



Synapse Linear InGaAs Array Scientific CCD Camera

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|------------------------------|
| ELEMENTAL ANALYSIS |
| FLUORESCENCE |
| GRATINGS & OEM SPECTROMETERS |
| OPTICAL COMPONENTS |
| CUSTOM SOLUTIONS |
| PARTICLE CHARACTERIZATION |
| RAMAN / AFM-RAMAN / TERS |
| SPECTROSCOPIC ELLIPSOMETRY |
| SPR IMAGING |

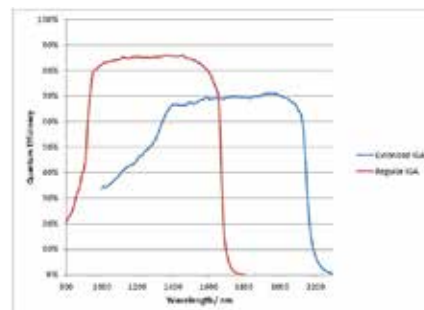
Ideal for low-light-level measurements in the near infrared (NIR) spectral region from 800–1700 nm



HORIBA Scientific's Synapse InGaAs arrays are the ideal choice for demanding, low-light-level measurements in the near infrared (NIR) spectral region from 800–1700 nm. Available in 512×1 ($25 \times 500 \mu\text{m}$), 512×1 ($50 \times 500 \mu\text{m}$), and 1024×1 ($25 \times 500 \mu\text{m}$) pixel formats, these InGaAs detectors provide high resolution while maintaining full well capacity. Synapse InGaAs arrays feature a 16-bit dynamic range, are deep thermoelectrically cooled, and use a mechanical shutter for subtraction of the dark background. Metal seals provide a permanent vacuum seal. A plug-and-play USB 2.0 interface allows portability and easy setup on PC notebooks and desktop computers with 100% data integrity. Applications include near-IR Raman, photoluminescence measurements of semiconductors, SWCNTs, and nanowires. Detectors with sensitivity from $1 \mu\text{m}$ to $2.2 \mu\text{m}$ are also available.

Features and Benefits

- Deep thermoelectric cooling cools the array to -60°C to minimize dark noise (-75°C with external watercooling option)
- High accuracy of data over the full dynamic range
- Easy to use USB 2.0 interface; connects to PC notebooks and desktops with 100% data integrity
- High sensitivity (HiS) and high dynamic range (HiD) modes—software selection of acquisition mode to optimize detector for best signal-to-noise ratio
- Auxiliary signal input—unique ability to add measurements from single-channel detectors without additional electronics
- HORIBA Scientific's SynerJY® software—complete control of a Synapse CCD and HORIBA Scientific Spectrographsystem with full analysis capabilities
- LabVIEW VIs and SDK available—flexible software to integrate a Synapse CCD into existing apparatus or as an OEM component



Linear extended InGaAs to 2200 nm

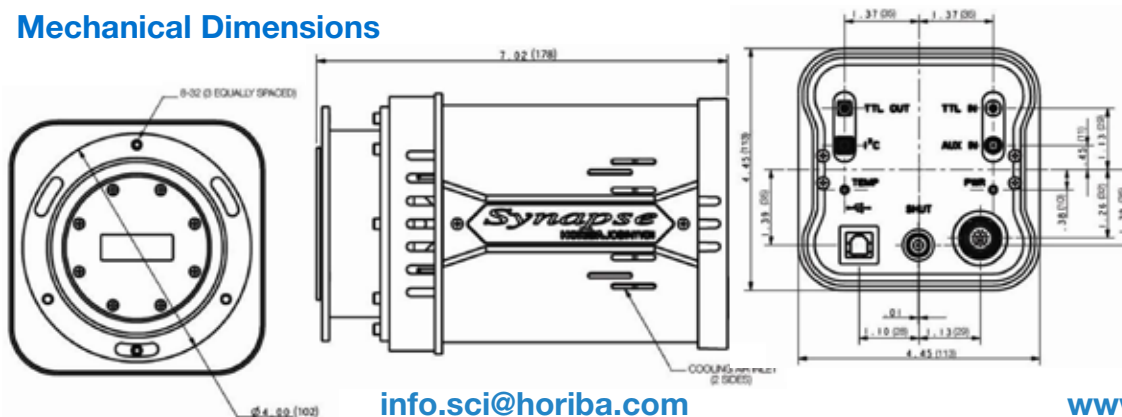
Linear InGaAs to 1700 nm

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|--------------------------------------|--|----------------------|-----------------------|
| IGA format | 512 x 1 | 512 x 1 | 1024 x 1 |
| Element size | 25 µm x 500 µm | 50 µm x 500 µm | 25 µm x 500 µm |
| Array size | 12.8 mm | 25.6 mm | 25.6 mm |
| Cooling system | Four-stage thermoelectric cooling. Typical operating temperature -60°C. External cooling option available (-75°C typical.) | | |
| Typical readout noise | High gain: 0.5 – 0.7 ke- rms; Low gain: 5-7 ke- rms | | |
| Typical full well capacity | High gain: 5 Me-; Low gain: 130 Me- | | |
| Typical dark current at -60°C | 32 ke-/p/s | 56 ke-/p/s | 45 ke-/p/s |
| Typical dark current at -75°C | 11 ke-/p/s | 18 ke-/p/s | 15 ke-/p/s |
| Response nonuniformity | ± 10% | ± 5% | ± 10% |
| Response nonlinearity | < ± 1% | | |
| Gain (normal) | High gain: 58 e-/count; Low gain: 1545 e-/count | | |
| Dynamic range | 16 bits | | |
| Pixel defects | Max of 5 dark pixels | Max of 5 dark pixels | Max of 10 dark pixels |

Linear extended InGaAs to 2200 nm

| | | | |
|--------------------------------------|--|----------------------|-----------------------|
| IGA format | 512 x 1 | 512 x 1 | 1024 x 1 |
| Element size | 25 µm x 250 µm | 50 µm x 250 µm | 25 µm x 250 µm |
| Array size | 12.8 mm | 25.6 mm | 25.6 mm |
| Cooling system | Four-stage thermoelectric cooling. Typical operating temperature -60°C. External cooling option available (-75°C typical.) | | |
| Typical readout noise | High gain: 0.5 – 0.7 ke- rms; Low gain: 5-7 ke- rms | | |
| Typical full well capacity | High gain: 5 Me-; Low gain: 130 Me- | | |
| Typical dark current at -60°C | 10 Me-/p/s | 16 Me-/p/s | 14 Me-/p/s |
| Typical dark current at -75°C | 3 Me-/p/s | 5 Me-/p/s | 5 Me-/p/s |
| Response nonuniformity | ± 10% | ± 5% | ± 10% |
| Response nonlinearity | < ± 1% | | |
| Gain (normal) | High gain: 58 e-/count; Low gain: 1545 e-/count | | |
| Dynamic range | 16 bits | | |
| Pixel defects | Max of 5 dark pixels | Max of 5 dark pixels | Max of 10 dark pixels |

Mechanical Dimensions



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