



# High Performance Raman Spectrometer Omni-iSpecT

## Application:

- Low pressure gas detection
- Confocal Raman spectroscopy
- Process control
- In-vivo or in-vitro medical diagnosis
- In-the-field and industrial applications etc.

Combining volume phase holographic (VPH) grating, wavelength optimized optics and deep-cooled CCD camera, Zolix is proud to present state-of-the-art Omni-iSpecT Raman spectrograph. It solves two essential problems concerned with Raman spectroscopy, speed and sensitivity. VPH spectrograph allows you to have faster acquisition and better S/N ratio, it is ideal for low light Raman applications such as remote detection, ultra fast Raman mapping etc, its lens-based design delivers minimum distortion at focal plane and ensures best image quality, which gives you high resolution and large spectral range simultaneously, also perfect image quality is ideal for multi-channel applications without cross-talking.

The Omni-iSpecT's rugged and compact design make an ideal module for in-the-field and industrial applications; It is still suitable for academic research with research-grade performance; The Omni-iSpecT also provides the SDK file for secondary development.

## Key Features

### High collection efficiency

F/2.3 aperture, almost 100% signal collection from 0.22NA fibre optics;

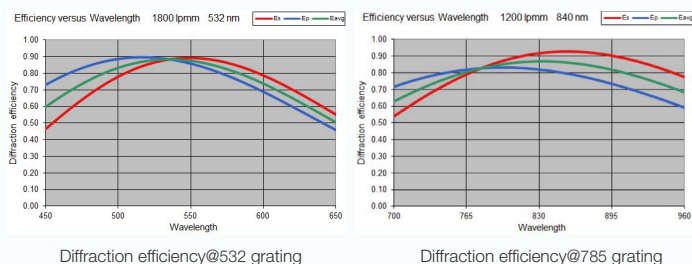
### High throughput

VPH (volume phase holographic) gratings offer superb diffraction efficiency, together with AR (Anti-Reflection) coating lens, maximum throughput for VIS or NIR range is available;

### Large raman shift coverage

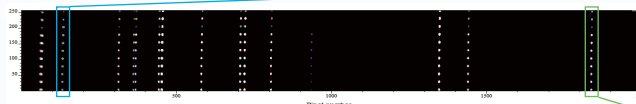
Large size CCD camera delivers large raman shift coverage, up to  $4000\text{cm}^{-1}$  in VIS range;

### High diffraction efficiency

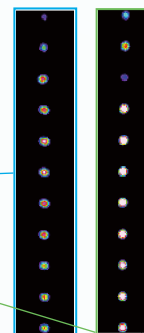


### Superior image quality

Superb optical aberration correction at 30mm image plane for superior image quality thus better spatial and spectral resolution at the same focal length compared to traditional C-T mode spectrograph. Near axial multi-channel acquisition is also guaranteed with minimum crosstalk and raman shift offset;



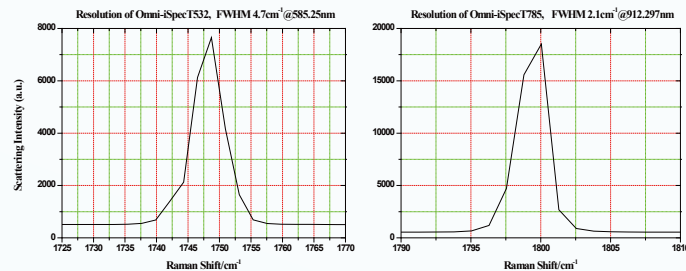
\*Neon light source spectrum, image mode, 20 core MM fiber bundle, 100um core diameter



### Compact and designed

All optics pre-aligned and pre-calibrated, out-of-the-box operation;

