

EA-3000-H series Fibre-optic Sensor Interrogation (FSI) unit



The EA -3000-H Series FSI has been specifically designed for deployment in air vehicles, but is also applicable to other platforms where size and weight are critical. It is based on the Moog Insensys OEM-3030 Fibre Sensor Interrogator family which was developed from the proven OEM-1030 of which over 1000 have been delivered, primarily for the control of wind power turbines.

This specification is provisional, pending completion of full design qualification. This will include environmental testing to RTCA DO-160E and compliance with RTCA DO-254 and RTCA DO-178B for hardware and software. Epsilon Optics Aerospace Ltd reserves the right to change this specification at any time.

Specification for: EA-3000-H-422

Number of channels (optical fibres)	1 to 4
Maximum acquisition speed (sensor readings per second)	3kHz, up to 10kHz with reduced measurement range
Maximum number of sensors	100
Measurement range	+/- 4500 microstrain ⁽¹⁾
Noise (RMS)	1.7 microstrain
Minimum sensor spacing	2.5m ⁽²⁾
Power Supply	9 to 36V DC, 100 to 240V AC with mains adapter
Power consumption (typical)	4W ⁽³⁾
Interface	RS422
Optical Connectors	Radiall LuxCis APC
Weight	800g
Dimensions	150 X 132 X 62mm
Operating temperature	0 to 50°C
Storage temperature	-40 to 65°C
Humidity	5 to 85% (non-condensing)
Shock	15g for 11ms, 5 times per axis
Vibration	1.5g on a level sine sweep 10 to 150 Hz, 4 tests per axis

1. The measurement range can be modified by offsetting the sensor central wavelength to give a range of 0 to 9000 microstrain, or 0 to -9000 microstrain, or incremental values in between.
2. 2.5m is the standard minimum in-fibre distance between sensors. This can be reduced depending on detailed design of the sensor arrays. There are also a number of deployment techniques that enable much closer physical spacing of sensors when installed in a structure.
3. The system power consumption is dependent on the interface and processing configuration.