

On Board Spectrum Analysis System

OnBoardSAS (On Board Spectrum Analysis System) intended as a preprocessing stage for a health monitoring system on board an aircraft. It receives analog data from various sensors (vibration sensors, microphones etc.), conditions and digitizes the signals, performs the necessary FFT processing on a DSP processor, rescales the frequency axis on a fraction of octave scale, and finally outputs the reformulated spectrum in terms of octave bands fraction on a serial RS422 link.

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System dimensions (mm) L x W x H = 145 x 96 x 47

This product is designed for Alenia Aeronautica

System Key Features:

- Spectral representation: $1/x$ of octave, $x =$ octave band fraction, $x = 1,3$
- Analysis of up to four analog input signals
- Two I/O serial ports: RS232 for system parametrization and programming, RS422 for system output.
- Frequency Range: 8KHz
- Sampling Frequency: 16384 Hz
- Frequency Resolution: 1Hz
- High performance: THDpN = 96dB, DR = 102dB Crosstalk= 102dB
- Facility for system expandability to up to twelve analog inputs
- In house windows XP application software for system programming and data acquisition

Publications: K. Makris, D. Fragopoulos, S. Kaloutsakis, N. Agianniotis, M. Marchitti, C. Papadas, K. Fotiadis, "On-Board Spectral Analysis System (OBSAS)," Proceedings of the Fifth European Workshop on Structural Health Monitoring, pp. 462 – 467, Sorrento, Naples, Italy, June 28-July 4, 2010.