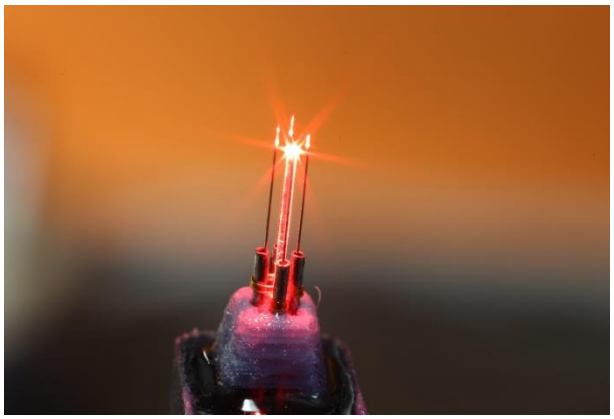
Neural drives



CyNexo designs, manufactures and customizes a series of **microdrives for neuronal recording and optogenetic stimulation**. The team at CyNexo has collaborated for years with SISSA's Tactile Perception and Learning Lab to develop the technologies necessary to have a highly reliable and customizable product that can be adapted to be implanted in different areas. We produce different sized models aimed at different parts of the brain. The versatility of our solutions also allows us to manufacture drives for simultaneous recording and stimulation in multiple areas.

aoDrive

The ***aoDrive*** is a unique product, studied to use optogenetics in free moving experiments. It is a customized independently adjustable optogenetics drive made primarily through high precision 3D printing processes. The methodology used during development has allowed obtaining the incredibly low weight of only 3 grams while incorporating many key features. The drive hosts up to 19 electrodes for neuronal registration combined with an optical fiber for optogenetic stimulation. The height of the electrode array and the optical fibre are independently adjustable. The ***aoDrive*** can be provided in a single configuration (for the stimulation and recording in one area of the brain) or tandem configuration (for the simultaneous and independent stimulation and recording in two different areas of the brain). The ***aoDrive*** is also completely customizable to suit specific research needs.

maDrive & maArray

The ***maDrive*** is a super low weight drive at only 1.6 grams, perfect for implantation in mice. The ***maDrive*** does not integrate the guide for the optical fiber but rather supports the use of a skull surface mounted LED for optogenetic stimulation. Despite its extremely compact size it maintains the ability to move the electrodes to optimize the desired position even after implantation. The ***maDrive*** is customizable for different entry angles and recording areas, even those most difficult to reach and is available in a multiple individual electrodes or tetrodes configuration. If you want maximum lightness and you do not consider the adjustability of the electrodes to be necessary, then the ***maArray*** is the perfect solution. In this case the electrodes are fixed, but to the advantage of an unbeatable compactness and light weight at less than 1.2 grams.

Main features

- Independent adjustable position (in Z axis) for electrodes and optic fiber through precise screw regulation
- Completely customizable based on research needs
- Extremely light weight, robust and precise thanks to the realization with high precision 3D printing technology
- Optimized design for functionality and durability even under strenuous experimental conditions

CyNexo srl | Via Roma n. 6 | 33050 Trivignano Udinese (UD) | info@cynexo.com | www.cynexo.com | pec: cynexosrl@pec.it
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aoDrive SPECIFICATIONS	
Weight	*3 grams*
Dimension	*30 x 13 x 13 mm*
Channels	*8-19 recording channels + 1 optical stimulation channel*
Electrodes movement in Z	*250µm / turn*
Fiber movement in Z	*800µm / turn*
Electrodes connector	*ZIF-Clip and Omnetics compatible*
Optical fiber connector	*1,25 mm sleeve*
Optical fiber features	*230µm fibre with high or low NA*

maDrive SPECIFICATIONS	
Weight	*1,6 grams*
Dimension	*10.3x10x6.8 mm (body 16 channels)* *18x12x11.5 mm (body 16 channels + Omnetics connector)*
Channels	*16 up to 64*
Electrodes movement in Z	*2 mm total*
Electrodes connector	*ZIF-Clip and Omnetics compatible*

maArray SPECIFICATIONS	
Weight	*1,2 grams*
Dimension	*8x7x5 mm (body 16 channels)* *15x8x8 mm (body 16 channels + Omnetics connector)*
Channels	*16 up to 64*
Electrodes connector	*ZIF-Clip and Omnetics compatible*

RELATED PRODUCTS	
Acquisition boards	*Open Ephys Acquisition Board*
Optogenetics	*aoLED*

OPTIONS / ADD-ONS

- *Implantable skull LED module*
- *Fixed/movable optic fiber*