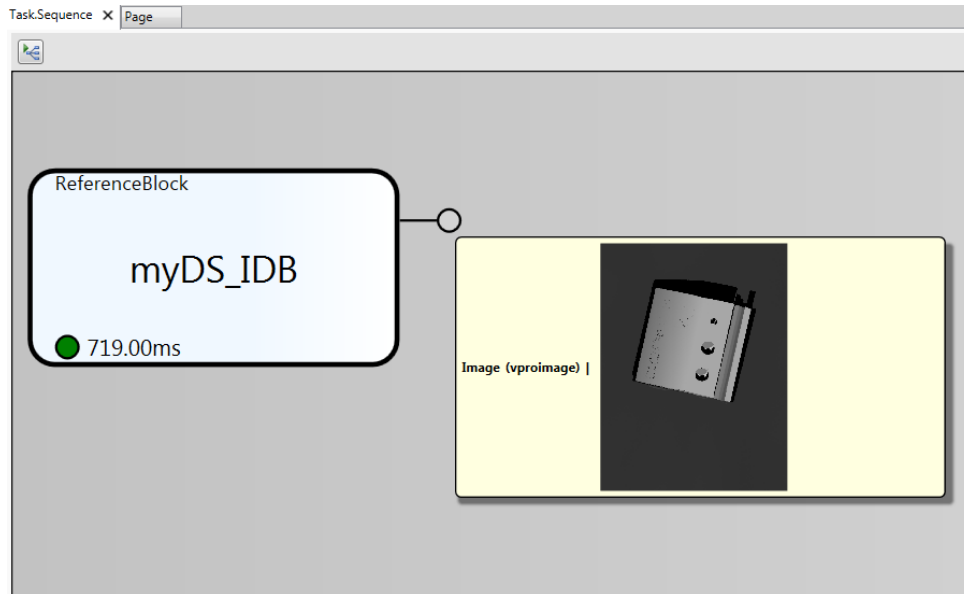


Cognex Designer Standard – Section 1
Intro to 3D Sensor & Getting a Good Image Lab
Approximate Duration: 20 minutes

EXPECTED OUTCOMES:

- Verify PC network settings
- Verify 3D Displacement Sensor network settings
- Add and set-up the DS1100 system

EXPECTED VISUAL RESULT:



OUTLINE OF LAB:

1. **Verify the Hardware connections**
 - a. Check cables
 - b. Check LEDs
2. **Verify PC Network Settings**
 - a. Confirm eBus Universal Driver
 - b. Verify PC and 3D DS Sensor network settings match.
 - c. Maximize Jumbo Frames
3. **Launch Cognex Designer**
 - a. Start a new application
4. **Connect to DS Camera system**
5. **Add DS Device to Sequence**
6. **Use Acquisition Wizard to Set-up the DS unit**
 - a. Set Exposure
 - b. Set Range of Height
 - c. Set Motion Set-up
 - d. Set Range of Image
 - e. Save Application

Steps for the Lab:

1. Verify the Hardware Connections

- Connect power and network cable to your 3D Displacement Sensor.



- Use the LEDs on the unit to verify power and network connections are intact.

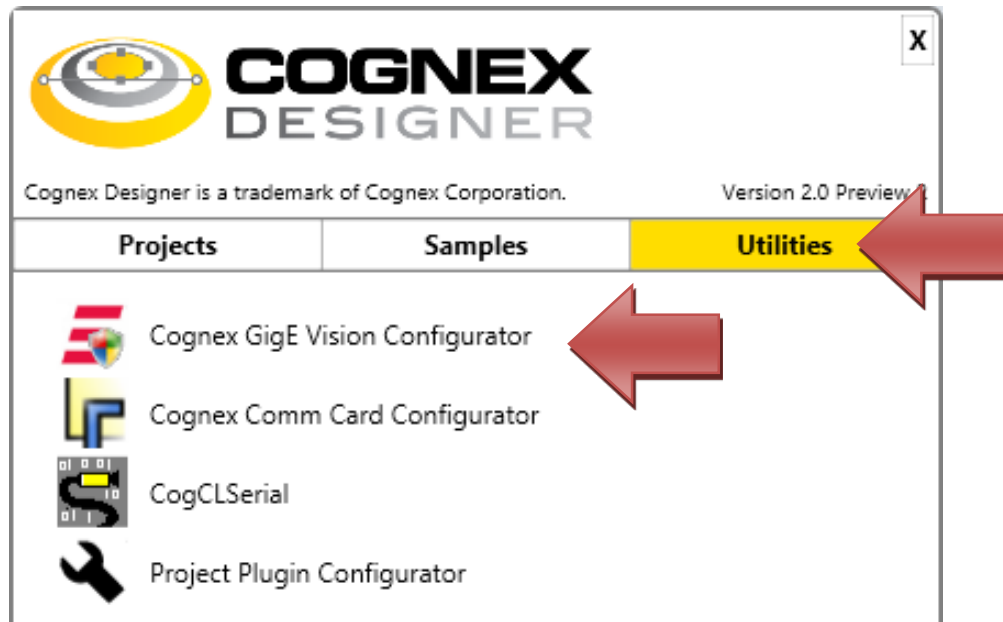
Status LEDs



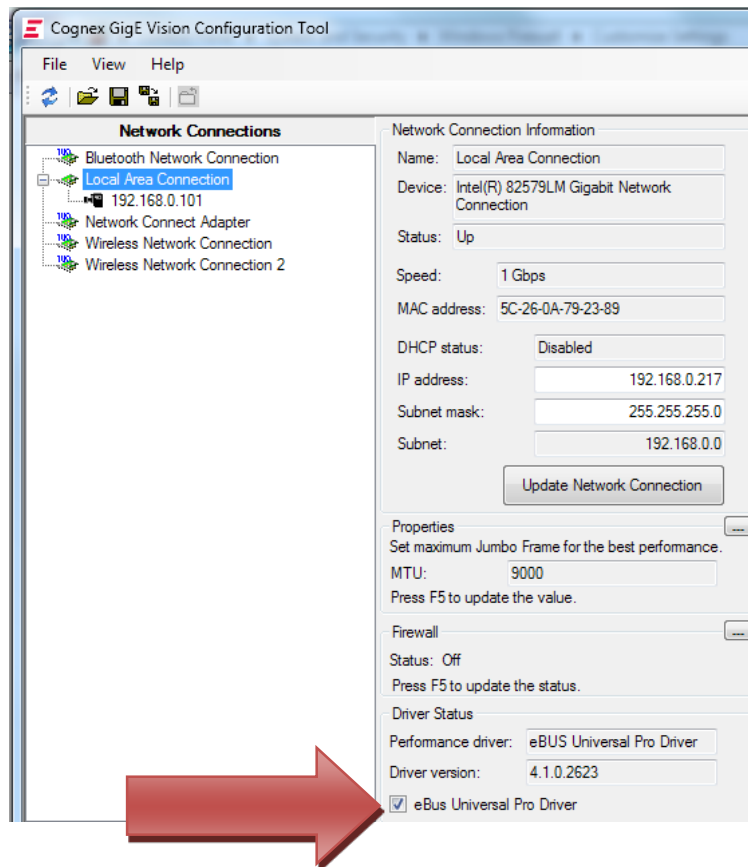
2. Open the Cognex Designer launcher app by double-clicking on the Cognex Designer shortcut (found on the Windows desktop).



