integrated optics ®

World's Smallest Turnkey Lasers

for Spectroscopy, Quantum and LiDAR

CW Lasers

- >20 Wavelengths
- MM/SM/PM fiber
- Single-frequency options

Combiners

- 405 nm to 1064 nm
- 4 wavelengths
- Free-space or Fiber

Q-switch Lasers

- 1029 nm
- High pulse energy
- SLM option

The MatchBox Platform

- +5 VDC Unified Power
- TEC Cooled
- PM SM MM Fiber Coupling
- Automatic Power Control
- OEM Dedicated Design
- USB or UART Control
- Self-Contained Unit
- Smart Electronics

Applications

CW LASERS (REGULAR SPECTRUM)
Fluorescence spectroscopy
Scanning Microscopy
Particle analysis
Sorting
Flow cytometry
Excitation

PULSED LASERS
Range Finding
Laser Induced Breakdown Spectroscopy (LIBS)
Laser Seeding
Raman Spectroscopy
Holography
Supercontinuum Generation

CW LASERS (NARROW SPECTRUM)
Raman Spectroscopy
Holography
Inspection
Metrology
Interferometry
Laser Seeding
Quantum cryptography

WAVELENGTH COMBINER
Diagnostic
Sorting
Illumination
Microscopy
Flow cytometry

Control Software

Part numbers of CW Lasers

Laser Platform:
L - MatchBox
S - Samogitian

Spectrum/power:
1 - non-SLM
2 - SLM
3 - non-SLM high power
4 - SLM high power
...

Type:
A - direct diode
B - DPSSL
E - OPSL

Fiber Termination:
NT - no termination
PT - FC/PC
AT - FC/APC
ST - SMA
CT - collimator

Wavelength ------ XXXXX-XXX-XI-XT-XF

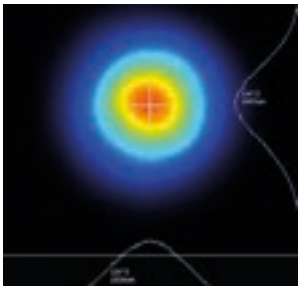
Output type:
1 - free-space
2 - circular beam
3 - SM fiber
4 - MM fiber
5 - PM fiber
6 - SMA port
7 - FBG SM fiber
8 - FBG PM fiber
0 - shaped beam

Optical Isolator (only for free-space):
NI - no isolator
1I - isolator w/o retarder
2I - isolator with vertical output pol.
3I - isolator with horizontal output pol.
1R - only retarder 45 deg.
2R - only retarder 90 deg.

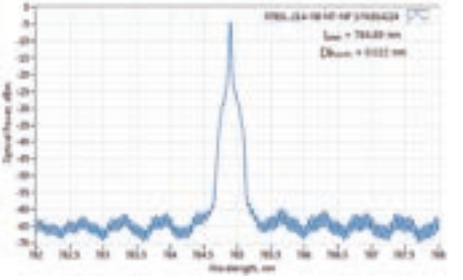
Optical Filters:
NF - no filter
CF - clean-up
LF - long-pass
SF - short-pass

General Information

Each produced laser comes
with a comprehensive test report



Beam profile of 1064L-11B
(far field)



Spectrum of 0785L-21A SLM laser
(linewidth measurement limited by spectrum analyzer)

