

BDL-405

Violet Picosecond Diode Laser

Pulse width down to 60 ps

Repetition rate 20-50-80 MHz

Wavelength 405 nm

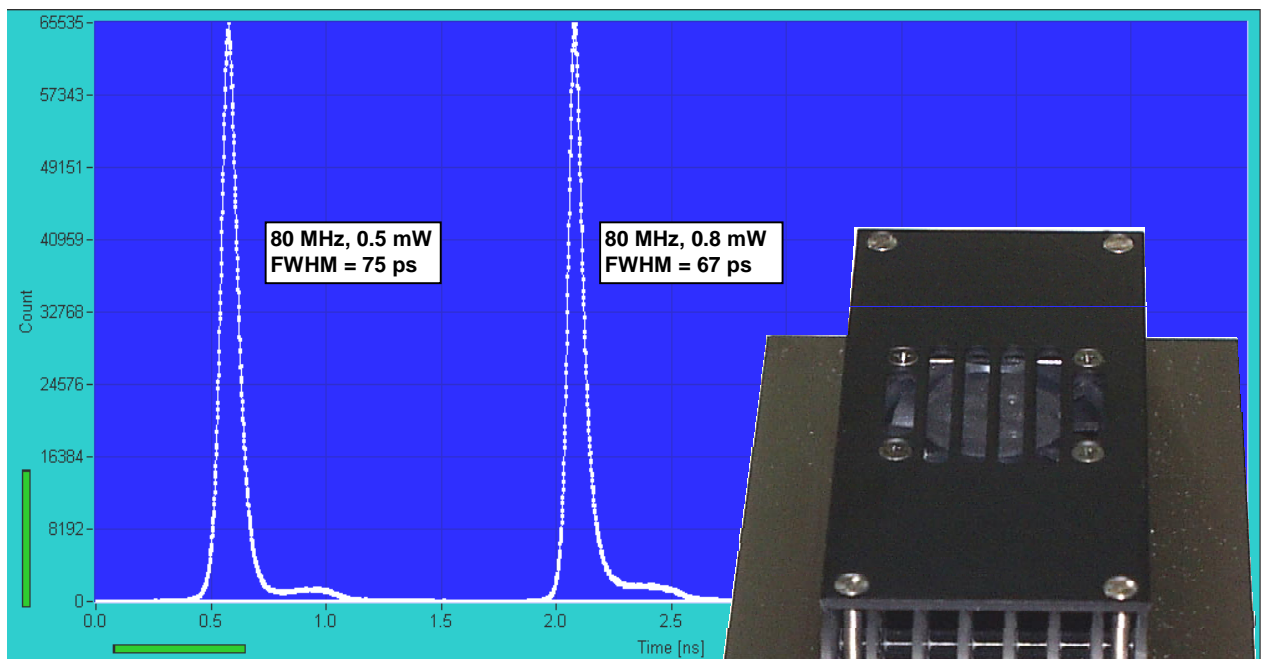
Low skew trigger output

Extremely low RF noise

Cooled laser diode

Simple + 9 V to +12V power supply

Compact design - no external controller unit

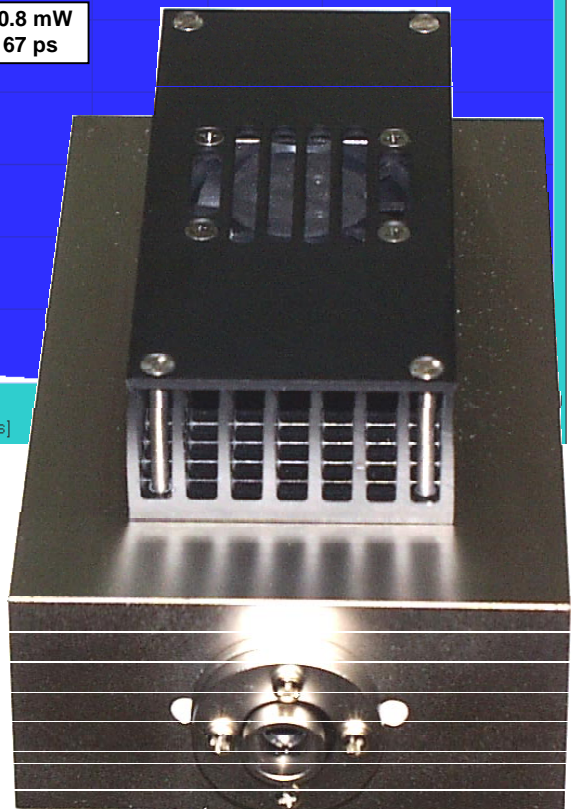


Luminescence lifetime experiments

Picosecond lifetime microscopy

Fluorescence correlation

**Time-correlated single photon counting
experiments**



Becker & Hickl GmbH
Nahmitzer Damm 30
12277 Berlin, Berlin
Tel. +49 / 30 / 787 56 32
Fax. +49 / 30 / 787 57 34
email: info@becker-hickl.com
www.becker-hickl.com