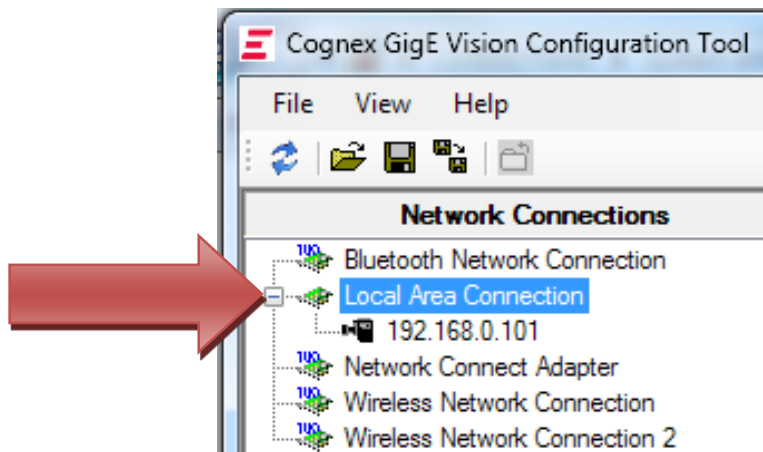
- Head to the Utilities tab so that you can launch the GigE Vision Configurator



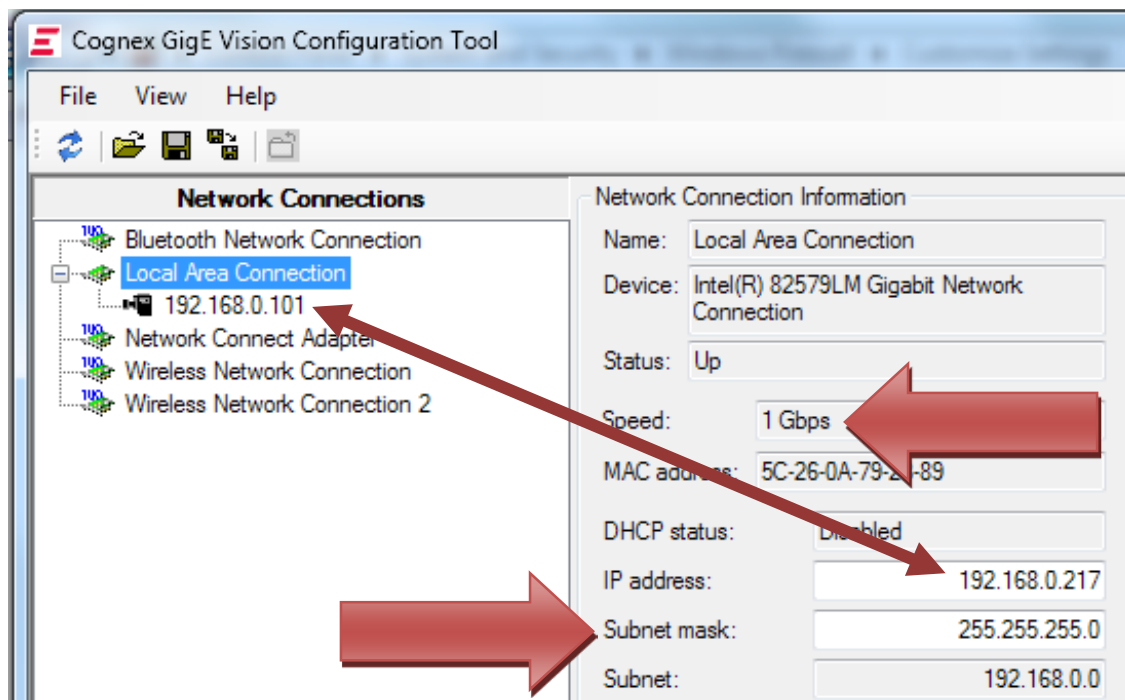
- Verify PC network settings:
 - Select you Network Adapter and make sure its eBus Univerval ro Driver is checked.



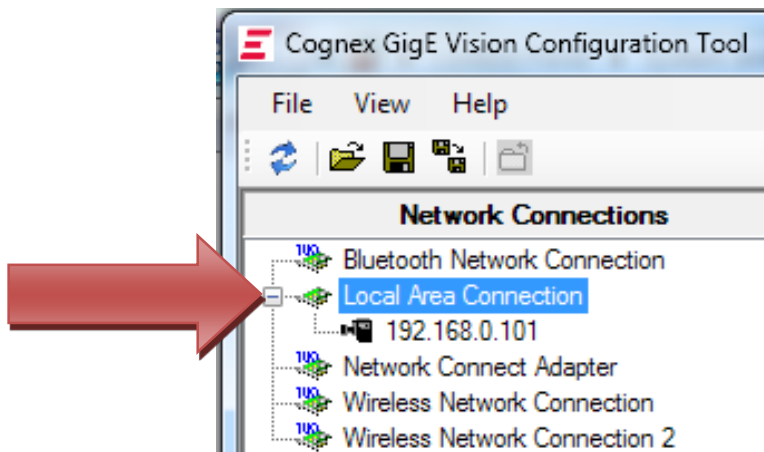
- Verify PC and 3D DS Sensor network settings match.
 - i. Select the Local Area Network entry in the GigE Vision Configuration Tool. You may need to expand it in order to see the 3D Displacement Sensor listed under it.



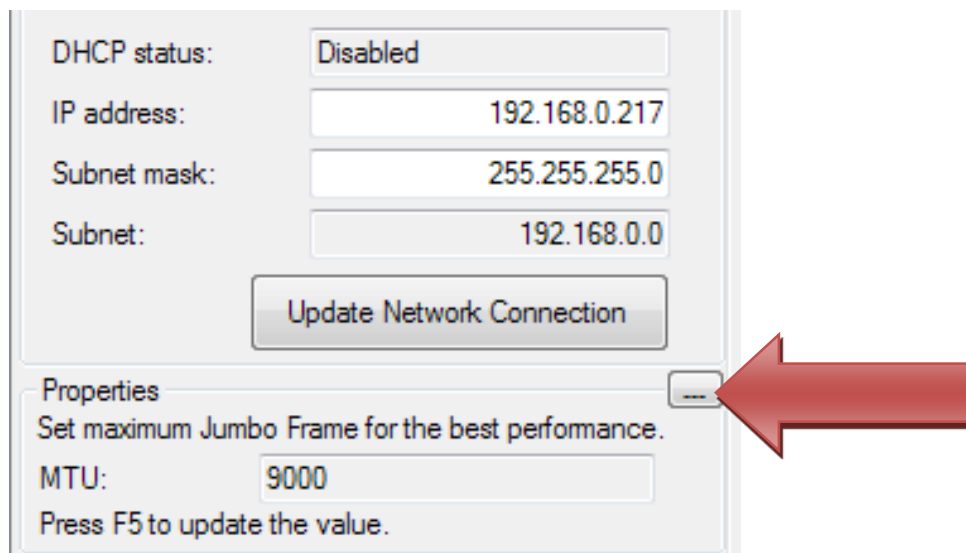
- ii. Check the IP address of the 3D Displacement Sensor and make sure it matches the first 3 numbers if your subnet is set to the recommended 255.255.255.0.



