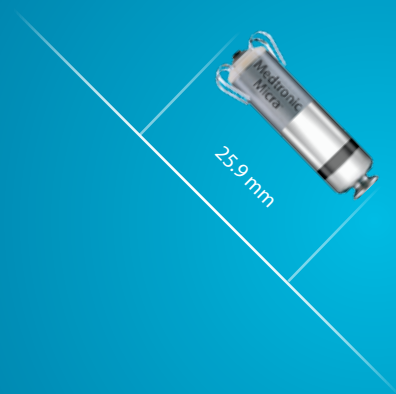




# Micra<sup>®</sup>

TRANSCATHETER PACING SYSTEM

Yes,  
this is  
actual  
size



cardiocapsule

Miniaturized • Sophisticated • Complete

# New Opportunities to:

---

## Redefine the patient experience

### Out of sight, out of mind.

- Potential to redefine the patient experience and increase pacemaker patient satisfaction
- No chest scar
- No bump
- No visible or physical reminder of the pacemaker under the skin
- Fewer post-implant activity restrictions

## Reduce complications associated with traditional pacing technology<sup>1</sup>

### Pocket Related Complications

- Infection
- Hematoma
- Erosion

### Lead Related Complications

- Fractures
- Insulation breaches
- Venous thrombosis and obstruction
- Tricuspid regurgitation





# Introducing Micra<sup>®</sup>

TRANSCATHETER PACING SYSTEM (TPS)

## The world's smallest pacemaker<sup>2</sup>

### Miniaturized

93% smaller than modern-day pacemakers<sup>3</sup>

- Completely self contained within the heart, no leads required
- New ultra low power circuit design delivers a 10-year longevity<sup>4</sup>

### Sophisticated

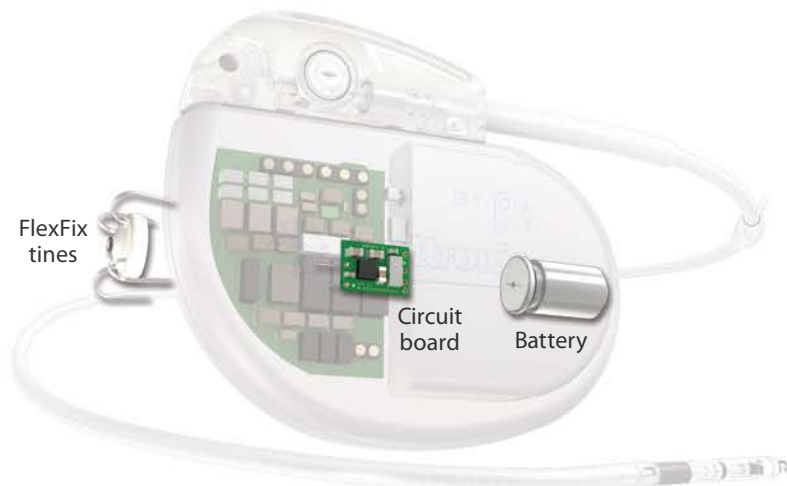
Engineered for a minimally invasive approach

- Atraumatic FlexFix™ nitinol tines provide secure capsule placement<sup>5,6</sup>
- Integrated delivery system facilitates a streamlined implant procedure via a percutaneous, femoral approach

### Complete

The only transcatheter pacing system to offer a complete feature set<sup>4,7</sup>

- 10-year battery longevity\*<sup>4</sup>
- MRI SureScan®, which allows the patient to be safely scanned using either a 1.5 T or 3 T full body MRI<sup>4</sup>
- Accelerometer based rate response
- CareLink® 2090 Programmer compatible; no accessories required
- Capture Management®
- CareLink compatibility – currently not available