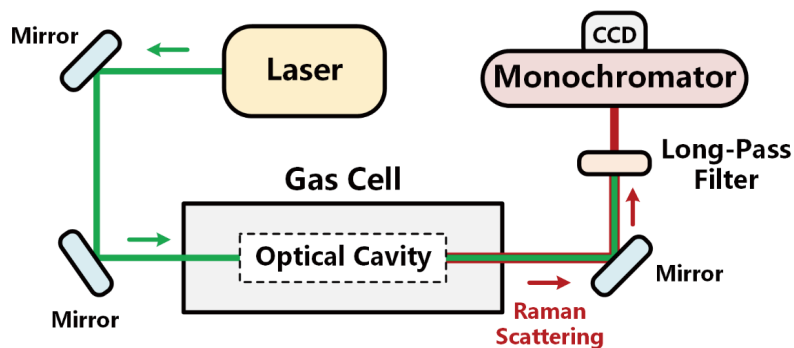
### High spectral resolution



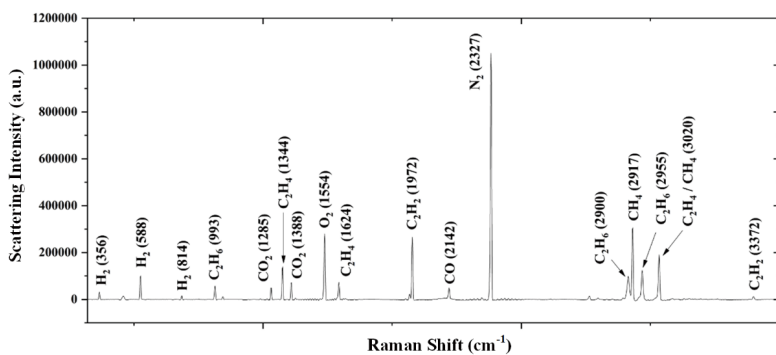
## Applications

### Low pressure gas detection (Omni-iSpecT532A1 system)

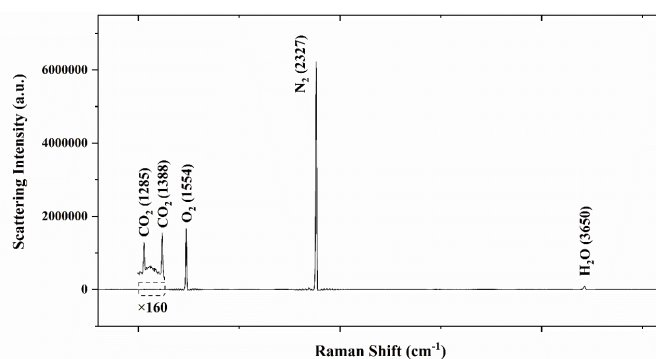
### Limit of detection( LOD unit:ppm)



Gas compound	1s exposure time	60s exposure time
CO <sub>2</sub>	23	3
CO	70	9
H <sub>2</sub>	39	5
CH <sub>4</sub>	15	2
C <sub>2</sub> H <sub>6</sub>	39	5
C <sub>2</sub> H <sub>4</sub>	15	2
C <sub>2</sub> H <sub>2</sub>	8	1
N <sub>2</sub>	155	20
O <sub>2</sub>	155	20



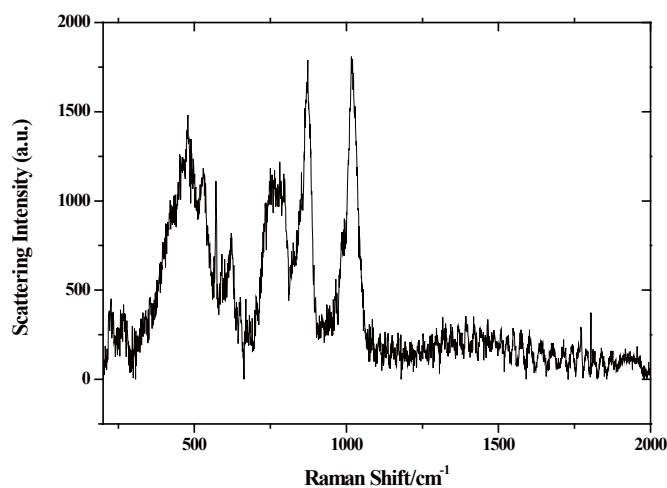
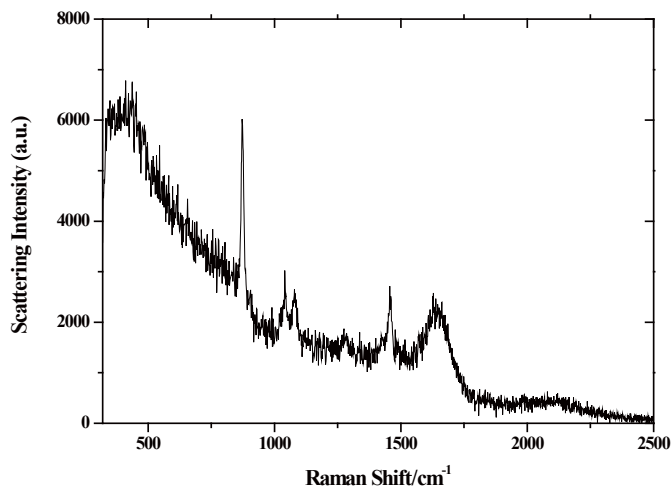
Raman spectrum of mixed gases with 60s exposure time



