

AMS pulsed fiber lasers datasheets



AMS Technologies – where technologies meet solutions

AMS Technologies is a leading solution provider and distributor of high-tech, leading-edge components, systems and equipment, with more than 30 years of experience to date and currently serving more than 2000 European customers.

We are the specialists in both componentry and complete solutions for Optical technology, Thermal Management and Power Technology fields, with access to and long standing relationships with the most advanced manufacturers in each of those fields. Drawing extensively on our experience in each of these differing technologies, and coupling this with our broad system-level competence, we are able to offer seamless and comprehensive solutions incorporating complementary aspects from all three key technology fields.

With an appropriate technical education, an element of entrepreneurial spirit and many years of design and consultancy expertise, our sales engineers can rapidly comprehend system requirements and provide you the customer with a solution that goes way beyond a simple understanding of our product datasheets. We take active involvement in the design cycle, defining and re-defining your specifications, and leading in many cases to

highly specific, customized products and solutions. Helping you to effectively outsource your production line, we can even provide you with the necessary leading turnkey contract manufacturing services in our key competency fields.

AMS Technologies has been delivering solutions into a variety of high-tech markets, including renewable energies, medical, defence & aerospace, research & scientific and various other industrial segments. Our customer base consists of Europe's largest leading technology corporations, a network of universities and research institutes as well as the most promising start-ups.

We thrive by working in a 'customer first' environment. Our pan-European customers are serviced from a network of local offices in Germany, the UK, France, Italy, Spain, Poland and Sweden, with a focused operations and logistics centre located in Munich, Germany.

Our commitment: Identifying the best solution for your project enabling you to become your customers' first choice!

Your AMS Technologies team

overview of pulsed fiber lasers available from AMS Technologies

Our comprehensive range of pulsed fiber lasers includes femtosecond, picosecond and nanosecond versions. The product range includes wavelengths ranging from UV to IR, pulse durations from sub-100 fs to a few ns, repetition rates from pulse-on-demand up to 1.3 GHz and pulse energy from a few nJ up to >400 μ J.

They are very compact and truly Plug & Play. There are no user serviceable parts inside or outside the laser head and laser driver, and no adjustment knobs or screws.

The lasers are dust sealed and maintenance free, shock and vibration proof and passively air cooled (no water, no fans). They maintain their high performance at temperatures ranging from

10°C to 40°C and offer superb spectral and temporal quality combined with a long lifetime. Several different power/energy versions are available, as well as different wavelength options, covering the IR, visible and UV spectrum.

These pulsed fiber lasers provide solid, reliable and cost-effective solutions for a broad range of ultrafast pulsed laser applications within micro material processing, laser surgery, medical treatment, THz generation, frequency comb generation, spectroscopy among others.



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SWISS MADE

Origami is the industrial-grade, ultra-compact, mode-locked, **femtosecond laser** that provides the **lowest phase noise** and timing jitter available on the market. It has been specifically designed for OEM integration. Origami laser emits transform-limited soliton pulses, provides diffraction-limited beam quality and excellent pointing stability. It is available at various wavelengths and repetition rates. Origami is an air-cooled, maintenance-free laser module packaged in a sealed, robust enclosure allowing for operation in the harshest environments. It guaranties high stability, low drift and **24/7 operation**.

THE LOWEST PHASE NOISE ON THE MARKET

OPTIONS:

- + Synchronization to external clock for ultra-low timing jitter
- + Analog pump power control
- + Repetition rate control and tunability
- + Carrier-Envelope-Phase (CEP) stabilization ready
- + Fiber output (PM or SM)

MAIN APPLICATIONS:

- + Seed for amplifiers
- + Frequency Comb systems
- + Supercontinuum generation
- + Analog-to-Digital converters / Radar systems
- + Clock distribution
- + THz generation

OUTSTANDING FEATURES :

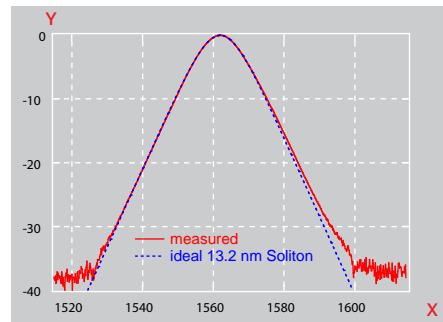
- + Lowest phase noise on the market
- + Transform-limited clean soliton pulses
- + Diffraction-limited beam quality
- + No Kelly sidebands, no spectral ripple
- + Shot noise limited relative intensity noise
- + Maintenance free – no alignment required
- + Plug & Play
- + 24/ 7 operation

	ORIGAMI - 05	ORIGAMI - 08	ORIGAMI - 10	ORIGAMI - 15	ORIGAMI - 17
CENTER WAVELENGTH	513 – 535 nm	765 – 785 nm	1025 – 1070 nm	1530 – 1580 nm	1580 – 1700 nm
PULSE DURATION ^{1,2}	<100 – 230 fs	<60 – 200 fs	<70 – 400 fs	<80 – 500 fs	<200 – 300 fs
AVG. OUTPUT POWER [UP TO] ²	100 mW	30 mW	250 mW	120 mW	50 mW
PULSE ENERGY [UP TO] ²	1.2 nJ	0.7 nJ	5 nJ	2 nJ	1 nJ
PEAK POWER [UP TO]	10 kW	4.5 kW	30 kW	15 kW	3 kW
PULSE REPETITION RATE ²	20 MHz – 1.3 GHz				
SPECTRAL BANDWIDTH	transform-limited ($\tau_p \cdot \Delta\nu \sim 0.32$)				
BEAM QUALITY	$M^2 < 1.1$, TEM ₀₀				
PER	> 23 dB				
AMPLITUDE NOISE [24 H]	< 0.2% rms, < 0.5% pk-pk				
CENTER WAVELENGTH DRIFT	< 0.2% rms, < 0.5% pk-pk				
LASER OUTPUT	collimated free space (fiber output optional)				
ENVIRONMENTAL					
WARM-UP TIME	< 10 minutes				
OPERATION TEMPERATURE	10 °C – 40 °C				
STORAGE TEMPERATURE	- 20 °C – 65 °C				
ON/OFF CYCLES	> 10000				
MECHANICAL					
SIZE LASER HEAD ³	296 x 112 x 54 mm ³				
WEIGHT LASER HEAD ³	2.5 kg				
SIZE CONTROL UNIT	165 x 104 x 44 mm ³				
WEIGHT CONTROL UNIT	0.65 kg				
ELECTRICAL					
POWER SUPPLY	24 VDC/2.5 A or 90 – 264 VAC, 47 – 63 Hz				
POWER CONSUMPTION	< 15 W				
COOLING					
LASER HEAD	air cooled				
LASER CONTROLLER	air cooled				

1 Tunable (requires external adjustable power supply)
2 Please inquire for possible combinations of pulse duration, average power and repetition rate
3 Exact size and weight depend on pulse repetition rate and wavelength

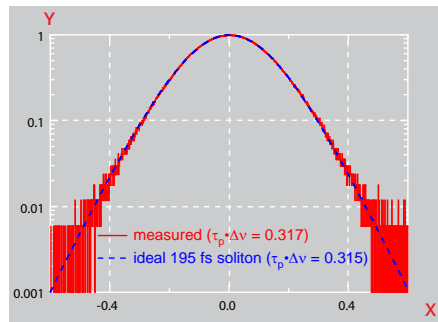


OPTICAL SPECTRUM



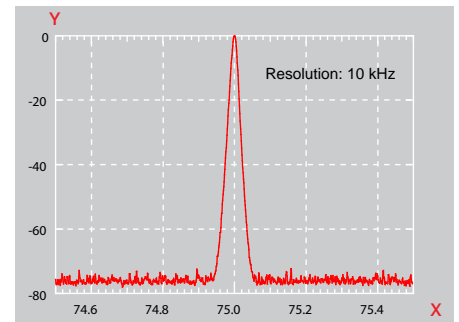
X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (dBc/nm)

PULSE PROFILE



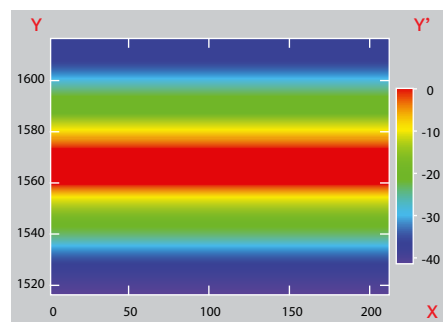
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

RF SPECTRUM



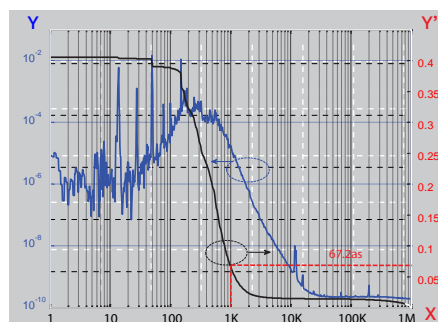
X FREQUENCY (MHz)
Y NOISE SPECTRAL DENSITY (dBc/10kHz)

