

## Fiber Spectrometer

Our spectrometer RI- LS Series developed by the Research India Innovation group which apply to the field of Material science, food safety, environmental sciences and more.

Spectrometer with 3648 pixels CCD linear array detector has high resolution up to 0.03 nm (FWHM). The system includes incident slit, collimating mirror, dispersion element (grating), focusing optical system and detector. Light is collected through the optical fiber into the spectrometer slit then the spectral information can be read out by the software.

Our Thermoelectric cooling is available  
70% increased S/N at long exposure  
CCD cooled down  $-40^{\circ}\text{C}$   
High Sensitivity for low light applications



Our products let you take the power of spectroscopy wherever you need to go.



Research and Science



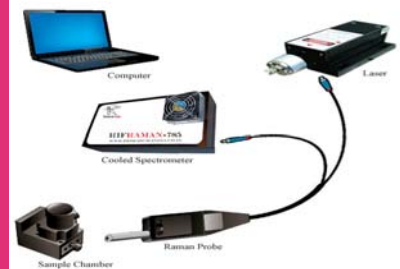
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Defense and Security



Biotechnology



RIFRAMAN - Fiber Optic Based Raman System, available version 532 & 785 nm



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## Features

Design	:	Symmetrical Czerny Turner
Detector	:	Toshiba TCD1304 linear array
Detector range	:	200 – 1100 nm
Pixels	:	3648
Sensitivity	:	≥ 1,20,000 counts/μW per ms integration time
TEC Cooled	:	-40 °C (Optional)
Filter	:	Diffraction Order Sorting Filter
Fiber optic connector	:	0.39 NA/0.22 NA, 600 μm Core SMA Connectors Multimode
Wavelength range	:	200- 1100 nm (Grating Dependent)
<b>Slit</b>	:	<b>Fixed Slit (10μm, 25 μm, 50 μm, 200 μm) or Variable 0-250 microns. Precision 10microns (-VS** Optional)</b>
Optical Resolution	:	0.03 – 8.4 nm
Signal-to-noise ratio	:	450: 1 Full Signal, 12000:1 (avg)
A/D Resolution	:	16 Bit
Onboard Memory	:	64 Spectra
Integration Time	:	10 μs – 60 secs
Stray light:	:	<0.05% at 600 nm; <0.10% at 435 nm
Data Transfer Rate	:	200 ms /100 ms (2points binding)
Power Consumption	:	100mA @ 5V from USB interface
Trigger Modes	:	3 modes – Optional
Operating System	:	Windows 10 /8 / 7 (32 & 64 Bit)
Software	:	RI Spectra, With Database Search Option & Manual Shift Calibration
Computer Interfaces:	:	USB 2.0, HID 2.0
Temperature:	:	-30 °C to +70 °C Storage & -10 °C to +50 °C Operation
Humidity	:	0%-90% non-condensing

- (1) Spectral range and spectral resolution can be customized
- (2) \*\* TE Cooled Spectrometer (-T40)
  - I. 70% increased S/N at long exposures
  - II. High Sensitivity for low light applications

## Variant available

- RIFS-LS Series (70 mm Focal Length)
- RIFS-HLS Series high resolution (200 mm input & output focal length), Wave length range: 300 – 1100 nm



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Desktop Vibration Isolation Module

## Software Features:

Instrument Control & Data Collection parameters are user-definable, such as Exposure time, dark correction, signal averaging, spectral smoothing, Automatic Saved Spectra. Graphics saved in .txt format and be opened in any Third-Party Software E.g. Origin, Excel and other data processing software.

Special features:

1. Save BMP & TXT
2. Save 380- 760nm normalized to intensity\*\*\*
3. Automatic Baseline correction
4. Gaussian Approximation
5. Calculate Spectral Energy Distribution\*\*\*
6. Calculate concentration in Absorbance Mode
7. Color space & Absolute Irradiation Measurements (W/cm<sup>2</sup>/nm)\*\*\*
8. Editable data collection parameters per channel, such as detector integration time, auto-dark correction, signal averaging and spectral smoothing.
9. Display data in transmittance, absorbance, Reflectance or relative irradiance mode
10. Mouse drag controls movement of a data cursor for instantaneous readout of wavelength- and Y-axis magnitude
11. Automatic save spectra periodically (save a spectrum every x seconds).
12. Manual Shift Calibration
13. Database Search Option (Library Purchase Separately) \*\*\*

\*\*\* Optional

## Characteristic

Probes can be connected externally

Simple, fast measurement and easy operation

Flexible and stable sampling, various forms in analyzing sample

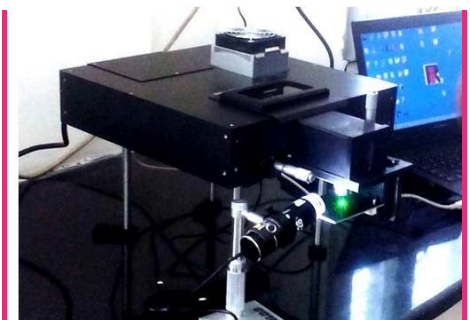


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RIRAMAN (upgrade mapping)  
Direct coupled optics. No optical  
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## Most Typical Spectral Range & Resolution (RIFS-H)

Spectral Range (nm)	Diffraction Grating (gr/mm)	Resolution with 25 um slit (nm)
600	300	0.8
320	600	0.4
130	1200	0.15
53	1800	0.06
40	2400	0.05
27	3600	0.03