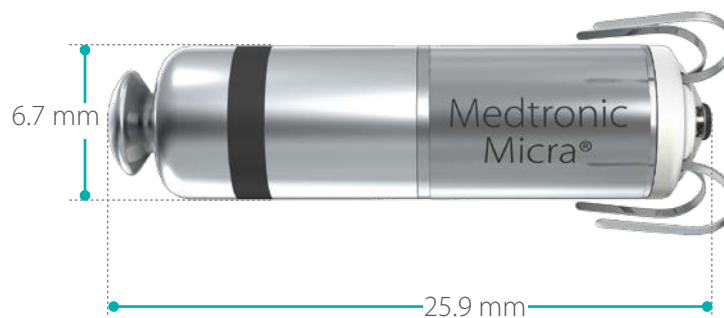
Miniaturized · Sophisticated · Complete

\* 100% VP, 1.5 V, 60 bpm, 500 ohms, 0.24 ms.

# Micra Cardiocapsule specifications<sup>4</sup>

## CAPSULE

Parameter	Micra
Pacing Mode	VVIR
Mass	2.0 g
Cathode Surface Area	2.5 mm <sup>2</sup>
Anode Surface Area	22 mm <sup>2</sup>
Volume	0.8 cc



## ANODE

- Bipolar pacing
- Electrode surface and spacing are comparable to 4074 CapSure Sense® pacing lead



## CATHODE

- Steroid eluting electrode
- Pacing functionality comparable to 4074 CapSure Sense pacing lead
- Separated from FlexFix tines to ensure optimal contact with myocardium

## FlexFix Nitinol Tines

Provides atraumatic and secure capsule placement<sup>5,6</sup>

- Multidimensional redundancy: two tines have 15 times the holding force necessary to hold the device in place<sup>6</sup>
- Designed to minimize tissue damage during deployment, repositioning, and retrieval<sup>5</sup>
- Optimal electrode tissue interface allows for low and stable chronic thresholds<sup>8</sup>



## Device life cycle management options

- Micra is designed to be programmed off at the end of service and can be differentiated from additional Micra devices, if subsequent devices are implanted
- The Micra design incorporates a proximal retrieval feature to enable acute retrieval
  - Successful retrieval demonstrated after 28 months in chronic animal models<sup>9</sup>

### PROXIMAL RETRIEVAL FEATURE

Designed to facilitate the:

- Recapture and repositioning of the pacing capsule during implant
- Retrieval of the pacing capsule post-implant



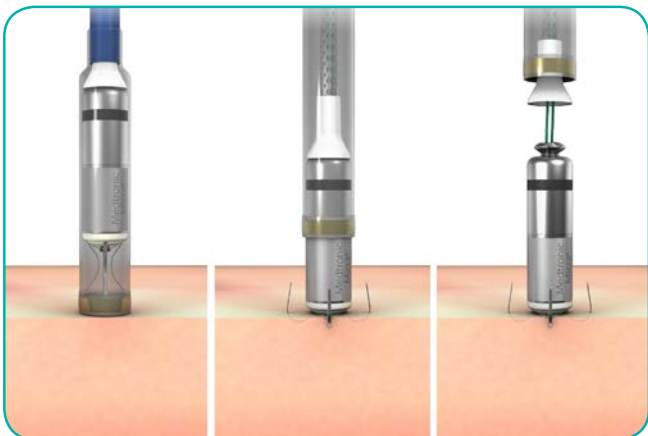
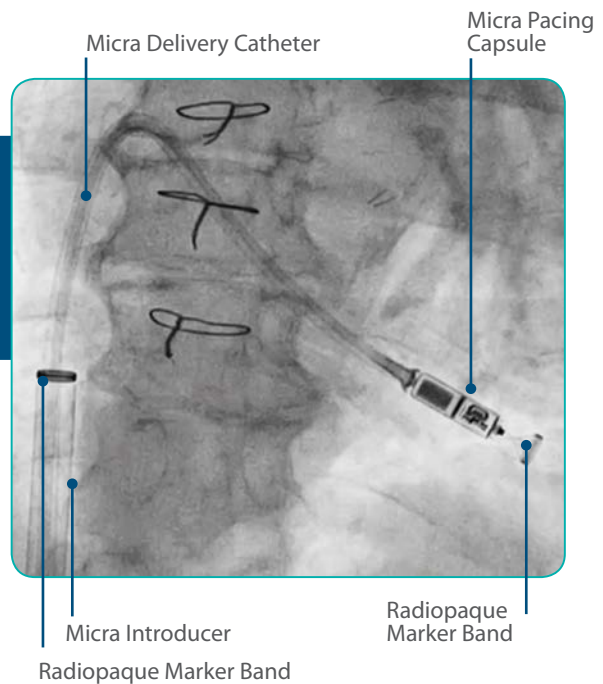


