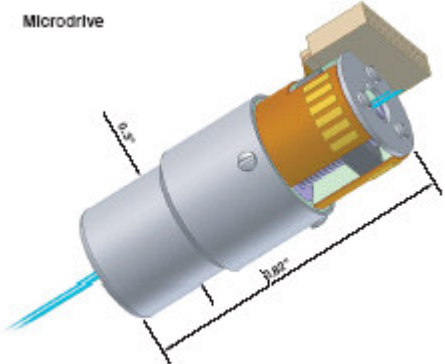


Three Microdrive Neural Recording System Overview	ND3SYS
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Lightweight Motorized System for Awake Animal Neural Recording

- 3 independent motorized microdrives.
- 12 microelectrode circuits
- 2 reference circuits
- 3 stimulus circuits
- 3 gram total microdrive mass



Components

Description	Part Number
Three Drive Neural Headstage	ND3HS-1
12-Channel Differential Pre-amplifier	ND3PA-1
12-Channel Pass Through Adapter	ND3PT-1
12-Channel Pre-amplifier Interface	ND3PIF-1
JFet Buffer Assembly	ND3BAJ-1
Tether Cable	ND3TC-1
Shuttle Assembly Fixture	ND3SAF-1
Microelectrode Capillary	ND3MEC-1

Description

The system consists of the following components (see Fig. 1):

- The microdrive. (see Page 1) The microdrive is implanted on the animal. It has 3 micromotors. Each motor moves a shuttle with submicron resolution. The shuttle can carry up to three metal electrodes (maybe four, depending on electrode diameter).
- A signal buffer and flexible cable. This is attached to the microdrive during recording. The signal buffer is the first stage of signal amplification and processing. The buffer has unity voltage gain.
- A 12-channel differential preamplifier. This is the next stage of signal amplification. Each differential amplifier has a voltage gain of 100 and a band pass from sub Hz to over 20 KHz. Each amplifier scales up the difference between its electrode signal and one of several references.
- The rotational commutator. The multichannel preamplifier hangs from the rotational commutator, so that the cable is allowed to rotate freely and avoid twisting.
- The preamplifier interface (distribution box). The rotational commutator is connected by 25-conductor cable to the distribution box. The distribution box routes 12 signal channels to the data acquisition system. It is also has an option to send four of 12 channels to external amplifiers for signal visualization or audio monitoring. It also provides the connections for the amplifier/buffer power supply and microdrive motor controller. The microdrive motor controller can be completely disconnected from the commutator cable to prevent noise pick up.
- The microdrive motor controller, supporting 3 motors in the headstage.
- A DC Power Supply. This provides 5 volts to the preamplifier interface, which in turn provides ± 15 volts for the preamplifier and buffer.