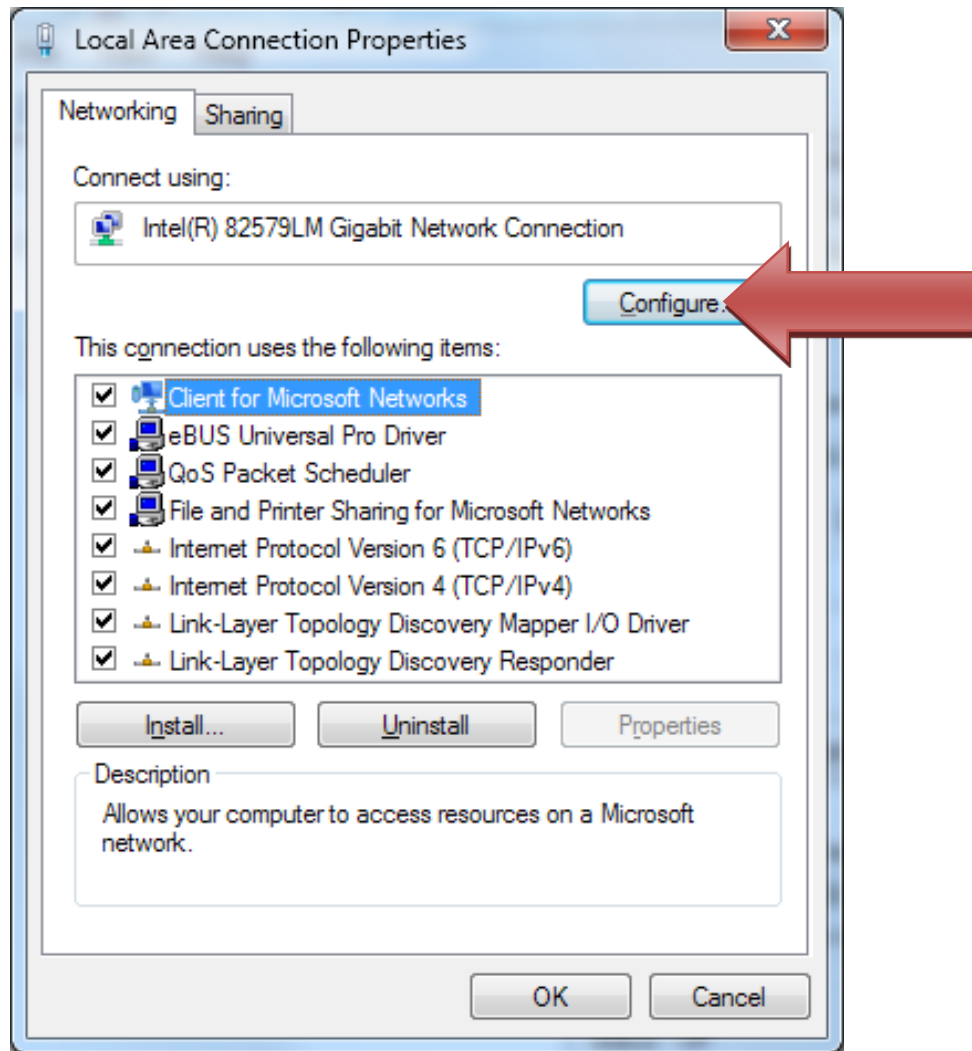
- Maximize Jumbo Frames (MTU)
 - i. Select the Local Area Network entry in the GigE Vision Configuration Tool. You may need to expand it in order to see the 3D Displacement Sensor listed under it.



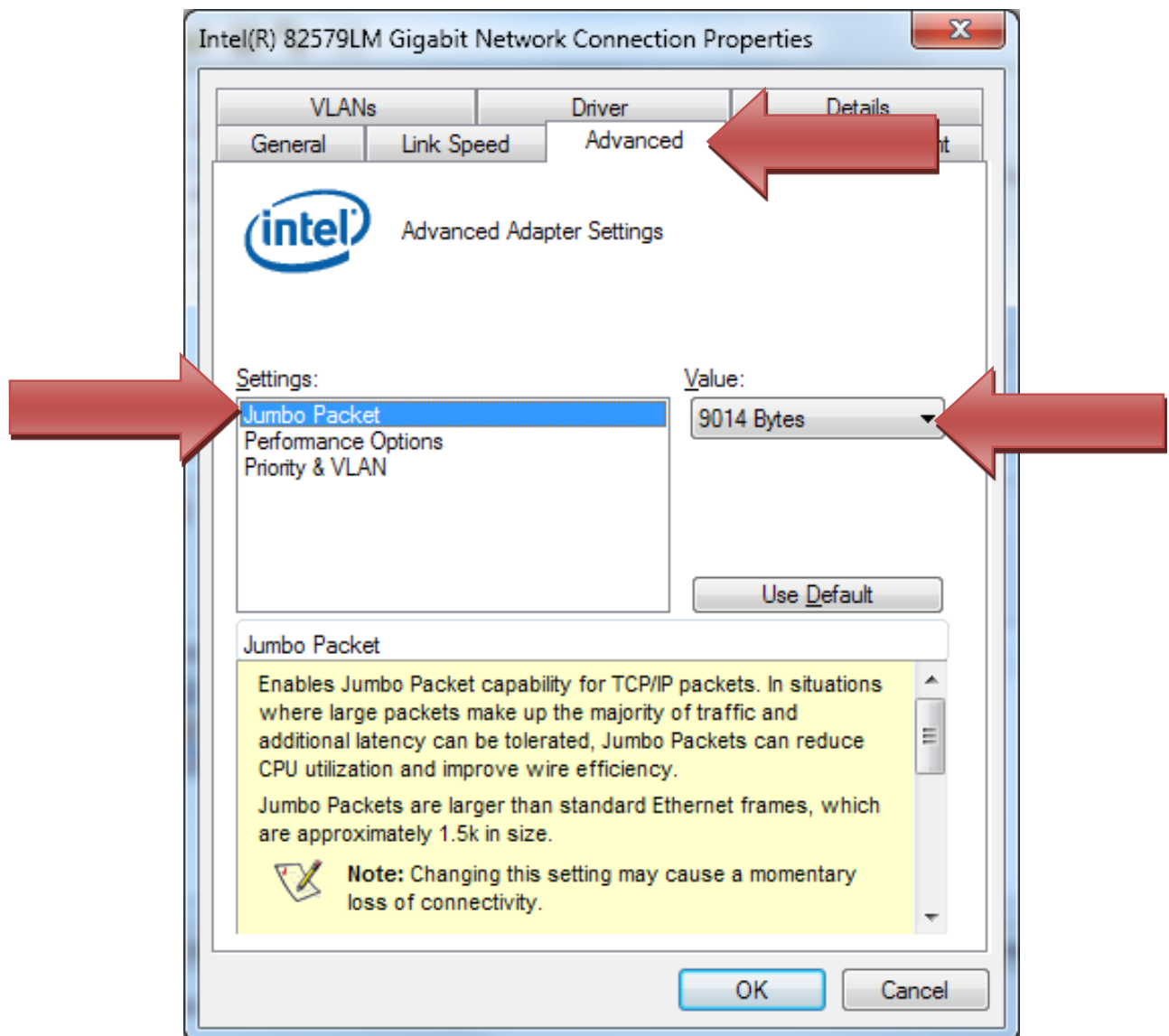
- ii. Click the “...” button for Properties.



