PICOSECOND ND:YAG LASER

2027 MD Lasers Pico

A multi-wavelength picosecond platform for tattoo removal, pigmented lesions and skin rejuvenation, combining ultra-short 450 ps pulses with four selectable operating modes.



450 ps
PULSE WIDTH

1.33 GW
PEAK POWER AT 1064 NM

5
WAVELENGTH OPTIONS

4
OPERATING MODES

Built for

- Tattoo Removal
- Pigmented Lesions
- Skin Rejuvenation
- Texture & Scars

STANDARD
1064 + 532 nm
Standard Nd:YAG wavelengths

STANDARD
585 · 650 · 755 nm
Included handpieces for blues & greens

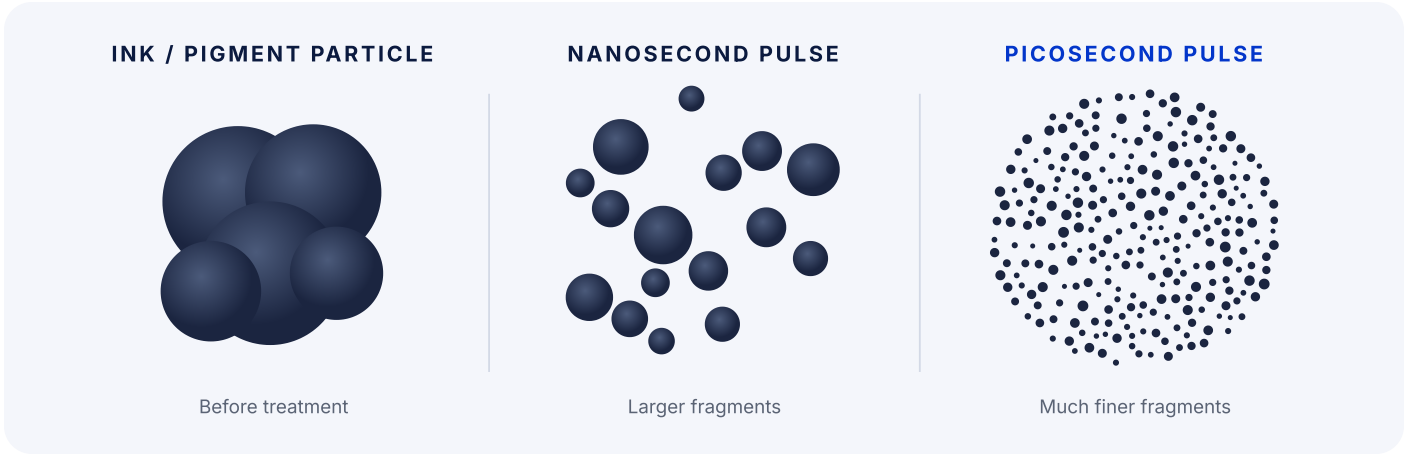
DELIVERY
Flat-top · 2–10 mm
Zoom spot, 1–10 Hz

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THE TECHNOLOGY

Why picosecond pulses?

A picosecond is one trillionth of a second (10^{-12} s); a nanosecond is one billionth (10^{-9} s). Conventional Q-switched lasers fire pulses measured in nanoseconds. The Pico fires 450 ps pulses, roughly ten times shorter than a typical 5 ns Q-switched pulse.

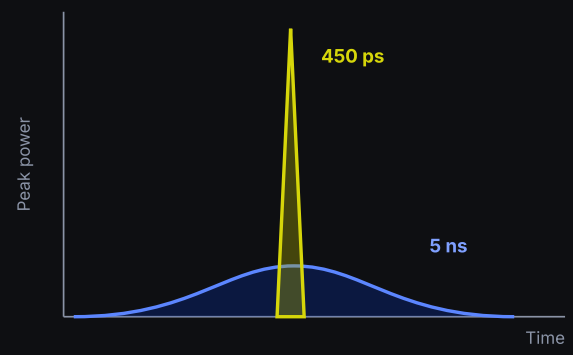


Less heat in surrounding tissue

Because each pulse is so brief, energy is delivered faster than heat can spread from the target. The effect is mainly photoacoustic (a pressure wave) rather than photothermal, which limits heating of the surrounding skin and helps keep treatments comfortable.

Finer particle breakdown

Shorter pulses break ink and pigment into much smaller particles than nanosecond pulses do. Smaller particles are easier for the body's own lymphatic system to clear, which is the natural route by which treated ink fades.



Higher peak power

Peak power is energy divided by pulse duration:

Peak power (W) = Energy (J) ÷ Pulse width (s)

For the same pulse energy, a 450 ps pulse reaches roughly ten times the peak power of a 5 ns pulse. The Pico is rated up to 1.33 GW at 1064 nm and 0.67 GW at 532 nm.

Illustrations are schematic and not to scale.

