

Selection/Satisfaction/Service = The AMT Advantage

XR-41 TEM Camera Series

***Large 4 Megapixel Format Sensor
40 MHz, High Speed Readout
Fast GigE Interface
High Performance Lenses***



XR41S-B

Classic Wide-Angle Side-Mount

- 1) >100% photographic or greater field-of-view imaging with up to a 30x30 mm phosphor.
- 2) 15 μm square pixels at phosphor .
- 3) Uses AMT's high performance B-lens.

XR41M-B

Wide-Angle Multi-Discipline Mid-Mount

- 1) 50% photographic or greater field-of-view imaging with up to a 30x30 mm phosphor.
- 2) 15 μm square pixels at phosphor depending on lens option.
- 3) Uses AMT's high performance B-lens.

XR41M-C

Super-Wide Angle Mid-Mount

- 1) ~100% photographic or greater field-of-view imaging with up to a 60x60 mm phosphor.
- 2) 30 μm square pixels at phosphor depending on lens option.
- 3) Uses AMT's high performance C-lens.

XR41L-B

High Mag Low-Mount

- 1) ~37% photographic field-of-view imaging with 30x30 phosphor.
- 2) 15 μm square pixels at phosphor.
- 3) Uses AMT's high performance B-lens.
- 4) Film compatible

XR41L-C

Wide-Angle Low-Mount

- 1) ~75% photographic field-of-view imaging with a large 60x60 mm phosphor.
- 2) Largest available, 30 μm square pixels at phosphor.
- 3) Uses AMT's high performance, large format C-lens.
- 4) Film compatible.

XR-41L-HTV

TV Rate, High Magnification Low-Mount

- 1) High "mag factor" of ~ 20x on display monitor depending on TEM.
- 2) Phosphor optimized for kV and user's application.
- 3) Uses AMT's high performance HTV-lens.
- 4) 7.4 μm square pixels at phosphor.



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Finite Conjugate Lens Options For XR-41 Series

AMT B Lens: Combines extraordinary speed with high resolution. This lens maintains a >70% MTF @ 70 line-pairs/mm across the entire image to provide unmatched sharpness at its numerical aperture of 0.23 @image). This low f-number gives B lens systems extremely high sensitivity. The B lens has <1% distortion across the field.

AMT C Lens: This is a sharp 4:1 lens (0.25x magnification) that is also very fast, with a numerical aperture of 0.40 @image. This lens maintains a >60% MTF @100 line-pairs/mm across the entire image of large phosphor screens needed for high definition, biological imaging. It is used at its maximum aperture to achieve low magnification factor bottom mount imaging. The C lens has <1% distortion across the field.

AMT HTV Lens: This is our highest efficiency 1:1 lens with a numerical aperture of 0.50 @image. It maintains a >70% MTF @40 line-pairs/mm across the entire image so that the XR41-HTV can provide sharp images with up to a 2048x2048 pixel format. The HTV lens has <1% distortion across the field.

XR-41 Camera Properties

Sensor: Scientific grade, progressive scan CCD sensor (Kodak KAI-4022 series) with anti-blooming sensor architecture. CCD has 2048 x 2048 x 7.4 μ m pixels with 15x15 mm active area.

Shutter: Electronic Shutter with no beam blanking or mechanical shutter required with exposures adjustable from 1 ms to 60 min. Overlapped shutter mode is used to maintain fast readout at longer exposures.

Digital Interface and Electronics: High speed GigE digital camera interface for both data transfer and control. All electrical components are outside the TEM vacuum for reliability and maintenance.

Readout Rate: Maximum 40MHz single port readout of full and sub-area. System automatically converts to 20 MHz for critical processes requiring <2 counts of read noise per pixel. Data recorded and displayed with up to 16 bit summations of ADC output. Well depth maximum of 76,000 electrons.

Maximum viewing speeds:

Full field/1x1 binning (i.e. full resolution): 7 fps

Full field/2x2 binning: 14 fps

Full field/4x4 binning: 24 fps

Half field/1x1 binning) 15 fps

