OMRON

AutoVISION Software

Quick Start Guide

Z434-E-01 (84-9100005-02)

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AutoVISION Quick Start Guide

1. Install and Start AutoVISION

1. Download the latest version of AutoVISION software from the website at: www.microscan.com
2. Double click (run) the downloaded program, SetupAutoVISION
3. Double click (run) the AutoVISION icon on your desktop

Minimum PC Requirements

- Intel® Core™ i3 Processor @1.6GHz
- Internet Explorer 11 / Google Chrome
- 2GB RAM (Windows 7 SP1 / Windows 7 Embedded Standard SP1)
- 64GB hard drive space
- 32-bit color display, 1366 x 768 or 1280 x 960
- 4.0 Windows Experience Index (particularly for graphics)
- 1 USB 2.0 port and 1 Network port

Safety Precautions

For details on Safety Precautions, refer to Safety Precautions in the READ ME FIRST (Cat. No.83-9500134-01).

Precautions for Safe Use
For details on Precautions for Safe Use, refer to Safety Precautions in the READ ME FIRST (Cat. No.83-9500134-01).

Precautions for Correct Use
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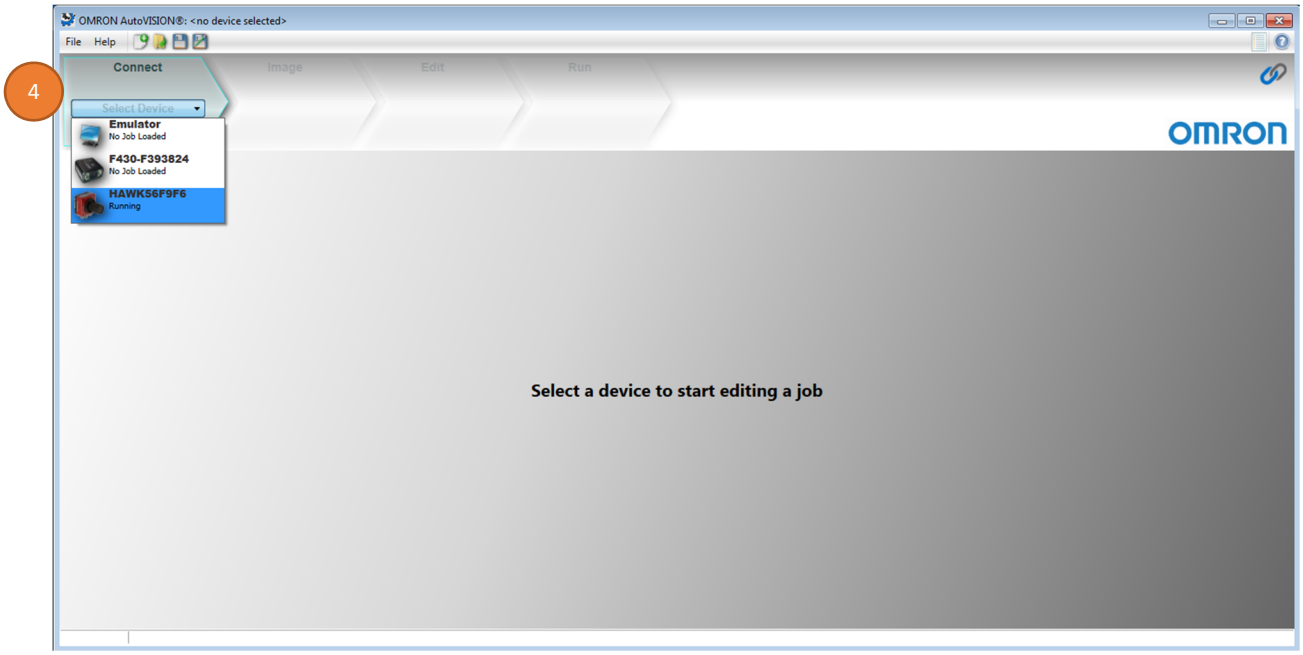
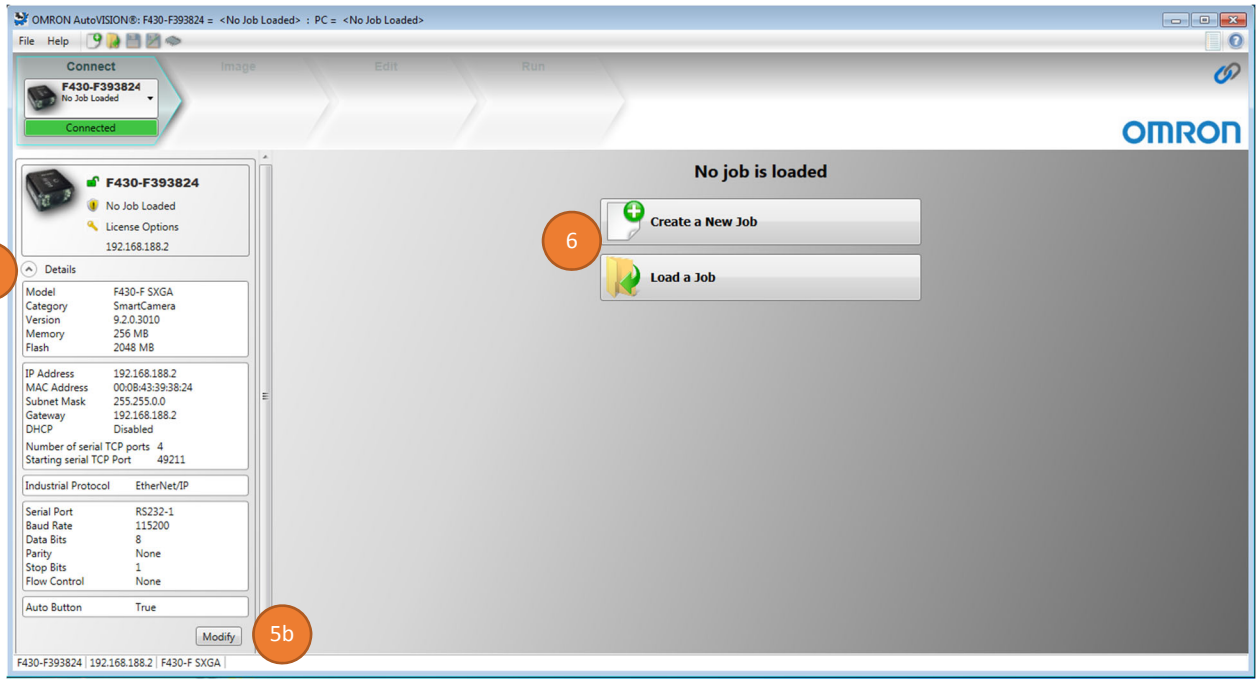
2. Connect to the Camera

Select the device to be used with AutoVISION.