HANDPIECES

Five wavelengths, one platform

Different ink and pigment colors absorb different wavelengths. All six handpieces come standard — 1064/532, 585, 650 and 755 nm, plus the fractional microlens — so the system is ready for a broad range of colors and skin types, with no add-on handpieces to purchase.



1064 nm
STANDARD



532 nm
STANDARD



585 nm
STANDARD



650 nm
STANDARD



755 nm
STANDARD

Black / dark · Blue · Green · Yellow · Orange / red

Wavelength	Configuration	Primary color targets
1064 nm	Standard	Black and dark inks; deeper dermal pigment
532 nm	Standard	Red, orange and yellow inks; superficial pigment
585 nm	Standard dye handpiece	Sky-blue and light-blue inks
650 nm	Standard dye handpiece	Green inks
755 nm	Standard handpiece	Green, blue and black inks

Used together, the wavelengths cover nine of the most commonly used tattoo colors, from light orange through to black. 1064 nm penetrates deepest and is the usual choice for dark ink; 532 nm is absorbed most strongly by warm colors; the 585, 650 and 755 nm handpieces extend coverage into the blues and greens that are often hardest to clear.

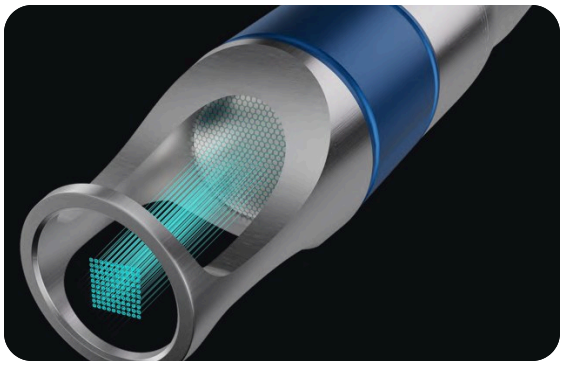
Color guidance is general and based on published absorption data; the operator selects wavelength and parameters for each patient.

DELIVERY & OPTICS

Fractional microlens handpiece

The included microlens-array handpiece splits each picosecond pulse into a grid of tiny, high-intensity micro-beams. It is used for skin resurfacing and rejuvenation, including acne scars, wrinkles and uneven texture.

The micro-beams stimulate the skin to produce new collagen and elastic fibers, helping to soften fine lines, refine pores and improve overall elasticity and tone.



Standard



Fine lines Before · After



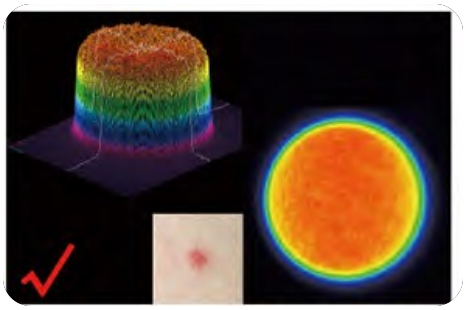
Acne scars Before · After



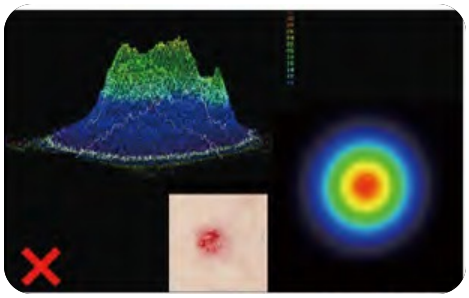
Skin texture Before · After

Flat-top (top-hat) beam profile

Energy is spread evenly across the whole treatment spot instead of peaking in the center as a Gaussian beam does. Uniform delivery targets the intended structures consistently, avoids hot spots and lowers the risk of injury to the epidermis.



Flat-top · even energy



Gaussian · central hot spot

Precision articulated arm

The beam travels through a high-precision articulated arm with highly reflective mirrors. Low transmission loss keeps the spot uniform and the output stable from pulse to pulse.



Representative images. Individual results vary.

CONTROL

Four operating modes

One touchscreen interface gives access to four pulse modes, so a single system can handle tattoo, pigment and rejuvenation work.

Pico mode

Single 450 ps pulses for tattoo ink and pigmented lesions, where the photoacoustic effect does most of the work.

PTP mode

Photoacoustic twin pulse: each pulse is split into two sub-pulses, for deep or stubborn pigment.

Multi-pulse mode

Each pulse is split into three shorter sub-pulses fired in quick succession, for more precise targeting of melanosomes.

Long pulse mode

Longer pulses for gentle heating and collagen stimulation in toning and rejuvenation treatments.

Guided presets



The software includes an automatic mode with suggested starting parameters for 11 common treatments. Each preset loads a recommended energy, frequency and spot size, which the operator can adjust as needed.

