Familiarization: The Digital Storage Oscilloscope (DSO) and Arbitrary/Function Generator (AFG)*

Before we begin

The chapter 2 of the main manual discusses the features of TDS200 series DSO. But for this lab session, we will be using TDS1002B series DSO (Figure 1[1]). Please note the following differences between the two.

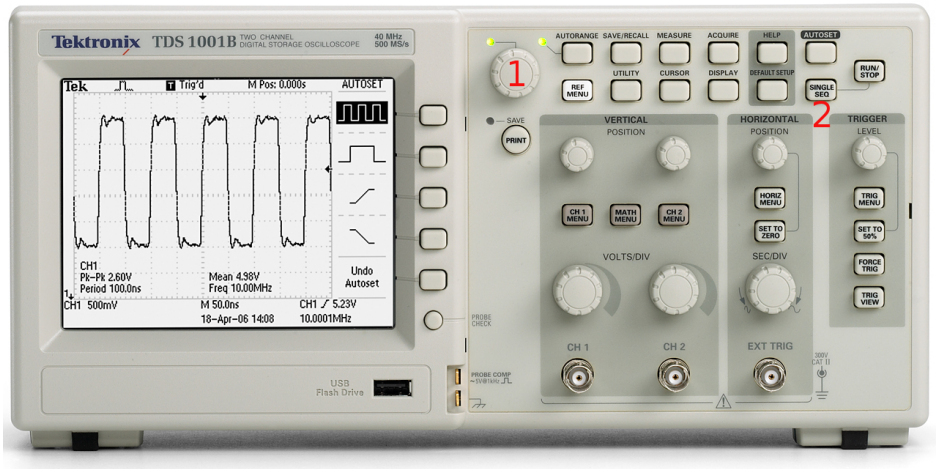

Figure 1: TDS1001/2B DSO

*Refer to the Chapter 2 of the manual.

[1]Image credits: http://ferria.ru/published/publicdata/ABCTOOL/attachments/SC/products_pictures/TDS1001_0oq_enl.jpg

- The cursors discussed in section 2.5 of the manual are moved using the knob ① in Figure 1
- There is an extra button in TDS1002B (②) for *Single* sequence triggering (discussed in section 2.3 of the manual)

Lab work

1. Carry out the steps mentioned in section 2.1.1 of the lab manual to test the basic functionality of the probe and DSO.
2. Follow the steps in section 2.3 and understand the concept of triggering.
    - Try out auto and normal triggering and state the difference between the two.
3. Make the connections as given in Figure 2.3 and follow the instructions in the sections 2.4-2.7.
4. Take the pictures of the DSO screen with the input and output waveforms of the circuit for sine, square and ramp inputs[2].
5. Vary the frequency (1kHz, 2kHz, 5kHz and 10kHz) of the input sine wave and note the following.
    - Amplitude of the output waveform.
    - Phase shift[3] in the output waveform (compared to the input)[4].

[2]Use 5V, 1kHz waveforms.

[3]Measure the phase shift in time domain. You may use either zero-crossing points or the peaks of the input and output.

[4]Prepare a table with three columns: Frequency, O/P amplitude, phase shift.