

## BLAZE® CCD CAMERA

### KEY FEATURES

- Back-Illuminated CCD
- Super sensitive in the NIR, up to 75% quantum efficiency (QE) at 1000 nm
- Blazing fast with dual 16 MHz readouts
- ADC readout speeds 10-15x higher than typical spectroscopy CCDs
- 1650 spectra/sec full vertical binning
- Deepest cooling to true -100 °C thanks to ArcTec™ technology
- Also available in a 1340 x 400 sensor format
- Patented eXcelon process for high sensitivity in visible and NIR
- SeNsR™ operating mode with bidirectional clocking ability

### TYPICAL APPLICATIONS

- Raman spectroscopy
- Photoluminescence
- Nanoparticle research
- Carbon nanotube studies
- Pump-probe experiments
- Fluorescence
- Micro-spectroscopy

### RELIABILITY

- One-year warranty
- Permanent vacuum guarantee

## Revolutionary High-Speed Cameras for Spectroscopy

The BLAZE® family of CCD cameras are ideal for low-light spectroscopy detection, offering unmatched performance and ease of use. BLAZE delivers extremely high sensitivity over the visible and NIR range (thanks to revolutionary new sensors with up to 3x higher NIR sensitivity), low dark current, blazing spectral rates up to thousands of spectra per second, and for low light applications, BLAZE delivers true -100 °C cooling for ultra-low dark current, ideal for long exposures.

The BLAZE family consists of the BLAZE 100 (1340 x 100 sensor) and the BLAZE 400 (1340 x 400 sensor), both with large 20 µm pixels, ideal for sensitive spectroscopy applications that require speed, sensitivity and low-noise.



**BLAZE SPECIFICATIONS**

| SPECIFICATIONS                  | BLAZE 100                                                                                                  | BLAZE 400                                     |
|---------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| CCD Sensor Format               | Back-illuminated, fully depleted high-resistivity-silicon HR-sensor (included anti-fringing coating)       |                                               |
| Active Array Size               | 1340 x 400 pixels                                                                                          | 1340 x 400 pixels                             |
| Pixel Area                      | 20 $\mu\text{m}$ x 20 $\mu\text{m}$ (400 $\mu\text{m}^2$ )                                                 |                                               |
| Sensor Area                     | 26.8 mm (W) x 2.0 mm (H) (optically centered)                                                              | 26.8 mm (W) x 8.0 mm (H) (optically centered) |
| Spectral Response               | 250 – 1150 nm                                                                                              |                                               |
| Full Well Capacity              | > 128,000 $\text{e}^-$                                                                                     |                                               |
| ADC Rates                       | Low noise: 2 x 100 kHz, 2 x 1 MHz, 2 x 4 MHz<br>High speed: 2 x 5 MHz, 2 x 10 MHz, 2 x 16 MHz              |                                               |
| Linearity                       | $\geq 99\%$                                                                                                |                                               |
| I/O Signals                     | Trigger In, TTL Out, Readout Monitor, Expose Monitor, Shutter Monitor, External Shutter Control            |                                               |
| Readout Modes                   | Full Frame, Cropped, Bi-Directional, Kinetics                                                              |                                               |
| Typical System Read Noise (RMS) | $\leq 3.0 \text{ e}^-$ @ 100 kHz; $\leq 10.0 \text{ e}^-$ @ 2 MHz                                          |                                               |
| Typical Dark Current            | 0.0015 $\text{e}^-/\text{p/s}$ @ -100 °C                                                                   |                                               |
| Cooling Method                  | Thermoelectric air and liquid cooling (additional liquid circulator required)                              |                                               |
| Cooling Temperature             | -95 °C (air cooled); -100 °C (20 °C liquid assist)                                                         |                                               |
| Thermostating Precision         | $\pm 0.05$ °C across temperature range                                                                     |                                               |
| Vertical Clock Speeds           | 4, 8, 10, 20 $\mu\text{s}/\text{row}$ (software selectable)                                                |                                               |
| Output Interface                | USB 3.0                                                                                                    |                                               |
| Digitization                    | 16-bit                                                                                                     |                                               |
| Operating Temperature Range     | 5 °C to 30 °C (non-condensing)                                                                             |                                               |
| Camera Weight                   | 10 lbs, 4.5 kg                                                                                             |                                               |
| Camera Dimensions               | 213.7 x 142.8 x 142.8 mm (L x W x D)                                                                       |                                               |
| Certification                   | CE, UL/CSA, FCC Part 15, VCCI (Japan), BSMI (Taiwan), KN32 & KN35 (Korea), AS/NZS (Australia, New Zealand) |                                               |

