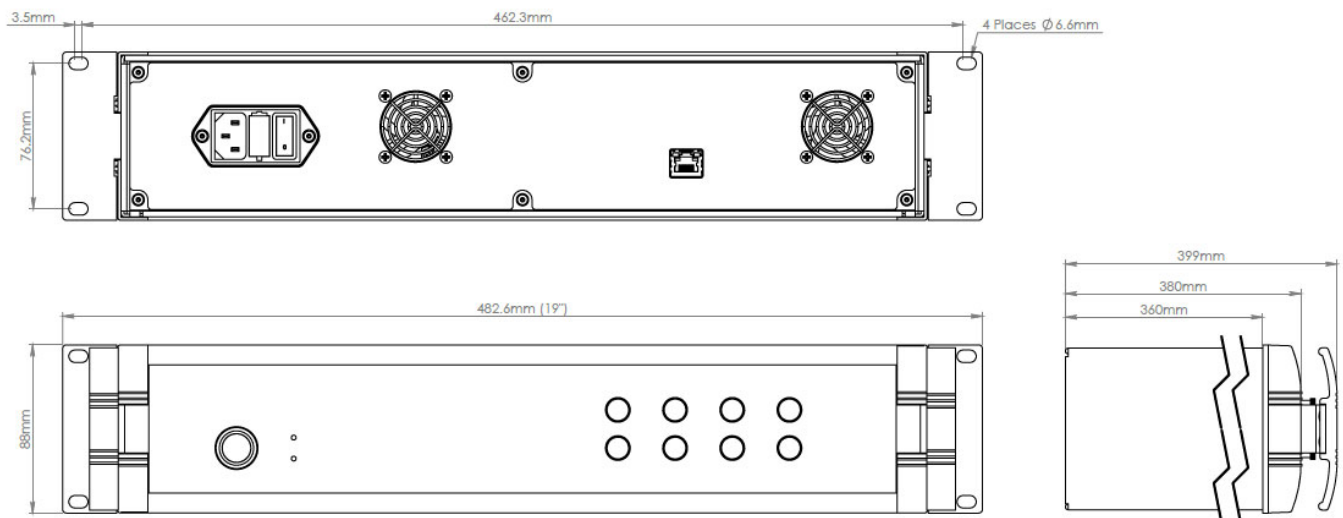
Standard

Represented configuration with 8 FC/APC connectors.

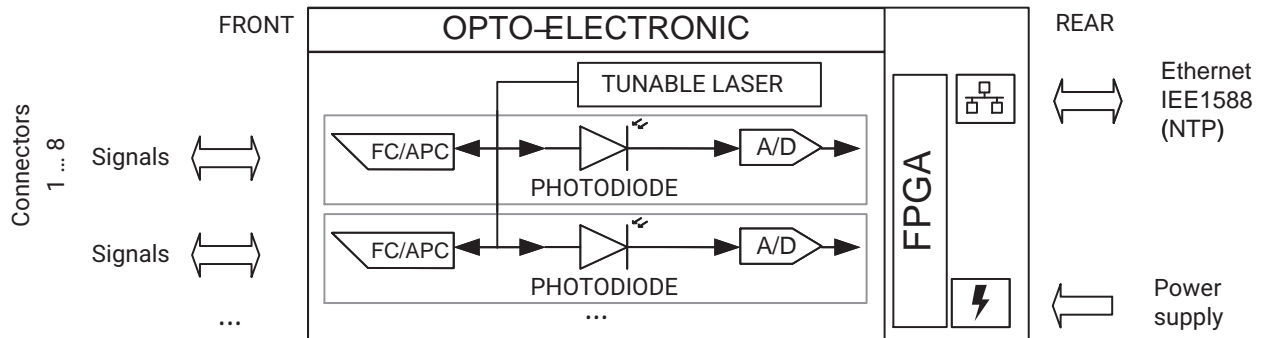


Rack Mountable

Represented configuration with 8 FC/APC connectors.