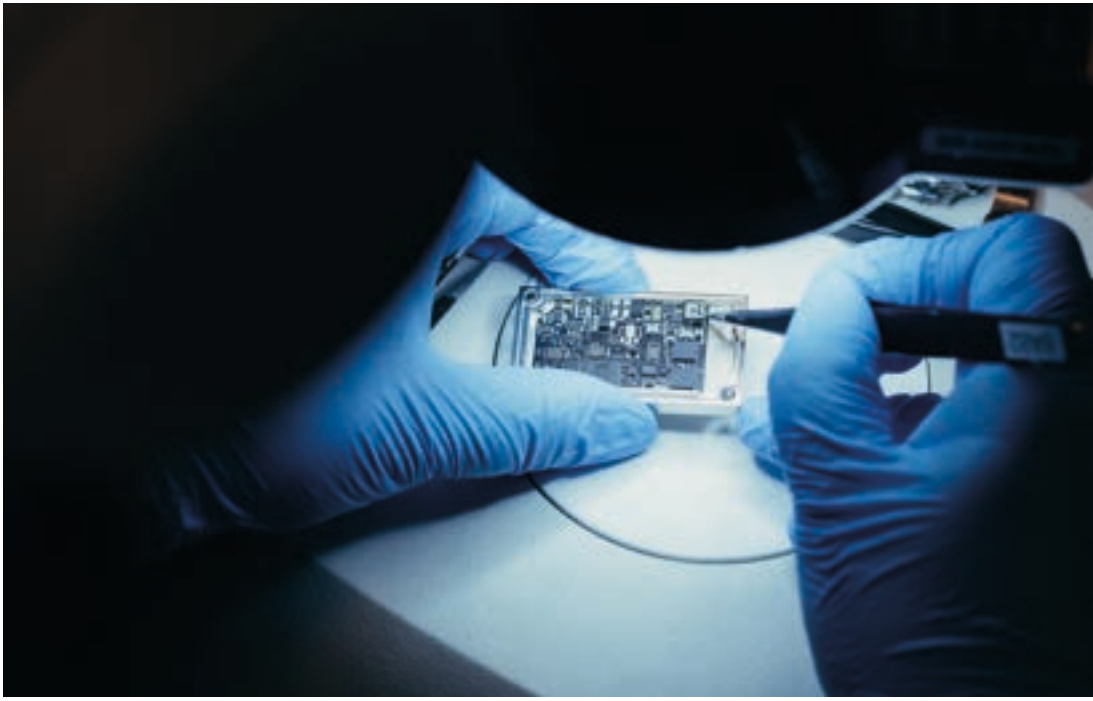
Specifications of SLM CW Lasers

	Output power, mW	Power Stability, % RMS, 8 hrs*	Noise, % RMS, 20 Hz to 20 MHz*	Spectral Line-width FWHM, pm*	Polarization contrast*	M^2 effective*	Transversal modes
0405L-21A	50	0,05	0,13	0,1	2000:1	1,3	TEM00
0405L-23A	20	0,1	0,14	0,1	N/A	1,05	TEM00
0405L-24A	40	0,03	0,18	0,1	N/A	N/A	Multimode
0405L-25A	20	0,1	0,2	0,1	20 dB	1,05	TEM00
0405L-26A	40	0,03	0,18	0,1	N/A	N/A	Multimode
0488L-21A	30	0,02	0,1	0,1	2000:1	1,50	TEM00
0488L-23A	10	0,2	0,2	0,1	N/A	1,05	TEM00
0488L-24A	15	0,2	0,2	0,1	N/A	N/A	Multimode
0488L-25A	10	0,2	0,2	0,1	23 dB	1,05	TEM00
0488L-26A	15	0,2	0,2	0,1	N/A	N/A	Multimode
0520L-21A	40	0,05	0,5	0,1	2000:1	1,40	TEM00
0520L-23A	25	0,05	0,5	0,1	N/A	1,05	TEM00
0520L-24A	35	0,05	0,5	0,1	N/A	N/A	Multimode
0520L-25A	25	0,05	0,5	0,1	27 dB	1,05	TEM00
0520L-26A	35	0,05	0,5	0,1	N/A	N/A	Multimode
0532L-21B	50	0,05	0,5	0,1	2000:1	1,05	TEM00
0532L-23B	25	0,1	0,6	0,1	N/A	1,05	TEM00
0532L-24B	40	0,1	0,7	0,1	N/A	N/A	Multimode
0532L-25B	25	0,08	0,5	0,1	25 dB	1,05	TEM00
0532L-26B	40	0,1	0,7	0,1	N/A	N/A	Multimode
0532L-41B	100	0,05	0,5	0,1	2000:1	1,05	TEM00
0532L-43B	50	0,07	0,5	0,1	N/A	1,05	TEM00
0532L-44B	80	0,05	0,5	0,1	N/A	N/A	Multimode
0532L-45B	50	0,10	0,5	0,1	23 dB	1,05	TEM00
0532L-46B	80	0,05	0,5	0,1	N/A	N/A	Multimode
0532L-61B	200	0,13	0,4	0,1	1000:1	1,05	TEM00
0532L-63B	100	0,06	0,4	0,1	N/A	1,05	TEM00
0532L-64B	150	1,00	0,5	0,1	N/A	N/A	Multimode
0532L-65B	100	0,10	0,5	0,1	23 dB	1,05	TEM00
0532L-66B	150	1,00	0,5	0,1	N/A	N/A	Multimode
0633L-21A	70	0,02	0,14	0,1	1500:1	1,3	TEM00
0633L-23A	35	0,04	0,1	0,1	N/A	1,05	TEM00
0633L-24A	40	0,05	0,2	0,1	N/A	N/A	Multimode
0633L-25A	35	0,05	0,15	0,1	25 dB	1,05	TEM00
0633L-26A	40	0,05	0,2	0,1	N/A	N/A	Multimode
0638L-21A	100	0,02	0,12	0,1	2000:1	1,3	TEM00
0638L-23A	60	0,05	0,25	0,1	N/A	1,05	TEM00
0638L-24A	80	0,1	0,25	0,1	N/A	N/A	Multimode
0638L-25A	60	0,04	0,1	0,1	27 dB	1,05	TEM00
0638L-26A	80	0,10	0,25	0,1	N/A	N/A	Multimode
0783L-21A	110	0,03	0,15	0,1	2000:1	1,2	TEM00
0783L-23A	70	0,03	0,15	0,1	N/A	1,05	TEM00
0783L-24A	80	0,03	0,15	0,1	N/A	N/A	Multimode
0783L-25A	70	0,05	0,15	0,1	27 dB	1,05	TEM00
0783L-26A	80	0,03	0,15	0,1	N/A	N/A	Multimode
0785L-21A	130	0,02	0,10	0,1	2000:1	1,2	TEM00
0785L-23A	80	0,03	0,15	0,1	N/A	1,05	TEM00
0785L-24A	100	0,05	0,15	0,1	N/A	N/A	Multimode
0785L-25A	80	0,03	0,15	0,1	27 dB	1,05	TEM00
0785L-26A	100	0,05	0,15	0,1	N/A	N/A	Multimode
0785L-27A	80	0,20	0,25	5,0	N/A	1,05	TEM00
0785L-28A	80	0,20	0,25	5,0	23 dB	1,05	TEM00
0785L-41A	1000	0,07	0,8	50	1500:1	N/A	Multimode
0785L-44A	800	0,04	0,4	50	N/A	N/A	Multimode