Raman spectrum of air with 60s exposure time

### Ethanol solvent Raman spectrum (Omni-iSpecT785A1 system with high throughput probe)

### Human skin Raman spectrum (Omni-iSpecT785A1 system with high throughput probe)

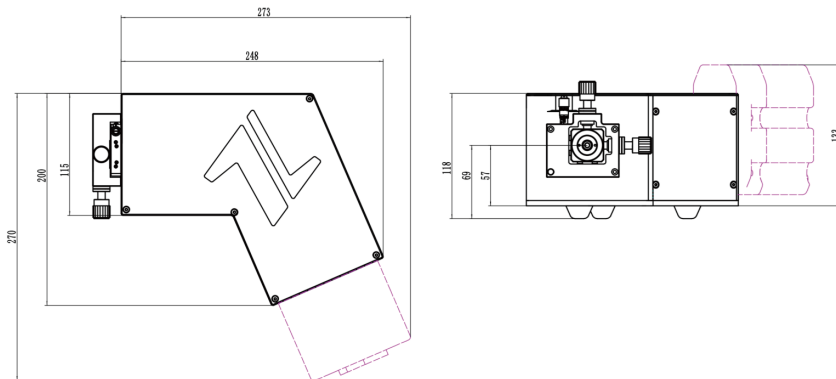


## Specification

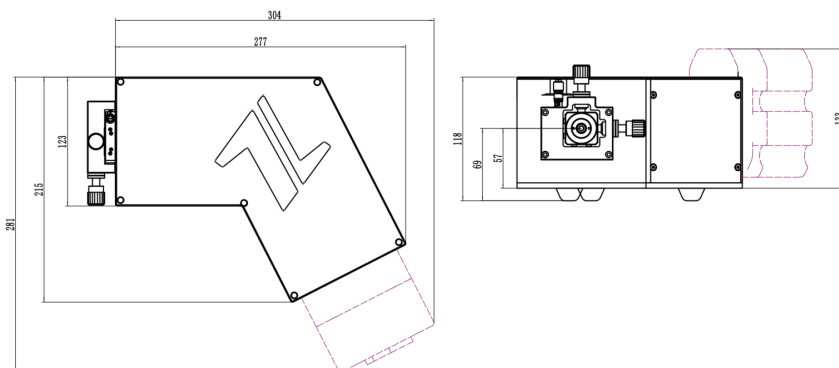
Model	Omni-iSpecT532A1	Omni-iSpecT785A1
Raman shift range /wavelength range	0-4100 $\text{cm}^{-1}$ /532-680nm	-200-2400 $\text{cm}^{-1}$ /770-960nm
F/# aperture	F/2.3	F/2.3
Focal length (input/output)	85/85mm	85/85mm
Grating	1800/mm VPH	1200/mm VPH
CCD detector	Back illuminated deep depletion 2000x256 pixels 15 $\mu\text{m}$ pixel size 30x3.8mm image area	Back illuminated deep depletion 2000x256 pixels 15 $\mu\text{m}$ pixel size 30x3.8mm image area
Adjustable entrance slit	10 $\mu\text{m}$ -6mm	10 $\mu\text{m}$ -6mm
Resolution (Typical)	5 $\text{cm}^{-1}$ @585nm@50 $\mu\text{m}$ slit 7 $\text{cm}^{-1}$ guaranteed	3 $\text{cm}^{-1}$ @912nm@50 $\mu\text{m}$ slit 5 $\text{cm}^{-1}$ guaranteed
Fiber couplers	XY adjustable fiber adaptor Fiber: SMA/ferrule 10mm	XY adjustable fiber adaptor Fiber: SMA/MPO/ferrule 10mm
Shutter	Optional	Optional
Built-in long pass filter	Optional $\Phi$ 50mm, 186 $\text{cm}^{-1}$ transition Lower transition edge available	Optional $\Phi$ 50mm, 309 $\text{cm}^{-1}$ transition Lower transition edge available
Dimension (without CCD)	248x200x118mm	277x215x118mm
Weight	5kg	5.8kg

## Dimension

Omni-iSpecT532A1



Omni-iSpecT785A1



## Packing list

- 1x Spectrograph base unit with XY adjustable universal fiber adaptor and manual entrance slit.
- 1x CCD detector with power supply and USB2.0 cable

## Option

- Shutter
- 2" 532nm long pass edge filter (OD=6)
- 2" 785nm long pass edge filter (OD=6)

## Operating & Storage Conditions

- Operating Temperature: 10 $^{\circ}\text{C}$  to 40 $^{\circ}\text{C}$  ambient
- Relative Humidity: < 80% (non-condensing)
- Ingress Protection: IP20
- Storage Temperature: -20 $^{\circ}\text{C}$  to 70 $^{\circ}\text{C}$

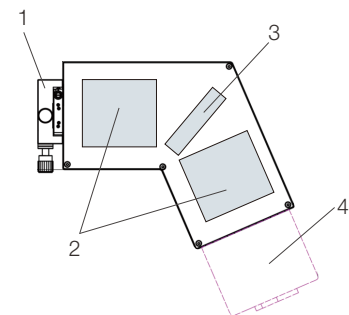
## Power Requirements

- PS-12: 110 - 240 Vac, 50 - 60 Hz

## OEM PSU recommendation:

- +12V,  $\pm$  5%, 5A maximum
- Regulation 11.4V minimum,  $\sim$  12.0V typical,  $\sim$  12.6V maximum
- Ripple & Noise: 200 mV maximum

## Configuration:



- 1、Fiber input port
- 2、AR coating lens
- 3、VPH grating
- 4、deep-cooled CCD camera