

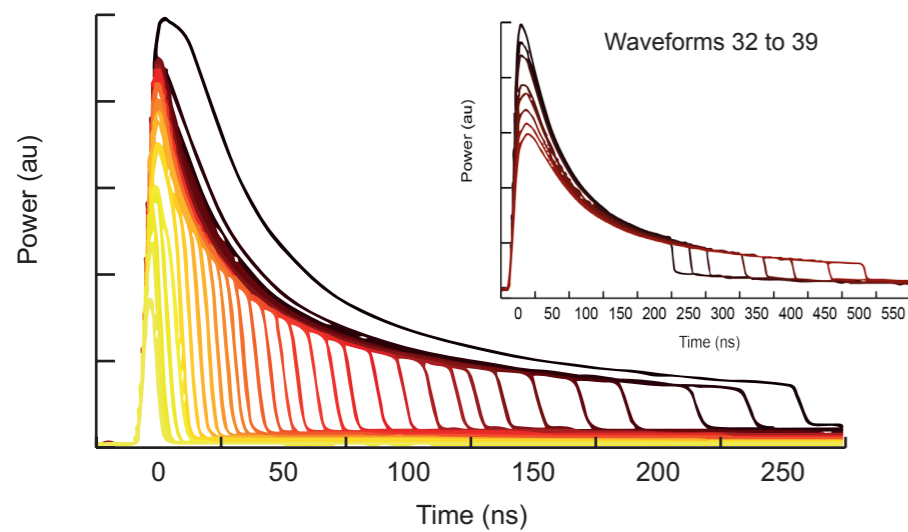


High Power redENERGY G4 Pulsed Fiber Laser.

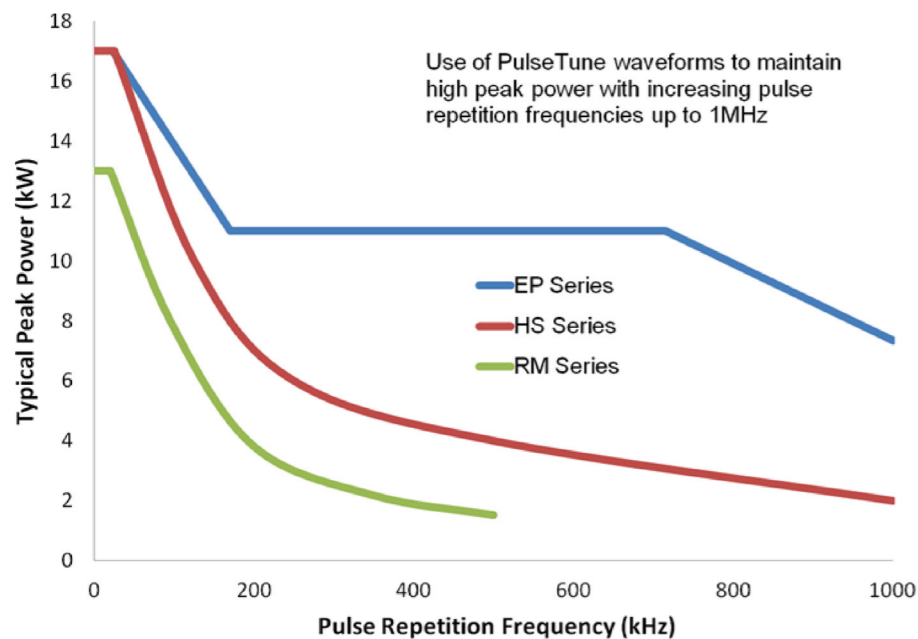
4. PulseTune Technology

Our PulseTune technology provides the ability to select waveforms, offering up to 40 pulse widths from 3 ns up to 500 ns. Each pulse waveform is designed for maximum peak power and pulse energy at an optimised pulse repetition frequency. This gives users greater control of pulse conditions over the full pulse repetition range.

Pulse Shapes for Waveforms 0 to 31



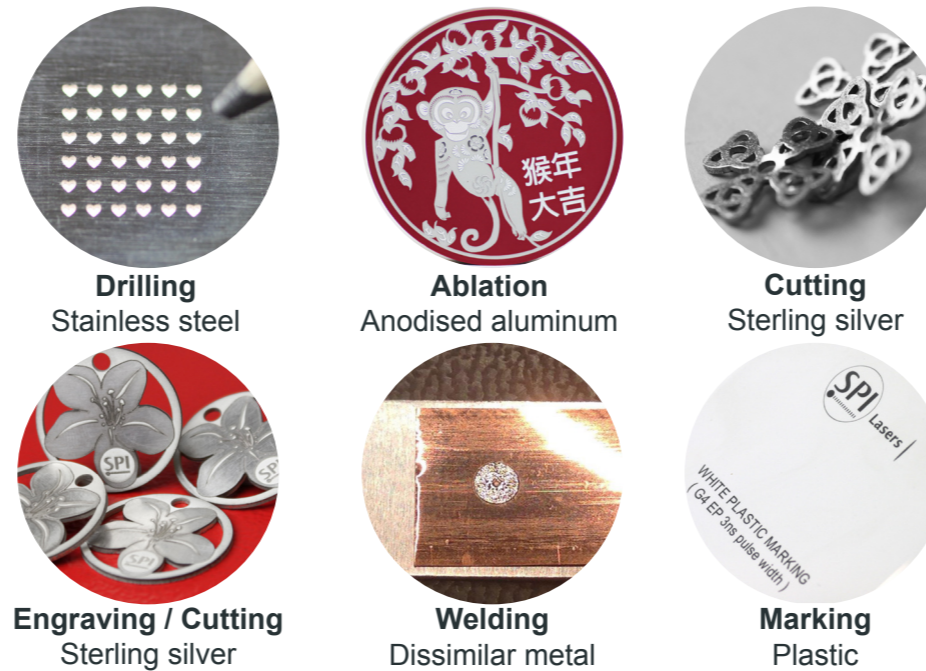
The graph shows typical waveforms from the 20W EP- S with the option to select from 40 PulseTune characteristics.