US Representative:
Boston Electronics Corp
tcspc@boselec.com
www.boselec.com



UK Representative:
Photonic Solutions PLC
sales@psplc.com
www.psplc.com

BDL-405

Optical

Repetition Rate
Wavelength
Pulse Width (FWHM, Power 0.5 mW, 50 MHz)
Peak Power
Optical Power
(Average CW power,
adjustable)
Stability of Repetition Rate
Pulse-to Pulse Jitter
Power and pulse shape stabilisation after 'Laser on' signal
Power and pulse shape stabilisation after switch-on

Speed Class A

20-50-80 MHz, selectable
401 nm to 410 nm, typ. 405 nm
60 to 90 ps
125 mW¹⁾
20 MHz: 0.1 mW to 0.3 mW²⁾
50 MHz: 0.2 mW to 0.8 mW²⁾
80 MHz: 0.3 mW to 1.3 mW²⁾

Speed Class B

90 to 150 ps
80 mW¹⁾

± 100 ppm
< 10 ps
1 μ s
3 min

Trigger Output

Pulse Amplitude
Pulse Width
Output Impedance
Connector
Delay from Trigger to Optical Pulse
Jitter between Trigger and Optical Pulse

+100 mV (peak) into 50 Ω
1 ns
50 Ω
SMA
< 500 ps
< 10 ps

Control Inputs

Frequency 20 MHz
Frequency 50 MHz
Frequency 80 MHz
/Laser Off
External Bias Input

TTL / CMOS high³⁾
TTL / CMOS high³⁾
TTL / CMOS high³⁾
TTL / CMOS low³⁾
analog input, -10 V to + 10V

Power Supply

Power Supply Voltage
Power Supply Current

+ 9 V to +12 V
300 mA to 1 A⁴⁾

Mechanical Data

Dimensions
Mounting Thread

160 mm x 90 mm x 60 mm
two M6 holes

Maximum Values

Power Supply Voltage
Voltage at Digital Control Inputs
Voltage at Ext. Bias Input
Ambient Temperature

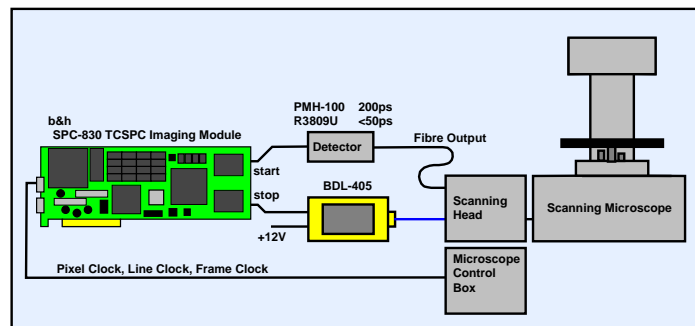
0 V to +15 V
-2 V to +7 V
-12 V to + 12 V
0 °C to 30 °C⁵⁾

- 1) Typical values, sample tested. Depends on pulse width and selected power.
- 2) Recommended power adjust range. Lower power gives broader pulses, higher power gives ringing in pulse shape. Power levels above the given range can be selected, but may impair the lifetime of the laser diode.
- 3) All inputs have 10 k Ω pull-up resistors. Open input is equivalent to logic 'high'.
- 4) Dependent on ambient temperature. Cooling current changes due to temperature regulation of laser diode
- 5) Operation below 13 °C may result in unstable power or extended warm-up time.

Caution: Light emitted by the device may be harmful to the human eye. Please pay attention to safety rules when operating the devices. Do not look into the collimated laser beam.

Application: TCSPC lifetime imaging with laser scanning microscopes

The BDL-405 laser excites the sample with 50 MHz, 75 ps pulses. The microscope scans the sample in y-x direction, and the SPC-830 TCSPC imaging module records the photon distribution versus time and the coordinates of the scanning area. The setup detects single and double exponential lifetimes down to a few 10ps. Typical applications are ion concentration, ph, or oxygen saturation measurements by fluorescence quenching, FRET experiments and distinguishing of autofluorescence components. Please see www.becker-hickl.com for detailed information.



Becker & Hickl GmbH
Nahmitzer Damm 30
12277 Berlin
Tel. +49 / 30 / 787 56 32
Fax. +49 / 30 / 787 57 34
<http://www.becker-hickl.com>
email: info@becker-hickl.com