

Micro-Needle Fractional RF Workstation - Official Clinical Overview & Technical  
Datasheet

MICRO-NEEDLE FRACTIONAL RF WORKSTATION

OFFICIAL CLINICAL OVERVIEW & TECHNICAL DATASHEET

EXECUTIVE SUMMARY

This document provides a comprehensive technical and clinical overview of the Micro-Needle Fractional RF Workstation, a premium medical aesthetic device engineered for dermal remodeling, scar revision, and rhytide reduction. By combining insulated micro-needles with bipolar fractional radiofrequency energy, the system delivers targeted volumetric heating to the reticular dermis while rigorously protecting the epidermis. This next-generation platform is indicated for all Fitzpatrick skin types (I-VI) with minimal downtime and exceptional safety margins.



## CLINICAL ARCHITECTURE & DESIGN

The system employs a closed-loop impedance monitoring algorithm that adjusts RF energy delivery in real-time based on tissue resistance. The disposable tip array utilizes gold-plated, electrically insulated micro-needles ranging from 0.3mm to 3.0mm in depth, deployable in both stamping and continuous motion modes. A high-performance peristaltic pump delivers active cooling fluid to the handpiece contact plate, maintaining epidermal surface temperatures below 38°C throughout the pulse train.

## KEY INDICATIONS & CAPABILITIES

- Atrophic acne scars (rolling, boxcar, icepick)
- Surgical and traumatic scars

- Periorbital and perioral rhytides
- Striae distensae (alba and rubra)
- Enlarged facial pores and textural irregularities
- Skin laxity (jowls, submental, neck, abdomen, and thighs)

## COMPLIANCE & STANDARDS

The Micro-Needle Fractional RF Workstation complies with international medical device regulations. It carries CE marking under MDD 93/42/EEC (Class IIb) and has received FDA 510(k) clearance for rhytide treatment and acne scar improvement. Safety systems include a redundant needle retraction mechanism, skin contact impedance verification, and automatic power cutoff upon tip removal.

## TECHNICAL SPECIFICATIONS

Parameter	Specification
RF Frequency	1.0 MHz (Bipolar)
Output Power (Max)	25 Watts (continuous adjust, 0.5W increments)
Needle Depth Range	0.3mm - 3.0mm (0.1mm step)
Needle Count per Tip	49 needles (7x7 square array) or 25

	needles (5x5)
Needle Material	Gold-plated stainless steel, electrically insulated shaft
Exposed Tip Length	0.2mm - 0.3mm (active energy delivery)
Pulse Duration	30ms - 500ms (programmable)
Cooling System	TEC + Sapphire contact plate + peristaltic fluid circulation + fan
Cooling Temp Range	0°C to 10°C (adjustable)
Skin Impedance Check	Automatic, 50-2500 ohms range with safety cutoff
User Interface	10.4 inch capacitive touchscreen, treatment preset library
Dimensions (W x D x H)	430mm x 420mm x 1050mm (console)
Weight	Approx. 32 kg (70.5 lbs)
Power Supply	AC 100-240V, 50/60Hz, 400VA

## CLINICAL PROTOCOLS

Standard treatment protocol for facial scars:

- Skin preparation: Topical anesthetic 30-45 minutes

- Needle depth: 1.5mm - 2.5mm (adjust per scar depth)
- RF power: 12.5W - 20W
- Pulse duration: 100ms - 200ms
- Passes: 1-2 passes with 10-15% overlap
- Cooling flow rate: 8-12 mL/min
- Final endpoint: Mild erythema and pinpoint bleeding ( $\leq 1$ mm)

Interval between sessions: 4-6 weeks. Recommended series: 3-4 treatments for optimal collagen neogenesis (up to 40% increase at 6 months post-final session).