4. Select the camera in the drop-down box. (figure 1)



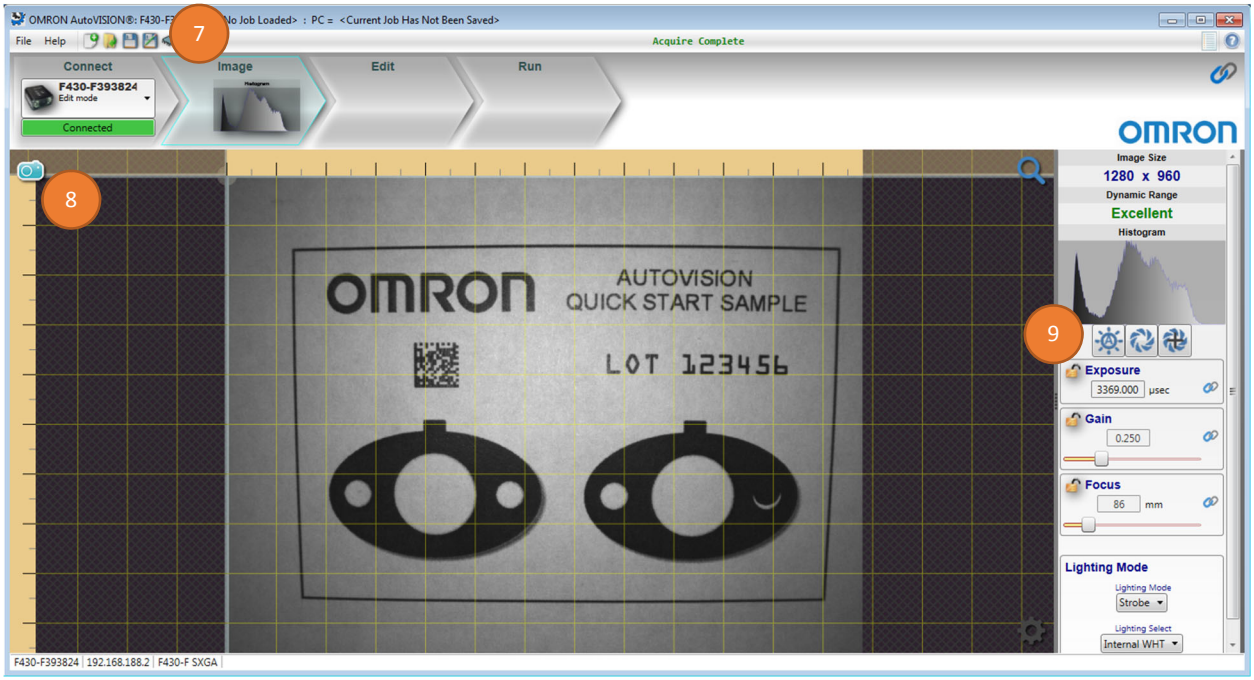
5. The F430-F camera, by default, has an IP address of 192.168.188.2, subnet mask of 255.255.0.0. Set your computer to a compatible address, or if the network parameters need to be changed,
    a. Click the Details button to see the IP Address
    b. Click Modify to make changes. This will reset your camera. Reconnect when done.
6. Select Create a New Job.


OMRON AutoVISION®: F430-F393824 = <No Job Loaded> : PC = <No Job Loaded>
File Help
Connect
F430-F393824
No Job Loaded
Connected
Image
Edit
Run
OMRON
F430-F393824
No Job Loaded
License Options
192.168.188.2
5a
Details
Model F430-F SXGA
Category SmartCamera
Version 9.2.0.3010
Memory 256 MB
Flash 2048 MB
IP Address 192.168.188.2
MAC Address 00:08:43:39:38:24
Subnet Mask 255.255.0.0
Gateway 192.168.188.2
DHCP Disabled
Number of serial TCP ports 4
Starting serial TCP Port 49211
Industrial Protocol EtherNet/IP
Serial Port RS232-1
Baud Rate 115200
Data Bits 8
Parity None
Stop Bits 1
Flow Control None
Auto Button True
Modify
5b
No job is loaded
6
Create a New Job
Load a Job
F430-F393824 | 192.168.188.2 | F430-F SXGA

3. Capture an Image

Adjust the camera and lighting settings to produce the best image.

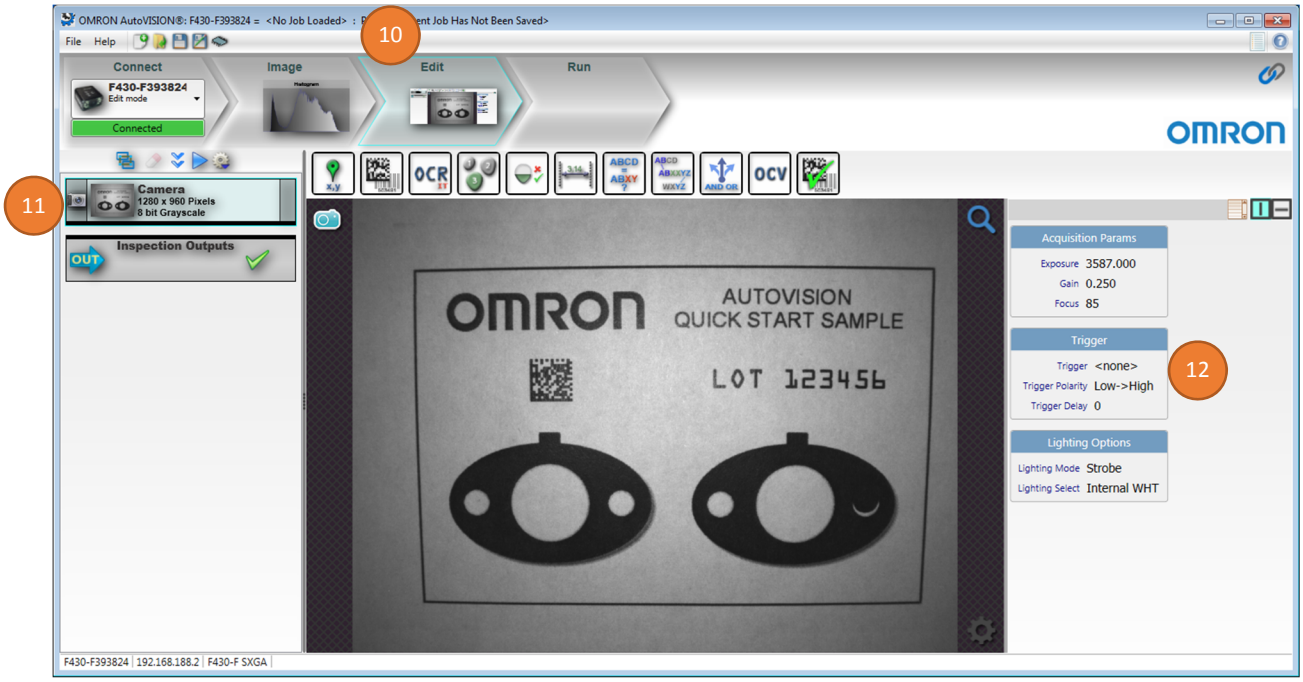
7. Select the Image view to adjust your image for best performance.
8. A new picture can be captured by clicking the blue camera icon.
    a. **NOTE:** If using the Emulator, step 11 describes how to load the saved images into AutoVISION.
9. The camera and lighting settings are available on the left side. These settings include Exposure, Gain, Focus and Lighting Modes.
    a. **TIP**: Click the Auto Calibration icon to have the optimal camera parameters set automatically. This feature works best if there are high contrast features in the center of the image. After Auto Calibration has completed, click the blue camera icon to capture a new image with these settings.



4. Edit Vision Job – Set Camera Parameters

Adjust camera parameters, including the camera trigger. Load saved images if using an Emulator.

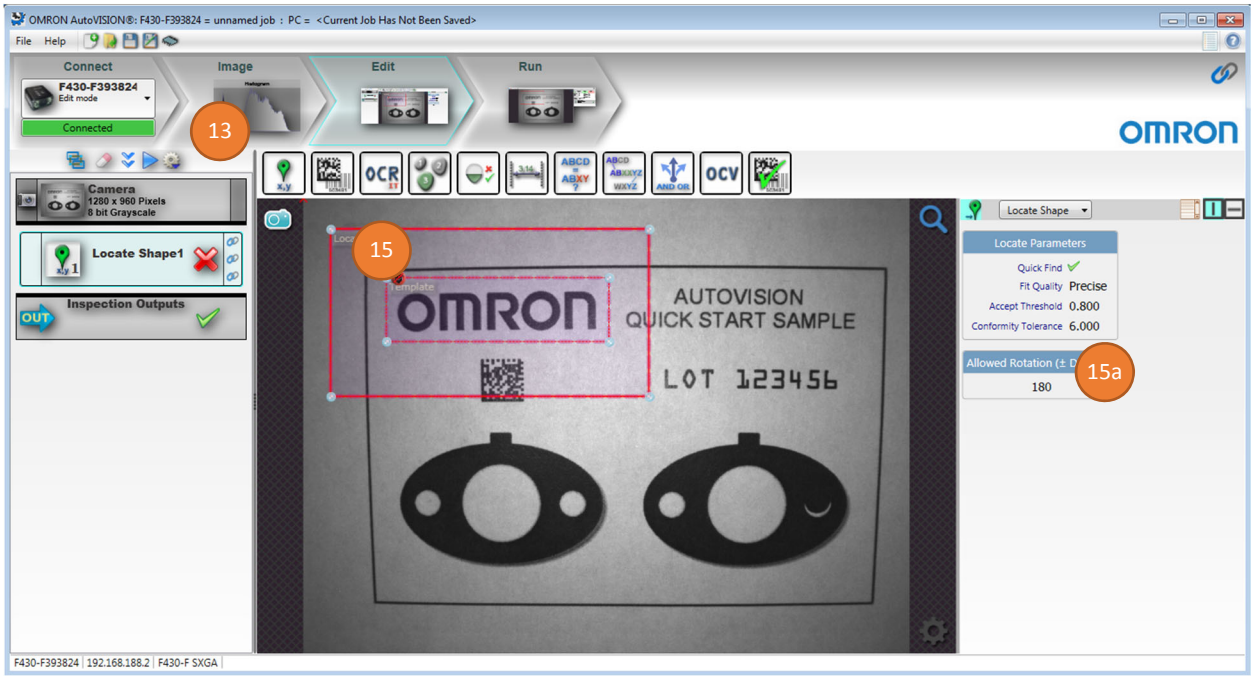
10. Select the Edit view to add or adjust the Tools used in your job.
11. To the left of the image is the tool list with the Camera at the top. Select the Camera in the tool list. The selected tool will be light blue.
    a. **TIP**: To use saved images, click the camera icon on the left side of the Camera tool. This will change the icon to a folder and a dialog box will be displayed to select the folder that contains the saved images.
    b. **NOTE**: If using the Emulator, click the folder icon on the left side of the Camera in the tool list. The AutoVISION quick start images are located at: C:\Omron\AutoVision\TestImages\AV Quick Start
12. To the right of the image are the settings associated with the selected tool. Set the desired trigger settings. Leave this setting at <none> or <Virtual> 1 for this job.



