

PRECISION PERFORMANCE SATELLITE SUN SENSOR

The SSOC-D60 Satellite Sun Sensor with digital interface is a low-cost navigational instrument used by spacecraft to detect and track the position of the sun for high accuracy pointing and attitude determination. This reliable ITAR-free solution is the perfect ADCS solution for nanosatellites, not only is it accurate but it is compact, lightweight, and requires low power consumption. More than 50 flight models of this 2-axis digital output sun-tracking sensor for SmallSats have been delivered in support of over 15 missions. The SSOC-D60 device measures the incident angle of the sun's rays in two orthogonal axes, leveraging the geometrical dimensions of the design to provide high sensitivity in a form factor perfect for small satellites. This solution features Sun Sensor on a Chip (SSOC) architecture, achieved through a

MEMS fabrication process, a design that enables a highly integrated sensing structure, providing accurate and reliable sun-tracking, pointing, and attitude determination. The digital SSOC-D60 includes an internal microprocessor that calculates and outputs the sunlight incident angles and their derivatives without external computation. Available digital interface options include UART, I2C, SPI or RS-422. Every sensor is calibrated, characterized, and includes a metal shield and cover glass over the optical eye to minimize aging in higher radiation environments.



RELIABLE

The unit includes MEMS technology from Solar MEMS, the space-grade electronic components have significant flight heritage. This reliable ITAR free solution is the perfect ADCS solution for nanosatellite, not only is it accurate but it is compact, lightweight and requires low power consumption.



ACCURATE

With $< 0.3^\circ$ accuracy for sun position determination and $< 0.05^\circ$ precision, this highly sensitive solution has been tried and tested on orbit on multiple missions.



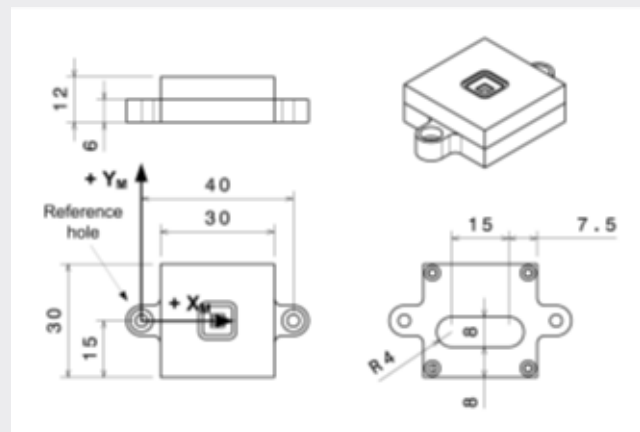
PERFORMANCE

This high-performance solution features SSOC architecture, achieved through a MEMS fabrication process, a design which enables a highly integrated sensing structure, providing accurate and reliable sun-tracking, pointing, and attitude determination.

TECHNICAL SPECIFICATIONS

Technical specifications:			
Parameter	SSOC-A60	Unit	Comments
Sensor type	2 axes	-	Orthogonal
Field of view (FOV)	$\pm 60^\circ$	$^\circ$	Angular size of the view cone
Accuracy	< 0.3	$^\circ$	3
Precision	< 0.05	$^\circ$	-
Average consumption	< 7.0	mA	70mA
Supply voltage	3.3/5	V	-
Output voltages	0-3.3 / 0-5	V	4 analog output photodiode voltages
Mass	35	g	-
Housing	6082		Aluminum, black anodizing

Qualification Data and Flight Heritage:	
Data	Value
Operating Temperature	-30 to +85 Celsius
Radiation	>100 kRad (gamma) 6 MeV 3000 kRad (protons)
Random vibration	14,1g @ 20-2000 Hz
Shock	3000 g @ 1-100 ms



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