# Micra Delivery Catheter

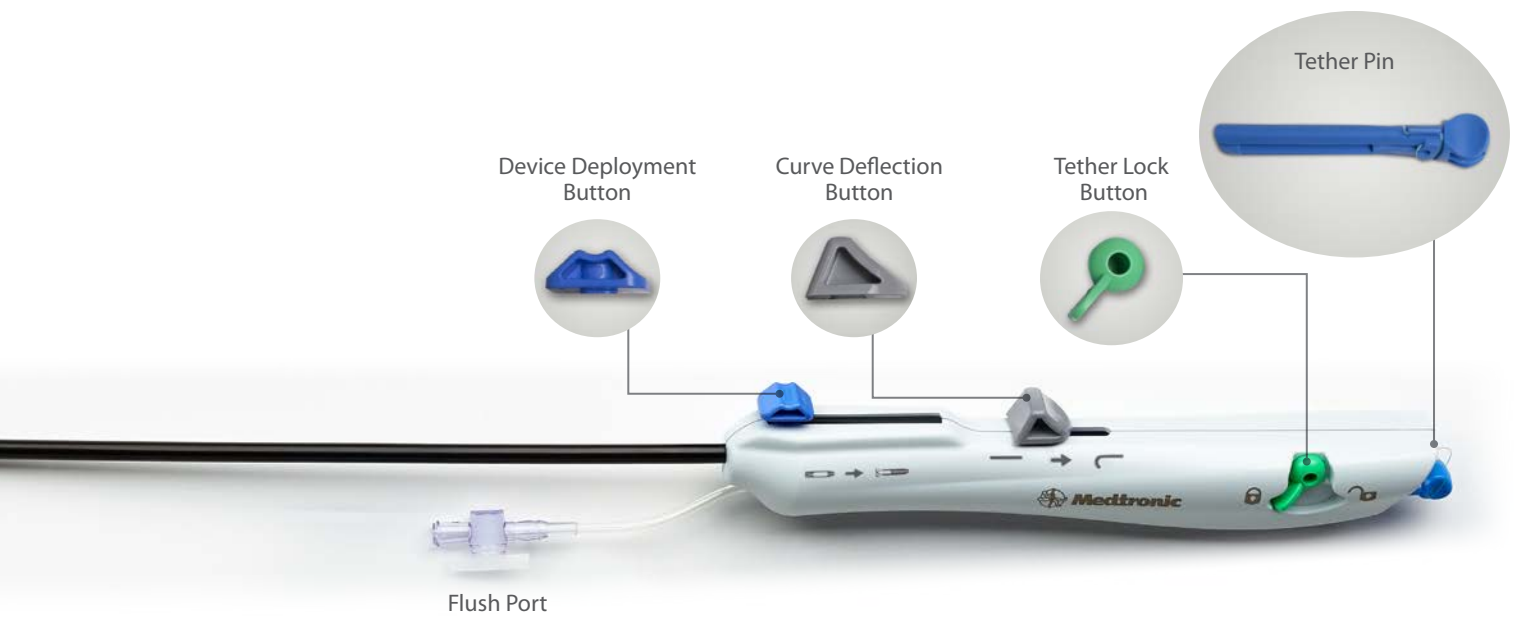
Integrated delivery system facilitates a streamlined implant procedure

- 105 cm long catheter system with a handle that controls deflection and deployment of the Micra pacing capsule<sup>4</sup>

Delivery system provides visual feedback when adequate tip pressure has been achieved and retracts during deployment<sup>4</sup>.



