

TruPulse 2010 nano

Edmund Part:
18309



EO **Edmund**
optics worldwide



Greater
flexibility



Superior
quality



Increased
productivity



Improved
profitability

+ Applications

- | | | | |
|------------|-------------------|-------------------------|------------------------|
| ▪ Ablation | ▪ Engraving | ▪ Precision Cutting | ▪ Thin Film Patterning |
| ▪ Cleaning | ▪ Marking | ▪ Scribing | ▪ Thin Film Cutting |
| ▪ Drilling | ▪ Micro-Machining | ▪ Solar Cell Processing | ▪ Welding |

TruPulse 2010 nano is ideal for:

01

High speed engraving
With peak power $\geq 10\text{kW}$



- Engraving metals
- Removal rates $> 65\text{mm}^3/\text{min}$

02

High quality welding
With pulse energy 1.2mJ



- Foils up to 0.7mm
- Dissimilar metals

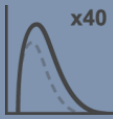
03

High speed cutting & drilling
With higher power & pulse energy



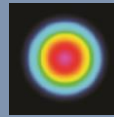
- Cutting metal foils up to 0.8mm
- Drilling holes down to $60\mu\text{m}$

TRUMPF



PulseTune Functionality (EP Series)

- Up to 48 optimized PulseTune waveforms
- Single shot to 4 MHz pulse repetition frequency



Beam Quality (Z Type $M^2 \leq 1.6$)

- Higher peak power and pulse energy with only minor increase in spot size and good depth of focus

+ Laser Characteristics

Parameters

Central emission wavelength	nm	1059 – 1065
Nominal average output power	W	100 (adjustable 0-100%)
M^2		≤ 1.6 (1.3 typical)
Collimated beam diameter	mm	7.5 standard (other collimators available)
PulseTune waveforms		48
Maximum pulse energy	mJ	1.3 (3% rms stability)
Maximum peak power	kW	≥ 10 (14 typical)
Pulse duration range	ns	4 – 2000 (see waveform table)
Pulse repetition frequency (PRF) range	kHz	1 – 4000 (see waveform table)
CW mode (with modulation)	kHz	YES (1 - 100)
Red alignment laser mode	mW	0.3

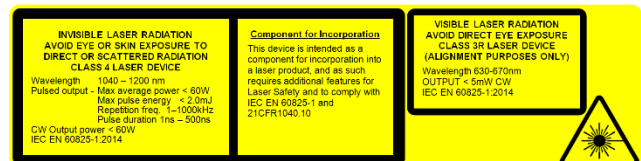
+ System Integration Details

Parameters

Cooling		Air
Beam delivery cable length	m	3
Laser module dimensions	mm	377 x 249 x 115
Power supply voltage	V DC	24 $\pm$ 2
Power supply requirement	W	530
Operating temperature range	°C	+5 to +40
Relative humidity range		5-95% RH (non-condensing)

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.



Parameters	Description	
Laser		TruPulse 2010 nano (FK10-EP)
Collimator		F75 removable beam expanding collimator without flange
Break-out-board		G4 Break-out board
RS232 Cable		9 pin to 9 pin RS232 Cable
Control Cable		I/O Control Cable
Power Supply Cable		Standard 24VDC Power Supply Cable

***Edmund Part does not include a power supply**

To learn more about our TruPulse nano Fiber Laser products visit our website: www.trumpf.com/s/trupulse-nano

Pulsed Fiber Laser Specification

Pulse Waveform Table (SP / TP-100P-A-EP-Z-B-Y)

Waveform	PRF ₀ (kHz)	PRF _{max} (kHz)	Max. pulse energy, E _{ma} (mJ)	Typ. FWHM pulse durat at E _{max} (n	Pulse durati 10%	Typ. peak power at E _{max} (kW)
0	100	1000	1.05	35	261	14
1	125	1130	0.84	31	237	13
2	135	1240	0.78	30	217	12
3	145	1420	0.72	30	197	12
4	150	1560	0.70	32	177	12
5	160	1720	0.66	33	157	11
6	170	1920	0.62	33	142	11
7	180	2080	0.58	33	132	11
8	185	2170	0.57	34	122	11
9	195	2380	0.54	35	117	11
10	205	2490	0.51	35	108	11
11	215	2770	0.49	38	96	10
12	225	3120	0.47	37	88	11
13	240	3840	0.44	38	80	10
14	255	4160	0.41	38	72	10
15	270	4160	0.39	43	68	10
16	285	4160	0.37	43	62	10
17	305	4160	0.34	43	58	10
18	325	4160	0.32	46	53	10
19	350	4160	0.30	44	48	10
20	380	4160	0.28	40	43	10
21	415	4160	0.25	33	37	10
22	450	4160	0.23	30	32	10
23	500	4160	0.21	26	29	10
24	575	4160	0.18	23	26	10
25	700	4160	0.15	20	23	9
26	850	4160	0.12	17	20	9
27	1060	4160	0.10	13	16	8
28	1420	4160	0.07	10	13	8
29	1920	4160	0.05	7	10	9
30	2490	4160	0.04	5	7	10
31	3570	4160	0.03	4	6	9
32	100	900	1.05	48	286	12
33	97	800	1.08	47	310	12
34	95	600	1.11	47	330	12
35	92	600	1.14	46	360	13
36	90	600	1.17	46	390	12
37	87	600	1.21	45	430	12
38	84	500	1.25	45	480	12
39	83	500	1.27	45	508	12
40 to 55	Not Specified					
56	83	415	1.27	22	620	13
57	80	310	1.31	22	820	13
58	80	250	1.31	23	1020	12
59	80	205	1.31	26	1220	11
60	80	175	1.31	30	1420	12
61	80	155	1.31	33	1620	9
62	80	135	1.31	38	1820	8
63	80	135	1.31	42	2020	7

Note: The laser operates at discrete pulse repetition frequencies (PRF) associated with multiple integer clock cycles. The resulting difference between "permissible" frequencies may become noticeable above 2 MHz. Frequencies at which the laser will operate above 2 MHz are: 2.000, 2.082, 2.173, 2.272, 2.380, 2.500, 2.631, 2.777, 2.941, 3.125, 3.333, 3.571, 3.846 and 4.166 MHz. In software mode (internal trigger) the laser will automatically round to the next frequency up if the demanded PRF is not one of these discrete values. For example, if the demanded frequency is 3.2 MHz, the laser will operate at 3.333 MHz, not 3.125 MHz. In hardware mode (external trigger) the laser will jitter between the two permissible frequencies above and below the demanded PRF. The 'Laser_Has_Pulsed' monitor signal is available only for waveforms where PRF_{max} ≤ 1 MHz.



Pulsed Fiber Laser Specification

Pulse Waveform Shapes (SP / TP-100P-A-EP-Z-B-Y)

