TruPulse nano 20 to 600 W

Nanosecond-pulsed fiber lasers with GTwave® and PulseTune™ technology

Greater flexibility

Increased productivity

Superior quality

Improved profitability

TRUMPF

Machine tools/Power tools
Laser technology/Electronics

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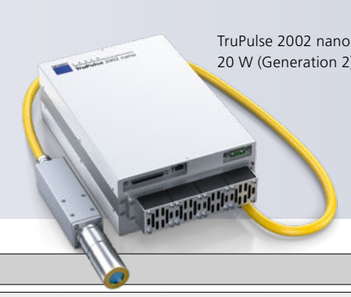
Nanosecond-pulsed fiber lasers



TruPulse 2002 nano
20 W (Generation 2)

TruPulse 2060 nano
600 W

Product selection parameters																					
Wavelength	nm	1060																			
Beam quality options		S type			Z type													H type		M type	
Beam quality	M^2	< 1.3			< 1.6													3		5	
Rated average power	W	20	50	100	20		50		70		100	200	300	500	600			40	70	200	500
PulseTune functionality		EP	HS	EP	RM	EP	RM	EP	RM	EP								HS		EP	
Beam delivery cable length	m	2			2 | 3		3			3 | 5		3		3.5				3 | 5		3 | 8	10
Beam delivery optic/connector		ILOC / ILLK			ILOC / ILLK						ILOC+	IBeam+		IBeam+ (HP)				ILOC / ILLK		IBeam+	
Pulse parameters																					
Max. peak power*	kW	> 7			> 10													> 20		> 50	> 45
Max. pulse energy	mJ	> 0.8	> 0.6	> 1		> 1.2	> 1	> 1.2	> 1	> 1.2	> 1.3	> 1.5		> 2				> 1.25		> 5	> 6
Pulse repetition frequency range	kHz	1–4000	1–1000	1–4000	1–500	1–4000	1–500	1–4000	1–500	1–4000								1–1000		1–4000	
Pulse duration range	ns	3–2000	11–220	4–2000	26–250	3–2000	26–250	3–2000	28–260	3–2000	4–2000	9–2000	10–1200	20–800				10–240	10–250	12–2000	20–2000
PulseTune waveforms		48	24	47	2	48	2	48	2	48		45	41	37				24		45	10
CW mode		Yes		No		Yes	No	Yes	No	Yes		No		Yes				Yes		No	
Modulation range in CW mode	kHz	1–100		N/A		1–100	N/A	1–100	N/A	1–100		N/A		1–100				1–100		N/A	
Output power stability (peak-to-peak)*	%	< 5																			
Cooling options																					
Air-cooled or water-cooled		Air											Air | Water	Air							
Environmental																					
Ambient temperature range	°C	0–45	0–42	5–40	0–45		0–40				5–40	10–40	15–37	15–40				0–45	0–40	10–40	15–40
Relative humidity range		5–95% RH (non-condensing)																			

* Measured at rated average power, waveform 0, max. pulse energy and over full operating temperature range. Models with longer beam delivery cables may have lower peak power than stated.

Beam quality options

Series 1000 | S type (single mode M^2 < 1.3)
provides a very fine spot size (< 20 micrometers) with high performance stability and great depth of focus. Ideal for applications requiring small structure sizes.

Series 2000 | Z type (M^2 < 1.6)
provides higher peak power and pulse energy with only a slight increase in spot size and good depth of focus.

Series 4000 | H type (high mode M^2 2.5–3.5)
provides high pulse energies, peak power and even larger spots, ideal for wide lines, applications with filled fonts and a high area coverage.

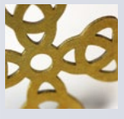
Series 5000 | M type (multimode M^2 4.0–6.0)
highest pulse energies and longer pulse durations, perfect for welding and cleaning.