- iii. Click the “Configure” button of your Local Area Connection properties.

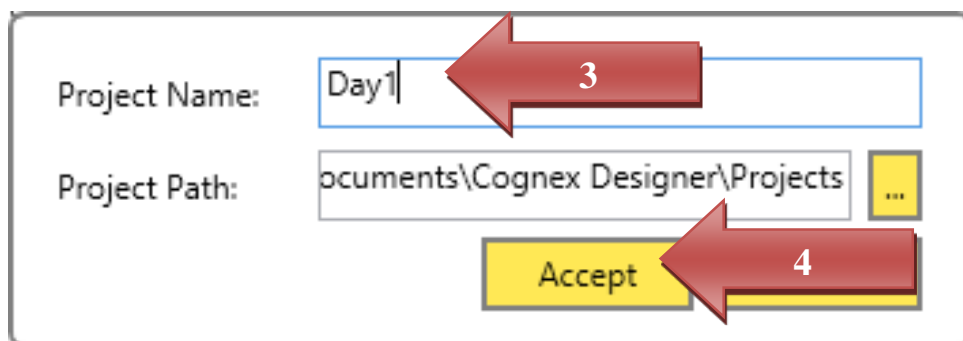
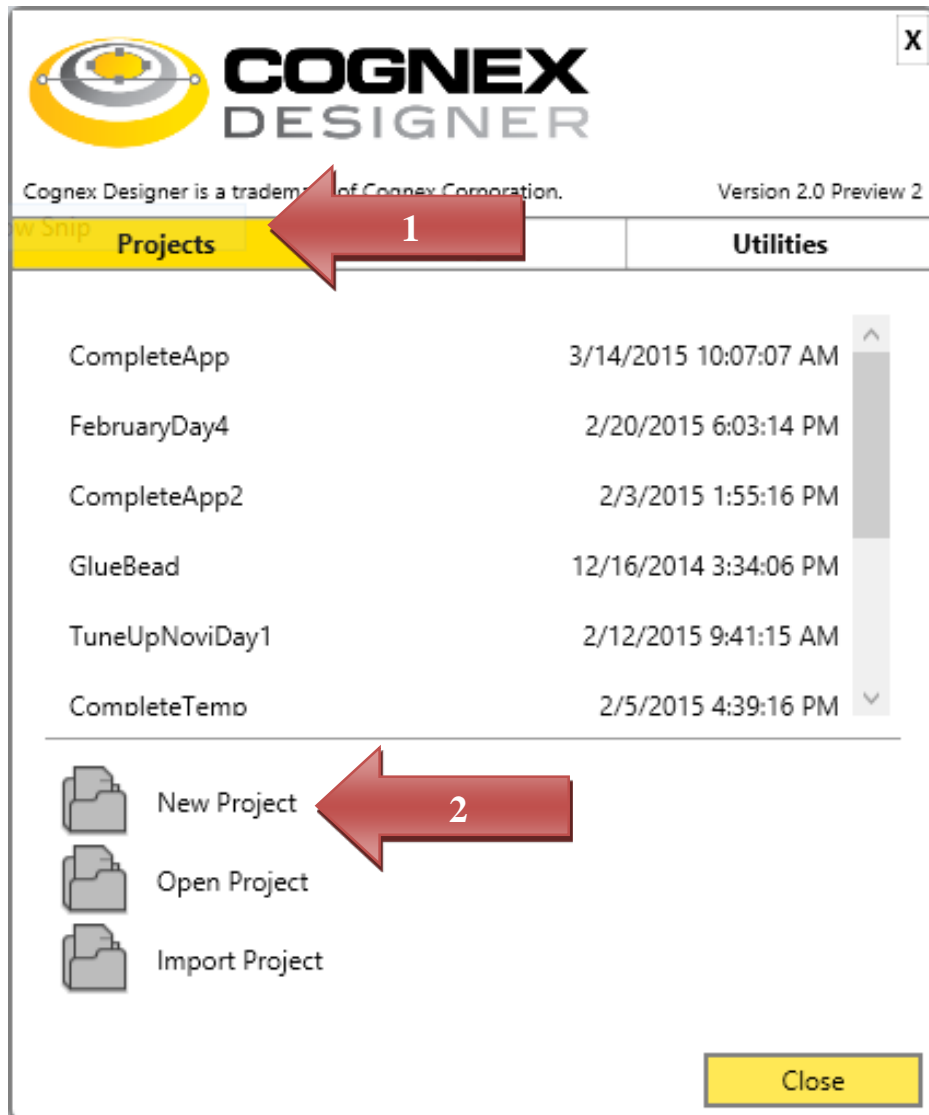


- iv. Select the Advanced tab, then select Jumbo Packet settings and choose the highest available value. Click OK to confirm the change on previous dialogs that may be left open.



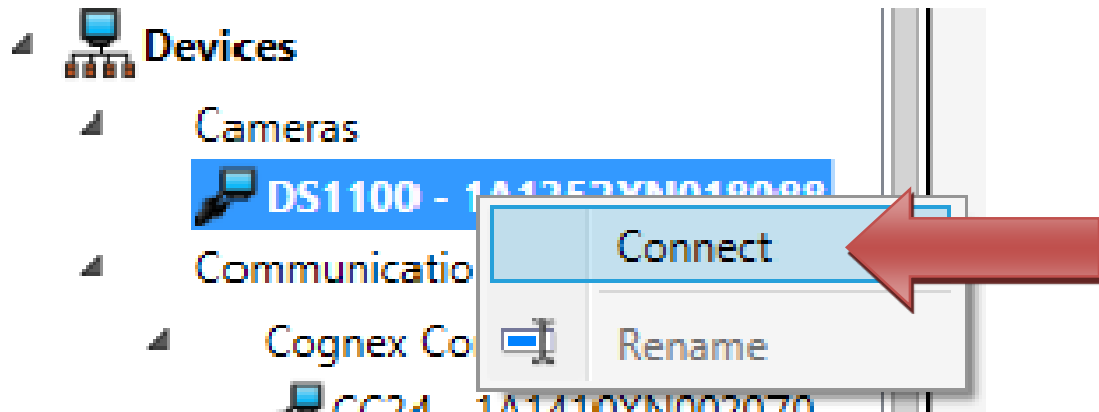
5. Back in Cognex Designer launcher app...

- Select the Projects tab
- Click “New Project” and set the project name. Click Accept.

