Fluorescence Illuminators

LED and Laser Illuminators
Single color manually-controlled
Three-color TTL-controlled
Seven-color computer controlled

- UV, Visible, Near IR
- LED and Lasers Light Sources
- Optical power: 10 mW - 3,000 mW
- LED: 350, 405, 455, 470, 505, 530, 627, 800. 830, 1270, 1300 nm
- Laser: 355, 375, 405, 450, 473, 532, 635, 650, 670, 805, 1064 nm
- Fiber-coupled and Free-beam
- Optical adapters for microscopes
- Linear potentiometers to adjust optical power 0-100%
- TTL, USB, Wi-Fi, BlueTooth com ports
- Embedded microprocessors

MultiChannel Computer-Controlled Laser/LED Illuminator MCI-7000

Specifications

Number of Laser/LED light sources	1 - 7
Optical power per channel -	< 2000 mW
Optical output stability	+/-0.5% / color
Response time	< 1 ms
Lifetime LEDs/lasers	>10,000/5,000 hours
Optical output connector	standard SMA custom-design
TTL control, USB, Ethernet, Wi-Fi	

MultiChannel Laser/LED Illuminator MCI-7000

The Multichannel Laser/LED Illuminator MCI-7000 is designed for TIRF microscopy and other fluorescence applications. Seven lightsource positions of MCI-7000 can be populated in any combination of powerful 250-2000 mW lasers or LEDs covering the spectrum 270 - 980 nm. Bright LEDs are equipped with bandpass filters. Peak wavelengths, spectral ranges, and power of most popular lasers and LEDs are listed in Table. Other wavelengths in the range 270 - 980 nm are available for custom-configurations.

MCI-7000 is a microprocessor-based illuminator, which controls each channel independently with response time < 1 ms. All seven lasers/LEDs can be switched on in parallel or in any sequence with any intensity from 0 to 2000 mW per channel. The illuminator can be programmed using touch-screen display, or controlled by external computer connected via USB, Ethernet, wireless ports, or TTL interface. Switching between colors and intensities is achieved electronically without filter wheels or any other moving parts.

Optical output features standard SMA connector with fiber optics cables for lg-TIRFM and p-TIRFM systems, and optical adapters for interfacing with fluorescence microscopes. Custom-designed optical connectors, adapters and customized modulation programs are available at the moment of ordering.

Table. Peak wavelengths, spectral ranges and power of lasers and LEDs

LEDs	Peak λ, nm	Range λ, nm	Power, mW
UV	350	340 - 360	50
Royal Blue	455	440 - 460	750
Blue	470	460 - 490	200
Cyan	505	490 - 520	200
Green	530	520 - 550	100
Amber	590	585 - 597	100
Red	627	620 - 645	70
Lasers			
Violet	405	+/-1	250
Blue	450	+/-5	2000
Blue	473	+/- 1	400
Green	532	< 1	250
Red	650	+/- 5	250

Multicolor Laser/LED Fluorescence Illuminator TIM

operates **8+ hours** on internal battery

Specifications

Number of laser/LED illuminator heads -	1 - 12+
Optical power per head -	< 2000 mW
Optical output stability -	+/-0.5%
Response time -	< 1 ms
Lifetime LEDs/lasers -	>10,000/5,000 hours
Adapters for epi-fluorescence and other applications	
Fiber optics adapter for TIRFM with SMA connector	
Modulation -	Up to 1 kHz
Communications -	joystick, Bluetooth, USB, TTL
Environment	0-50C, < 80%humidity
Electrical Requirement	110 or 220V
Internal rechargeable battery- operate	**>8 hours**
Dimensions	180 x 105 x 55 mm

Multicolor Fluorescence Illuminator

Operates **8+ hours** on internal battery.
No power cables. Small footprint

Multicolor laser/LED Illuminator TIM features single IntelliDriver™ smart driver module and multiple illuminator heads. The driver is a microprocessor based device with a user interface that provides a simple user experience. The system is truly Plug-n-Play as the driver communicates with the attached head to automatically set appropriate voltage, current, and cooling regimes.

The base model of TIM illuminator is supplied with two laser and two LED heads with most popular excitation wavelengths. Additional LED and laser illuminator heads are available at any time to cover the entire UV, visible, and near IR range of spectrum 280-1064 nm. Optical power of monochromatic light is in the range of 50-2000 mW. Bright LEDs are equipped with 20-40 nm bandpass filters. Peak wavelengths, spectral ranges, and power of most popular lasers and LEDs are listed in Table.

