

High speed pico second pulsed laser

The QLD-301 is a direct-pulsed diode laser system featuring adjustable pulse width, low time jitter, high extinction ratio and high repetition frequency. The minimal pulse width is less than 50 ps but also can be adjusted to a large extent up to 1.5 ns duration for user-specific applications. With minimal short pulse, the repetition rate can go up to 1.25 GHz. Laser pulses can be triggered internally or externally with built-in precision delay control. A sync output and a programmable clock output allow to trigger other components such as a TCSPC or testing electronics for single photon system.



With built-in EVOA and PD, the optical power can be adjusted easily and shown on the screen for quantum optical applications. Besides pulsed laser mode, continuous wave mode is also supported, of which average power can be set and monitored as well.

Product Highlights

- Minimal pulse width ≤ 50 ps, FWHM
- Laser pulse jitter ≤ 20 ps, RMS
- Optical extinction ratio ≥ 40 dB
- High repetition frequency up to 1.25 GHz
- Internal/external trigger selection with adjustable trigger delay
- Laser sync output and programmable clock output
- Reference clock input and output
- 7" IPS touch screen and graphical user interface

Applications

- Quantum optics, weak coherent pulse
- Heralded single photon generation
- Single photon detector testing system
- Fluorescence lifetime and fluorescence spectroscopy
- Laser ranging system
- Time-resolved single molecule spectroscopy

Optical specifications

PARAMETER	MIN	TYP	MAX	UNIT
Laser output (FC/PC x1)				
- pulsed laser mode				
repetition frequency	single shot		1250	MHz
minimal pulse width		30	50	ps, FWHM
adjustable pulse width ^[1]	0.1		1.5	ns
pulse width resolution		100		ps
time jitter		15	20	ps, RMS
-3dB bandwidth		0.06	0.1	nm
extinction ratio	40	50		dB
maximum peak power ^[2]			1.5	mW
- CW laser mode				
average power adjustment range	-48		-13	dBm
wavelength tuning resolution		0.1		pm
wavelength short term stability ^[3]			10	MHz, RMS
Optical attenuator and power monitor				
power monitor sensitivity		-75		dBm
internal attenuation	0		35	dB

- Electrical specifications
- External trigger mode (pulsed laser mode only)

PARAMETER	MIN	TYP	MAX	UNIT
Trigger input (SMA x1)				
trigger frequency	single shot		1250M	Hz
trigger input voltage range	-5		5	V
trigger input duty cycle	40		60	%
trigger input threshold	-2.5		2.5	V
input impedance, DC-coupled		50		Ω
trigger delay range		10		ns
trigger delay resolution		10		ps
Sync output (SMA x1)				
output voltage, ac coupled ^[4]		400		mVpp
output impedance		50		Ω
output duty cycle	40		60	%

- Internal trigger mode (pulsed laser mode only)

PARAMETER	MIN	TYP	MAX	UNIT
Internal trigger				
trigger frequency		1,2,5,10,20,40,50,100,200,500,1000,1250		MHz
trigger delay range		1		us
trigger delay resolution		10		ps
Sync output (SMA x1)				
output voltage, ac coupled ^[4]		400		mVpp
output impedance		50		Ω
output duty cycle		50		%
Programmable clock output (SMA x1)				
output voltage, ac coupled ^[4]		400		mVpp
output impedance		50		Ω
output duty cycle		50		%
output frequency	1		1250	MHz
Reference clock input (SMA x1)				
input voltage range	-5		5	V
input duty cycle	40		60	%
input threshold	-2.5		2.5	V
input impedance, DC-coupled		50		Ω
input clock frequency		100		MHz
Reference clock output (SMA x1)				
output voltage, ac coupled ^[4]		1500		mVpp
output clock frequency		100		MHz

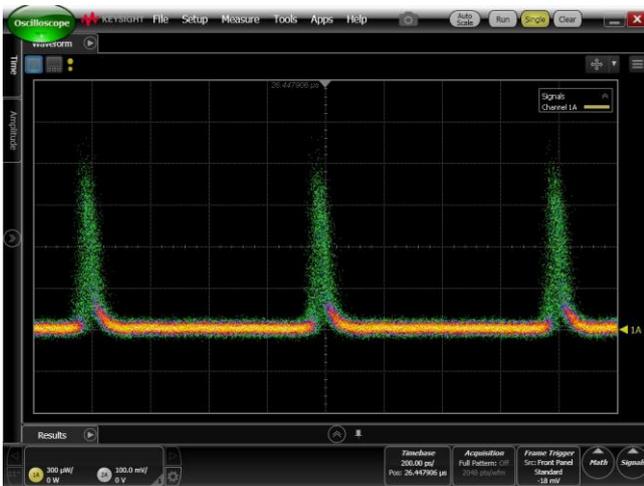
Note:

- [1] The maximum adjustable pulse width is limited to 1ns when repetition frequency is more than 200MHz, and the pulse width is fixed to the minimal (<50ps) when frequency is more than 400MHz.
- [2] Maximum peak power may be reduced by adjusting the internal attenuator.
- [3] Wavelength short term stability condition: 25°C after 20 min. warm up, 1000 sec.
- [4] Output voltage is specified with 50-ohm termination.

Hardware specifications

PARAMETER	MIN	TYP	MAX	UNIT
Operating temperature	10		40	°C
Power supply		100-240VAC 50/60Hz		
Power consumption			65	W
Dimensions (WxDxH)		300 x 388.6 x 146.3		mm
Net weight		7.5		kg

Typical measurements

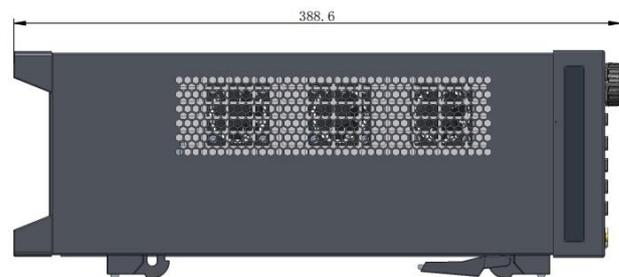


Minimal pulse width, 1.25GHz repetition rate



1ns pulse width, 200MHz repetition rate

Dimensions (unit: mm)



Ordering information

QLD-301-1550: High-speed picosecond pulsed laser with variable power and pulse width (central wavelength 1550 ± 0.5 nm)

(please contact our sales representative for other wavelengths)



All information given here is reliable to our best knowledge. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications and external appearances are subject to change without notice. Trademarks or corporate names are used for explanation and identification, to the owner's benefit and without intent to infringe.