Precise one-step deployment facilitates consistent capsule placement<sup>4</sup>.

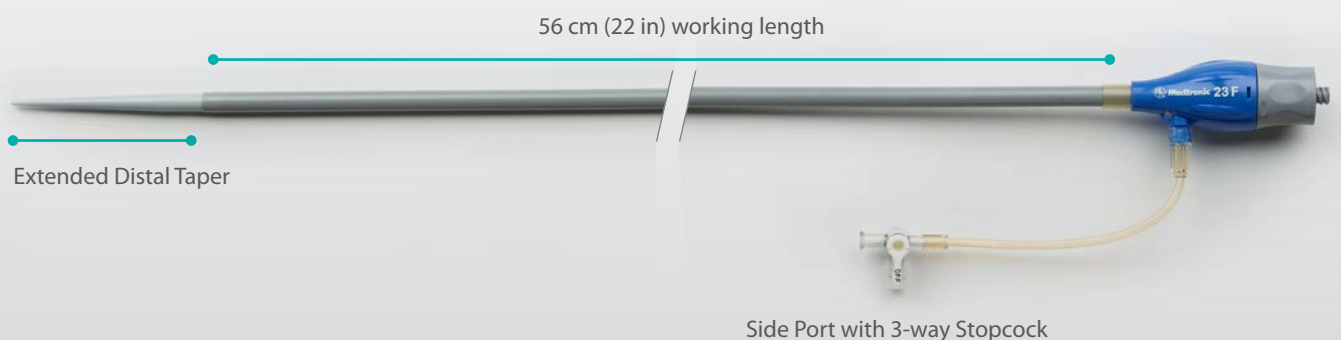


## Micra Introducer

Lubricious hydrophilic coating facilitates smooth vessel navigation

### Introducer features

- 23 Fr inner diameter (27 Fr outer diameter)
- Hydrophilic coated sheath
- Silicone oil coated dilator tip



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### Brief Statement

See the device manual for detailed information regarding the implant procedure, indications, contraindications, warnings, precautions, and potential adverse events.

### References

- <sup>1</sup> Ritter P, et al. The rationale and design of the Micra Transcatheter Pacing Study: safety and efficacy of a novel miniaturized pacemaker. *Europace*. April 7, 2015.
- <sup>2</sup> Nippoldt, Doug; Whiting, Jon. Micra Transcatheter Pacing System: Device Volume Characterization Comparison. November 2014. Medtronic Data on File.
- <sup>3</sup> Williams, Eric; Whiting, Jon. Micra Transcatheter Pacing System Size Comparison. November 2014. Medtronic Data on File.
- <sup>4</sup> Medtronic Micra MC1VR01 Clinician Manual, November 2014.
- <sup>5</sup> Eggen, Mike. FlexFix Tine Design. April 2015. Medtronic Data on File.
- <sup>6</sup> Grubac V, Goff R, Rys K, Eggen M, Bonner M, Nikolski V. Analysis of the Micra fixation mechanism use conditions and holding energy requirements. Presented at EHRA Europace 2014 (Abstract 16-56).
- <sup>7</sup> St. Jude Medical Nanostim™ Leadless Pacemaker, Nanostim Delivery System Catheter Instructions for Use, January 2014.
- <sup>8</sup> Bonner MD, Eggen M, Hilpisch K, et al. Performance of the Medtronic Micra Transcatheter Pacemaker in a GLP Study. *Heart Rhythm*. May 2014;11(5):S19.
- <sup>9</sup> Bonner MD, Neafus N, Byrd CL, et al. Extraction of the Micra transcatheter pacemaker system. *Heart Rhythm*. May 2014;11(5):S342.

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