

aa readme.txt

disambiguate Mark-up types

PDS\_VERSION\_ID = PDS3  
 RECORD\_TYPE = STREAM  
 DATA\_SET\_ID = "R0-C-VIRTIS-2-PRL-MTP006-V1.0"  
 OBJECT = TEXT  
 PUBLICATION\_DATE = 2012-01-24  
 NOTE = "General overview of the ROSETTA  
 VIRTIS PRL (MTP006)) data set"  
 END\_OBJECT = TEXT  
 END

VIRTIS STANDARD DATA ARCHIVE

1. Overview

This volume contains VIRTIS Standard Data Products from observations acquired by the Visual Infrared Thermal Imaging Spectrometer (VIRTIS) on Rosetta during the Prelanding phase of the mission.

More details can be found in DATASET.CAT, TARGET.CAT.

The VIRTIS (Visible Infra Red Thermal Imaging Spectrometer) instrument combines a double capability: (1) high-resolution visible and infrared imaging in the 0.25-5 micron range at moderate spectral resolution (VIRTIS-M channel) and (2) high-resolution spectroscopy in the 2-5 micron

range (VIRTIS-H channel). The two channels will observe the same comet areas in combined modes to take full advantage of their complementarities.

VIRTIS-M (named -M in the following) is characterized by a single optical

head consisting of a Shafer telescope combined with an Offner imaging spectrometer and by two two-dimensional FPAs: the VIS (0.25-1 micron) and IR (1-5 micron).

VIRTIS-H (-H) is a high-resolution infrared cross-dispersed spectrometer using a prism and a grating. The 2-5 micron

spectrum is dispersed in 9 orders on a focal-plane detector array.

There is only one type of product for each channel, raw records (EDR), stored as multi-spectral data QUBES with attached labels. Measurements are provided as DN per spectral channel in the Qube objects, with housekeeping parameters in the sideplanes. Data from the three focal planes are stored in separate files. The logical object Qube is composed

of a data area and an attached label. The data area is composed of a 3-dimension matrix containing science measurements (the core) and a sideplane containing the housekeepings.

Table 2.1 "ro\_virtis\_eaich.pdf" lists 8 orders, w/ overlapping  $\lambda$ 's for successive orders.

Calibration files and all the relevant information on the calibration process is also provided in the data set.

The VIRTIS Data directory is split into three subdirectories, one for each focal plane:

/data/VIRTIS\_M\_VIS: contains VIRTIS-M VIS channel cubes

/data/VIRTIS\_M\_IR: contains VIRTIS-M IR channel cubes

/data/VIRTIS\_H: contains VIRTIS-H channel cubes

Data products archived in this volume are copies of files maintained and released by the VIRTIS team. Supporting documentation and labels conform to the Planetary Data System (PDS) Standards Reference, Version

3.6, Jet Propulsion Laboratory (JPL) document JPL D-7669 (8/03/2003) and the Planetary Science Data Dictionary, JPL document JPL D-7116, (7/27/2001).

## 2. File Formats

This section provides a brief description of the files and data objects available on the VIRTIS archive volumes: text files, PDF files, and PDS objects such as LABELs, QUBEs, and TABLEs. A complete description of each file format is available in the DOCUMENT/RO\_VIRTIS\_EAICD on each archive volume.

All text and detached PDS label files are stream format files, with a carriage return (ASCII 13) and a line feed character (ASCII 10) at the end of the record. This allows the files to be read by MS-DOS/Windows, Unix, and VMS operating systems.

Documents that contain formatting and figures that cannot be rendered as ASCII text are provided as PDF files. The PDF (Portable Document Format) file is a proprietary format of Adobe Systems Incorporated that can be viewed using the free Acrobat Reader software.

A PDS label, whether embedded or detached from its associated file, provides descriptive information about the associated file. All PDS labels in the VIRTIS Standard Data Archive conform to PDS standards [Planetary Science Data Dictionary, 2005; PDS Standards Reference, 2003].

For examples of the PDS labels used with each type of data product, see the DOCUMENT/RO\_VIRTIS\_EAICD text on each archive volume. In general,

the

PDS label is an object-oriented structure consisting of sets of 'keyword = value' declarations; the object to which the label refers is denoted by

a statement of the form:

```
^object = location
```

in which the carat character (^, also called a pointer in this context) indicates where to find the object. In an embedded label, the location is an integer representing the starting record number of the object (the first record in the file is record 1). In a detached label, the location denotes the name of the file containing the object, along with the starting record or byte number, if there is more than one object in the file. For example:

```
^HEADER = ("F01.IMG",1)
^TABLE = ("T01.TAB",1025 <BYTES>)
```

indicates that the TABLE object begins at byte 1025 of the file T01.TAB, in the same directory as the detached label file. Below is a list of the possible formats for the ^object definition.

```
^object = n
^object = n<BYTES>
^object = "filename.ext"
^object = ("filename.ext",n)
^object = ("[dirlist]filename.ext",n)
^object = ("filename.ext",n<BYTES>)
^object = ("[dirlist]filename.ext",n<BYTES>)
```

where n is the starting record or byte number of the object, counting from the beginning of the file (record 1, byte 1), <BYTES> indicates that the number given is in units of bytes, filename is the up to 8 alphanumeric upper-case file name, ext is the 3 character upper-case file extension, and dirlist is a period-delimited path-list of parent directories, in upper case, that specifies the object file directory (used only when the object is not in the same directory as the label file). The list begins at the directory level below the root

directory.

'[dirlist]' may be omitted when the object being described is located either in the same directory as the detached label or in a subdirectory named LABEL that is located in a higher level of the directory tree (typically root itself).

VIRTIS raw records are stored in PDS QUBE objects as defined in the PDS Standards Reference [2003]. A QUBE is a three-dimensional array of binary data values in two spatial dimensions (samples and lines) and one spectral dimension (bands). VIRTIS QUBEs include always an attached PDS label and SUFFIX data planes.

### 3. Applicable Software

VIRTIS qubes can be read and managed with an IDL package written and maintained by S. Erard that can be found in the directory DOCUMENT. In the same directory ~~it~~ can be found a manual explaining how to use this package (VIRTIS\_PDS\_IDL\_SW\_MANUAL).

### 4. Volume Contents

Files on the VIRTIS archive volume are organized into a series of subdirectories below the top-level directory. See the xxxxINFO.TXT files in each directory for specific information on the files in the directory.

The following table shows the generalized structure and contents of the VIRTIS archive volumes. In this table, lowercase s's and n's used as placeholders for spacecraft clock reset number and integer part of acquisition spacecraft clock start count.

Top-level directory

	-----	AAREADME.TXT
	-----	VOLDESC.CAT
	-----	ERRATA.TXT
	-----	CALIB