

TEA Series – High Power

The TEA Series – High Power lasers are part of *sdilasers™* standard Transversely-Excited Atmospheric-Pressure (TEA) CO₂ laser product series. The TEA High Power 200/600 through TEA High Power 600/3000 models have a selective repetition rate and high power output. These lasers yield high output powers ranging from 600W to 3000W at discriminant repetition rate conditions. Configuring the laser pulse energy selectively controls total output energy, providing optimal flexibility for the end user. The output pulse of these lasers is comparatively short for a TEA CO₂ laser, resulting in very high peak power. Typical Full Width Half Maximum (FWHM) values of the laser pulse are between 80ns and 150ns.



Each laser unit is packaged into a single, well-designed and ergonomically sound enclosure, facilitating effortless transport, installation and operation. Required external interfaces are limited to electrical supply, laser gas, cooling water and vacuum pump. The TEA High Power system design also allows for easy maintenance and servicing of the laser system by virtue of easily removable panels and straightforward access. Due to the high degree of stability, the laser resonator requires no adjustment after the initial cavity alignment, which is done during commissioning.

Fully automated, the laser unit offers advanced features such as an RS232 interface to facilitate local as well as remote computerized control. An optical arc detection system protects the laser system from improper discharge conditions. TEA CO₂ lasers also feature closed gas loop operation with the addition of room temperature catalysts to the laser, housed in the optional side arm catalyst system. Standard models can also be individually customized. Other unique applications include utilizing lasers as oscillators or amplifiers for Master Oscillator Power Amplifier (MOPA) configurations. Please contact us to determine which laser model will best suit your application requirements.

Key Performance Features:

- Atmospheric pressure
- Selective repetition rate
- High pulse energy
- Short output pulse
- High peak power per pulse
- Local/Remote control
- Optional side arm catalyst for gas recycling

TEA Series High Power models are ideal for applications such as:

- Mold Cleaning
- Paint removal / Decoating
- Laser Marking systems
- Surface treatment
- Other materials processing applications

Creating Solutions that Dramatically Enhance Real Value for *your* Customers.

TEA Series – High Power Specifications

Model	200/600	200/800	300/1500	600/3000
Wavelength (µm)	10.6	10.6	10.6	10.6
Repetition rate (Hz)	200	200	300	600
Pulse energy - Multimode (J)	3	4	5	5
Pulse energy - TEM ₀₀ (J)	-	-	-	-
Average output power - Multimode (W)	600	800	1500	3000
Average output power - TEM ₀₀ (W)	-	-	-	-
Pulse width - FWHM of initial spike (ns)	80 - 150	80 - 150	80 - 150	80 - 150
Output stability (1 sigma)	<4%	<4%	<4%	<4%
Jitter (1 sigma)	<10ns	<10ns	<10ns	<10ns
Beam height - Multimode (mm)	25	25	30	30
Beam width - Multimode (mm)	25	25	30	30
Beam Quality factor (M ²) - Multimode	10 - 13	10 - 13	20 - 28	20 - 28
Beam waist - TEM ₀₀ (mm)	5	5	5	5
Beam Quality factor (M ²) - TEM ₀₀	1 - 2	1 - 2	1 - 2	1 - 2
Operating pressure (atm)	1	1	1	1
Dimensions (L x W x H)	1.8m x 1.5m x 1.6m	1.8m x 1.5m x 1.6m	2.2m x 1.5m x 1.6m	2.2m x 1.5m x 1.6m
Weight - including transformer oil (kg)	1600	1600	2500	2800
Gas load lifetime for closed loop system	>100,000,000 pulses	>100,000,000 pulses	>100,000,000 pulses	>100,000,000 pulses
Electrical voltage	380V 50/60Hz	380V 50/60Hz	380V 50/60Hz	380V 50/60Hz
Phase	Three phase	Three phase	Three phase	Three phase
Pulse Circuit	Patented solid switch technology	Patented solid switch technology	Patented solid switch technology	Patented solid switch technology
Pre-ionisation	Corona pre-ionised	Corona pre-ionised	Corona pre-ionised	Corona pre-ionised
Cooling services Temperature stabilised, closed loop chilled water supply with temperature at 18°C, with a heat removal capacity of:	15kW	18kW	30kW	60kW
Operational extras	Side arm catalyst system			
Typical applications	Mold cleaning Paint removal / Decoating Laser marking system Material surface treatment			