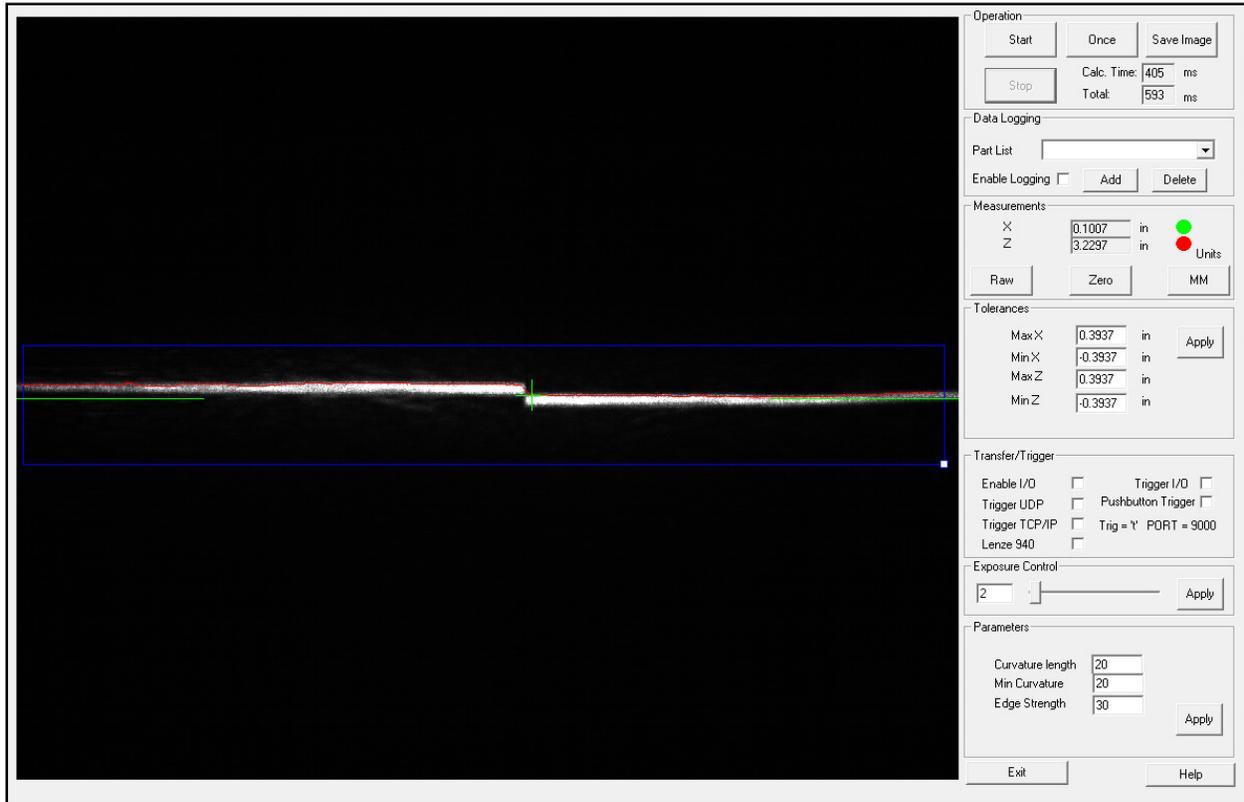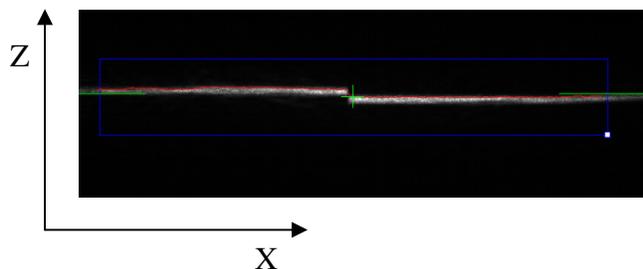# Lucana Weld Help

About Lucana Weld

Lucana Weld is an affordable device that can measure the X and Z coordinates of the seam between two materials being welded together. Lucana Weld can perform measurements automatically without calibration, setup or programming.

Camera Connection

Lucana hardware can be connected to a computer through a USB 2.0 port. The application will fail if Lucana is opened without a camera connected. This will cause an error message to be displayed. If the camera is disconnected while Lacuna is running, the program will pause and you will be notified. Operation will resume when communication is re-established.

