



SmartScan Aero

- Multi-kHz Scanning
- Ultra compact / low weight
- Highly robust instrument platform proven in military flight trials
- Retrievable on board USB storage option available



BAE Systems Hawk Trainer – Proving ground for SmartScan Aero Technology



Showing optional removable USB storage

The SmartScan Aero 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.

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

The SmartScan Aero shock and vibration test certificate can be [seen here](#)

Results of additional testing from a SmartScan Aero user can be [seen here](#)

Specifications

Measurement and Processing	
Wavelength Range	40 nm (1528 – 1568 nm)
Optical Channels / Max sensors per channel ¹	4 / 16
Scan Frequency (all sensors simultaneously) ²	2.5 kHz
Max. Scan Frequency (individual FBGs) ²	25 kHz
Repeatability ^{3,6}	< 1 pm
Wavelength Stability	+/-5 pm over operating temperature range, +/- 20 pm over 25 years
Dynamic Range ⁴	27 dB
Gain Control	9 levels, per channel or per sensor, automatic or user controlled
Bragg Grating Full Width Half Maximum (FWHM)	Minimum >0.2 nm, >0.5 nm recommended
Removable onboard data storage	8/16/32/64 GB Mil spec USB memory stick
Example data logging period ⁵	24 hours per 16 GB of stick capacity
Mechanical, Environmental and Electrical	
Weight kg / lbs	2.2 kg / 4.84 lbs
Dimensions H X W x D	155 x 155 x 180 mm / 6.1 x 6.1 x 7.1"
Operating Temperature	-30 to +50 °C / -22 to 122 °F
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 Optional, Amphenol USBFTV memory stick
Power Connector	Amphenol JN1003
Optical Connector	Radiall LxC-R APC
Input Voltage	+9 to +36 VDC
Power Consumption	typ 10 W, max 12 W

¹ Max 32 total FBGS for USB storage at time of writing

² Faster sampling available at reduced resolution, limited to 10kHz for USB storage at time of writing

³ Measured over 1 minute, standard uncertainty (1 σ distribution)

⁴ Maximum attenuation of reflected signal before measurement performance is affected

⁵ Assuming 8 sensors per channel x 4 channels at 2.5 kHz scan rate

⁶ Using recommended FWHM as stated Specifications are subject to change without notice