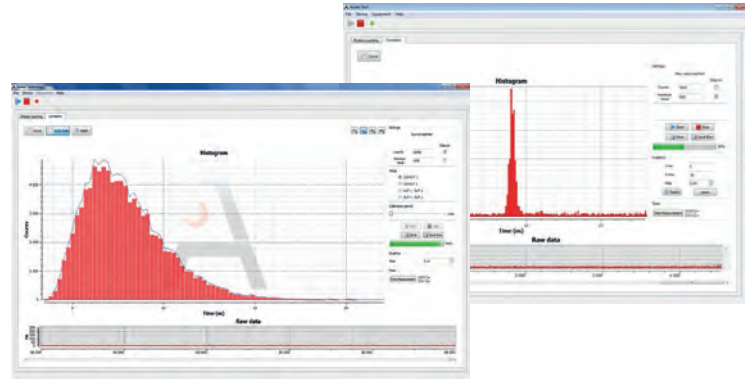


PICOXEA

TCSPC Instrument

Fully-integrated ps laser, photon counter and TCSPC
[405 nm - 1680 nm]



Engineered with "high-performance and ease-of-use" innovative mindset, the PICOXEA instrument includes within the same box, the world's most advanced photon detectors based on Geiger-mode avalanche photodiode technology and up to two high-performance picosecond laser sources.

The PICOXEA instrument is the new generation of self-contained instrument that brings a breakthrough in high-resolution OTDR measurements, lifetime measurements and FLIM microscopy. **A wide range of emission wavelengths as well as two types of photon detectors for low-level-of-light detection in the visible (400 nm - 1060 nm) or in the NIR range (900 nm - 1700 nm) are available.**

Very well-designed, its modern interfaces and high-performances make the PICOXEA an essential and complete analytic tool for any time-resolved measurements !

Features

- 1-channel ps laser source
- 1-channel photon counter
- TCSPC electronics
- Custom emission/detection wavelengths
- User friendly graphical interface
- Remote control
- DLL Libraries : LabVIEW, C++
- Read out in TTL

Applications

- High-resolution reflectometry
- Quantum communication
- TCSPC measurements
- Lifetime measurements
- FLIM microscopy
- Optical fiber sensing