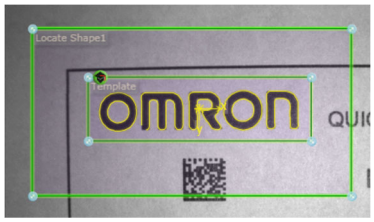
5. Edit Vision Job – Add Locator

Locate the part to compensate for part movement and rotation.

13. The available tools are shown in a toolbar just above the image. Click on the Locator to add this tool to the job.
14. This tool has two regions of interest (ROIs). The inner ROI (Template) is the locate pattern to learn. The outer ROI (Locate Shape) is the search area for this pattern. Adjust the regions as shown below.



15. Click the Red Train icon in the upper left of the Template ROI. After training the ROIs will become green and a yellow outline should be seen around the learned pattern.

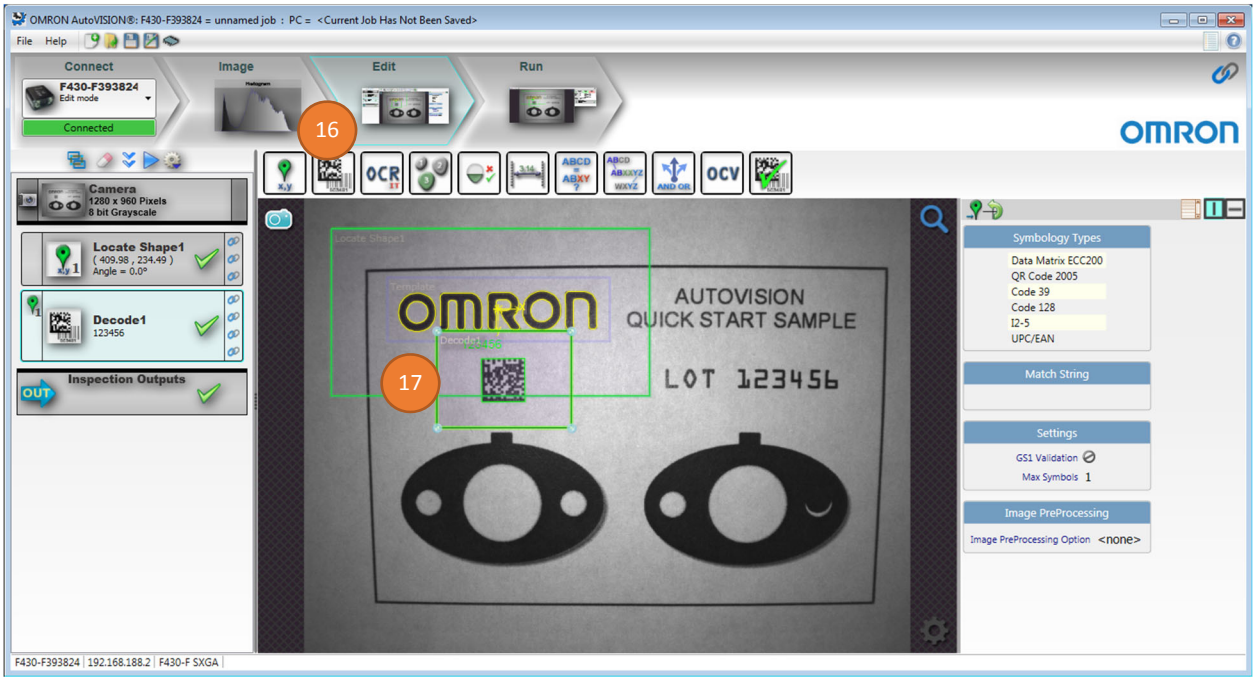


a. **TIP**: To reduce the inspection times, lower the Allowed Rotation value the required value.