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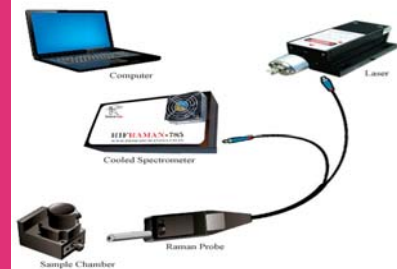
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RIFRAMAN - Fiber Optic Based Raman System, available version 532 & 785 nm

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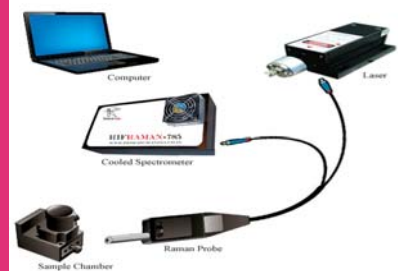
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## Features

Design	:	Czerny Turner
Detector	:	Toshiba TCD1304 linear array
Detector range	:	200 – 1100 nm
Pixels	:	3648
Sensitivity	:	130 photons/count at 400 nm 60 photons/count at 600 nm
TEC Cooled	:	-40 °C (Optional)
Filter	:	Diffraction Order Sorting Filter
Fiber optic connector	:	0.39 NA/0.22 NA, 600 µm Core SMA Connectors Multimode
Wavelength range	:	200- 1100 nm (Grating Dependent)
Slit	:	10 -200 µm
Optical Resolution	:	0.03 – 8.4 nm
Signal-to-noise ratio	:	450: 1 Full Signal, 12000:1 (avg)
A/D Resolution	:	16 Bit
Onboard Memory	:	64 Spectra
Dynamic range:	:	3.4 x 10 <sup>6</sup> (system); 1300:1 for single acquisition
Integration Time	:	1 ms – 60 sec
CCD Read out Time	:	14 ms
Stray light:	:	<0.05% at 600 nm; <0.10% at 435 nm
Data Transfer Rate	:	200 ms /100 ms (2points binding)
Power Consumption	:	100mA @ 5V from USB interface
Trigger Modes	:	3 modes – Optional
Operating System	:	Windows 10 /8 / 7 (32 & 64 Bit)
Software	:	RI Spectra, With Database Search Option & Manual Shift Calibration
Computer Interfaces:	:	USB 2.0, HID 2.0
Temperature:	:	-30 °C to +70 °C Storage & -10 °C to +50 °C Operation
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## Variant available

- RIFS Series (75 mm Focal Length)
- RIFS-H Series high resolution (200 mm input & output focal length), Wave length range: 300 – 1100 nm



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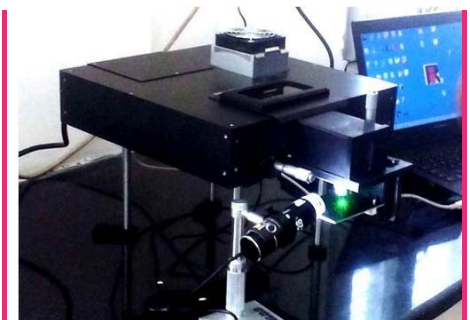


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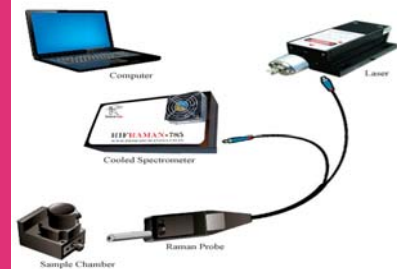
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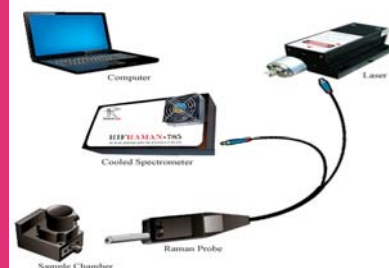
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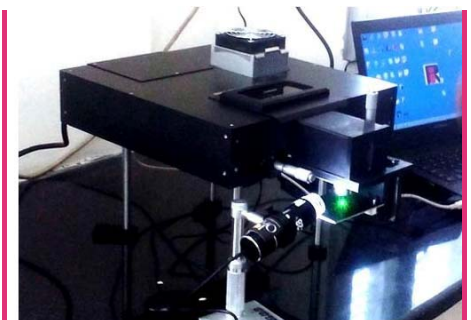


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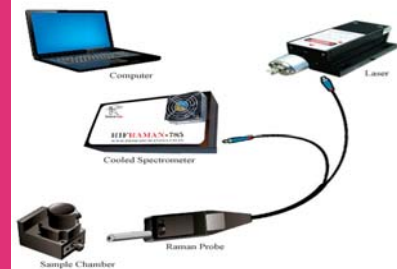
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## Tungsten -Halogen Light Source



### Model No. TL10

#### Specifications

Source:	Tungsten Halogen
Wavelength range:	360-2200 nm
Nominal bulb power:	10 watts
Source lifetime:	4000 hours (typical)
Stability of optical output:	0.15% peak-to-peak
Drift of optical output:	<0.3% per hour
Operating temperature:	5 °C – 35 °C
Operating humidity:	5-95% without condensation at 40 °C
Power requirements:	12 VDC



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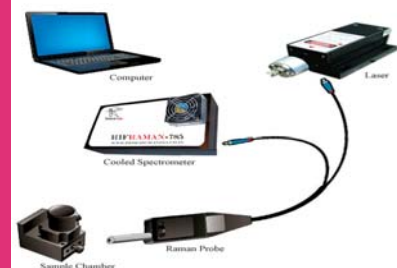
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