



**Thomas RECORDING GmbH**

- The Microelectrode Company -

# Differential PreAmplifier DPA-4



## Key Features:

- 4 Channel, DC or AC coupled, differential input
- High impedance input
- Adapted to be used with Thomas Tetrodes
- Other electrode adapters on request!
- Battery power supply available to avoid noise pickup from power lines
- Low noise
- Small size, lightweight and low price

## Differential PreAmplifier DPA-4

The *Differential Pre-Amplifier, Model DPA-4* is a miniature 4-channel, differential input preamplifier that is designed for low noise recordings from excitable tissue. It is intended for extracellular recording in conjunction with Thomas Tetrodes and Thomas single microelectrodes. It can be used in a number of research or teaching applications requiring extracellular neurophysiological recording from excitable tissue.

The 4-Channel Differential Preamplifier DPA-4 is connected to the microelectrodes or tetrodes for providing an initial tenfold amplification stage. Ideally Thomas RECORDING quartz glass insulated platinum/tungsten microelectrodes or tetrodes are used to yield optimal recording results with high signal amplitudes and low noise levels.

The DPA-4 is delivered as a DC-coupled preamplifier to yield optimal common mode rejection ratio (CMRR). An AC-coupled version is available on request. The DPA-4 is equipped with an additional common ground and reference electrode input. The reference electrode has ideally identical material to the recording electrodes (e.g. platinum) and is placed into a comparable but inactive area or tissue. Large background or noise signals (common mode signal) that are picked up by both the reference electrode and the recording electrodes are removed by the differential preamplifier input.

The aluminum case of the DPA-4 provides electrical shielding. Electrode damage is prevented by the very low bias current. The high input impedance ensures stable long-term recordings.

Beside the possibility to use Thomas microelectrodes and tetrodes adapters for

other microelectrodes for acute and chronic recordings are available. Adapters are not part of the standard delivery and have to be ordered separately. For custom adapters, please contact Thomas RECORDING for more information.



**Fig. 1:** Differential PreAmplifier DPA-4 in comparison to the size of a standard AA-size battery

To avoid additional noise pickup from the power supply there is a special designed accumulator power supply and a battery charger available for power supply of the DPA-4.

