

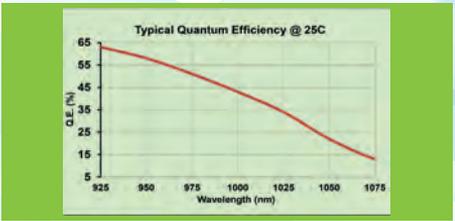
- ELEMENTAL ANALYSIS
- FLUORESCENCE
- GRATINGS & OEM SPECTROMETERS
- OPTICAL COMPONENTS
- FORENSICS
- PARTICLE CHARACTERIZATION
- RAMAN
- SPECTROSCOPIC ELLIPSONOMETRY
- SPR IMAGING



OEM Camera Sincerity™ BI-NIR

2048 x 70 Back-illuminated Deep-cooled CCD for RAMAN

OEM
Cameras



NIR Optimized

Also available as UV-VIS optimized

Ideal for RAMAN
High resolution:
14 μm pixel size
42% Q.E. @ 1000 nm (*)

Ultra-low etaloning & much lower cost than Deep Depletion for OEM applications

TE-cooled to -50°C (-60°C on request)
Great Q.E. from 400 to 1075 nm



The TE-cooled back-illuminated 2048 x 70 CCD Camera combines affordability, performance and versatility for OEM applications. With peak Q.E. of 84% @ 700 nm and 20% @ 1050 nm, Sincerity BI-NIR offers a relatively broad response and addresses multiple applications. In the NIR, this detector is a much lower cost alternative to a deep depleted CCD, with ultra-low etaloning. Sincerity's flexible design allows our OEM-dedicated team to quickly adapt the camera for industrial requirements, ranging from alternate CCD chips to electronics customizations.

Back-illuminated CCD Technology	Enhanced near infrared sensitivity Q.E. 42% @ 1000 nm.
Deep Thermoelectric Cooling	-50°C @ +25°C ambient (-60°C optional).
Ultra-Compact Size	Ideal for use on microscopes and OEM integration.
Lifetime Vacuum Warranty	All-metal sealed technology provides a maintenance-free permanent vacuum.
PC Interface	USB 2.0 high speed with 100% data integrity. No controller box.
Ruggedized Connectors	Maintains overall system integrity in industrial environments.
Scientific Grade CCD with 1 mm Height Spectroscopy Format	Ideally suited for low light level detection in a variety of spectroscopic applications. We offer other CCD formats and sensor types for OEM volumes.
Flexible Input & Output Trigger Interface	Experiment synchronization with External Trigger In & TTL Shutter Out with programmable edge triggering.
LabView VIs and SDK available.	Flexible software to integrate a Sincerity CCD into existing apparatus or as an OEM component. Contact us for a Linux driver.

