

Operation of Fluke 199C Oscilloscope:

Automatic Operation: This is the simplest and quickest way to capture a signal, knowing little about what you are measuring.

- A. Turn scope on – **circular button** in lower left hand corner.
- B. Push the yellow button labeled “**Scope**”.
- C. Press the lime green **Auto/Manual** button.
- D. Connect to where you wish to measure.
 1. The oscilloscope will auto-range to the correct voltage range, time scale, etc. The trigger will go to “Auto Level”, and the trigger mode will go to “Automatic”.
 2. Adjustments may be made from that point, such as changing the time scale, voltage scale, readings, using cursors and using screen capture.

Use of “Screen Replay”



- A. The scope meter will (automatically) capture up to 100 of the most recent scope screens. (This is the case whether triggering for the scope is set to automatic trigger, one shot, or “on trigger”. Each refresh will result in a screen stored in the memory.)
- B. To look at what has been saved, press the “**Replay**” button.
 1. A control panel will appear at the bottom of the screen, allowing you to scroll through each screen one at a time for a close look, scroll back one at a time, or hit play and rapidly go through all of the replay screens.
 2. On any recalled screens you may use the cursors and zoom functions to get a better look at the waveform.
 3. Individual Screens may be saved to one of the 15 memory positions.
- C. If any scope adjustments are made (time scale, voltage scale, trigger level, etc), everything previously captured by the replay memory will be lost.

Use of the Scope Memory

- A. Press the light blue “**hold/run**” button to freeze the scope screen. The word “**Hold**” will appear in a box in the upper right hand side of the scope screen.

- B. Press the **“Save/Print”** button on the lower right had side of the scope control panel. The memory menu will appear across the lower portion of the display.
- C. Press the **F1** button directly below the word **“Save”**. A sub-menu will appear. Showing all of the available **“screen + setup”** and **“record + setup”** positions.
- D. Using the **up and down/left and right arrowed buttons** on the scope control panel, highlight the position where you wish to save the screen shot, and then press the **F4** button to save the capture in that specific memory position.
- E. If there was already something in the memory, denoted by the box in front of the memory position being filled in, you will be asked whether you wish to overwrite the data in that memory position.
- F. **To later recall** and view what you have stored, press the **“Save/Print”** button. The memory menu will appear across the lower portion of the display.
- G. Press the **F2** button below the **“Recall”** designation, or the **F4** button below the **“View”** designation.

Downloading Saved Screens to a File or Document

- A. Connect the scope to your computer via the optical coupler supplied with the scope meter.
- B. Open Fluke View. The softwear will automatically prompt you about your desire to connect to the Instrument.
- C. Turn on the Scope Meter.
- D. Click on the **“Connect”** button on the computer screen.
- E. Once connected, the buttons across the top of the computer screen will light up.
- F. To download the screen displayed on the Scope Meter into Flukeview, select the button with the picture of a camera on it.  The screen will download and appear.
- G. Alternatively, you may download the Scope Meter capture as a waveform by using the waveform button. 
- H. The screen/file may now be saved as you would any file, but it will have a file extension **”fvf”**, making it only viewable with Flukeview. Alternatively, you may copy the graphics via the edit dropdown, and past the picture to another document.

Capturing Fencer and Trainer Transients.