Region of Interest

The Region of Interest (ROI) can be moved over the desired area of the image, resulting in more accurate measurements. To select a region, first select STOP, Lucana must **_not_** be in the live image capture mode. Move the ROI by pressing anywhere within the blue box and dragging it to the desired area. To resize the ROI, press the small box in the lower, right corner, and adjust to include the entire width of the welding area. Once you are in live image capture mode, the ROI will turn red indicating that you cannot alter the ROI until you stop the capture. For the most accurate measurements, align the laser with the horizontal green reference line displayed on the screen.

Note: The object of interest should be placed **_perpendicular_** to the laser.
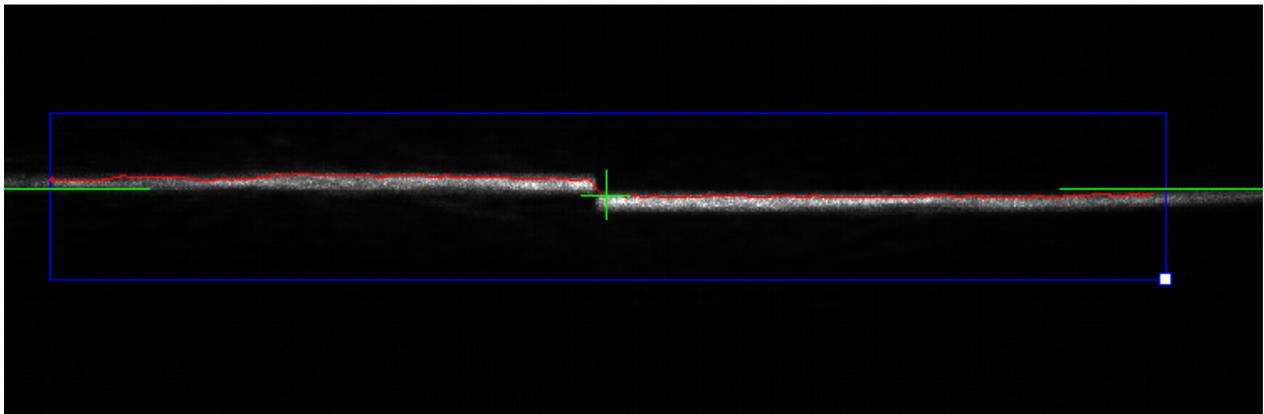
Camera Operation

There are two options to view the objects. The camera can be operated in a live feed mode by choosing the START button once the ROI is over the seam being welded. While in live mode, a continuous image feed is displayed. The ROI box will turn red and red cross-hairs should appear indicating points of measure as shown under ROI section in this help document. Measurements of X and Z offsets are calculated and displayed in units of inches / millimeters.

A second option is to capture a single image using the ONCE button. Measurements are then calculated and displayed.
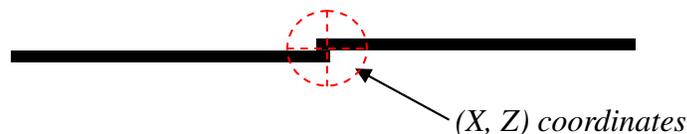
SAVE IMAGE saves the currently displayed image to a specified location.
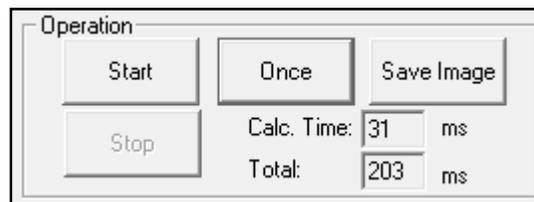
Measurements

Lucana Weld calculates X and Z coordinate of the seam between two materials being joined together.

