

CamIR Adapter - a cost-effective Telecom C-band* NIR image converter

- Extends the range of our standard silicon cameras into the near-infrared 1480 to 1605 nm
- No image fading or lag time
- Cost effective for beams $\geq 500 \mu\text{m}$
- High quality AR coated optics

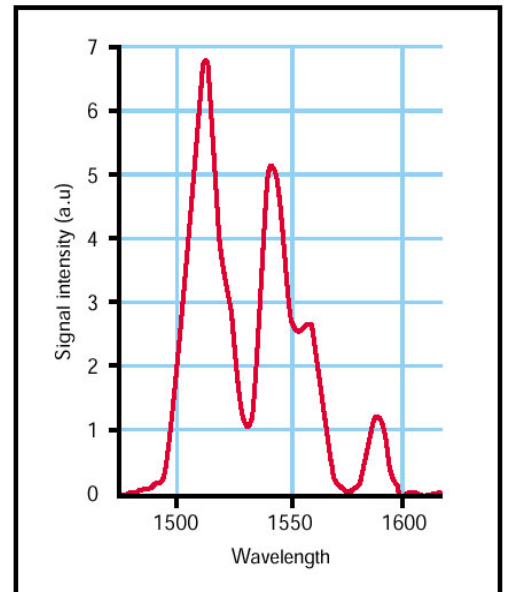
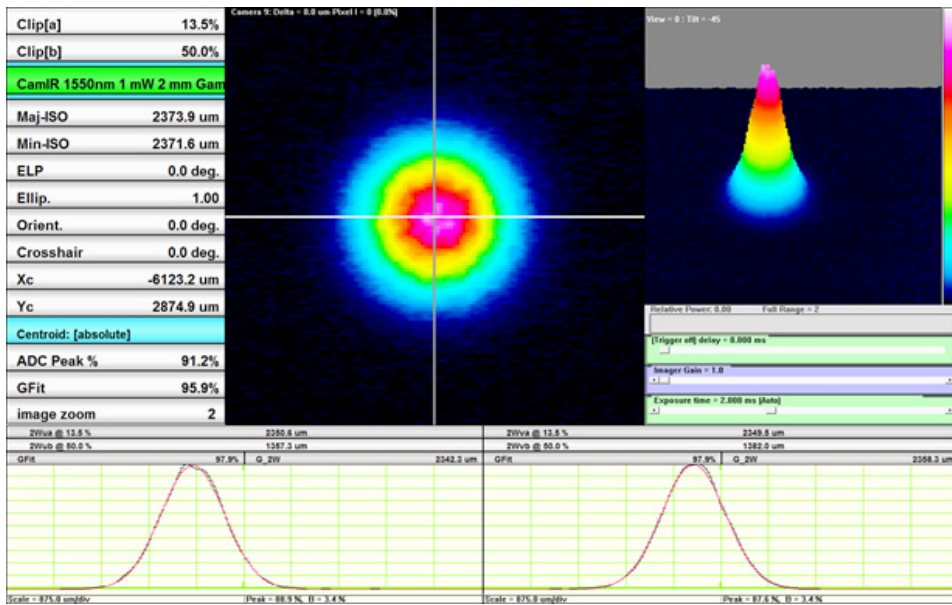
Applications: The **CamIR Adapter*** extends silicon camera sensitivity into the near IR range 1480-1605 nm, the telecom C, L & S* bands. This C-Mount module attaches to a standard DataRay WinCamD series cameras.

Technology: A proprietary phosphor converts 1480-1605 nm photons to Silicon **CMOS/ CCD** detectable wavelengths image to the attached **CMOS/CCD** camera at a demagnification of $\times 0.29$ (PMF=3.5), to give an effective active area of $22 \times 16.5 \text{ mm}$ with a $\frac{1}{2}$ ", $\frac{1}{4}$ ", $\frac{2}{3}$ ", or 1" cameras.

The effective pixel size is 3.5 x the actual pixel size, but due to the phosphor, the primary limitation is the phosphors point spread function of $\sim 70 \mu\text{m}$ FWHM, and $\sim 200 \mu\text{m}$ at $1/e^2$.

The response to incoming irradiance is logarithmic. This is automatically corrected in WinCamD software, by setting the Gamma in **Setup** to 1.41. Like any phosphor, the response is spatially non-uniform. Typical beam diameter measurement accuracy is around 5 to 10%.

Performance and Pricing: This technology is better than the low resolution and image lag of IR vidicons, yet less sensitive and less uniform than InGaAs arrays.



*S-band: 1460 - 1530, C-band: 1530 - 1565, L-band: 1565 - 1625

Technical Specifications

Optical Characteristics

Active Area	27.5 mm
IR Spectral Sensitivity	1480 - 1605 nm (see curve)
Peak IR Sensitivity	1510/1540 nm (see curve)
Maximum Resolution	12 lp/mm over active area
Converter IR Output	950 - 1075 nm
Distortion	-1.0% Barrel Distortion (Inverted Image)
Linearity	Non-Linear IR converter output \sim (IR input intensity) ^{1.41}
Maximum Illumination	1W/cm ² (damage may occur if this limit is exceeded)

Other Characteristics

Dimensions	Φ 46 mm x L 97 mm
Operating Temperature	-10° C to +40° C
Weight	210 g

Requirements

Mount	C-Mount (adapter supplied)
Effective Aperture	17 mm, 19 mm, 23 mm, 27.5 mm
Camera Format	½", ⅓", ¼", ⅛", 1/16" formats

Application Areas

- Beam intensity profiling of telecom diodes/devices
- Imaging optical outputs of components such as optical fiber ends, amplifiers, routers and switchers, fiber gratings, splitters and couplers
- On Line Production Alignment and Characterization –Real time Lens focusing
- Stability Testing- Beam Wander over time
- Divergence measurements
- Co-Linear Measurements Aligning two lasers
- Multiple Image separation Measurements (distance between peaks)
- Measure Relative Intensity

For researchers requiring higher resolutions DataRay offers the phosphor coating applied directly onto the sensor. This improves the point spread function to $\sim 35 \mu\text{m}$ FWHM.

This option is offered on the following cameras;

Model	Description
WinCamD-LCM1-NIR	1" CMOS USB 3.0/2.0 system with phosphor coating for 1480 to 1605 nm.
WinCamD-UHR-NIR	½" CMOS system with phosphor coating for 1480 to 1605 nm.
BladeCam-UHR-NIR	½" CMOS system with phosphor coating for 1480 to 1605 nm.
WinCamD-UCD12-NIR	½" CCD system with phosphor coating for 1480 to 1605 nm.
WinCamD-UCD23-NIR	⅓" CCD system with phosphor coating for 1480 to 1605 nm.
TaperCamD20-15-UCD23-NIR	20 x 15 mm CCD system with phosphor coating for 1480 to 1605 nm.