OPTICAL SPECTRUM AS FUNCTION OF TIME



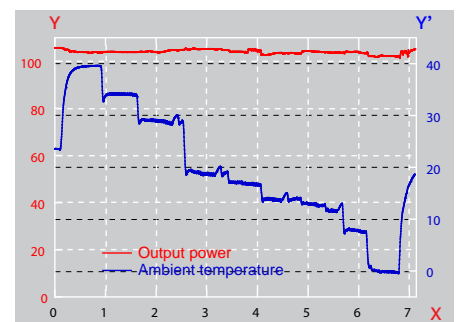
X TIME (h)
Y WAVELENGTH (nm)
Y' SPECTRAL POWER DENSITY (dBc)

PHASE NOISE / TIMING JITTER



X FREQUENCY (MHz)
Y TIMING JITTER SPECTRAL DENSITY (fs²/Hz)
Y' INTEGRATED TIMING JITTER [f, 1MHz] (fs rms)

TEMPERATURE CYCLING



X TIME (h)
Y AVERAGE OUTPUT POWER (mW)
Y' AMBIENT TEMPERATURE (°C)



fs

HIGH POWER FEMTOSECOND LASER MODULE

ORIGAMI HP



SWISS MADE

**HIGH POWER
AND HIGH
REPETITION
RATE
COMPACT
INDUSTRIAL
LASER**

Origami HP is an industrial-grade, cost-effective femtosecond laser that emits transform-limited pulses down to **70 fs** duration at high power levels. This laser platform is available at repetition rates above **40 MHz** and power levels up to **4W**. The free-space output provides diffraction-limited beam quality and excellent pointing stability. Origami HP is available in infrared, green and UV models. Origami HP is a maintenance-free laser module which comes in a compact, dust-sealed **OEM package**. It guaranties high repeatability and **24/7 operation**.

OPTIONS:

- + UVA 343 – 355 nm
- + UVC 257 – 266 nm
- + Synchronization to external clock for ultra-low timing jitter
- + Electrical interface for pump power control
- + Repetition rate tunability

MAIN APPLICATIONS:

- + Multi-photon microscopy
- + Supercontinuum generation
- + Multi-photon polymerization
- + THz generation
- + Inspection
- + Seed for amplifiers

OUTSTANDING FEATURES :

- + Low amplitude and phase noise
- + Transform-limited clean soliton pulses
- + Diffraction-limited beam quality
- + No Kelly-sidebands / no spectral ripple
- + No amplifier built-in / no ASE noise
- + Maintenance free / no alignment required
- + Plug & Play
- + 24/ 7 operation



	ORIGAMI - 05 HP	ORIGAMI - 08 HP	ORIGAMI - 10 HP	ORIGAMI - 15 HP
CENTER WAVELENGTH	514 – 532 nm	765 – 780 nm	1028 – 1065 nm	1530 – 1560 nm
PULSE DURATION ^{1,2}	100 fs – 1 ps	70 – 300 fs	70 fs – 1 ps	< 500 fs
AVG. OUTPUT POWER [UP TO] ²	2 W	300 mW	4 W	3 W
PULSE ENERGY [UP TO] ²	40 nJ	8 nJ	80 nJ	30 nJ
PEAK POWER [UP TO]	160 kW	60 kW	350 kW	60 kW
SPECTRAL BANDWIDTH	3 nm – 0.3 nm	9 nm – 2 nm	16 nm – 2.5 nm	9 nm
		$\tau_p \cdot \Delta\nu \sim 0.32$ (transform-limited)		$\tau_p \cdot \Delta\nu < 0.7$
PULSE REPETITION RATE ²		40 MHz – 200 MHz		40 MHz – 100 MHz
BEAM QUALITY		$M^2 < 1.2$, TEM ₀₀		
PER		> 20 dB		
AMPLITUDE NOISE [1 H]		< 0.5% rms, < 1.0% pk-pk		
CENTER WL DRIFT [1 H]		< 0.3 nm pk-pk		
POINTING STABILITY [12 H]		4 < 50 μ rad rms		
LASER OUTPUT		collimated free space		
ENVIRONMENTAL				
WARM-UP TIME		< 15 minutes		
OPERATION TEMPERATURE		18 °C – 32 °C		
STORAGE TEMPERATURE		- 20 °C – 65 °C		
ON/OFF CYCLES		> 10000		
MECHANICAL				
SIZE LASER HEAD ³		57 x 275 x 300 mm ³		
WEIGHT LASER HEAD ³		5 kg		
SIZE CONTROL UNIT		133 x 483 x 400 mm ³ (19"/3U rack mount)		
WEIGHT CONTROL UNIT		7 kg		
ELECTRICAL				
POWER SUPPLY		24 VDC / 9A or 90 – 264 VAC, 47 – 63 Hz		
POWER CONSUMPTION		< 300 W		
COOLING				
LASER HEAD		air cooled or water cooled		
LASER CONTROLLER		air cooled		

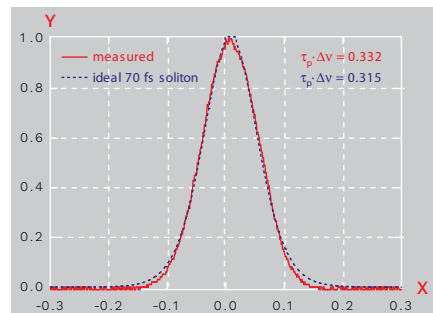
1 Tunable (requires external adjustable power supply)

2 Please inquire for possible combinations of pulse duration, average power and repetition rate

3 Exact size and weight depend on pulse repetition rate and wavelength

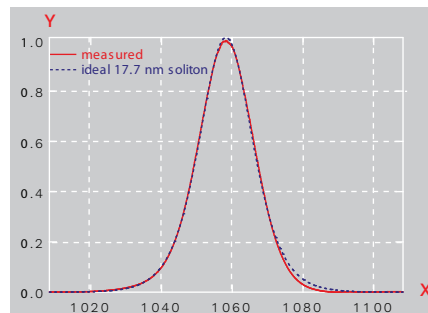


PULSE PROFILE



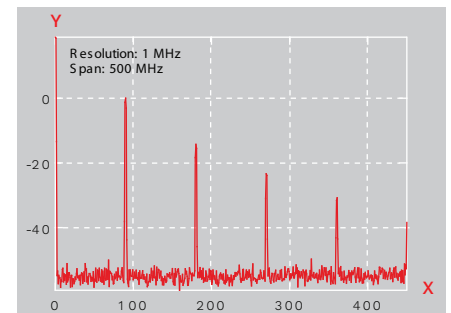
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OPTICAL SPECTRUM



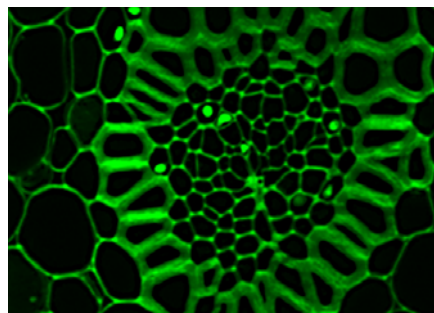
X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (nm⁻¹)

RF SPECTRUM



X FREQUENCY (MHz)
Y NOISE SPECTRAL DENSITY (dBc/MHz)

APPLICATION



2-PHOTON MICROSCOPY IMAGE OF THE RHIZOME SECTION REALIZED WITH THE **ORIGAMI HP** LASER.



fs

HIGH ENERGY SINGLE-BOX FEMTOSECOND LASER MODULE

ORIGAMI XP

+

SWISS MADE

NEW FEATURE

-

**THE FIRST
ALL-IN-ONE,
AIR-COOLED,
MICROJoule
FEMTOSECOND
LASER**

Origami XP is the first all-in-one, single-box, microjoule femtosecond laser available on the market. The laser head, controller and air-cooling system are integrated in one box. Being as small as 280 x 498 x 155 mm it even fits into a hand-luggage. Origami XP is based on the unique low noise ultra-stable Origami femtosecond seed laser. A simple and compact chirped pulse amplification system is capable of > **40 μJ** pulse energy, **4 W** average power and pulse duration below **400 fs**. The laser platform offers remote control capability. Origami XP has been designed for the easiest and most cost-effective possible system integration. It comes with removable handles, offers simple through-hole mounting and contains precise mechanical reference planes for simple drop in applications.

