

Axial Array Microelectrode



Developed and Manufactured in Collaboration with

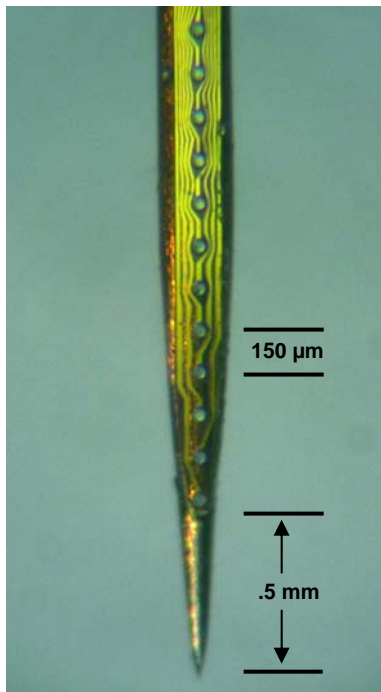
NeuroNexus Technologies

Making the connection

The Axial Array Microelectrode combines the features of traditional metal microelectrode recording (single unit recording, precise tracking through tissue, i.e.) with those of multichannel array recording (high recording site count, precise distance from site to site, i.e.). It also introduces the ability, by replacing microelectrode with a cannula and stylette, to record neural activity close to a microinjection site.

Arrays of 6 or 12 iridium recording sites of 37.5 μ m diameter (approximate impedance value of 1Meg), are built on the shank of a standard .008" (200 μ m) epoxyite-insulated metal microelectrode. On standard models, the spacing from the tip of the microelectrode to the first recording site is .5mm with recording sites spaced at either 150 μ m or 300 μ m. The working length of the microelectrode and array assembly is 67mm. The microelectrode is designed with a convex profile for added durability at the tip and comes standard with an impedance of 1Meg, set with our D.ZAP method, for improved recording and durability properties.

Guide Tubes (23ga.XTW: .025"/.020") are available in standard 45mm working lengths (other lengths may be specified) with beveled or straight tips. The guide tube shafts can be insulated with epoxyite which allows them to be used as a reference electrode in a differential recording situation, macro stimulating electrode, or grounded. A locking mechanism is designed into the collar to keep the Axial Array Microelectrode in place once target is reached, or to facilitate positioning over long distances.



The Axial Array Microelectrode can be mounted directly in either FHC's Hydraulic Probe Drive, or in a standard stereotaxic frame electrode holder. Adapters are available for other positioners. Signals from all recording sites and the microelectrode are routed through a micro connector that fits most common preamps and headstages.

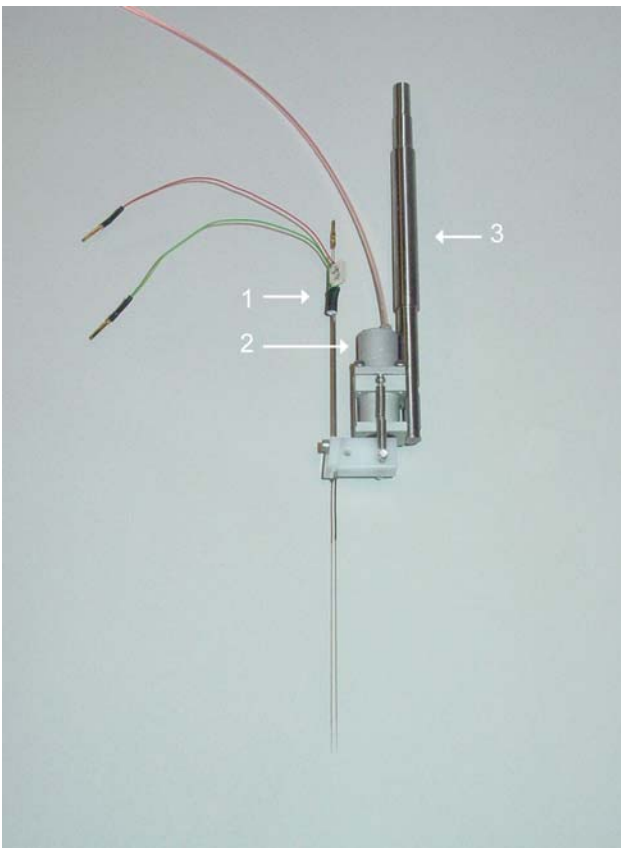
FEATURES:

- ◆ Design combines traditional metal microelectrode recording with multichannel array recording
- ◆ 6 or 12 iridium array sites spaced at 150 μ m and 300 μ m along the shank of a microelectrode (008"/200 μ m diameter)
- ◆ Array sites can be used for recording or stimulation
- ◆ Microelectrode tip used for array placement (mapping), LFP recording, stimulation, or lesioning
- ◆ Micro connector fits available headstages and preamps. Adapters are available
- ◆ Standard working length of 67mm
- ◆ 23ga. XTW Guide Tubes are available in multiple configurations: beveled, straight, insulated, and locking (45mm standard)
- ◆ Electrode loading fixture available to easily, and safely, load microelectrode into guide tube
- ◆ Custom cannula and stylette assemblies available soon for microinjection studies.

