



VIRTIS VISIBLE & 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 ESA for two missions:

- it is flying on board of Rosetta, the mission to comet 67P/Churyumov-Gerasimenko; launched in February 2004, Rosetta will meet the comet around may 2014
- it is flying 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 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 130 K to limit background radiation.

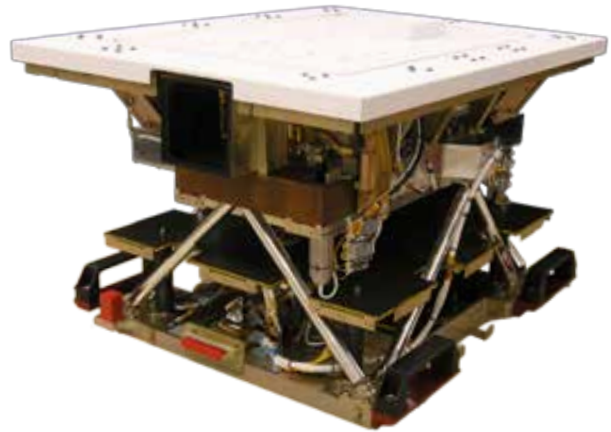
VIRTIS-M includes a visible and a single IR (infrared) channel using the same all-reflective optical system, while VIRTIS-H has a single IR channel.

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

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

TECHNICAL CHARACTERISTICS

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: 250 - 5000nm VIRTIS-H: 2000 - 5000nm VIR-MS: 250 - 5000nm
Spectral resolution	VIRTIS-M: 3nm VIS: 15nm IR VIRTIS-H: 2 - 10nm VIR-MS: 3 nm VIS: 15nm IR
Spatial resolution (IFOV)	0.375 mrad
Sensitivity	NE D p ² 4* 10 ⁻⁴ @3.25 AU
Calibration system	In flight spectral and radiometric
Weight	<27Kg
Main bus voltage	22 - 35V
Power consumption	VIRTIS: < 36W VIR-MS: 45 - 60W (inc. ME)
Data rate interface	VIRTIS: 80kbps VIR-MS: 155kbps
Main electronics (only for VIR-MS)	
Mass memory	6Gbit
SiC interface	1553



For more information please email space@selex-es.com

Selex ES S.p.A. - A Finmeccanica Company

Via delle Officine Galileo, 1 - 50013 Campi Bisenzio (FI) - Italy - Tel: +39 055 89501 - Fax: +39 055 8950600

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