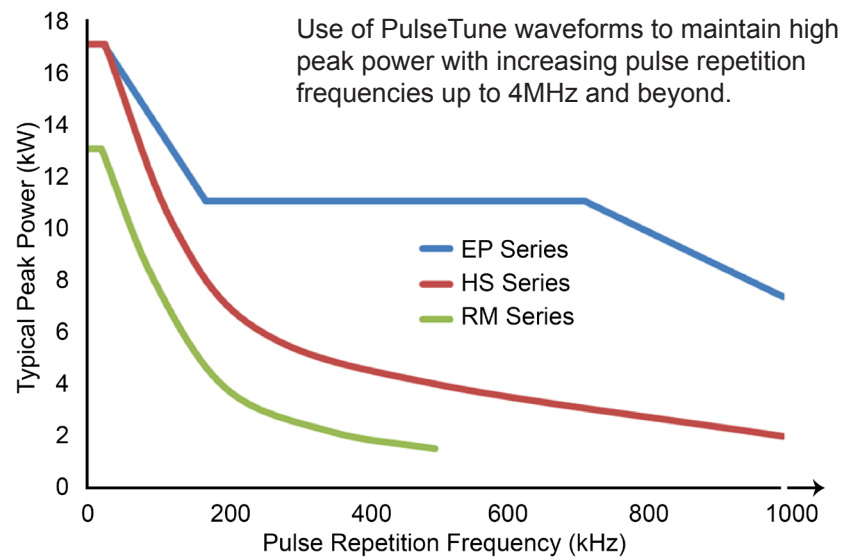
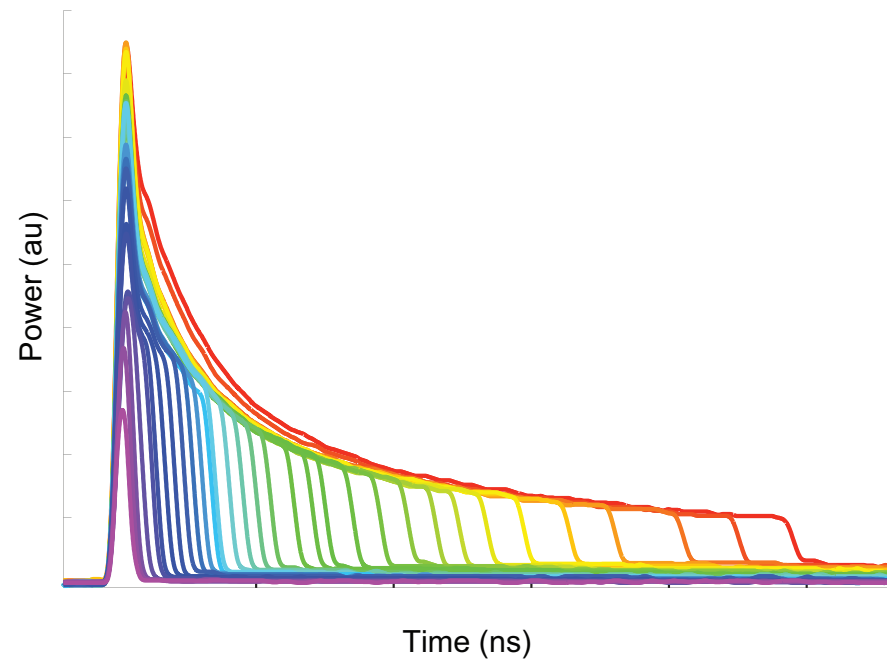


## PulseTune Technology

Our PulseTune technology provides the ability to select waveforms, offering pulse durations from 3 ns - 2000 ns. Each pulse waveform is designed for maximum peak power and pulse energy at an optimised pulse repetition frequency.



Link to latest datasheet.

