

ISOPLANE® 320/320A SPECTROMETER

KEY FEATURES

The best spectroscopy solution by any measure

- Astigmatism-free design
- Outstanding spatial and spectral resolution
- Higher signal-to noise than comparable instruments
- Fixed-position camera mount with μm focus adjustment
- Kinematic, torque-limiting turret mount
- High-efficiency optical coatings
- Compatible with a wide range of Teledyne Princeton Instruments cameras
- Wide range of optional accessories, including calibration sources, mounts, adapters, filters, and gratings
- ResXtreme™ spectral deconvolution technology for enhanced resolution and uniformity across the focal plane
- IntelliCal™ automated wavelength and intensity calibration for accurate, reproducible spectral data

TYPICAL APPLICATIONS

- Spectroscopy
- Nanomaterial Studies
- Tip-Enhanced Raman Spectroscopy
- Solar cell analysis
- Wide-Angle Energy-Momentum Spectroscopy
- Micro-spectroscopy

RELIABILITY

- One-year warranty
- Repeatable spectral accuracy to a single pixel

Multi Award-Winning Imaging Spectrometer

The IsoPlane family sets the standard for imaging spectrometers in its class. With a unique optical design, IsoPlane completely eliminates astigmatism across the entire focal plane for superior multichannel capabilities. With fast optics and specialized mirror coatings, it ensures maximum throughput and maximum signal-to-noise performance.

IsoPlane spectrometers provide, astigmatism-free design at all wavelengths across the entire focal plane, with excellent spatial and spectral resolution. No other mirror-based scanned spectrometer offers comparable performance.

The IsoPlane series includes the IsoPlane 320 and IsoPlane 320 Advanced (320A) models. Both offer high resolution, large input aperture, wide spectral bandwidth, and unmatched multitrack capability. The 320A incorporates proprietary high-performance imaging optics for dramatically enhanced optical quality, resulting in superior imaging and improved signal-to-noise performance.



SPECIFICATIONS

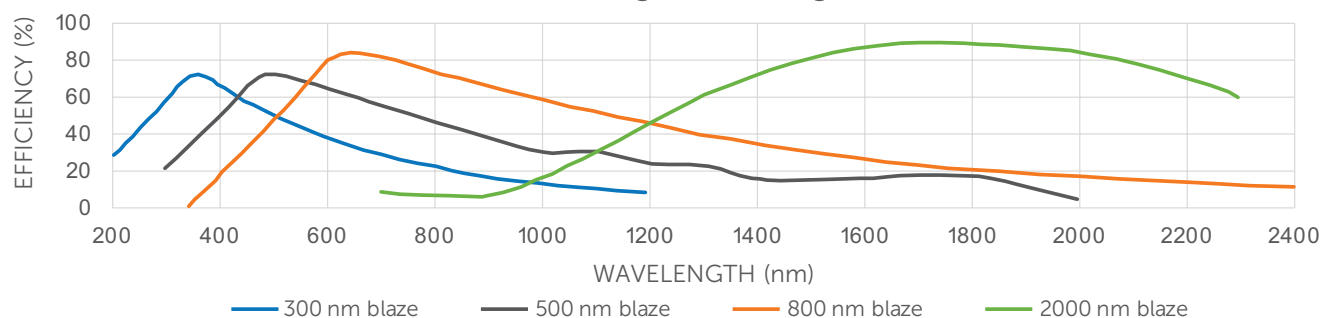
Features	IsoPlane 320	IsoPlane 320A
FOCAL LENGTH	320 mm	
APERTURE RATIO	f/4.6	
TYPICAL SPECTRAL RESOLUTION	0.05 nm with PMT <0.08 nm with CCD (at all points on focal plane) <0.05 nm with CCD and ResXtreme	0.04 nm with PMT 0.065 nm with CCD <0.04 nm with CCD and ResXtreme
RECIPROCAL LINEAR DISPERSION	2.30 nm/mm	
WAVELENGTH COVERAGE	63 nm (nomial across 27 mm wide CCD)	
FOCAL PLANE SIZE	27 mm (W) x 22 mm (H)	
SCAN RANGE	0 to 1400 nm	
DRIVE STEP SIZE	0.002 nm/step	
WAVELENGTH ACCURACY	±0.2 nm (up to 0.02 nm with IntelliCal wavelength calibration)	
WAVELENGTH REPRODUCIBILITY	±0.015 nm	
TURRET	Interchangeable triple-grating CTS-Turrets self-align to system when installed	
GRATING CHANGE REPEATABILITY	0.02 nm (typical)	
GRATING SIZE	68 mm x 68 mm gratings	
NUMBER OF TURRETS ALLOWED	Accepts as many as 3 turrets, each with 3 gratings	
ASTIGMATISM	Zero at all wavelengths	
SPATIAL RESOLUTION (MTF)	≥15 line pairs/mm @ 50% modulation measured at focal plane center ≥8 line pairs/mm @ 50% modulation measured over 27 x 8 mm focal plane	≥25 line pairs/mm @ 50% modulation measured at focal plane center ≥10 line pairs/mm @ 50% modulation measured over 27 x 8 mm focal plane
COMPUTER INTERFACE	USB and RS-232	
CERTIFICATION	CE tested to the following standards: EN 55022:2010/AC:2011, EN 61000-3-2:2014, EN 61000-3-3:2013, EN 61000-6-3:2007/A1:2011, EN 61326-1:2013	
DIMENSIONS	518 x 450 x 216 mm (L x W x H)	
WEIGHT	55 lbs, 25 kg	
OPTICAL AXIS HEIGHT	5.0" to 5.875", 127 to 149.225 mm, adjustable	
	Unless otherwise stated, specifications are with a 1200 g/mm grating @ 435.8 nm	