	Output power, mW	Power Stability, % RMS, 8 hrs*	Noise, % RMS, 20 Hz to 20 MHz*	Spectral Line- width FWHM, pm*	Polarization contrast*	M^2 effective*	Transversal modes
0785L-t46A	800	0,05	0,4	50	N/A	N/A	Multimode
0830L-21A	100	0,02	0,20	0,1	2000:1	1,3	TEM00
0830L-23A	70	0,05	0,25	0,1	N/A	1,05	TEM00
0830L-24A	80	0,05	0,25	0,1	N/A	N/A	Multimode
0830L-25A	70	0,05	0,25	0,1	27 dB	1,05	TEM00
0830L-26A	80	0,05	0,25	0,1	N/A	N/A	Multimode
1030L-21B	400	0,1	1,5	0,2	1000:1	1,05	TEM00
1030L-23B	200	0,1	1,5	0,2	N/A	1,05	TEM00
1030L-24B	300	0,1	1,5	0,2	N/A	N/A	Multimode
1030L-25B	200	0,2	1	0,2	23 dB	1,05	TEM00
1030L-26B	280	1	0,5	0,2	N/A	N/A	Multimode
1064L-21B	400	0,1	0,3	0,2	1500:1	1,1	TEM00
1064L-23B	200	0,1	1	0,2	N/A	1,05	TEM00
1064L-24B	300	0,1	1	0,2	N/A	N/A	Multimode
1064L-25B	200	0,2	0,9	0,2	23 dB	1,05	TEM00
1064L-26B	280	1	0,5	0,2	N/A	N/A	Multimode

* Typical performance (full specification available at https://integratedoptics.com/products/cw-lasers)

Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.



Regular Spectrum CW Lasers

	Output power, mW	Power Stability, % RMS, 8 hrs*	Noise, % RMS, 20 Hz to 20 MHz*	Spectral Line- width FWHM, nm*	Polarization contrast / extinction*	M^2 effective*	Transversal modes
0405L-11A	180	0,1	0,10	0,5	2000:1	1,3	TEM00
0405L-13A	100	0,04	0,20	0,5	N/A	1,05	TEM00
0405L-14A	150	0,05	0,2	0,5	N/A	N/A	Multimode
0405L-15A	100	0,04	0,2	0,5	30 dB	1,05	TEM00
0405L-16A	150	0,05	0,2	0,5	N/A	N/A	Multimode
0450L-11A	60	0,05	0,40	0,8	2000:1	1,4	TEM00
0450L-13A	35	0,05	0,25	0,8	N/A	1,05	TEM00
0450L-14A	50	0,05	0,25	0,8	N/A	N/A	Multimode
0450L-15A	35	0,05	0,25	0,8	23 dB	1,05	TEM00
0450L-16A	50	0,1	0,25	0,8	N/A	N/A	Multimode
0488L-11A	40	0,02	0,3	0,5	1500:1	1,2	TEM00
0488L-13A	20	0,05	0,5	0,5	N/A	1,05	TEM00
0488L-14A	30	0,1	0,5	0,5	N/A	N/A	Multimode
0488L-15A	20	0,05	0,5	0,5	27 dB	1,05	TEM00
0488L-16A	30	0,05	0,5	0,5	N/A	N/A	Multimode
0505L-11A	60	0,02	0,5	0,7	2000:1	1,25	TEM00
0505L-13A	30	0,05	0,5	0,7	N/A	1,05	TEM00
0505L-14A	50	0,05	0,5	0,7	N/A	N/A	Multimode
0505L-15A	30	0,05	0,5	0,7	23 dB	1,05	TEM00
0505L-16A	50	0,05	0,5	0,7	N/A	N/A	Multimode
0520L-11A	80	0,02	0,50	1	3000:1	1,4	TEM00
0520L-13A	40	0,02	0,3	1	N/A	1,05	TEM00
0520L-14A	70	0,03	0,5	1	N/A	N/A	Multimode
0520L-15A	40	0,02	0,4	1	29 dB	1,05	TEM00
0520L-16A	70	0,02	0,4	1	N/A	N/A	Multimode
0532L-11B	200	0,06	2,5	0,1	1000:1	1,2	TEM00
0532L-13B	100	0,5	5	0,1	N/A	1,05	TEM00
0532L-14B	160	0,04	5	0,1	N/A	N/A	Multimode
0532L-15B	100	0,5	5	0,1	23 dB	1,05	TEM00
0532L-16B	150	0,5	5	0,1	N/A	N/A	Multimode
0633L-11A	90	0,05	0,25	0,5	2000:1	1,2	TEM00
0633L-13A	60	0,05	0,25	0,5	N/A	1,05	TEM00
0633L-14A	80	0,05	0,25	0,5	N/A	N/A	Multimode
0633L-15A	60	0,05	0,25	0,5	27 dB	1,05	TEM00
0633L-16A	80	0,05	0,25	0,5	N/A	N/A	Multimode
0638L-11A	170	0,05	0,13	0,7	2000:1	1,15	TEM00
0638L-13A	100	0,03	0,20	0,7	N/A	1,05	TEM00
0638L-14A	150	0,05	0,25	0,7	N/A	N/A	Multimode
0638L-15A	100	0,03	0,15	0,7	31 dB	1,05	TEM00
0638L-16A	150	0,05	0,25	0,7	N/A	N/A	Multimode
0660L-11A	110	0,05	0,2	0,7	3000:1	1,25	TEM00
0660L-13A	70	0,05	0,25	0,7	N/A	1,05	TEM00
0660L-14A	90	0,1	0,25	0,7	N/A	N/A	Multimode
0660L-15A	70	0,1	0,25	0,7	27 dB	1,05	TEM00
0660L-16A	90	0,1	0,25	0,7	N/A	N/A	Multimode
0785L-11A	170	0,03	0,1	0,1	2000:1	1,2	TEM00
0785L-13A	120	0,02	0,25	0,5	N/A	1,05	TEM00
0785L-14A	150	0,02	0,35	0,2	N/A	N/A	Multimode
0785L-15A	120	0,05	0,25	0,5	27 dB	1,05	TEM00
0785L-16A	150	0,05	0,25	0,2	N/A	N/A	Multimode
0830L-11A	130	0,05	0,10	0,5	2000:1	1,4	TEM00
0830L-13A	70	0,05	0,25	0,5	N/A	1,05	TEM00
0830L-14A	90	0,05	0,25	0,5	N/A	N/A	Multimode
0830L-15A	70	0,05	0,25	0,5	27 dB	1,05	TEM00