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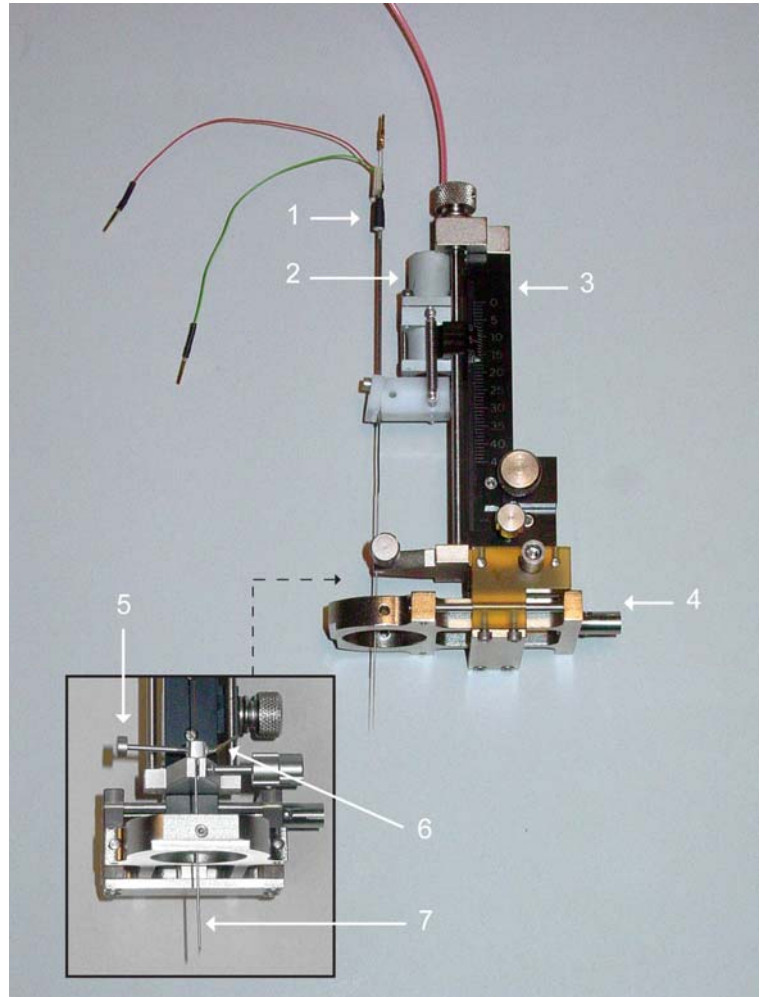


SYSTEM CONFIGURATIONS



Setup for mounting in a stereotaxic frame:

1. Axial Array Microelectrode
2. Hydraulic Probe Drive
3. Acute Mounting Rod



Setup for mounting to a skull chamber:

1. Axial Array Microelectrode
2. Hydraulic Probe Drive
3. 45mm Guide Tube Drive
4. Semi Open Chamber XY
5. Guide Tube Locking Thumbscrew
6. Guide Tube Grounding Pin
7. 45mm Beveled Guide Tube

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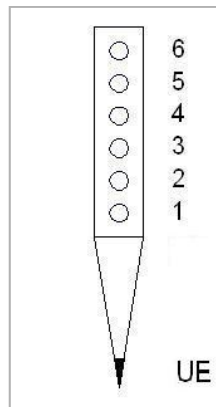
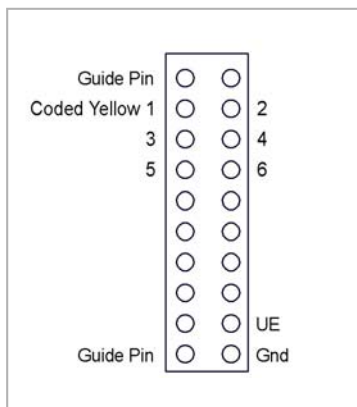
CONTROLS/CONNECTORS



