

# MiXXWave

By Oxxius

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| <b>Product range</b> | Laser Diode Illuminators (LDI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Product name</b>  | LDI-G2-4 Laser Diode Illuminator                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Reference</b>     | LDI-G2-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>   | <p>The LDI-G2-4 Laser Diode Illuminator represents a significant leap forward from the original LDI-4 platform. By adopting a single 400 <math>\mu\text{m}</math> fiber output, compared to the bifurcated configuration of Gen1, the G2 architecture concentrates the same optical power into a smaller core, delivering higher power density at the sample plane. Combined with a tenfold improvement in CW stability (<math>&lt; 0.2\%</math>) and intensity control down to 0.1% steps, the LDI-G2-4 sets a new benchmark for quantitative fluorescence imaging. It is fully compliant with the QUAREP-LiMi WG1 standard, making it the reference choice for reproducible, publication-grade confocal, TIRF, PALM/STORM, and live-cell imaging workflows. Formerly part of the 89 North product line, the LDI-G2-4 is now manufactured and supported by Oxxius. <b>Key features</b></p> <ul style="list-style-type: none"> <li>• 4 laser lines covering the most widely used fluorescence probes</li> <li>• Up to 1000 mW output power per line</li> <li>• Feedback-controlled optical stability</li> <li>• Optional 488 nm &amp; 577 nm lasers</li> <li>• No user alignment required</li> <li>• TTL &amp; Analog control</li> </ul> |



## Product Variations

| Part Number      | Combined wavelengths  |
|------------------|-----------------------|
| LDI-G2-4         | 405 / 470 / 555 / 640 |
| LDI-G2-4-577     | 405 / 470 / 577 / 640 |
| LDI-G2-4-488     | 405 / 488 / 555 / 640 |
| LDI-G2-4-488-577 | 405 / 488 / 577 / 640 |

## Performance by Wavelength

| Wavelength | Optical Power Min <sup>1</sup> | CW Stability (typ.) <sup>2</sup> | Max Rise Time (typ.) <sup>3</sup> | Max On/Off Frequency <sup>4</sup> |
|------------|--------------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| 405        | 300 mW                         | 0.2 %                            | 5 µs                              | >1000 Hz                          |
| 470 or 488 | 1000 mW <sup>5</sup>           | 0.2 %                            | 5 µs                              | >1000 Hz                          |
| 555 or 577 | 700 or 500 mW <sup>6</sup>     | 0.2 %                            | 2 ms                              | 100 Hz                            |
| 640        | 400 mW                         | 0.2 %                            | 5 µs                              | >1000 Hz                          |

### Legends

1. Optical Power Min: Defined in accordance with the QUAREP-LiMi WG 1 standard, "Illumination Power, Stability, and Linearity Measurements for Confocal and Widefield Microscopes V.2", Section 8, with power output measured at the fiber output.

2. CW Stability (typ.): Measured at 100 % intensity, 23 °C ± 2 °C.

3. Max Rise Time (typ.): Defined in accordance with the QUAREP-LiMi WG 1 standard, "Illumination Power, Stability, and Linearity Measurements for Confocal and Widefield Microscopes V.2", Section 8, with power output measured at the fiber output.

4. Max On/Off Frequency: Measured at 100 % intensity, 50 % duty cycle

5. 470 or 488 - Optical Power Min: 488 nm optical power min preliminary estimate. Actual output power pending product release.

6. 555 or 577 - Optical Power Min: 577 nm optical power min preliminary estimate. Actual output power pending product release.

## Optical Characteristics

|                             |                                                                          |
|-----------------------------|--------------------------------------------------------------------------|
| <b>Output Power</b>         | Up to 1000 mW per line<br>+ higher power density via 400 µm single fiber |
| <b>Optical Stability</b>    | Active feedback control<br>0.2 % CW stability (10× improvement)          |
| <b>Intensity Control</b>    | 0.1 % steps (10× finer)<br>Full linear range                             |
| <b>Laser Lines</b>          | Up to 7 lines: 405 / 445 / 470 or 488<br>520 / 555 or 577 / 640 / 730 nm |
| <b>NIR Channel (730 nm)</b> | ✓ Deep-tissue imaging<br>Extended spectral range beyond visible          |
| <b>Beam Quality</b>         | Improved beam quality<br>Cleaner, more stable output profile             |
| <b>Fiber Output</b>         | 400 µm single → higher power density                                     |
| <b>User Alignment</b>       | Not required                                                             |

## LDI-G2-4 Laser Diode Illuminator General specifications

|                        |                                                              |
|------------------------|--------------------------------------------------------------|
| <b>Output Options</b>  | Optical fiber<br>(400 µm single, 0.39 NA)                    |
| <b>Control Options</b> | TTL (> 2.3 V)   Analog (0-5 V)<br>USB-DSP (virtual COM port) |
| <b>Safety</b>          | Interlocked housing   Key interlock<br>IEC 60825 compliant   |
| <b>QUAREP-LiMi WG1</b> | ✓ Compliant                                                  |
| <b>Dimensions</b>      | 318 × 234 × 146 mm<br>(12.5" × 9.2" × 5.75")                 |
| <b>Weight</b>          | ~4 kg (~9 lbs)                                               |
| <b>Operating Temp.</b> | 15 to 30 °C                                                  |
| <b>Storage Temp.</b>   | -18 to 50 °C                                                 |
| <b>Humidity</b>        | 80 % non-condensing                                          |
| <b>Voltage</b>         | 90-220 V AC, 50-60 Hz                                        |
| <b>Warranty</b>        | 2 years                                                      |

## Options

|                     |
|---------------------|
| Fiber sets          |
| LDI Breakout Box    |
| Fiber Bend Box      |
| External Despeckler |

## Applications / Techniques

|                                          |
|------------------------------------------|
| Confocal Microscopy                      |
| Spinning Disk Microscopy                 |
| Widefield Microscopy                     |
| Light Sheet Microscopy                   |
| Structured Illumination Microscopy (SIM) |
| Super Resolution Imaging                 |
| TIRF                                     |
| PALM / STORM / DNA-PAINT                 |
| FRAP                                     |
| Photoactivation / Photoconversion        |
| Photoablation                            |
| Optogenetics                             |
| Neuroscience / Physiology                |
| Cellular Biology                         |
| Single Molecule FISH (smFISH)            |
| Spatial Transcriptomics / Proteomics     |
| Digital Pathology                        |

*Oxxius has a policy of continuous product improvement. Specifications may change without notice.*