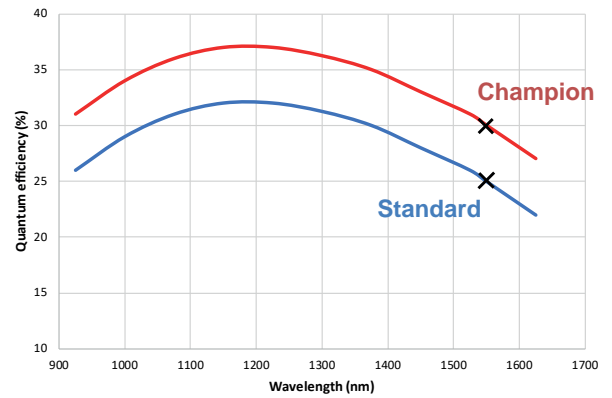
Options

- 2 detection channels
- 2 emission channels

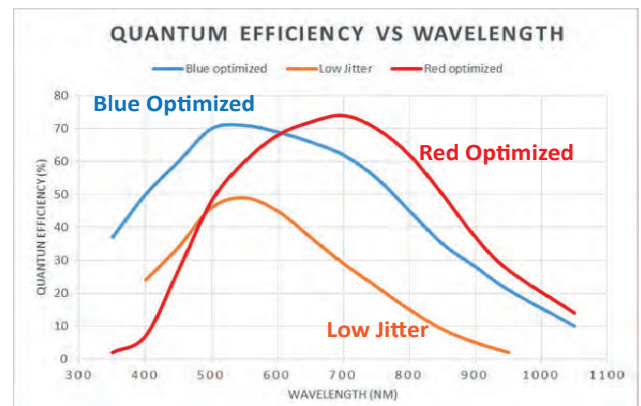
TECHNICAL SPECIFICATIONS

Picosecond laser emission	
Wavelength	From 405 nm to 1680 nm (see table 1)
Optical pulse width	From 45 ps to 80 ps typical (see table 1)
Peak power	Adjustable up to 250 mW (see table 1)
Max repetition rate	20 MHz
Continuous wave	Continuous wave operation (option)
NIR photon detection	
Detector type	InGaAs Geiger mode APD
Spectral range	900 nm to 1700 nm
Dark Count Rate @10% QE	< 2 500 cps : standard grade < 800 cps : champion grade
Quantum Efficiency	10% - 25% [5% step] : standard grade 10% - 30% [10% step] : champion grade
Timing Jitter @max QE	< 200 ps
Min deadtime range	1 μ s
Visible photon detection	
Detector type	Silicon Geiger mode APD
Wavelength	400 nm - 1060 nm
Dark Count Rate	< 100 cps
Quantum Efficiency	> 60% [550 nm - 700 nm]
Timing Jitter @max QE	< 350 ps (< 50 ps)
Min deadtime	20 ns - 40 ns
Synchronization	
External trigger	From CW up to 20 MHz
Internal trigger	From CW up to 20 MHz
Time Correlation	
Timing resolution	13 ps from 1 sec measurement range
Data transfert	1 Millions of correlation per sec
Data display	Graphical User Interface Histograms & curves Raw data & DLL libraries
Input/Output - Mechanical - Environmental	
Computer Connection	Mini USB 2.0 type B
Optical In	FC/PC optical fiber connector
Detection Out	SMA female type connector (TTL)
Clock In	SMA female type connector (TTL)
Clock Out	SMA female type connector (TTL)
Power consumption	5 W
Dimensions (LxWxH)	70 x 250 x 280 mm ³
Weight	4.5 kg
Operating temperature	+ 10°C to + 30°C
Cooling time	< 1 min @ 25°C

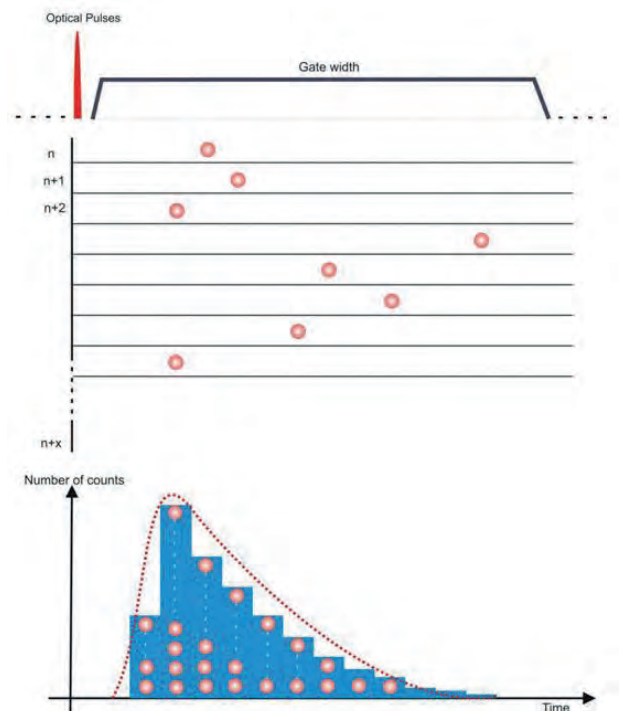
¹ per 10ns measurement time @10 μ s deadtime and 10% QE



QE vs Wavelength



QE vs Wavelength



Time histogram building representation

WAVELENGTHS - FP LASER TYPE

PIXEA-XXXX	Wavelength (nm)	Spectral Width (nm)	Pulse width ¹ (ps)	Peak Power ² (mW)	Average ³ Power (mW)
PIXEA-405	405 ± 15	< 5	< 45	> 300	2
PIXEA-440	440 ± 20	< 5	< 60	> 150	1.5
PIXEA-470	470 ± 10	< 5	< 60	> 150	1.5
PIXEA-480	480 ± 10	< 5	< 60	> 100	1
PIXEA-510	510 ± 20	< 10	< 120	> 100	1
PIXEA-635	635 ± 15	< 7	< 45	> 200	1.5
PIXEA-665	665 ± 15	< 7	< 45	> 200	1.5
PIXEA-690	690 ± 15	< 7	< 50	> 200	1.5
PIXEA-720	720 ± 30	< 7	< 50	> 200	1.5
PIXEA-770	770 ± 20	< 7	< 50	> 100	1
PIXEA-805	805 ± 20	< 7	< 50	> 100	1
PIXEA-830	830 ± 15	< 10	< 45	> 100	1
PIXEA-850	850 ± 15	< 10	< 50	> 100	1
PIXEA-880	880 ± 20	< 10	< 50	> 100	1
PIXEA-905	905 ± 15	< 10	< 50	> 100	1
PIXEA-940	940 ± 20	< 10	< 50	> 100	1
PIXEA-980	980 ± 20	< 10	< 50	> 100	1
PIXEA-1060	1060 ± 20	< 15	< 60	> 100	1
PIXEA-1310	1310 ± 20	< 15	< 35	> 50	1
PIXEA-1550	1550 ± 20	< 15	< 35	> 50	1
PIXEA-1680	1680 ± 25	< 10	< 70	> 100	1