A. Basic Setup: Scope.

3. Turn scope on – **circular button** in lower left hand corner.
4. Push the yellow button labeled “**Scope**”.
 - a. A blue set of options will show up along the bottom the screen
 - b. Push the **F1** button to turn reading on and off. Turn them off.
 - c. Push the **F4** button for Waveform Options. Another screen will open up.
 - d. On the new screen, push the up and down arrows to alternatively turn Glitch detect on and off. Turn **Glitch detect ON**
 - e. Use the side arrow to “Average”. Use the up/down arrows to Turn **Average OFF**.
 - f. Use the side arrow to move to “Waveform”. Use the up/down arrows highlight normal, and then press enter (Button F4) to activate “**Normal**”.
 - g. Push the circular “**Clear Menu**” button to remove the blue menu from the screen.
5. Input to Channel A:
 - a. Push the square “**A**” button to turn on the channel A menu. A blue menu will appear at the bottom of the screen.
 - b. Alternately pushing the **F1** button will turn input A on and off. Turn **input A on**.
 - c. Alternately pushing the **F2** button will alternate the coupling between DC (direct coupling) and AC. **Turn on DC**.
 - d. Generally we will be using the 1:1 probe. Pushing the **F3** button will open up the probe menu.
 - 1) From the open probe menu, use the **up and down arrows** to highlight “Voltage” under probe type. Then pressing the **F4 Enter** button will select the highlighted voltage probe selection.
 - 2) Pressing the Enter button in step 1) automatically moves you to the “Attenuation” portion of the menu. Use the **up/down arrows** to **highlight “10:1”**, and press the **F4** enter button to select the 1:1 attenuation. You will then be automatically returned to the main input A menu.
 - e. Press **F4** for other Input A Options. Another submenu will be opened.
 - 1) Use the **up/down arrows** to highlight “Normal” polarity. Then press the **F4** enter button the select **Normal**.

- 2) You will be automatically be moved to the “bandwidth” submenu portion of the screen. Use the **up/down arrows** to highlight “**Full**”, and press **F4 Enter**. This will close out the submenu, and return you to the Input A menu.
- f. Press the round “**Clear Menu**” button to clear the menu.
6. Trigger Menu.
 - a. Press the rectangular “**Trigger**” button to open the trigger menu.
 - b. Pressing the **F1** button will scroll you through the “**Edge Trig**” selections. **Highlight A.**
 - c. Pressing the **F2** button will alternate you between the positive and the negative Slope option. Highlight the left “**positive**” slope.
 - d. The trigger level is denoted black mark in the middle of the screen. Use the **up/down arrows to adjust.**
 - e. Push the **F4** button to open the “**Trigger Options**” submenu.
 - 1) Use the **Up/Down** arrows to highlight “**On Edges**” selection under trigger options.
 - 2) Pressing the **F4 Enter** button will make that selection, and automatically bring up the Trigger on Edge submenu. Use the **up/down arrows** to highlight “**single shot**”, and press **F4 enter** to select single shot.
 - 3) You will be automatically moved over to Noise Rejection Filter submenu. Use the **up/down arrows** to highlight **OFF**, press **F4 Enter** to select, and you will automatically be brought back to the main trigger menu.
 - f. Press the **Clear Menu** button to clear the trigger menu.
7. Input to Channel B Input.
 - a. Press the **square B** button. The Input B menu will appear.
 - b. Press the **F1** Input B button to alternately turn the B input on and off. **Turn it off.**
 - c. The rest of the menu and submenus behave the same as for the A input. There is no need to set these unless you would be using the B input. Press the **Clear Menu** button to clear the trigger menu.
 - d. Press the Clear Menu button to clear the trigger menu.
- B. Saving the Setup.
 1. You only have to go through the above once. This setup can be saved.
 2. Press the round “**Save/Print**” button to open the save menu.
 3. Press **F1** to open the Save submenu.
 4. Use the **up/down arrows** to highlight the location (out of 15 choices) where you wish to save the setup. (The active screen goes with it.)

5. Press **F4** save, and your setup and the screen that was on the scope will be saved in the location you selected.
- C. Recalling a Setup.
1. Press the round “**Save/Print**” button to open the save menu.
 2. Press the **F2** Recall button.
 3. Use the **up/down arrows** to highlight the location (out of 15 choices) where you saved the setup.
 4. Press **F2** Recall Setup button to recall you saved setup.
 5. You will be automatically be brought to a screen w/ your setup.
- D. To capture a series of fencer transients.
1. Attach you 1:1 probes to the Input A connector.
 2. Turn on the scope.
 3. Connect the probe between the two points of the selected cow contact location, preferable at close to (in) the location and w/o other wires attached to the location.
 4. You will have to adjust the trigger level, voltage scale, and time scale to capture what you want.
 - a. Start with the voltage scale set to 1 Volt per division, the time scale set at 1 second per division, and the trigger set around a couple of volts. (Use the 1 second per division scale because the fencers generally put out 1 pulse per second, making it easy to identify that what you are capturing is a fencer or trainer transient.)
 - b. If nothing shows up, open the trigger menu by pressing the rectangular **Trigger** button.
 - 1) Use the **up/down arrows** to adjust the trigger level until you get something.
 - 2) If you still get nothing, change the voltage scale by pushing the Input A **Range** button to change the scale to higher or lower values. Note the scale per division changes in the red box on the lower left side of the screen.
 - c. If the screen is overloaded, with signals appearing off screen, change the input scale by pushing the **Range** button to raise the scale. Raise it until the entire signal appears on the screen.
 5. Press the **Clear Menu** button to clear the trigger menu, once you are satisfied w/ your snapshot.
 6. To save the screen, press the **Save/Print** button, press **F1** to open the save menu, use the **up/down arrows** to highlight the location you wish to save the screen, and press **save**. Press the **Clear Menu** button to clear the Save/Print menu. You are now ready to go again.

