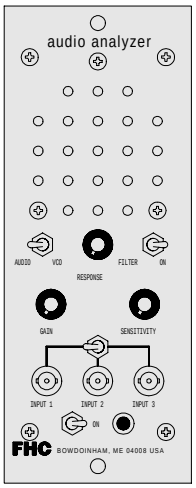
Audio Analyzer



- **THREE SWITCHABLE INPUTS**
- **AUDIO-MODE**
  - **ADJUSTABLE FREQUENCY RESPONSE**
  - **NOISE FILTER**
- **VCO MODE**
  - **FREQUENCY OF TONE VARIES PROPORTIONATELY TO INPUT LEVEL**
- **BUILT-IN POWER SUPPLY**

The **Audio Analyzer** (74-30-1) has two circuits to aid the electrophysiological investigator searching for cells.

For extracellular recordings, EDG, or EEG, the Audio Analyzer provides an audio amplifier circuit with adjustable frequency response and wide volume range. These features permit "tuning in" to the correct frequency signal. A noise filter is included for reducing the hash from the signal.

For recording intracellular potentials or for EEG conditioning studies, the instrument has a VCO mode (Voltage Controlled Oscillator). It produces a tone (approximately 650 Hz with zero voltage input); the frequency of the tone varies proportional to the input level. The instrument is sensitive enough to "hear" millivolt changes.

OPERATIONAL DESCRIPTION

The Audio Analyzer has a high impedance, unity gain, FET input stage in front of an amplifier stage with gain (SENSITIVITY CONTROL) variable from x1 - x10. This amplifier stage also includes the RESPONSE control for controlling the high frequency response cutoff point.

In the VCO MODE, the signal is then fed to a voltage controlled oscillator which generates a sine wave whose frequency is proportional to the amplitude of the input signal.

In the AUDIO MODE, the signal can be switched through a diode bridge NOISE FILTER.

The output of either mode is passed through a second variable gain (GAIN CONTROL) amplifier. The effect of this amplifier is the same as a volume control.

SPECIFICATIONS

Input Impedance: >500KOhm

Input Range: ±10V

Frequency Response (AUDIO): 10Hz - 50KHz

Zero Input Frequency (VCO): Approximately 650Hz

Frequency/Voltage Slope (VCO): Adjustable from 50-15000Hz/ input Volt

External Speaker: Jack provided

Inputs: 3 provided, switch selectable

Line Fuse: 1/10A (115 VAC line) or 1/16A (230VAC line), Slow Blow

Power Requirements: 115-230VAC switch selectable, 50-60Hz

Dimensions: 2 3/4"w x 7"h x 9d" (7 x 17.8 x 22.9 cm); 4 lb. (1.8 kg)

ORDERING INFORMATION

74-30-1 Audio Analyzer

ILLUSTRATIVE EXAMPLES

For extracellular recording, it is recommended that the Audio Analyzer be connected into the amplification system before variable gain stages so that when gain is adjusted it is not necessary to readjust the audio volume.

After the electrode has been advanced into the tissue and the noise level has been stabilized, the noise filter is activated and the sensitivity control adjusted until most of the baseline noise is eliminated. The gain control serves as a volume control.

For "in vivo" intracellular recording, it is helpful to set up both the AUDIO and the VCO circuits. If an AC coupled amplifier is being used to monitor extracellular potentials, connect its output to one of the Audio Analyzer's inputs and connect the low gain DC amplifier to another input.

As the microelectrode is advanced into tissue, adjust the AUDIO as in the example above. Just prior to cell penetration, switch to the VCO mode and the DC input. Cell penetration will be indicated by a shift in tone and cell condition will be monitored by the stability of the tone.