

Condor 486EF



The Condor™ 486EF is an ultrasensitive, fiberoptic coupled camera for imaging phosphors and other xray and electron scintillators. Applications that demand a large field of view and high optical throughput particularly benefit from the size and sensitivity of the Condor. The camera is based upon a state-of-the-art, scientific grade, 4k x 4k sensor. At more than 36 cm², this sensor is the largest commercially available CCD, and when coupled to a 1:1 imaging fiberoptic, it delivers unsurpassed optical throughput. The camera boasts a lownoise, dual speed, four port readout architecture for superior speed and sensitivity. Dark current is minimized with regulated thermoelectric cooling to -25 °C. Linear, 16-bit dynamic range and sophisticated features such as software control over

binning and gain make the Condor the ultimate instrument for low light detection of electron and x-ray images. The Condor 486 EF model is designed with the fiber optic protruding from the vacuum chamber such that the user can utilize a wide range of phosphors or other fiber optic scintillators. In addition, this model is ideally suited for mating with the fiber optic output of other apparatus such as streak tubes or image intensifiers.

Features

Benefits

| | |
|---|--|
| 4k x 4k sensor | High resolution (16 Megapixel) |
| 60 mm x 60 mm CCD image area | Large field of view |
| 1:1 straight fiber-optic faceplate | Highest throughput, no taper distortion |
| Four-port readout | Optimal design for speed and sensitivity |
| 90 mm extended fiber | Efficient coupling & x-ray absorption |
| Deep thermoelectric cooling | Minimize dark noise |
| High-performance low-noise electronics | Minimize readout noise |
| Linear 16-bit dynamic range | Scientific precision and accuracy |
| Software-controlled binning & windowing | Optimize speed versus resolution |
| Plug-in for ImagePro Plus software | Data acquisition and analysis |



