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## Prelude™ Functional Imaging Microscope



### Features

- Laser-Alignment-Free Operation
- Integrated Optics and Filters for Two-Photon Imaging of GFP
- Fiber-Coupled fs Laser Source with Dispersion Compensation for Improved Contrast
- Hypersensitive Silicon Photomultiplier (SiPM) Detector
- Vibrationless Remote Focus Adjustment
- Includes Long-Working-Distance 10X or 16X Objective

Ushering in a new level of flexibility for functional imaging, Thorlabs has created a completely integrated two-photon microscopy system suitable for samples with demanding positioning requirements. The Prelude™ Functional Imaging Microscope offers motorized XYZ translation and manually operated rotation through a  $\pm 90^\circ$  range, providing multi-axis access to samples at non-vertical angles. Its compact fiber-coupled design eliminates the need for complex alignment procedures and provides a high degree of maneuverability.

A near-infrared 920 nm femtosecond pulsed laser and integrated filter set are ideally suited for two-photon imaging of GFP. The fiber-coupled laser source allows for easy assembly, disassembly, and relocation of the system compared to multiphoton microscopes that use free-space laser beams and mirrors.

The Prelude is available with either of two objectives: a 10X dry objective with a long 7.77 mm working distance, or a 16X water-dipping objective with a large collection NA of 0.80. Non-descanned detection optics collect signals emitted over a  $7^\circ$  angle (for a  $\varnothing 20$  mm objective entrance pupil) and deliver them to a hypersensitive silicon photomultiplier (SiPM) detector.

A liquid crystal-based remote focus system provides vibrationless translation of the focal plane between 16 discrete positions over a 300  $\mu\text{m}$  or 600  $\mu\text{m}$  range when using the 16X objective or 10X objective, respectively. This enables the Prelude to perform volumetric functional imaging without moving either the objective or the sample.

- **Compact and Maneuverable Multiphoton Functional Imaging System**
- **Designed for Two-Photon Imaging of GFP**
- **Motorized XYZ Translation and Manual  $\pm 90^\circ$  Rotation**

| Key Specifications                          |  |  |
|---|--|--|
| Scanner                                     | 4.7 kHz Resonant-Galvo-Galvo Scanning  |  |
| Scan Speed                                  | >12 fps at 512 x 512 Pixels  |  |
| Collection Optics                           | 7° Non-Descanned Collection Optics (for a $\varnothing 20$ mm Entrance Pupil)                                  |  |
| Detection                                   | Silicon Photomultiplier (SiPM)   |  |
| Motion                                      | 1" (25.4 mm) of Motorized Travel in X, Y, and Z<br>$\pm 90^\circ$ of Manually Operated Rotation                |  |
| Objective Threading                         | M32 x 0.75   |  |
| Objective (Choose One)                      |  |  |
| Item #                                      | TL10X-2P   | N16XLWD-PF   |
| Magnification                               | 10X  | 16X  |
| Collection NA                               | 0.50   | 0.80   |
| Immersion                                   | Dry  | Water Dipping  |
| Working Distance                            | 7.77 mm  | 3.0 mm   |
| Imaging <sup>a</sup>                        |  |  |
| Field of View                               | 1600 $\mu\text{m}$ x 1600 $\mu\text{m}$ (<100 Hz Scan)<br>880 $\mu\text{m}$ x 880 $\mu\text{m}$ (4.7 kHz Scan) | 1000 $\mu\text{m}$ x 1000 $\mu\text{m}$ (<100 Hz Scan)<br>550 $\mu\text{m}$ x 550 $\mu\text{m}$ (4.7 kHz Scan) |
| Remote Focus Range                          | 600 $\mu\text{m}$  | 300 $\mu\text{m}$  |
| Nominal Remote Focus Step Size <sup>b</sup> | 40 $\mu\text{m}$   | 20 $\mu\text{m}$   |

- a. Specifications for Microscope with the Given Objective  
b. As the remote focus steps are not exactly equally spaced, true step sizes will differ slightly from the nominal values.

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