Datasheet
Dual wavelength laser diode system - iFLEX-Gemini

iFLEX-Gemini™ is Qioptiq's compact yet powerful, dual-wavelength laser source that is now available in a range of different wavelength pairs including, for example, 488/640nm and 405/515nm, ideal for fluorescence, spectroscopy and metrology applications or simply as an ideal replacement for your Argon Ion gas lasers. The output kineFLEX™ fiber coupling system provides a single mode, polarisation maintained output with 'plug-and-play' versatility making it ideal for experimental work with changing needs and high performance standards.

This new innovative technology provides a compact and cost-effective alternative to setting up and aligning two separate laser sources whilst providing greater long term reliability and lifetime than traditional technologies, such as gas lasers. This makes the iFLEX-Gemini the best choice for enhancing your laboratory's capabilities in a simple, easy to use, product.

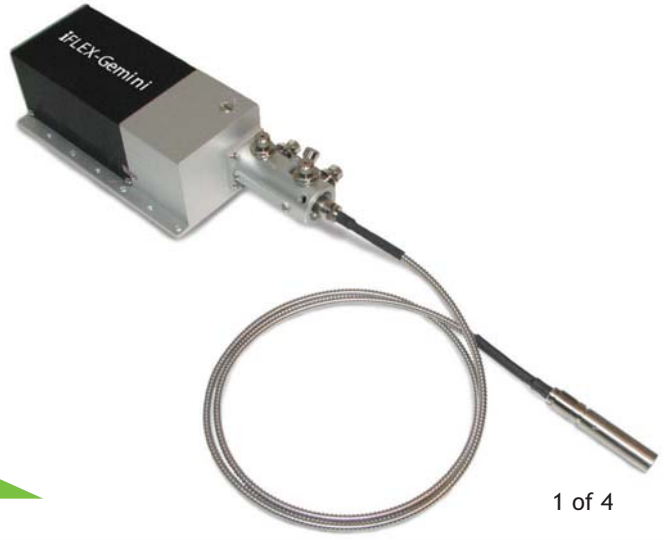
For instrument designers, Qioptiq's iFLEX laser family continues to provide long lifetime and delivers exceptional power stability with low amplitude noise. Additional functionality such as interlock and output diagnostics for laser current and temperature level as standard, mean your instrument design capabilities can be taken to new levels of innovation.

Other features include high dynamic range, modulation option or a variable power control via analog modulation up to 5MHz for each wavelength. All lasers feature diffraction limited output beams with zero astigmatism, high spatial coherence and low dynamic pointing error from the award winning kineFLEX™ fiber delivery technology.

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 wavelengths.

Some of the product features include:

- 'Out of the Box' performance
- Stable to opto-mechanical thermal effects and exhibits no hysteresis
- TEM_{00} true Gaussian beam
- Configurations available from 375, 405, 445, 488, 515, 640 and 660nm pairings
- Up to 60mW as standard per wavelength
- High stability, high beam quality
- Low noise
- Software controllable
- OEM versions available



