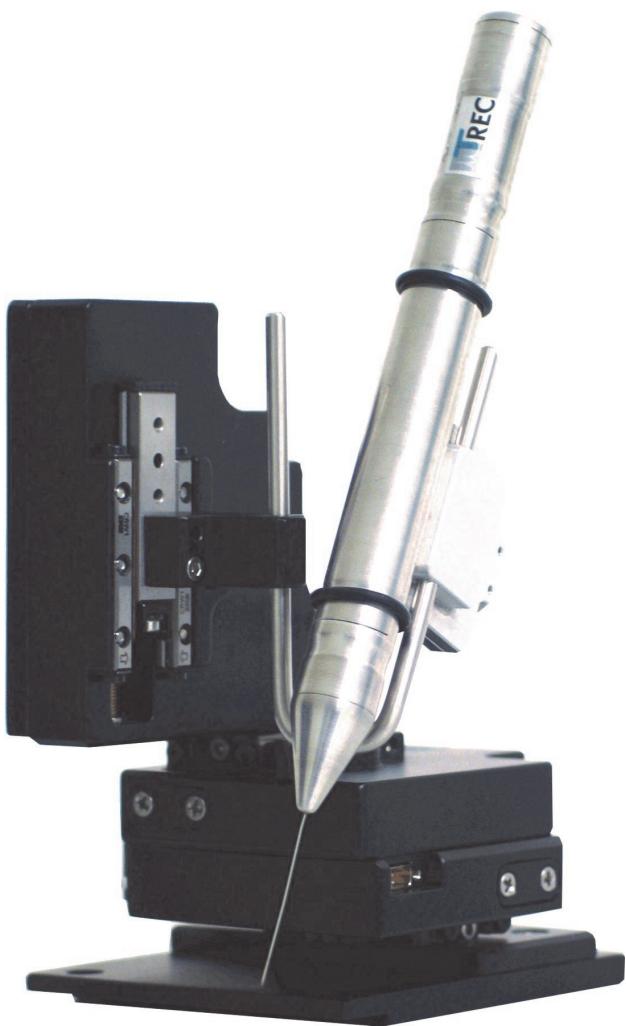




Thomas RECORDING GmbH

Electrochemical Division

Motorized XYZ-Manipulator for neurophysiological Applications



- X-, Y- and Z-axis **motorized**
- No powered-off mode, **record while electrode is moving**
- **Thomas pencil drive** can be mounted to the manipulator
- **Other electrode holders** are available on request
- System for **slice recording applications** is available
- Manipulator is delivered with **motor control unit** and **software**
- **Small** and **lightweight**
- **Plug-and-play** technology
- **Low cost**



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Innovative Products for Neurophysiology

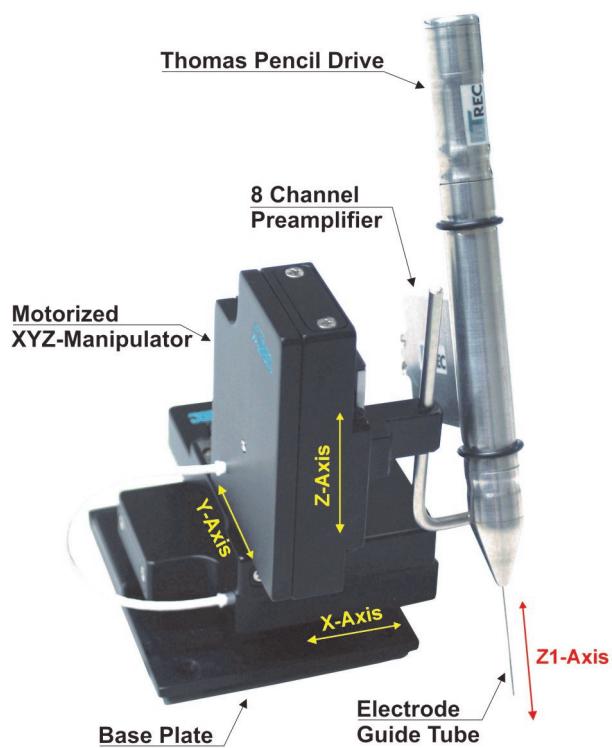


Figure 1: Motorized XYZ-manipulator with *Thomas Pencil Drive* mounted to the Z-Axis of the motorized XYZ-

Motorized XYZ-Manipulator

Thomas RECORDING has developed a new motorized XYZ-manipulator. This device has three axis motorized with precision linear motors. The Z-axis is equipped with an electrode holder which can be customized.

Figure 1 shows a Thomas Pencil Microdrive mounted to the Z-axis of the motorized XYZ-manipulator. This Pencil Microdrive is optional available and can move a Thomas microelectrode (single electrode, tetrode, heptode or multitrode) with an axial resolution of 1µm into neural tissue. So finally we can offer 4 motorized axis that can be controlled independently from each other by a motor control software which is part of system delivery.

The motorized XYZ-manipulator is small and lightweight. We can customize the device to fulfill different scientific requirements.

For example the motorized XYZ-manipulator is used in multi-slice recording setups together with Thomas pencil drives or stimulation electrode holders.

The motorized XYZ-manipulator has an axial resolution of about 1µm.

Innovative Products for Electrochemistry



Figure 2: Motorized XYZ-manipulator with *Thomas Pencil Drive* mounted on a Lohmann Research single channel slice recording chamber



Figure 3: Motorized XYZ-manipulator available for neuro recording setups.

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Slice Recording Application

The newly developed **motorized XYZ-manipulator** is for example used in slice recording applications.

Acute vital tissue sections like the hippocampal slice preparation have become a valuable tool in neuropharmacology and toxicology for evaluation of drug effects in the pharmaceutical industry. However, with a single standard experimental setup only a few tissue slices can be characterized within one day. A higher throughput of tissue sections, different drugs or concentrations is difficult and time consuming.

The newly developed automatic slice recording system, developed in a R&D cooperation between **Thomas RECORDING GmbH** and **Lohmann Research Equipment**, overcomes this problem by full-automatic electrophysiological evaluation in up to 8 tissue slices simultaneously. The system is equipped with up to **8 motorized XYZ-manipulators** with Thomas Pencil microdrive for single fiber microelectrode recording. The Pencil microdrive has an integrated 7 channel preamplifier for using 7 core quartz platinum/tungsten microelectrodes (heptodes) for extracellular recording.

The **motorized XYZ-manipulator** like shown in figure 3 can be customized for any other neurophysiological application