

NAN Electrode Drive™

The NAN Electrode Drive is a modular, lightweight extracellular microelectrode drive, which uses individual towers to independently position each electrode within a grid in the XY plane. Brushless motors and a computer-controlled electrode advancement system ensure accurate electrode positioning in the Z direction. A single drive can accommodate up to 16 single-site electrodes.



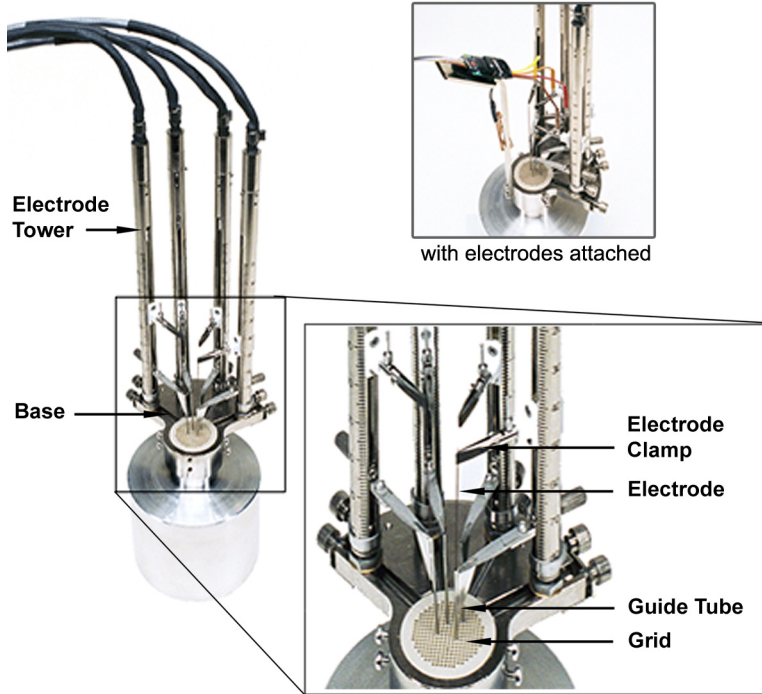
Key Features

- **Modular** - A single drive has the capacity to handle from 1 to 16 electrodes
- **Lightweight** - A basic 4-channel drive (4-channel base and 4 towers) weighs 125 grams
- **Flexible positioning** - Each electrode/tetrode can be independently positioned in the XY plane, within a user-defined working range, and in the Z direction within a user defined working depth (up to 150 mm) and a variable speed range from 1 micron/sec to 200 micron/sec and a high resolution of 1 micron
- **Precise electrode placement** - 1 micron step size with minimal backlash
- **Cost-effective system** - A single drive can accommodate 16 towers -- add towers as your need for more electrodes increases
- **Sophisticated control software** - The user can select a subset of channels using a variety of controls
- **Uses standard, inexpensive electrodes** - Customers can use almost any stiff-wire electrode; electrodes can be easily exchanged

The NAN Electrode Drive has two basic components and two optional adapters for electrode positioning:

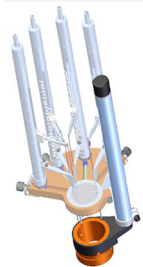
Basic components:

- **Electrode Tower** - The Electrode Tower includes a miniature motor which is coupled to a driving screw that moves a cartridge. The cartridge could be customized to hold a microelectrode, probe, needle, dagger electrode, tetraode or group of electrodes. The standard range of movement for each tower is 50 mm but can be custom-defined.
- **Base** - The Base is the foundation of the drive. A single base accommodates up to 16 electrodes. The base is custom made to fit the user's chamber adapter (well) or other adaptation.

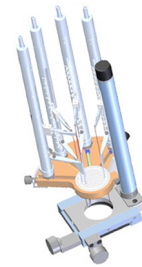


Optional adapters:

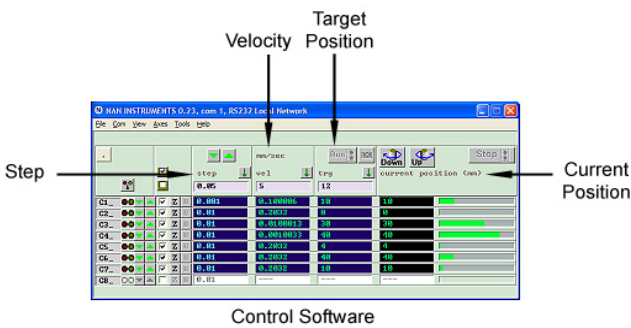
- **Coarse Movement System** - The Coarse Movement System (CMS) is an optional adapter when the user needs to penetrate the dura with the guiding tubes. It allows manual control in the Z direction within a user defined working depth of up to 100 mm. The adapter sits on the chamber or whatever adaptation is used.



- **XY Stage** - The XY Stage is an adapter that allows smoother controlled penetration of the entire drive. The XY Stage holds the base and enables the user to manually control vertical and horizontal coarse electrode positioning in the Z direction and XY plane.



The NAN Electrode Drive includes a control box, power supply and a driver for the motors and control software, which allows precise positioning of each electrode to within 1 micron. The user can select a subset of electrode channels to advance using the following screen elements:



NAN Electrode Drive Technical Specifications:

Step size	1 μm
Standard operating range	50 mm*
Variable speed range	0.001 mm/sec-0.2 mm/sec
Weight of 4-channel base	45 grams
Weight per tower	20 grams
Weight of CMS	30 grams
Weight of XY Table	40 grams
Height of CMS	118.88 mm
Height of XY Table	122 mm
Width of 16-channel base	70 mm
Width of chamber ring	24.15 mm*

* Can be custom-defined to the user's specifications