IsoPlane 320/320A STANDARD GRATINGS

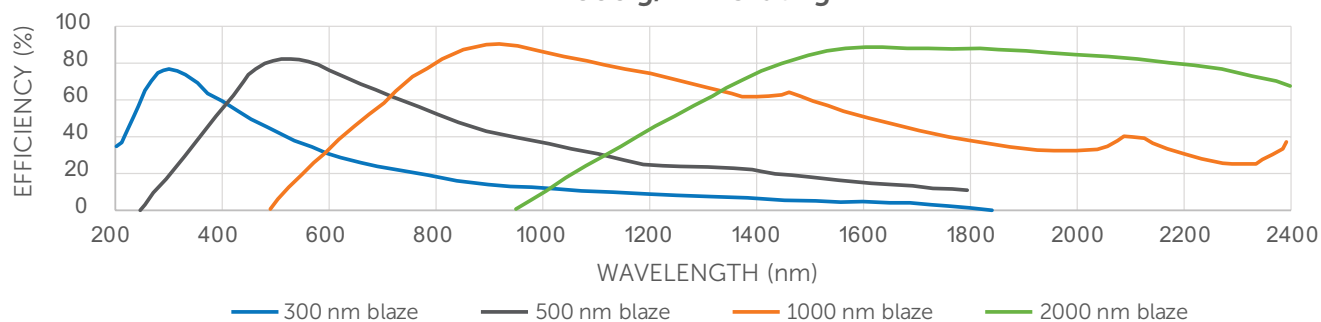
Groove density (g/mm)	Blaze wavelength (nm)	Mechanical scanning range	Optimum wavelength range (nm)		Grating part number IsoPlane 320/320A
50	600	0 - 36 μ m	402	950	i3-005-600-P
150	300	0 - 12 μ m	200	500	i3-015-300-P
150	500	0 - 12 μ m	330	800	i3-015-500-P
150	800	0 - 12 μ m	425	1400	i3-015-800-P
150	1250	0 - 12 μ m	850	2100	i3-015-1250-P
150	4000	0 - 12 μ m	2600	6000	i3-015-4000-P
300	300	0 - 6 μ m	200	500	i3-030-300-P
300	500	0 - 6 μ m	330	800	i3-030-500-P
300	750	0 - 6 μ m	500	1200	i3-030-750-P
300	1000	0 - 6 μ m	650	1600	i3-030-1000-P
300	1200	0 - 6 μ m	700	2100	i3-030-1200-P
300	2000	0 - 6 μ m	1300	4000	i3-030-2000-P
600	150	0 - 3 μ m	105	250	i3-060-150-P
600	300	0 - 3 μ m	200	500	i3-060-300-P
600	500	0 - 3 μ m	330	800	i3-060-500-P
600	1000	0 - 3 μ m	670	1600	i3-060-1000-P
600	1250	0 - 3 μ m	850	2100	i3-060-1250-P
600	1600	0 - 3 μ m	1050	2500	i3-060-1600-P
900	550	0 - 2 μ m	335	800	i3-090-550-P
900	NIR	0 - 2 μ m	700	1100	i3-090-HNIR-P
1200	150	0 - 1500 nm	105	250	i3-120-150-P
1200	300	0 - 1500 nm	200	700	i3-120-300-P
1200	500	0 - 1500 nm	325	1000	i3-120-500-P
1200	750	0 - 1500 nm	475	1500	i3-120-750-P
1200	850	0 - 1500 nm	525	1500	i3-120-850-P
1200	UV holo	0 - 1500 nm	200	450	i3-120-HUV-P
1200	VIS holo	0 - 1500 nm	400	1100	i3-120-HVIS-P
1800	500	0 - 1000 nm	330	800	i3-180-500-P
1800	UV holo	0 - 1000 nm	200	500	i3-180-HUV-P
1800	VIS holo	0 - 1000 nm	350	1000	i3-180-HVIS-P
2400	150	0 - 750 nm	105	250	i3-240-150-P
2400	240	0 - 750 nm	160	400	i3-240-240-P
2400	UV holo	0 - 750 nm	200	500	i3-240-HUV-P
2400	VIS holo	0 - 750 nm	250	750	i3-340-HVIS-P
3600	240	0 - 500 nm	160	400	i3-360-240-P
3600	UV holo	0 - 500 nm	200	500	i3-360-HUV-P
MIRROR	-	0 nm	-	-	i3-MIRROR-P