WAVELENGTHS - NARROW SPECTRAL LINEWIDTH DFB-LASER TYPE

	Wavelength (nm)	Spectral Width (nm)	Pulse width (ps)	Peak Power (mW)	Average Power (mW)
<i>PIXEA-850-DFB</i>	852 ± 2	< 0.5	< 90	>100	0.5
<i>PIXEA-1064-DFB</i>	1064 ± 2	< 0.5	< 60	> 100	0.5
<i>PIXEA-1310-DFB</i>	1310 ± 2	< 0.5	< 30	> 50	0.5
<i>PIXEA-1550-DFB</i>	1550 ± 2	< 0.5	< 30	> 50	0.5
<i>PIXEA-1610-DFB</i>	1610 ± 2	< 0.5	< 30	> 50	0.5

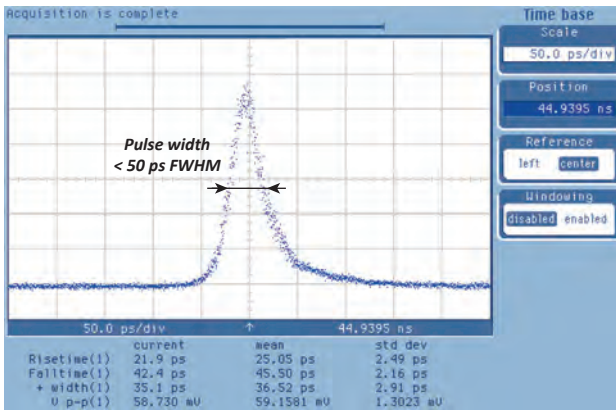
Other wavelengths, pulse widths and power are available on request

¹ Minimum pulse widths. The pulse widths depend on repetition rate,

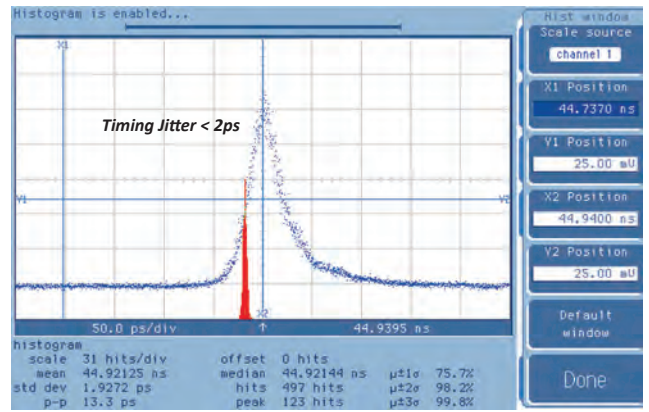
² Peak power for collimated beam. Fiber coupling will reduce peak power. Corresponding pulse energy depends on pulse width,

³ Typical average output power for collimated beam at 80 MHz. Average power depends on rate.

