## Simulation of Plethysmograph Circuit with Function Generators

### A) Function Generator Siglent SDG800 settings for 20mV 500mHz waveform

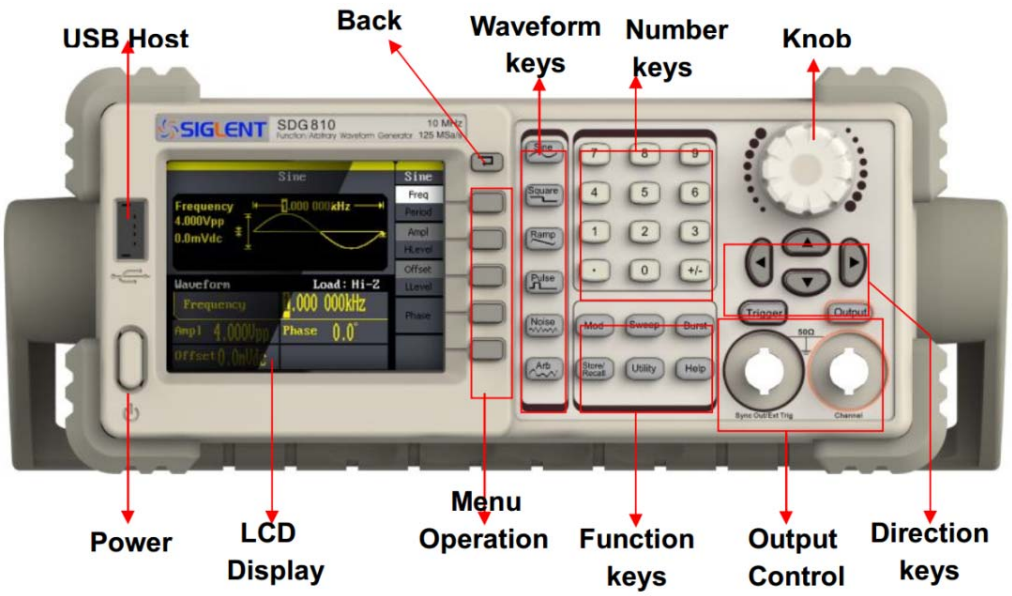


**Fig. 1**

1) Press "Sine" button.
2) Press "Freq" button in Menu Operation (lighted up means selected, see Fig.2).
3) Key in ".5" on the Number Keys and "Hz" (i.e. 0.5 Hz).
4) Select "Ampl" button.
5) Key in "20" and select "mVpp" (20mVpp signal).
6) Press "Offset" to 0.00mVdc.
7) Leave Phase to 0.0 deg.
8) Waveform of Sine wave 0.5 Hz at 20mVpp is obtained (see Fig.3 ).
9) Connect BNC cable output to +ve of 0.22uF capacitor and ground. Refer to Fig. 4.
10) Make sure Trimmer in Plethysmograph Circuit is approx. 2.2 Kohm.
11) Set Chan 1 of oscilloscope to 20.0mV (Volts/Div scale), and time scale to 500ms(sec/Div) , see Fig. 5 ].
12) Press "Output" button to see a signal on the Oscilloscope
13) Chan2 will be approx. 2 Vpp viewed on Oscilloscope. See the outputs on Oscilloscope as in Fig. 5.

