NEW PRODUCT

SeaWave® IR Spectrometer

Small Foot Print High-Performance IR Spectrometer

Key Features

- Very compact and rugged design based on linear diode array technology
- Wide spectral response range (900 – 1700 nm)
- High resolution (1 – 12 nm) for specific slits and detectors
- High readout speed (>1000 spectra/second)
- Multiple configurations to suit customised spectral ranges and resolutions
- Both, fiber coupled and free-space entrance port
- Triggered by software or via electronic trigger input
- Robust and user-friendly control software package and programming platform
- No moving parts and customisable for OEM applications

Applications

- Pharmaceutical and food industry analysers
- Monitoring of petrochemical manufacturing processes
- Agricultural product quantification
- Medical non-invasive assessments
- Photovoltaic material quality control
- Chemical reaction monitoring
- Laser characterization

RADIANTIS

The SeaWave® IR spectrometer from Radiantis® offers efficient compactness and readout speed with very high performance across the IR range (900 – 1700 nm). Based on robust and efficient Hamamatsu uncooled InGaAs linear image sensors, it provides a cost-effective, rugged, lightweight and USB2-powered solution for many industrial and scientific applications.

The Radiantis® SeaWave® incorporates both, SMA 905 optical fiber connector and free-space optical coupling into the device. The trade-off between slit/fiber size and resolution leads to a best of 3 nm resolution for the complete bandwidth. The SeaWave® can also be configured with different gratings for improved resolution and reduced spectral ranges. Two threaded holes for standard optical posts are provided in the base of the product.

With a 16-bit DAC capable of high speed acquisition and a USB 2.0 Hi-speed connection to the PC, it offers fast readout speeds (>1000 spectra/second) which can be further enhanced on-request for higher-demanding applications. It is also powered by the USB connection so no external power supply is required, making it ideal for applications where portability is critical.

A user-friendly software package and software drivers are included with the system. The drivers use a simple but effective software architecture for improved ease of use, robustness and speed of integration into OEM applications. The acquisition can be started either directly via the software interface which provides millisecond-level timing accuracy, or to the sub-microsecond level by using the electronic trigger.

The SeaWave® is an ideal spectrometer platform for many applications, including the pharmaceutical, petrochemical, food and beverage industries where a compact and robust spectrometer with high speed and resolution is required. It can also be used for laser characterisation purposes in the scientific sector.

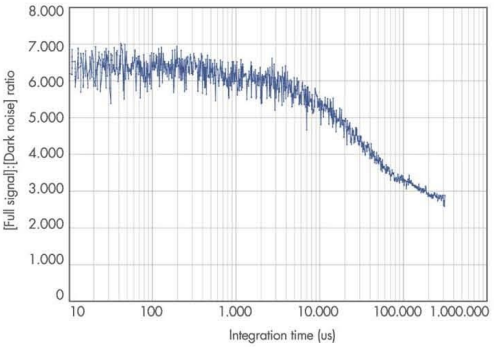
Specifications[1]

Optical Configuration	
Grating[2]	300 lines/mm, 900 – 1700 nm, blaze wavelength 1 µm (default)
Entrance aperture	10/25/50/100/200 µm slit or no slit (default = 25 µm)
Input	Fiber SMA/FCPC and free-space
Longpass filter	Optional
Collimating and focusing mirrors	Protected Aluminium (default) Silver or Gold (optional)
Detector	Hamamatsu InGaAs linear array (256/512 pixels)
Numerical aperture	0.25
Output	
Spectral response range	900 – 1700 nm (default). Alternative spectral ranges (optional)
Spectral resolution (FWHM)[3] for complete spectral response range	512 pixels (3 nm – 12 nm) 256 pixels (6nm – 12 nm) Slit and fiber size dependent
Signal/Noise ratio at full signal	4500:1 at 20 ms / 3000:1 at 100 ms (default) Low noise ratio (optional) (SeaWave® 256p) 1000:1 at 20 ms (SeaWave® 512p)
Dark noise	15 counts (typical at 20 ms) (SeaWave® 256p) 60 counts (typical at 20 ms) (SeaWave® 512p)
Dynamic range	6K:1 (default) Improved dynamic range (optional)
Integration time	6 µs to 1s
Readout speed	>1000 spectra/second
Dynamic range	16 bit (4 MHz A/D converter)
Software	User interface and driver software included as standard for Linux, Windows XP and higher.
Trigger modes	Software triggered (1 µs timing accuracy) External TTL trigger (1 µs timing accuracy)
Noise equivalent power	<3 picoJoule/pixel (SeaWave® 256p) <12 picoJoule/pixel (SeaWave® 512p)
Electronics	
Power	USB 2.0 bus powered
Data transfer speed	Full scan to memory every 1 ms with USB 2.0 Hi-speed port
Inputs / Outputs	External trigger input
Gated delay	Yes
Connector	SMA
Interface	USB 2.0 Hi-speed
Driver software	Windows and Linux
Cooling	Uncooled
Dimensions (W x L x H)	70,5 x 104 x 42 mm (2.7 x 4.1 x 1.65 inch)

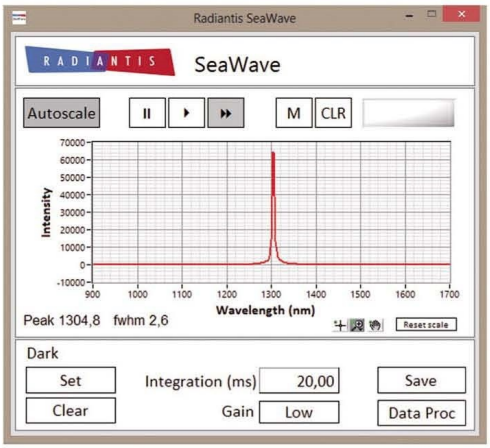
Footnotes

[1] Specifications are subject to change without notice
[2] Other grating options for different spectral ranges are available upon request
[3] Higher resolution available for reduced spectral ranges (grating dependent)

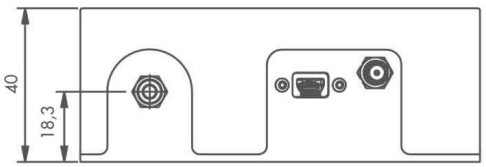
Signal to Noise Ratio versus Integration Time for SeaWave® 256pixel models

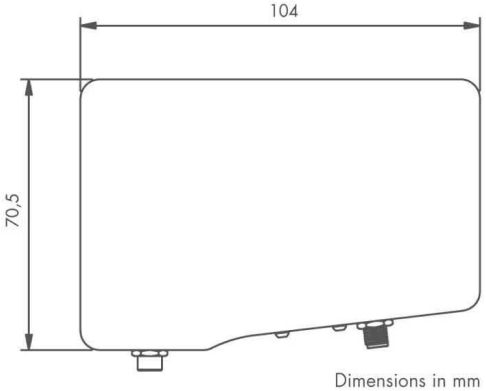


SeaWave® IR Software User-Interface



SeaWave® Dimensions





Dimensions in mm