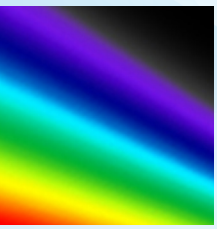
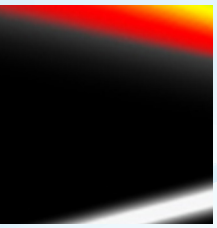
HORIBA Scientific



Syncerity OE

Scientific Deep-cooled Camera for OEM Industrial Applications



Lowest Noise
and Highest Range
in its class

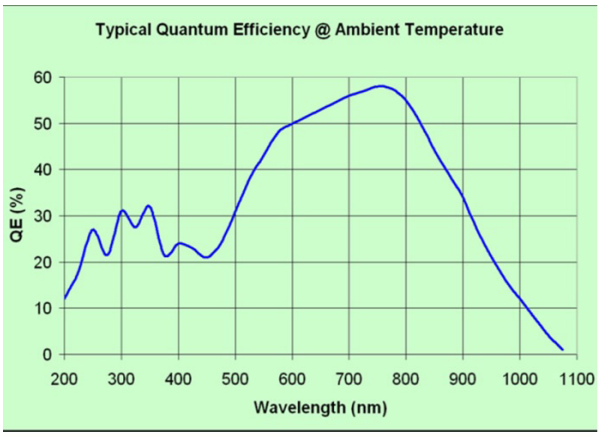
Key Features and Benefits

Lowest Noise and Highest Dynamic Range in its class!

- **1024 x 256 Front Illuminated Open Electrode sensor**
  Broad spectral coverage with no etaloning effect
- **Deep Thermoelectric cooling**
  -600 C for low dark current
- **UV transmission with Fused Silica window**
  Spectral coverage from 200nm to 1050nm
- **16 bit Digitization**
  Provides wide dynamic range
- **> 58% Quantum Efficiency**
  Optimum Photon collection
- **> Lifetime Vacuum Warranty**
  Metal sealed technology for permanent vacuum

Sensor Size	1024 x 256
Deep-cooled	-60ºC
Pixel Size	26µm x 26µm
Digitization	16 bit

Quantum Efficiency



Sample Applications

- Plasma analysis
- Raman spectroscopy
- Fluorescence spectroscopy
- Spectral Flow cytometry
- Absorption/Transmission/Reflection
- Atomic emission spectroscopy
- UV-Vis-NIR spectroscopy

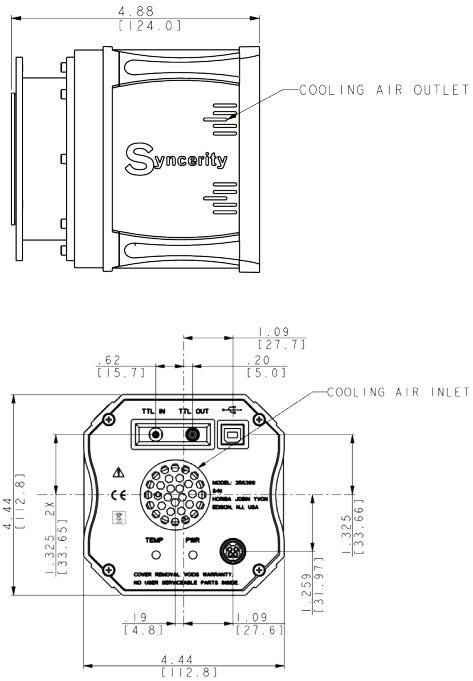
JOBIN YVON Technology

Specifications for Syncerity

CCD Sensor Format	1024 × 256
Quantum efficiency at 20°C	27% at 250nm 31% at 300nm 42% at 550nm 58% at 750nm 55% at 800nm 12% at 1,000nm
Pixel size	26 µm × 26 µm
Image area	26.6mm × 6.7mm, 100% fill factor
Deep thermoelectric cooling	–60 °C @ +25 °C ambient or –50 °C @ +40 °C ambient Yields low dark current suitable for most OEM and some Research applications
Single pixel well capacity	5200,000 e^-/pixel (Minimum_
Serial register full well capacity	1,000,000 e^-/pixel (Typical Output Register Saturation)
Scan rates	45kHz and 1MHz
Readout noise (at 45 kHz and at –60°C)[1] **Readout noise (at 1MHz and at –60°C)[1]**	4.7 e– (Typical) to 7e^- (Maximum) 17 e– (Typical) to 20 e^- (Maximum)
Maximum spectral rate	27Hz at 45 kHz scan rate 278Hz at 1 MHz scan rate
Digitization	16-bit ADC
Dynamic range (typical for single pixel)[2]	42,550:1 (92.5dB providing >15 bit effective dynamic range)
Non-linearity (measured on each camera)	< 0.4% at 45kHz – Linearity better than 99.6% < 0.8% at 1MHz – Linearity better than 99.2%
Dark current at –50°C[3] (Note that pixel size = 26 µm)	0.0052 e–/pixel/sec (Typical) equivalent to 0.0020 e^-/pixel/sec for a 16 m pixel size equivalent to 0.0031 e^-/pixel/sec for a 20 m pixel size
Software-adjustable gains	1–12 e^-/count
Environmental conditions	• 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)** **Recommendation for OEM supplying camera to power directly:**	90–264 VAC, 47–63 Hz • Pin: +9 V, ± 5%, 6.44 A maximum • Regulation: +8.55 V_{min}, +9 Vtyp, +9.45 V_{max} • Ripple & Noise: 200 mV_{pp} maximum
Minimum computer requirements	• 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)

Dimensions

Unit: [inch]mm



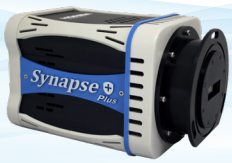
1. Entire system noise measured for a single pixel
2. Dynamic range is defined as Full Well/Readout Noise, measured at 45 kHz
3. Averaged over CCD area, but excluding any regions of blemishes.

Scientific Deep Cooled CCD, InGaAs and CMOS cameras

Syncerity®

Low Cost -50° C
Air-cooled OEM Camera

Synapse® Plus



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

Synapse® EM

EM CCD
Deep-cooled Camera

VUV Syncerity ®

TE-cooled to -50˚ C (Vacuum)
or -30˚ C with N2 purge

Synapse® InGaAs

Deep Cooled NIR Camera
to -75˚ C (Water-cooled)

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