



BDU-SM

BDU-SM Family USB-Controlled Picosecond Diode Lasers

Small-size, 40 mm x 80 mm x 120 mm

USB interface

Power supply from USB port

No external controller or power supply

Wavelengths from 375 nm to 785 nm

Pulse repetition rate 20, 50, 80 MHz, CW

Pulse width down to 40 ps

Excellent timing stability

Excellent power stability

No warm-up time

Free-beam or single-mode fibre output

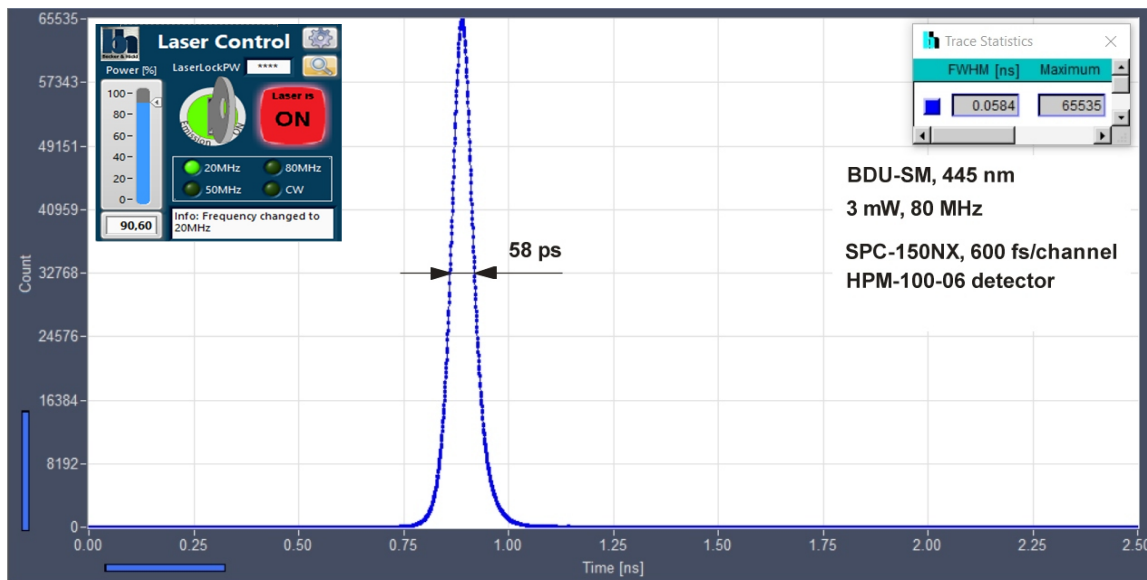
Free-beam power in pulsed mode up to 3 mW

Free-beam power in CW mode up to 10 mW

Internal power stabilisation loop

USB 2.0 compatible

Compatible with all bh TCSPC devices



Pulse shapes and power levels may change due to development in laser diode technology. Coupling efficiency into single-mode fibres is 40 to 60%.

Designed and manufactured by



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BDU-SM

Optical

Repetition Rate, selected via USB	20 MHz, 50 MHz, 80 MHz, for other repetition rates contact bh
Wavelengths	375 nm, 405 nm, 445 nm, 470 nm, 485 nm, 515 nm, 640 nm, 685 nm, 785 nm, for other contact bh
Pulse width (FWHM, at medium power)	30 to 90 ps
Pulse width (FWHM, at maximum power)	60 to 300 ps
Power control range (ps mode, 80 MHz, power in free beam)	0 to 1 mW 0 to 5 mW, depends on wavelength version
Power control range (CW mode, power in free beam)	0 to 10 mW, limited by USB power supply limitations
Beam diameter, free beam	0.8 mm
Polarisation	vertical
Coupling efficiency into single-mode fibre, typically	40% to 60 %

SYNC / Trigger Output, to TCSPC Modules (Con1, see right)

Connector	SMA
Pulse Amplitude	-1.2 V (peak) into 50 Ω
Pulse Width	1 ns, see figure lower right
Output Impedance	50 Ω
Jitter between Trigger and Optical Pulse	< 5 ps
Timing stability, trigger out to optical pulse	< 2 ps over 10 minutes

Synchronisation Input (Con2, see right)

Connector	SMA
Input pulse amplitude	+3.3 to +5V into 50 Ω
Duty cycle	10 to 30 %. DC equivalent must be < 2.5V
Switching between external sync and internal oscillator	By average input voltage
	Vav < 2.5V: External. Vav > 2.5V: Internal
	10 MHz to 80 MHz

Input frequency range

Laser ON/OFF Modulation Input (Con 3, see right)

Signal Levels	TTL / CMOS
Response time of optical output to on/off signal	< 4 μ s for power 10 to 100%, see figure right
Standard configuration, active H, normally ON	TTL / CMOS H: Emission on, pull-up resistor
Special configuration, active H, normally OFF	TTL / CMOS H: Emission on, pull-down resistor
Special configuration, active L, normally ON	TTL / CMOS L: Emission on, pull-down resistor
Special configuration, active L, normally OFF	TTL / CMOS L: Emission on, pull-up resistor
	Special configurations on demand

Safety Interlock Function (Con 3, see right)

Laser enabled:	Con 3 INTLCK connected to GND
Laser disabled	Con 3 INTLCK open

USB Interface

Version	USB 2.0 standard
Connector	USB C

Power Supply

Power Supply Voltage	+5V from USB port
Power Supply Current	200 mA to 800 mA

Mechanical Data

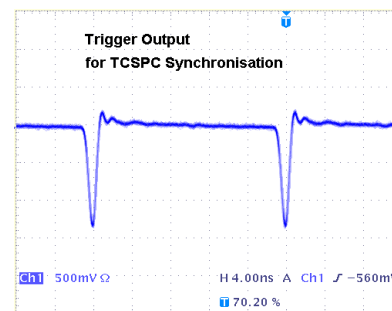
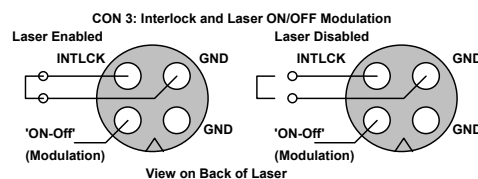
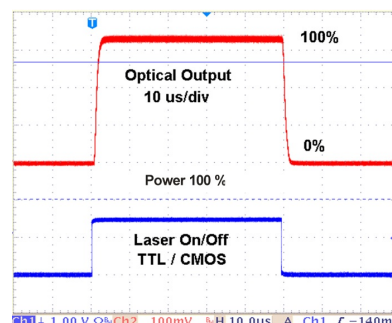
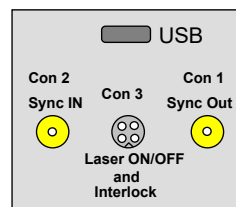
Dimensions, including heat sink	40 mm x 80 mm x 120 mm
Mounting holes	four holes for M3 screws

Maximum Ratings

Supply voltage	4.5 V to 5.5 V
Voltage at 'Laser On/Off' input	-2 V to +7 V
Ambient Temperature	0 $^{\circ}$ C to 40 $^{\circ}$ C

Related Products

BDS-SM picosecond and CW diode lasers, BDS-MM picosecond diode lasers



Caution: Class 3B laser product. Avoid direct eye exposure. Light emitted by the device may be harmful to the human eye. Please obey to laser safety rules when operating the devices.
Complies with US federal laser product performance standards.

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