OPTIONS:

- + Up to 60 μJ pulse energy
- + Up to 5 W output power
- + UVC 258 nm
- + Synchronization to external clock
- + Picosecond operation
- + Circular polarization
- + Water cooling

MAIN APPLICATIONS:

- + High precision laser surgery
- + Micromachining
- + Plasma generation
- + Nonlinear optics
- + LIBS
- + THz generation

OUTSTANDING FEATURES :

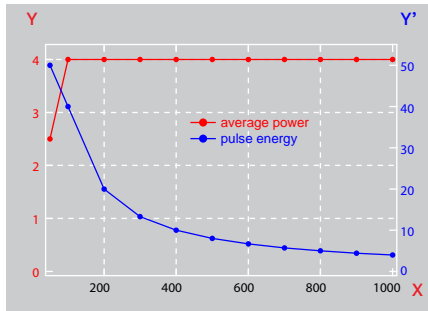
- + Air-cooled, single-box, dust sealed OEM package
- + Mountable in any direction
- + Real-time pulse energy measurement and control
- + Burst mode
- + Excellent pulse quality
- + Outstanding energy and pointing stability
- + Maintenance free – no alignment required
- + Complete remote control
- + 24/ 7 operation



	ORIGAMI - 03 XP	ORIGAMI - 05 XP	ORIGAMI -10 XP
CENTER WAVELENGTH	343 nm	512 nm	1030 nm
PULSE DURATION	<400 fs	<400 fs	<400 fs
AVG. OUTPUT POWER [UP TO]	1 W	2 W	4 W
PULSE ENERGY [UP TO]	10 μJ	20 μJ	40 μJ
PEAK POWER [UP TO]	13 MW	35 MW	100 kW
PULSE REPETITION RATE		single shot – 1 MHz	
SPECTRAL BANDWIDTH	< 1.8 nm	< 2.5 nm	< 4 nm
BEAM QUALITY	$M^2 < 1.4$, TEM_{00}	$M^2 < 1.2$, TEM_{00}	$M^2 < 1.2$, TEM_{00}
ELLIPTICITY	< 1.3	< 1.1	< 1.1
AMPLITUDE NOISE [12 h]	< 4.0 % rms	< 2.0 % rms	< 1.0 % rms
PER		> 23 dB vertical	
ENERGY CONTRAST		23 dB	
POINTING STABILITY	< 30 μrad rms (12 h) const. temp., < 5 μrad/ °C 18-35°C		
LASER OUTPUT	collimated free space		
ENVIRONMENTAL			
WARM-UP TIME	< 10 minutes		
OPERATION TEMPERATURE	18 °C – 32 °C		
STORAGE TEMPERATURE	- 20 °C – 65 °C		
ON/OFF CYCLES	> 10000		
MECHANICAL			
SIZE LASER SYSTEM	280 x 498 x 156 mm ³		
WEIGHT LASER SYSTEM	32 kg		
ELECTRICAL			
POWER SUPPLY	24 VDC / 20 A or 90 – 264 VAC, 47 – 63 Hz		
POWER CONSUMPTION	< 500 W		
COOLING			
LASER SYSTEM	air cooled or water cooled		

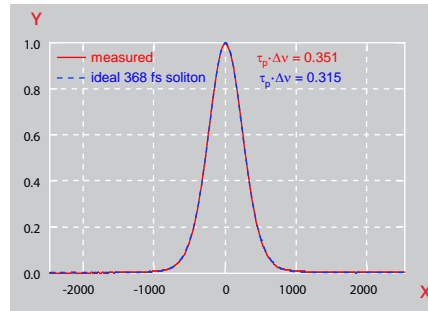


OUTPUT POWER VS REPETITION RATE



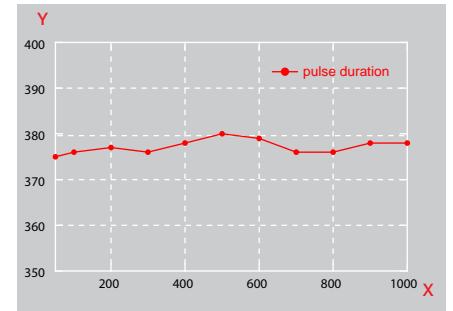
X REPETITION RATE (kHz)
 Y AVERAGE OUTPUT POWER (W)
 Y PULSE ENERGY (μJ)

PULSE PROFILE



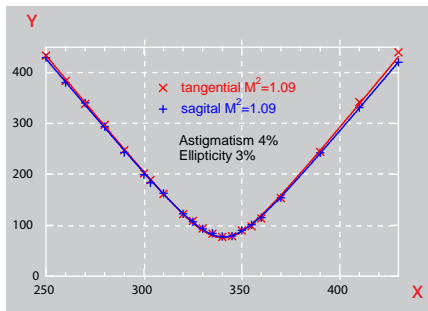
X TIME DELAY (fs)
 Y AUTOCORRELATION SIGNAL

PULSE DURATION VS REPETITION RATE



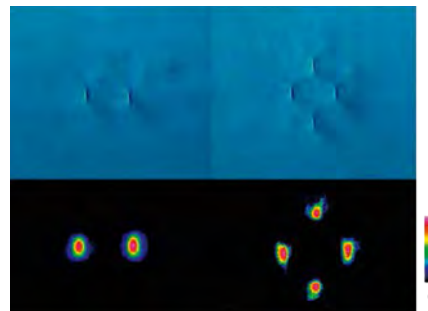
X REPETITION RATE (kHz)
 Y PULSE DURATION (fs)

BEAM QUALITY



X DISTANCE (mm)
 Y BEAM RADIUS (μm)

APPLICATION



DIRECT LASER INSCRIPTION IN BULK
 ACRYLIC GLASS USING **ORIGAMI – 10 XP**.
 © W. – H. Yuan et al., Optical Materials 49, 110-115, 2015

IEC COMPLIANT PRODUCT

SHOCK & VIBRATION TEST
 IEC 60068-2-27: 2008
 IEC 60068-2-6: 2007

ELECTROMAGNETIC COMPATIBILITY
 IEC 61010-1: 2010
 IEC 61326-1: 2012

LASER RADIATION SAFETY
 IEC 60825-1: 2014





LOW NOISE PICOSECOND LASER MODULE

GENKI



Genki is an industrial-grade, low noise and cost-effective, mode locked picosecond laser that emits close to transform-limited pulses from **1 to 45 ps** with a narrow spectral width. It provides diffraction-limited beam quality and excellent pointing stability. Both free-space as well as simple fiber output are available at various wavelengths. Genki is an air-cooled laser module which can be packaged in a compact and robust enclosure allowing for operation in the harshest environments. Genki laser platform is maintenance-free and guaranties **24/7 operation**.

**COST-EFFECTIVE
MODE-LOCKED
PICOSECOND
LASER**

OPTIONS:

- + Synchronization to external clock for ultra-low timing jitter
- + Analog adjustable output power
- + Repetition rate tunability
- + Integration of user-defined opto electronic devices

MAIN APPLICATIONS:

- + Seed for amplifiers
- + Photodetector sampling
- + Telecommunication
- + Time-resolved measurements

OUTSTANDING FEATURES :

- + Very low amplitude noise
- + Clean and narrow optical spectrum
- + Pedestal-free, almost transform-limited pulses
- + Diffraction-limited beam
- + Ultra-compact package
- + Maintenance free – no alignment required
- + 24 / 7 operation

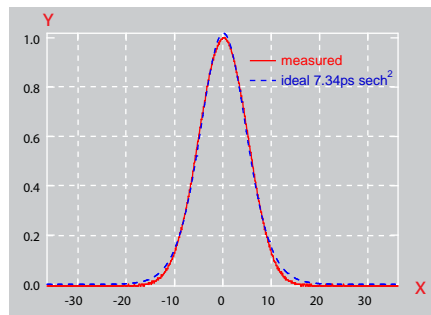


	GENKI - 10 S	GENKI - 10	GENKI - 15
CENTER WAVELENGTH	1030 – 1064 nm	1030 – 1064 nm	1530 – 1575 nm
PULSE DURATION ^{1,2}	4 – 45 ps	4 – 45 ps	5 ps
AVG. OUTPUT POWER [UP TO] ²	10 mW	250 mW	150 mW
PULSE ENERGY [UP TO] ²	100 pJ	5 nJ	3 nJ
PULSE REPETITION RATE ^{1,2}	30 – 100 MHz	30 – 100 MHz	40 MHz – 10 GHz
SPECTRAL BANDWIDTH ²	< 1 nm	< 1 nm	< 5 nm
BEAM QUALITY		M ² < 1.1, TEM ₀₀	
PER		> 20 dB	
AMPLITUDE NOISE [24 H]		< 1% rms, < 3% pk-pk	
CENTER WL DRIFT [1 H]		< 0.1 nm pk-pk	
LASER OUTPUT	PM fiber output or collimated free space		
ENVIRONMENTAL			
WARM-UP TIME	< 10 minutes		
OPERATION TEMPERATURE	18 °C – 32 °C		
STORAGE TEMPERATURE	- 20 °C – 65 °C		
ON/OFF CYCLES	> 10000		
MECHANICAL			
SIZE LASER HEAD ³	150 x 200 x 30 mm ³		
WEIGHT LASER HEAD ³	2 kg		
SIZE CONTROL UNIT	165 x 104 x 44 mm ³ (19"/3U rack mount)		
WEIGHT CONTROL UNIT	0.5 kg		
ELECTRICAL			
POWER SUPPLY	24 VDC / 2.5A or 90 – 264 VAC, 47 – 63 Hz		
POWER CONSUMPTION	< 15 W		
COOLING			
LASER SYSTEM	air cooled		

¹ Please inquire for possible combinations of wavelength, pulse duration, average power and repetition rate
² Spectral bandwidth and amplitude noise depend on pulse length, pulse energy and repetition rate
³ Exact size and weight depend on pulse duration, repetition rate and wavelength