	Output power, mW	Power Stability, % RMS, 8 hrs*	Noise, % RMS, 20 Hz to 20 MHz*	Spectral Line- width FWHM, nm*	Polarization contrast*	M^2 effective*	Transversal modes
0830L-16A	90	0,05	0,25	0,5	N/A	N/A	Multimode
0850L-11A	150	0,03	0,25	0,1	1000:1	1,3	TEM00
0850L-13A	100	0,03	0,25	0,1	N/A	1,05	TEM00
0850L-14A	130	0,03	0,25	0,1	N/A	N/A	Multimode
0850L-15A	100	0,03	0,25	0,1	27 dB	1,05	TEM00
0850L-16A	130	0,03	0,25	0,1	N/A	N/A	Multimode
0915L-11A	170	0,05	0,25	0,5	2000:1	1,2	TEM00
0915L-13A	80	0,05	0,25	0,5	N/A	1,05	TEM00
0915L-14A	140	0,05	0,25	0,5	N/A	N/A	Multimode
0915L-15A	80	0,05	0,25	0,5	27 dB	1,05	TEM00
0915L-16A	140	0,05	0,25	0,5	N/A	N/A	Multimode
0975L-11A	170	0,05	0,25	0,5	2000:1	1,2	TEM00
0975L-13A	100	0,05	0,25	0,5	N/A	1,05	TEM00
0975L-14A	140	0,05	0,25	0,5	N/A	N/A	Multimode
0975L-15A	100	0,05	0,25	0,5	27 dB	1,05	TEM00
0975L-16A	140	0,05	0,25	0,5	N/A	N/A	Multimode
1030L-11B	500	0,1	1,5	0,7	1000:1	1,05	TEM00
1030L-13B	350	0,1	1,5	0,7	N/A	1,05	TEM00
1030L-14B	400	0,1	1,5	0,7	N/A	N/A	Multimode
1030L-15B	350	0,1	1,5	0,7	27 dB	1,05	TEM00
1030L-16B	400	0,1	1,5	0,7	N/A	N/A	Multimode
1064L-11B	500	0,1	1,5	0,1	1500:1	1,1	TEM00
1064L-13B	300	0,1	1,5	0,1	N/A	1,05	TEM00
1064L-14B	400	0,1	1,5	0,1	N/A	N/A	Multimode
1064L-15B	300	0,1	1,5	0,1	27dB	1,05	TEM00
1064L-16B	400	0,1	1,5	0,1	N/A	N/A	Multimode
1123L-11B	200	0,2	3	0,7	1000:1	1,1	TEM00
1123L-13B	100	0,5	3	0,7	N/A	1,05	TEM00
1123L-14B	160	0,5	3	0,7	N/A	N/A	Multimode
1123L-15B	100	0,5	3	0,7	23 dB	1,05	TEM00
1123L-16B	160	0,5	3	0,7	N/A	N/A	Multimode
1319L-11B	200	0,2	3	0,7	1000:1	1,1	TEM00
1319L-13B	100	0,5	3	0,7	N/A	1,05	TEM00
1319L-14B	160	0,5	3	0,7	N/A	N/A	Multimode
1319L-15B	100	0,5	3	0,7	23 dB	1,05	TEM00
1319L-16B	160	0,5	3	0,7	N/A	N/A	Multimode
	200	0,2	3	0,7	1000:1	1,1	TEM00
1342L-13B	100	0,5	3	0,7	N/A	1,05	TEM00
1342L-14B	160	0,5	3	0,7	N/A	N/A	Multimode
1342L-15B	100	0,5	3	0,7	23 dB	1,05	TEM00
1342L-16B	160	0,5	3	0,7	N/A	N/A	Multimode
1550L-11A	120	0,2	0,25	8	1500:1	1,2	TEM00
1550L-13A	60	0,05	0,25	8	N/A	1,05	TEM00
1550L-14A	200	0,2	0,25	10	N/A	N/A	Multimode
1550L-15A	60	0,05	0,25	8	27 dB	1,05	TEM00
1550L-16A	200	0,2	0,25	10	N/A	N/A	Multimode

