



Syncerity™ VUV Camera

Back-illuminated Deep-cooled CCD

- ELEMENTAL ANALYSIS
- FLUORESCENCE
- GRATINGS & DEM SPECTROMETERS
- OPTICAL COMPONENTS
- FORENSICS
- PARTICLE CHARACTERIZATION
- R A M A N
- SPECTROSCOPIC ELLIPSOmetry
- SPR IMAGING

OEM
Cameras

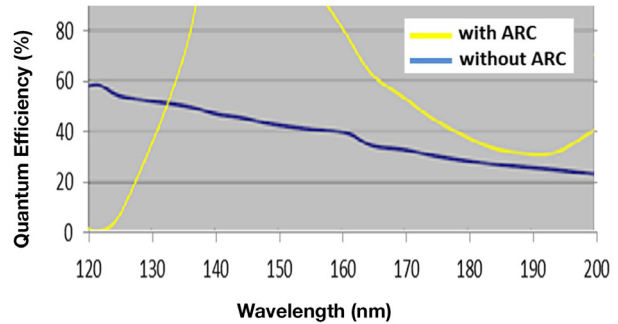


VUV Optimized Scientific Camera

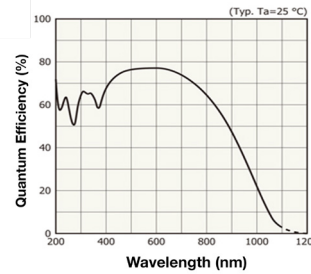


Up to
2048 x 512
Pixels

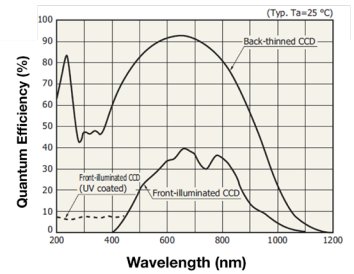
- High QE in VUV Range
58% @120 nm (no ARC)
- Attachable to High Vacuum Chamber
with Viton® O-Ring, down to 10^{-6} Torr
- TE-cooled to -50°C (Vacuum) or -30°C with N2 Purge
Low Dark Current, Low Noise



“Typical”
VUV
Response*



Type A

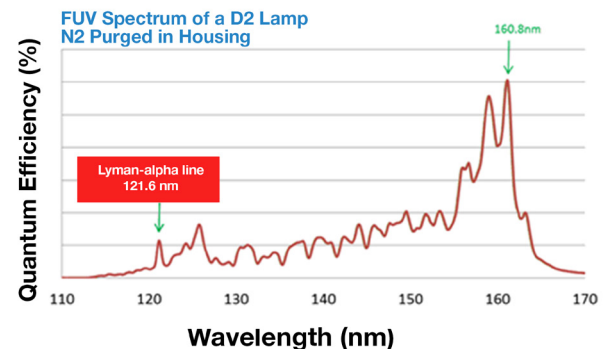


Type B

*This data is reference data only and is not guaranteed.

*Cameras provided without window have no warranty on CCD and need special handling under N2

Q.E.	Standard Type-A	Special Type-B	Special Type-B
CCD pixel format	2048 x 70	2048 x 256 2048 x 512	1024 x 128
CCD pixel size	14 x 14 μm	12 x 12 μm	24 x 24 μm
CCD height	1 mm	3 mm / 6 mm	3 mm
CCD AR coating	Without AR coating for 115 nm - 200 nm With AR coating for 135 nm - 1100 nm		
Window	No window or with MgF2 window		
Flange	Special flange for vacuum chamber with Viton O-ring (Standard Syncerity cap + MgF2 window is also available)		



D2 Spectrum on a VUV Spectrograph

Syncerity™ Specifications (Syncerity VUV 2048 x 70 Back-illuminated - Standard)

