CO2 Star - Official Clinical Overview & Datasheet

EXECUTIVE SUMMARY

The CO2 Star is a next-generation fractional carbon dioxide laser system engineered for premium dermatology clinics and medical spas seeking high-efficacy resurfacing with minimized patient downtime. Clinically positioned between ablative and non-ablative modalities, the CO2 Star delivers deep dermal coagulation and epidermal micro-ablation, driving robust neocollagenesis while preserving treatment comfort. Its primary value proposition centers on painless operation via integrated epidermal cooling, combined with a high ROI through low consumables cost and exceptional treatment versatility.

Designed for high-volume aesthetic practices, the CO2 Star addresses key market demands for safer, faster, and more predictable outcomes in skin rejuvenation, scar revision, and rhytide reduction. By leveraging proprietary pulse shaping and a sealed CO2 laser cartridge, the system achieves consistent fluence delivery with minimal maintenance, enabling clinics to expand their service portfolio while reducing per-procedure overhead. The device is CE marked and ISO 13485 certified, ensuring regulatory readiness in over 50 countries.

CLINICAL ARCHITECTURE & DESIGN

The CO2 Star features a robust all-metal RF-excited laser cavity with a long-life sealed CO2 cartridge, eliminating routine gas refills and reducing total cost of ownership. The optical train incorporates gold-plated mirrors and a ZnSe focusing lens, ensuring >98% transmission efficiency at the 10,600nm wavelength. A dual-channel water pump system maintains thermal stability across the resonator and handpiece, enabling continuous operation at 60W peak power without performance degradation.

The integrated epidermal cooling mechanism employs a sapphire contact tip with dynamic temperature regulation (0°C to +5°C), coupled with a forced-air vortex cooler. This dual-stage cooling allows clinicians to perform high-fluence treatments (up to 50 mJ/microbeam) with significantly reduced pain perception

and minimal erythema. The handpiece contains a galvanometric scanner for adjustable spot size (0.5mm to 1.2mm) and pattern density (5% to 95%), all controlled via a 10.4-inch capacitive touchscreen interface.

KEY INDICATIONS & CAPABILITIES

- Fractional Skin Resurfacing: Deep dermal coagulation columns (up to 1.2mm) trigger neocollagenesis, improving moderate-to-severe photodamage, rhytides, and atrophic scars with single-session visible results.
- Scar Revision (Acne & Surgical): Customizable ablation depth and density settings treat ice-pick, boxcar, and hypertrophic scars. The STAR Mode automatically adjusts fluence based on scar topography feedback.
- Pigmented Lesion Clearance: High-absorption at 10,600nm vaporizes epidermal melasma, seborrheic keratosis, and lentigines without lateral thermal damage, reducing post-inflammatory hyperpigmentation risk.
- Vaginal Rejuvenation (Off-label Use): Specialized handpiece and low-fluence protocol enable non-ablative vaginal tightening, addressing stress incontinence and laxity with four weekly sessions.
- Smart UI with Treatment Protocols: Pre-programmed algorithms for 14 clinical indications (e.g., perioral wrinkles, surgical scars) with real-time fluence adjustment and patient database integration.

COMPLIANCE & STANDARDS

The CO2 Star is manufactured in an ISO 13485:2016 certified facility and complies with Medical CE (MDD 93/42/EEC, Class IIb). It meets IEC 60825-1:2014 safety requirements for laser products and has undergone 60601-2-22 electromechanical testing. The device is FDA 510(k) cleared for incision, ablation, vaporization, and coagulation of soft tissue in dermatology and plastic surgery. Additional certifications include RoHS 3 compliance and CB Scheme acceptance for global distribution.

TECHNICAL SPECIFICATIONS

The following parameters define the operational envelope and clinical performance characteristics of the CO2 Star system. All values are measured under factory calibration conditions (23°C ± 2°C, 40-60% RH).

Parameter	**Specification**
Laser Type / Wavelength	Sealed CO2 / 10,600 nm
Maximum Power	60W (CW), 30W (Pulsed)
Spot Size (Scan Field)	0.5 mm to 12.0 mm diameter (galvo-controlled)
Fluence per Microbeam	5 mJ to 150 mJ
Treatment Modes	Continuous, Pulsed, UltraPulse, STAR

	Fractional
Cooling System	Sapphire contact TEC + forced air vortex (0°C to +5°C)
Dimensions (W x D x H)	380 mm x 520 mm x 980 mm
Weight	58 kg (128 lbs)
Power Supply	100-240 VAC, 50/60 Hz, 800 VA