

# Calibration Manual

This manual contains adjustment procedures for the SDS1000 series oscilloscopes. Only qualified person should perform the procedures.

The procedures include voltage adjust and trigger adjust.

## **Required Equipments and Resources:**

- DC Voltage Source (-6 mV to 30 V,  $\pm 0.1\%$  accuracy)
- Standard square wave generator (200Hz, -6 mV to 60 V,  $\pm 1\%$  amplitude accuracy)
- BNC cables

## **Note:**

- The oscilloscope must have been operating continuously for thirty minutes within the operating temperature range specified.
- You must do the Self Calibration procedure. If the ambient temperature changes by more than 5°C, you must do the Self Calibration procedure again.

## Voltage adjust

1. Press the 'UTILITY' button, and select Page 2/4
2. Press the 'Do Self Cal', then continuously press once 'CURSORS' button, once 'DEFAULT SETUP' button, once 'SET TO 50%' button, once 'fifth option' button, once 'AUTO' button, once 'FORCE' button to enter the 'SIGLENT TEST' mode.
3. Press the 'Do Self Cal' button, then continuously press once 'CURSORS' button, double 'MEASURE' button, three times 'ACQUIRE' button to enter the adjust interface.
4. Press the 'Volt Adj' option button to enter voltage adjust menu. In this menu, there are three option buttons: Source, Range Zoom (Adjust Range Zoom) and Save (Save adjust button) .
5. Set oscilloscope VOLT/DIV to 10V/div.
6. Input a DC signal (+30V: three times of VOLT/DIV) to CH1 channel, record the value of mean appeared on the screen as  $V_{pos}$ , change the polarity of the DC signal, and record the value of mean appeared on the screen as  $V_{neg}$
7. Calculate  $V_{diff}=V_{pos} - V_{neg}$ , turn the almighty knob to increase or decrease the value of 'Range Zoom', make  $V_{diff}$  approximate to 60V(six times of VOLT/DIV) .For the convenience of observing the waveform, you can turn the Sec/div knob to adjust time base to 500 $\mu$ s/div
8. When you finish adjusting 10V/div, turn the 'VOLT/DIV' knob of the oscilloscope to set voltage scale to next VOLT/DIV.
9. Repeat steps 6 -8 to adjust all the voltage scales of both channels.
10. When you finish the voltage adjustment, press the fifth option button to save the adjusted data.

## Trigger adjust

1. Input a square signal (200HZ) to CH1 channel and press the 'AUTO' button.
2. Press the CH1 button and set 'Coupling' option to 'AC'.
3. Press the 'UTILITY' button.
4. Press the 'Do Self Cal' option button.
5. Continuously press once 'CURSORS' button, press double 'MEASURE' button, press three times 'ACQUIRE' button to enter the adjust interface .
6. Press the 'Trig Adj' option button to enter the "Trigger Adjust menu". In this menu, there are four option buttons: Source, Center (Adjust trigger center) , delta (Adjust trigger range) and Save (Save adjust button) .
7. Adjust signal amplitude to make the waveform take up about one and a half divides of the screen.
8. Turn the 'LEVEL' knob to find the up limit and lower limit of the trigger range and figure out the trigger center of the waveform. For example: Trigger up limit is 1.2V, Trigger lower limit is -3.2V, now figure out the trigger center:  $(1.2V(\text{Up limit}) - (-3.2V)(\text{Lower Limit})) / 2 = 2.2v$  (Trigger Center) .Because the current trigger center is on the below side of the screen, you have to adjust the trigger center up.
9. Turn the 'LEVEL' knob to place the trigger level to 2.2V and press the 'Center' option button, then turn the 'Adjust' knob to increase center value to make this position change to the critical position between non-trigger position and trigger position.
10. When finish adjusting the 2.2v, move the trigger level to the -2.2v, observe the waveform whether in trigger and no-trigger verge, or else, repeat the step 9.
11. When you finish the voltage adjustment, press the fifth option button to save the adjusted data.

**NOTE: When you finish the two adjustments, you must change the oscilloscope to the release mode.**

**Enter the release mode:**

- 1. Press the 'UTILITY' button, and select the page 2/4.**
  - 2. Press the 'Do Self Cal' button.**
  - 3. Press once 'DEFAULT SETUP' button, double 'SAVE/RECALL' button, three times 'UTILITY' button to enter the release mode.**
  - 4. Finally you need to do once self calibration to the oscilloscope.**
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