

## ProSpecTIR VS

### VNIR – SWIR Hyperspectral Instrument

SpecTIR presents the **ProSpecTIR-VS** as part of our full line of pushbroom-imaging spectral instruments for remote sensing. The rugged high-performance instruments have superior spectral imaging capability and are built with components for maximum performance and utility - great performing dispersive optics, high dynamic range imaging devices, an integrated GPS/INS sensor, a durable housing, all integrated with flight operations and recording hardware.

The **ProSpecTIR-VS** instrument has dual sensors individually covering visible/near-infrared (VNIR) wavelengths of 400-1000nm and short-wave infrared (SWIR) in the 1000-2500nm wavelength range. The dual sensors are co-boresighted and include all hardware, acquisition and processing software for flight operations and spectral mapping with a choice of navigation packages.

The **ProSpecTIR-VS** can be installed in almost any light aircraft with aerial camera capability. The imagery is navigated with the integrated DGPS/IMU and, when processed with the included Cali-Geo software, provides geo-referenced radiance and reflectance files readily imported into ENVI or other spectral analysis programs.



Mounted sensor system dimensions  
25 x 19 x 16 inches (HWD)

#### Total Turnkey Remote Sensing System

All ProSpecTIR systems provide an integrated turnkey solution, ready for installation and operation.

The VS system consists of:

- VNIR + SWIR hyperspectral sensors with all cables and connections
- Real time acquisition computer with user-friendly flight operations software
- GPS/INS navigation and flight solution
- Power supplies
- Caligeo post-processing software



The ProSpecTIR dual system is ideal for geological applications. Sample data of Buddingtonite Outcrops, Cuprite, NV USA

## ProSpecTIR VS Instrument

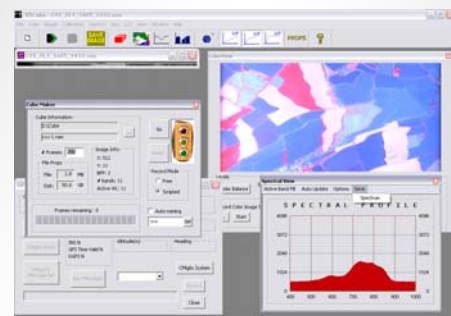
TYPICAL SPECIFICATIONS								
Spectral range	VNIR 400-970 nm				SWIR 970-2500 nm			
	Total 400-2500 nm							
Spectral resolution	VNIR 2.9 nm				SWIR 8.5 nm			
Spectral binning configurations	VNIR	none	2x	4x	SWIR	none	2x	4x
# spectral bands		244	122	60		254	127	63
Spectral sampling/ band (nm)		2.3	4.6	9.2		5.8	11.6	23.2
TERRAIN COVERAGE & FIELDS OF VIEW								
# spatial pixels	320							
FOV	24 degrees							
IFOV	1m GSD @ 2500'							
	0.075 degrees (1.3mrad)							
Swath width	1km @ 7600'							
	0.43 x altitude							
OPERATIONAL CHARACTERISTICS								
Camera	VNIR	Si CCD 12 bits			SWIR	MCT 14 bits		
SNR	350:1 or 500:1 (peak)				800:1 (peak)			
Integration time	adjustable at each sensor for optimum exposure levels							
Image rate	Up to 100 images/s							
Shutter	Electromechanical shutter for dark background registration in both channels, user controllable by software.							

### DESCRIPTION OF OPERATIONS AND DATA COLLECTION

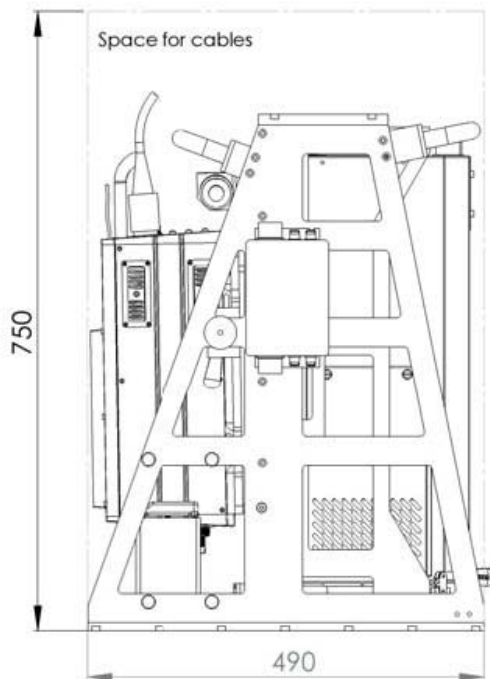
The VNIR and SWIR data are combined and saved in a single image covering the spectral range of 400 to 2500 nm.

A single flight operations computer is used for data acquisition, collecting both the VNIR and SWIR data coincident swath width of 320 pixels.

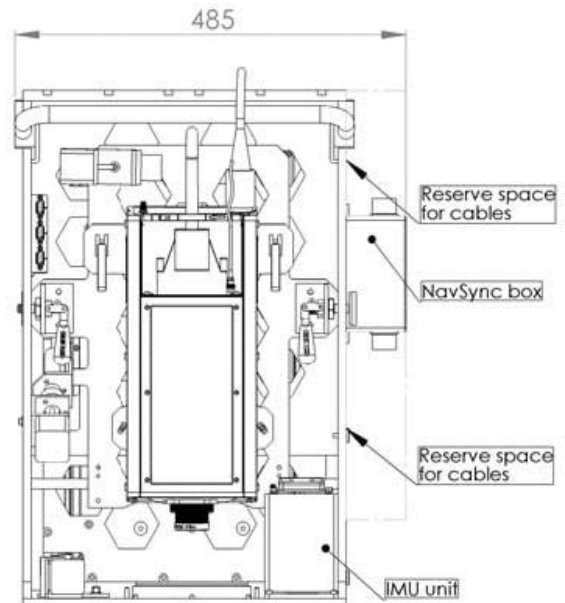
RSCube Remote Sensing Software provides images and information to the flight operator, controlling flight experiments and data recording.



Images from both the VNIR and SWIR are acquired synchronously with each other and time stamped and tagged with GPS information and line-of-sight information from the Inertial Navigation System.



Sensor head assembly, side view



Sensor head assembly, back view