(X, Z) coordinates

The measurements can be displayed in inches or millimeters and can be adjusted by selecting the button next to the measurement display. Once tolerances are set, an indicator displays whether the measurements are within specified tolerances (red: not within specified tolerances or green: within specified tolerances). If the ROI is not placed properly to cover a sufficient amount of the image, measurements cannot be made and cross hairs will not appear.
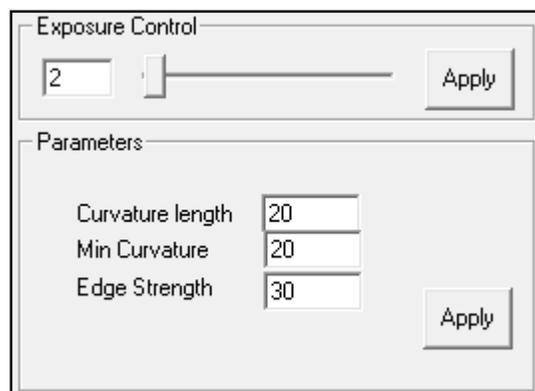
Measurements (continued)
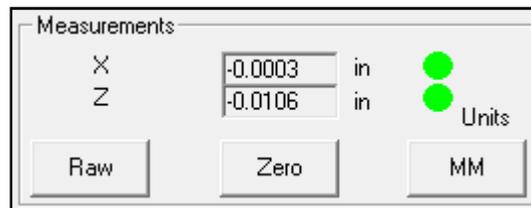
RAW displays the X and Z coordinate relative to the center of the image and to the camera respectively. To take effect, STOP Lucana, then press RAW. Press START or ONCE to update measurements.

ZERO displays the X and Z coordinates relative to a specified point. To take effect, STOP Lucana, press ZERO. The measurements should now read close to zero for both X and Z at the current location. Once START or ONCE is pressed and the seam moves, Lucana will be displaying the X and Z offsets from the point at which the program was set to zero.

Exposure Control & Parameters

The exposure can be controlled by adjusting the slider to a desired time or manually entering a value in milliseconds. Changing the exposure until a clear image of the laser is observed will allow for better performance and more accurate readings. "Edge Strength", found under "Parameters", can be adjusted in conjunction with exposure control. It is important that the laser is not saturated. It is therefore typical for a lighter object to have lower exposure time and edge strength and a darker object to have a higher exposure time. An ideal image of the laser would result in the edges being a dull gray color as shown in previous images.

Exposure Control & Parameters (continued)

Initial values for "Curvature Length" and "Min Curvature", located under "Parameters", must be entered for Lucana Weld to make accurate measurements. Curvature Length values must be between 10 and 60 while Min Curvature must be between 10 and 100.

Typical Values for Curvature Length, Min Curvature, and Edge Strength are 20, 20, and 30 respectively.

Tolerances

A range of acceptable values for X and Z coordinates can be set by indicating the minimum and maximum values in millimeters or inches. You **_must_** press APPLY for new variables to be considered. If a single image is being captured and tolerances are changed after the image has been taken, the ONCE button must be pushed again after the tolerances have been applied for them to take effect.
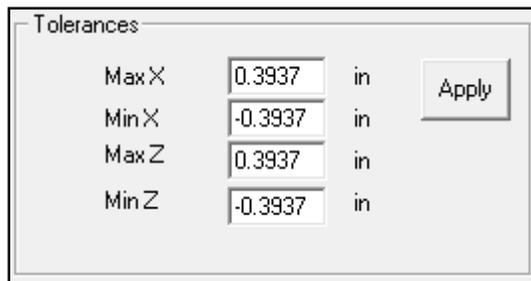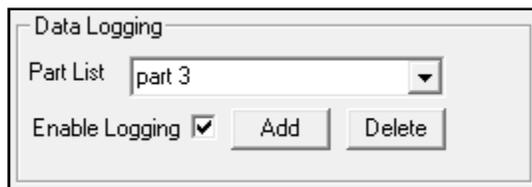