* Typical performance (full specification available at https://integratedoptics.com/products/cw-lasers)
Custom: other wavelengths and configurations are available on request.
Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.

High Power (Class 4) Lasers

Platform	Output power, mW	Power Stability, % RMS, 8 hrs*	Noise, % RMS, 20 Hz to 20 MHz*	Spectral Line-width FWHM, nm*	Polarization contrast*	Fiber core diameter, µm
0405L-31A	500	0,2	0,8	1	100	N/A
0405L-34A	400	1	0,8	1	N/A	50
0405L-36A	400	1	0,8	1	N/A	50
0450L-31A	400	0,1	0,8	0,7	N/A	N/A
0450L-34A	300	0,1	0,3	0,7	N/A	50
0450L-36A	300	0,1	0,3	0,7	N/A	50
0532L-31B	500	0,2	3	0,3	2000	N/A
0532L-34B	400	1	3	0,3	N/A	50
0532L-36B	400	1	3	0,3	N/A	50
0638L-31A	600	0,2	0,4	1	N/A	N/A
0638L-34A	500	1	0,4	1	N/A	50
0638L-36A	500	1	0,4	1	N/A	50
0785L-31A	1500	0,2	0,4	1	N/A	N/A
0785L-34A	1000	1	0,4	1	N/A	50
0785L-36A	1000	1	0,4	1	N/A	50
0808L-31A	3000	1	0,25	1	N/A	N/A
0808L-34A	1600	1	0,25	1	N/A	50
0808L-36A	1600	1	0,4	1	N/A	50
0830L-34A	1000	1	0,25	1	N/A	50
0830L-36A	1000	1	0,25	1	N/A	50
0915L-34A	2000	1	0,25	1	N/A	50
0915L-36A	2000	1	0,25	1	N/A	50
0940L-34A	2000	1	0,25	1	N/A	50
0940L-36A	2000	1	0,25	1	N/A	50
0975L-34A	2000	1	0,25	1	N/A	50
0975L-36A	2000	1	0,25	1,5	N/A	50
1064L-34A	1000	1	0,25	1,5	N/A	50
1064L-36A	1000	1	0,25	1,5	N/A	50
1550L-34A	1000	1	0,25	2	N/A	50
1550L-36A	1000	1	0,25	2	N/A	50

* Typical performance (full specification available at https://integratedoptics.com/products/cw-lasers)

Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.

Other parameters of CW lasers

Beam properties:
- Beam diameter at aperture (1/e2): <2 mm for diode and ~1 mm for DPSS
- Beam divergence (full angle): <1.5 mrad for diode and DPSS, except 500 mW versions of 532 nm and 785 nm
- Beam pointing stability: <5 µrad/C°

Modulation:
- Fast TTL modulation (up to 10 MHz in ACC mode) is available for non-SLM diode lasers
- Typical rise time of diode non-SLM lasers is 17ns
- Typical fall time of diode non-SLM lasers is 13 ns
- Modulation of DPSS lasers (up to few kHz) is implemented upon request
- For SLM diode and all DPSS lasers, the TTL pin is configured for fan speed control

Fiber specs:
- Default connector for SLM laser is FC/APC.
- Default connector for regular spectrum lasers is FC/PC
- Standard length of a fiber is 1 m to 1.2 m
- Polarization rotation (PM fiber): less than 5 degree

