



# FMwand<sup>®</sup>

A precise hemostatic dissection instrument that cuts and coagulates soft tissue without passing electrical current through the patient



FMwand is an intelligent thermal dissection instrument that uses ferromagnetic technology to precisely cut and coagulate with a fraction of the tissue injury compared to other dissection technologies, without passing any electrical current through the patient.



Laser-like precision  
with tactile feedback



Minimal thermal injury,  
safe to use near  
nerves and vessels



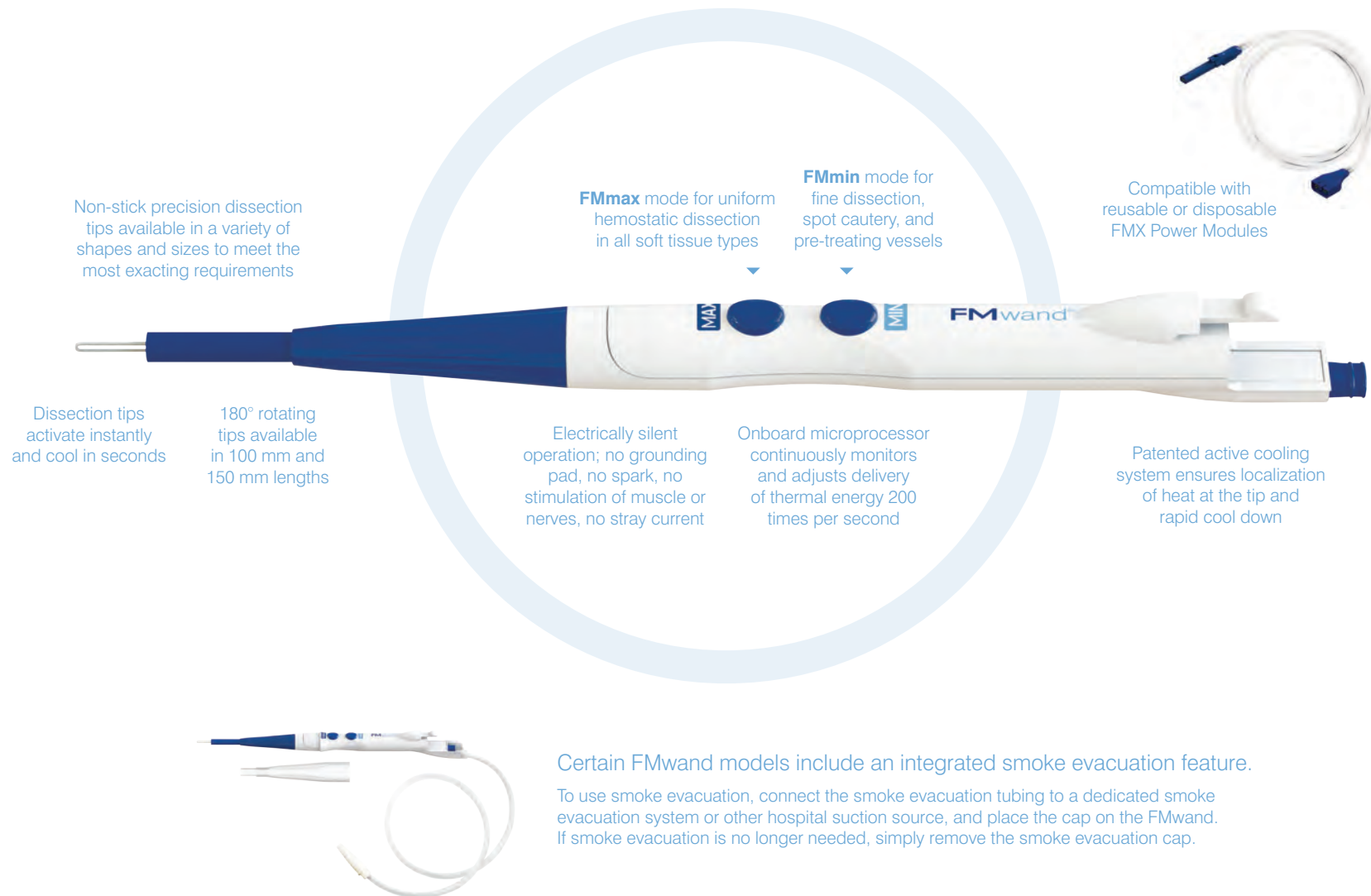
Safe, electrically silent  
operation, no grounding  
pad, no stray current

