



VISIBLE AND INFRARED THERMAL IMAGING SPECTROMETER

VIRTIS is an hyperspectral imaging spectrometer in the visible and mid-infrared regions for remote sensing in deep space missions.

VIRTIS has been selected by the European Space Agency (ESA) for two missions:

- It is installed aboard Rosetta, the mission to comet 67P/ Churyumov-Gerasimenko, launched in February 2004
- It on board of Venus Express, the mission launched on November 2005 for studying Venus atmosphere and its interactions with the planet surface
- VIR-MS, a VIRTIS-like instrument, has been selected by the Italian Space Agency
- VIR-MS is flying as orbiter payload for Dawn, the ninth NASA Discovery Mission
 - The Dawn Mission's primary objective is to examine the geophysical and geochemical properties of two complementary protoplanets in the main asteroid belt. Ceres and Vesta

The VIRTIS instrument is composed by two optical heads, VIRTIS-M (mapper) and VIRTIS-H (high spectral resolution), both passively cooled to 130K to limit background radiation.

VIRTIS-M includes a visible and a single IR (infrared) channel using the same all-reflective optical system, while VIRTIS-F has a single IR channel.

The VIR-MS instrument includes a visible and a single infrared (IR) channel.

All VIRTIS instruments are using IR detectors cooled to 70K by means of miniature Stirling cycle cryocoolers.

TECHNICAL CHARACTERISTICS

GENERAL

Application	Asteroid, comets and planets observation	
Satellite	Rosetta orbiter VEY orbiter Dawn orbiter	
Launch date	Rosetta	February 2004
	Vex	November 2005
	Dawn	September 2006
Configuration	All reflective telescope with Offner spectrometer with scan mirror	
Spectral band	VIRTIS-M	250nm to 5000nm
	VIRTIS-H	2000nm to 5000nm
	VIR-MS	250nm to 5000nm
Spectral resolution	VIRTIS-M	3nm (visible), 15nm (IR)
	VIRTIS-H	2nm to 10nm
	VIR-MS	3nm (visible), 15nm (IR)
Spatial resolution (IFOV)	0.375 mrad	
Sensitivity	NE D p2 4* 10 ⁻⁴ @3.25 AU	
Calibration system	In flight spectral and radiometric	
Weight	<27Kg	
Main bus voltage	22V to 35V	
Power consumption	VIRTIS	< 36W
	VIR-MS	45W to 60W (inc. ME)
Data rate interface	VIRTIS	80kbps
	VIR-MS	155kbps

MAIN ELECTRONICS (ONLY FOR VIR-MS)

Mass memory	6Gbit
SIC interface	1553