Physical properties:
- Control interface type: UART serial bus, convertible to USB or RS232 using standard accessories
- External power supply requirement: +5VDC, 5A for DPSS, 1.5 A for diode up to 200 mW
- Dimensions (L-W-H): 50 x 30 x 18 mm (excluding pins and output window)
- Beam height from the base: 10.4 mm (+/- 0.3 mm)
- Heatsink requirement: diode <1 °C/W, DPSS <0.5 °C/W
- Optimum heatsink temperature (non-condensing): +15...+30 °C
- Max. heatsink temperature 40 °C
- Internal temperature stabilization: TEC
- Overheat protection: Yes
- Storage temperature (non-condensing): -10 to +50 °C
- Warranty: 14 months, or 10000 hours, whichever occurs first. Operational time calculation is based on an internal EPROM counter

Compatibility:
- RoHS
- General Product Safety Directive (GPSD) 2001/95/EC
- Electromagnetic Compatibility (EMC) Directive 2004/108/EC
- IEC60825-1:2014 (compliant only using additional accessories)

Unified Physical Control Interface

Vcc and GND pins are for +5 VDC power supply;
Tx and Rx pins are for UART communication;
TTL pin is used for digital modulation;
For DPSS and VBG diode lasers, the TTL pin
is configured for FAN control of a compatible heatsink.

MatchBox Accessories

BREAK-OUT-BOX
An optional accessory which simplifies installation and use of MatchBox lasers. It provides DATA, POWER connections as well as interlock, TTL modulation and fan control pins.

HEATSINKS
We offer a range of heatsinks - from cost effective sinks with fan cooling to high- end TEC coolers.

SHUTTERS
several shutter options are provided with extra functionality of lens holder (for beam expanders), optical isolator holders, cage bench adapters.

POWER SUPPLIES
our break-out-boxes are now standartized for PD (Power Delivery standard), thus we are offering several models of PD power supplies.

Wavelength Combiners

A powerful and highly integrated solution for particle analysis, flow cytometry and microscopy applications.

Up to 4
diode lasers

Independent TTL
modulation for all
wavelengths

+12 VDC
power supply

Free space
SM fiber
MM fiber
PM fiber

Thermoelectric

Advantages

- **4 slots for detectors/emitters**
- **Free-space or multi-mode fiber output**
- **Color mixing**
- **Fast warm-up time (bi-directional TEC)**
- **Compatible with MatchBox accessories**

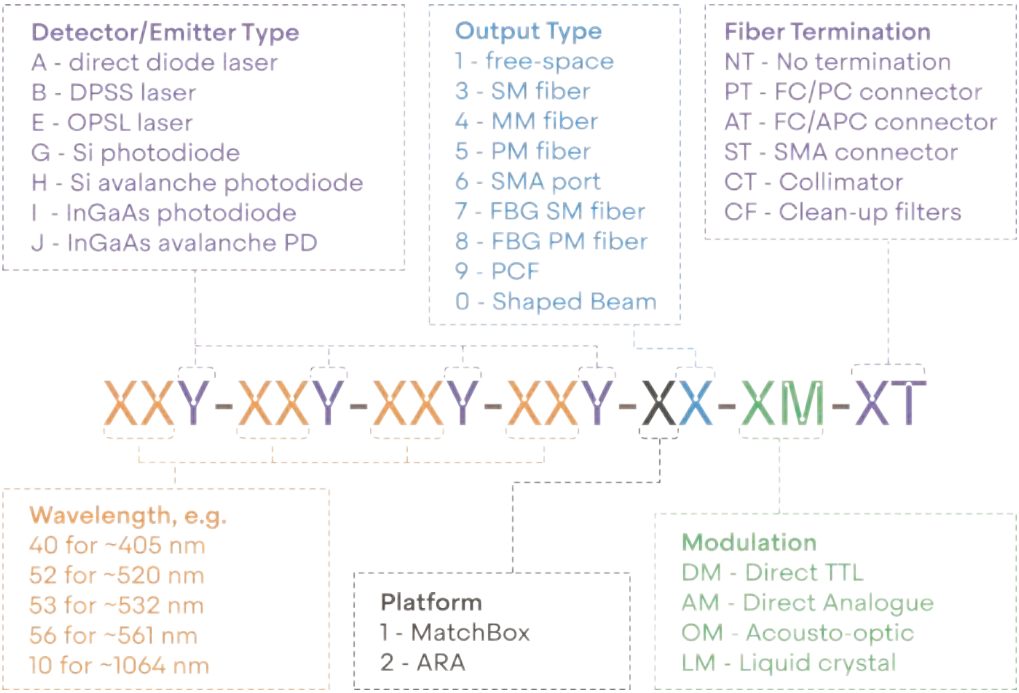
A dedicated **Break-out-Box** can be purchased separatelly. It provides PD-type power supply support, fan control , an interlock. and inputs for TTL modulation.

Applications

- Flow cytometry
- Particle analysis
- Sorting
- Ophthalmology
- Microscopy
- Illumination
- Spectroscopy

Part numbers of combiners

Based on the item code structure there are thousands of different configurations, which are theoretically possible. You are welcome to contact our sales staff in order to get a preliminary evaluation if your target configuration is potentially feasible in the MatchBox combiner platform.



