

G4 Pulsed Fiber Laser Specification

50 W, Air-cooled EP-Z Laser

Part Number	Beam Type	Optical Connector	Optical Cable Length	Visible Pilot Laser
SP-050P-A-EP-Z-B-Y	Divergent, collimator accessories available	ILLK	3 m	Yes (Class 3R)
SP-050P-A-EP-Z-F-Y	Collimated, beam diameter 7.5 mm	ILOC	3 m	Yes (Class 1)



G4 Laser with ILLK (type A1)



G4 Laser with ILOC (type A4)

Laser Characteristics

All parameters specified for waveform 0 at rated power, PRF₀ (pulse repetition frequency providing maximum pulse energy at rated power) and over full operating temperature range, unless otherwise stated.

Parameter	Unit	SP-050P-A-EP-Z-B-Y	SP-050P-A-EP-Z-F-Y
Rated average output power	W	50	
Output power stability	% p-p	< 5	
Maximum pulse energy	mJ	> 1.0	
Maximum peak power	kW	> 10	
Pulse duration range (see pulse waveform table)	ns	6 - 500	
Pulse-to-Pulse energy stability (at stable temperature)	% rms	< 3	
Pulse repetition frequency range (PRF)	kHz	1 - 1000	
CW mode		YES	
Central emission wavelength, λ_0	nm	1059 - 1065	
Emission bandwidth	nm	< 12	
Fraction of power within $\lambda_0 \pm 20$ nm	%	> 80	
M ² (averaged over x, y axes)		≤ 1.6	
Collimated beam diameter, 2 nd moment	mm	n/a	6.0 - 9.0
Full angle divergence / collimated divergence, 2 nd moment	mrad	80 - 120	≤ 0.5
Beam offset	mm	≤ 0.1	≤ 1
Pointing error	mrad	≤ 10	≤ 2.15
Circularity	%	> 90	> 85
Astigmatism	Z _R	< 0.3	
Degree of polarization	%	< 20	

Related Documents

Document Number	Description
SM-S00227	OEM Safety and System Integration Manual: Modules Type A1, A4
SM-S00360	V8 Control Interface Manual
SM-S00220	G4 Accessories (including beam collimator options)

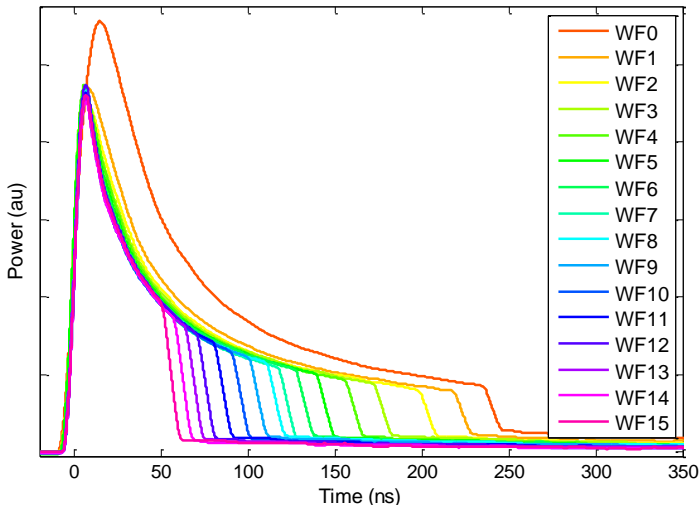
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Pulse Waveform Table

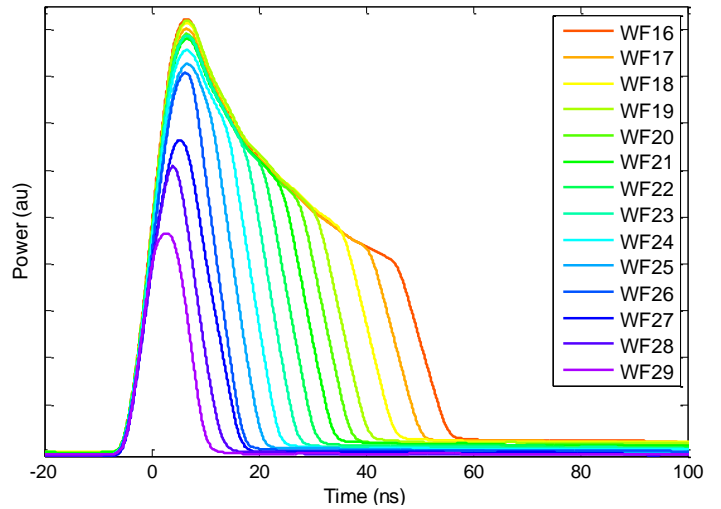
Waveform	PRF ₀ (kHz)	PRF _{max} (kHz)	Max. pulse energy, E _{max} (mJ)	Typ. FWHM pulse duration at E _{max} (ns)	Pulse duration at 10% (ns)	Typ. peak power at E _{max} (kW)
0	50	1000	1.00	35	250	12
1	63	1000	0.79	34	230	12
2	68	1000	0.74	32	210	12
3	73	1000	0.68	29	183	12
4	76	1000	0.66	27	167	12
5	81	1000	0.62	26	150	12
6	86	1000	0.58	23	137	13
7	91	1000	0.55	23	127	13
8	93	1000	0.54	23	120	13
9	98	1000	0.51	23	110	13
10	103	1000	0.49	23	100	12
11	108	1000	0.46	23	90	12
12	113	1000	0.44	23	80	13
13	121	1000	0.41	23	73	12
14	129	1000	0.39	23	67	12
15	136	1000	0.37	23	60	12
16	144	1000	0.35	23	55	12
17	154	1000	0.32	23	50	12
18	164	1000	0.30	23	45	12
19	176	1000	0.28	23	40	12
20	192	1000	0.26	23	37	12
21	209	1000	0.24	23	33	11
22	227	1000	0.22	23	30	11
23	252	1000	0.20	21	27	12
24	290	1000	0.17	19	23	12
25	353	1000	0.14	16	20	11
26	429	1000	0.12	12	17	11
27	542	1000	0.09	12	13	9
28	720	1000	0.07	9	10	9
29	1000	1000	0.05	6	7	9
30	50	940	1.00	63	270	10
31	50	940	1.00	67	290	10
32	50	835	1.00	70	320	9
33	50	625	1.00	76	350	8
34	50	625	1.00	79	380	8
35	50	625	1.00	84	420	7
36	50	520	1.00	89	460	7
37	50	520	1.00	94	500	6