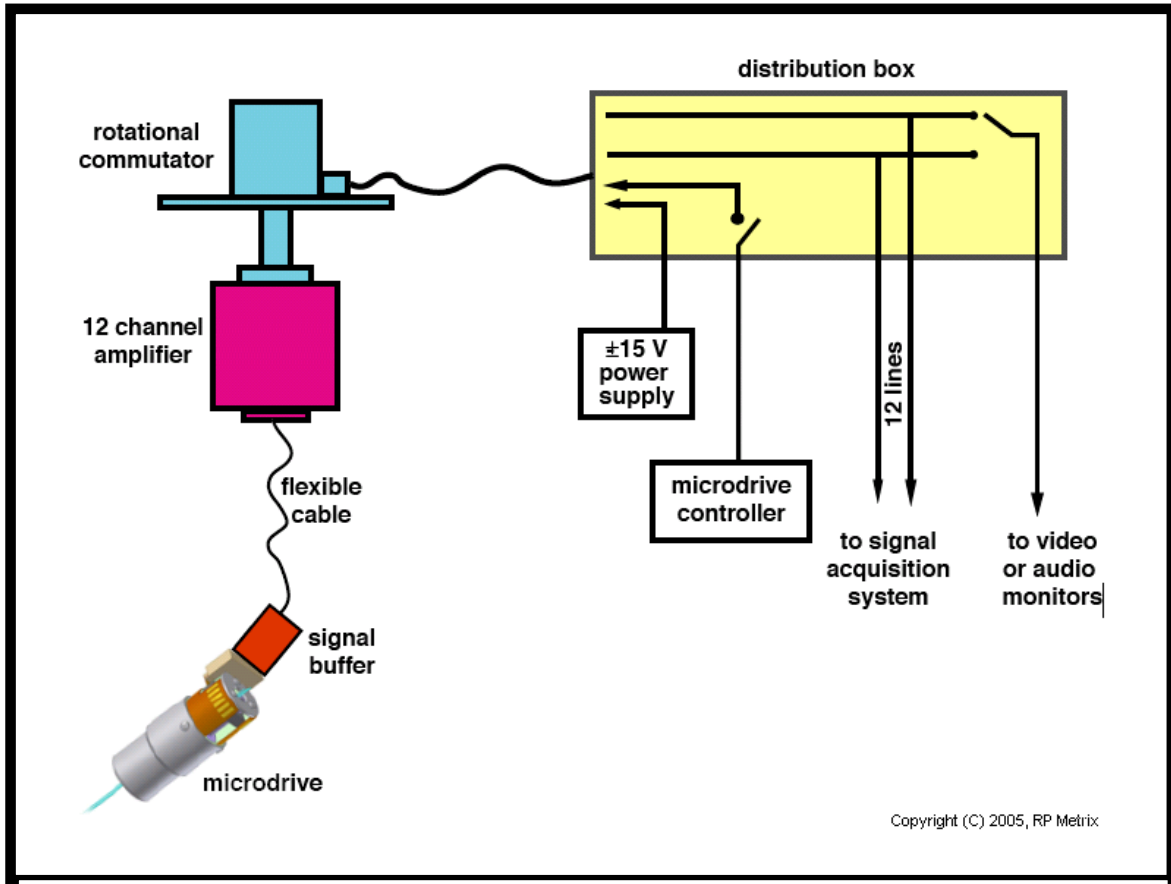


Figure 1 - Neural Implant System

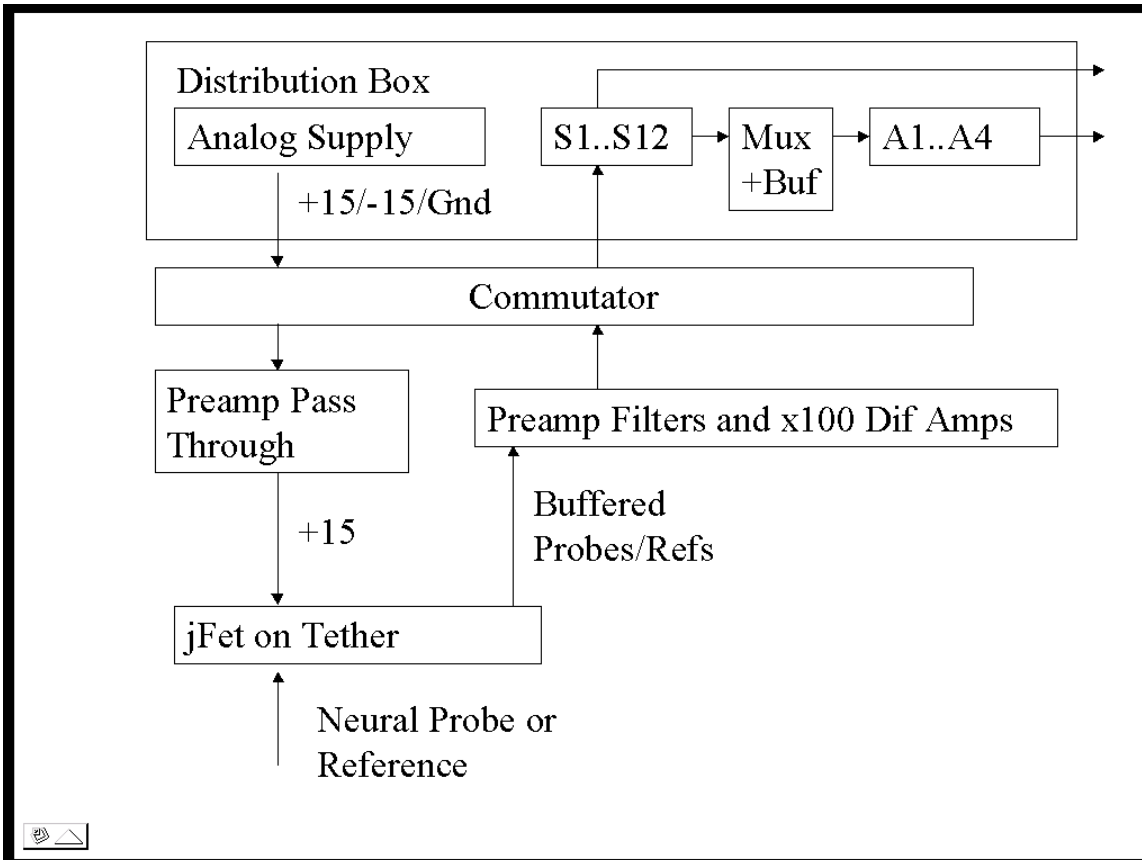


Figure 2 - Microelectrode Signal Path