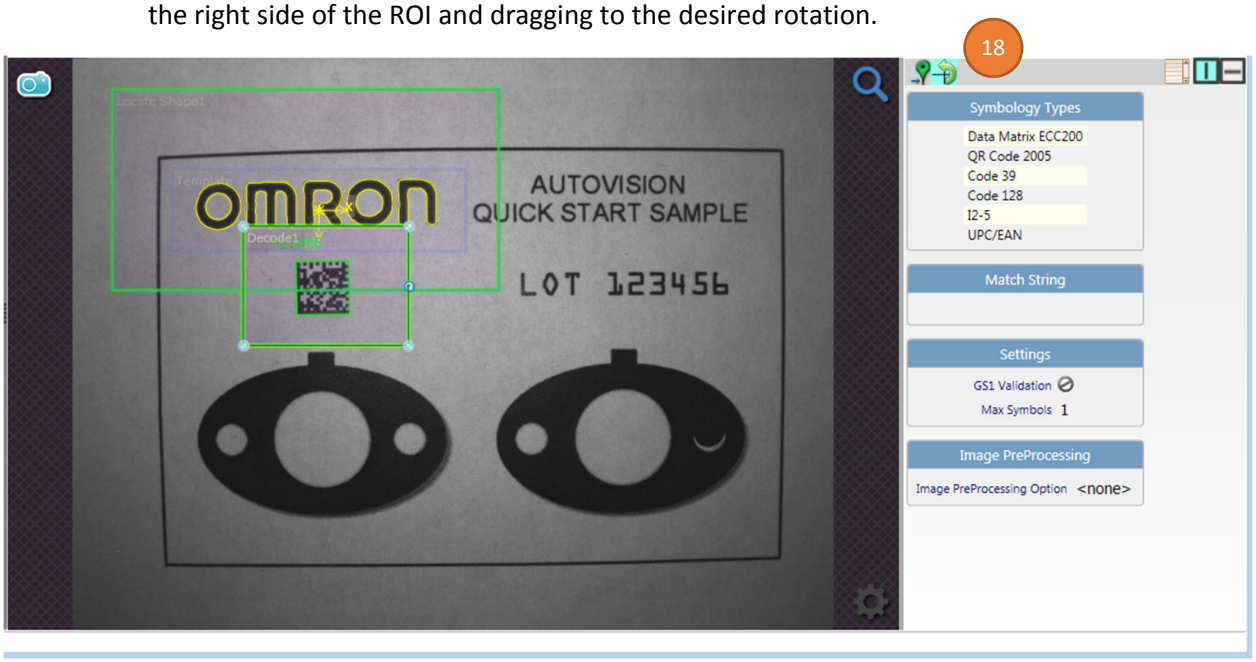
6. Edit Vision Job – Add Decode Tool

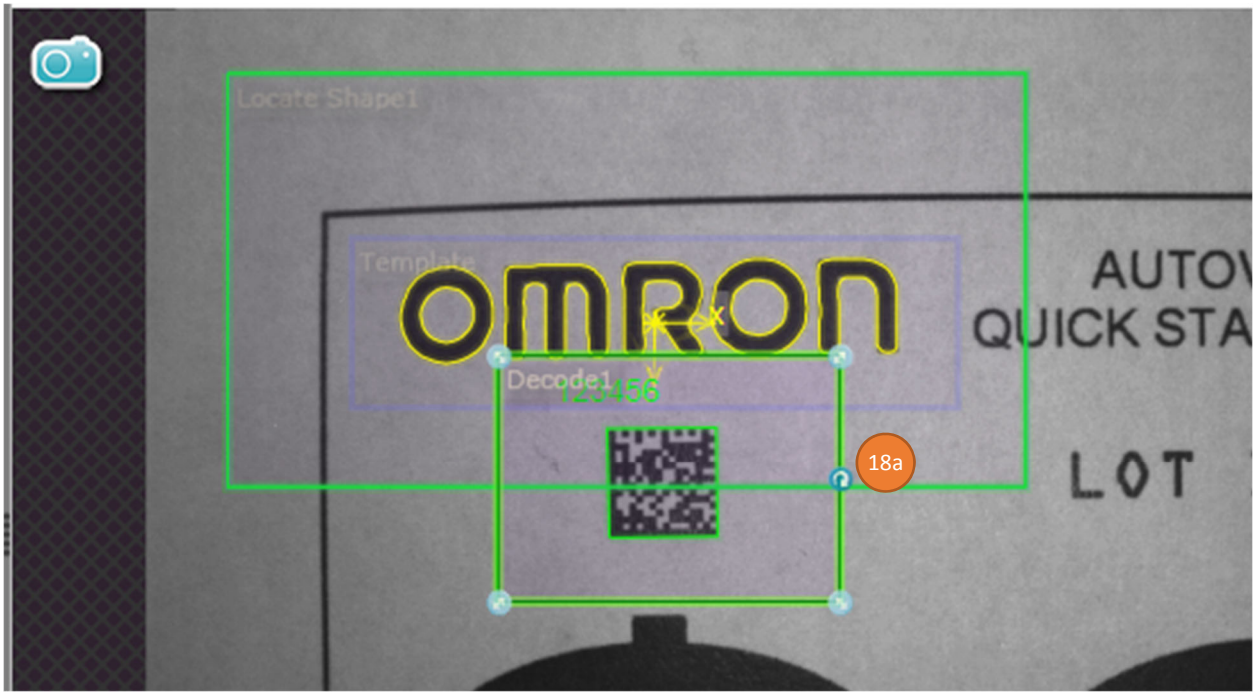
Read the Data Matrix symbol

16. Select the Decode (barcode) icon to add this tool to the job.
17. Resize the Decode tool ROI around the Data Matrix Symbol. This tool typically works well with default settings. No parameter changes are required here.
    a. **TIP**: Make the Decode tool ROI 20 % larger than the barcode to allow for the barcode quiet zone / clean area.



18. Enable the rotate option in the OCR parameters. When enabled the icon will be light blue. This will allow the tool to rotate based on the angle of the Locator.
    a. The tool rotation can be adjusted by clicking on the blue round rotation handle seen on the right side of the ROI and dragging to the desired rotation.

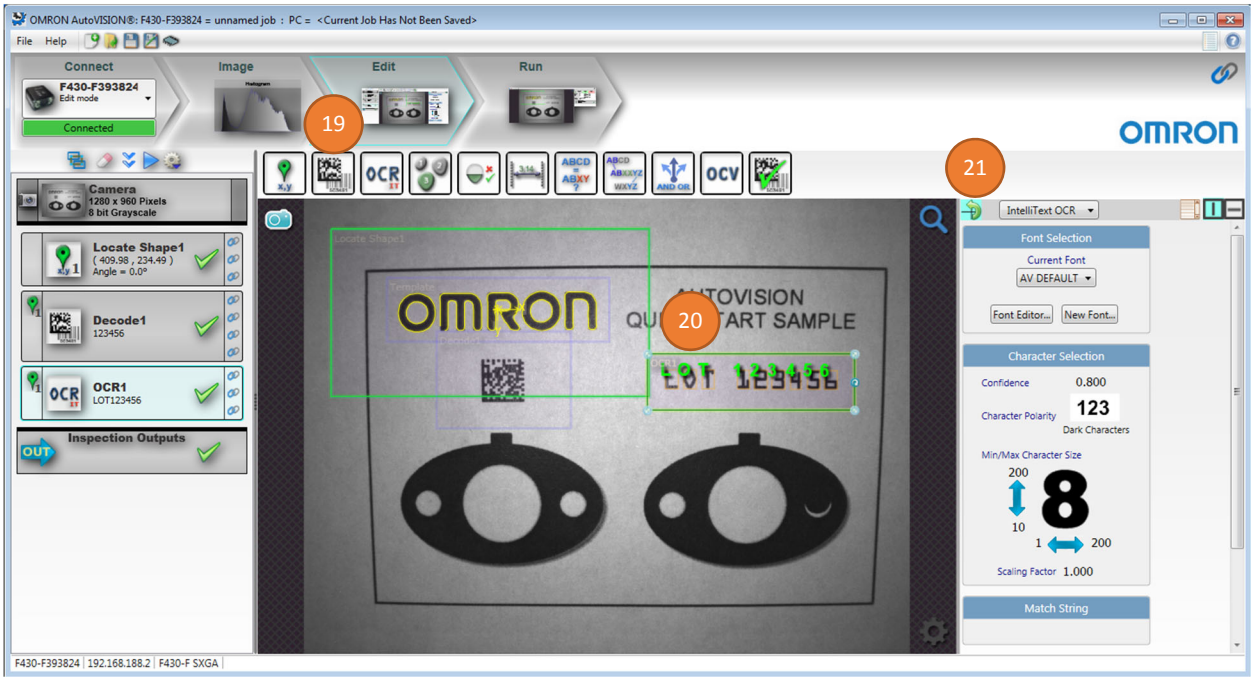




7. Edit Vision Job – Add OCR Tool

Verify that Lot code is readable

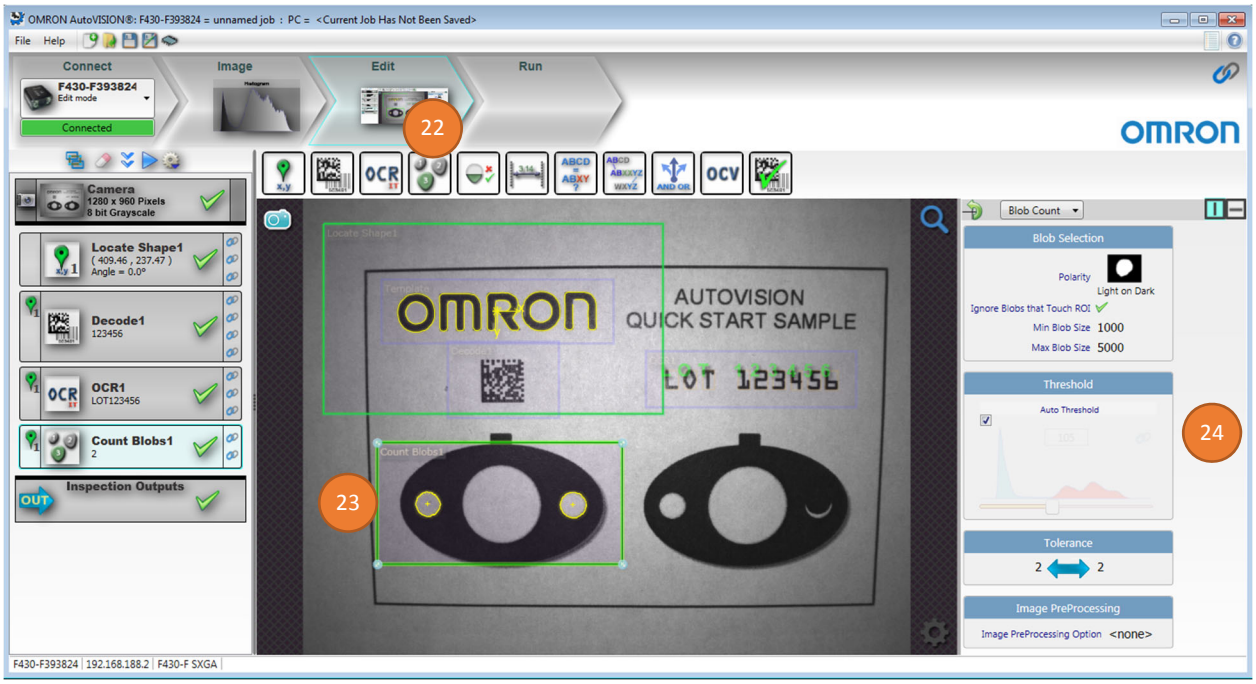
19. Select the OCR icon to add this tool to the job.
20. Resize the OCR tool ROI around the text, “LOT 123456”.
21. Enable rotation for this tool.
    a. **TIP**: On the right side of the screen, click on character selection. Set the character size to help the OCR tool find the characters when the characters are touching.