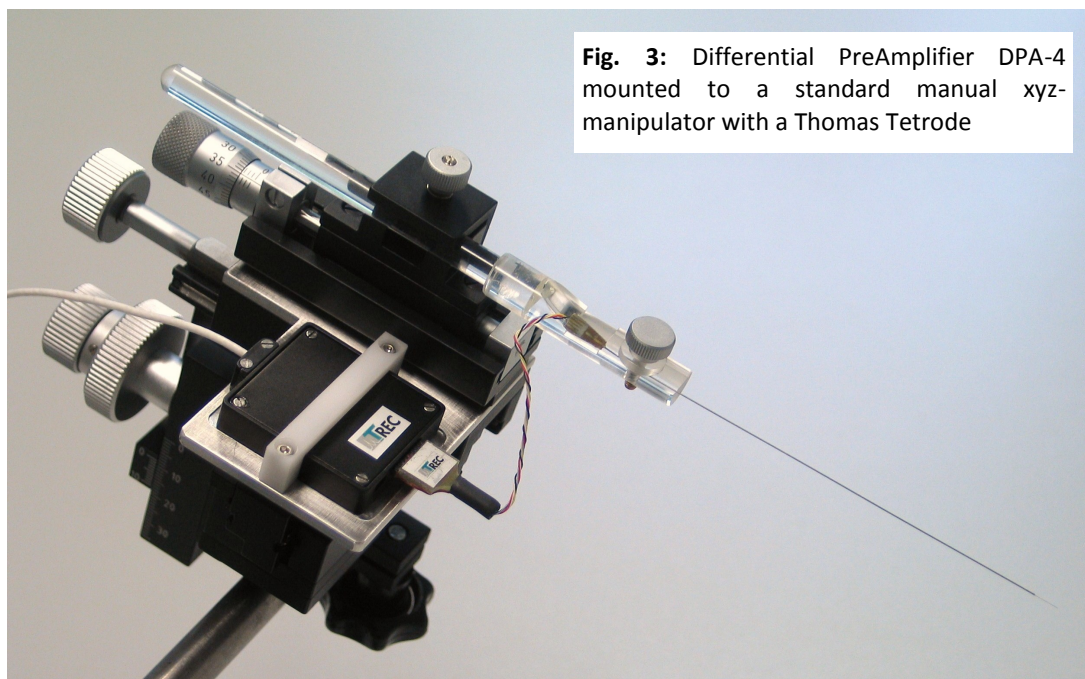


**Fig. 2:** Accumulator (left) and charger (right) for the Differential PreAmplifier DPA-4

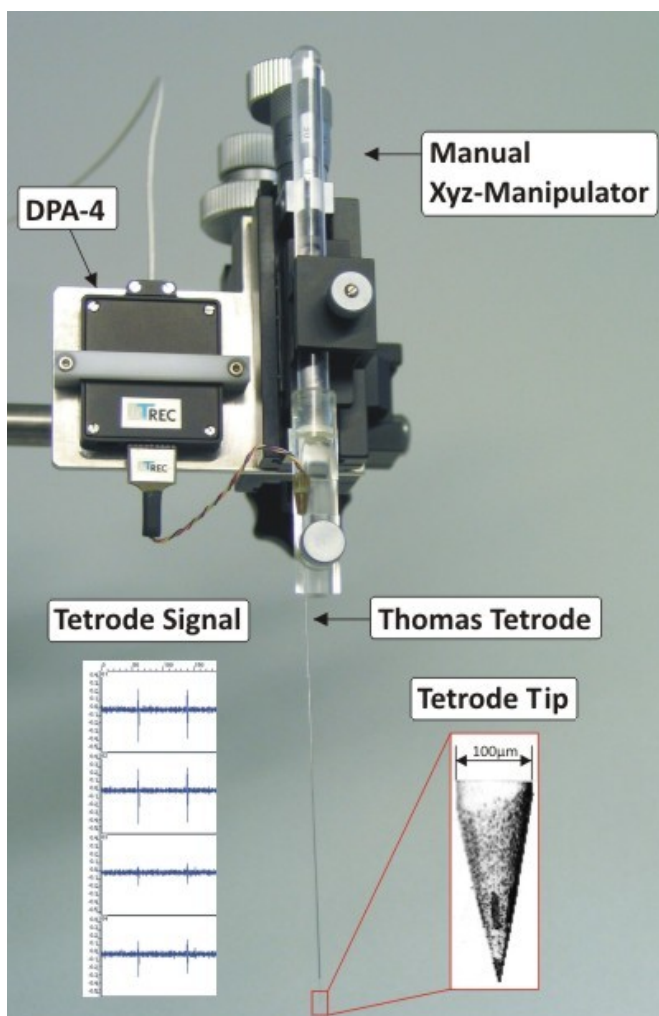
For further information please feel free to contact us at:

**info@ThomasRECORDING.com**

## Differential PreAmplifier DPA-4 Recording Application



**Fig. 3:** Differential PreAmplifier DPA-4 mounted to a standard manual xyz-manipulator with a Thomas Tetrode



**Fig. 4:** Differential PreAmplifier DPA-4 mounted to a standard manual xyz-manipulator with a Thomas Tetrode.

The Thomas Tetrode tip has an outer diameter of 100µm and 4 wires independently insulated from each other by quartz glass.

The Thomas Tetrode is connected with a short connection cable to the DPA-4 input socket to guarantee a good signal/-to-noise ratio.

Beside tetrodes one can also use Thomas RECORDING single micro-electrodes for recording with this setup.

For adaptation of our products to your special requirements please do not hesitate to contact us at:

[info@ThomasRECORDING.com](mailto:info@ThomasRECORDING.com)

## Differential PreAmplifier DPA-4

### Technical Data:

Parameter	Value
<b>Dimensions and Weight</b>	
Length (mm)	40
Width (mm)	34
Height (mm)	7,5
Weight (grams)	26
<b>Power Supply</b>	
Supply voltage (V)	±6V DC
Supply current (mA)	±5,3mA
<b>Amplifier Data</b>	
Gain per channel	9,9
Number of channels	4
Bandwidth per channel	0...40kHz
Input circuit per channel	DC-coupled (AC on request)
Common mode rejection ratio/channel (CMRR) Per channel at f=50-60Hz	100dB
Input referred noise voltage per channel	16 nV/VHz
Crosstalk attenuation between channels	55 - 73dB
<b>Environmental condition</b>	
Operating temperature range	+10°C to +40°C
Transport temperature range	+10°C to +40°C
Humidity	20% - 80% RH (non-condensing)

### Ordering Information:

Pos.	Product description	Article number	Price
1.0	Differential Preamplifier	DPA-4	On request
2.0	Accumulator power supply for DPA-4	Accu-6V1,3Ah	On request
3.0	Charger for the accumulator power supply	LAAC-02	On request

### Contact Information:

Email: [info@ThomasRECORDING.com](mailto:info@ThomasRECORDING.com)