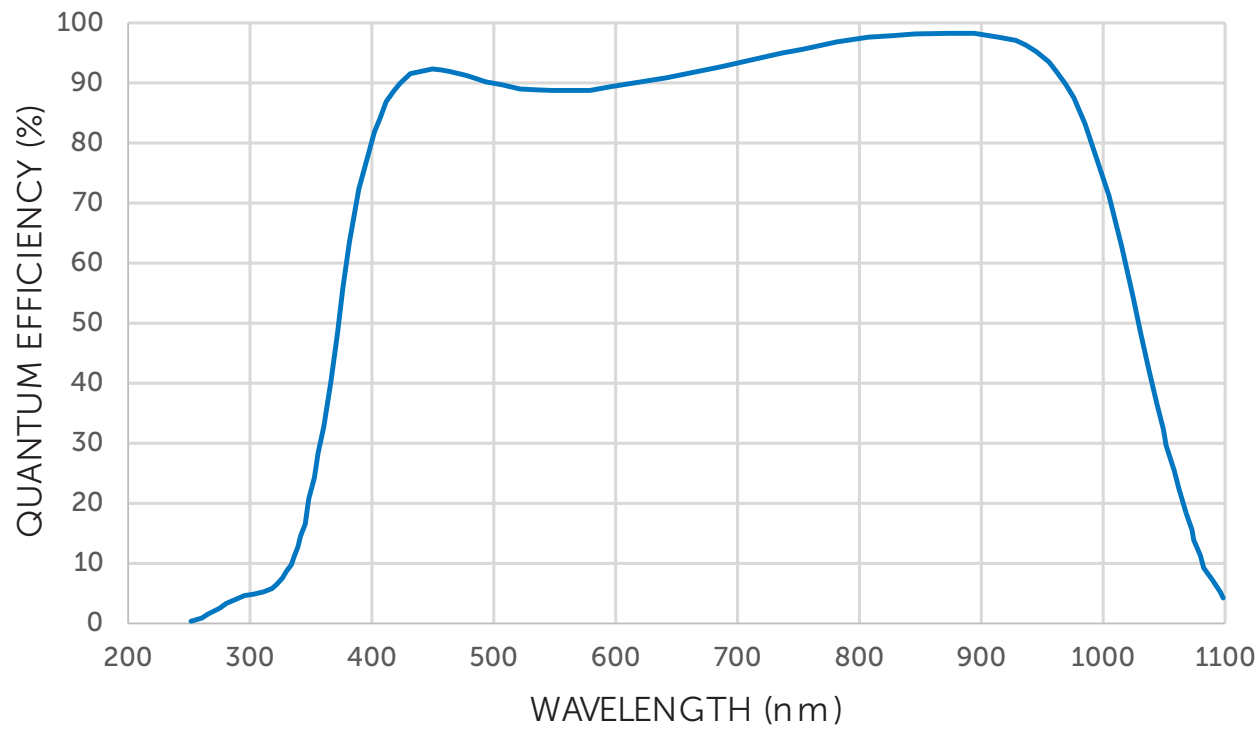
**BLAZE 100 SPEED TABLES**

| Readout RateS (2 ports) | Spectral Rates | Frame Rates |
|-------------------------|----------------|-------------|
| 16 MHz                  | 1650           | 218         |
| 10 MHz                  | 1260           | 140         |
| 5 MHz                   | 1095           | 70          |
| 4 MHz                   | 990            | 57          |
| 1 MHz                   | 680            | 14.8        |
| 100 kHz                 | 133            | 1.5         |

**BLAZE 400 SPEED TABLES**

| Readout Rate (2 ports) | Spectral Rate | Frame Rate |
|------------------------|---------------|------------|
| 16 MHz                 | 577           | 37         |

