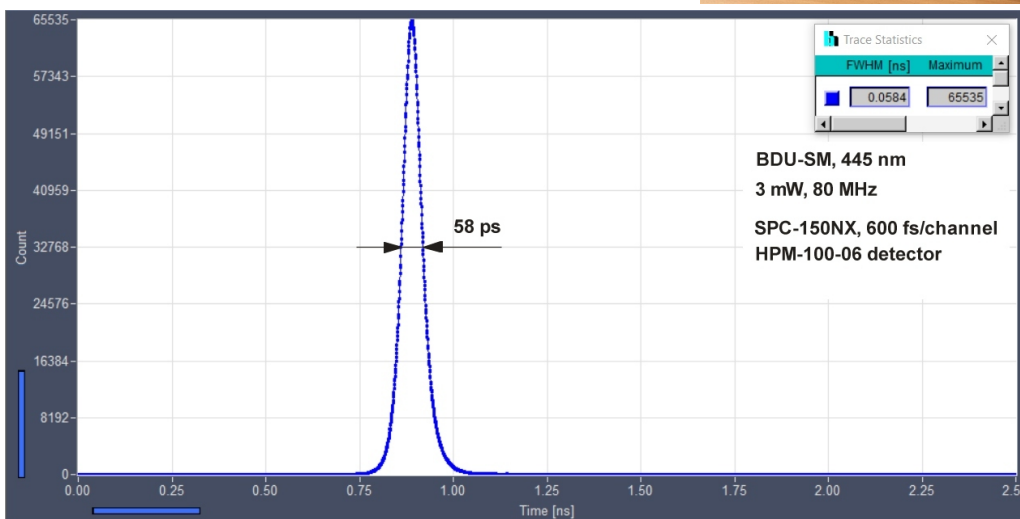




# BDU-SM

## 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 and CW mode**  
**Pulse width down to 40 ps**  
**Excellent timing stability**  
**Excellent power stability**  
**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 20 mW**  
**Internal power stabilisation loop**  
**USB 3.0, 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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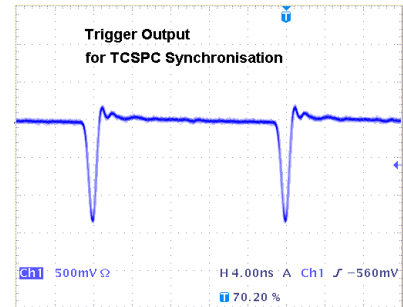
# BDU-SM

## Optical

Repetition Rate, selected via USB	20 MHz, 50 MHz, 80 MHz and CW, other repetition rates on request
Wavelengths	375 nm, 405 nm, 445 nm, 470 nm, 485 nm, 515 nm, 640 nm, 685 nm, 785 nm other on request
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, 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 20 mW ..... 0 to 20 mW (depends on wavelength version)
Beam diameter, free beam	0.7 mm x 1.2 mm (depends on wavelength version)
Polarisation	horizontal
Coupling efficiency into single-mode fibre, typically	40% to 60 %

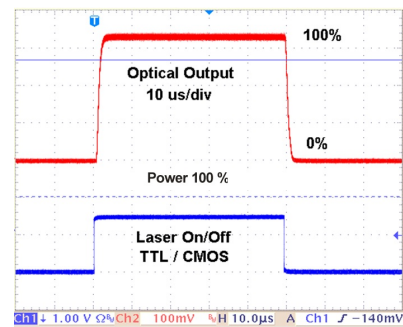
## Trigger Output, to TCSPC Modules

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



## Synchronisation Input

Input amplitude	+3.3 to +5V into 50 Ω
Duty cycle	10 to 30 %. DC equivalent must be < 2.5V
Input frequency	10 to 80 MHz
Connector	SMA
Switch between internal clock and sync input	automatic, by average voltage at trigger connector



## ON/OFF Control Input

Laser ON / Off	TTL / CMOS, 'low' means 'off', internal pull-up
Response of optical output to on/off signal	< 4 us for power 10 to 100%, see figures right

## USB Interface

Version	USB 2.0 or USB 3.0
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 °C to 40 °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.

## International Sales Representatives



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