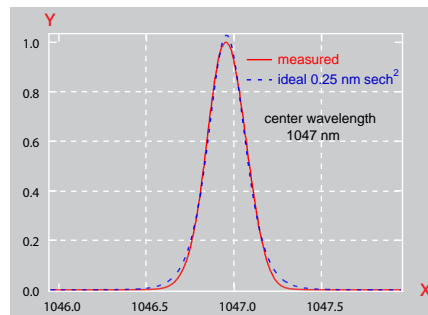


PULSE PROFILE



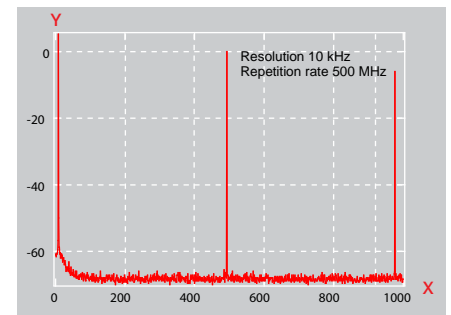
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OPTICAL SPECTRUM



X WAVELENGTH (nm)
Y POWER SPECTRAL DENSITY (dBc/nm)

RF SPECTRUM



X FREQUENCY (MHz)
Y NOISE SPECTRAL DENSITY (dBc/10kHz)





HIGH POWER PICOSECOND LASER MODULE

GENKI HP



**COST-EFFECTIVE
PICOSECOND
LASER WITH
INTEGRATED
PULSE PICKER**

Genki HP is an industrial-grade, cost-effective, high power, picosecond laser that emits close to transformlimited pulses, provides diffraction-limited beam quality and narrow spectral width. Genki HP comes with an integrated pulse picker and can be operated in burst-mode. Excellent pointing stability in free-space output as well as fiber output are available. Genki HP is a compact, maintenance-free laser module which is packaged in a sealed, robust enclosure. It guaranties high stability and 24/7 operation.

OPTIONS:

- + Green 515 – 532 nm
- + UVA 343 – 355 nm
- + UVC 258 – 266 nm
- + External signal gating
- + Adjustable output power

MAIN APPLICATIONS:

- + Material processing
- + Microscopy
- + Time-resolved spectroscopy
- + Supercontinuum generation
- + Semiconductor inspection

OUTSTANDING FEATURES :

- + Pedestal-free pulses
- + Low amplitude noise
- + Pulse picker
- + Burst-mode
- + Maintenance free – no alignment required
- + Remote control
- + 24/ 7 operation



GENKI - 10 HP	
CENTER WAVELENGTH	1030 – 1064 nm
PULSE DURATION ^{1,2}	4 – 45 ps
AVG. OUTPUT POWER [UP TO] ²	20 W
PULSE ENERGY [UP TO] ²	500 nJ
PULSE REPETITION RATE ^{1,2}	single shot – 100 MHz
SPECTRAL BANDWIDTH ²	< 5 nm
BEAM QUALITY	$M^2 < 1.2$, TEM ₀₀
PER	> 20 dB
AMPLITUDE NOISE [24 H]	< 1% rms, < 3% pk-pk
CENTER WL DRIFT [1 H]	< 0.1 nm pk-pk
LASER OUTPUT	collimated free space
ENVIRONMENTAL	
WARM-UP TIME	< 15 minutes
OPERATION TEMPERATURE	18 °C – 32 °C
STORAGE TEMPERATURE	- 20 °C – 65 °C
ON/OFF CYCLES	> 10000
MECHANICAL	
SIZE LASER HEAD ³	125 x 420 x 260 mm ³
WEIGHT LASER HEAD ³	15 kg
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)
WEIGHT CONTROL UNIT	7 kg
ELECTRICAL	
POWER SUPPLY	24 VDC / 9A DC or 90 – 264 VAC, 47 – 63 Hz
POWER CONSUMPTION	< 500 W
COOLING	
LASER HEAD	air cooled
LASER CONTROLLER	air cooled

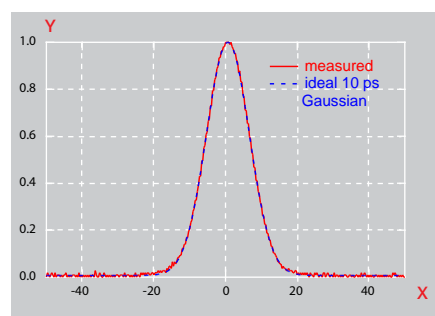
¹ Please inquire for possible combinations of pulse duration, average power and repetition rate

² Spectral bandwidth depends on pulse duration, pulse energy and repetition rate

³ Exact size and weight depend on pulse duration, pulse repetition rate, average power and wavelength

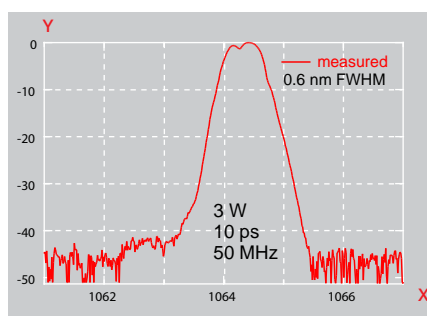


PULSE PROFILE



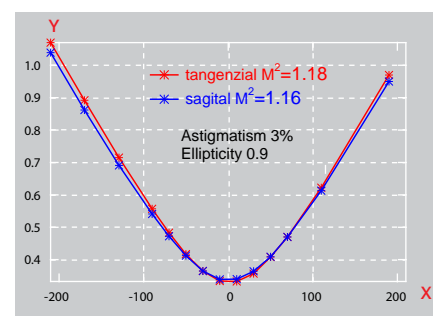
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OPTICAL SPECTRUM



X WAVELENGTH (nm)
Y POWER SPECTRAL DENSITY (dBc/nm)

BEAM QUALITY



X DISTANCE (mm)
Y BEAM RADIUS (mm)





HIGH ENERGY PICOSECOND LASER MODULE

GENKI XP



**NEW 100W
MICROMACHINING
PICOSECOND
LASER**

The Genki XP platform pushes industrialization of high energy and high power picosecond lasers further. The system is based on the ultra-stable Genki seed laser and provides clean pulses shorter than **10 ps**, which is an optimal pulse duration window for many micromachining applications. To satisfy the increasing demand of picosecond laser workstations, the Genki XP has been optimized to provide up to **100 W** of average power and **300 μJ** pulse energy at the industry-standard wavelengths of **1030 and 1064 nm**. The laser can be tailored to work at lower repetition rates with even higher energies or at several MHz to follow high-speed automated processes. The Genki XP has been designed for the easiest and most cost-effective possible system integration, can be mounted in any direction and offers full remote control capability.

OPTIONS:

- + Green 532 nm
- + UVA 355 nm
- + UVC 266 nm
- + Synchronization to external clock

MAIN APPLICATIONS:

- + Material processing
- + Glass and sapphire cutting
- + Plasma generation
- + Nonlinear optics

OUTSTANDING FEATURES :

- + Pulse energy up to 300 μJ
- + High pulse quality
- + Narrow spectral width
- + Excellent energy and pointing stability
- + Mountable in any direction
- + Maintenance free – no alignment required
- + Complete remote control
- + Burst mode
- + 24/ 7 operation

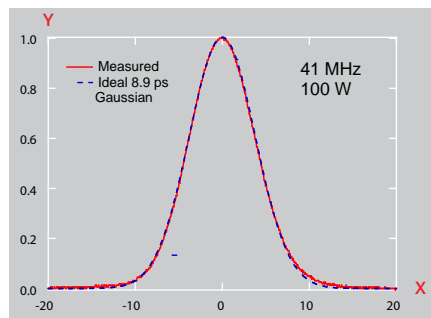


	GENKI - 10 XPC		GENKI - 10 XP
CENTER WAVELENGTH	1030 nm		1064 nm
PULSE DURATION ^{1,2}	< 10 ps	+	< 10 ps
AVG. OUTPUT POWER [UP TO] ²	40 W	+	100 W
PULSE ENERGY [UP TO] ²	100 μJ	+	300 μJ
PULSE REPETITION RATE ^{1,2}		+	single shot – 80 MHz
SPECTRAL BANDWIDTH ²	< 2 nm	+	< 1 nm
BEAM QUALITY		+	M ² < 1.3, TEM ₀₀
PER		+	> 20 dB
AMPLITUDE NOISE [24 H]	< 2% rms	+	< 1% rms
LASER OUTPUT	collimated free space		
ENVIRONMENTAL			
WARM-UP TIME	< 30 minutes		
OPERATION TEMPERATURE	18 °C – 32 °C		
STORAGE TEMPERATURE	- 20 °C – 65 °C		
ON/OFF CYCLES	> 10000		
MECHANICAL			
SIZE LASER SYSTEM	300 x 401 x 81 mm ³	+	505 x 630 x 142 mm ³
WEIGHT SYSTEM	15 kg	+	70 kg
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)	+	-
WEIGHT CONTROL UNIT	10 kg	+	-
ELECTRICAL			
POWER SUPPLY	24 VDC/25 A or 90 – 264 VAC, 47 – 63 Hz	+	24 VDC/25 A + 48 VDC/21 A or 90 – 264 VAC, 47 – 63 Hz
POWER CONSUMPTION	600 W	+	1600 W
COOLING			
LASER SYSTEM	water cooled		

¹ Please inquire for possible combinations of pulse duration, average power and repetition rate
² Spectral bandwidth depends on pulse duration, pulse energy and repetition rate
³ Exact size and weight depend on pulse duration, pulse repetition rate, average power and wavelength