8. Edit Vision Job – Add Count Tool

Verify that two small holes are in the gasket.

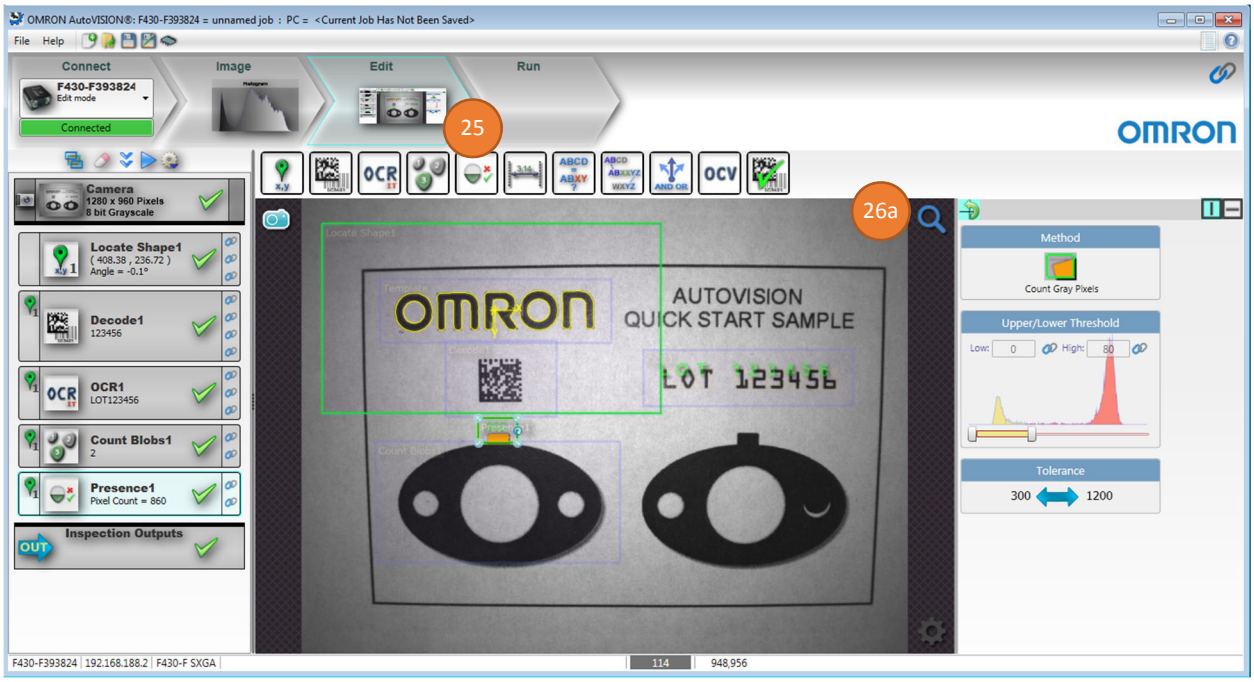
22. Select the Count Objects icon to add this tool to the job.
23. Resize the Count Blobs tool ROI around the left gasket. Enable rotation for this tool.
24. Change the Blob settings to find the desired objects. Each blob will have a yellow perimeter with a crosshair (+) in the center. In the parameter settings on right side of screen:
    a. Set Polarity to Light on Dark
    b. Adjust Min and Max blob size to count the two smaller white circles on each gasket.
    c. Change the max and min range of the Tolerance to 2 <–> 2 to make sure the tool only passes if it finds the correct number of holes, which is this case is 2.



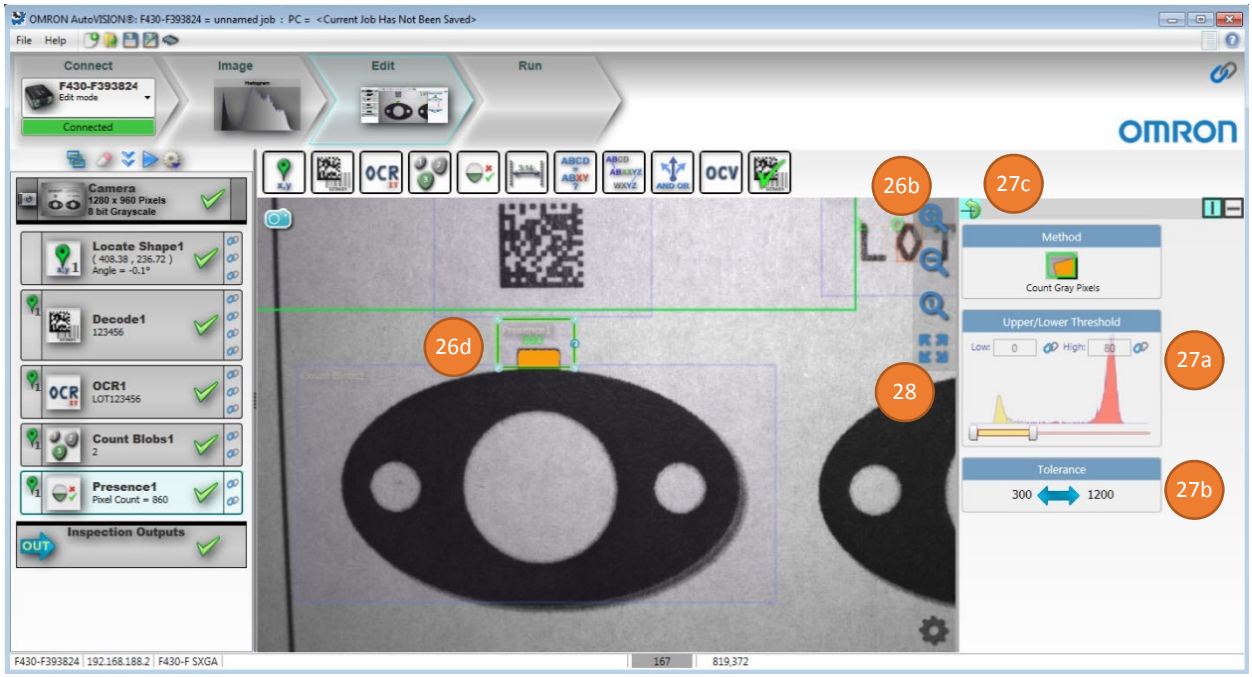
9. Edit Vision Job – Add Presence Tool

Verify that the tab is present in the gasket.

