



SmartScan Aero Mini Interrogator

- Multi-kHz Scanning
- Ultra compact / low weight
- Robust instrument platform
- On board storage



BAE Systems Hawk Trainer – Proving ground for SmartScan Aero Mini Technology

The SmartScan Aero Mini is a compact and robust interrogator for dynamic measurement of FBG sensors. This WDM instrument is based on an agile, tuneable laser source that enables high resolution interrogation at multi-kHz frequencies. The combination of COTS components in a ruggedised enclosure makes the benefits of FBG sensing accessible to applications where it was previously impossible or prohibitively expensive. The SmartScan Aero Mini, with its reduced size and mass and improved features, is optimised for avionic installations especially military, civil or unmanned aircrafts.

The SmartScan Aero Mini is certified for use in ATEX hazardous zones 0, 1, or 2, with gas groups IIA, IIB, or IIC.

Additionally, in response to several aerospace customer demands, SmartScan instruments are now available with on-board logging capability. This capability allows the interrogator to be set up to log data during a flight trial, without the need for a separate flightworthy computer.

### Specifications

Measurement and Processing	
Wavelength Range	40 nm (1528 – 1568 nm)
Optical Channels	4
Max sensors per channel <sup>1</sup>	16
Scan Frequency (all sensors simultaneously) <sup>2</sup>	2.5 kHz
Max. Scan Frequency (individual FBGs) <sup>2</sup>	25 kHz
Repeatability <sup>3,6</sup>	< 1 pm
Wavelength Stability	+/- 5 pm over operating temperature range, +/- 20 pm over 25 years
Dynamic Range <sup>4</sup>	27 dB
Gain Control	9 levels, per channel or per sensor, automatic or user controlled
Suitable FBG profile (FWHM)	Minimum > 0.2 nm, > 0.5 nm recommended
On-board data storage	16/32 GB
Example data logging period <sup>5</sup>	24 hours per 16 GB
Mechanical, Environmental and Electrical	
Weight kg / lbs	1.4 kg / 3 lbs
Dimensions H x W x D <sup>7</sup>	45 x 135 x 203 mm / 1.77 x 5.31 x 7.99"
Operating Temperature	-15 to +65 °C / 5 to 149 °F -55 to +70 °C / -67 to 158 °F to follow
Shock	MIL-STD 810G Method 516.6 20g
Vibration	MIL-STD 810G Method 514.6 D 11g rms
EMC	Per EN 61326
Comms Interface	Ethernet (UDP-IP), Amphenol TVP00RW connector
Power Connector	Amphenol JN1003
Optical Connector	Radiall LuxCis Mil-Dtl-38999 4-way APC
Input Voltage	+9 to +32 VDC
Power Consumption	typ 10 W, max 12 W

<sup>1</sup> Max 32 total FBGs for on-board storage at time of writing

<sup>2</sup> Faster sampling available at reduced resolution, limited to 10 kHz for on-board storage at time of writing

<sup>3</sup> Measured over 1 minute, standard uncertainty (1  $\sigma$  distribution)

<sup>4</sup> Maximum attenuation of reflected signal before measurement performance is affected

<sup>5</sup> Assuming 8 sensors per channel x 4 channels at 2.5 kHz scan rate

<sup>6</sup> Using recommended FWHM as stated

<sup>7</sup> Dimensions excluding the mounting flanges, drawing available for layout details

Specifications are subject to change without notice