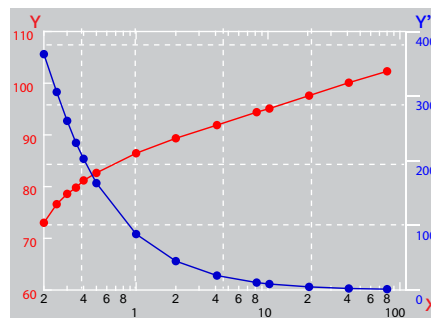


PULSE PROFILE



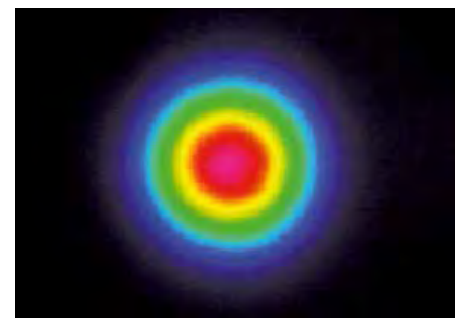
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OUTPUT POWER AND PULSE ENERGY

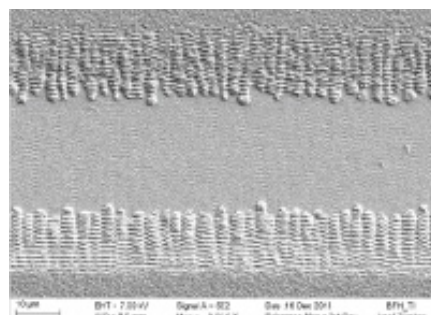


X REPETITION RATE (MHz)
Y AVERAGE POWER (W)
Y' PULSE ENERGY (μJ)

BEAM PROFILE



APPLICATION



Bern University
of Applied Sciences **appolo**

P2 scribe on Mo/CIGS/IZO thin film solar module realized with the Genki XP, 4W, 10 kHz, 1064 nm.
© A. Burn et al., Proc. SPIE 9735, 973504-1-13, 2016



ps

ns

VERSATILE PULSED LASER MODULE

KATANA

+

SWISS MADE

EXTERNAL
TRIGGERING
AT ANY
FREQUENCY

Katana is a versatile, sub-nanosecond laser system designed for all industrial applications that require maintenance-free operation, continuous tuning of the repetition rate and low cost of ownership. It can provide pulses from **30 ps up to 10 ns** in pulse duration. The Katana laser can be operated from **pulse-on-demand** up to **100 MHz**, and it can also easily be triggered from an external source (master or slave mode). A single-box multi-wavelength version is available which, combined with the use of the Katana HP as a depletion laser, can provide a complete source for super-resolution fluorescence microscopy.

OPTIONS:

- + Single-box multi-wavelength emission
- + Burst mode
- + Isolator /collimator output
- + Second harmonic generation
- + Fiber output (PM of SM)
- + More options on request

MAIN APPLICATIONS:

- + Multi-wavelength excitation for fluorescence microscopy
- + Seed for amplifiers
- + Laser ranging
- + Semiconductor inspection
- + Single photon counting

OUTSTANDING FEATURES :

- + External laser triggering
- + Continuously tunable repetition rate
- + Pulse on demand
- + Master/slave operation
- + Diffraction-limited beam quality
- + Lightweight
- + Maintenance free – no alignment required
- + 24/ 7 operation



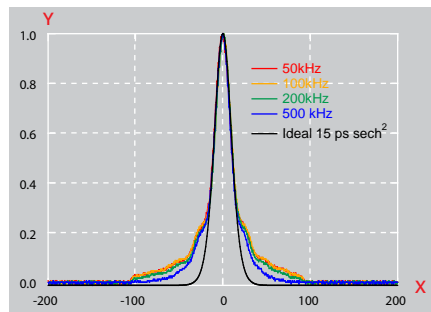
	KATANA - 05	KATANA - 06	KATANA - 08	KATANA - 10	KATANA - 15
CENTER WAVELENGTH	512 – 532 nm	550 – 660 nm	775 nm	1030 – 1064 nm	1550 nm
PULSE DURATION ^{1,2}	< 30 ps – 10 ns	70 ps – 10 ns	< 30 ps – 10 ns	< 30 ps – 10 ns	< 30 ps – 10 ns
AVG. OUTPUT POWER [UP TO] ²	50 mW	20 mW	50 mW	500 mW	500 mW
PULSE ENERGY [UP TO] ²	20 nJ	20 nJ	20 nJ	100 nJ	100 nJ
PULSE REPETITION RATE ¹	pulse-on-demand – 100 MHz				
SPECTRAL BANDWIDTH	0.1 nm				
BEAM QUALITY	$M^2 < 1.1$, TEM ₀₀				
PER	> 20 dB				
AMPLITUDE NOISE	< 4.0 % rms (10 h)				
LASER OUTPUT	PM fiber output (free-space optional)				
ENVIRONMENTAL					
WARM-UP TIME	< 15 minutes				
OPERATION TEMPERATURE	15 °C – 35 °C				
STORAGE TEMPERATURE	- 20 °C – 65 °C				
ON/OFF CYCLES	> 10000				
MECHANICAL					
SIZE OEM LASER	32 x 374 x 184 mm ³				
WEIGHT OEM LASER	2 kg				
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)				
WEIGHT CONTROL UNIT	7 kg				
ELECTRICAL					
POWER SUPPLY	24 VDC/2.5 A or 90 – 264 VAC, 47 – 63 Hz				
POWER CONSUMPTION	15 W				
COOLING					
LASER SYSTEM	air cooled				

¹ More wavelengths available on request

² Please inquire for possible combinations of average power, pulse energy and repetition rate

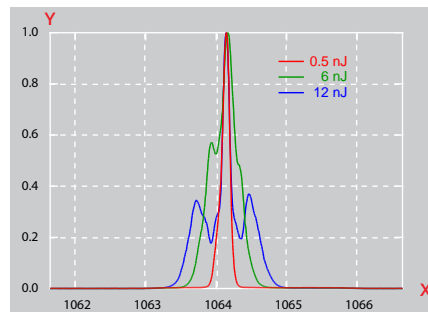


PULSE PROFILE



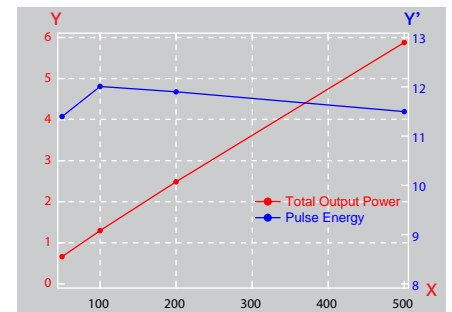
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OPTICAL SPECTRUM



X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (nm⁻¹)

OUTPUT POWER VS REPETITION RATE

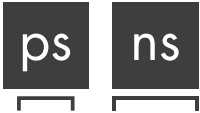


X REPETITION RATE (kHz)
Y AVERAGE OUTPUT POWER (mW)
Y' PULSE ENERGY (nJ)

NEW

SINGLE-BOX MULTI-WAVELENGTH KATANA - 05/06





MULTI-WAVELENGTH, HIGH POWER, PULSED LASER MODULE

KATANA HP



SWISS MADE

- THE HIGH POWER, PICOSECOND LASER IN GREEN, YELLOW, ORANGE RED AND INFRARED

Katana HP is a versatile, pulsed laser system designed for all industrial applications that require continuous tuning of the repetition rate, maintenance-free operation and low cost of ownership. The Katana laser can be triggered from **pulse-on-demand** up to **100 MHz** from either an internal or an external source (master or slave mode), and can provide pulses from **30 ps up to 10 ns** in pulse duration. Katana HP has already proven to be an ideal, robust source as depletion laser for super-resolution STED fluorescence microscopy, for which application it can also provide a complete solution when combined with the Katana single-box multi-wavelength excitation system.