IsoPlane 320/320A GRATING EFFICIENCY CURVES

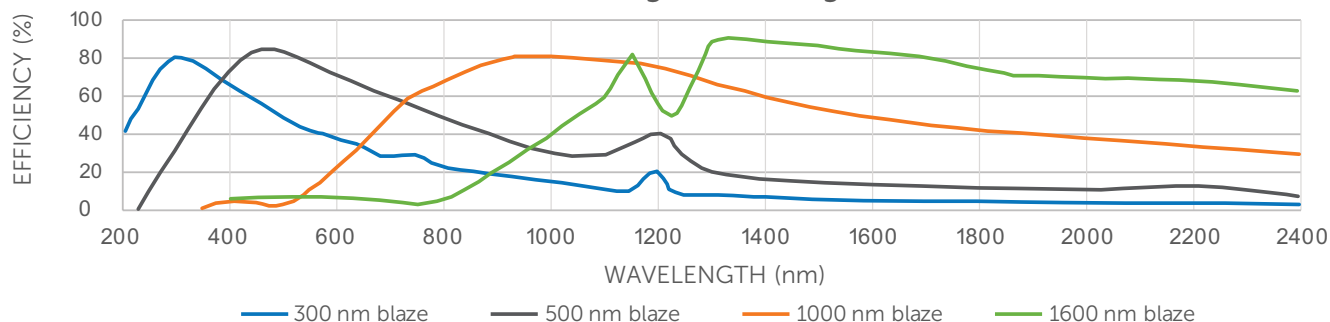
150 g/mm Grating



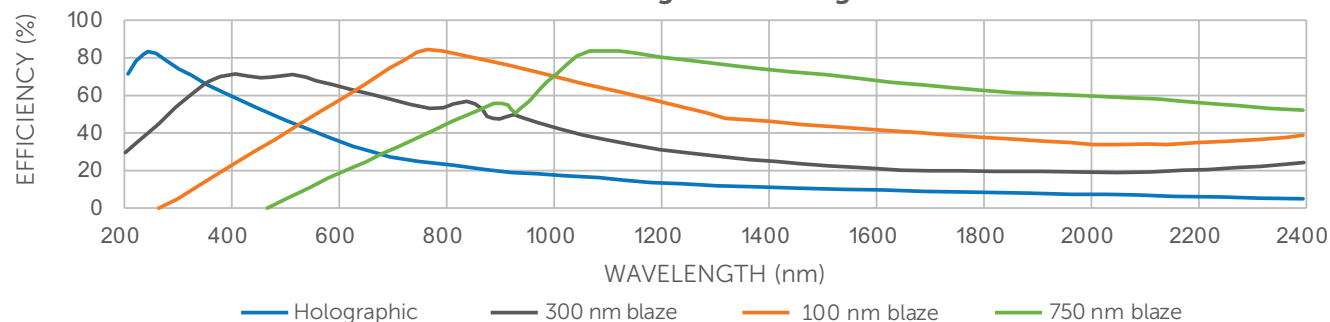
300 g/mm Grating



600 g/mm Grating



1200 g/mm Grating



IsoPlane 320/320A ACCESSORIES

Included	Compatible Teledyne Princeton Instruments Cameras
External power supply	The IsoPlane 160 is compatible with the following scientific-grade cameras from Teledyne Princeton Instruments:
USB A-B data interface cables	PIXIS, BLAZE®, PyLoN®, PyLoN®-IR, NIRvana®, ProEM®-HS, PI-MAX 4, KURO
Grating turret	