Feature Combinations

At a glance		Functionality ⁽²⁾		
		EP	HS	RM
Beam Quality ⁽¹⁾	S Type	20W	30W, 50W	
	Z Type	20W, 50W, 70W, 100W		20W, 30W, 50W, 70W
	L Type	20W	20W	
	H Type		40W, 70W	

Applications - More than just marking.



✓✓ = Optimal for ✓ = Good for

Type	S Type	Z Type	L Type	H Type
Key Applications				
Ablation	✓✓	✓✓	✓✓	✓
Cleaning			✓	✓✓
Drilling	✓✓	✓✓	✓	✓✓
Engraving, deep	✓	✓✓	✓	✓✓
Engraving, fine	✓✓	✓✓	✓	
Marking, anodised & painted materials	✓	✓	✓	✓
Marking, general		✓✓	✓✓	✓✓
Marking, metal	✓	✓	✓✓	✓
Marking, plastic (night & day)	✓	✓	✓✓	✓✓
Micro-machining	✓✓	✓		
Precision cutting	✓✓	✓✓		✓
Scribing	✓✓	✓✓	✓	
Solar cell processing	✓✓	✓	✓	✓
Thin film patterning	✓✓	✓✓	✓✓	✓
Thin foil cutting	✓✓	✓✓	✓✓	

VISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION CLASS 4 LASER PRODUCT

Wavelength 1040 - 1070nm
 Pulsed output - Max average power < 175W
 Max duty cycle < 20%
 Repetition Freq. 1-1000kHz
 Pulse duration 1ns - 500ns
 IEC/EN 60825-1:2014

Wavelength 630 - 670nm
 Output power < 50mW CW
VISIBLE LASER RADIATION AVOID DIRECT EYE EXPOSURE CLASS 3R LASER PRODUCT
 IEC/EN 60825-1:2014

COMPONENT FOR INCORPORATION
 This product is intended as a component for incorporation into a laser product, and as such requires additional features for Laser Safety and to comply with IEC/EN60825-1 and 21CFR 1040.10

Terms and Conditions

All product information is believed to be accurate and subject to change without notice. A complete product specification will be issued on request and also at time of order acknowledgement. The user assumes all risks and liability whatsoever in connection with the use of the product and its application. These lasers are designed as products for incorporation or integration into other equipment.



redENERGY® G4
20W - 100W
Pulsed Fiber Lasers

WITH GTWAVE® AND PULSETUNE TECHNOLOGY

PULSETUNE WAVEFORMS

GREATER FLEXIBILITY

SUPERIOR QUALITY

INCREASED PRODUCTIVITY

IMPROVED PROFITABILITY





redENERGY G4 20W-100W Pulsed Fiber Lasers



Product selection parameters

Wavelength		1060 nm														
Beam quality options ⁽¹⁾	S Type			Z Type							L Type		H Type			
M ²	<1.3			<1.6							1.6 - 2.0		2.5 - 3.5			
Average power (W)	>20	>30	>50	>20	>20	>30	>50	>50	>70	>70	100	>20	>38	>70		
PulseTune Functionality ⁽²⁾	EP	HS	HS	RM	EP	RM	RM	EP	RM	EP	EP	HS	EP	HS	HS	
Beam delivery cable length (m)	2			2/3		3					2/3	3	3/5			
Pulse parameters																
Peak power (kW) ⁽³⁾	>7	>10	>12	>10							>8	>12	>20			
Pulse energy (mJ) ⁽³⁾	>0.7	>0.65	>0.7	>1							>0.8	>1	>1.25			
Operating repetition frequency range (kHz)	1-1000			1-500	1-1000	1-500	1-500	1-1000	1-500	1-1000		1-1000		1-1000		
PulseTune waveforms	40	25		2	40	2	2	38	2	37	32	25	40	25		
Pulse width range (ns)	3-500	10-240	10-240	35/250	3-500	35-250	40-250	7-500	35-250	10-500	12-500	11-220	3-500	10-250		
CW mode with modulation	Yes			No	Yes	No	No	Yes	No	Yes		Yes		Yes		
Modulation range in CW (kHz)	1-100			N/A	1-100	N/A	N/A	1-100	N/A	1-100	1-100	1-100		1-100		
Output power stability %p-p ⁽³⁾	<5						<8					<5				
Cooling options																
Air cooled or Water Cooled	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air	Water	Air	Air	Air	Air
Electrical																
Power supply voltage (V)	24															
Power supply current (A)	<10	<16		<10				<20				<10	<10	<20		
Mechanical																
Weight (kg)	10	13	10				13	10	10	10	10	10	10	13		
Laser module length (mm)	347.5	377.2	347.5				377.2	400	347.5	347.5	377.2	347.5	377.2			
Laser module width (mm)	201	248	201				248	249	201	201	248	201	248			
Laser module height (mm)	95					63					95					
Environmental																
Ambient temperature range (°C)	0 - 40					15 - 35				0 - 45		0 - 40				
Relative humidity	5 - 95% RH (non condensing)															