PERFORMANCES

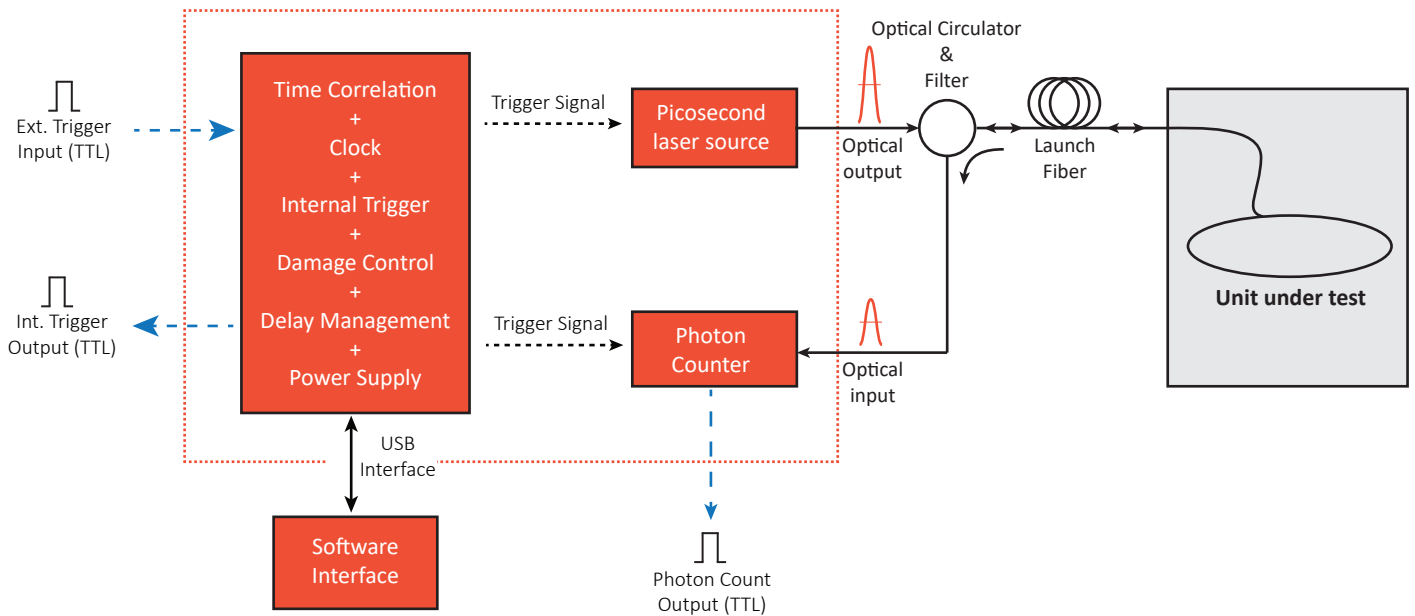


Pulse width measurement @780nm

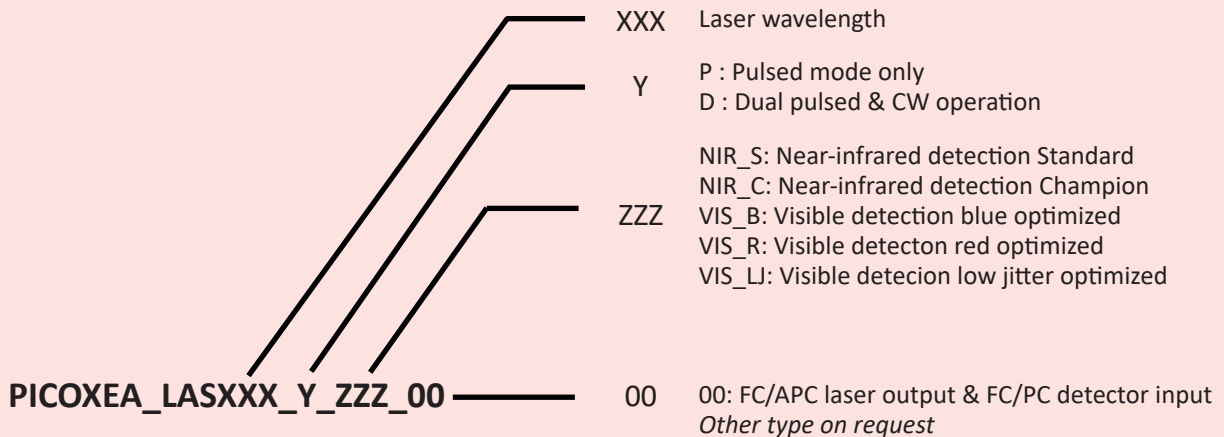


Timing jitter measurement

APPLICATION EXAMPLE - OTDR measurements



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