Output types

Integrated Optics uses proprietary micro- optics assembly technique to assemble tiny optical components inside the MatchBox Combiner.

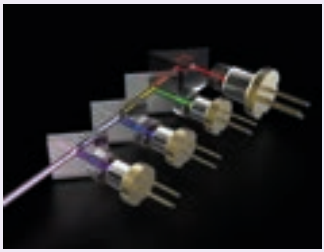
Fiber coupling is permanently carried out inside the box, thus alignment-free operation is ensured.

Multi-wavelength laser specifications

Platform	Part No.	Wavelength set, nm	Output power (free-space), mW	Output power (MM fiber), mW	Output power (SM/PM fiber), mW	Power stability, % (RMS, 8 hrs)*	Spectral line-width, nm*
MatchBox	40A-45A-48A-52A-1...	405 450 488 520	120 70 40 100	100 50 40 70	30 20 20 30	Free-space <0.2 MM fiber <0.5 SM fiber <1 PM fiber <1	0,5 0,8 1 1
	40A-45A-48A-64A-1...	405 450 520 638	120 70 100 130	100 50 70 100	30 20 30 30		0,5 0,8 1 0,7
	40A-48A-52A-64A-1...	405 488 520 638	120 40 100 130	100 30 70 100	30 20 30 30		0,5 1 1 0,7
	40A-48A-64A-78A-1...	405 488 638 785	120 40 130 120	100 30 100 100	30 20 30 30		0,5 1 0,7 0,2
	40A-52A-64A-78A-1...	405 520 638 785	120 100 130 120	100 90 100 100	30 30 30 30		0,5 1 0,7 0,2
ARA	40A-48A-52B-64A-2...	405 488 532 638	120 40 100 130	100 40 90 100	25 20 25 25		0,5 1 0,1 0,7
	40A-48A-56B-64A-2...	405 488 561 638	120 40 50 130	100 40 40 100	25 20 20 25		0,5 1 0,2 0,7

* Typical performance (full specification available at https://integratedoptics.com/products/wavelength-combiners)
Custom: other wavelengths on request: 505 nm, 660 nm, 830 nm, 850 nm, 1064 nm, 1470nm, 1550 nm
NOTE: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.

Following output types are available/ customizable:



- Collimated Free-space
- Line-focussed
- MM fiber-coupled
- SM fiber-coupled
- PM fiber-coupled
- SMA port

Other parameters of combiners

Beam properties:
- Beam diameter at aperture (1/e2): <2 mm
- Beam divergence (full angle): <1.5 mrad
- Beam pointing stability: <5 µrad/C°

Operation mode:
- Automatic Current Control (ACC)
- TTL modulation up to 10 MHz in ACC mode. Each laser diode can be modulated independently.

Fiber specs:
- Default connector for SM/PM fiber is FC/PC
- Default connector for MM fiber is SMA
- Standard length of a fiber is 1 m to 1.2 m
- Polarization rotation (PM fiber): less than 5 degree

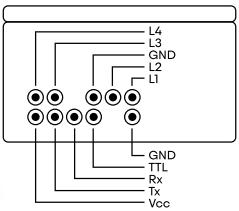
Physical properties:
- Control interface type: UART serial bus, convertible to USB or RS232 using accessories
- External power supply requirement: 1.5 A and +12 VDC
- Dimensions (L-W-H): 50 x 30 x 18 mm (excluding pins and output window)
- Beam height from the base: 10.4 mm (+/- 0.3 mm)
- Heatsink requirement: <0.5 °C/W
- Optimum heatsink temperature (non-condensing): +15...+30 °C
- Max. heatsink temperature 40 °C
- Internal temperature stabilization: TEC
- Overheat protection: Yes
- Warranty: 14 months, or 10000 hours, whichever occurs first. Operational time calculation is based on an internal EPROM counter

Compatibility:
- RoHS
- Electromagnetic Compatibility (EMC) Directive 2004/108/EC
- General Product Safety Directive (GPSD) 2001/95/EC
- IEC60825-1:2014 (compliant only using additional accessories)

The Pinout

The bottom row comprises Vcc and GND pins, that are used for 12 VDC power supply; Tx and Rx pins are for UART communication; TTL pin is universally programmable and is set to fan-control mode as a default.

The row is used for TTL modulation of each installed laser diode.



Nanosecond Pulsed Lasers

The MatchBox Series includes several variants of pulsed lasers. Matchbox lasers show that small dimensions and high performance are not mutually exclusive.

