Digitimer

NeuroLog System

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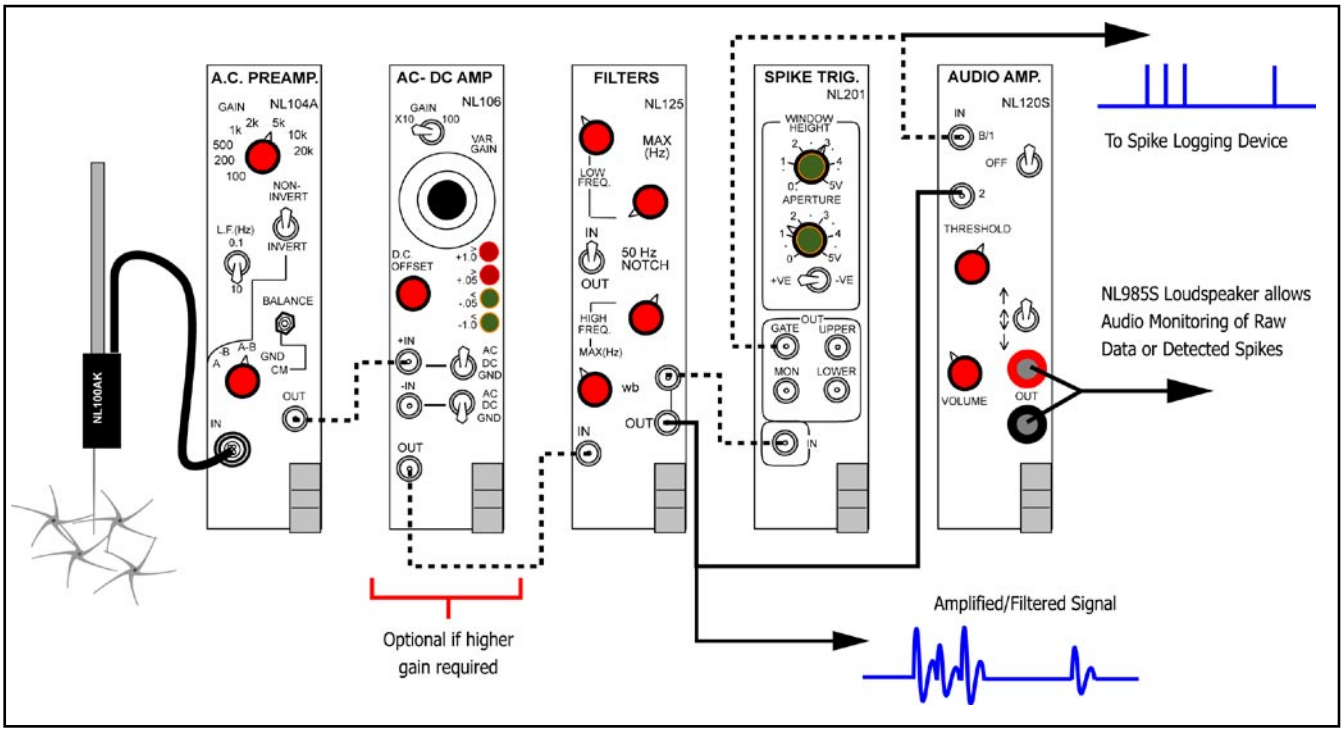
Extracellular AC Recording System with Spike Discrimination & Audio Monitoring

Overview

The **NL100AK PREAMPLIFIER HEADSTAGE** and **NL104A AC PREAMPLIFIER** combine to provide an excellent low noise amplification, impedance matched system for extracellular AC recording from *in vitro* or *in vivo* preparations. The NL104A can be used in differential or single ended modes and can amplify a signal by x100 to x20k. A 0.1Hz or 10Hz low frequency cut-off



filter allows removal of DC components. If the signal of interest requires further amplification, the **NL106 AC/DC AMPLIFIER** can be used to boost the gain by up to x100. Notch (50/60Hz), low and high cut filtering is provided by the **NL125 FILTER**. The output from the NL125 can be fed directly into a computer via an ADC for acquisition, or alternatively, individual spikes can be discriminated using the **NL201 SPIKE TRIGGER** module. The aperture size, polarity and height of the discriminator window can be monitored on an oscilloscope with the raw data superimposed (MONITOR). The various outputs on the NL201 produce a TTL compatible pulse in response to a spike which crosses the lower threshold only (LOWER), upper threshold (UPPER) and lower but not upper thresholds (GATE). These pulses can be collected by a computer DAC enabling spike frequency logging to be carried out.

Often it is desirable to be able to hear the spike activity during an experiment and with the **NL120S AUDIO AMPLIFIER** and **NL985 LOUDSPEAKER**, this is possible. As the NL120S has two inputs, it is possible to switch between listening to the raw filtered/amplified signal or the "clicks" resulting from the detection of individual spikes.

This particular configuration of modules requires only one Lemo interconnection cable (NL951), as all other module connections are made through the **NL900D CASE & POWER SUPPLY UNIT**. Additional cables and "T" connectors would be required to feed the signals into a data acquisition system.

Application Note 9