	<b>INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION CLASS 4 LASER PRODUCT</b> Wavelength 1040 – 1200nm Pulsed output - Max average power < 175W Max pulse energy < 2.0mJ Repetition freq. 1-1000kHz Pulse duration 1ns – 500ns CW Output power < 175W IEC/EN 60825-1:2014	<b>COMPONENT FOR INCORPORATION</b> 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 21CFR1040.10
	Wavelength 630 – 670nm Output power < 5mW CW <b>VISIBLE LASER RADIATION AVOID DIRECT EYE EXPOSURE CLASS 3R LASER PRODUCT</b> IEC/EN 60825-1:2014	

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✓✓= Optimal for ✓= Good for

Type		S Type	Z Type	L Type	H Type	M Type
<b>Key Applications</b>						
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		✓✓	✓✓	✓	✓✓	
Welding		✓	✓✓		✓✓	✓✓

### 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 - 200W  
Pulsed Fiber Lasers

**WITH GTwave® AND PulseTune TECHNOLOGY**

GREATER FLEXIBILITY

SUPERIOR QUALITY

INCREASED PRODUCTIVITY

IMPROVED PROFITABILITY



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SM-S00219 Rev I 08/17



## Product selection parameters

Wavelength																			1060nm									
Beam quality options <sup>(1)</sup>	S Type					Z Type										L Type	H Type			M Type								
M <sup>2</sup>	<1.3		<1.2	<1.3	<1.2	<1.6										1.8	3			5								
Rated average power (W)	20	20	20	50	50	20	20	30	50	50	70	70	100	130	200	20	40	70	130	200								
PulseTune Functionality <sup>(2)</sup>	HS	EP	EP-S-J	HS	EP-S-J	RM	EP	RM	RM	EP	RM	EP	EP	EP	EP	HS	HS	HS	EP	EP								
Beam delivery cable length (m)	2		0	2	0	3						3/5	1/3	3/5		2/3	3/5											
Beam delivery optic / connector	ILOC										HE-ILLK		IBeam1			ILOC			IBeam2									
<b>Pulse parameters</b>																												
Max peak power (kW)*	>7		>20	>7	>20	>10										>12	>20			>40								
Max pulse energy (mJ) *	>0.6	>0.7				>1										>1.5	>0.8	>1.25			>5							
Pulse repetition frequency range (kHz)	1-1000		1-2000	1-1000	1-2000	1-500	1-1000	1-500		1-1000	1-500	1-1000			1-4000			1-1000		1-4000								
PulseTune waveforms	24	40	32	24	32	2	40	2		38	2	37	32	>40			25	24		>40								
Pulse duration range (ns)	10-240	3-500		11-220	3-500	26-250	3-500	26-250		6-500	28-260	9-500	12-500	5-2000	9-2000	10-220	10-240	10-250	3-2000									
CW mode with modulation	Yes					No	Yes	No		Yes	No	Yes					Yes											
Modulation range in CW (kHz)	1-100					N/A	1-100	N/A		1-100	N/A	1-100					1-100											
Output power stability %p-p*	<5								<5							<8	<5											
<b>Cooling options</b>																												
Air cooled or Water cooled	Air										Water				Air													
<b>Environmental</b>																												
Ambient temperature range (°C)	0-45		15-45	0-42	15-45	0-45				0-40				15-35	10-40	0-45	0-40	10-40										
Relative humidity	5-95% RH (non-codensing)																											

\* As measured at rated average power, waveform 0, max pulse energy and over full operating temperature range.

### 1. Beam quality options

#### S Type - Single mode (M<sup>2</sup> <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 - General purpose - (M<sup>2</sup> <1.6)

Offering higher peak power and pulse energy with only minor increase in spot size and good depth of focus.

#### L Type - Low mode (M<sup>2</sup> 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<sup>2</sup> 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.

#### M Type - Multimode (M<sup>2</sup> 4.0 - 6.0)

Highest pulse energies and longer pulse durations ideal for welding and cleaning.

### Feature Combinations

At a glance				PulseTune Functionality <sup>(2)</sup>		
				RM	HS	EP
Beam Quality <sup>(1)</sup>	S Type				20W, 50W	20W, 50W
	Z Type			20W, 30W, 50W, 70W		20W, 50W, 70W, 100W, 130W, 200W
	L Type				20W	
	H Type				40W, 70W	
	M Type					130W, 200W

### 2. PulseTune Functionality

Gives users greater control of pulse conditions providing increased pulse energy, peak power and pulse repetition frequency.



#### RM Series (Reduced Mode)

- Models benefit from 2 PulseTune waveforms
- Up to 0.5 MHz pulse repetition frequencies



#### HS Series (High Specification)

- 25 PulseTune waveforms
- Up to 1 MHz pulse repetition frequencies



#### EP Series (Extended Performance)

- Up to 40 optimised PulseTune waveforms
- Up to 4 MHz pulse repetition frequencies