BLOCK DIAGRAM



SPECIFICATIONS

General		
Measurement range	nm	100 [1 500 ... 1 600]
Resolution/Repeatability ¹⁾	pm	<0.5
Stability/Reproducibility ¹⁾	pm	1
Optical connectors (simultaneous acquisition)	n.a.	1, 4 or 8
Connector type	n.a.	FC/APC or SC/APC
Sample rate	S/s	1
Maximum Number of sensors	n.a.	
With SPD		
Per connector		152
Total		1000
Without SPD		
Per connector		500
Total		500
Optical detection method	n.a.	Logarithmic
Dynamic range ²⁾	dB	> 50
OSA ³⁾	n.a.	Yes
Optical output power per connector	dBm	
One connector		
Typical		2
Maximum		3
Four connectors		
Typical		-1
Maximum		1
Eight connectors		
Typical		-3.5
Maximum		-2
Power supply	VDC	
Standard		11-36
Rack-mountable		100-240 (50-60 Hz)
Power connector	n.a.	
Standard		ODU Medi-Snap S11M08-P04MJGO-5280 ⁵⁾
Rack-mountable		C14 (IEC/EN 60320-1) ⁶⁾
Consumption ⁴⁾	W	
Peak		24
Nominal		15
Stand by and sleep mode		0.4

Communication Technology Connector Protocol Syntax	n.a.	Ethernet RJ45 TCP/IP SCPI ⁷⁾ (ASCII textual strings)
Synchronization	n.a.	NTP
Environmental and mechanical		
Operation Temperature	°C	0 ... 50
Storage Temperature	°C	-20 ... 70
Operation Humidity	%	< 90% (at 40 °C)
Storage Humidity	%	< 95% (non-condensing)
Mechanical tests ⁸⁾ Sinusoidal vibration (EN60068-2-6) Acceleration Duration per axis Frequency Random vibration (EN60068-2-64) Acceleration Power Spectral Density Frequency Shock resistance (EN60068-2-27) Acceleration Pulse duration	 g0-pk min Hz g0-pk g ² /Hz Hz g0-pk ms	 2.5 30 5 ... 65 9 1 10 ... 500 20 11
Dimensions (w x h x d) Standard Rack-Mountable	mm	155 x 125 x 275 483 x 88 x 400
Weight Standard (without mounting brackets) Rack-mountable	kg	4.5 7
Enclosure Material	n.a.	Aluminum
Degree of protection (EN60529; IEC529) Standard Rack-mountable		IP40 IP20
EMC requirements	n.a.	Per EN 61326

- 1) Measurements carried out using calibrated instrument against a NIST traceable gas cell. Accuracy as per NIST Technical Note 1297. Further details on HKB FiberSensing technical notes.
- 2) Considered as the ratio between the optical power emitted at an optical connector and the minimum detectable optical power reflected by a fiber Bragg grating.
- 3) Optical Spectral Analysis (1 S/s refresh rate; 20001 points per sample, 5 pm resolution)
- 4) Typical values. Peak consumption may reach 50 W (during start up).
- 5) Supplied with 100...240 V power adapter with international AC plugs and 1.5 m cable length. For additional orders use 1-NTX001 material number.
- 6) Supplied with international AC plug cables.
- 7) Standard Commands for Programmable Instruments.
- 8) During tests the interrogator is powered off. The correct functioning of the equipment is confirmed after the test (transport simulation).

ORDERING INFORMATION

Configurable Item		Standard item ⁹⁾
K-FS22 – 1 - 2 - 3		
Options		
1	01 - Standard (ST) - FC/APC; 03 - Standard (ST) - SC/APC; 11 - 19" rack (RM) - FC/APC; 13 - 19" rack (RM) - SC/APC	
2	010 - Static (1S/s)	
3	120 - 1 optical connector; 420 - 4 optical connectors; 820 - 8 optical connectors	

⁹⁾ Standard Items correspond to a configuration: Standard format and FC/APC connectors. With 4 or 8 optical connectors.

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