The IntelliDriver provides a high level of configurability to meet the demanding needs of many fluorescence applications including TIRF microscopy, epi-fluorescence microscopy, fluorescence spectroscopy, and biosensing. The system can be operated very simply standalone, or in conjunction with an external host PC and/or digital I/O card. External communication and control interfaces include Bluetooth, USB, and a TTL. Optical power of each illuminator head can be controlled in a continuous range from 0 to 100% and can be modulated on and off in any sequence either by the front panel, software, or external TTL modulation. Response times for optical output are in the range of microseconds and modulation rates up to 10kHz are supported. To switch between colors one needs manually change the illuminator head. (See MCI-7000 brochure for an illuminator with automated switching between 7 wavelengths.)

Optical output features a standard SMA connector for lg-TIRFM and p-TIRFM systems. Optical and fiber optics adapters are available for interfacing with standard fluorescence microscopes. Custom-designed optical connectors, adapters and customized software are available at the moment of ordering.

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Tri-Color Computer-Controlled Laser Illuminator

Tri-Color Fluorescence Illuminator L-473-532-650-T

Tri-color illuminator L-473-532-650-T comprises three powerful lasers 473 nm, 532 nm, and 650 nm with optical output up to 2,000 mW each. The lasers illuminate one common fiber optics port equipped with standard SMA 905 connector and fiber bundle populated with 0.22 NA silica fibers. Propagating along the multimode 0.22 NA fibers the laser radiation is distributed over a large number of modes having different path lengths and therefore its coherence is reduced. The beam outgoing the fiber optics bundle is virtually non-coherent. It does **not** produce interference fringes that are typical for laser light.

There are no moving parts inside the illuminator. The laser beams enter the fiber bundle at angles smaller than +/- 12 degrees, which is within the acceptance cone for 0.22 NA fibers used in the bundle.

Optical power of each illuminator head can be manually adjusted in the range 0 - 100% using linear potentiometers installed at the front panel, and can be controlled using external TTL modulation. Response times for optical output are in the range of microseconds.

Optical output features a standard SMA connector for lg-TIRFM and p-TIRFM systems. Optical and fiber optics adapters are available for interfacing with standard fluorescence microscopes. Custom-designed optical connectors, adapters and customized software are available at the moment of ordering.

Specifications

Number of laser illuminator heads -	3
Wavelengths - choice of 3 - 405 nm, 450 nm, 473 nm, 532 nm, 635 and 650 nm	
Optical power per channel -	< 2000 mW
Optical output stability -	+/-0.5%
Response time -	< 1 ms
Laser lifetime -	>5,000 hours
Adapters for epi-fluorescence and other applications	
Fiber optics adapter for TIRFM with SMA connector	
Modulation -	Up to 1 kHz
Communication -	TTL
Environment	0-50C, < 80%humidity
Electrical Requirement	110 or 220V

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Red	650	+/- 5	250

Single Laser Fluorescence Illuminators

405 nm, 450 nm, 473 nm, 532 nm, 635 and 650 nm, 10 mW - 2000 mW

355 nm, 375 nm, 405 nm, 450 nm, 473 nm, 532 nm, 635 nm and 650 nm

Optical power -	10 mW - 2 000 mW
Optical output stability -	+/-0.5% - 5%
Response time -	< 1 ms
Laser lifetime -	>5,000 hours

Adapters for epi-fluorescence and other applications

Fiber-coupled or free beam versions

Adapter for lg- and p-TIRFM with SMA connector

TTL Modulation -	Up to 1 kHz
Manually adjusted optical power -	0-100%
Electrical Requirement	110 or 220V
Optional internal battery -	operates >8 hours

Single Laser Fluorescence Illuminators

TIRF Labs offers a family of single laser illumimantors with the following wavelengths: 355 nm, 375 nm, 405 nm, 450 nm, 473 nm, 532 nm, 635 and 650 nm and optical power 10 - 3,000 mW.

Optical power of each laser can be manually adjusted in the range 0 - 100% using linear potentiometers installed at the front panel, and can be controlled using external TTL modulation. Response times for optical output are in the range of microseconds.

Fiber-coupled or free beam versions are available for each laser. Optical output features a standard SMA connector for lg-TIRFM and p-TIRFM systems.

Optical and fiber optics adapters are available for interfacing with standard fluorescence microscopes. Custom-designed optical connectors and adapters are available at the moment of ordering.

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