

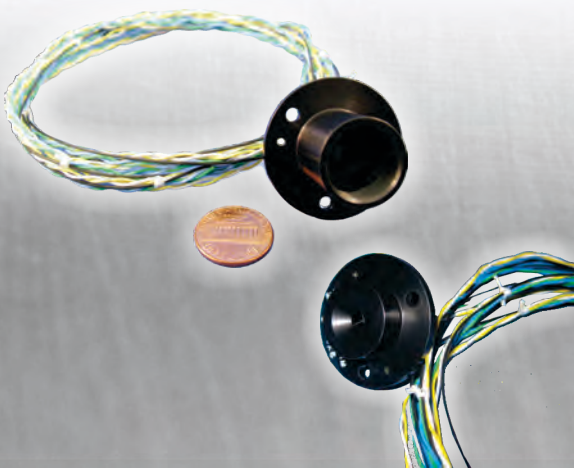
## Medium Sun Sensor

Comtech AeroAstro's Medium Sun Sensor is a low-cost, two-axis, medium-resolution sun sensor with over 20 years of flight heritage. The sun sensor, which draws no power (completely passive), is comprised of a small housing containing a set of four photodiodes. Calibration data is provided with the sensor, to be stored on the satellite computer for computing sun angle from four signal outputs. The sensor housing also serves as the aperture, reducing mechanical complexity and precisely masking solar light.

Our Medium Sun Sensor provides attitude determination in two axes. Two baffle sizes are available—a short barrel (~½") and a long barrel (1") providing 120° and 48° full-angle fields of view, respectively. Both solutions provide sun vector determination accurate to  $\pm 2^\circ$  over most of the field of view. The long barrel unit is adapted to high-glint and other reflective environments, providing a sharp analog cutoff response.

We also provide an array configuration of five Medium Sun Sensors integrated into a common mounting bracket. In this form, a sun vector may be resolved to within  $2^\circ$  inside of a  $150^\circ$  field of view (full angle) centered on the central sun sensor, and to within  $5^\circ$  inside of a  $180^\circ$  (full angle) field of view. Calibration data is also provided and assistance with sensor response mapping is included.

Our Medium Sun Sensors have flown successfully on several different spacecraft, including ALEXIS, HETE and TERRIERS.



Our Medium Sun Sensors were originally designed and built for the ALEXIS Space Program for the Los Alamos National Laboratory.

The original long barrel design provided the necessary response for early microsat programs. As mission designs demanded smaller and more flexible solutions with higher computing capabilities, the short barrel solution was devised to provide the same post-calibration accuracies. We continue to fine tune our calibration sensor response curves providing even better accuracies and performance without changes to hardware.

## Long Barrel

## Short Barrel

Flight Heritage:	ALEXIS, HETE and TERRIERS (partial list)	ALEXIS, HETE and TERRIERS (partial list)
Field of View:	48° full-angle circular field of view	120° full-angle circular field of view
Accuracy:	±2° sun vector knowledge	±2° sun vector knowledge – inner 80° (full angle) field of view, ±5 to 120° (full angle) field of view
Temperature Range:	-40 to +93°C	-40 to +93°C
Vibration Test Levels:	14.1g rms protoqual	14.1g rms protoqual
Shock Test Levels:	60g protoqual	60g protoqual
Interface:	Four 0 to 3.5 mA (typical) current sources on five flying leads: 50" (1.27m) in length, M22759 / 33-26, 26 AWG wire	Four 0 to 3.5 mA (typical) current sources on five flying leads: 50" (1.27m) in length, M22759 / 33-26, 26 AWG wire
Mounting:	Three #4 through holes, 120° apart on a 1.062" (2.70 cm) diameter pattern with two 0.064" diameter alignment holes	Three #4 through holes, 120° apart on a 1.062" (2.70 cm) diameter pattern with two 0.064" diameter alignment holes
Power:	None required	None required
Size:	Housing diameter: 0.75" (1.91 cm) Flange diameter: 1.375" (3.49 cm) Sensor height: 0.957" (2.43 cm)	Housing diameter: 0.75" (1.91 cm) Flange diameter: 1.375" (3.49 cm) Sensor height: 0.407" (1.03 cm)
Volume:	0.957" (2.43 cm) diameter × 1.375" (3.49 cm) height	0.957" (2.43 cm) diameter × 1.375" (3.49 cm) height
Mass:	0.12 lbs (54g) with 1.27 cm flying leads	0.08 lbs (36g) with 1.27 cm flying leads



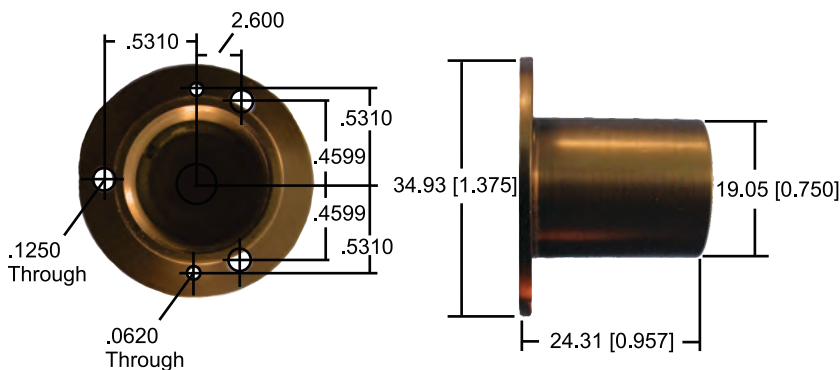
Short Barrel



Long Barrel



Accuracy ±2° Over a 150° Field of View, ±5° Over a 180° Field of View Full Angle



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