

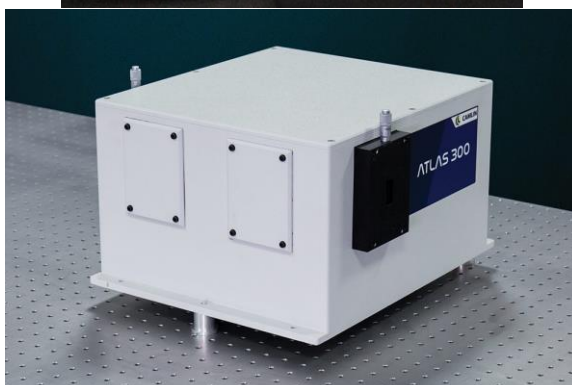
An Affordable Spectroscopy Solution for Professional Performance

Jireh Scientific Imaging introduces:

Navima™ Spectroscopy System

KEY FEATURES

- High precision wavelength accuracy and repeatability
- Choice of slit and port configuration on both inputs and outputs
- Interchangeable grating turret on precision kinematic mount
- Extensive range of high-quality gratings
- Full range of accessories available
 - Motorized Slits
 - Shutters
 - Filter Wheels
 - Tunable Light Source
 - ETC.
- Industry Proven 1024x256 pixel spectroscopy array
- Air Cooled, 70°C below Ambient Temperature
- USB 2.0 and Ethernet 10/100 for robust communication and lab commonality
- Software Development Kit (SDK) Ease of control integration into complex setups: Matlab, Labview, Visual Basic or C/C+



The JSI *Navima*™ Series of monochromators are highly customizable allowing choice of spectral range and resolution appropriate for the application. These systems are available with focal lengths of 150mm, 300mm, 500mm and 750mm. At the shorter focal lengths, they provide a cost-effective tool for low to medium resolution spectral analysis or tuneable light sources, whereas the longer focal length instruments provide the resolution needed to robustly conduct high precision measurements in areas such as photoluminescence and laser fluorescence. Our multi grating turret design can hold up to three gratings and offers unparalleled repeatability and reproducibility in any spectral position for selecting a particular wavelength of light. Operating ranges are from the ultraviolet through to the long wave

Jireh Scientific Imaging has teamed up with *Camlin Photonics* to bring an Affordable Spectroscopy Solutions for Professional Performance! Introducing *Navima*™ Series Spectroscopy system. We have combined our innovating, high performance Zion Spectroscopy Camera to Camlin Photonics' high precision, wavelength accuracy Monochromators and Spectrographs to provide researchers the best budget friendly spectroscopy solution!

The JSI *Navima*™ Series of Czerny-Turner monochromators provide a customizable range of high-quality direct drive scanning monochromator systems. With focal lengths from 150mm to 750mm and multi-grating turret design features we can provide the appropriate system for low, medium and high-resolution spectroscopy applications.

infrared range and the instrument can be further customized using gold-coated optics for enhanced optical efficiency in the infrared range.

The monochromator is the backbone of many spectroscopy instruments, not least our tunable light source and fluorimeter systems. Our mechanical design allows for straightforward alignment of the monochromator with other spectroscopy components to which it may be coupled. We align, calibrate and test every monochromator to ensure it meets our specification. Our robust design, both product and packaging, ensures that the instrument our customer receives, has the same performance as the instrument shipped from our factory.

Spectrograph System Solutions from UV to NIR

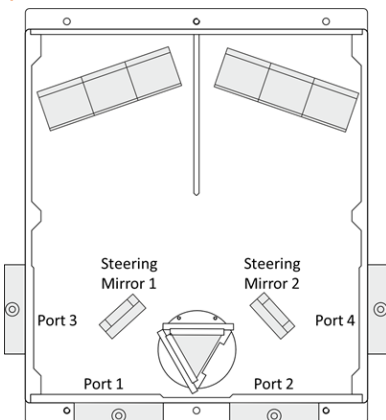


Slits & CCD Array Ports

Navima™ Systems are normally supplied with micrometer adjusted bi-lateral precision knife-edge slits. These can be upgraded to be motorized and controlled from our software. Fixed slits at 0.5, 1, 2, 3 and 5mm are also available. We can also provide precision focus and rotation alignment array ports

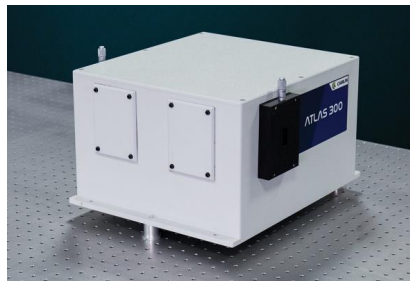
Input & Output Ports

Navima™ Spectroscopy Systems have a choice of two input ports and two output ports. Where more than one input or output is required, a software-controlled selection of the input or output port.



(SPECS ABOVE ARE AVERAGE/TYPICAL AND SUBJECT TO CHANGE)

****Cooling of 95 degrees below ambient with 10°C liquid chiller and with Zion GXP Deep Cooling option****



Zion CCD Options

CCD 30-11 1024x256 26x26 μm

Front Illuminated

Standard

Open Electrode

Deep Depletion

Back Illuminated

Standard

UV Coating

Broadband Coating

Deep Depletion

Deep Depletion IR Coating

Also Available

S10140 2068x512

Front & Back Illuminated

Camera Optional Cooling
(Below Ambient Temp)

Typical Air Cooling 70°C

Typical Liquid Chilled Cooling 95°C**

Monochromators

150mm, 300mm, 500mm and 750mm focal length Czerny-Turner monochromators to balance your requirements for resolution, light gathering capacity and of course budget.

