

Fine Sun Sensor FSS

Based on photo diodes the Jena-Optronik **FSS** is an analogue sun sensor. The FSS is produced for application on Telecom, Earth Observation and Scientific satellites with high pointing requirements.



FSS has been designed with two orthogonal detectors, full internal redundancy and special thermal radiation stability.

Special Features

- Lifetime >13 years
- Radiation hard design
- Robustness against Earth albedo

Measurement Principle

- Illumination of a photodiode array with eight pixels by sunlight via a slitmask
- Angle of incident sunlight corresponding to illumination of photodiodes
- Calculation of sunlight-angle with an algorithm based on arctan-function of geometrical parameters and currents on photodiodes

Technology for Sun Sensors

The requirements for the sensors are very demanding. In addition to measurement accuracy and efficiency, reliability and durability play a decisive role. All of our developments have proven this value under the conditions in space. In-flight data are available and considerably better than specified.



FSS Fine Sun Sensor Performance

Sentinel-1, Earth observation satellite for Europe's GMES programme

Dimensions	
	160 mm x 145 mm x 56 mm
Mass	
	< 650 g
Temperature Range	
Operational	-30 °C...+65 °C
Non-operational	-40 °C...+75 °C
Power Consumption	
	≤ 200 mW per channel
Performance	
Field of View	128° [α -channel] 128° [β -channel]
α/β -channel accuracy	< 0.15° [3σ]
Redundancy	
	main and redundant channel
Data Output	
	36 analogue voltage signals, multiplexed for the 36 diodes
Input Voltage Supply	
	±(13...15 V) DC
Output Voltage Range	
	-5...+5 V DC, analogue signal
Detector Layout	
	2 redundant diodes arrays for 2 orthogonal axes α and β each 2 dark current diodes [redundant], 2 sun presence diodes [redundant]