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Specifications

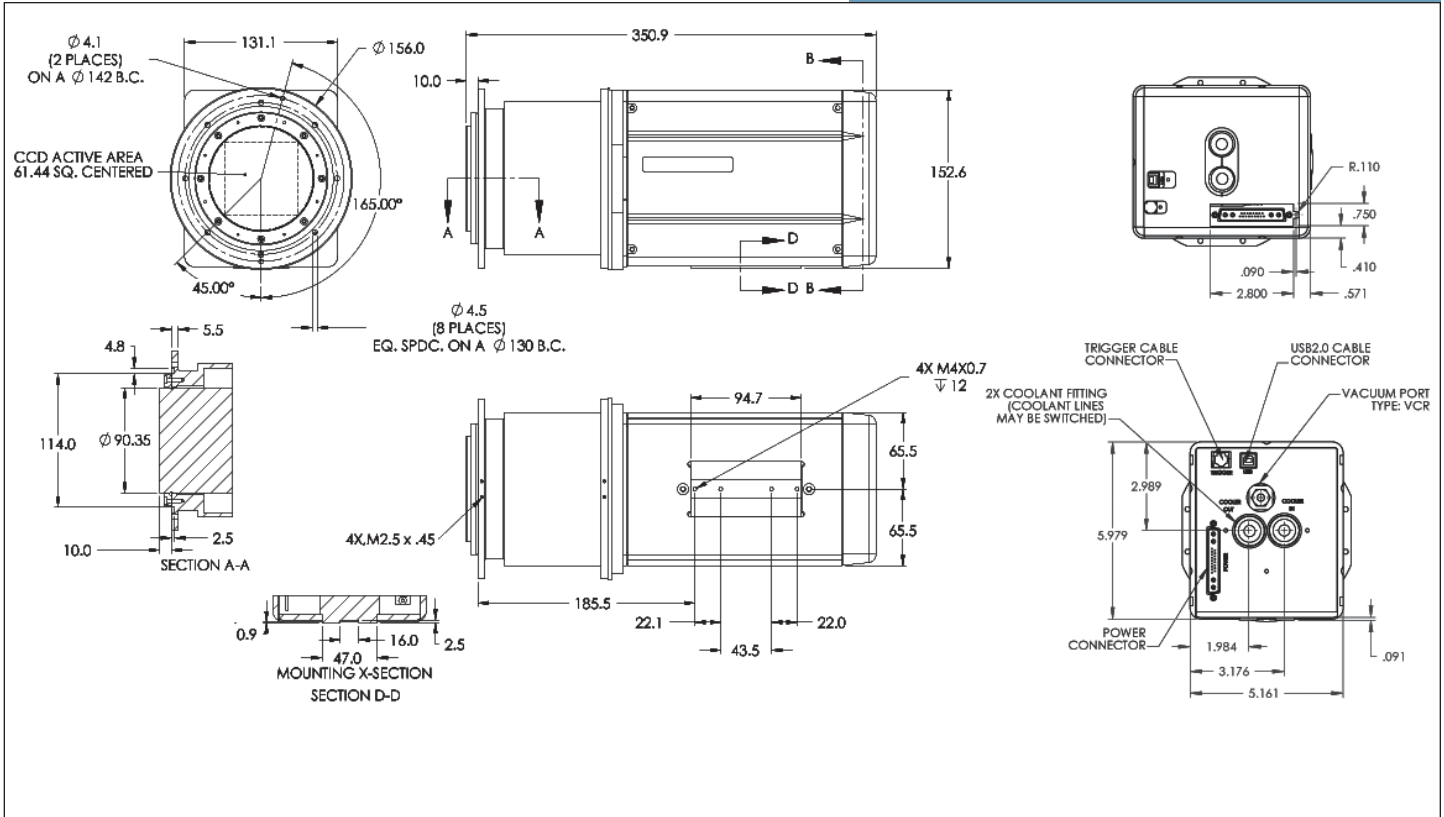
| | | | |
|------------------------|---|-----------------------------------|-----------------------------|
| Sensor | 16MP CCD, scientific grade 1, front-illuminated | | |
| Type | 16MP CCD, scientific grade 1, front-illuminated | | |
| Resolution | 4096 x 4096 pixels | | |
| Pixel Size | 15 μm x 15 μm | | |
| Image Area | 61.44 mm x 61.44 mm | | |
| Fiber Optic Phosphor | 1:1 external fiber-optic (90 mm diameter) Gadolinium Oxysulfide ($\text{Gd}_2\text{O}_2\text{S}$) - Custom phosphors available | | |
| Read Noise | Minimum | Typical | Maximum |
| | 1 MHz | 10 e ⁻ | 12 e ⁻ |
| 250 kHz | 5 e ⁻ | 7 e ⁻ | |
| Full Well Capacity | | | |
| Single Pixel | 80 ke ⁻ | 100 ke ⁻ | |
| Output Register | 700 ke ⁻ | 800 ke ⁻ | |
| Gain | | 1.5 e ⁻ /ADU (nominal) | |
| Linearity | | < 1% | |
| Dark Current (-25 °C) | | 0.5 e ⁻ /pix/sec | 1.0 e ⁻ /pix/sec |
| Cooling | -25°C, Thermoelectric w/chilled water | | |
| Output Ports | 4 low noise amplifiers | | |
| Readout Rate | | | |
| 4 MHz | 4 ports x 1 MHz | | |
| 1 MHz | 4 ports x 250 kHz | | |
| Binning and Windowing | 1x1, 2x2, 4x4 and 8x8; Arbitrary sized centered window | | |
| ADC Dynamic Range | 16-bit | | |
| Vertical Shift Speed | 200 μsec | | |
| Operating Range | 15°C to 30°C; 40% to 75% relative humidity (non-condensing) | | |
| PC Interface | USB 2.0 | | |
| I/O Triggers | External In, Expose Out, Shutter Out | | |
| Dimensions (H x W x L) | 6.0 in. x 5.2 in. x 14.0 in. (152 mm x 131 mm x 351 mm) | | |
| Camera Weight | 25 pounds (11.4 kg) | | |

*Note: All Specifications measured in 1x1 (full image) mode unless stated otherwise. Subject to change without notice.



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Mechanical Drawing



Readout Rates

| | 1 x 1 - 4MHz | 2 x 2 - 2.5 MHz | 4 x 4 - 2.1 MHz | 8 x 8 - 1.6 MHz |
|--------------|--------------|-----------------|-----------------|-----------------|
| Readout Time | 6.5 sec | 1.90 sec | 1.18 sec | 0.55 sec |
| Frame Rate | 0.15 fps | 0.52 fps | 0.85 fps | 1.8 fps |

Note: Measured with 0 sec exposure. Actual results may vary depending upon your experimental conditions.

Fairchild Imaging certifies that its products are fully inspected and tested at the factory prior to shipment, and that they conform to the stated specifications.

This product is designed, manufactured, and distributed utilizing the ISO 9001:2008 Business Management System.