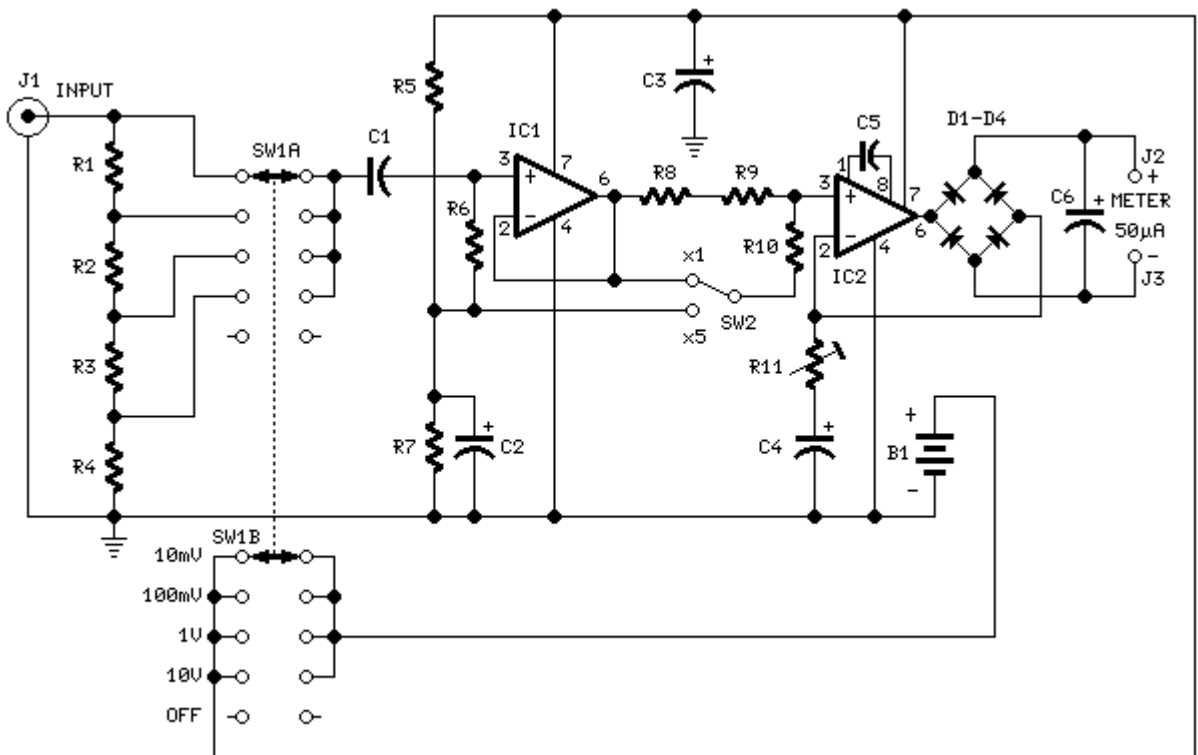


Precision Audio Millivoltmeter

Measures 10mV to 50Volt RMS in eight ranges
Simply connect to your Avo-meter set @ 50 μ A range

Circuit diagram:



Parts:

R1	_____909K	1/2Watt 1% Metal Oxide Resistor
R2	_____90K9	1/2Watt 1% Metal Oxide Resistor
R3	_____9K09	1/2Watt 1% Metal Oxide Resistor
R4	_____1K01	1/2Watt 1% Metal Oxide Resistor
R5	_____100K	1/4W Resistor
R6	_____2M2	1/4W Resistor
R7	_____82K	1/4W Resistor
R8	_____12K	1/4W Resistor
R9	_____1K2	1/4W Resistor
R10	_____3K3	1/4W Resistor
R11	_____200R	1/2W Trimmer Cermet
C1	_____330nF	63V Polyester Capacitor

C2,C3__100 μ F 25V Electrolytic Capacitor
C4_____220 μ F 25V Electrolytic Capacitor
C5_____33pF 63V Polystyrene Capacitor
C6_____2 μ 2 63V Electrolytic Capacitor

D1-D4___1N4148 75V 150mA Diodes

IC1_____CA3140 Op-amp

IC2_____CA3130 Op-amp

SW1_____2 poles 5 ways rotary switch

SW2_____SPDT switch

J1_____RCA audio input socket

J2,J3___4mm. output sockets

B1_____9V PP3 Battery

Clip for PP3 Battery

Notes:

- | Connect J2 and J3 to an Avo-meter set @ 50 μ A range
- | Switching SW2 the four input ranges can be multiplied by 5
- | Total fsd ranges are: 10mV, 50mV, 100mV, 500mV, 1V, 5V, 10V, 50V
- | Set R11 to read 1V in the 1V range, with a sinewave input of 1V @ 1KHz
- | Compare the reading with that of another known precision Millivoltmeter or with an oscilloscope
- | The oscilloscope reading must be a sinewave of 2.828V peak to peak amplitude
- | Frequency response is flat in the 20Hz-20KHz range
- | If you have difficulties in finding resistor values for R1, R2, R3 & R4, you can use the following trick:
 - R1 = 10M + 1M in parallel
 - R2 = 1M + 100K in parallel
 - R3 = 100K + 10K in parallel
 - R4 = 1K2 + 6K8 in parallel
- All resistors 1% tolerance