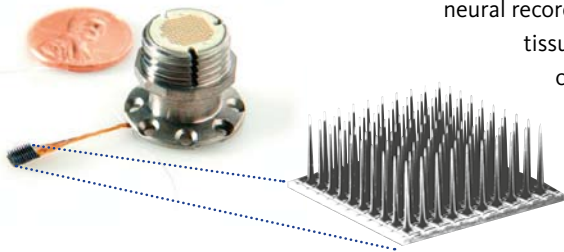


MICROELECTRODE ARRAYS

Our microelectrode arrays have become the standard for multichannel, high-density neural recordings from large populations of neurons. Over the past two decades, this patented microelectrode array technology has undergone numerous refinements and repeated validations in a variety of species (fish, birds, rodents, felines, monkeys, humans) and preparations (in vitro, in vivo). This effort delivered a proven and well-documented method to obtain stable, long-term neural recordings of action potentials (spikes) and field potentials in brain and peripheral-nerve tissue. Because the array can be wired to various connector types, researchers can choose a connector that is optimal for chronic (long term) or acute (short term) recordings from small to large subjects as well as from slice and cell-culture preparations.



Key Features

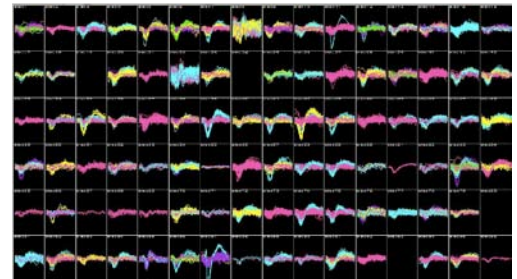
- >> Multichannel, high-density
- >> Up to 96 electrodes (cut to any configuration, e.g., 2x8, 5x8, 10x10)
- >> Customizable designs (pitch, length, hole)
- >> High-quality neural recordings immediately after implantation
- >> Floating neural interface
- >> Sterilizable
- >> Excellent acute and chronic stability
- >> Capable as stimulation sites
- >> Various connector options

Applications

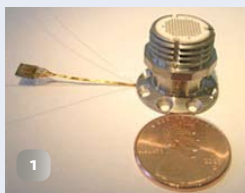
Example Applications

Electrical recording/stimulation of

- >> Motor cortex
- >> Sensory cortex
- >> Spinal cord
- >> Peripheral-nerve fibers



Isolated single units on a 96-ch microelectrode arrays 290 days after implantation in primate motor cortex



1 **CerePort array**
(chronic: large animal)



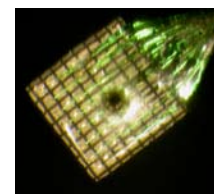
2 **ICS-96 array**
(acute: small or large animal, slice)



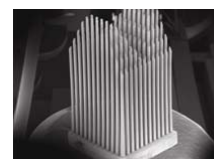
3 **Omnetics array**
(acute: small or large animal, slice)

Connector Style	Connection Dimensions	Implant Type	Skull Mount
CerePort	16.5 mm (H) 19 mm (d base) 11 mm (d body)	Chronic	Bone screws
ICS-96	18 mm (H) 17 mm (W) 37 mm (L)	Acute	Dental acrylic
Omnetics	9 mm (H) 7 mm (W) 13 mm (L)	Chronic	Dental acrylic

Custom Microelectrode Arrays



1 **The laser-drilled hole**
for drug delivery



2 **Slant**
microelectrode array

3 **Convex**
microelectrode array



Connector linked to 4 arrays (MultiPort option)

MICROELECTRODE ARRAYS

Specifications

Up to 96 active electrode channels	
Electrode-site metal options	Platinum (~400 k Ohms @ 1 kHz) Iridium Oxide (~50 k Ohms @ 1 kHz)
2 reference wires, 1 ground wire	
Parylene-C insulation	
Standard electrode lengths	0.5 – 1.5 mm
Standard electrode pitch	400 µm
MultiPort option	1–4 arrays per connector
25 µm Pt/Au lead wires between electrode array and connector	20 mm – 130 mm length Potted with medical-grade silicone elastomer



Microelectrode Array Inserter

The Blackrock pneumatically-actuated inserter is a device for implanting high-density microelectrode arrays into brain, spinal-cord, and peripheral-nerve tissue. Its high-speed, momentum-impulse insertion mechanism facilitates complete array implantation with minimal tissue damage. Adjustable insertion speed and implantation depth allows researchers to optimize device settings for different electrode configurations and tissue preparations.

Key Features

- » High-speed pneumatic insertion
- » Adjustable implantation depth
- » Minimal tissue insult
- » *In vivo* or *in vitro* preparations
- » Sterilizable

Specifications

Control Module

Pressure range	0 to 30 PSI
Controls	Power, insertion pressure, power, trigger enable, trigger
Dimensions	305 mm (L) x 305 mm (W) x 127 mm (H)
Weight	7.25 Kg
Power	110 VAC/2 A or 220 VAC/1 A

Wand

Dimensions	254 mm (L) x 8 mm (d)
Weight	71 g

Trigger/Trigger Cable:

Dimensions	76 mm (L) x 0.2 mm (d)/2 m (L)
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