CCD sensor format	2048 × 70
Quantum efficiency at 20°C	See type A curve for VUV and UV-VIS QE responses
Pixel size	14 μm × 14 μm
Image area	28.7 mm × 0.98 mm; 100% fill factor
Deep thermoelectric cooling	-50°C under vacuum (10 ⁻⁶ mbar) with +25°C ambient or -30°C under N2 purging
Single pixel well capacity	50 000 e ⁻ /pixel (minimum); 60 000 e ⁻ /pixel (typical)
Serial register full well capacity	250 000 e ⁻ /pixel (minimum) 500 000 e ⁻ /pixel (typical output register saturation)
Scan rates	45 kHz and 500 kHz
Readout noise (at 45 kHz and at -50°C)**¹ Readout noise (at 500 kHz and at -50°C)**¹	9 e ⁻ (typical) to 12 e ⁻ (maximum) 20 e ⁻ (typical) to 25 e ⁻ (maximum)
Maximum spectral rate	20 Hz at 45 kHz scan rate 189 Hz at 500 kHz scan rate
Digitization	16-bit ADC
Dynamic range (typical for single pixel)**²	55 500:1
Non-linearity (measured on each camera)	<0.15% (typical) at 45 kHz (0.4% maximum) <0.20% (typical) at 500 kHz (1% maximum)
Dark current at -50°C**³ (Note that pixel size = 14 μm)	0.05 e ⁻ /pixel/s (typical)
Software-adjustable gains	2, 4, and 10 e ⁻ /count at -50°C
Environmental conditions	<ul style="list-style-type: none"> • Operating temperature 0°C to 40°C ambient • Relative humidity <70% (non-condensing) • Storage temperature -25°C to 50°C
Weight	1.769 kg (3.90 lb)
Dimensions	See mechanical drawings
Power requirements AC/DC power supply (provided)	90-264 VAC, 47-63 Hz
Recommendation for OEM supplying camera to power directly:	<ul style="list-style-type: none"> • Pin: +9 V, ± 5%, 6.44 A maximum • Regulation: +8.55 V_{min}, +9 V_{typ}, +9.45 V_{max} • Ripple & noise: 200 mV_{pp} maximum
Minimum computer requirements	<ul style="list-style-type: none"> • 3.0 GHz single core or 2.4 GHz multi-core processor • 2 GB RAM • 32-bit or 64-bit compatible • 500 MB free hard disk space (additional disk space may be required depending on data-storage needs) • USB 2.0 high-speed host controller capable of sustained rate of 40 MB/s • Windows® (XP, Vista and 7)

Syncerity - Other CCD Format Specifications: Contact us

2048 x 256	2048 x 512	1024 x 128
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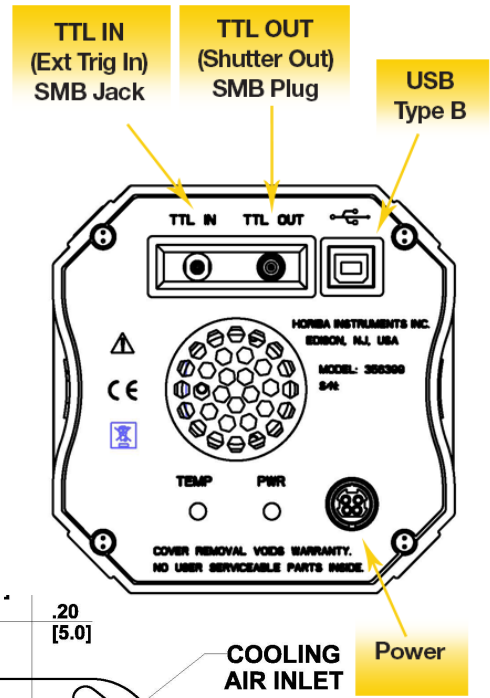
*1. Entire system noise measured for a single pixel

**2. Dynamic range is defined as Full Well/Readout Noise, measured at 45 kHz

**3. Averaged over CCD area, but excluding any regions of blemishes

All specifications subject to change without notice.

