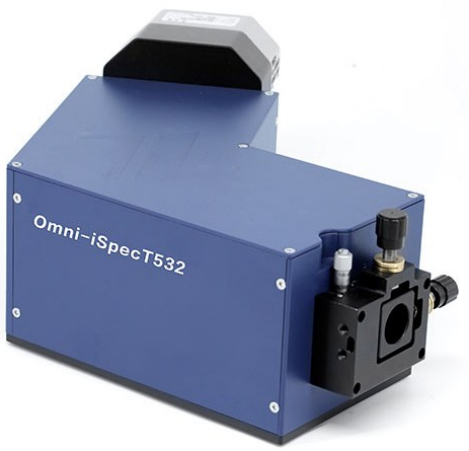
# Omni-iSpecT VPH Raman Spectrograph, F/2.3, 532 nm and 785 nm Versions

Model Omni-iSpecT · waveqvanta.com/products/omni-ispect-vph-raman-spectrograph

High-throughput VPH transmission spectrograph with deep-cooled CCD for fast, low-light Raman measurements.




Omni-iSpecT is a lens-based Raman spectrograph combining a volume phase holographic (VPH) transmission grating, wavelength-optimized AR-coated optics and a deep-cooled CCD camera. The design targets faster acquisition and higher signal-to-noise ratio for low-light Raman work such as remote detection and rapid Raman mapping, and its low focal-plane distortion supports multichannel measurement with minimal crosstalk. The rugged, compact unit suits field and industrial integration as well as academic research, and an SDK is provided for software development.

## Key features

- F/2.3 aperture collects nearly all light from 0.22 NA fibers
- VPH transmission gratings and AR-coated lenses for high throughput in the VIS or NIR
- Large-format CCD covers up to about 4000 $cm^{-1}$ Raman shift in the visible version
- Aberration correction over a 30 mm image plane for near-axial multichannel acquisition with minimal crosstalk and Raman shift offset
- Typical resolution 5 $cm^{-1}$ (532 nm version) and 3 $cm^{-1}$ (785 nm version) with a 50 µm slit
- All optics pre-aligned and pre-calibrated for out-of-the-box operation; SDK available
- Low-pressure gas detection limits (532 nm system, 60 s exposure): $CH_4$ 2 ppm, $CO_2$ 3 ppm, $H_2$ 5 ppm, $N_2$ and $O_2$ 20 ppm

## Specifications

| | |
|---|---|
| **Optical Design** | Lens-based transmission spectrograph with VPH grating |
| **Aperture** | F/2.3 |
| **Focal Length (Input/Output)** | 85 mm / 85 mm |
| **Raman Shift Range** | 0–4100 $cm^{-1}$ (532A1); −200–2400 $cm^{-1}$ (785A1) |
| **Wavelength Range** | 532–680 nm (532A1); 770–960 nm (785A1) |
| **Grating** | 1800 l/mm VPH (532A1); 1200 l/mm VPH (785A1) |
| **CCD Detector** | Back-illuminated deep-depletion, 2000 × 256 pixels, 15 µm pixels, 30 × 3.8 mm area |
| **Entrance Slit** | Adjustable, 10 µm–6 mm |
| **Resolution** | Typical 5 $cm^{-1}$ / 3 $cm^{-1}$, guaranteed 7 $cm^{-1}$ / 5 $cm^{-1}$ (532A1 / 785A1, 50 µm slit) |
| **Fiber Coupling** | XY-adjustable fiber adapter; SMA or 10 mm ferrule (MPO also on 785A1) |
| **Shutter** | Optional |
| **Built-in Long-Pass Filter** | Optional, Φ50 mm; lower transition-edge versions available |
| **Filter Options** | 2-inch 532 nm or 785 nm long-pass edge filter, OD 6 |
| **Operating Temperature** | 10–40 °C ambient |

| | |
|---|---|
| **Relative Humidity** | Below 80%, non-condensing |
| **Ingress Protection** | IP20 |
| **Storage Temperature** | −20 to 70 °C |
| **Power Supply** | PS-12, 110–240 VAC, 50–60 Hz |
| **Software Support** | SDK for user software development |

## Model overview

| Model | Raman Shift ($cm^{-1}$) | Wavelength (nm) | VPH Grating (l/mm) | Resolution typ./guar. ($cm^{-1}$) | Fiber Connectors | LP Filter Edge ($cm^{-1}$) | Size w/o CCD (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| Omni-iSpecT532A1 | 0–4100 | 532–680 | 1800 | 5 / 7 | SMA, 10 mm ferrule | 186 | 248 × 200 × 118 | 5 |
| Omni-iSpecT785A1 | −200–2400 | 770–960 | 1200 | 3 / 5 | SMA, MPO, 10 mm ferrule | 309 | 277 × 215 × 118 | 5.8 |

## Typical applications

- Low-pressure gas detection
- Confocal Raman spectroscopy
- Process control
- In-vivo and in-vitro medical diagnostics
- Field and industrial Raman instruments
- Remote detection and fast Raman mapping