FMwand is a component of the **FMX™** Ferromagnetic Surgical System



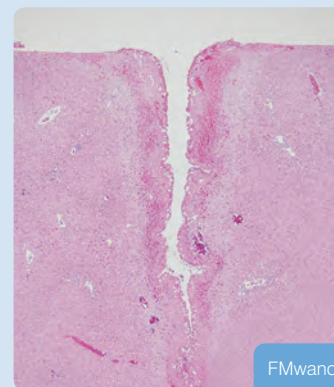
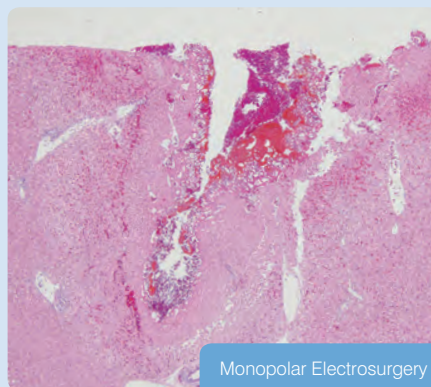
# “The FMwand demonstrated great precision, good hemostasis, and minimal tissue damage.”

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## Laser-like Precision

- ▶ Tactile control with minimal tissue drag
- ▶ Predictable, char-free layer-by-layer dissection with optimal visualization of tissue planes
- ▶ Precise dissection in all soft tissues, including muscle and adipose, even in wet environments
- ▶ Effective dissection through dense adhesions and tumors
- ▶ *Safe to use near nerves, vessels, and all delicate organs, including the heart*



### Incision Margins:

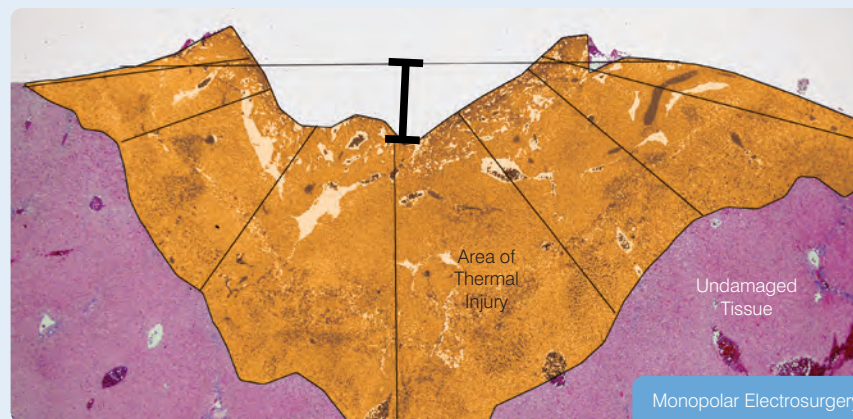
Histologic analysis of comparative incisions in rabbit liver indicates that monopolar electrosurgery (left - Coag 40 Watts) produces extreme variability, while the FMwand (right - 60 Watts) produces consistently uniform margins.

## Minimal Thermal Injury

- ▶ Imparts substantially less collateral thermal injury than monopolar electrosurgery
- ▶ As few as 80 microns (0.08 mm) of thermal spread
- ▶ Clear margins for reliable pathology specimens
- ▶ *Surgeons note less unintended damage to tissue, leading to reduced use of blood products during surgery, and less post-operative edema and drainage*

Histological analysis concluded that incisions made using the FMwand resulted in **as little as 1/10th the amount of thermal injury** compared to incisions made with monopolar electrosurgery.

**Breadth of Thermal Injury:** Comparative incisions were made in pig liver at equal depth using both monopolar electrosurgery (left - Coag 40 Watts) and the FMwand (right - 60 Watts). Histology data were analyzed to measure the exact depth of incision (thick black line), the area of collateral thermal injury (orange area), and lateral thermal spread shown in the table below.