*Q.E. from CCD manufacturer @ 25°C



Specifications

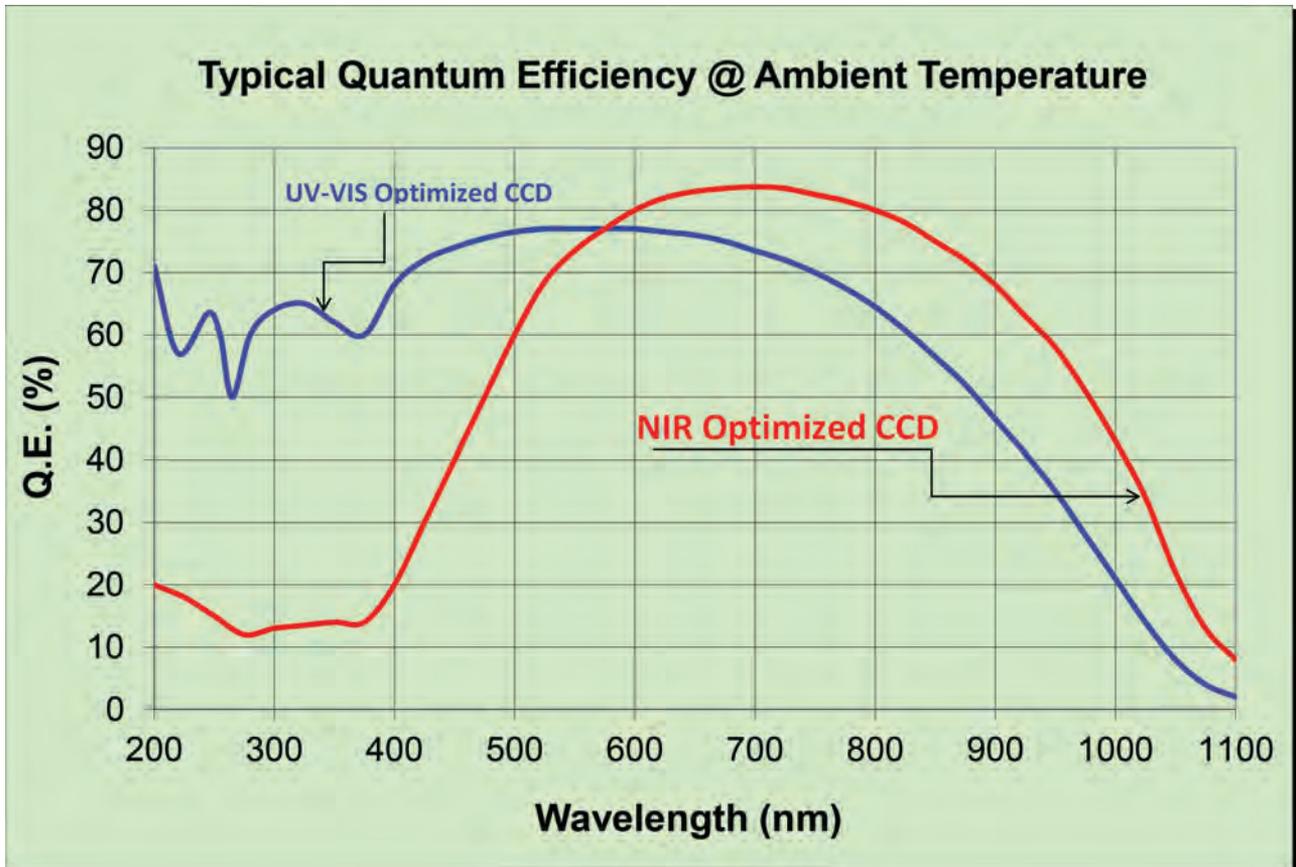
SYNCERITY™ BI-NIR 2048 x 70 — Back-illuminated

CCD Sensor Format	2048 x 70 pixels
Quantum Efficiency @ 25°C (See Q.E. curve below for NIR Optimized)	60% @ 500 nm 80% @ 600 nm 80% @ 800 nm 68% @ 900 nm 42% @ 1000 nm 20% @ 1075 nm
Pixel Size	14 μm x 14 μm
Image Area	28.7 mm x 0.98 mm, 100% fill factor
Deep Thermoelectric Cooling	-50°C @ +25°C ambient (-60°C @ +25°C ambient, on request) Yields low dark current suitable for most OEM and some Research Applications
Single Pixel Well Capacity	50,000 e ⁻ /pixel (Minimum) 60,000 e ⁻ /pixel (Typical)
Serial Register Full Well Capacity	250,000 e ⁻ (Minimum) 500,000 e ⁻ /pixel (Typical) (Typical Output Register Saturation)
Scan Rates	45 kHz and 500 kHz
Readout Noise (@ 45 kHz and @ -50°C) ^{*1}	9 e ⁻ (Typical) to 12 e ⁻ (Maximum)
Readout Noise (@ 500 kHz and @ -50°C) ^{*1}	20 e ⁻ (Typical) to 25 e ⁻ (Maximum)
Maximum Spectral Rate	20 Hz @ 45 kHz scan rate 189 Hz @ 500 kHz scan rate
Digitization	16 bit ADC
Dynamic Range (Typical for Serial Register) ^{*2}	55,500:1
Non Linearity (Measured on Each Camera)	0.15% (Typical) @ 45 kHz (0.4% maximum) 0.20% (Typical) @ 500 kHz (1% maximum)
Dark Current @ -50°C ^{*3} (Note that pixel size = 14 μm)	0.05 e ⁻ /pixel/sec (Typical)
Software-Adjustable Gains	2, 4 & 9.5 e ⁻ /count @ -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	Refer to mechanical drawings herein
Power Requirements AC-DC Power Supply (Provided): Recommendation for OEM Supplying Camera Power Directly:	90–264 VAC, 47–63 Hz <ul style="list-style-type: none"> • Pin: +9 V ± 5%, 6.44 A maximum • Regulation: +8.55 Vmin, +9 Vtyp, +9.45 Vmax • 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)
All specifications subject to change without notice.	

Footnotes:

1. Entire system noise measured for a single pixel
2. Dynamic range is defined as: Full Well / Readout Noise and is measured @ 45 kHz
3. Averaged over CCD area, but excluding any regions of blemishes.

Quantum Efficiency: 42% @ 1000 nm



Sincerity BI-NIR Features an NIR-Optimized CCD (Q.E. measured @ 25°C)

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)

