

Thermal RF Skin Tightening System - Official Clinical Overview & Technical Datasheet

EXECUTIVE SUMMARY

The Thermal RF Skin Tightening System represents a paradigm shift in non-invasive dermal remodeling. Utilizing Monopolar Capacitive Radiofrequency (RF) energy, the device induces controlled volumetric heating within the deep dermis and subcutaneous fibrous septae. This process stimulates neocollagenesis and elastin reorganization without violating the epidermal barrier. Designed for high-throughput medical spas and dermatology clinics, the platform delivers consistent thermal coagulation zones at precise depths, ensuring predictable clinical outcomes for skin laxity.



CLINICAL ARCHITECTURE & DESIGN

The system operates on a closed-loop impedance feedback architecture. A dedicated Return Electrode (dispersive pad) completes the circuit, allowing deep penetration (up to 15-20mm) without surface overheating. The handpiece integrates an active skin surface thermistor that modulates RF power delivery in real-time (100ms response cycle). Key architectural features include:

- THERMAL REGULATION: Automatic power cut-off when epidermal temperature exceeds 42°C.
- PULSE MODULATION: Selectable Continuous, Pulsed, or Fractionated RF modes.
- PATIENT RETURN MONITOR: Continuous contact quality monitoring for safety.

KEY INDICATIONS & CAPABILITIES

FDA-cleared and CE-marked indications include:

- Mild to moderate facial and periorbital wrinkles (Glabellar, Crow's feet).
- Jawline definition and submental skin laxity (non-surgical neck lift).
- Abdominal, arm, and thigh skin tightening post-weight loss.
- Acoustic cavitation adjunct for circumferential reduction protocols.

COMPLIANCE & STANDARDS

- Medical Device Class: IIa (EU MDR 2017/745) / II (FDA 21 CFR 878.4810).
- Electrical Safety: IEC 60601-1, IEC 60601-2-2 (RF electrosurgical compliance).
- Electromagnetic Compatibility: IEC 60601-1-2, Edition 4.1.
- Biocompatibility: ISO 10993-5 for handpiece tip materials.

TECHNICAL SPECIFICATIONS

Parameter	Specification
RF Technology	Monopolar Capacitive 1.0 MHz
Output Power	10W - 150W (Continuously adjustable)
Peak-to-Peak Voltage	150V - 400V
Impedance Range	50 - 600 Ohms (Auto-matched)
Treatment Depth	2.5mm (Superficial) / 4.5mm (Deep) / 7.5mm (X-Deep)
Skin Cooling	Sapphire Contact Cooling (-2 ° C to +10°C adjustable)
Display	10.4" Medical-Grade Touchscreen (1280x800)
Dimensions (WxDxH)	380mm x 480mm x 1050mm
Weight	32 kg (71 lbs)
Power Supply	AC 100-240V, 50/60Hz, 600VA

CLINICAL PROTOCOLS

PRE-TREATMENT: Cleanse skin, remove all metal jewelry. Apply ultrasonic gel coupling medium. Place return electrode on patient's sacrum or mid-back.

TREATMENT PARAMETERS (Initial session):

- Energy: 80-120J/cm³ (Depth 2.5mm mode) or 150-200J/cm³ (Depth 4.5mm mode).
- Temperature target: 40-42 ° C epidermal, 52-55 ° C dermal (measured via infrared).
- Pulse duration: 300ms to 800ms.
- Passes: 3-5 passes per anatomical area, each overlapping 50%.

POST-TREATMENT: Apply cooling mask for 5 minutes. No downtime expected.

Protocol schedule: 4 sessions, 3 weeks apart, with maintenance every 6 months.