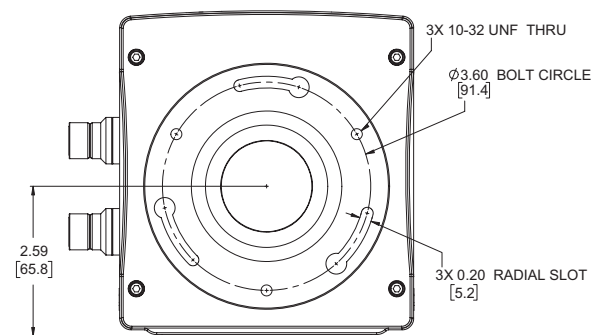
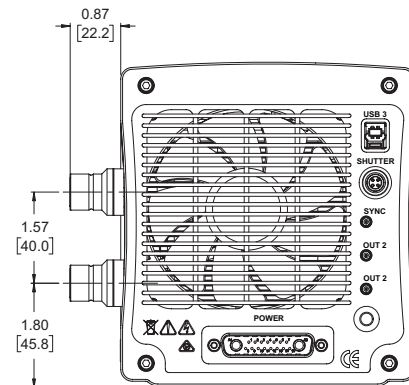
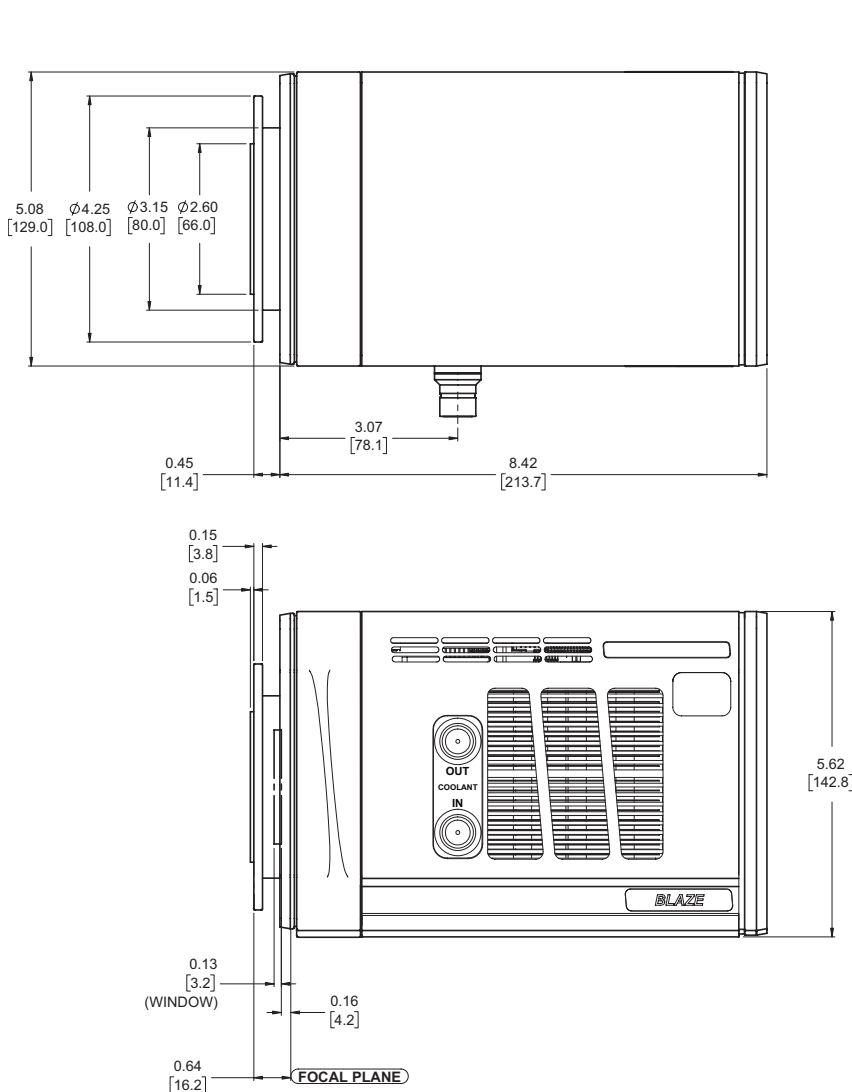
BLAZE QE CURVE



Enhanced Unichrome UV version available upon special request.

BLAZE ACCESSORIES

| ACCESSORIES (Air Cooling) |                            | ACCESSORIES (Liquid Cooling) |                            |
|---------------------------|----------------------------|------------------------------|----------------------------|
| Power supply cables       | Data acquisition software  | Power supply cables          | Coolant hoses              |
| MCX to BNC cables (x3)    | Certificate of Performance | MCX to BNC cables (x3)       | Data acquisition software  |
| USB 3.0 interface cables  |                            | USB 3.0 interface cables     | Certificate of Performance |
|                           |                            | External coolant circulator  |                            |

**BLAZE 400 & 100 DIMENSIONAL OUTLINES (Unit: mm)**

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Specifications in this datasheet are subject to change.  
 Refer to the Teledyne Princeton Instruments website for most current specifications.

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Revision Date: 2025 01 10