System Read Out Noise

Typical @ 500KHz 13.5 e⁻

Optional 100KHz 8.0 e⁻

Data Interface

USB 2.0



Shutters

Shutters can be fitted at any input or output port. We have a choice of a 300ms solenoid shutter or a high-speed shutter operating with a speed of less than 10ms

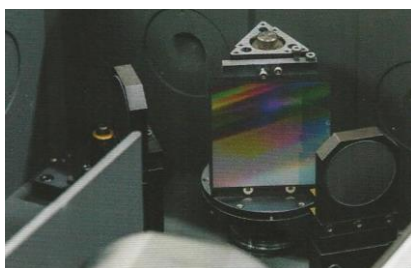
CCD Performance

Spectrometric Well Capacity	Single Pixel Binned	500 Ke- 1000 Ke-
Dark Current	FI @ -50°C BI @ -50°C OE @ -50°C	0.015 e ⁻ /pix/sec 0.08 e ⁻ /pix/sec 0.015 e ⁻ /pix/sec
Vertical Shift Rate	OE (Full Vert Bin)	65 μsec

Navima™ Spectroscopy System Modularity is Key

Modularity

The *Navima™* Spectroscopy System has been designed to be wholly modular. Choose focal length, one or more input and output ports to use, diffraction gratings, slits (fixed, manual or motorized), shutters, CCD array ports, filter wheels, filters, fiber optics, liquid light guide adaptors, gold coated optics etc. We maximized the potential benefits of the system! Furthermore, a fully integrated software, *ilustra™*, includes all necessary functionality to drive the monochromators, cameras, and accessories, ensuring a truly 'plug and play' approach.

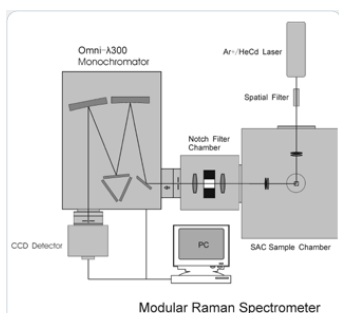
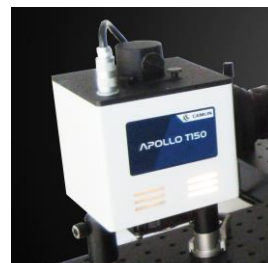


Diffraction Gratings

Our 150mm has a dual grating turret as standard while the 300mm, 500mm and 750 mm models have triple grating turrets. We have a wide range of diffraction gratings which we normally supply, but others are available upon request including holographic gratings.

Light Sources & Tuneable Light Sources

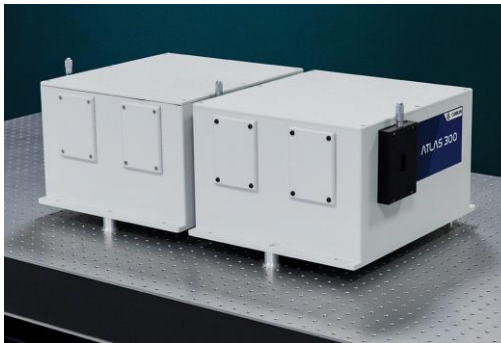
Our range of professional high-performance light sources include continuum sources such as arc and incandescent lamps that covers a wide spectral range from UV to IR. We offer a highly customizable tuneable light source that will meet your power and resolution requirements.



Navima™ Spectroscopy System is Fully Customizable

Double & Triple Systems

The innovative and customizable design of our monochromators allows them to be easily configured in double and triple monochromator configurations to dramatically reduce stray light or to further improve the spectral resolution for the most challenging of applications. Our modular design ensures we can supply such systems more cost effectively than many of our competitors.



In a triple monochromator configuration, three monochromators can be joined in series providing not only additional stray light rejection but also enhanced resolution. Often used in high-grade Raman measurements, such as ultraviolet-resonance Raman spectroscopy, our triple monochromators are an ideal high-performance solution.

Additive or subtractive dispersion modes

The double monochromators can be configured to operate in either additive or subtractive dispersion modes.

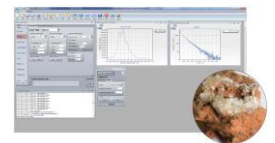
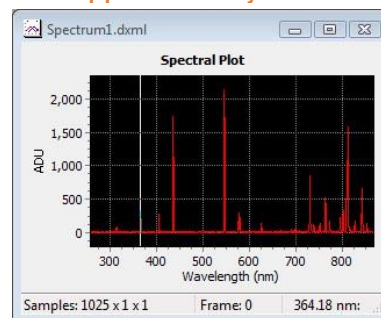
Additive Dispersion Mode:

the light dispersed by the first monochromator is further dispersed by the second monochromator

Subtractive Dispersion Mode:

in subtractive dispersion, the spectral dispersion at the output is effectively the same as a single monochromator

Both modes dramatically improve stray-light performance with the stray light ratio increasing from approximately 1:105 to 1:1010



ilustra™ Capture & Analysis Software

Our innovative, user friendly *ilustra*™ software allows easy control of our Zion Cameras, all monochromator functions and features including control of many of our accessories.

Key Features Includes:

- Wavelength selection
- Grating switch
- Scanning parameters such as start and delay timer, etc.
- Order sorting filter control
- Motorized entrance and exit slits
- Input and output port selection via motorized steering mirrors
- Shutter control