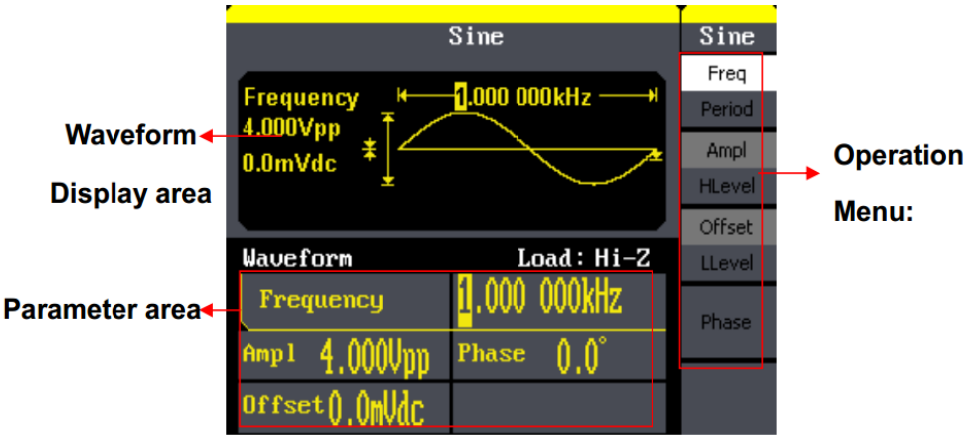


**Fig. 2**

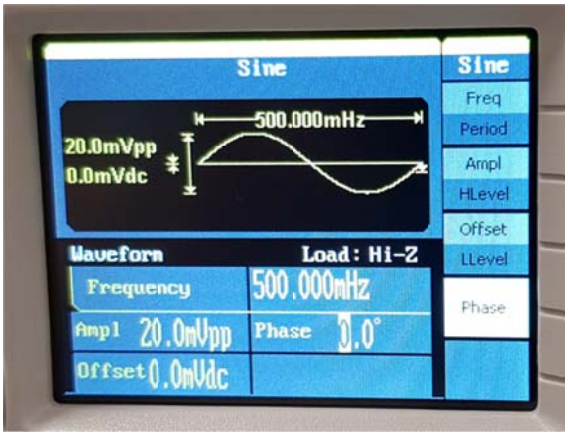


**Fig. 3 - Output waveform of 0.5Hz, 20mVpp**

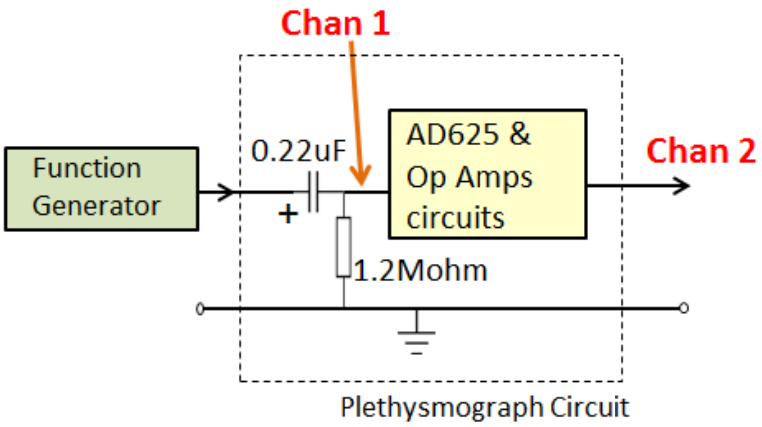


**Fig. 4**

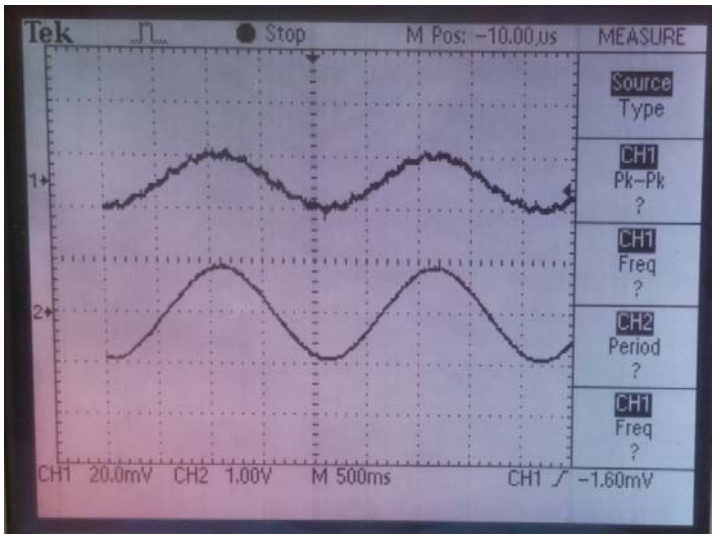


**Fig. 5 – Waveforms shown in the oscilloscope**

## B) *(Only in Hardware Projects Lab)* Function Generator Escort EGC-3230 settings for 20mV 500mHz waveform

The Function Generator Escort EGC-3230 is able to produce a 20mV signal as it has -20dB and -40dB function available. Therefore pi-attenuator is not needed.


**Fig. 6**

Setup the Function Generator Escort EGC-3230 as follows :-

1) Push down the button 1 Hz(in blue), -40dB MAIN OUTPUT ATTENUATOR, select Sine wave, tune FREQ knob to approx. 0.5 Hz, turn AMPLITUDE knob to MIN (anti-clockwise), connect BNC cable to MAIN OUTPUT FROM 50 ohm socket.
2) Connect BNC cable output to +ve of 0.22uF capacitor and ground. Refer to Fig. 4.
3) Make sure Trimmer in Plethysmograph Circuit is approx. 2.2 Kohm.
4) Turn AMPLITUDE knob to obtain 20mVpp at Chan1 viewed on Oscilloscope.
5) Chan2 will be approx. 2 Vpp viewed on Oscilloscope. See the outputs on Oscilloscope as in Fig. 5.