



# USER CALIBRATION

FOR THE SIA-3000

**NOTE: Always allow a 30 minute warm-up period prior to performing system calibrations**

There are 5 distinct user calibration modes which need to be performed in order:

## Timer Calibration

This calibration mode affects all other calibrations and should be performed first. The Timer calibration characterizes the internal ramps that provide the fine accuracy and resolution for time measurements. The calibration data is stored in the instrument and used each time a measurement is taken. This calibration should be performed whenever the SIA-3000 has been off for a long period of time or if it is moved to a significantly different operating environment ( $>5^{\circ}\text{C}$ ). Users should allow a for 30 minute warm-up period prior to performing any calibrations or testing.

Longer calibrations will lower the noise floor of the SIA-3000. The "Extended" check box will allow the user to select increased time periods for the Timer Calibration.

## Oscilloscope/Arming Calibration

Calibrates the Oscilloscope function and the Arming Circuitry. Always perform this cal after Timer Cal. Additionally, if Deskew Calibration w/DC Offset fails, you should run this calibration first.

## Deskew Calibration with DC Offset

This calibration compensates for DC offsets and then automatically performs a "Deskew Calibration". This calibration deskews between channels and internal signal paths to the channel input connectors. This does not calibrate to the end of the cables used.

## Deskew Calibration

This calibration only deskews between channels and internal signal paths to the channel input connectors and is an optional 3<sup>rd</sup> cal. This does not calibrate to the end of the cables used. The DC offset calibration is not performed. *If "Deskew Calibration with DC Offset" is run, you do not need to run this calibration.*

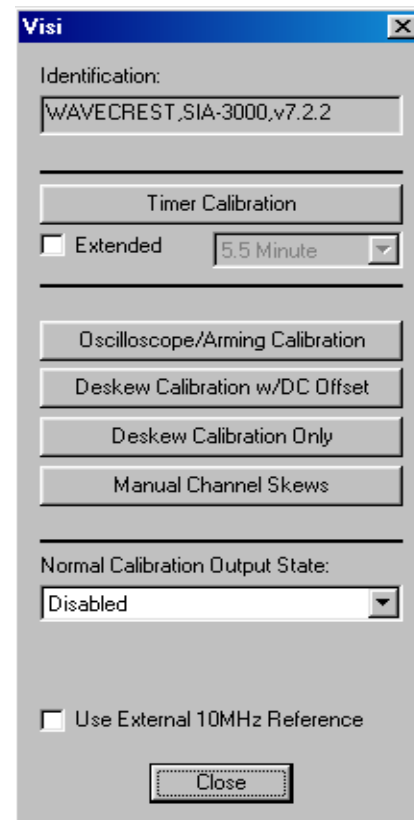


Figure 1. VISI Calibration dialog box

## Manual Channel Skews

This step is optional, it allows fixed time offsets to be added to or subtracted from a channel when a Channel-to-Channel measurement is made. This can be used to compensate for different cable delays between channels. *This will affect all channel-to-channel measurements or any measurement such as DataBus, Random Data w/ Bit Clock or any measurement using one channel as a "reference".* To clear these values, press "Reset". The values will also reset to zero if the instrument is powered down.

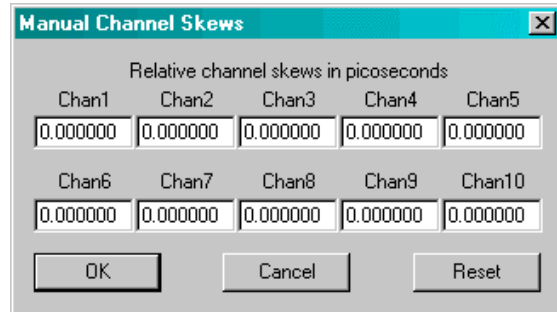


Figure 2. Manual Channel Skew setup

## Performing Timer Calibration

In the Menu Bar, select **Action** followed by **Calibration...**. Press "Timer Calibration" (Figure 1). To run an extended calibration, select **Extended** check box and choose the desired time from the drop down menu then press "Timer Calibration". No front panel connections are necessary for the Timer Calibration. The elapsed time is shown in the Status Bar on the lower right of the screen.

## Performing an Oscilloscope/Arming Calibration

- Go to the **Calibration...** menu. Select "Oscilloscope/Arming Calibration".
- Ensure nothing is connected to the channel inputs.

## Performing Deskew Calibration with DC Offset

This Calibration performs a DC calibration first and then performs the Deskew Calibration as described above. The purpose of the DC calibration portion is to zero any DC offset, which may be caused by active probes or any sort of DC offset in the setup.

- Select "Deskew Calibration w/DC Offset" (see Figure 1).
- You will be prompted to make connections to the channel inputs and should use matched electrical length cables. Two cables are shipped with the SIA-3000 for this purpose. Follow onscreen instructions to complete calibration.

## Performing Deskew Only calibration

*You do not need to perform this calibration if you have already performed "Deskew Calibration with DC Offset".*

- On the Menu Bar, select **Action**, and select the **Calibration...** menu.
- Select "Deskew Calibration" (see Figure 1).
- A dialog window appears informing the user to connect the calibration cables (use provided matched cables).
- Follow the onscreen instructions to complete the calibration.

## Entering Manual Channel Skews

*Only enter values here if the delay differences between channels is known. When using differential inputs, the cables connected to each pair of channel inputs must be a matched set.*

The values entered are relative to one of the channels, one value will always be left at 0.0000.

- On the Menu Bar, select **Action**, and select the **Calibration...** menu.
- Select "Manual Channel Skews" (see Figure 1).
- A dialog window appears allowing the user to enter relative channel skews. Enter values in picoseconds.

In Figure 3 example values are shown. The values that are input are the differences between channels, not the absolute electrical length of a cable on that channel.

For instance, Channel 1 cable is 2.80ns. Channel 2 cable is 2.8205ns. So the value entered in "Channel 2" is the difference, 20.5 ps. Note in this example, Channel 5 is 14ps shorter than Channel 1.

The SIA-3000 is now ready to make measurements. Refer to the SIA-3000 User's Guide for a description of the features and measurement tools on the instrument.

Relative channel skews in picoseconds				
Chan1	Chan2	Chan3	Chan4	Chan5
0.000000	20.500000	17.000000	5.600000	-14.000000
Chan6	Chan7	Chan8	Chan9	Chan10
0.000000	0.000000	0.000000	0.000000	0.000000

Buttons: OK, Cancel, Reset

**Figure 3. Manual Channel Skews**

FOR MORE INFORMATION CONTACT:

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Rev 09.11.02\_tag