Feature combinations

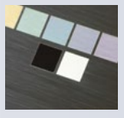
At a glance		**PulseTune functionality** (in W)		
		RM	**HS**	**EP**
Beam quality	**S type**		50	20, 100
	Z type	20, 50, 70		20, 50, 70, 100, 200, 300, 500, 600
	H type		40, 70	
	M type			200, 500

PulseTune functionality

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



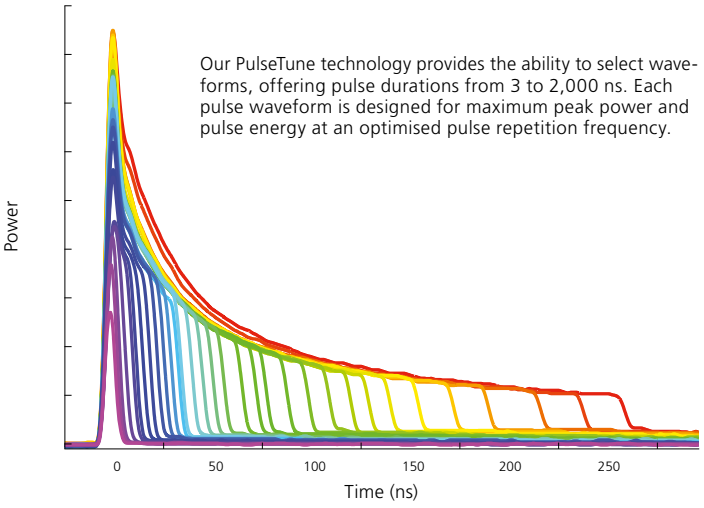
RM Series (reduced mode)
- Models benefit from 2 PulseTune waveforms
- Up to 0.5 MHz pulse repetition frequency



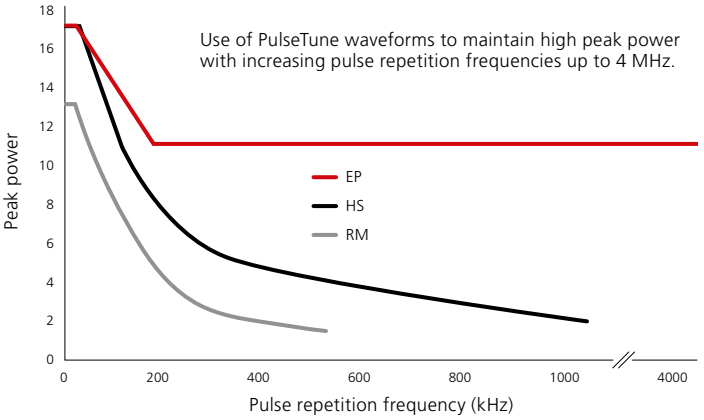
HS Series (high specification)
- Up to 25 PulseTune waveforms
- Up to 1 MHz pulse repetition frequency

EP Series (extended performance)
- Up to 48 optimised PulseTune waveforms
- Up to 4 MHz pulse repetition frequency

PulseTune technology



Our PulseTune technology provides the ability to select waveforms, offering pulse durations from 3 to 2,000 ns. Each pulse waveform is designed for maximum peak power and pulse energy at an optimised pulse repetition frequency.



Use of PulseTune waveforms to maintain high peak power with increasing pulse repetition frequencies up to 4 MHz.

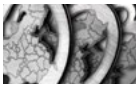
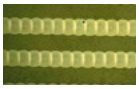
ILLK with Collimator

TruPulse nano products are equipped with an ILLK beam delivery optic. Comprising an IP54 rated beam delivery cable and an integrated isolator with a high toleranced, 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.

Collimator Options	F30	F50	F75	F100	F130
Typical beam diameter in mm (±20%)	3.0	5.0	7.5	10.0	13.0

Visit our newly configured page TruPulse nano:
www.trumpf.com/s/trupulse-nano

Key applications

Product range by beam quality		S type	Z type	H type	M type
Ablation		■	■	□	□
Cleaning			□	■	■
Drilling		■	■	□	□
Engraving, deep		□	■	■	■
Engraving, fine		■	■		
Marking anodised and painted materials		□	■	□	■
Marking, general		□	■	□	
Marking, metal		□	■	□	□
Marking, plastic (night and day)		■	□	□	
Micro-machining		■	□		
Precision cutting		■	■	□	□
Scribing		■	■		
Surface Texturing			■		□
Thin film patterning		■	■	■	
Thin foil cutting		■	■	□	
Welding		□	■	■	■

■ = Optimal for □ = Good for

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.

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