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

PRISM AWARDS FINALIST

Applications

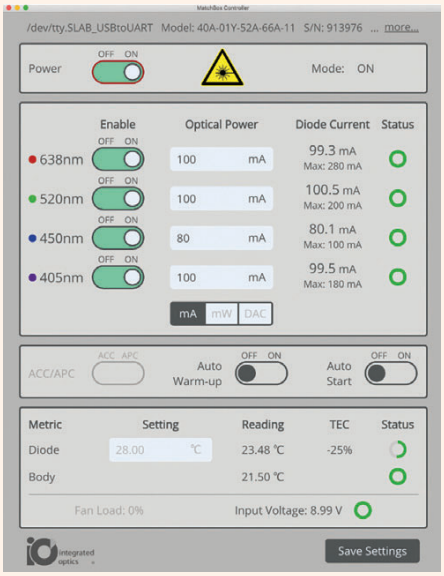
CW LASERS (REGULAR SPECTRUM)
Fluorescence spectroscopy
Scanning Microscopy
Particle analysis
Sorting
Flow cytometry
Excitation

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



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

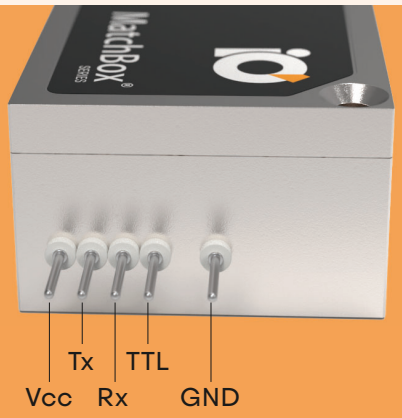
Fiber specs:
- Default connector for SLM laser is FC/APC.
- Default connector for regular spectrum lasers is FC/PC
- Standard length of a fiber is 1 m to 1.2 m
- Polarization rotation (PM fiber): less than 5 degree

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.



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

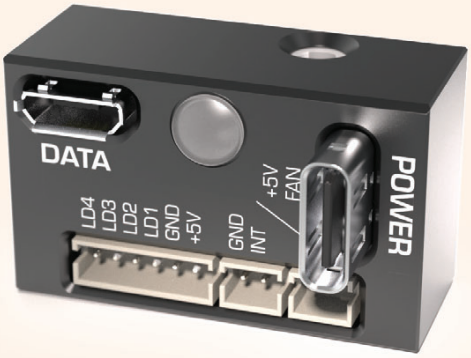
Free space
SM fiber
MM fiber
PM fiber

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

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

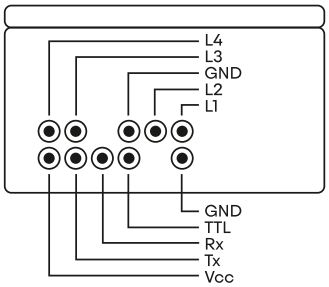
Physical properties:
- Control interface type: UART serial bus, convertible to USB or RS232 using accessories
- External power supply requirement: 1.5 A and +12 VDC
- Dimensions (L-W-H): 50 x 30 x 18 mm (excluding pins and output window)
- Beam height from the base: 10.4 mm (+/- 0.3 mm)
- Heatsink requirement: <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