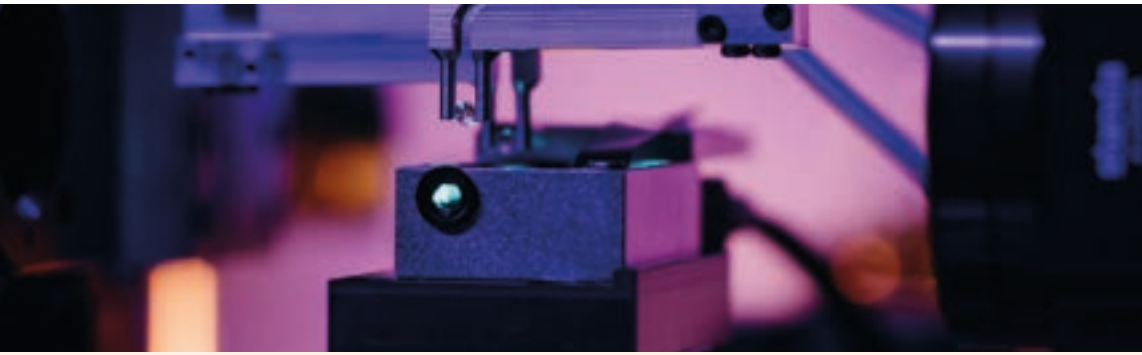
Advantages

- **Same size and a interface as of CW MatchBox lasers**
- **High pulse energy**
- **High average power**
- **Superb pulse-to-pulse stability in SLM operation**

Nanosecond Pulsed Lasers

µFlash laser

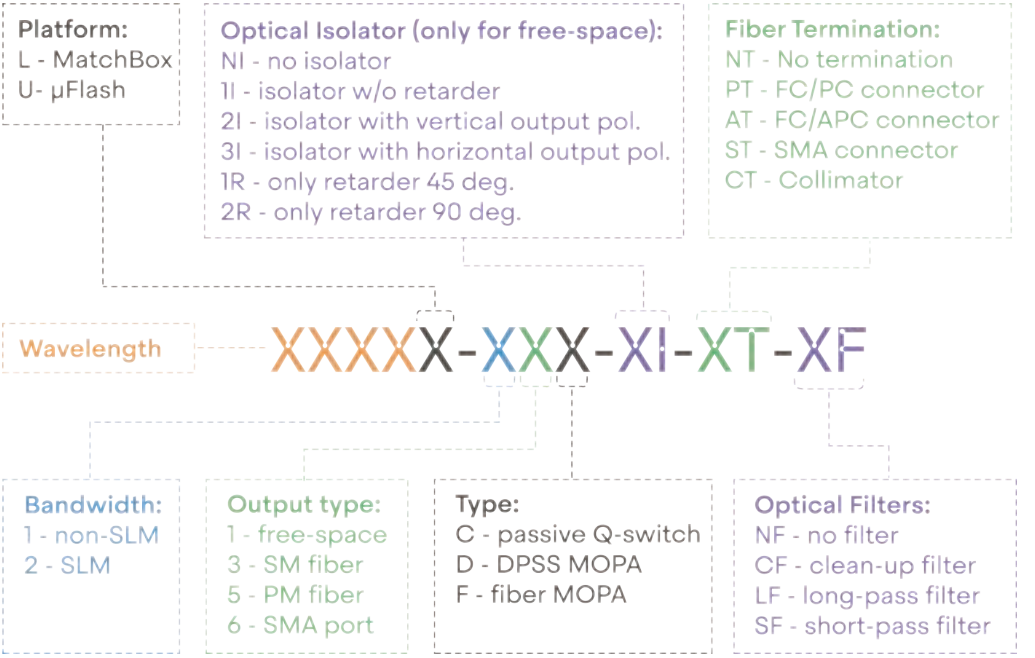
µFlash laser is an OEM- dedicated platform, without included electronics for extremely compact and powerful LiDAR and range finding applications.



Applications

- LiDAR
- Range Finding
- LIBS
- Seeding
- Marking
- Plasma science
- Photoacoustics

Part numbers of pulsed lasers



Specifications

Part Number	Wavelength, nm	Spectral line-width FWHM, nm*	Pulse duration, ns	Pulse Energy, µJ	Repetition rate, kHz	Peak power, kW	Pulse-to-pulse stability, %*
1030L-11C	1029.5	0.7	1.5	100	2-3	67	10
1030U-11C	1029.5	0.7	1.3	150	0.1	115	20

* Typical performance (full specification available at https://integratedoptics.com/products/nanosecond-lasers)
- Pulse energy and repetition rate can be adjusted according to customers requirements.
- Repetition rate changes upon changing the average output power, the pulse energy remains constant.
- Triggering on request

integrated optics ®

PHOTO TECHNICA www.phototechnica.co.jp
フォトテクニカ株式会社
〒336-0017 埼玉県さいたま市南区南浦和 1-2-17
TEL:048-871-0067 FAX:048-871-0068
e-mail:voc@phototechnica.co.jp

ISO 9001 BUREAU VERITAS Certification

Headquarters:
Integrated Optics, UAB
Kalvariju str. 125B, XI building
08221 Vilnius, Lithuania
+370 677 84594
sales@integratedoptics.com

Germany/Austria/ Switzerland:
IO Integrated Optics GmbH
Schwaighofstr. 86a
Landsberg am Lech
86899 Germany
+49 152 09984643
dach@integratedoptics.com

integratedoptics.com
Made in Lithuania (EU)