integrated optics ®

WAVELENGTH COMBINERS

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

Independent TTL modulation for all wavelengths

4 emitters/ detectors with a dichroic combiner

+9 VDC power supply

Thermoelectric

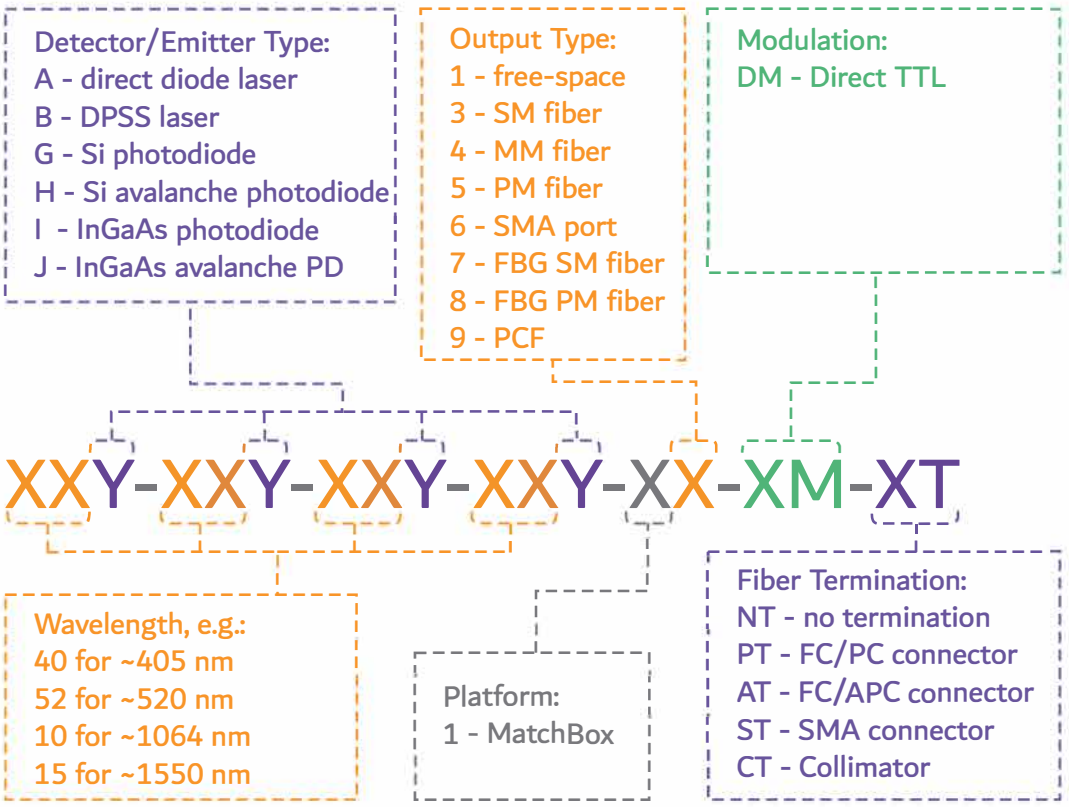
Free-space
SM fiber
MM fiber
PM fiber

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.

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.

APPLICATIONS

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

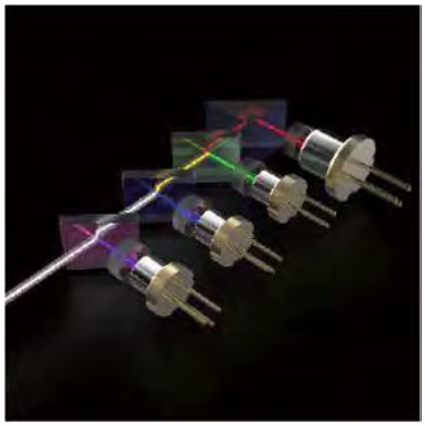
MULTI-WAVELENGTH LASER SPECIFICATIONS

Part No.	Wavelength set, nm	Output power (free-space '-11'), mW	Output power (MM fiber '-14', '-16'), mW	Output power (SM/PM fiber '-13' and '-15'), mW	Power stability, % (RMS, 8 hrs)*	Spectral line-width, nm*
40A-45A-48A-52A	405 445 488 520	120 70 40 100	100 50 40 100	50 20 20 40	Free-space <0.2 MM fiber <0.5 SM fiber <1 PM fiber <1	0.5 0.8 1 1
40A-45A-52A-64A	405 445 520 638	120 70 100 130	100 50 90 100	50 20 40 50		0.5 0.8 1 0.7
40A-48A-52A-64A	405 488 520 638	120 40 100 130	100 40 90 100	50 20 40 50		0.5 1 1 0.7
40A-48A-64A-78A	405 488 638 785	120 40 130 120	100 40 100 100	50 20 50 50		0.5 1 0.7 0.2
40A-52A-64A-78A	405 520 638 785	120 100 130 120	100 90 100 100	50 40 50 50		0.5 1 0.7 0.2

* 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.

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.



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:

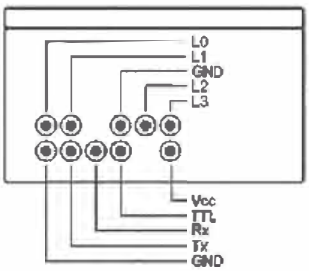
- Default connector for SM/PM fiber is FC/PC
- Default connector for MM fiber is SMA
- Standard length of a fiber is 1 m to 1.2 m
- Polarization rotation (PM fiber): less than 5 degree

PHYSICAL PROPERTIES:

- Control interface type: UART serial bus, convertible to USB or RS232 using accessories
- External power supply requirement: +9VDC, 1.5A or +12VDC, 1.5 A
- 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 +9 (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.

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