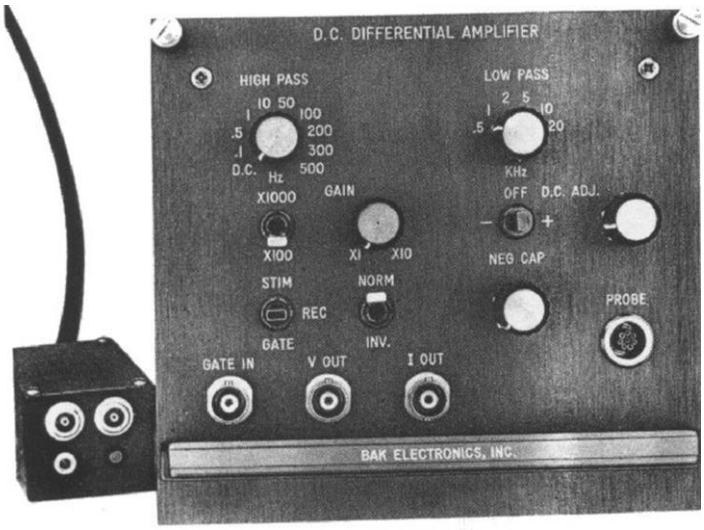
D.C. DIFFERENTIAL AMPLIFIER WITH REMOTE PROBE

Model DCDA-1



CONTINUOUS GAIN CONTROL UP TO 10,000

HIGH COMMON MODE REJECTION

SIGNAL INVERTING SWITCH
STIMULUS MODE WITH GATE CONTROL FOR + INPUT

D.C. MODE WITH ULTRA LOW DRIFT
VIRTUAL GROUND INPUT FOR CURRENT MONITORING

Description:

The Model DCDA-l is a high performance preamplifier designed for both low level A.C. neurological and cardiac signals from high impedance electrodes as well as slow wave phenomena such as D.C. potential shifts associated with sucrose gap type experiments. It is provided with capacitive feedback neutralization which is controlled from the main unit front panel to nullify the shunting effect of stray capacitance existing across higher impedance electrodes. The amplifier utilizes a small, very high impedance differential head stage with driven guard inputs to minimize noise pick-up and capacitive signal loss. The probe is small enough to be mounted close to the preparation. It comes equipped with + input leads, a preparation ground lead, a virtual ground input lead for measuring currents and a stimulus input mini-banana jack for applying -an external stimulus source to the + electrode. Currents monitored by the virtual ground input lead are converted to a 50 millivolt per microamp signal which is available at the lout BNC connector on the main front panel. The stimulus mode is configured via probe stage relays which are activated from the mode switch. When the mode switch is in the STIM position the positive input is grounded and the electrode re-connected to the stimulus source. In the GATE position of the mode switch the same process is achieved by providing a TTL compatible signal to the front panel BNC label GATE IN.

In addition to its very stable D.C. mode, which has drift characteristics of only 1 microvolt per hour and front panel D.C. offset controls, the unit also has selectable high pass filtering from 0.1 Hz to 500 Hz. It further provides switchable low pass filter settings from 0.5 kHz to 20 kHz. This combined with its continuously variable high gain of X 100 to X 10,000 and its signal inverting switch make the Model DCDA-1 a very versatile general purpose differential amplifier.

Specifications:

Input Resistance . . . . . 1,000 megohm shunted by 8 pF
Input Leaktage . . . . . Less than 10(x-12) amperes 1
Gain . . . . . 100 to 10,000 confinuously adjustable
Common Mode Rejection . . . . . .93 db @ 60 Hz
Noise (Wide-Band - Inputs Shorted) . . Less than 15 microvolts
Maximum Common Mode Signal . . . . +/-15 volts
Input Dynamic Range . . . . . 200 millivolts peak-to-peak
Output Dynamic Range . . . . . 20 volts peak-to-peak
Low Frequency Settings . . . . . .D.C. or -3db@0.1, 0.5,1,10,50,100, 200,300 and 500 Hz
High Frequency Settings . . . . . -3db@0.5, 1,2,5, lOand2OKHz
Virtual Ground Output (lout) . . . . . 50 millivolts per microamp
Stimulus Gate Pulse . . . . . 3 volts min. (5 msec mm. pulse width)
Stimulus Relay Operating Time . . . . . 3 milliseconds typ.
Drift . . . . . 1 microvolt per hour
Output Polarity . . . . . Normal or inverting switched
Output Resistance (Vout and lout) . . . 100 ohms
Power Requirements . . . . . .+/-15 volts @ f75mA (+l2SmA for STIM mode)
Probe Size . . . . . 1.4"w x l.13"h x 2.25"d
Main Unit Size . . . . . 5.6"w x 5.25"h x 7.25"d

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