



SmartScan Aero Mini

Key Features

- Multi-kHz Scanning
- Ultra-Compact / Low Weight
- Robust Instrument Platform
- On-Board data logging

About SmartScan Aero Mini

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 ruggedized 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 military or civil manned and unmanned aircraft.

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 to 1568 nm)
Optical Channels	4
Max. Sensors Per Channel	16
Max. Sensors in Total	Up to 32 at 2.5 kHz, 64 at 1.25 kHz or lower frequencies
Scan Frequency (all channels simultaneously) ¹	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	g 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 GB
Example Data Logging Period ⁵	24 hours per 16 GB

Mechanical, Environmental and Electrical	
Weight kg / lbs	1.4 kg / 3 lbs
Dimensions H x W x D ⁷	45 x 135 x 203 mm / 1.77 x 5.31 x 7.99"
Operating Temperature	-40 to +60 °C / -40 to 140 °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
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

1. SmartScan Aero Mini interrogates all 4 channels simultaneously. On each channel, every sensor is interrogated at a speed of 2.5 kHz (32 sensors max) or 1.25 kHz (64 sensors max).
 2. Up to 25 kHz scanning speed is only possible when the on-board logging is 'OFF'. With on-board logging 'ON', faster sampling is available at reduced bandwidth, limited to 10 kHz for on-board 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.
 7. Dimensions excluding the mounting flanges, drawing available for layout details.

Specifications may change without notice

Ordering Information

Product Type	ATEX Certified	World Zone Plug
S-AeroM	X	XX
	EX	UK
		EU
		US
		CN
		IN

Order code example:

S-AeroM-EX-UK

Variant Description	Variant Options	Variant Code
ATEX Certification	ATEX Certified	EX
	Not ATEX Certified	Blank
Mains Plug World Zone	United Kingdom (IEC Type G)	UK
	European Union (IEC Type C, or F)	EU
	United States (IEC Type A or B)	US
	China (IEC Type A, C or I)	CN
	India (IEC Type C, D or M)	IN