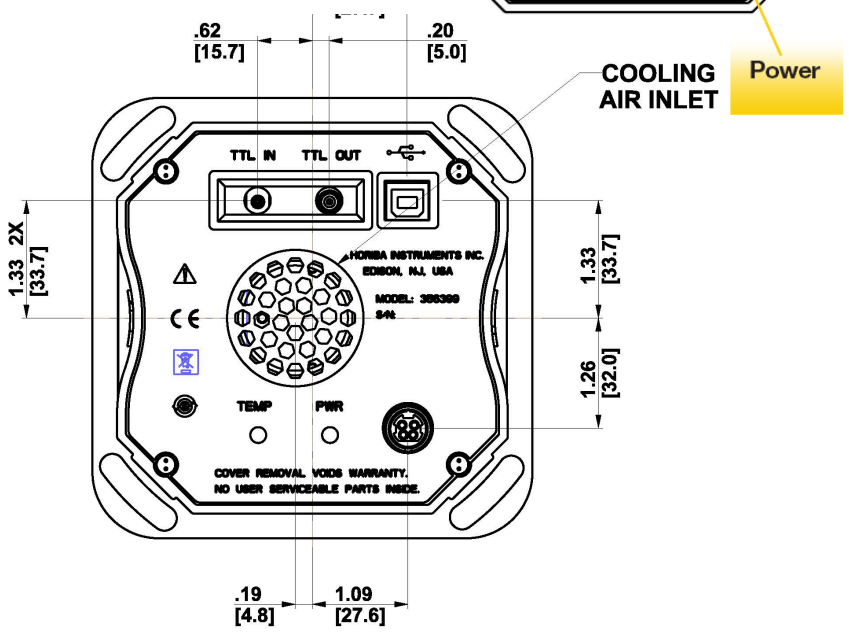
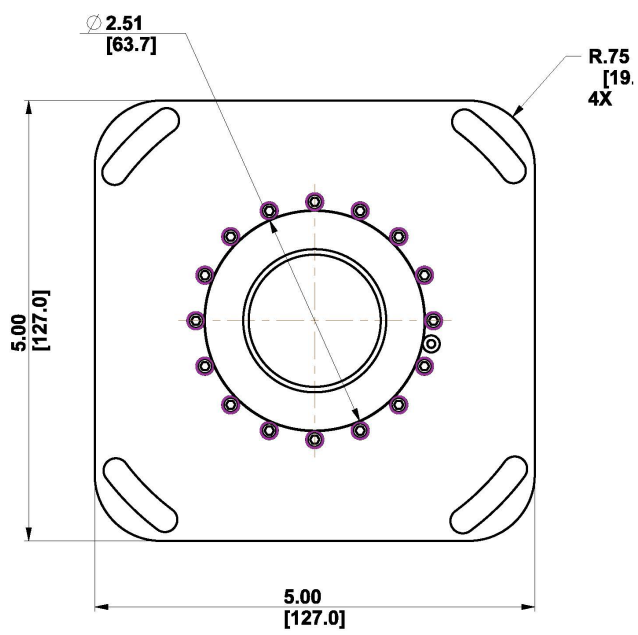
Connecting to Sincerity



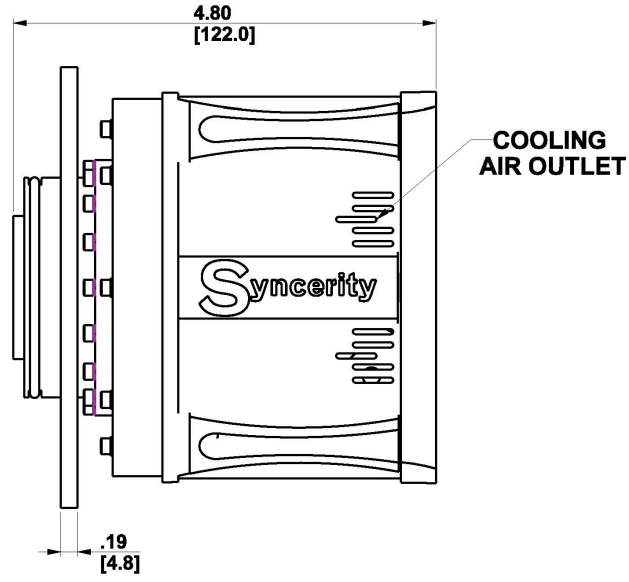
Power Interface:
 Connector Type: PDP-40, Mini PWR DIN, 4-Position, STR Plug

Camera Interface:
 Connector Type: USB Standard Type B

Sync I/O Connectors:
 Connector Type: SMB
 Input Jack: TTL IN (EXT TRIG In)
 Output Plug: TTL OUT (SHUTTER Out)



DIMENSIONS IN INCHES [MM]