7. Because you are set up for single shot capture, the scope will capture any signal where the trigger level is exceeded. It will then stop, and HOLD will appear in the upper right corner of the screen. If you are satisfied w/ the screen, you can save it as described above. If not, you can adjust your scale and trigger settings, press the rectangular **“Hold/Run”** button, and the scope is ready to go again. Regardless, if the Hold signal appears on the screen in the upper right hand corner, you can rearm the scope by pressing the Hold/Run button.
- E. To look at an individual fencer transient.
1. Once you have captured a series of fencer or trainer transients, you can leave the voltage scale and trigger level alone.
 2. The time scale can be adjusted up or down by rocking the rectangular **“Time”** button.
 3. Change the scale down to a point where you can identify the up and down undulations (like that word?) on the screen which will enable you to determine the Phase duration. On the Fluke 199C, you can change the time scale all the way down to 5 nanoseconds/ division (ns) and still have the glitch detect activated.
 8. Once you capture a signal you are happy w/ by alternately pressing the hold/run button and changing the time scale, (and voltage scale as necessary), you can save the screen as previously described. Press the **Save/Print** button, press **F1** to open the save menu, use the **up/down arrows** to highlight the location you wish to save the screen, and press **save**. Press the **Clear Menu** button to clear the Save/Print menu. You are now ready to go again.
- F. Printing Saved Screens.
1. There are several ways to handle the saved screens to save them to a file and include them in reports. They all start by opening the Flukeview Softwear.
 2. Word
 - a. Connect you scopemeter to the computer using the fiberoptic connection cable.
 - b. Recall you saved scope shot on the scopemeter.
 - c. Going to the Program Menu on your computer, you can open up **“Qreport”** to automatically open up a “Fluke ScopeMeter Test Report” blank document.
 - d. In the upper right hand corner is the picture of a camera. Click on the **camera**, and the computer will automatically connect to the scopemeter connected to the Com Port 1.

- e. The computer will automatically bring the active screen from the scope, and insert it into the work document. You can then finish filling out the report by inserting the name, etc. You can then save the document as you would any word document.
3. Bringing the saved screen into Flukeview.
- a. Going to the Program Menu on your computer, you can click on **“Flukeview”** to open up the “Flukeview” software.
 - b. If the scope meter was already connected to the Com Port 1, the scope will automatically be connected to Flukeview. Otherwise, you can connect to the scope by clicking on the **connection icon** in the upper right hand corner of flukeview software.
 - c. Clicking on the **camera icon** will bring in the active scopemeter screen to the Flukeview software. Clicking on the camera w/ the question mark will let you bring in screens from the memory locations.
 - d. Once in Flukeview, you may:
 - 1) Save the screens as bitmap or fvf files at a location of your choosing. (FVF files are for Flukeview, and can only be viewed by the software. A BMP is better.)
 - 2) You can also transfer the displayed (and highlighted) screen to a word document by first going to the **Window Drop Down Menu** and highlighting **“Default Size”** (to maintain resolution), then click on the **“Copy the Graphics to the Clipboard” icon**, (or go to the Edit drop down menu and click on “Copy Graphics”), open a Word document, and then pasting the graphics from the clipboard to the word document. You can then add whatever description you wish.