Commercial Picosecond Laser Machine Brochure Download - Official Clinical Overview & Technical Datasheet

CLINICAL ARCHITECTURE & PERFORMANCE REFERENCE MANUAL: COMMERCIAL PICOSECOND LASER MACHINE

EXECUTIVE SUMMARY

This document serves as the definitive clinical and technical reference for the Commercial Picosecond Laser Machine, a state-of-the-art dermatological platform engineered for the precise treatment of benign pigmented lesions, aesthetic skin rejuvenation, and tattoo removal. Leveraging advanced photomechanical impact via ultra-short pulse durations, this system delivers high peak power with minimized thermal damage to surrounding tissues, establishing a new standard of safety and efficacy in medical aesthetics. This datasheet provides a comprehensive overview of the device's clinical architecture, treatment capabilities, technical specifications, and regulatory compliance.

CLINICAL ARCHITECTURE & DESIGN

The system is built upon a modular architecture that integrates a high-stability solid-state laser source with an advanced beam delivery system. The core optical engine is designed to generate consistent, high-energy picosecond pulses across multiple wavelengths, allowing for versatile treatment protocols. The chassis is engineered for optimal thermal management and acoustic dampening, ensuring reliable performance in high-volume clinical environments. The user interface features a high-resolution, intuitive touchscreen that provides clinicians with precise control over all treatment parameters, including fluence, repetition rate, and spot size, while housing a library of pre-set protocols for various indications and skin types.

KEY INDICATIONS & CAPABILITIES

- Tattoo Removal: Effective clearance of professional and amateur tattoos with multicolored pigments through selective photomechanical disruption.
- Pigmented Lesions: Treatment of benign epidermal and dermal pigmented lesions, including solar lentigines, ephelides, and café-au-lait macules.
- Skin Rejuvenation: Induction of dermal remodeling and neocollagenesis for the improvement of fine lines, wrinkles, and skin texture.
- Acne Scars: Attenuation of atrophic acne scars through controlled dermal wound healing response.

COMPLIANCE & STANDARDS

The Commercial Picosecond Laser Machine is manufactured in accordance with rigorous international quality and safety standards. The device complies with applicable requirements of the Medical Device Regulation (MDR) and has received clearance from the U.S. Food and Drug Administration (FDA) for specific indications. It adheres to the essential requirements of IEC 60601-1 for medical electrical equipment and IEC 60825-1 for laser safety, ensuring a secure and reliable operation for both the patient and the practitioner. The system is classified as a Class 4 laser product under the FDA's Center for Devices and Radiological Health (CDRH) guidelines.

TECHNICAL SPECIFICATIONS

The device is engineered for high-efficiency energy delivery with precision and repeatability. The following table provides a detailed overview of the system's core operational metrics.

Parameter	**Specification**
Laser Type / Wavelength	Solid-State / 532nm, 755nm, 1064nm
Pulse Duration	≤ 450 ps (FWHM)
Max Output Energy	Up to 600 mJ @ 1064nm
Repetition Rate	1 Hz to 10 Hz (Adjustable)
Spot Size	2 mm to 8 mm (Variable, Multi-Spot Handpiece)
Cooling System	Advanced Dual-Cycle Chiller & Contact Sapphire Cooling
Display	15.6 Inch High-Resolution Color Touchscreen
Dimensions (W x D x H)	~ 450 mm x 650 mm x 1100 mm
Weight	~ 85 kg
Power Requirements	110-240 VAC, 50/60 Hz, 15 A

CLINICAL PROTOCOLS

Standard treatment protocols are designed to maximize therapeutic outcomes while prioritizing patient comfort and safety. Pre-treatment assessment includes a comprehensive skin type evaluation (Fitzpatrick Skin Type I-VI) and a test spot procedure to determine the optimal treatment parameters. The treatment zone is prepared by cleansing and, if necessary, applying a topical anesthetic. During the procedure, the handpiece is applied perpendicularly to the skin surface with a uniform motion. Post-treatment care typically includes the application of a cold compress and a topical antibiotic or soothing ointment to aid in epidermal recovery. Clinicians are advised to monitor for transient erythema, edema, or purpura, which are expected and resolve spontaneously. A series of treatments spaced 4 to 8 weeks apart is generally recommended for achieving optimal clearance or rejuvenation.