25. Select the Presence Tool icon to add this tool to the job. Enable rotation for this tool.



26. Use the Zoom button to make it easier to position the tool
    a. Move the mouse over the Zoom icon to see the Zoom options
    b. Click Zoom in (+)
    c. Right click and drag to reposition image
    d. Resize and position the Presence tool over the left gasket tab

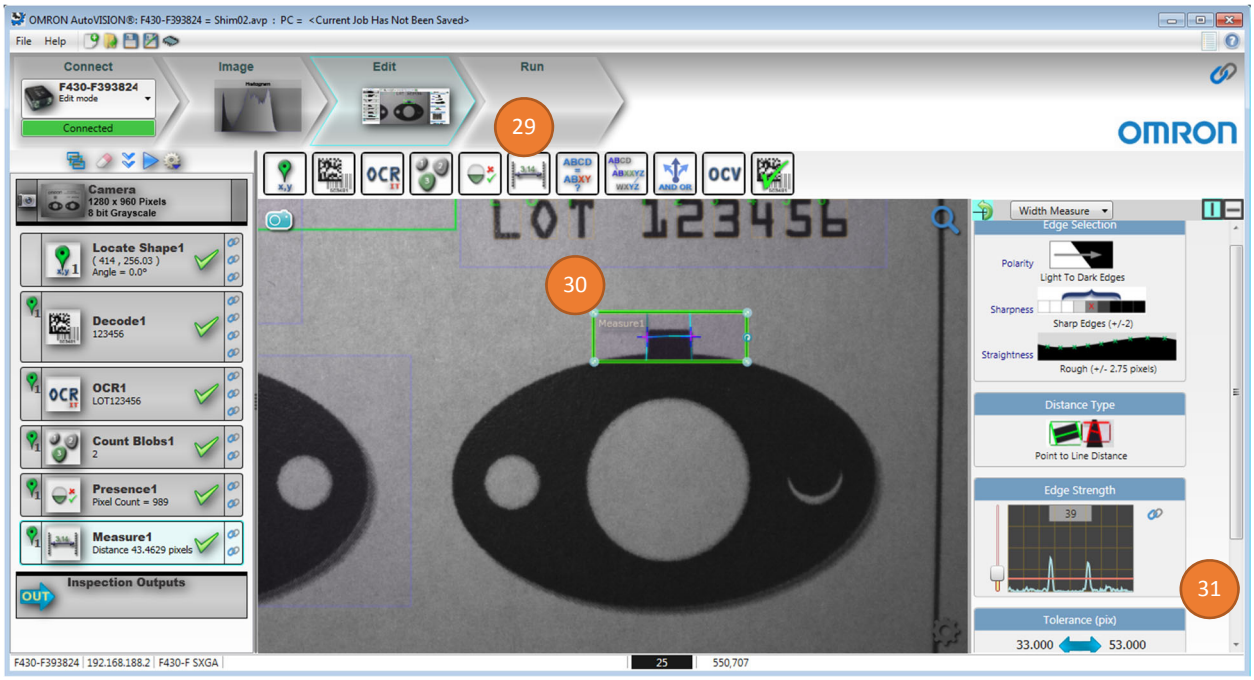


27. Change the Presence tool settings to pass when the gasket tab is present in the tool. The orange pixels inside the tool are the pixels that are counted.
    a. Adjust the Upper/Lower Threshold, using the sliders, to make the gasket tab appear orange.
    b. Set the Tolerance so that the Presence tool will pass when a gasket tab is in the tool but fails when the tool contains all light or dark pixels. Note the pixel count in the Presence1 tool on the left side of the screen. The lower and upper tolerance settings should bracket this value to determine if the tab is present.
    c. Enable the Rotate option.
28. Click Zoom to Fit to see the entire image

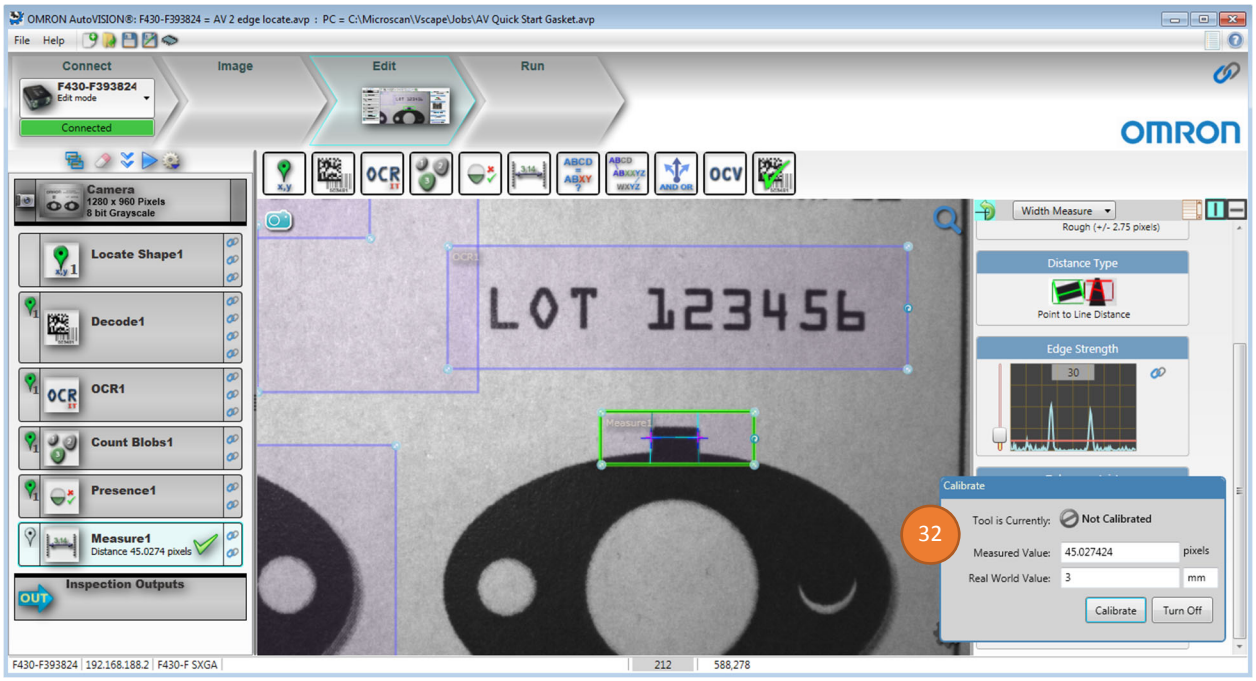
10. Edit Vision Job – Add Measure Tool

Measure the width of the gasket tab.

29. Select the Measure Tool icon to add this tool to the job. Width measure is default.
30. Resize and position the Measure tool over the right gasket tab. Zoom in if desired. Enable rotation in this tool.
31. Change the Measure tool settings to pass when the gasket tab is the correct width
    a. Adjust the Edge Strength to find the desired edge
    b. Adjust the Tolerance so that the tab only passes when it is the correct width. The current width is shown in Measure1 in the tool list on left side of screen.



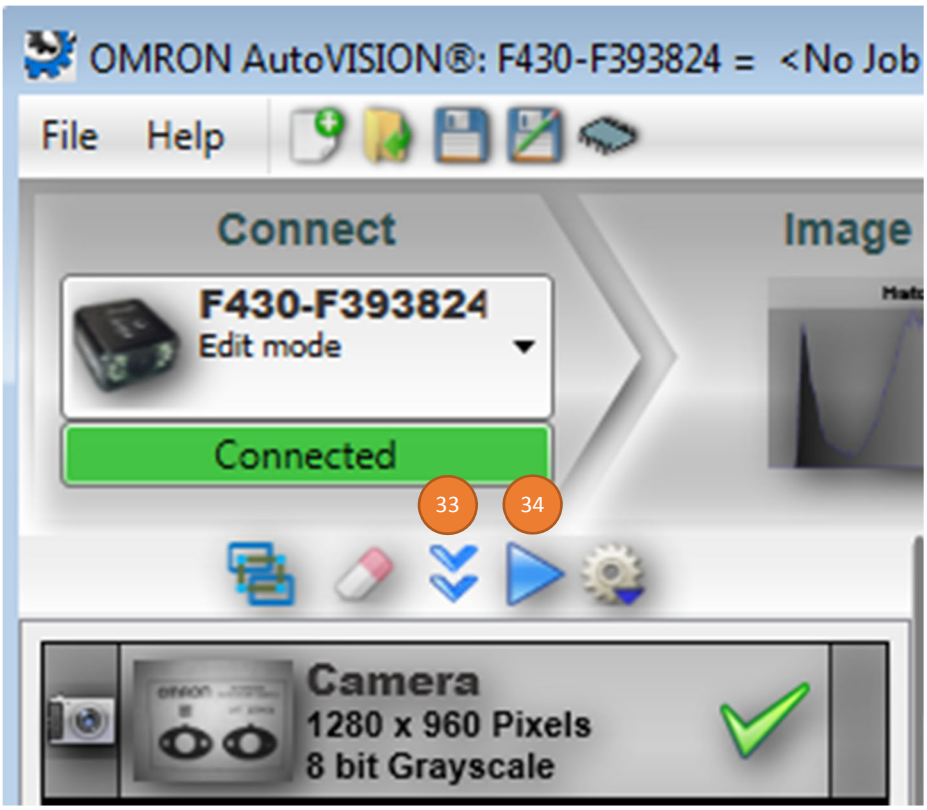
32. The Measure tool also has a quick calibration option. To use this feature
    a. Click Calibrate
    b. The current measurement in pixels is displayed in the Measured Value field
    c. In the Real World Value field enter the current measurement
    d. Enter the measurement units
    e. Click Calibrate