OPTIONS:

- + UVA 355 nm
- + UVC 266 nm
- + Burst mode
- + Isolator /collimator output
- + More options on request

MAIN APPLICATIONS:

- + Depletion laser for STED microscopy
- + Fluorescence microscopy
- + Solar cell scribing and contacting
- + Spectroscopy
- + Laser ranging

OUTSTANDING FEATURES :

- + Infrared: 775, 1064, 1200 & 1550 nm
- + Orange: 556 – 620 nm
- + Red: 620 – 660 nm
- + Green: 532 nm
- + Pulse duration: 30 ps – 10 ns
- + Continuously tunable pulse repetition rate
- + Master/slave operation
- + External triggering
- + Pulse-on-demand
- + Maintenance free – no alignment required
- + 24/ 7 operation

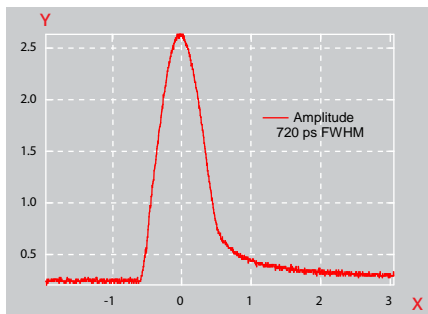


	KATANA - 05 HP	KATANA - 06 HP	KATANA - 08 HP	KATANA - 10 HP	KATANA - 12 HP	KATANA - 15 HP
CENTER WAVELENGTH	512 – 532 nm	556 – 660 nm	775 nm	1030 – 1064 nm	1112 – 1320 nm	1550 nm
PULSE DURATION ¹	< 30 ps – 10 ns	< 200 ps – 10 ns	< 30 ps – 10 ns	< 30 ps – 10 ns	< 200 ps – 10 ns	< 30 ps – 10 ns
AVG. OUTPUT POWER [UP TO] ¹	5 W	1 W	8 W	20 W	2 W	14 W
PULSE ENERGY [UP TO] ¹	5 μJ	50 nJ	1 μJ	10 μJ	100 nJ	3 μJ
PEAK POWER [UP TO] ¹	200 kW	2 kW	50 kW	400 kW	8 kW	100 kW
PULSE REPETITION RATE ¹	pulse-on-demand – 100 MHz					
SPECTRAL BANDWIDTH	> 0.1 nm					
BEAM QUALITY	$M^2 < 1.3$, TEM ₀₀					
PER	> 23 dB					
AMPLITUDE NOISE	< 4.0 % rms (10 h)					
LASER OUTPUT	Collimated free-space					
ENVIRONMENTAL						
WARM-UP TIME	< 15 minutes					
OPERATION TEMPERATURE	15 °C – 35 °C					
STORAGE TEMPERATURE	- 20 °C – 65 °C					
ON/OFF CYCLES	> 10000					
MECHANICAL						
SIZE LASER HEAD	39 x 100 x 162 mm ³					
WEIGHT LASER HEAD	1 kg					
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)					
WEIGHT CONTROL UNIT	7 kg					
ELECTRICAL						
POWER SUPPLY	24 VDC/9A or 90 – 264 VAC, 47 – 63 Hz					
POWER CONSUMPTION	< 300 W					
COOLING						
LASER SYSTEM	air cooled					

¹ Please inquire for possible combinations of wavelength, pulse duration, pulse energy and repetition rate

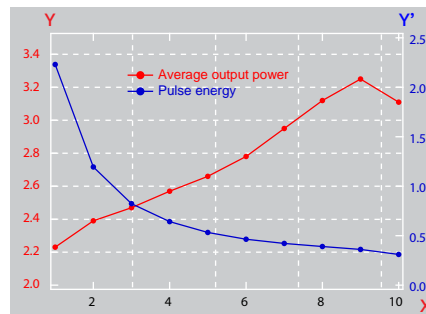


PULSE PROFILE



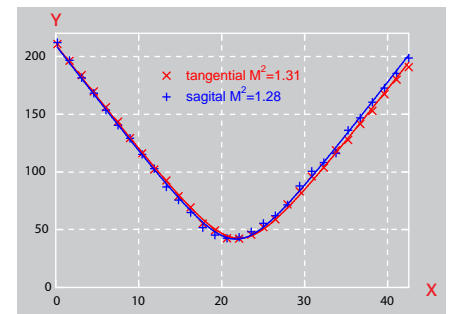
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OUTPUT POWER VS REPETITION RATE



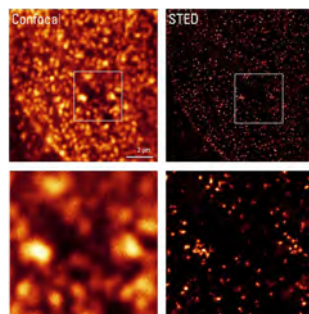
X REPETITION RATE (MHz)
Y OUTPUT POWER (W)
Y' PULSE ENERGY (μJ)

BEAM QUALITY



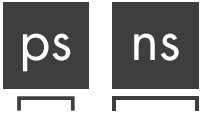
X DISTANCE (mm)
Y BEAM RADIUS (μm)

APPLICATION



Resolution enhancement achieved with Leica TCS SP8 STED 3X microscope and the 775 nm Katana-08 HP pulsed laser, compared to the resolution achieved with confocal microscopy. Courtesy of Leica Microsystems





HIGH ENERGY VERSATILE PICOSECOND LASER MODULE

KATANA XP



Katana XP has been designed to offer synchronization compatibility with any industrial process. Its unique **externally triggerable** and **continuously tunable repetition rate**, in both slave and master operation mode, makes it the most versatile high energy laser on the market for fast, synchronous and precise industrial processes. Katana XP can also operate in **burst-mode**, which allows generating pulses of arbitrary amplitude and sequence.

THE LASER THAT CAN ADAPT AND SYNCHRONIZE TO ANY SPEED CHANGE

OPTIONS:

- + Green 532 nm
- + UVA 355 nm
- + UVC 266 nm
- + Efficient green and UV generation over
- + wide range of repetition rates
- + Motorized switching between wavelengths

MAIN APPLICATIONS:

- + Micromachining
- + Solar cell scribing and contacting
- + Plasma generation
- + Nonlinear optics
- + Material research
- + Laser ranging

OUTSTANDING FEATURES :

- + External triggering
- + Continuously tunable repetition rate
- + Master/slave operation
- + Pulse-on-demand
- + Burst mode: programmable pulse sequence with arbitrary amplitude
- + Adjustable pulse energy
- + Diffraction-limited beam
- + No ASE background
- + Maintenance free – no alignment required
- + 24/ 7 operation

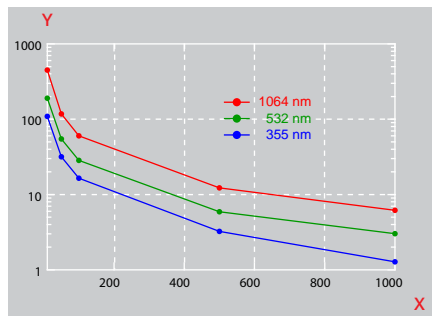


	KATANA - 02 XP	KATANA - 03 XP	KATANA - 05 XP	KATANA - 10 XP
CENTER WAVELENGTH	266 nm	355 nm	532 nm	1064 nm
PULSE DURATION	30 ps – 1 ns	30 ps – 1 ns	30 ps – 1 ns	30 ps – 1 ns
AVG. OUTPUT POWER [UP TO] ¹	0.55 W	1.8 W	3.3 W	6 W
PULSE ENERGY [UP TO] ¹	40 μJ	100 μJ	200 μJ	400 μJ
PEAK POWER [UP TO] ¹	1.2 MW	3 MW	6 MW	12 MW
PULSE REPETITION RATE ¹	pulse-on-demand – 1 MHz			
SPECTRAL BANDWIDTH	< 1 nm			
BEAM QUALITY	M ² < 1.2, TEM ₀₀			
PER	> 23 dB			
AMPLITUDE NOISE	< 4.0 % rms			
TIMING JITTER	< 3 ps			
LASER OUTPUT	Collimated free-space			
ENVIRONMENTAL				
WARM-UP TIME	< 15 minutes			
OPERATION TEMPERATURE	18 °C – 32 °C			
STORAGE TEMPERATURE	- 15 °C – 65 °C			
ON/OFF CYCLES	> 10000			
MECHANICAL				
SIZE LASER HEAD ²	135 x 715 x 306 mm ³			
WEIGHT LASER HEAD ²	45 kg			
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)			
WEIGHT CONTROL UNIT	7 kg			
ELECTRICAL				
POWER SUPPLY	24 VDC / 25 A or 90 – 264 VAC, 47 – 63 Hz			
POWER CONSUMPTION	< 600 W			
COOLING				
LASER HEAD	water cooled			
LASER CONTROLLER	air cooled			

¹ Please inquire for possible combinations of pulse duration, average power and repetition rate
² Exact size and weight depend on pulse repetition rate and wavelength

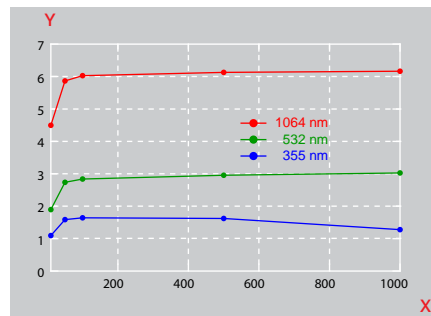


PULSE ENERGY VS REPETITION RATE



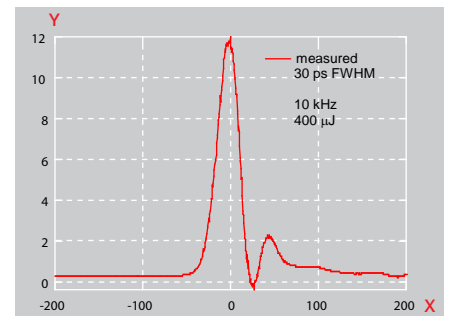
X REPETITION RATE (kHz)
Y Pulse energy (μJ)

AVERAGE OUTPUT POWER VS REPETITION RATE



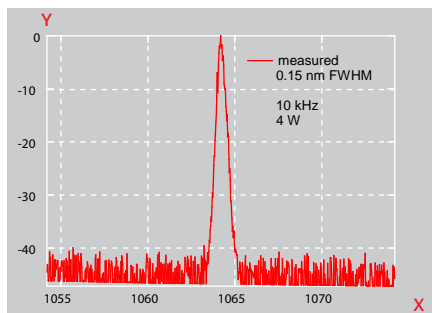
X REPETITION RATE (kHz)
Y AVERAGE OUTPUT POWER (W)