Tattoo & peel presets

- Eyebrow tattoo
- Eyeliner tattoo
- Body tattoo
- Red tattoo
- Carbon peel

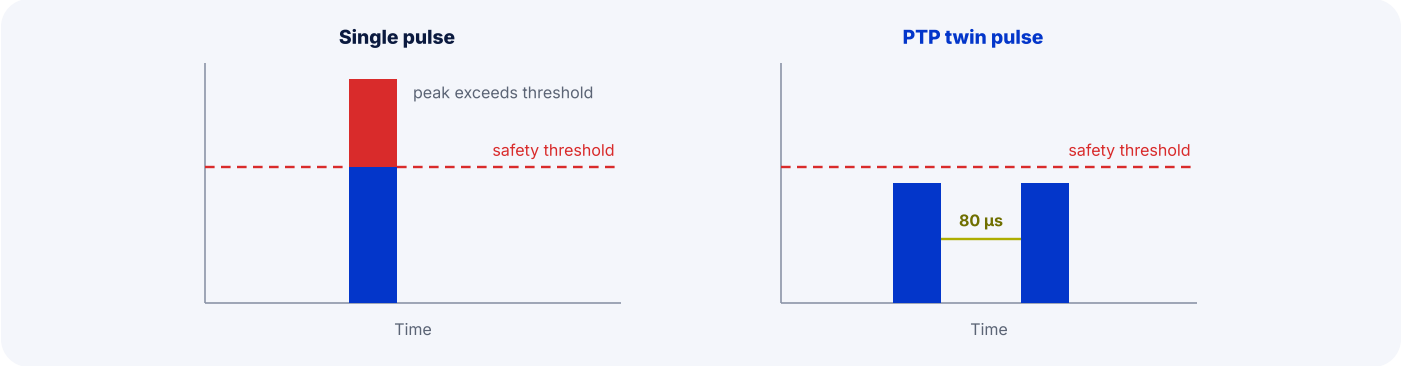
Pigment presets

- Nevus
- Freckles
- Age spots
- Café-au-lait spots
- Melasma
- Nevus of Ota

ADVANCED PULSE MODES

PTP & multi-pulse modes

Both modes split each pulse's energy into sub-pulses. The total energy can stay high while each sub-pulse stays below the tissue's safety threshold.



PTP: photoacoustic twin pulse

PTP delivers high output energy as two pulses separated by a very short 80 µs pause. Splitting the pulse lowers the instantaneous peak reaching surrounding tissue. Compared with a single pulse of equal energy, it is designed to reduce discomfort and the risk of hypopigmentation and PIH, and to support collagen regeneration.



Multi-pulse

Multi-pulse mode goes a step further than PTP and divides each pulse into three shorter sub-pulses fired at short intervals. This delivers high peak energy to melanosomes with greater precision while keeping side effects and discomfort to a minimum.



Typical uses: deep and stubborn pigment such as chloasma (melasma), birthmarks and nevus of Ota.



Birthmark Before · After



Freckles Before · After



Age spots Before · After

Schematic diagram. Representative images; individual results vary.

REJUVENATION

Long pulse mode

Long pulse mode switches from photoacoustic to gentle photothermal energy for overall skin quality. By stimulating collagen production it helps create a brighter, firmer and more even-looking complexion.



Used for

- Brightening
- Firming
- Even tone
- Pore refinement
- Fine wrinkles
- Fine red vessels

One system, three treatment areas



Representative image. Individual results vary.

Tattoo removal

Body tattoos in multiple colors, cosmetic eyebrow and eyeliner tattoos, and red inks.

Pigmented lesions

Freckles, age spots, café-au-lait spots, nevus, nevus of Ota, melasma/chloasma and birthmarks.

Skin rejuvenation

Carbon peel, toning and brightening, fine lines and wrinkles, enlarged pores, acne scars and uneven texture (with the fractional microlens handpiece).

> Most tattoos fade gradually over a series of sessions as the body clears the treated ink. The number of sessions depends on ink colors, depth, location and the patient's skin.

TECHNICAL DATA

Specifications

Laser type	Picosecond Nd:YAG
Standard wavelengths	1064 nm, 532 nm, 585 nm, 650 nm, 755 nm
Maximum energy	1500 mJ (1064 nm) 800 mJ (532 nm)
Peak power	1.33 GW (1064 nm) 0.67 GW (532 nm)
Pulse width	450 ps
Repetition rate	1–10 Hz
Spot size	2–10 mm, adjustable zoom
Beam profile	Flat-top (top hat)
Operating modes	Pico, PTP, Multi-pulse, Long pulse
Beam delivery	Precision articulated arm
Aiming beam	655 nm red diode
Fractional handpiece	Microlens-array, included standard
Dimensions (W × D × H)	23 × 27 × 43 in



Sales, service & support from MD Lasers

We buy, sell, refurbish and service aesthetic lasers.

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Specifications subject to change without notice. Regulatory status and indications vary by market; contact MD Lasers for details.