How to Use External Trigger

Appliable model: 062

1. Brief explaination of external trigger

Trigger is an important portion of a oscilloscope. It is used to synchrounize captures to generate stable waveform displays and help to capture rarely appear signals. Most oscilloscopes contain a trigger that uses internal signal, i.e. the signal being viewed, as trig source. Some oscilloscopes can use signal other than the one being viewed as trig source, too. This is called external trigger.

For 062 digital storage oscilloscopes with firmware version of -080 or later the external trigger was implemented. This design note explains how to use the external trigger. It includes connection of external trig signal, selection of trig sources, and adjustment of trigger level.

2. Connection of external trigging signal

The point for external trig signal input is Pin 12 of J5. There are two ways to connect external trig signal.

1) Connect to pin 12 of J5 directly through a 2K – 10K (1/4W) resister. (see Fig. 1). The resistor protects scope from being damaged and can not be omitted.
2) Connect to the 500Hz Test Signal output terminal. In order to be able to do so pin 4 of J5 must be shorted to pin 12 of J5 (Fig. 2). When pin 4 and pin 12 of J5 are shorted the 500Hz test signal output will be automatically disabled as long as external trig source is selected.

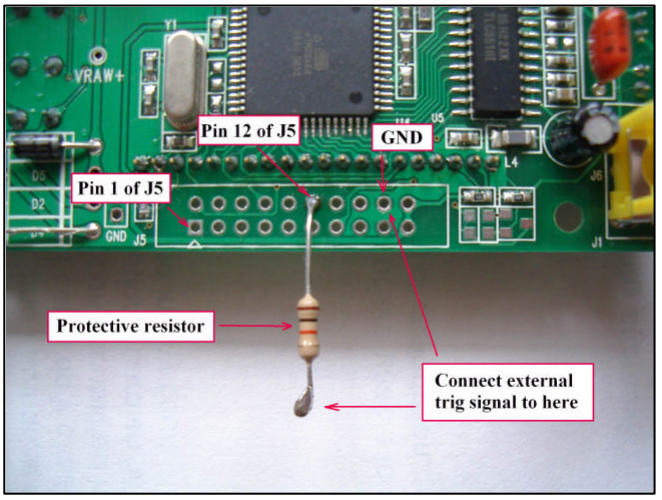

Fig. 1

3. Selection of trig sources

After external trig signal is connected you have to tell the scope to use it as trig source. This is done by first pressing [LEVEL] to highlight the trigger level indicator. Then press [LEVEL] again to toggle trig source to external. The little case letter above trigger level indicator shows currently selected trig source. " i " stands for internal trig. " e " for external trig. Press [LEVEL] to make letter " e " is displayed.

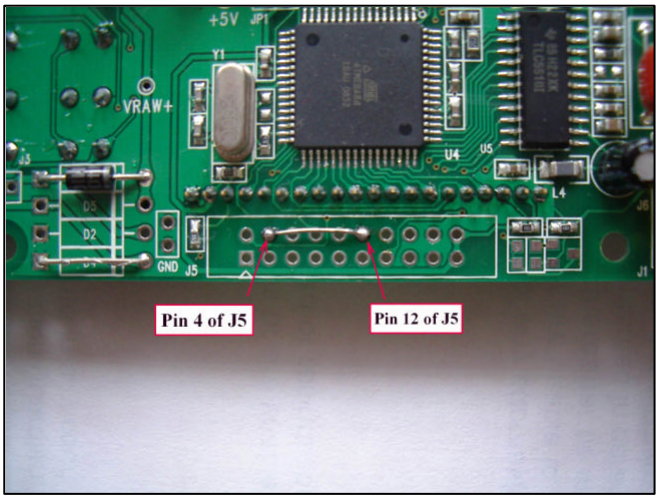

Fig. 2

4. Adjustment of trigger level

Trigger level is a constant voltage that determines at what level trigs are generated. Since trigs are only generated when signal level intersects with trigger level this voltage need to be adjusted from time to time. For 062 oscilloscope trigger level is adjusted by pressing [+] and [-] buttons while the trigger level indicator is highlighted.

When external trig source is selected trigger level adjustable range is 0V – 5V. The small triangle on the right border of the waveform window indicates trigger level with its bottom position for 0V and top position for 5V. Please note t\hat external trigger level is independent of internal trigger level and is not related to any shown waveforms. It is only a genearted voltage used to compare with unshown external trig signal to produce triggings.

From the discussion above we know that in order to be able to generate trigging by an external signal the external

signal (or part of it) must fall within the range of 0V – 5V and trigger level must be adjusted to intersect with it. This means users need to have some idea about the signal before using it as external trig source. After the signal is connected trigger level need to be placed at a appropriate to generate trigs.