PULSE PROFILE



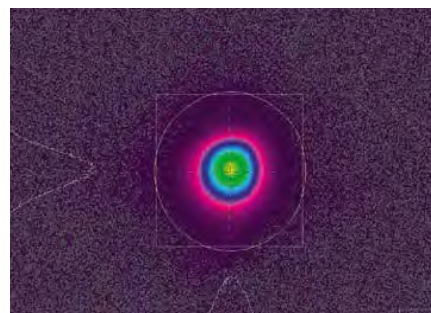
X TIME DELAY (ps)
Y POWER (MW)

OPTICAL SPECTRUM



X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (dBc/nm)

BEAM PROFILE



Far-field beam profile at 10 kHz repetition rate and 400 μJ pulse energy



ps

ns

VERSATILE PULSED LASER MODULE

KATANA

+

SWISS MADE

-
**EXTERNAL
 TRIGGERING
 AT ANY
 FREQUENCY**
 -

Katana is a versatile, sub-nanosecond laser system designed for all industrial applications that require maintenance-free operation, continuous tuning of the repetition rate and low cost of ownership. It can provide pulses from **30 ps up to 10 ns** in pulse duration. The Katana laser can be operated from **pulse-on-demand** up to **100 MHz**, and it can also easily be triggered from an external source (master or slave mode). A single-box multi-wavelength version is available which, combined with the use of the Katana HP as a depletion laser, can provide a complete source for super-resolution fluorescence microscopy.

OPTIONS:

- + Single-box multi-wavelength emission
- + Burst mode
- + Isolator /collimator output
- + Second harmonic generation
- + Fiber output (PM of SM)
- + More options on request

MAIN APPLICATIONS:

- + Multi-wavelength excitation for fluorescence microscopy
- + Seed for amplifiers
- + Laser ranging
- + Semiconductor inspection
- + Single photon counting

OUTSTANDING FEATURES :

- + External laser triggering
- + Continuously tunable repetition rate
- + Pulse on demand
- + Master/slave operation
- + Diffraction-limited beam quality
- + Lightweight
- + Maintenance free – no alignment required
- + 24/ 7 operation



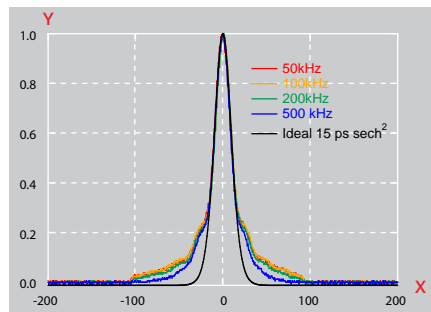
	KATANA - 05	KATANA - 06	KATANA - 08	KATANA - 10	KATANA - 15
CENTER WAVELENGTH	512 – 532 nm	550 – 660 nm	775 nm	1030 – 1064 nm	1550 nm
PULSE DURATION ^{1,2}	< 30 ps – 10 ns	70 ps – 10 ns	< 30 ps – 10 ns	< 30 ps – 10 ns	< 30 ps – 10 ns
AVG. OUTPUT POWER [UP TO] ²	50 mW	20 mW	50 mW	500 mW	500 mW
PULSE ENERGY [UP TO] ²	20 nJ	20 nJ	20 nJ	100 nJ	100 nJ
PULSE REPETITION RATE ¹	pulse-on-demand – 100 MHz				
SPECTRAL BANDWIDTH	0.1 nm				
BEAM QUALITY	$M^2 < 1.1$, TEM ₀₀				
PER	> 20 dB				
AMPLITUDE NOISE	< 4.0 % rms (10 h)				
LASER OUTPUT	PM fiber output (free-space optional)				
ENVIRONMENTAL					
WARM-UP TIME	< 15 minutes				
OPERATION TEMPERATURE	15 °C – 35 °C				
STORAGE TEMPERATURE	- 20 °C – 65 °C				
ON/OFF CYCLES	> 10000				
MECHANICAL					
SIZE OEM LASER	32 x 374 x 184 mm ³				
WEIGHT OEM LASER	2 kg				
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)				
WEIGHT CONTROL UNIT	7 kg				
ELECTRICAL					
POWER SUPPLY	24 VDC/2.5 A or 90 – 264 VAC, 47 – 63 Hz				
POWER CONSUMPTION	15 W				
COOLING					
LASER SYSTEM	air cooled				

¹ More wavelengths available on request

² Please inquire for possible combinations of average power, pulse energy and repetition rate

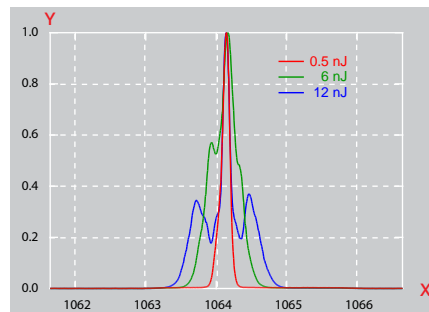


PULSE PROFILE



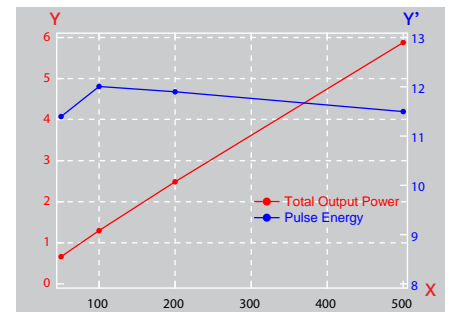
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OPTICAL SPECTRUM



X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (nm⁻¹)

OUTPUT POWER VS REPETITION RATE

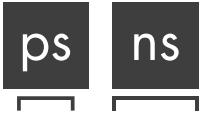


X REPETITION RATE (kHz)
Y AVERAGE OUTPUT POWER (mW)
Y' PULSE ENERGY (nJ)

NEW

SINGLE-BOX MULTI-WAVELENGTH KATANA - 05/06





MULTI-WAVELENGTH, HIGH POWER, PULSED LASER MODULE

KATANA HP



Katana HP is a versatile, pulsed laser system designed for all industrial applications that require continuous tuning of the repetition rate, maintenance-free operation and low cost of ownership. The Katana laser can be triggered from **pulse-on-demand** up to **100 MHz** from either an internal or an external source (master or slave mode), and can provide pulses from **30 ps up to 10 ns** in pulse duration. Katana HP has already proven to be an ideal, robust source as depletion laser for super-resolution STED fluorescence microscopy, for which application it can also provide a complete solution when combined with the Katana single-box multi-wavelength excitation system.

- THE HIGH POWER, PICOSECOND LASER IN GREEN, YELLOW, ORANGE RED AND INFRARED

OPTIONS:

- + UVA 355 nm
- + UVC 266 nm
- + Burst mode
- + Isolator /collimator output
- + More options on request

MAIN APPLICATIONS:

- + Depletion laser for STED microscopy
- + Fluorescence microscopy
- + Solar cell scribing and contacting
- + Spectroscopy
- + Laser ranging

OUTSTANDING FEATURES :

- + Infrared: 775, 1064, 1200 & 1550 nm
- + Orange: 556 – 620 nm
- + Red: 620 – 660 nm
- + Green: 532 nm
- + Pulse duration: 30 ps – 10 ns
- + Continuously tunable pulse repetition rate
- + Master/slave operation
- + External triggering
- + Pulse-on-demand
- + Maintenance free – no alignment required
- + 24/ 7 operation

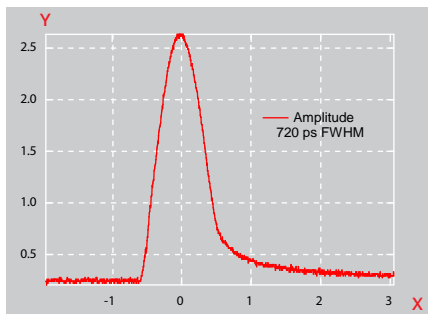


	KATANA - 05 HP	KATANA - 06 HP	KATANA - 08 HP	KATANA - 10 HP	KATANA - 12 HP	KATANA - 15 HP
CENTER WAVELENGTH	512 – 532 nm	556 – 660 nm	775 nm	1030 – 1064 nm	1112 – 1320 nm	1550 nm
PULSE DURATION ¹	< 30 ps – 10 ns	< 200 ps – 10 ns	< 30 ps – 10 ns	< 30 ps – 10 ns	< 200 ps – 10 ns	< 30 ps – 10 ns
AVG. OUTPUT POWER [UP TO] ¹	5 W	1 W	8 W	20 W	2 W	14 W
PULSE ENERGY [UP TO] ¹	5 μJ	50 nJ	1 μJ	10 μJ	100 nJ	3 μJ
PEAK POWER [UP TO] ¹	200 kW	2 kW	50 kW	400 kW	8 kW	100 kW
PULSE REPETITION RATE ¹	pulse-on-demand – 100 MHz					
SPECTRAL BANDWIDTH	> 0.1 nm					
BEAM QUALITY	$M^2 < 1.3$, TEM ₀₀					
PER	> 23 dB					
AMPLITUDE NOISE	< 4.0 % rms (10 h)					
LASER OUTPUT	Collimated free-space					
ENVIRONMENTAL						
WARM-UP TIME	< 15 minutes					
OPERATION TEMPERATURE	15 °C – 35 °C					
STORAGE TEMPERATURE	- 20 °C – 65 °C					
ON/OFF CYCLES	> 10000					
MECHANICAL						
SIZE LASER HEAD	39 x 100 x 162 mm ³					
WEIGHT LASER HEAD	1 kg					
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)					
WEIGHT CONTROL UNIT	7 kg					
ELECTRICAL						
POWER SUPPLY	24 VDC/9A or 90 – 264 VAC, 47 – 63 Hz					
POWER CONSUMPTION	< 300 W					
COOLING						
LASER SYSTEM	air cooled					

