

10 years TA pro – Continuing Tapered Amplifier Improvements

TA pro delivers up to 4W at wavelengths between 660nm and 1495nm with tapered amplifier technology.

The TA pro is the flagship product of TOPTICA's high power tunable diode laser solutions. Its tapered amplifier technology allows for high power with excellent beam quality, while at the same time maintaining the favorable spectral properties of the pro master laser.

Tapered amplifiers have a 20 year long history at TOPTICA. In the beginning with the TA 100, then the **TA pro** in much advanced pro technology: a stable DL pro master laser, new chip mount with improved mechanical and thermal stability, specifically designed ultra-stable mirror mounts, and a stable housing machined from a solid metal block.

The next evolution step was the introduction of the completely digital DLC pro controller – low noise, total remote control, higher powers with up to 10 A driving current, at the same time even narrower linewidth and less drift. And now a rack-mounted version is available as MTA pro.

High power up to 4 W at 780 nm and 860 nm

In parallel, TA chips have improved substantially over time. The available spectrum widened, output powers increased. The main TA chip provider, TOPTICA eagleyard, continues to improve designs and further raise output power levels continuously. Latest examples: a new chip centered at 890nm (872 – 912nm) now with up to 3.5 W output power, and record TA output powers at important wavelengths: 4 W @780nm and 860nm.

Particularly suitable for atom cooling and quantum simulations

TA pro is ideally suited for atom and ion cooling with its high power, narrow linewidth and low noise operation. Also quantum simulations with large numbers of atoms and Rydberg atoms benefit from its properties.

Photo contest: 20 years amplified @TOPTICA, 10 years TA pro

To celebrate, scientists are asked to send us their greatest pictures with TOPTICA lasers in the lab. An independent jury will reward the best picture with the TOPTICA Photo Contest Prize, a pair of Sony Wireless Bluetooth Noise Cancelling Headphones: www.toptica.com/photo-contest

For any further information please consult our web page at: www.toptica.com/amplified



TA pro – TOPTICA's Tapered Amplifier (TA) Laser System

Quick Reference:

Tapered amplifier diodes amplify laser radiation into a nearly diffraction limited beam to powers that would destroy the facets of normal laser diodes. At the same time the spectral properties of the master laser are preserved.

TOPTICA eagleyard manufactures tapered amplifier chips between 650nm and 985nm with high brightness. Output powers from 250mW to 3000mW are available. TOPTICA Photonics integrates tapered amplifiers into convenient laser and amplifier systems (TA pro and BoosTA pro).

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TOPTICA has been developing and manufacturing high-end laser systems for scientific and industrial applications for 20 years. Our portfolio includes diode lasers, ultrafast fiber lasers, terahertz systems and frequency combs. The systems are used for demanding applications in biophotonics, industrial metrology and quantum technology. TOPTICA is renowned for providing the widest wavelength coverage of diode lasers on the market, providing high-power lasers even at exotic wavelengths.

Today, TOPTICA employs 340 people worldwide in six business units (TOPTICA Photonics AG, TOPTICA eagleyard, TOPTICA Projects GmbH, TOPTICA Photonics Inc. USA, TOPTICA Photonics K.K. Japan, and TOPTICA Photonics China) with a consolidated group turnover of € 76 million.