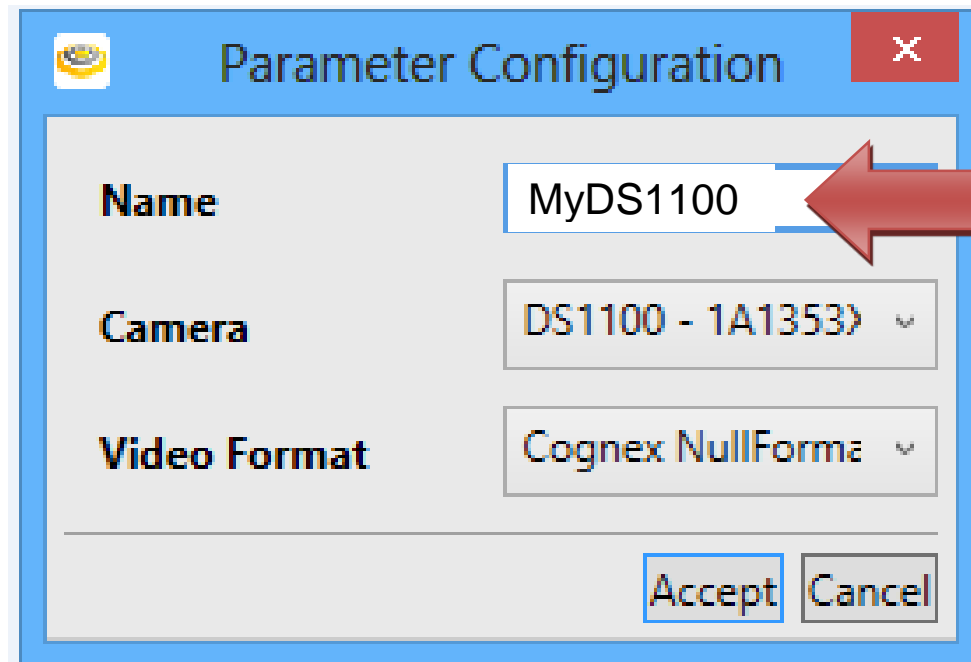


6. Connect to the DS camera system

- Right-click on the DS1100 entry under Devices→Cameras and click Connect.

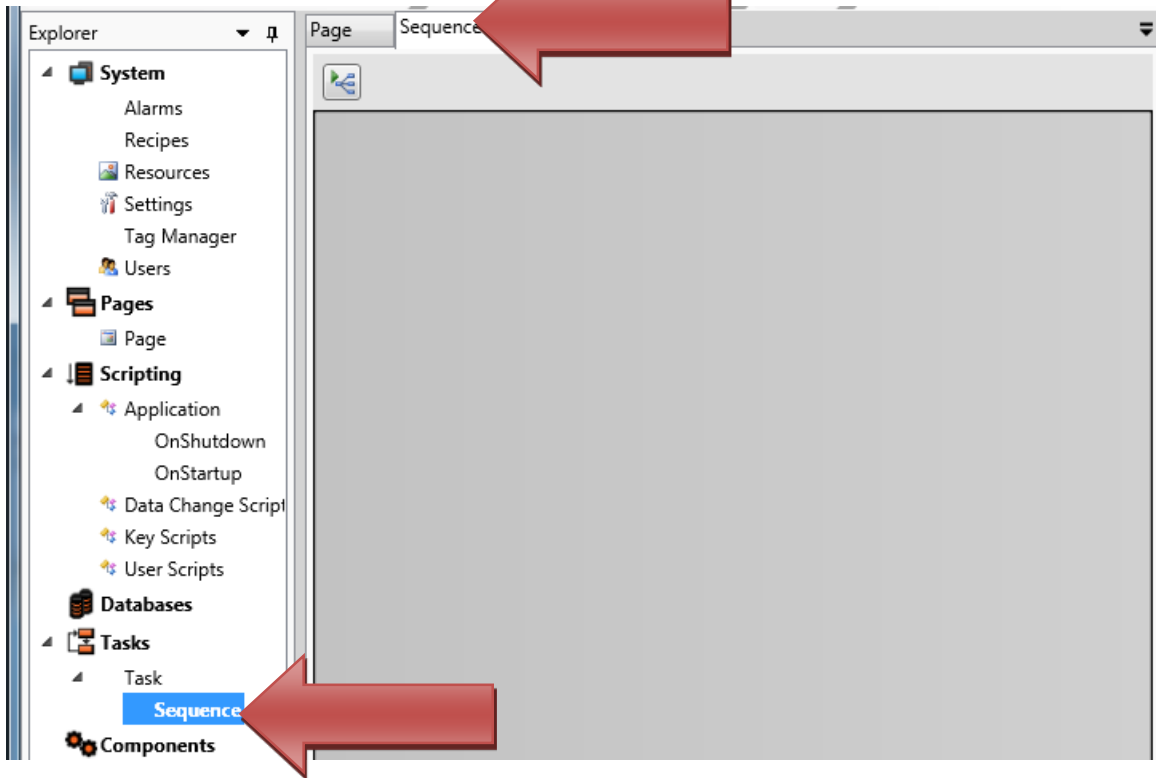


- Name your DS1100 sensor. Select the camera type and video format, then click Accept.

