Key Features and Benefits

- **2048 × 70 back-illuminated sensor**
  Enable optimum spectral resolution
- **NIR quantum efficiency enhancement**
  40% QE at 1000 nm, ideal for NIR Spectroscopy
- **Deep thermoelectric cooling**
  –50°C for low dark current
- **Improved etaloning**
  Ideal for Raman applications
- **16-bit digitization**
  Provides wide dynamic range
- **Lifetime vacuum warranty**
  Metal-sealed technology for permanent vacuum

Quantum Efficiency

Sample Applications

- Raman spectroscopy
- Microspectroscopy
- Plasma analysis
- VIS/NIR photoluminescence
- Diffuse reflectance spectroscopy

Suppressed Etaloning
CCD Sensor Format
2048 × 70
Quantum efficiency at 20°C
(See QE curve below for NIR-optimized)
60% at 500 nm; 80% at 600 nm; 80% at 800 nm
68% at 900 nm; 42% at 1000 nm; 20% at 1075 nm
Pixel size
14 μm × 14 μm
Image area
28.7 mm × 0.98 mm, 100% fill factor
Deep thermoelectric cooling
–50°C at +25°C ambient (–60°C at +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–/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
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°C³
0.05 e–/pixel/s (typical)
Software-adjustable gains
2, 4, and 10 e–/count at –50°C
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 Vmax, +9 Vtyp, +9.45 Vmax
• Ripple & Noise: 200 mVpp 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)

Scientific Deep Cooled CCD, InGaAs and CMOS cameras

Syncerity™ BI-NIR Specifications

Low Cost -50°C Air-cooled OEM Camera
Deep-cooled -80°C to -100°C Air or Water-cooled Camera
EM CCD Deep-cooled Camera
TE-cooled to -50°C (Vacuum) or -30°C with N2 purge
Deep Cooled NIR Camera to -75°C (Water-cooled)

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