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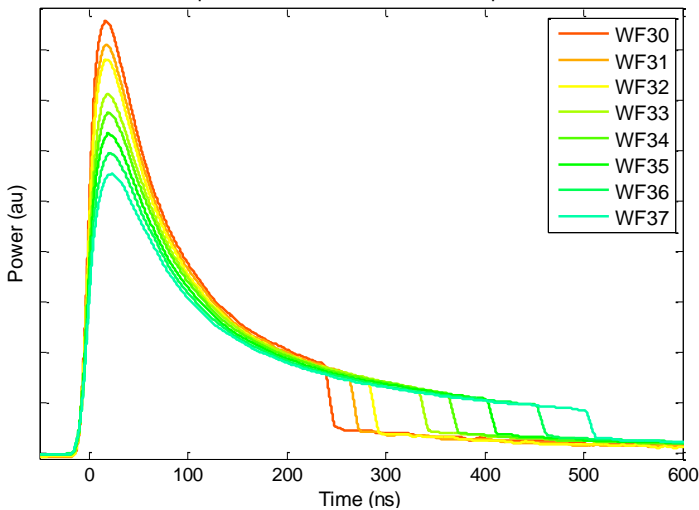
Pulse Shapes for Waveform 0 to 15 at Respective PRFO



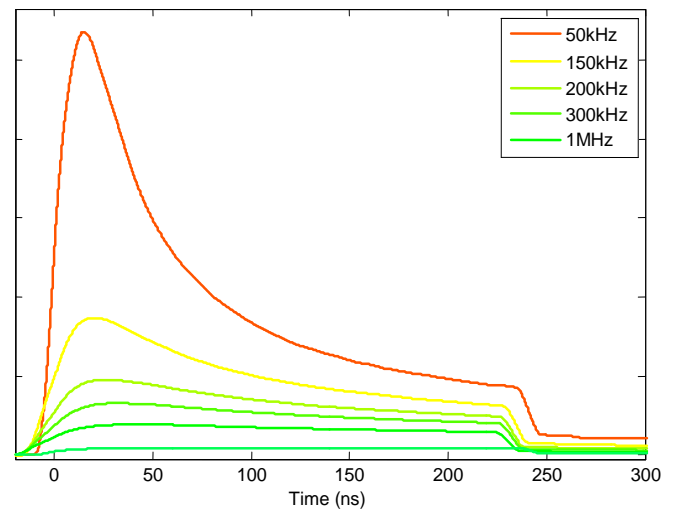
Pulse Shapes for Waveform 16 to 29 at Respective PRFO



Pulse Shapes for Waveform 30 to 37 at Respective PRFO




Pulse Shapes for Waveform 0 at Varying PRF



System Integration Details

Parameter	Unit	Range
Laser module type		A1, A4
Laser module dimensions	mm	347.2 x 201 x 95
Control interface version		V8
Power supply voltage	V DC	24 ± 2
Logic power supply requirement	W	50
Laser diode power supply requirement	W	250
Operating temperature range	°C	0 to +40
Storage temperature range	°C	-10 to +60

<p>INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION CLASS 4 LASER DEVICE</p> <p>Wavelength 1040 – 1200 nm Pulsed output - Max average power < 120W Max pulse energy < 2.0mJ Repetition freq. 1–1000kHz Pulse duration 1ns – 500ns CW Output power < 120W IEC EN 60825-1:2014</p>	<p><u>Component for Incorporation</u></p> <p>This device 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 EN 60825-1 and 21CFR1040.10</p>	<p>VISIBLE LASER RADIATION AVOID DIRECT EYE EXPOSURE CLASS 3R LASER DEVICE (ALIGNMENT PURPOSES ONLY)</p> <p>Wavelength 630-670nm OUTPUT < 5mW CW IEC EN 60825-1:2014</p> 
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