

CHAPTER 2 LASERS

FIBER COUPLED LASER



The iFLEX2000™ is a compact laser diode system with a modular singlemode fiber delivery system. The laser is mode-hop free and wavelength stabilized as a direct result of active temperature control. A closed loop control provides long term power stability and an ability to monitor the power via an external output signal.

The laser module is guaranteed for long lifetime and delivers exceptional power stability with low amplitude noise. All models feature an interlock and output diagnostics for laser current and temperature as standard. Features include a high dynamic range 5MHz TTL modulation option or a variable power control via analog modulation up to 5MHz. All lasers feature diffraction limited output beams with zero astigmatism, high spatial coherence and low dynamic pointing error.

The iFLEX2000™ is compatible with a number of commercially available imaging software packages such as Olympus cell^R™, MetaMorph® and µManager and a number of add-on interfaces ensure a complete solution for all microscope systems.

The kinematic design of the laser to fiber coupler enables true 'Plug & Play' benefits for singlemode and polarization-preserving fiber designs. Sub-micron repeatability and submicroradian stability mean systems can be 'factory set' and stable for multiple remove and insert operations. The laser and fiber systems are also optimized for unmatched laser modules thus providing true modularity for instrument design and ease of replacement.

Laser systems can be made available in constant current mode and in ultra-low noise versions. OEM options also include custom multiplexed laser modules with customer specific lasers.

Operating Wavelengths

Wavelength(nm)	405	445	473	488	640	660	670	780	830
Fixed Output Power(mw)	30	20	5	15,30	20,50	35,50	4	35	50

Technical Specifications

Operating Performance

Polarization ratio <-20dB

Laser Parameters

Center wavelength + 5nm
 Power stability < 2% (over 8 hours)
 Noise (20Hz to 20kHz) < 0.1% rms
 Noise (20Hz to 20kHz) < 1% pk to pk

Electrical

Power Supply 12V DC, 0.5A (laser)
 5V DC, 3A max, 1 A running (TE Controller)
 Max. base plate temperature +40°C
 Max. heat dissipation 12.5w

Connectorised output beam

Polarization maintaining fiber FCP, (polarization keyed) FCP8, APC (polarization keyed and 8 degree polished)

Fiber Parameters

Fiber length 1 to 3 meters
 Fiber protective jacket Stainless steel, 5mm OD

Collimated output beam

Beam diameter (mm) 0.7
 M squared < 1.1
 Pointing stability < 1µrad/°C
 Operating humidity Beam divergence
 Mechanical dimensions Ø12 x 50mm
 Beam position (mm) < +0.15
 Beam angle (mrad) < +0.5

Environmental conditions

Storage temperature 10 to 50 °C
 Operating pressure Atmospheric
 Operating temperature 10 to 40 °C
 Operating humidity Non-condensing

Modulation

Analog 5MHz, <200ns rise time, input voltage level 0 - 5V

