

# Wavelength Combiners

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



## 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 separately. It provides PD-type power supply support, fan control, an interlock, and inputs for TTL modulation.





## Applications

Flow cytometry

Particle analysis

Sorting

Ophthalmology

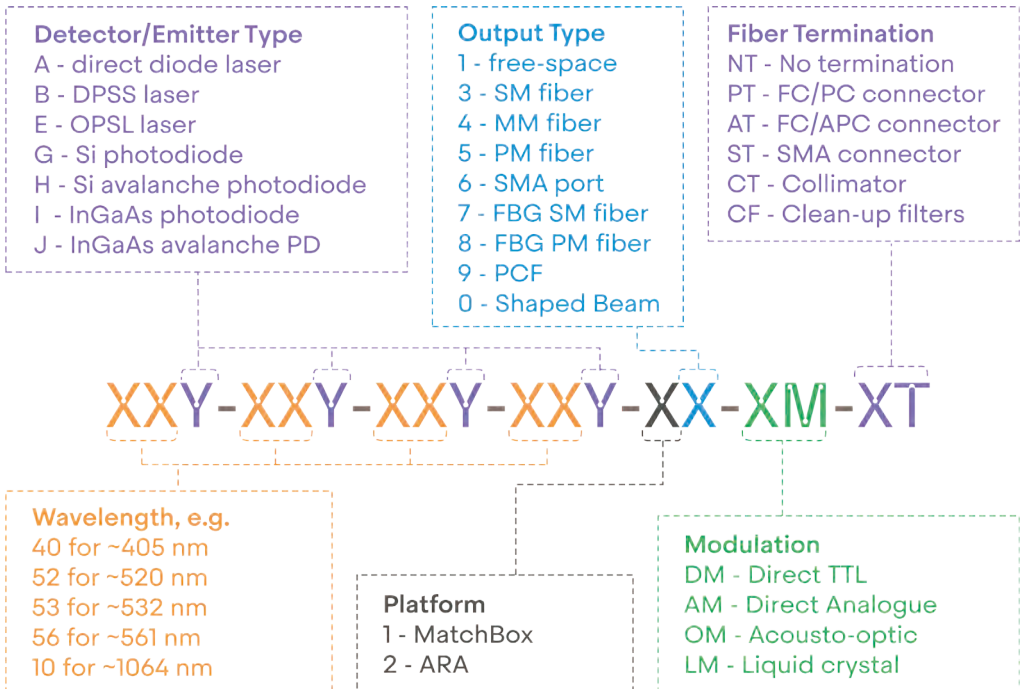
Microscopy

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

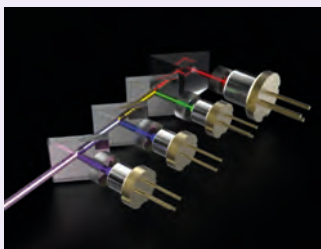
Platform	Part No.	Wavelength set, nm	Output power (free-space), mW	Output power (MM fiber), mW	Output power (SM/PM fiber), mW	Power stability, % (RMS, 8 hrs)*	Spectral line-width, nm*
MatchBox	40A-45A-48A-52A-1...	405	120	100	30	Free-space <0.2 MM fiber <0.5 SM fiber <1 PM fiber <1	0,5
		450	70	50	20		0,8
		488	40	40	20		1
		520	100	70	30		1
		638	100	100	30		0,7
	40A-45A-48A-64A-1...	405	120	100	30		0,5
		450	70	50	20		0,8
		520	100	70	30		1
		638	130	100	30		0,7
		638	130	100	30		0,7
	40A-48A-52A-64A-1...	405	120	100	30		0,5
		488	40	30	20		1
		520	100	70	30		1
		638	130	100	30		0,7
		638	130	100	30		0,7
	40A-48A-64A-78A-1...	405	120	100	30		0,5
		488	40	30	20		1
		638	130	100	30		0,7
		785	120	100	30		0,2
		785	120	100	30		0,2
40A-52A-64A-78A-1...	405	120	100	30	0,5		
	520	100	90	30	1		
	638	130	100	30	0,7		
	785	120	100	30	0,2		
	785	120	100	30	0,2		
ARA	40A-48A-52B-64A-2...	405	120	100	25	0,5	
		488	40	40	20	1	
		532	100	90	25	0,1	
		638	130	100	25	0,7	
		638	130	100	25	0,7	
	40A-48A-56B-64A-2...	405	120	100	25	0,5	
		488	40	40	20	1	
		561	50	40	20	0,2	
		638	130	100	25	0,2	
		638	130	100	25	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/e<sup>2</sup>): <2 mm
- Beam divergence (full angle): <1.5 mrad
- Beam pointing stability: <5  $\mu$ rad/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)

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## 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.

