

## High Resolution BSI Scientific CMOS

Prime BSI Express is designed on a compact platform optimized for integration and delivers the perfect balance between high resolution imaging and sensitivity with an optimized pixel design and near perfect 95% Quantum Efficiency to maximize signal detection.

A 4.2 Megapixel camera with 6.5µm pixels, it captures highly detailed images with great quality while acquiring data at high frame rates with a convenient but capable USB 3.2 Gen 2 interface. This ensures that all data is collected and no event goes undetected.

This perfect balance in performance makes the Prime BSI Express the most versatile imaging camera for system integration with:

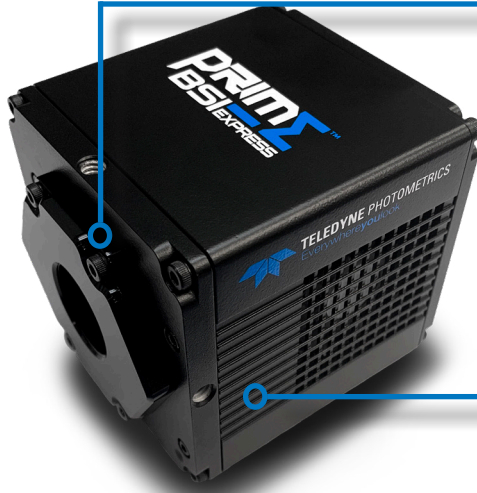
- Highest Sensitivity
- High Resolution
- Large Field of View
- High Frame Rates
- Large Dynamic Range



- ▶ **95% Quantum Efficiency**
- ▶ **6.5µm x 6.5µm Pixel Area**
- ▶ **1.0e- Read Noise**
- ▶ **USB 3.2 Gen 2 Interface**
- ▶ **78mm x 78mm x 92mm Form Factor**

| Features                               | Advantages   |
|--|--|
| High Quantum Efficiency<br>95% Peak QE | Maximizes ability to detect weak signals, enables short exposure times at high frame rates, minimizes phototoxicity across a wide range of wavelengths |
| Optimized 6.5µm Pixel Size             | Maximize light collection while maintaining proper spatial sampling at 60X   |
| Extremely Low Read Noise               | Maximize your ability to detect faint fluorescence   |
| Fast Frame Rates                       | Capture highly dynamic events with high temporal resolution  |
| Large Field of View                    | Maximize the number of cells that can be tracked and monitored per frame   |
| Enhanced Dynamic Range                 | Measure both bright and dim signal levels within the same image  |
| SMART Streaming™                       | Faster acquisition rates with variable exposures, ideal for multi-probed live cell imaging   |
| Programmable Scan Mode                 | Easily synchronize and control acquisitions with the rolling shutter readout   |

### 4.2 Megapixel BSI CMOS Sensor



Backside Illuminated Sensor  
>95% peak QE  
45,000e- full well  
6.5 x 6.5µm pixels  
18.8mm diagonal

### Easily Mounted and Secured

C-Mount  
One ¼" -20 mounting holes per side

### Cooling

0°C Forced Air Cooling

### Advanced Triggering Capabilities

Effective Global Shutter  
Four Trigger Lines:  
Trigger in, Expose Out, Trigger Ready and Read Out

### Convenient Interfaces

USB 3.2 Gen 2  
USB Diagnostic Port for remote troubleshooting



| Specifications     | Camera Performance   |
|--------------------|--|
| Sensor             | Gpixel GSENSE2020BSI Scientific CMOS sensor                          |
| Active Array Size  | 2048 x 2048 (4.2 Megapixel)  |
| Pixel Area         | 6.5µm x 6.5µm (42.25µm <sup>2</sup> )                                |
| Sensor Area        | 13.3mm x 13.3mm, 18.8mm diagonal                                     |
| Peak QE%           | >95%   |
| Read Noise         | Correlated Multi-Sampling (CMS) 1.0 e- (Median)<br>1.1e- (RMS)       |
|                    | Combined/High Gain 1.6e- (Median)<br>1.8e- (RMS)                     |
| Full-Well Capacity | 45,000e- (Combined Gain)   |
|                    | 10,000e- (High Gain)   |
|                    | 1,000e- (CMS)  |
| Dynamic Range      | 25,000:1 (Combined Gain)   |
| Bit Depth          | 16-bit (Combined Gain)   |
|                    | 12-bit (CMS)   |
|                    | 11-bit (High Gain)   |
| Readout Mode       | Rolling Shutter, Effective Global Shutter,<br>Programmable Scan Mode |
| Binning            | 2x2 (on FPGA)  |

- ▶ Cameras that excel in a wide range of applications
- ▶ Flexible and customizable branding options Unique part number/ Bill of Materials (BOM)
- ▶ Bill of Materials (BOM) supports a wide range of product offerings
- ▶ Strategically located global service centers
- ▶ Dedicated support from a focused OEM team

| Cooling    | Sensor Temperature | Dark Current        |
|------------|--------------------|---------------------|
| Air Cooled | 0°C @ 25°C Ambient | 1.5e- /pixel/second |

| Specifications    | Camera Interface                                    |
|-------------------|---|
| Digital Interface | USB 3.2 Gen 2                                       |
| Lens Interface    | C-Mount   |
| Mounting Points   | One ¼ 20" mounting point on each side of the camera |

| Programmable Scan Mode | Function   |
|------------------------|--|
| Scan Modes             | Auto: Normal camera operation<br>Line Delay: Control rolling shutter propagation rate by adding delays to the line time<br>Scan Width: Control number of rows between reset and readout signal in the rolling shutter                      |
| Scan Direction         | Down: Rolling shutter readout begins at the top of the sensor<br>Up: Rolling shutter readout begins at the bottom of the sensor<br>Down/Up Alternate: Rolling shutter readout alternates direction after starting at the top of the sensor |