¹ Please inquire for possible combinations of wavelength, pulse duration, pulse energy and repetition rate

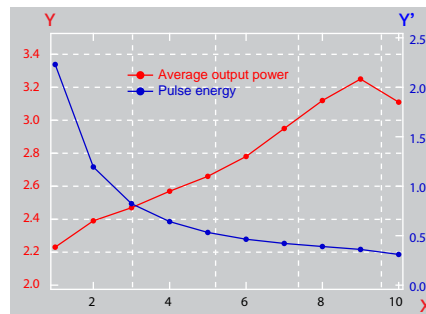


PULSE PROFILE



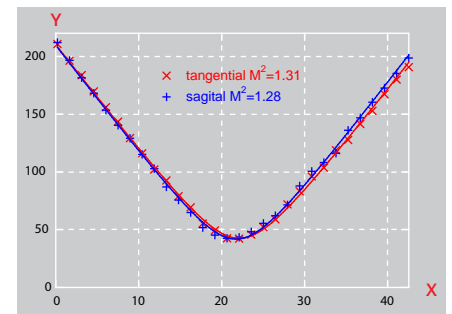
X TIME DELAY (PS)
Y AUTOCORRELATION SIGNAL

OUTPUT POWER VS REPETITION RATE



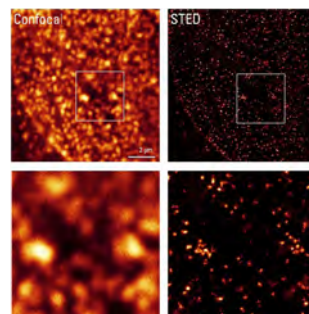
X REPETITION RATE (MHz)
Y OUTPUT POWER (W)
Y' PULSE ENERGY (μJ)

BEAM QUALITY



X DISTANCE (mm)
Y BEAM RADIUS (μm)

APPLICATION



Resolution enhancement achieved with Leica TCS SP8 STED 3X microscope and the 775 nm Katana-08 HP pulsed laser, compared to the resolution achieved with confocal microscopy. Courtesy of Leica Microsystems





HIGH ENERGY VERSATILE PICOSECOND LASER MODULE

KATANA XP



Katana XP has been designed to offer synchronization compatibility with any industrial process. Its unique **externally triggerable** and **continuously tunable repetition rate**, in both slave and master operation mode, makes it the most versatile high energy laser on the market for fast, synchronous and precise industrial processes. Katana XP can also operate in **burst-mode**, which allows generating pulses of arbitrary amplitude and sequence.

THE LASER THAT CAN ADAPT AND SYNCHRONIZE TO ANY SPEED CHANGE

OPTIONS:

- + Green 532 nm
- + UVA 355 nm
- + UVC 266 nm
- + Efficient green and UV generation over
- + wide range of repetition rates
- + Motorized switching between wavelengths

MAIN APPLICATIONS:

- + Micromachining
- + Solar cell scribing and contacting
- + Plasma generation
- + Nonlinear optics
- + Material research
- + Laser ranging

OUTSTANDING FEATURES :

- + External triggering
- + Continuously tunable repetition rate
- + Master/slave operation
- + Pulse-on-demand
- + Burst mode: programmable pulse sequence with arbitrary amplitude
- + Adjustable pulse energy
- + Diffraction-limited beam
- + No ASE background
- + Maintenance free – no alignment required
- + 24/ 7 operation

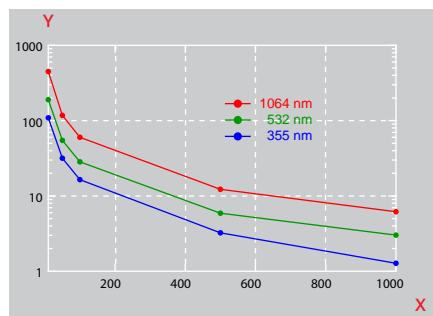


	KATANA - 02 XP	KATANA - 03 XP	KATANA - 05 XP	KATANA - 10 XP
CENTER WAVELENGTH	266 nm	355 nm	532 nm	1064 nm
PULSE DURATION	30 ps – 1 ns	30 ps – 1 ns	30 ps – 1 ns	30 ps – 1 ns
AVG. OUTPUT POWER [UP TO] ¹	0.55 W	1.8 W	3.3 W	6 W
PULSE ENERGY [UP TO] ¹	40 μJ	100 μJ	200 μJ	400 μJ
PEAK POWER [UP TO] ¹	1.2 MW	3 MW	6 MW	12 MW
PULSE REPETITION RATE ¹	pulse-on-demand – 1 MHz			
SPECTRAL BANDWIDTH	< 1 nm			
BEAM QUALITY	M ² < 1.2, TEM ₀₀			
PER	> 23 dB			
AMPLITUDE NOISE	< 4.0 % rms			
TIMING JITTER	< 3 ps			
LASER OUTPUT	Collimated free-space			
ENVIRONMENTAL				
WARM-UP TIME	< 15 minutes			
OPERATION TEMPERATURE	18 °C – 32 °C			
STORAGE TEMPERATURE	- 15 °C – 65 °C			
ON/OFF CYCLES	> 10000			
MECHANICAL				
SIZE LASER HEAD ²	135 x 715 x 306 mm ³			
WEIGHT LASER HEAD ²	45 kg			
SIZE CONTROL UNIT	133 x 483 x 400 mm ³ (19"/3U rack mount)			
WEIGHT CONTROL UNIT	7 kg			
ELECTRICAL				
POWER SUPPLY	24 VDC / 25 A or 90 – 264 VAC, 47 – 63 Hz			
POWER CONSUMPTION	< 600 W			
COOLING				
LASER HEAD	water cooled			
LASER CONTROLLER	air cooled			

¹ Please inquire for possible combinations of pulse duration, average power and repetition rate
² Exact size and weight depend on pulse repetition rate and wavelength

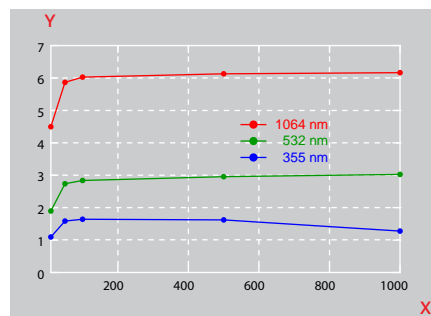


PULSE ENERGY VS REPETITION RATE



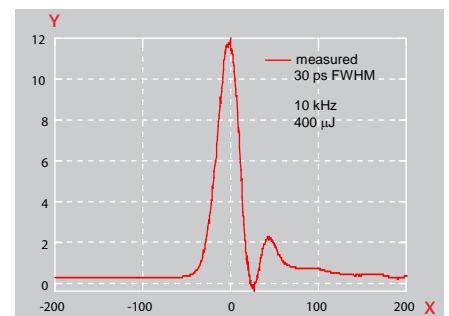
X REPETITION RATE (kHz)
Y Pulse energy (μJ)

AVERAGE OUTPUT POWER VS REPETITION RATE



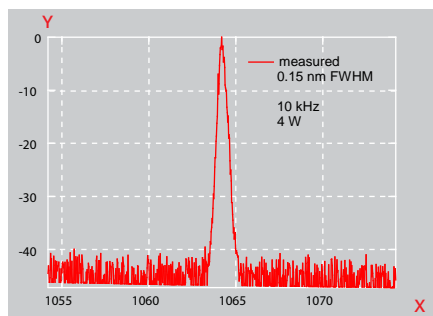
X REPETITION RATE (kHz)
Y AVERAGE OUTPUT POWER (W)

PULSE PROFILE



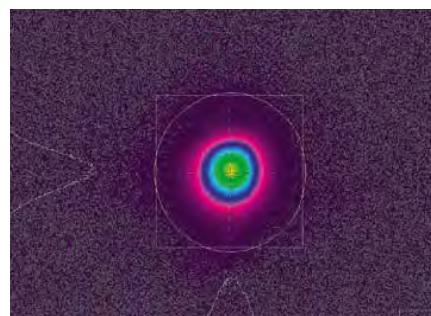
X TIME DELAY (ps)
Y POWER (MW)

OPTICAL SPECTRUM



X WAVELENGTH (nm)
Y SPECTRAL POWER DENSITY (dBc/nm)

BEAM PROFILE



Far-field beam profile at 10 kHz repetition rate and 400 μJ pulse energy





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where technologies meet solutions

enabling your ideas.

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