



SmartScope

- High Resolution FBG Interrogator
- Solid State Light Source
- Insensitive to Polarisation Effects
- No Moving Parts
- Compact and Lightweight
- Broad Operating Temperature
- Low Power Consumption
- Ideal for Permanent Measurements:
 - Pressure and Temperature
 - Strain in Civil Structures

Building on the success of the SmartScan interrogator, SmartScope was developed to offer increased accuracy combined with high resolution peak detection measurements of FBG sensors. SmartScope uses the same tuneable laser core optics as SmartScan and uses an internal optical reference for improved stability and accuracy. Its highly unpolarised light avoids measurement errors commonly induced by birefringence. This removes the need for expensive and relatively unreliable additional equipment to provide active polarisation scrambling.

SmartScope is aimed at applications demanding greater reliability over a wider temperature range, such as oil well instrumentation or civil structure monitoring. Combined with SmartPort P/T gauges, SmartScope provides for a cost-effective downhole distributed pressure sensing system.

Specifications

Measurement and Processing	
Wavelength Range	40 nm (1528 – 1568 nm)
Number of Optical Channels ¹	1, 2 or 4
Maximum Number of Sensors / Channel	24
Scan Frequency (all sensors simultaneously)	5 Hz
Wavelength Resolution ²	0.2 pm @ 5 Hz, 0.1 pm @ 1 Hz, 0.04 pm @ 0.1 Hz
Wavelength Accuracy ³	< 2 pm
Wavelength Stability over Operating Temperature Range ⁴	3 pm
Polarisation Extinction Ratio ⁵	< 1dB
Dynamic Range ⁶	38 dB
Gain Control	9 levels, per channel or per sensor, automatic or user controlled
FBG Full Width at Half Maximum (FWHM)	> 0.2 nm, 0.5 nm recommended
Mechanical, Environmental and Electrical	
Dimensions (W x H x D)	130 x 85 x 142 mm / 5.1 x 3.3 x 5.6"
Weight	1 kg / 2.2 lb
Operating Temperature	-15 to +55 °C / 5 to 131 °F
Storage temperature	-40 to +80 °C / -40 to 176 °F
Comms Interface	Ethernet (UDP-IP)
Data Connector	RJ45
Power Connector	via mains adapter supplied
Optical Connector	FC/APC
Input Voltage	+9 to +36 VDC
Power Consumption	typ 7.5 W, max. 8.5 W
EMC Certification	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

¹ For 8, 12, 16 channels instruments, please contact us

² Measurement distributions (1σ) when measuring a controlled artefact having recommended FWHM, during 16 hours. Maintained for up to 15 dB optical gain.

³ Per NIST Technical note 1297, maximum wavelength difference when compared to NIST SRM 2519. Measurement with instrument at 25 °C

⁴ Per NIST Technical note 1297, ed 1994, D1.1.3 Maximum wavelength variations over full temperature range. The measurand is NIST SRM 2519.

⁵ Light is not polarised out of the instrument, therefore polarisation rotation cannot increase the measurement uncertainty

⁶ Laser launch power minus detector noise floor.

Specifications are subject to change without notice