Single-Channel Detector Accessories	Details
Spectrasense data acquisition software	Designed to control scanning monochromators, single-channel detectors, and related accessories.
SpectraHub detector interface/readout system	Required for operation of all single-point detectors (except those that require lock-in amplifiers). Requires SpectraSense software, a scanning monochromator, and a single-channel detector for operation.
Silicon detector/ Uv-enhanced silicon detector	Two available, provided with housing, BNC connector and mounting flange, sensitive from 400-1100 nm.
Photomultiplier tube (PMT) detector	Three 1 1/8 side-window PMTs available, each requires a housing and power supply for operation. Sensitivity range as follows: P1 (190-650 nm); P2 (190-900 nm); P3 (300-1100 nm).
Integrated photon-counting detector system	Includes PMT, amplifier/discriminator, and built-in power supply, sensitive from 185-850 nm.
Solid state InGaAs detector (with cooling option)	Two InGaAs detectors available, each with pre-amplifier, sensitive from 800-1700 nm.

Light Input Accessories	Details
Fixed-position fiber adapter	FC and SMA-905 connectors available. Cannot be used with motorized slit assemblies.
Adjustable fiber adapter	Holds 10 mm diameter fiber bundles directly at entrance slit of IsoPlane. FC and SMA-905 available.
Universal fiber coupler	X-Y micrometer control, 3 mm of travel, interchangeable 10 mm diameter ferrule, SMA-905 connector, FC inserts and slit baffle.
Imaging fiber adapter	Refocuses fiberoptic input for filter wheels or other imaging devices. Accepts fibers with FC/PC, SMA 905 or 10 mm diameter ferrules, horizontal/vertical alignment capabilities, and 19 mm thick removable spacer
Raman filter chamber	For use of Raman or edge filters, chamber collects fibers and collimates the beam, second lens focuses the beam on IsoPlane entrance slit. Chamber includes adapter for 25.4 mm filters.
Sample chamber	Features ports with light-tight covers and two quartz lenses. Requires sample holder.

Fiberoptic Bundle Accessories	Details (custom fibers available on request)
Single-leg fiber bundles (190-1100 nm or 400-2200 nm wavelength ranges available)	x19 200 μ m fibers with SMA connector at illumination end and 10 mm ferrule at slit end. Fiber configuration is round at light input end and line (column) at output (slit) end. Available in 1 m or 3 m lengths.
Two-leg fiber bundle (190-1100 nm)	x7 200 μ m fibers per leg with SMA connector at illumination end and 10 mm ferrule at slit end. Fiber configuration is round at two light inputs and ends at line (column) at the common output end, with 1 mm spacing between fiber groups. Available in 1 m length.
Four-leg fiber bundle (190-1100 nm)	x3 200 μ m fibers per leg with SMA connector at illumination end and 10 mm ferrule at slit end. Fiber configuration is round at four light inputs and ends at line (column) at the common output end, with 1 mm spacing between fiber groups. Available in 1 m length.

