

GUIDE

AQUILA SUN SENSORS

The Sun Sensor product line, known as AQUILA, provides reliable and accurate sun-angle measurements for spacecraft attitude, determination and control. Designed for high-reliability space applications, these sensors are suitable for both primary and safe-mode attitude sensing. With over 1000+ units delivered and an extensive in-orbit heritage exceeding five years in Low Earth Orbit (LEO), the NSS Sun Sensors are baselined on multiple satellite constellations. Their robust design, ultra-compact form factor, low power consumption, and wide field of view make them a preferred choice for both commercial and institutional missions. This datasheet outlines the functional, physical, and environmental specifications of the AQUILA series, including the AQUILA-A05 and AQUILA-H02 models.

1,000+ **SUN SENSORS DELIVERED**
260+ **UNITS IN ORBIT**
OPERATIONAL SINCE **2014**
UTILIZED ON **5+ CONSTELLATIONS**
5 YEARS **OF LIFE IN-ORBIT**



QUALIFICATIONS

APPLICATION

The Aquila is TRL 9 with extensive in-orbit heritage. The Aquila Sun Sensor has demonstrated in orbit lifetimes of >5 years in LEO and, due to its robust nature, has become a preferred choice for constellation primes. To date, >200 Aquila units have been delivered globally. Currently, the NSS Sun Sensor is baselined on 5 constellations.

- ✦ Orbit determination and maneuvering
- ✦ Precise time stamping and synchronization

FUNCTIONAL	AQUILA-A05 (NCSS-SA05)	AQUILA-H02
Field of view	≤114°	140°
Update rate	>10 Hz (limited by customer OBC)	≤5 Hz
Accuracy	≤ 0.5 Average	≤ 0.2 RMS
PHYSICAL	AQUILA-A05 (NCSS-SA05)	AQUILA-H02
Dimensions	33 mm x 11 mm x 6 mm	34 mm x 40 mm x 20 mm
Current Consumption	<10mA @ 5V	Idle: <3mA [15mW], bootloader mode <20mA [80mW], application mode Active: <40mA [200mW]
Mass	< 5 g	< 37 g
ENVIRONMENTAL	AQUILA-A05 (NCSS-SA05)	AQUILA-H02
Thermal (operational)	-20 °C to +60 °C	-25 °C to +70 °C
Mechanical Tests (qualification)	14.1 g _{RMS} (random), 26.25 g (sine)	34.93 g _{RMS} (random), 26.25 g (sine), 2000 g (shock)
Radiation (TID) (qualification)	10 kRAD (component Level)	10 kRAD (component Level)
INTERFACES	AQUILA-A05 (NCSS-SA05)	AQUILA-H02
Power supply	5 V _{DC}	+5 V _{DC} to +36 V _{DC} (5 V nominal)
Data	5 analogue channels	RS-485 / RS-422
Connector	9-way female Nano-D	9-way female Micro-D
Mechanical	3 x M2 threaded Holes	4 x M2.5 Socket Head Cap

ACCEPTANCE TESTING: All FM parts undergo random vibration (10 GRMS) as well as thermal cycling (four-cycle ambient pressure) to five degrees beyond operational thermal specifications. However, NewSpace can perform additional environmental testing if required by a client.

CONFIGURATION MANAGEMENT: Specifications are subject to change. Please refer to the latest version