### FMwand Lateral Thermal Spread

<b>Brain:</b>	80 microns (0.08 mm)
<b>Liver:</b>	100 microns (0.10 mm)
<b>Muscle:</b>	200 microns (0.20 mm)

Monopolar electrosurgery routinely imparts over 1,500 microns (1.5 mm) of lateral thermal spread in various tissue types.



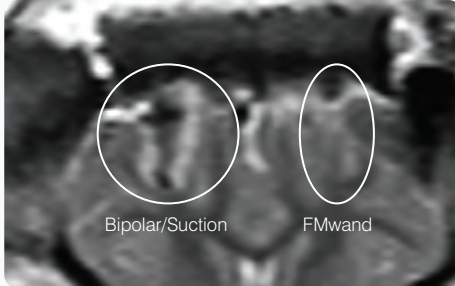
## Electrical Silence

- ▶ No electrical current passes through tissue
- ▶ No grounding pad
- ▶ No spark, arcing, or stray current
- ▶ *Surgeons and anesthesiologists report no generation of dysrhythmia, and no interference with electrophysiological monitoring, ultrasound imaging, cochlear implants, or CIEDs*



**Electromagnetic Interference:** The ECG chart shown above shows electromagnetic interference caused when using monopolar electrosurgery, and the bottom chart shows no interference when using the FMwand during the same surgery.

## Improved Patient Outcomes

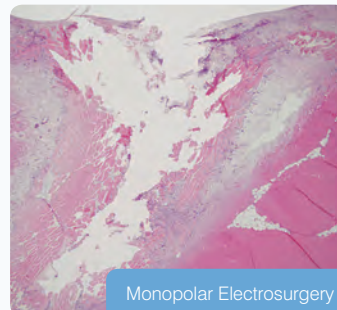


**Post-Operative Indicators:** To test the impact of minimized collateral tissue damage on a body's natural healing response, 3 pigs underwent bifrontalparietal craniotomies with 2 cm linear incisions through cortex into white matter at a depth of 8 mm using both the traditional bipolar forcep/suction dissection method (left) and the FMwand (right). MR imaging was completed 1.5 hours post procedure to measure the edema depth surrounding the incision.

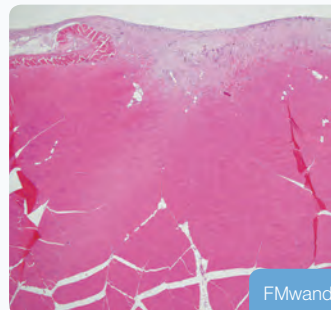
*The incision made by the FMwand demonstrated about 1/2 the edema depth in brain tissue compared to the incision made with bipolar/suction.*

**Healing Studies:** Incisions were made in rabbit paraspinous muscle using monopolar electrosurgery (left) and the FMwand (right) to compare healing characteristics. Histologic analysis was performed 14 days later.

*After 14 days, the incision made with the FMwand exhibited evidence of markedly superior healing compared to the incision made with monopolar electrosurgery.*



Monopolar Electrosurgery



FMwand

## FMX™ Ferromagnetic Surgical System

FMX Generator features a patented software control algorithm that continuously monitors and adjusts the delivery of energy to the tissue, ensuring that the optimal amount of heat is delivered at all times. FMX Generator offers multi language support through its graphical user interface.



FMX Power Modules connect FMX surgical instruments to the generator, and intelligently manage the communication throughout the system.

FMX Surgical Instruments have been designed to bring the unique clinical benefits of ferromagnetic technology to a wide range of surgical sub-specialties.

The FMX Ferromagnetic Surgical System harnesses state-of-the-art technology to achieve unparalleled simplicity. To prepare the FMX system for use, follow these simple steps:

- 1 **Plug** the FMX Power Module into the front panel of the FMX Generator
- 2 **Snap** the power module into the back of the FMwand
- 3 **Set** the power settings on the generator and the FMwand is ready

Utilizing a single power module, multiple FMX instruments can be swapped out at any time during surgery. Simply remove the power module and snap it into any other FMX instrument. The generator remembers each instrument's previous power setting, making the instrument swap fast and seamless.





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For additional information on the advantages and safety considerations of the FMX System, please visit [domainsurgical.com](http://domainsurgical.com).  
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