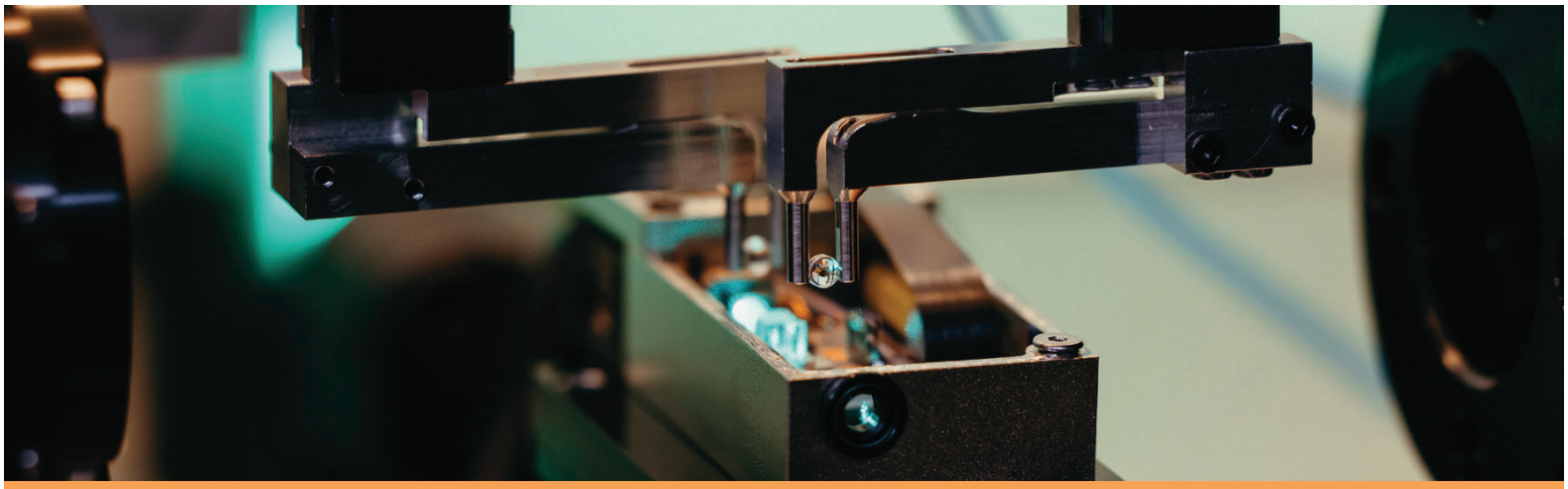
The bottom row comprises Vcc and GND pins, that are used for 12 VDC power supply; Tx and Rx pins are for UART communication; TTL pin is universally programmable and is set to fan-control mode as a default.

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.

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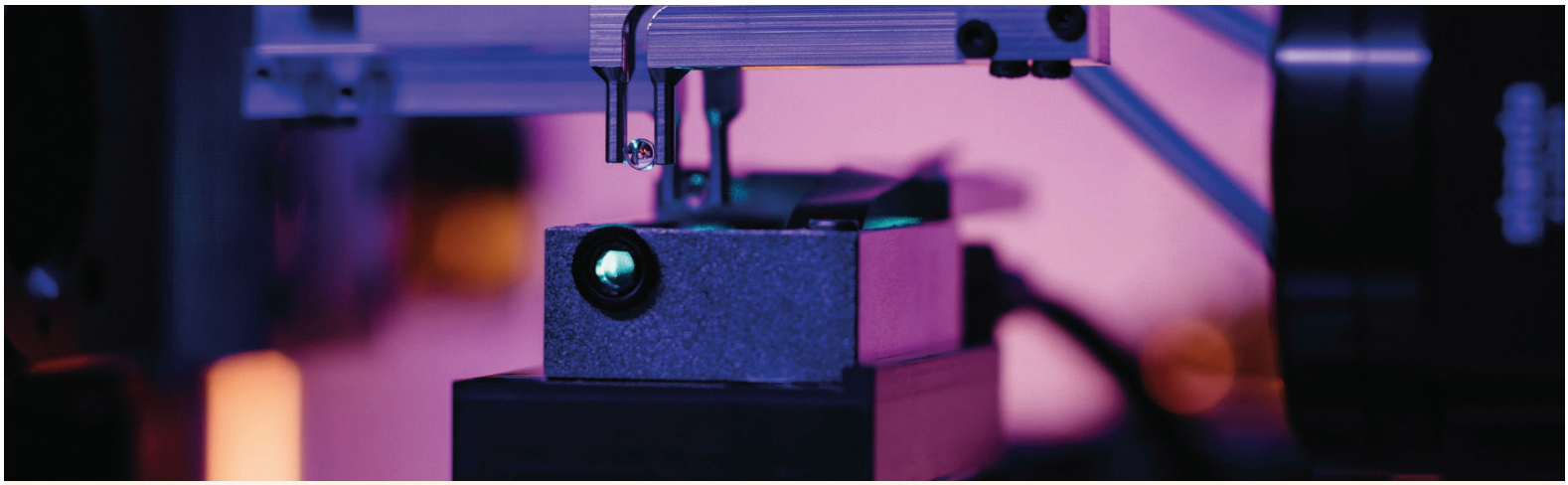

Applications

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