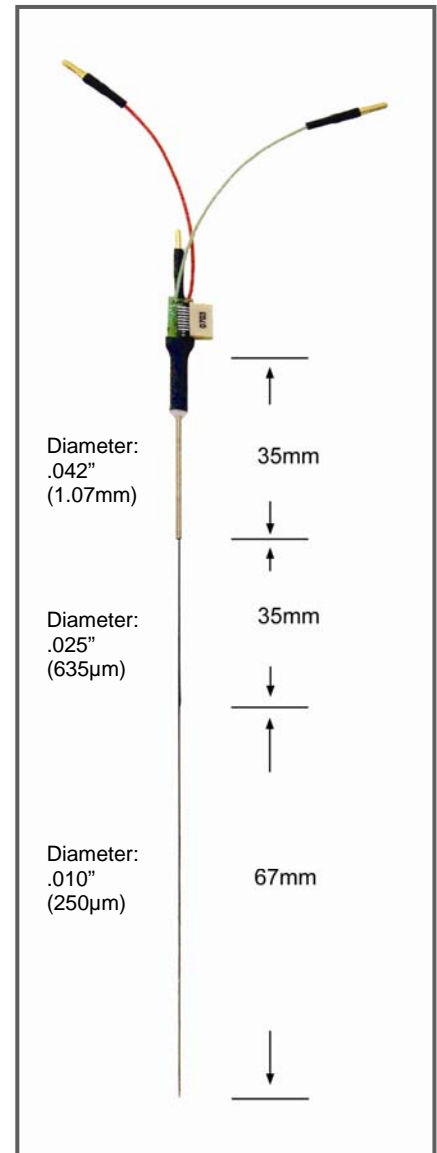
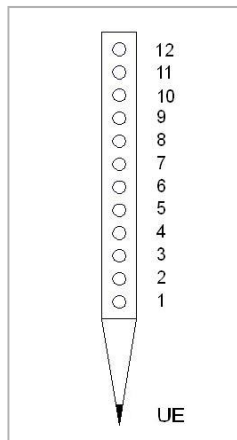
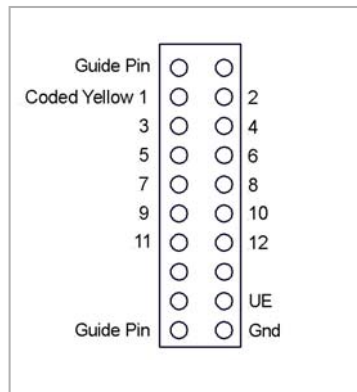
Connections - Axial Array Microelectrode Connector Assembly

- Microelectrode:** Red 30ga. wire terminated with FHC standard female pin for microelectrode connection to headstage connector.
- Ground:** Green 30ga. wire terminated with FHC standard female pin for common ground reference.
- Headstage:** Dual row 18 pin (with guide pins) male connector .025" spacing.
- Pinout:**

6 Site Configurations:



12 Site Configurations:



Dimensions of Standard Model Axial Array Microelectrode



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COMPATIBILITIES

The Axial Array Microelectrode can be directly mounted to a stereotaxic frame holder using the Axial Array Stereotaxic Holder (#50-12-7). The Axial Array Mounting Bracket also fits FHC's Hydraulic Probe Drive (#50-12-1C). The signal connector fits most available headstage cables. Custom mounting and connecting options are available.

ORDERING INFORMATION

- 1 ea. AM(001) Axial Array Microelectrode (6 site, 150µm)**
Includes: Axial Array Microelectrode
- 1 ea. AM(002) Axial Array Microelectrode (6 site, 300µm spacing)**
Includes: Axial Array Microelectrode
- 1 ea. AM(003) Axial Array Microelectrode (12 site, 150µm spacing)**
Includes: Axial Array Microelectrode
- 1 ea. AM(004) Axial Array Microelectrode (12 site, 300µm spacing)**
Includes: Axial Array Microelectrode

ADDITIONAL ITEMS REQUIRED FOR OPERATION (The following additional items are ORDERED SEPERATELY):

Stereotaxic Mounting:

- 50-12-1C Hydraulic Probe Drive (or similar)
Includes: Acute Mounting Rod
- 50-12-7 Axial Array Stereotaxic Holder

Skull Chamber Mounting:

- 50-12-1C Hydraulic Probe Drive (or similar)
- 60-00-2 45mm Guide Tube Drive (or similar)
- 60-02-0 Semi Open Chamber XY Drive (or similar)

1 of the following:

- GT(AM1) 45mm Axial Guide Tube, Beveled, Insulated
- GT(AM2) 45mm Axial Guide Tube, Straight, Insulated
- GT(AM3) 45mm Axial Guide Tube, Beveled, Uninsulated
- GT(AM4) 45mm Axial Guide Tube, Straight, Uninsulated



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SPECIFICATIONS

*AM(XXX): Axial Array Microelectrode
(All Standard Configurations)*

- Microelectrode Diameter:** .008" (200µm)
- Microelectrode Impedance:** 1Meg (Set using D.ZAP Method)
- Array Site Diameter:** 37.5µm
- Array Site Impedance:** ~1-3Meg
- Microelectrode Tip to First Array Site Spacing:** .5mm
- Working Length:** 67mm
- Working Outside Diameter:** .010" (250µm)
- Total Length:** 160mm (6.30")
- Enclosure Tube Outside Diameter:** .042" (1.067mm)

*GT(AMX): Axial Guide Tube
(All Standard Configurations)*

- Tubing Gauge:** 23ga. XTW (.025" o.d. / .020" i.d.)
- Working Length:** 45mm (Custom lengths are available)
- Tip Options:** Beveled (~45° angle) or straight (chamfered)
- Shank Options:** Insulated (2 dips epoxyLite. Adds ~60µm to outer diameter), or uninsulated
- Termination:** Male Amphenol pin

OPTIONAL ACCESSORIES

(The following accessories are available):

- 61-00-1 Axial Loading Fixture
- 55-40-6(AM1) 6 Channel Axial Array Cable For PAU
- 55-40-6(AM2) 12 Channel Axial Array Cable For PAU
- 55-40-6(AMX) Custom Axial Array Cable (contact Technical Support for details)



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