OMRON AutoVISION®: F430-F393824 = AV 2 edge locate.avp : PC = C:\Microscan\Vscape\Jobs\AV Quick Start Gasket.avp
File Help
Connect
Image
Edit
Run
F430-F393824
Edit mode
Connected
OMRON
Camera
1280 x 960 Pixels
8 bit Grayscale
Locate Shape1
Decode1
OCR1
Count Blobs1
Presence1
Measure1
Distance 45.0274 pixels
Inspection Outputs
OUT
LOT 123456
Width Measure
Rough (+/- 2.75 pixels)
Distance Type
Point to Line Distance
Edge Strength
30
Calibrate
Tool is Currently:
Not Calibrated
32
Measured Value:
45.027424
pixels
Real World Value:
3
mm
Calibrate
Turn Off
F430-F393824 | 192.168.188.2 | F430-F SXGA
212
588,278

11. Try All Tools

Try all the vision tools in the job to confirm that they are configured as desired.

33. Tryout Once button (double blue down arrows) will capture a new image and run all tools, once on the PC.
    a. Look at status indicators. A green check means the tool has passed. A red X means the tool has failed, for reason such as wrong count, or out of tolerance.
34. Tryout Loop button (Blue Triangle) will capture a new image and run all tools. Once completed it will repeat this process continuously until the Stop Loop button (Red Square) is pressed.



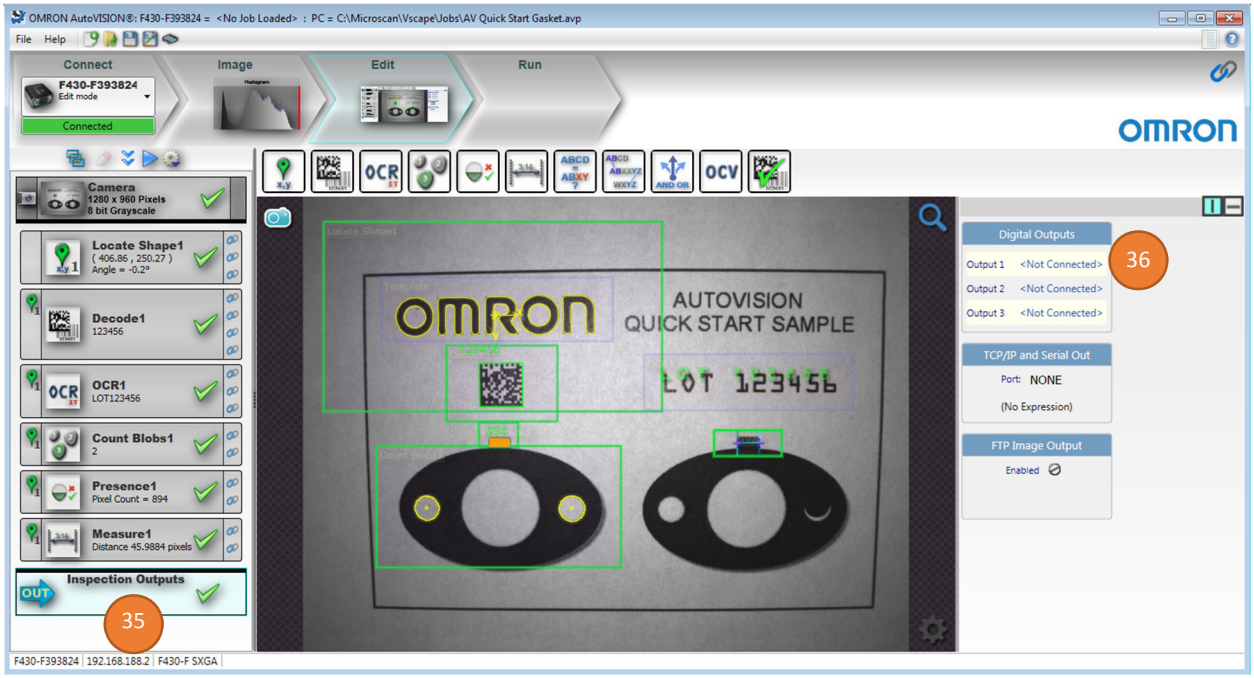
12. Edit Vision Job – Set Inspection Outputs

Communicate inspection results to another device.

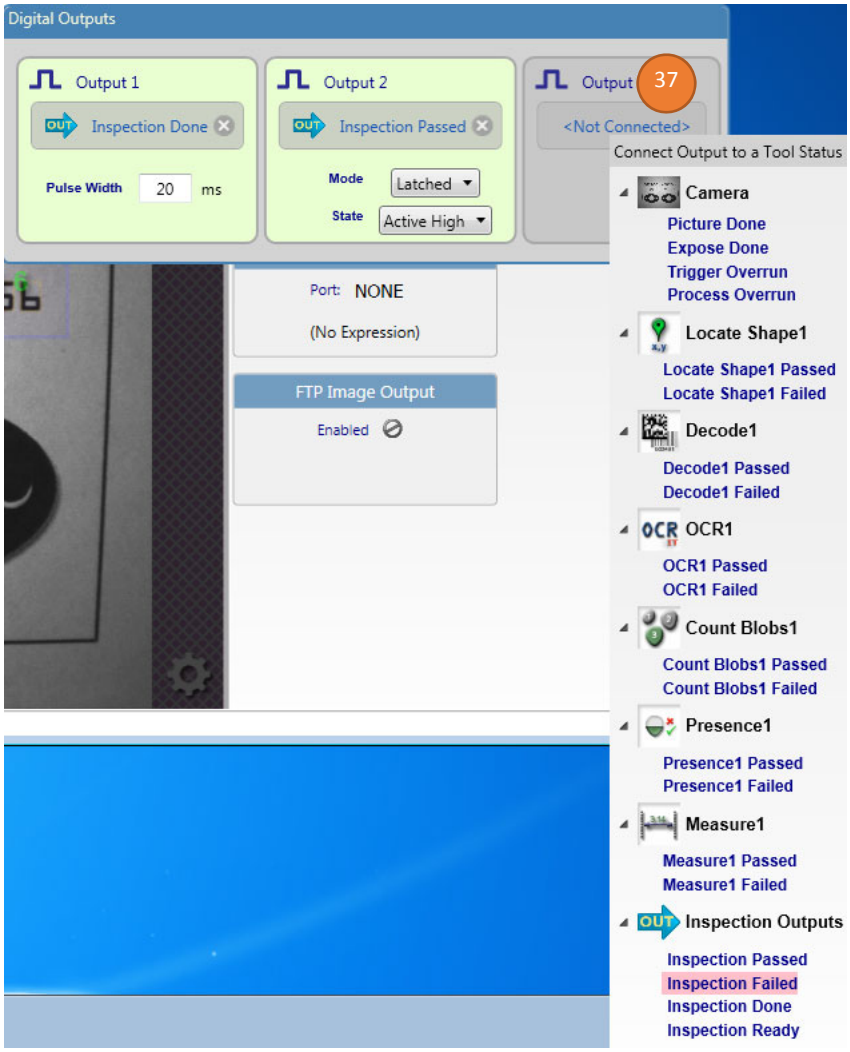
Digital Outputs

Digital Outputs are a fast, easy method of indicating the inspection results to another device, like a PLC or stack light.

