Product Specification

EA-3080-H-E series Fibre-optic Sensor Interrogation (FSI) unit

The EA-3080-H-E FSI represents a substantial enhancement to the very successful EA-3030-H-422 FSI. By integrating a high speed solid state optical switch into the previous high speed interrogator platform, we have been able to increase the channel count to 8, whilst increasing the optical power per channel and the total number of sensors from 100 to 800. In addition the case size has been further reduced and the serial communications link replaced by Ethernet.

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-3080-H-E	
Number of channels (optical fibres)	8
Maximum acquisition speed (sensor readings per second)	3kHz, up to 10kHz with reduced measurement range
Maximum number of sensors	100 per channel, 800 total[1]
Measurement range	+/- 4500 microstrain[2]
Noise (RMS)	1.7 microstrain
Minimum sensor spacing	2m[3]
Maximum array length	1000m at 500Hz, 300m at 5kHz, 200m at 10kHz
Power Supply	9 to 36V DC, 100 to 240V AC with mains adapter
Power consumption (typical)	4W[4]
Interface	Ethernet
Optical Connectors	Diamond AVIM/APC or Diamond F3000/APC
Weight	800g
Dimensions	131 X 132 X 55mm
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. Maximum number of sensors per channel may be constrained by the maximum array length at a given data acquisition speed.
2. 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.
3. 2m 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.
4. The system power consumption is dependent on the interface and processing configuration.