

Highly-Integrated Broadband Imaging Spectrometer

The Highly Integrated Broadband Imaging Spectrometer (HIBRIS) provides simultaneous global thermal characterization and detailed imagery in the near infrared bands. The HIBRIS design combines a cooled hyperspectral HgCdTe detector with a microbolometer. The purpose of HIBRIS is to take detailed hyperspectral surveys in the near-infrared range, and contextualize them by placing them in a global thermal infrared map. This makes HIBRIS a suitable instrument for earth observation and planetary surveys and characterization from space.

HIBRIS combines the following technologies into one instrument:

Near Infrared Hyperspectral Imager

The HSI consists of a cooled HgCdTe detector coupled with a Linear Variable Filter Array.

Stirling Cycle Micro-cooler

The HSI is cooled to 80 K using a micro-cooler that provides 400 mW of cooling power. The micro-cooler is positioned to eliminate unwanted vibrations.

Sapphire Beam Splitter

HIBRIS is able to operate both a near and thermal IR detector by implementing a sapphire beam splitter at the branch in the shared imaging optics.

Rotating Input Mirror

The motor-actuated mirror can calibrate the micro-bolometer on the fly from up to two sources using a space qualified low power motor.

Using cosine's Highly Integrated Payload Suite (HIPS) technology for integration and miniaturisation, the volume, mass and power requirements are significantly reduced.

HIBRIS	
Total Mass	7.1 kg
Size (LxWxH)	22x26x21 cm
Avg. Power consumption.	8 W
Near Infrared Hyperspectral Imager (HSI)	
Linear Variable Filter Ranges	700 to 1400 nm
	1400 to 2800 nm
	2800 to 5200 nm
Spectral Resolution	1% of Central λ
Spatial Resolution (at 600 km AGL)	50 m
FOV	14.5°
Thermal Imager (TI)	
Spectral Range	8 to 14 μm
Spectral Resolution	1.5 μm
Spatial Resolution (at 600 km AGL)	715 m
FOV	6.9°



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