**O-RING SIZE = #141
 ID X 2.506 [63.65] OD X .103 [2.62] CS**

Ordering Information

SYNCER-2048x70-VUV
Sincerity TE-cooled CCD Camera includes:

USB 2.0 Camera Head	Specify:
AC-DC Power Supply	• With/without ARC
USB Cable	• With/without Vacuum Flange
CD Manual	• With/without MgF2 Window

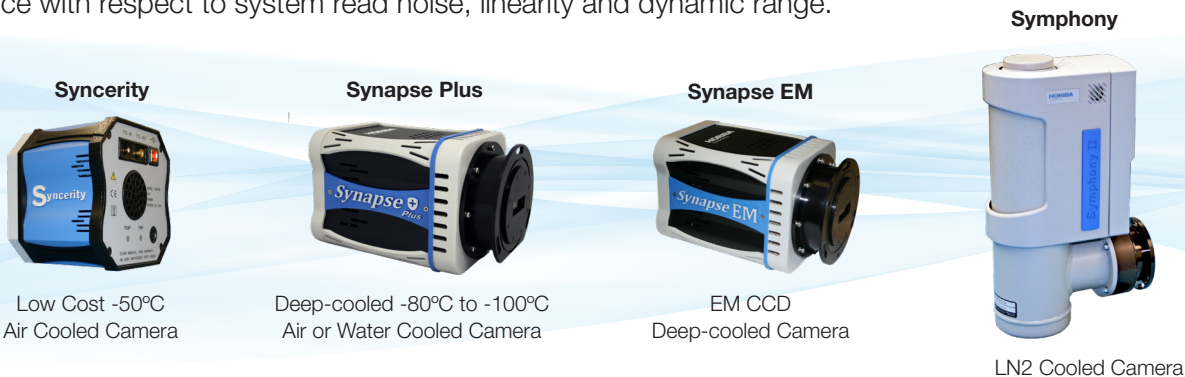
Other CCD Formats up to 2048 x 512: Contact us

Optional:
 UV-VIS CCD or VIS-NIR CCD (See Q.E. Curve)
 Shutter Driver (SDrive-500 Shutter Control Unit with Cable)
 CCD Shutter
 TTL IN Trigger Cable
 Printed Manual

VUV Sincerity

Latest Addition to our Growing Family of Scientific Cameras

HORIBA Scientific provides a wide variety of deep-cooled CCD cameras...offering "Best-in-Class" performance with respect to system read noise, linearity and dynamic range.



Sincerity
Low Cost -50°C
Air Cooled Camera

Synapse Plus
Deep-cooled -80°C to -100°C
Air or Water Cooled Camera

Synapse EM
EM CCD
Deep-cooled Camera

Symphony
LN2 Cooled Camera

Family of Vacuum Monochromators and CCD Spectrometers

Most popular models: H20UVL, H30UVL and TGS300

Typical applications: High Harmonic Generation, Plasma Characterization

HORIBA Scientific provides a wide variety of vacuum monochromators, spectrographs and VUV cameras. We can customize these VUV designs for OEM volume applications.

We cover a large spectral range from few nanometers to a few hundred nanometers. Based on toroidal, spherical or plane diffraction gratings, our systems provide unequaled throughput with competitive spectral resolution for Soft X-Ray, EUV, FUV and DUV applications.



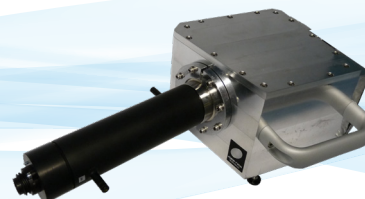
Spectral range (nm)		Energy range (eV)		Model	Focal length (mm)	Grating Rotation	Single channel detector	Array Detector	Replica Available	VLS grating correction
Min	Max	Min	Max							
9.5	110	11.3	135.5	TGS300	300			x	x	x
50	300	4.1	24.8	H30-UVL	300	x	x	x	x	x
100	300	4.1	12.4	H20-UVL	200	x	x	x	x	x



VUV Monochromators



VUV Systems



VUV Accessories



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<http://www.horiba.com/sincerityVUV>

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Brazil: +55 11 2923-5440

Germany: +49 (0)89 4623 17-0
Japan: +81 (0)3 6206 4721
Other: +33 (0)1 69 74 72 00