Peregrine 486SX

The Peregrine™ 486SX is a high-performance imaging camera for use in low energy x-ray detection applications. The camera is based upon a scientific grade 4k x 4k sensor, is available back-illuminated, and incorporates a non-AR coating design to provide maximum sensitivity. The camera boasts a low-noise, dual-speed, four-port readout architecture for superior speed and sensitivity. Dark current is virtually eliminated with deep thermoelectric cooling to −50 °C. Linear, 16-bit dynamic range and sophisticated features such as software-controlled windowing and binning make the Peregrine™ the ultimate instrument in scientific optical imaging. The camera is packaged in a compact and rugged housing and the front nose can be easily adapted to your VUV system, or an optional beryllium window can be installed.

Features / Benefits

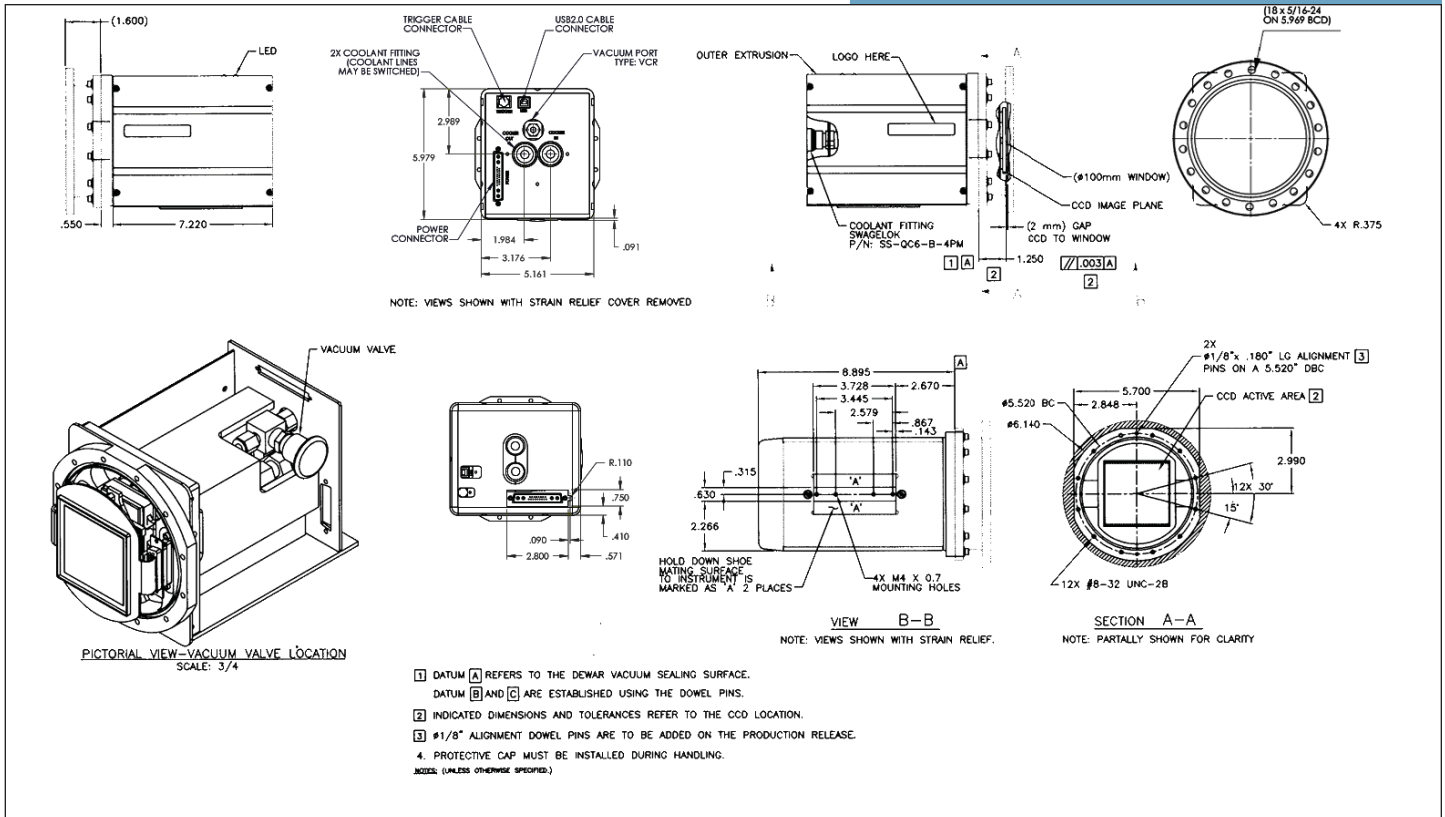| Features	Benefits
4k x 4k sensor	High resolution (16 Megapixel)
60 mm x 60 mm CCD image area	Large field of view
Back-illuminated Non-AR coated CCD	Highest quantum efficiency for low energy x-rays
Flexible user interace	Adaptable to vacuum ports or beryllium window
Four-port readout	Optimal design for speed and sensitivity
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 acquisitoin and analysis

Specifications

Sensor

Type	16MP CCD, scientific grade 1, back-illuminated, Non-AR coated
Resolution	4096 x 4096 pixels
Pixel Size	15 µm x 15 µm
Image Area	61.4 mm x 61.4 mm
Front nose options	6.75" rotatable conflat flange (1 ev – 10 kev) Beryllium window (2 keV – 20 keV)

	Minimum	Typical	Maximum
Read Noise			
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 (–50°C)		0.25 e-/pix/sec	0.5 e-/pix/sec

Cooling	–50°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)
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 9.4 in. (152 mm x 131 mm x 239 mm)
Camera Weight	20.5 pounds (9.3 kg)

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

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Mechanical Drawing

NOTE: VIEWS SHOWN WITH STRAIN RELIEF COVER REMOVED

PICTORIAL VIEW—VACUUM VALVE LOCATION
SCALE: 3/4

VIEW B—B
NOTE: VIEWS SHOWN WITH STRAIN RELIEF.

SECTION A—A
NOTE: PARTIALLY SHOWN FOR CLARITY

1 DATUM A REFERS TO THE DEWAR VACUUM SEALING SURFACE.
DATUM B AND C ARE ESTABLISHED USING THE DOWEL PINS.
2 INDICATED DIMENSIONS AND TOLERANCES REFER TO THE CCD LOCATION.
3 ⌀1/8" ALIGNMENT DOWEL PINS ARE TO BE ADDED ON THE PRODUCTION RELEASE.
4. PROTECTIVE CAP MUST BE INSTALLED DURING HANDLING.
NOTES: (UNLESS OTHERWISE SPECIFIED.)

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 9001:2000 Business Management System.