Data Logging

To log the data to a text file, select from the drop down menu the part ID that you are examining. If the part is not there, you can add it by entering the part ID into the list and pushing ADD. After you have selected the part from the drop down menu, check the "Enable Logging" checkbox and press START or ONCE to record the data. Push STOP and uncheck the "Enable Logging" box when data logging is completed. The logs will be located in a folder in C:\weldlogs. The logs are organized by part ID and by date.
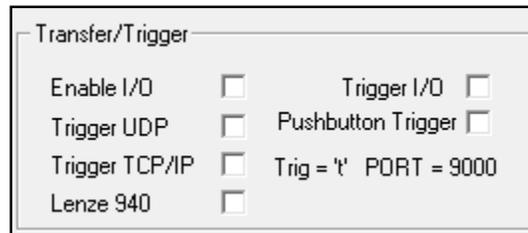
To delete a part, select the part from the list and press DELETE. Press OK on the confirmation.
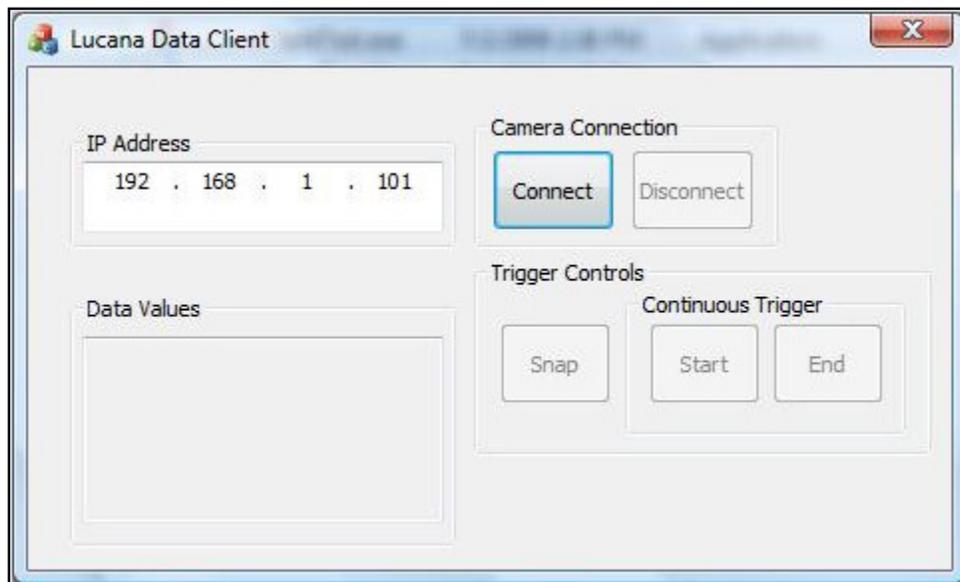
Transfer/Trigger

These options determine in what way the data is transferred between the computer running Lucana and the computer receiving data, as well as if a trigger will be used. Data can be transferred through UDP, TCP/IP, or through I/O console.

Transfer Client using UDP

To test the transfer of data through a UDP connection, Lucana Data Client is provided. After installing Lucana Data Client on the "communicating" computer (client computer), Lucana Data Client will communicate with the Lucana (host computer). To connect, enter the IP address for the computer which is running Lucana (the server computer). *NOTE:* To connect properly, make sure that Lucana is running. After you press START on Lucana GUI, press the CONNECT button on Lucana Data Client. This will establish the connection. SNAP will trigger Lucana by sending the string 't'. Once Lucana receives the trigger string, it will measure and send measurement data back to the client. START, in Continuous Trigger box, will cause to continuously trigger and receive data.

Transfer Client using TCP/IP

To transfer data via TCP/IP connection, you must first set up a TCP/IP connection between the server and client computer. *NOTE:* Use port 9000 for connection. Press the "Trigger TCP/IP" check box before establishing a connection. After connecting, send "t" to the server. The configuration is network specific. Please advise your IT staff if you encounter any problems.

Using an I/O device

To use an I/O device, plug in the device so it is on the network. Change the IP address of the I/O device to 192.168.0.100. After the device is on the network, check the "Enable I/O" check box and press START. NOTE: Be sure to check the "Enable I/O" checkbox before pressing START.

Using a Pushbutton Trigger

To use the Pushbutton on the Lucana device, check the "Pushbutton Trigger" checkbox found under Transfer/Trigger after selecting STOP. Once this is checked, select START. The screen should appear frozen, as no measurements are being taken until you push the pushbutton on the Lucana device. The pushbutton acts as the ONCE button would, therefore only taking one measurement at a time.

TROUBLESHOOTING

Image is frozen or no image is displayed:
- Check to confirm that START is selected and you are in live-image capture mode.
- Check that a camera is connected.
- If a trigger was selected when Lucana Weld was closed, Lucana may be waiting for a trigger. If this is the case, "Waiting for Trigger" will be flashing. Either continue with the trigger, or uncheck the box.
- If the above suggestions do not help, try closing out of Lucana Weld and re-opening the application.