

## Clinical Architecture & Performance Reference Manual: 4 Handles EMS Body Contouring Console

### DEVICE ROLE IN AESTHETIC MEDICINE

The 4 Handles EMS (Electrical Muscle Stimulation) Body Contouring Console represents a paradigm shift in non-invasive body shaping. Classified as a high-performance neuromuscular electrostimulation platform, this device is engineered for simultaneous multi-area muscle definition, fat metabolism activation, and deep tissue recovery. Unlike single-zone systems, the quad-handpiece architecture allows clinicians to treat bilateral zones (abdomen + flanks or glutes + thighs) concurrently, reducing total procedure time by up to 60% while maintaining supra-maximal contraction intensity.



### ADVANCED SAPPHIRE COOLING & SIGNAL ARCHITECTURE

The platform integrates a proprietary synchronized EMS waveform generator capable of delivering 1 Hz to 150 Hz frequency sweeps with independent amplitude control per handle. Each handpiece contains a medical-grade stainless steel electrode array coupled with a thermoelectric (TEC) sapphire cooling interface, maintaining epidermal temperature at 15-18 ° C during maximal motor recruitment (up to 120 mA peak current). This dual-layer thermal protection eliminates gel burns and allows painless 45-minute sessions. The system dynamically monitors skin impedance (50-500 kOhm range) and automatically adjusts pulse width (150 µs to 450 µs) to ensure supramaximal contractions without tetanic lock.

#### INDICATION RANGE & CLINICAL CAPABILITIES

- Primary: Abdominal muscle toning (rectus abdominis & transverse abdominis)
- Secondary: Gluteal augmentation & lifting, thigh definition (quadriceps/hamstrings)
- Tertiary: Post-partum diastasis recti rehabilitation, lymphatic drainage adjuvant
- Adjunctive: Post-liposuction skin retraction & EMS-based metabolic potentiation

Each channel operates independently, allowing protocols such as "Russian stimulation" (2.5 kHz carrier frequency modulated at 50 Hz) for strength or "TENS-like" (low-frequency, 2-10 Hz) for pain gating. The device supports up to 4 patients sequentially or 2 patients simultaneously in a dual-zone configuration.

#### CORE PARAMETERS & VERIFIED SPECIFICATIONS

Parameter	Specification
Number of Handpieces	4 (independently controlled)
Output Waveform	Biphasic asymmetric rectangular pulse, 1-150 Hz
Max Output Current (per channel)	120 mA peak into 500 ohm load
Pulse Width	150 $\mu$ s - 450 $\mu$ s, automatically adaptive
Carrier Frequency (Russian mode)	2.5 kHz (selectable)
Cooling System	TEC + Sapphire glass contact plate + forced air (each handle)
Epidermal Temperature	15-18°C (59-64°F) steady-state
Safety Certifications	CE MDR Class IIa, FDA 510(k), IEC 60601-1, IEC 60601-2-10
Power Supply	100-240V AC, 50/60 Hz, 350W max

Dimensions (Console)	42 x 48 x 110 cm (W x D x H)
Screen	10.1" capacitive touch, 1280x800
Treatment Timer	1-60 min per channel, independent
Electrode Pad Durability	100 uses per pad set (disposable)

## REGULATORY COMPLIANCE & HANDPIECE DURABILITY

The console complies with IEC 60601-1 (medical electrical equipment safety), IEC 60601-2-10 (particular requirements for nerve and muscle stimulators), and holds CE (MDR Class IIa) and FDA 510(k) clearance as an over-the-counter muscle stimulator for aesthetic use. Handpieces are IP67-rated against fluid ingress, validated for >500 autoclave cycles (134 ° C) or 1,000+ uses with disposable electrode pads. The system includes a real-time contact quality indicator per handle; if any electrode loses 20% contact, output is halted and a visual alarm triggers. All 4 handles can be hot-swapped during a paused treatment without system reboot.

## RECOMMENDED CLINICAL WORKFLOWS

Phase 1 (Prep): Clean skin, apply conductive gel or pre-gelled pads. Attach up to 4 handles using elastic straps. Phase 2 (Treatment): Initiate 10-minute warm-up

(30 Hz, 40 mA), followed by 25-minute supramaximal phase (50-70 Hz, 70-110 mA adjusted for tolerance), end with 10-minute cool-down (10 Hz, 25 mA). Phase 3 (Post): Remove handles, clean with alcohol wipes. Document contraction visual analog scale (VAS). Recommended protocol: 2 sessions/week for 8 weeks, then monthly maintenance. Maximum simultaneous operation: 4 handles on one patient (abdomen 2, flanks 2) or 2+2 on two patients. Energy per pulse: 0.5-4.5 mJ dependent on impedance.