Notes: 3. As measured at rated average power, waveform 0, optimised pulse repetition frequency and over full ambient temperature range.. For information on PulseTune technology see overleaf⁽⁴⁾

ILLK with Collimator

G4 products are equipped with an ILLK beam delivery optic. Comprising an IP54 rated beam delivery cable and an integrated isolator with a high tolerance, quick connect beam delivery interface. Its diverging beam output, coupled with a range of collimators, matched to standard scanner apertures, offers users "plug and play" capability.

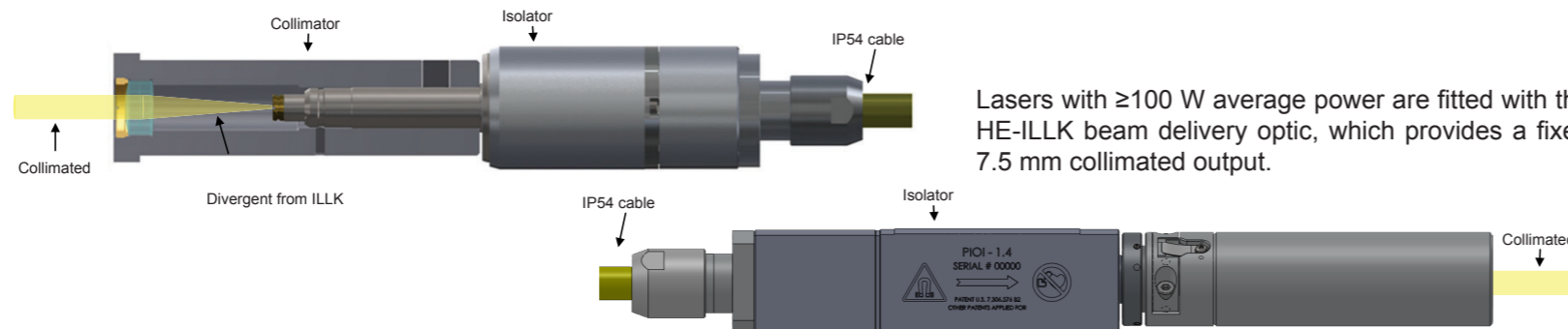


Link to latest datasheet

Collimator Options

F30	3.0 mm
F50	5.0 mm
F75	7.5 mm
F100	10.0 mm

Nominal beam diameter



1. Beam quality options

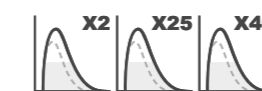
S Type - Single mode $M^2 < 1.3$
Generating very fine spot size < 20 microns with high power stability and large depth of focus. Ideally suited to applications requiring small feature sizes.

Z Type - $M^2 < 1.6$
Offering higher peak power and pulse energy with only minor increase in spot size with good depth of focus.

L Type - Low mode $M^2 1.6 - 2.0$
General marking applications giving slightly larger spots and features that are more appropriate to making marks visible to the naked eye.

H Type - High mode $M^2 2.5 - 3.5$
Offering higher pulse energies, peak powers and even larger spots ideal for wide lines, filled font type applications and large area coverage.

2. PulseTune Functionality

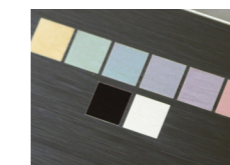


PulseTune waveforms available.



RM Series (Reduced Mode)

- Entry level products with limited pulse options
- Basic software and hardware interfaces
- Models benefit from 2 PulseTune waveforms and pulse repetition frequency up to 500 kHz



HS Series (High Specification)

- Benefits from PulseTune technology
- Pulse width variable (25 pre-set waveforms)
- Enhanced control and modulated CW functionality
- Up to 1 MHz pulse repetition frequency



EP Series (Extended Performance)

- Up to 40 optimised PulseTune waveforms
- Most versatile Fiber Laser source
- Enhanced control and modulated CW functionality
- Increased pulse energy and peak power performance
- Pulse width range of 3-500 ns

Contact Us:

UK	+44 1489 779 696	US	+1 408 454 1170
China	+86 21 6171 9470	Korea	+82 2 3151 9591

Email: sales@spilasers.com

For all country contacts see website: www.spilasers.com

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