



SmartScan SBI Single Board Interrogator (1-channel model)

- Complete Single Board FBG Interrogator
- Multi-kHz Scanning
- Extraordinary SmartScan Resolution
- Scalable Modular Architecture
- Rugged Solid State Design with no moving Parts
- Available as an OEM module for customer integration

SmartScan SBI is a complete FBG interrogator offering dynamic measurement of numerous connected FBG sensors from a single board Eurocard format. It has been developed from Smart Fibres' highly popular [SmartScan](#) instrument. This single board instrument is based on an agile, tuneable laser source that enables high resolution interrogation at multi kHz frequencies. It offers connection via a PC 104 interface to a separate processing module required to run software routines to set-up the SBI, read the high-speed FBG wavelength data across the PC 104 bus, and package the received data for processing or onward communication. A suitable [PC 104 processing module](#) is available from Smart Fibres, as are drivers for the software routines should a client choose to run them on their own hardware.

Each SmartScan SBI contains an agile electrically tuneable laser, four photo-detector channels, and custom Smart Fibres high-speed gate array electronics for driving the laser and processing the photo-detected signals. The SBI is scalable, and modular systems with multiple SBIs can be assembled to offer 40 nm or 80 nm high-speed interrogation of 4, 8, 12 or 16 fibres. Smart Fibres' [Modular SmartScan](#) is an example of a developed product exploiting this capability.

SmartScan SBI Specifications

Measurement and Processing	SmartScan SBI	SmartScan SBI Lite
Wavelength Range	40 nm (1528 – 1568 nm or 1568 – 1608 nm)	
Number of Optical Channels	1, 2, 3, 4	
Maximum Number of Sensors / Channel	16	
Scan Frequency (all sensors simultaneously)	2.5 kHz	250 Hz
Scan Frequency (per each sensor in turn)	25 kHz	-
Repeatability ^{1,2}	< 1 pm	
Wavelength Stability	< 5 pm over operating temperature range, +/- 20 pm over 25 years	
Dynamic Range	27 dB	
Suitable FBG profile (FWHM)	Minimum > 0.2 nm, > 0.5 nm recommended	
Mechanical, Environmental and Electrical		
Form Factor	108 x 160 mm (excluding optional connector frame)	
Weight	250 g	
Operating Temperature	-20 to +75 °C	
Comms Interface	PC 104	
Power Connector	Two way terminal screw	
Optical Connector ³	FC/APC (others on request)	
Input Voltage	+9 to +32 VDC	
Power Consumption	typ < 6 W	
EMC Certification ⁴	Per BS EN 61326-1 edition 2006	
Hazardous Area Certification (optional)	Per ATEX for hazardous zones 0, 1 or 2 with gas groups IIA, IIB or IIC Link to certification	

Specifications are subject to change without notice

¹ Measured over 1 minute, standard uncertainty (1 σ distribution)

² Using recommended FBG profile

³ Connector required to be fitted on cable to mate with unit

⁴ Achieved by modular SmartScan containing multiple SmartScan SBIs