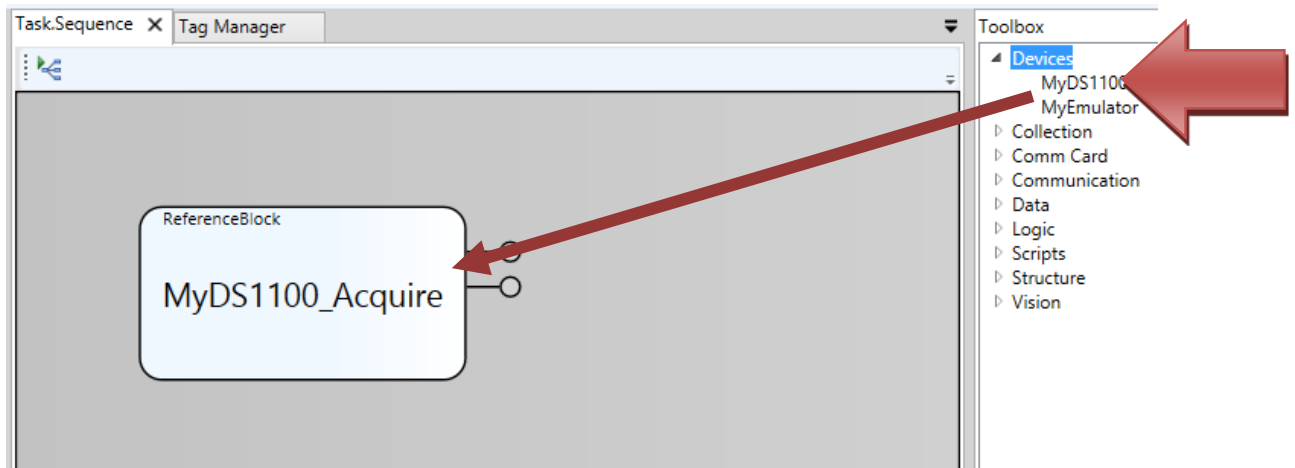


7. Add Device to the Sequence

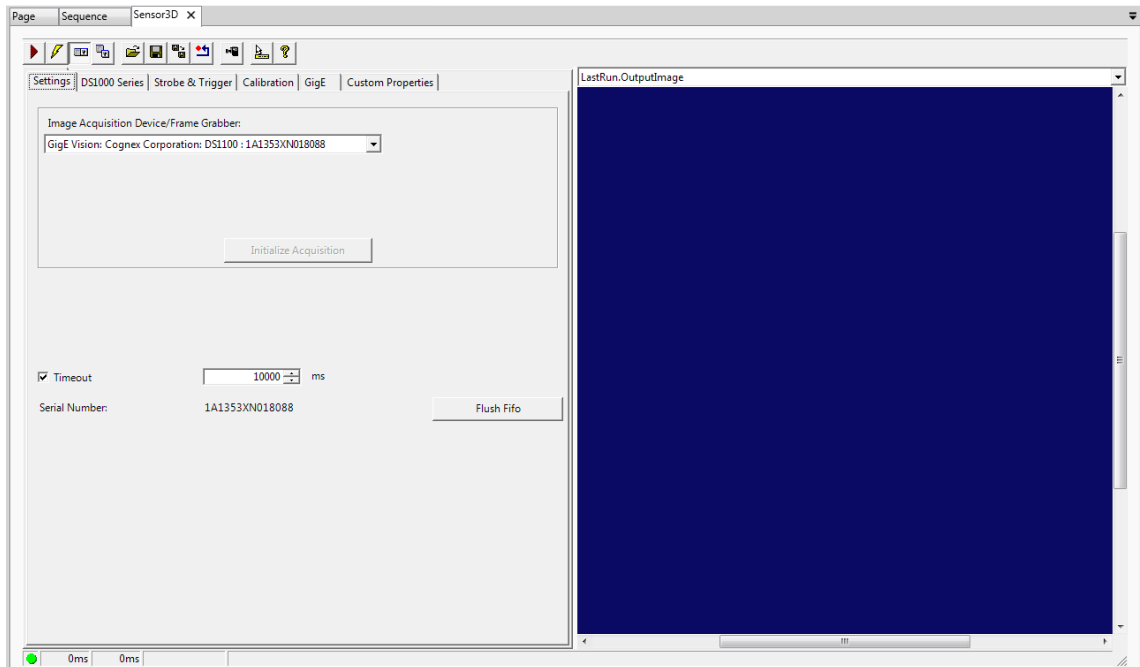
- Open the Sequence in Cognex Designer by double-clicking on the Sequence entry in the left tree structure.



- Drag your newly named Sensor3D sensor into the sequence from the Toolbox on the right. You should find it under the Devices.

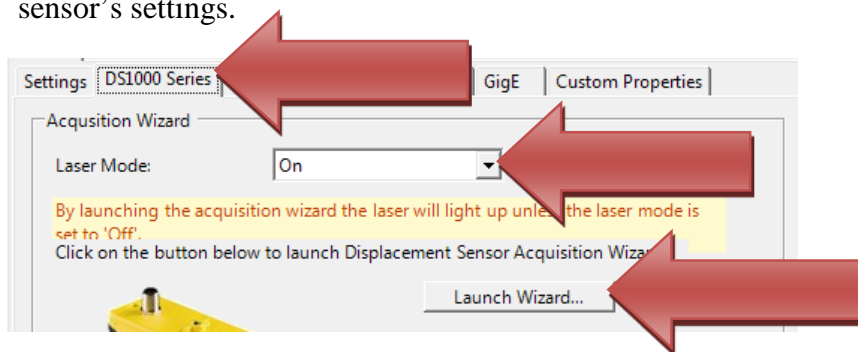


- Double-click on the Sensor3D you just dragged into the Sequence to open up the acquisition settings.

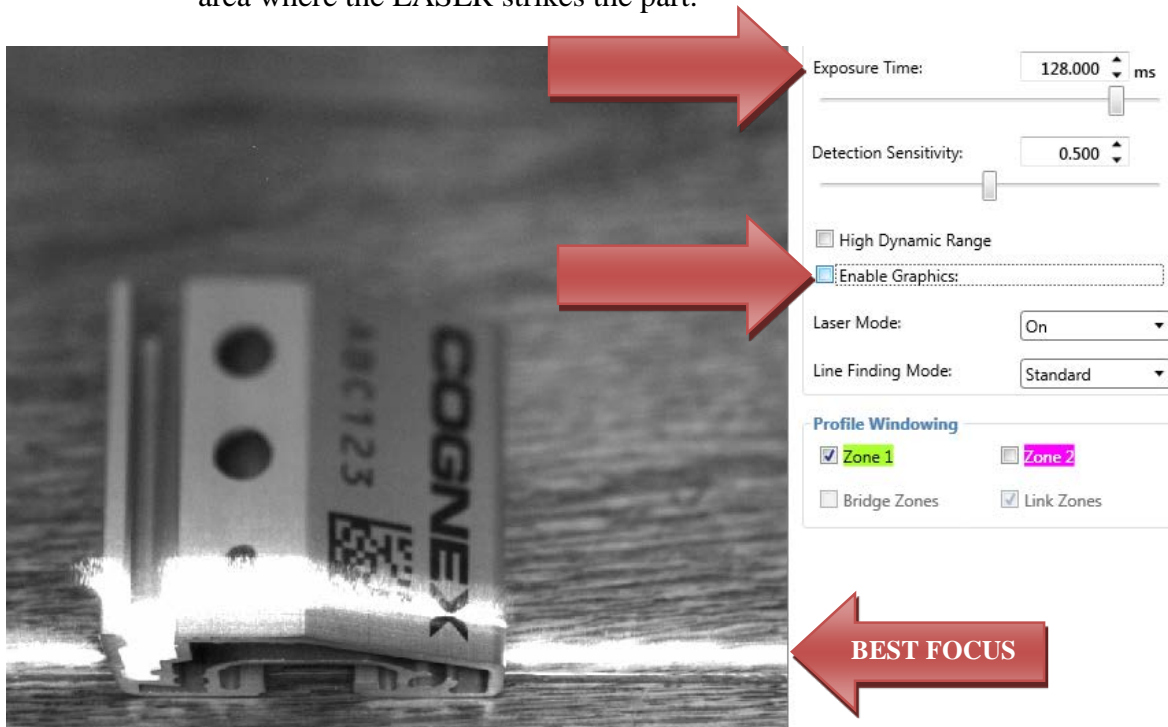


8. Use Acquisition Wizard to Set-up the DS unit

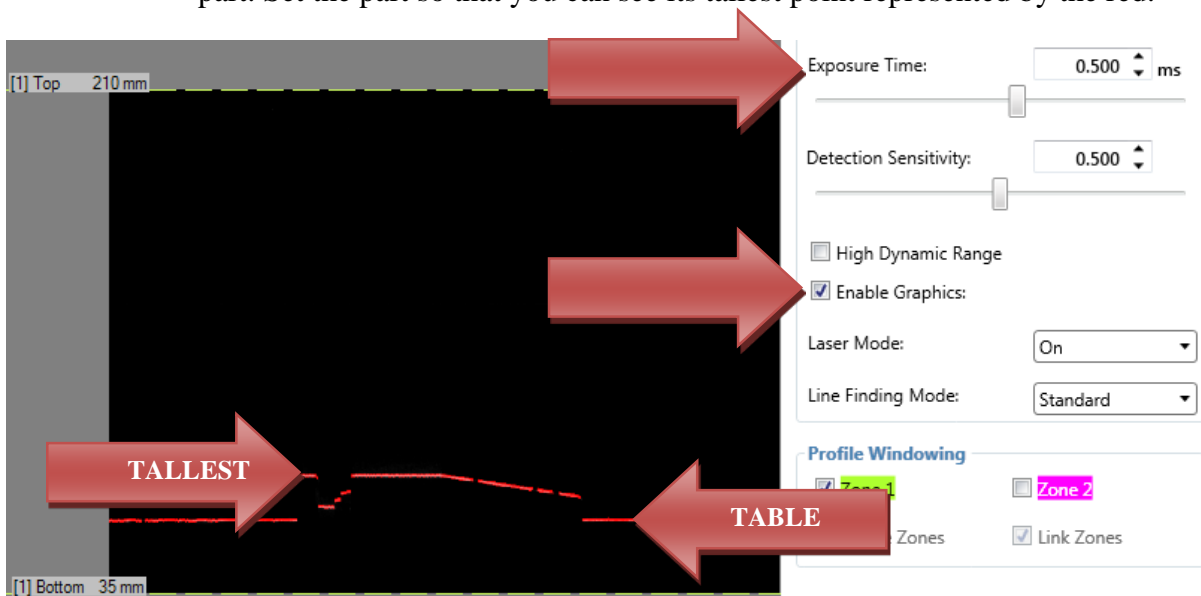
- Click on the DS1000 Series tab, set the LASER Mode to On and verify your sensor's LASER is On. Click Launch Wizard to start configuring the sensor's settings.