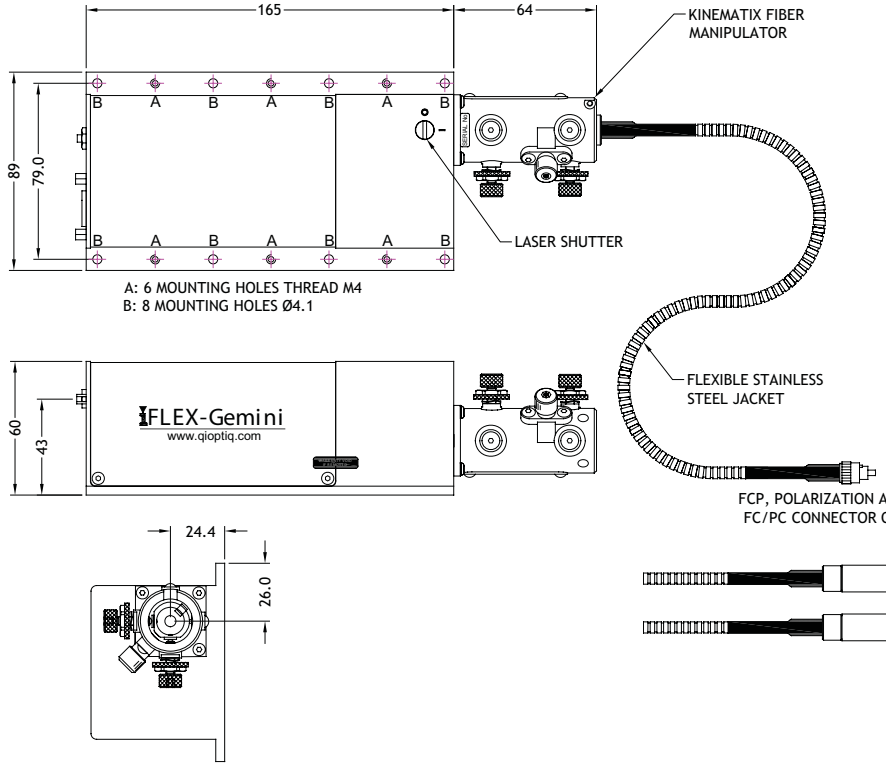
Technical Specifications

Lasers								Units
Wavelength	375	405	445	488	515	640	660	nm
Output power	8	25, 40	15, 30	12, 25, 60[1]	8	15, 40, 60	30,50	mW
Operating performance								
Polarization ratio				≤ -20				dB
Laser parameters								
Center wavelength				± 5				nm
Power stability (over 8 hours)				< 2				%
Optical Noise (20Hz to 2MHz) rms[2]				< 0.1				%
Optical Noise (20Hz to 20kHz) pk to pk[2]				< 1				%
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				12.5				W
Fiber parameters								
Fiber length				1 to 3				m
Fiber protective jacket				Stainless steel, 5mm OD				-
Connectorized output beam								
Polarization maintaining fiber				FCP (polarization keyed) FCP8, APC (polarization keyed and 8 degree polished)				-
Collimated output beam								
Beam diameter				0.7				mm
M squared				typ 1.2				-
Pointing stability				≤ 1				µRad/°C
Beam divergence				Diffraction Limited				-
Mechanical dimensions				Ø 12 x 50				mm
Beam position				≤ ± 0.15				mm
Beam angle				≤ ± 0.5				mRad
Environmental conditions								
Storage temperature				10 to 50				°C
Operating pressure				Atomspheric				-
Operating temperature				10 to 40				°C
Operating humidity				Non-condensing				-
Modulation								
Analog				5MHz, <200ns rise time, input voltage level 0 – 5V				-

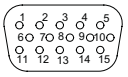
[1]Model under development – Contact Qioptiq for additional details

[2]Model Specific – Contact Qioptiq for clarification.

Laser head



Electrical interface



15 way micro 'D' pin connections

1. +12V Laser Supply
2. 0V Laser Supply
3. +5V TEC Supply
4. 0V TEC Supply
5. Laser 1 Enable
6. Laser 1 Power Output
7. Laser 1LD Current
8. Laser 1 Temperature Status
9. Laser 2 Enable
10. Laser 2 Power Output
11. Laser 2 LD Current
12. Laser 2 Temperature Staus
13. RS232 TX
14. RS232 RX
15. Safety Interlock

Order Code

iFLEX-Gemini - [ ] – [ ] – [/] – [ ] – [/] – [ ]

Fiber type, (P)olarization maintaining
Fiber length (m)
Wavelength Pairing (λ_1 / λ_2 See Table Below)
Output termination (0.7, FCP, FCP8, APC)
Output power (mW) at λ_1 / λ_2 *
Modulation Options (A=Analog, NP=CW with power control)

* For powers options, see page 2

Wavelength Combinations

λ1 / λ2	405	445	488	515	640	660
375	Y	O	O	O	O	O
405		O	Y	O	Y	Y
445	O		O	Y	O	O
488	Y	O		Y	Y	O
515	O	Y	Y		O	Y
640	Y	O	Y	O		O
660	Y	O	O	Y	O	

Y = Available as standard option
O = OEM wavelength combinations available on request - Contact Qioptiq for clarification.

Fiber Optics

kineFLEX™

Robust laser beam delivery system for precision measurement applications

- Fiber coupling for DPSS, diode and gas lasers
- Highly repeatable and stable operation
- Greater then 65% coupling efficiency

kineFLEX-HPV™ / kineFLEX-UV™

Robust high power laser beam delivery system for precision measurement applications

- Input power up to 500mW for 488nm or higher
- Input power up to 20mW for 375nm
- OEM multiple wavelength versions available

kineFLEX-DUO™

Robust laser beam delivery system for two laser sources at visible wavelengths

- Efficient and simple beam combination
- Visible wavelengths
- Rugged platform for industrial applications

laserPLATE™

Rapid and convenient mechanical mounting and packaging system for laser to fiber alignment

- Compatible and integrated laser to fiber coupling
- Combined laser chassis and heatsink
- Easy to integrate and align

Lasers

iFLEX-Mustang™

Fiber coupled solid state laser with on-board acousto-optic modulation

- DPSS lasers, 488, 532 and 561nm
- High long term stability and low noise
- 25mW of output power

iFLEX-Q3™

Compact laser diode system for precision optical instrumentation

- Exceptional brightness, stability and long-term reliability
- Highly polarized beam
- Versatile, small form laser head and remote electronics module

Multi-laser Engines

iFLEX-Adder™

5 into 1 fiber-coupled laser beam combination system

- True 'Plug & Play' capability enabling ultimate flexibility of laser suite
- Upgradeable from 2 to 5 wavelengths as required
- Compatible with kineFLEX™ and kineFLEX-HPV™

iFLEX-Viper™

The world's first integrated Multi-laser Engine

- Combines 5 wavelengths in one instrument
- Delivers wavelengths via a singlemode fiber optic cable
- On-board acousto-optic modulation up to 3MHz

For further information please contact:
Mitchell Point, Ensign Way, Hamble, Hampshire, SO31 4RF
Email: sales@qpl.qioptiq.com
Tel: +44 (0) 23 80 744 500 Fax: +44 (0) 23 80 744 501
www.qioptiq.com

www.qioptiq.com/diode-lasers
www.qioptiq.com/fiber-optics

NOW COMPATIBLE WITH:

MetaMorph®

µManager
THE OPEN SOURCE MICROSCOPY SOFTWARE

PSM1033_1