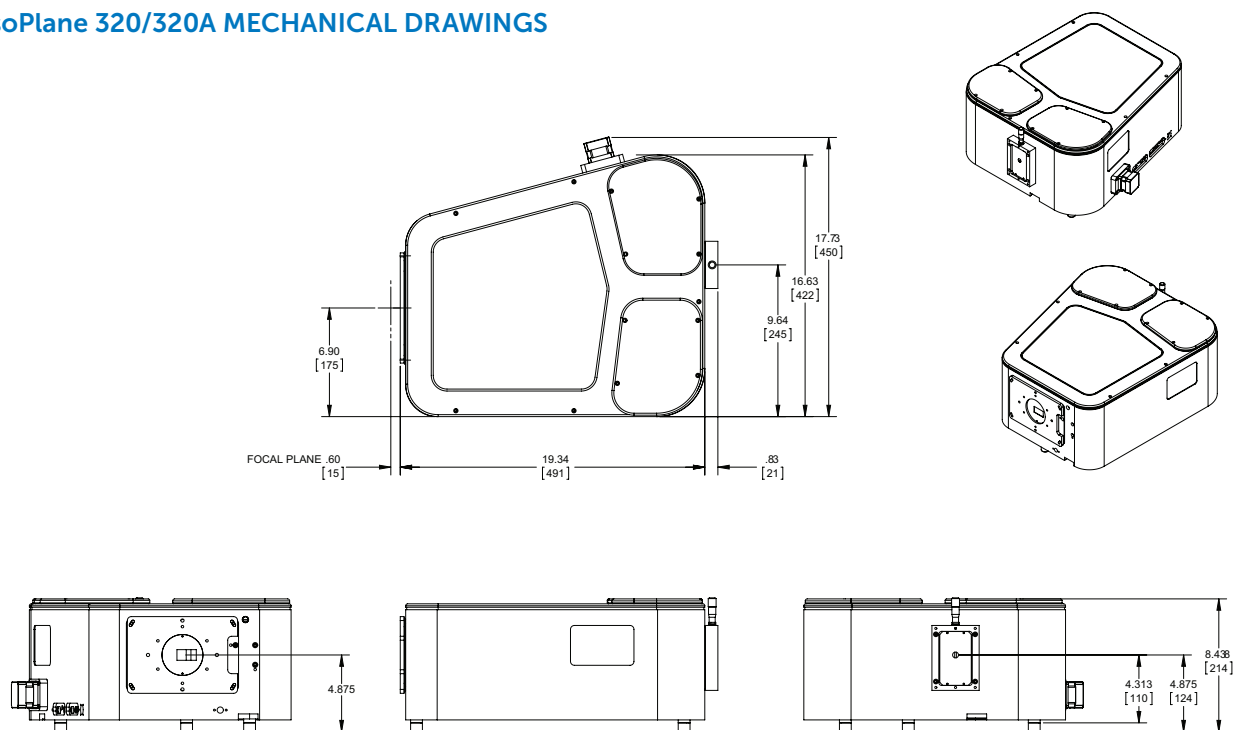
Light Source Accessories	Details (custom fibers available on request)
IntelliCal Atomic Emission (AE)	USB-powered light source useful for wavelength calibration. Includes Hg and Ne-Ar lamps and toggle switch.
Deuterium	30 W lamp provides ~190 to ~350 nm UV light, negligible visible light output. 110 or 220 V light source available
Quartz Tungsten-Halogen (QTH)	30 or 250 W QTH to output ~350 to >2500 nm light, with DC power supply. 250 W version also available cooled.
Deuterium and Tungsten-Halogen	30 W deuterium and TH lamps in same housing, output 190 to 2500 nm light, with cooling and 110/220 V power.
Xenon	75 W xenon lamp with small emission area. Output 190-750 nm bright, with declining output up to 2700 nm.

Filter Wheel Accessories	Details (custom fibers available on request)
Motorized filter wheel assemblies	Six-position filter wheel for 1 inch (25.4 mm) diameter samples with stepping motor, controller, and RS-232 interface for computer-controlled filter indexing. Filters not included.
Filter set	Standalone filter set including 320, 590, 665 and 715 nm FA series of filters.

IsoPlane 320/320A CUBE ACCESSORIES

CUBEs (Part Numbers)	Compatible Teledyne Princeton Instruments Cameras
CAGE-SPEC	Adapter plate and 30 mm cage mount to entrance slit
SPEC-CUBE1-UV SPEC-CUBE1-VIS SPEC-CUBE1-NIR	Focusing CUBES, contain achromatic doublet for focusing incoming light onto slit and precision X-Z stage for fine focus and slit alignment. Optimised for UV (250-425 nm); VIS (400-700 nm); or NIR (650-1050 nm)
SPEC-CAL-QTH	QTH calibration lamp, allows automated relative intensity calibration, stabilized optical output, NIST traceable, with a USB interface
SPEC-CUBE2-785	Contains mounted 785 nm narrowband laser line filter, PI long-pass dichroic filter (127 nm edge) and matching edge filter (OD 6) with precision built-in angle tuning. Optimised for Raman spectroscopy.
SPEC-CUBE3	Contains sample chamber for 12.5 mm cuvette (not included) and light cover, with 2 lenses and 4 optical ports
SPEC-CUBE4-50 SPEC-CUBE4-70 SPEC-CUBE4-90	Beam splitter CUBES, contains precisely aligned and mounted non-polarizing cubic beam splitter. Allows splitting of beam paths in either 50:50; 70:30 or 90:10 optical ratios respectively, without beam walk off
SPEC-CUBE5	Filter CUBE, three-positions for ½-inch diameter filters (filters not included)
SPEC-FIBER-LAS	Laser excitation fiber, 105 µm multimode fiber for coupling excitation light from laser
SPEC-FIBER-PTH	Fiber patch cable, 400 µm multimode fiber for coupling light from QTH lamp for absorption/transmission spec
SPEC-LAS-785	Wavelength-stabilized multimode 785 nm laser, fiber coupled, 475 mW power, narrow laser line, ideal for Raman

IsoPlane 320/320A MECHANICAL DRAWINGS



FOR MORE INFORMATION REACH OUT ONLINE:

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