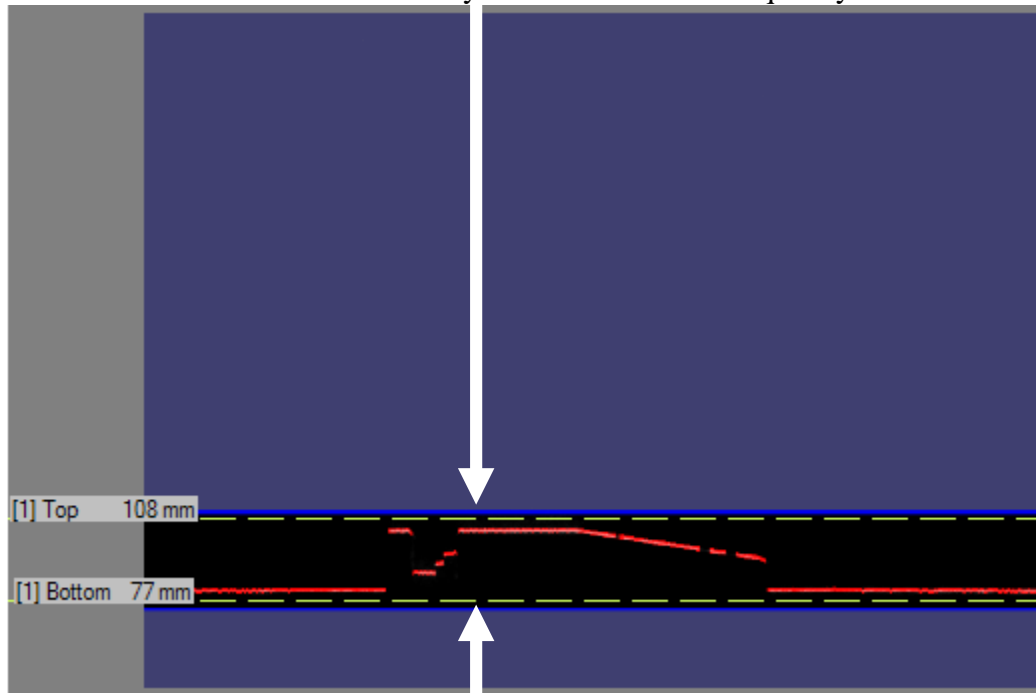
- Disable graphics and set your exposure to something very high like 128. This will show you that you can see a traditional 2D image. Use this to set the orientation and line your part up properly with the DS1100. Also notice that since the camera is at angle, the best focus is right around the area where the LASER strikes the part.



- Set exposure to 0.5 ms and enable graphics again. Move your part so that you can see a red line at different heights throughout the surface of your part. Set the part so that you can see its tallest point represented by the red.



- b. Use your mouse to adjust the Top and Bottom lines so that they fall just above the tallest point of your part and just below the table respectively. Notice what that does to your maximum line frequency.



BEFORE

AFTER

Performance

Maximum Line Frequency: 592 Hz

Performance

Maximum Line Frequency: 1905 Hz

- c. Select Motion Setup and use the following settings:

- i. Motion Input: Encoder
- ii. Scan Length in Pixels: 2048
- iii. Encoder Resolution: 4x
- iv. Steps per Line: 1
- v. Distance per Cycle: 0.22

Type

Motion Input: Encoder

Resolution:

Scan Length in mm: 112.64 mm

Scan Length in Pixel: 2048

X Scale (mm/pixel): 0.1100

Y Scale (mm/pixel): 0.1100

Encoder

☐ Single Channel Encoder

Encoder Resolution: 4x

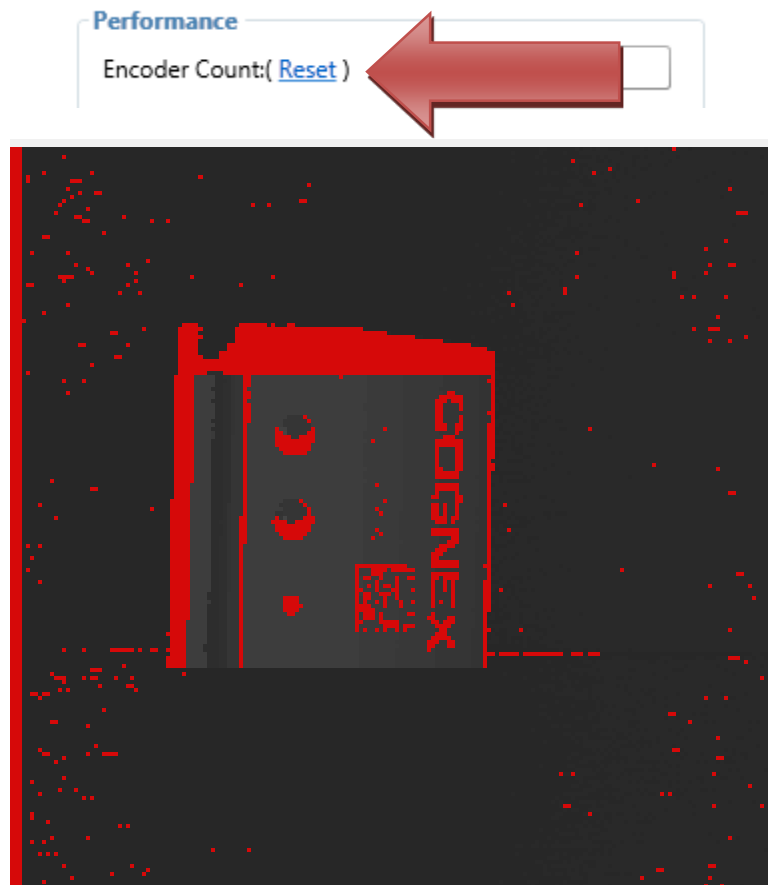
Acquire Direction: Lens to Laser

Encoder Direction: Lens to Laser

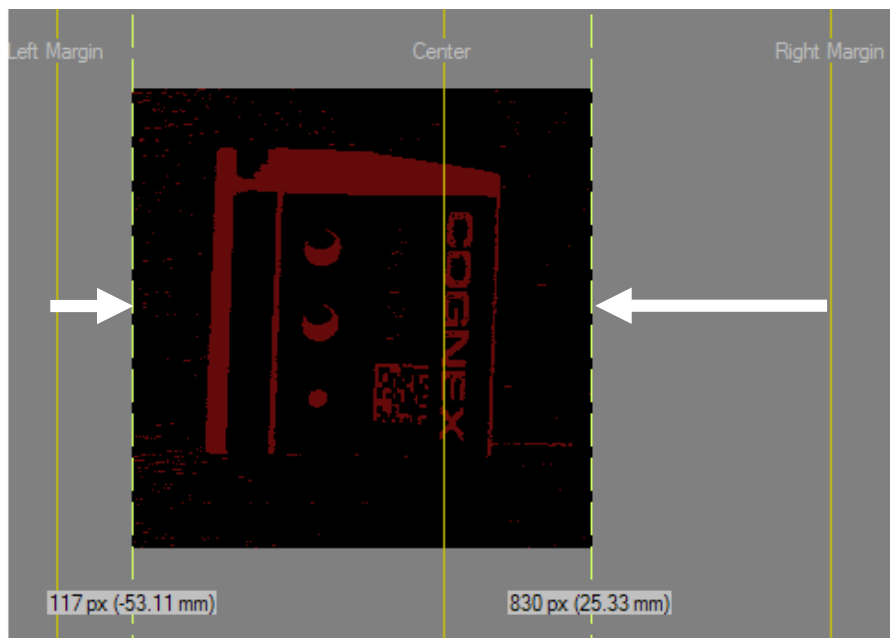
Steps per Line: 1

Distance per Cycle: 0.2200

- Move your gantry system to so that the LASER is projected just before the beginning of your part. Reset the Encoder and move your gantry over the part.



- d. Select Range Image and use the left and right graphics to reduce the area being scanned on the left and right side of the part.



- Set “Bottom of the Detection Zone” and “Auto Z-scale to On”, clear the image using the button with the red X, reset your encoder, and scan again.

☒ Use the Bottom of the Detection Zone

Z Scale (mm/value):

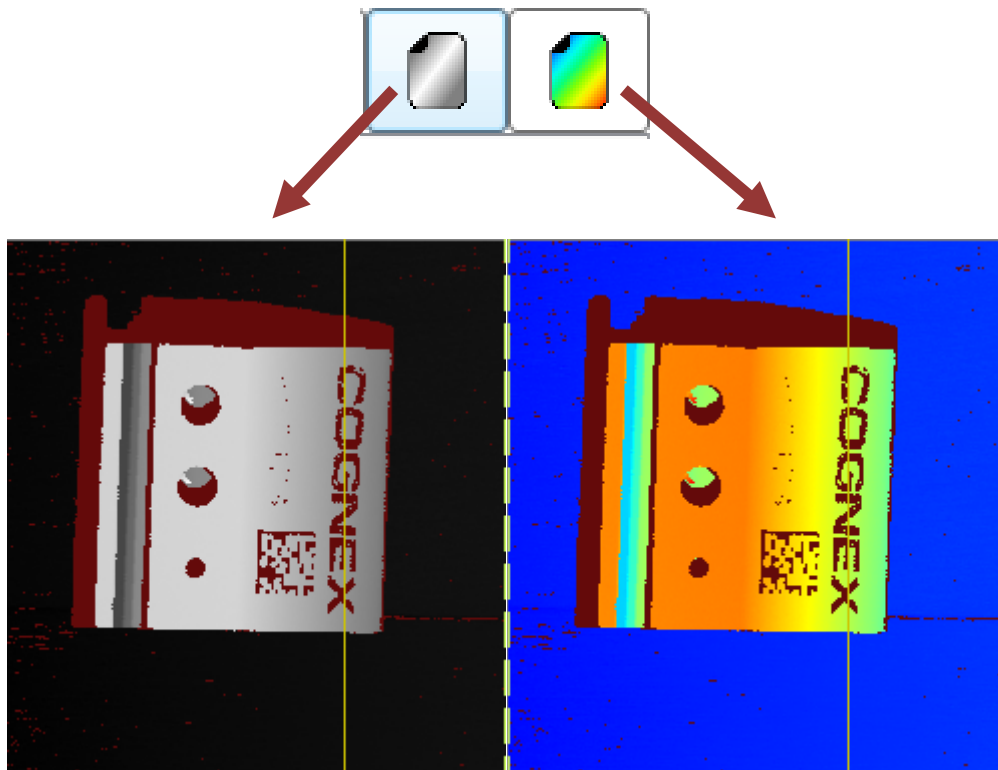
0.002823

☒ Auto Z-scale



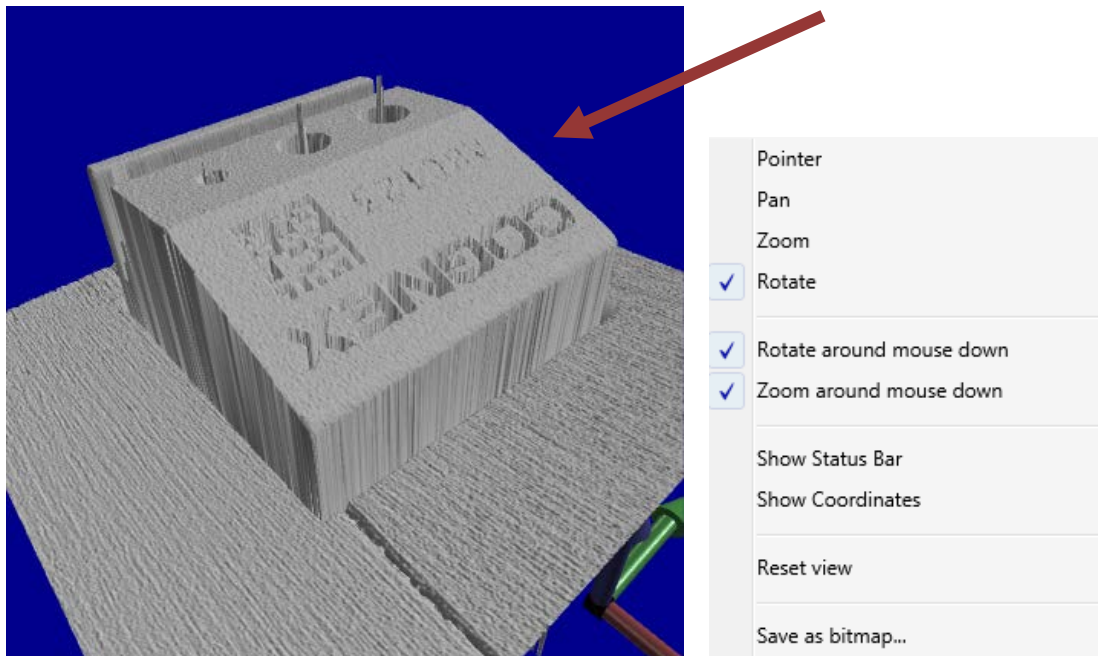
CLEARs THE IMAGE

- Review the grayscale and color enhanced 2D image.



- Click 3D button to review 3D image. Right click on the image to toggle between Pan, Zoom, and Rotate mouse controls.

3D



- e. Once you are happy with your image, close the Wizard. Save your project by clicking on the Save Timer indicator on the lower right hand corner of Cognex Designer.