35. Select the Inspection Outputs in the tool list
36. Click the Digital Outputs



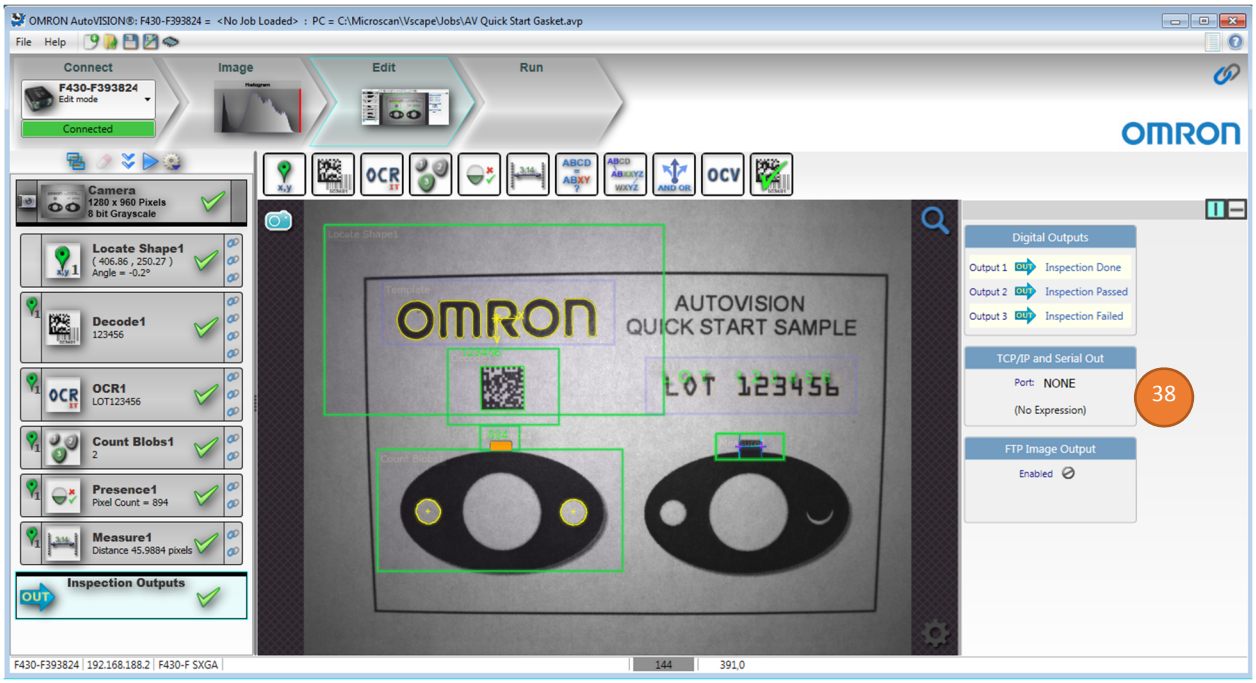
37. Assign the outputs in the Digital Outputs pop up window.
    a. Click under Output 1 and select Inspection Done. Set the desired pulse width time, in this job make it 20 ms (milliseconds).
    b. Click under Output 2 and select Inspection Passed
    c. Click under Output 3 and select Inspection Failed


Digital Outputs
Output 1
Inspection Done
Pulse Width
20
ms
Output 2
Inspection Passed
Mode
Latched
State
Active High
Output
37
<Not Connected>
Port: NONE
(No Expression)
FTP Image Output
Enabled
Connect Output to a Tool Status
Camera
Picture Done
Expose Done
Trigger Overrun
Process Overrun
Locate Shape1
Locate Shape1 Passed
Locate Shape1 Failed
Decode1
Decode1 Passed
Decode1 Failed
OCR1
OCR1 Passed
OCR1 Failed
Count Blobs1
Count Blobs1 Passed
Count Blobs1 Failed
Presence1
Presence1 Passed
Presence1 Failed
Measure1
Measure1 Passed
Measure1 Failed
Inspection Outputs
Inspection Passed
Inspection Failed
Inspection Done
Inspection Ready

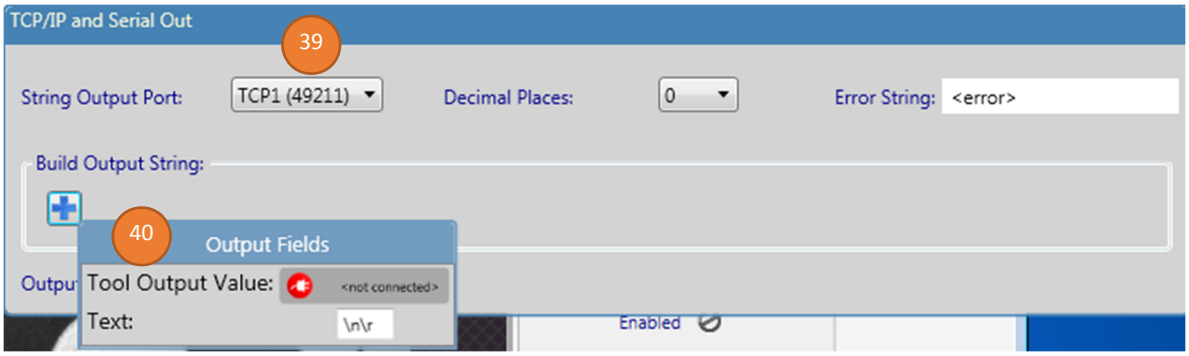
TCP/IP and Serial Output String

TCP/IP or Serial output messages provide the ability to transmit inspection results like a barcode or measurement to another device. In this example we will send the Decode1 tool string followed by CR LF (Carriage Return + Line Feed) characters.

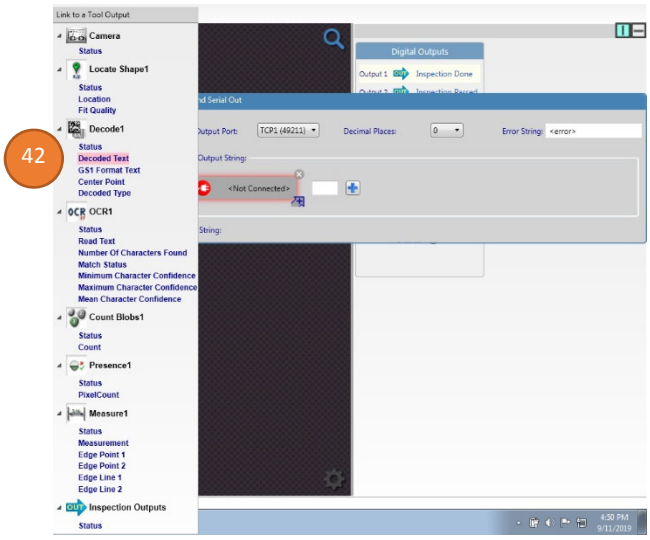
38. Select TCP/IP and Serial Out



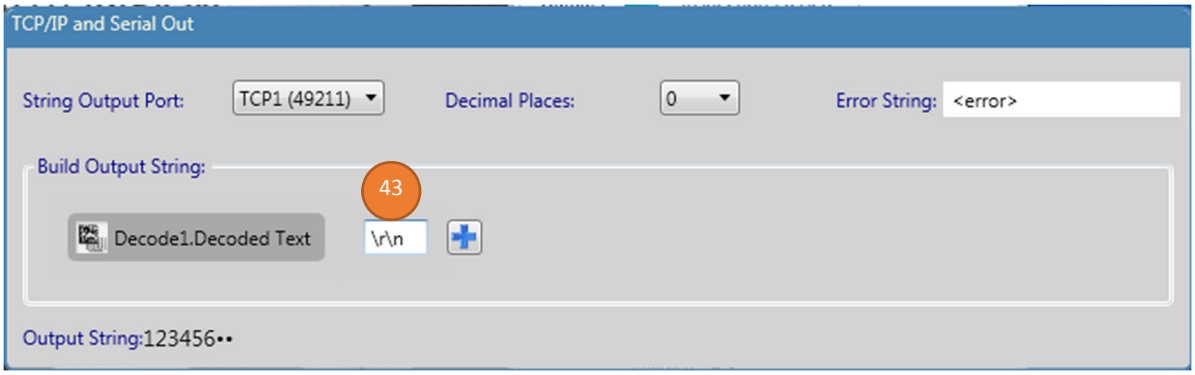
39. Select String Output Port and choose TCP1 (49211).
40. In the TCP/IP and Serial Out window we need to build the output string. Select the blue + symbol and select Tool Output Value. This will add a field to the Build Output String region that states <Not Connected>.
41. Select the blue + symbol and select Text. This will enter a field to allow you to add characters to the output string.



42. Click on the <Not Connected> field, under Decode1, select Decoded Text.



43. Click in the blank text field and enter: \r\n



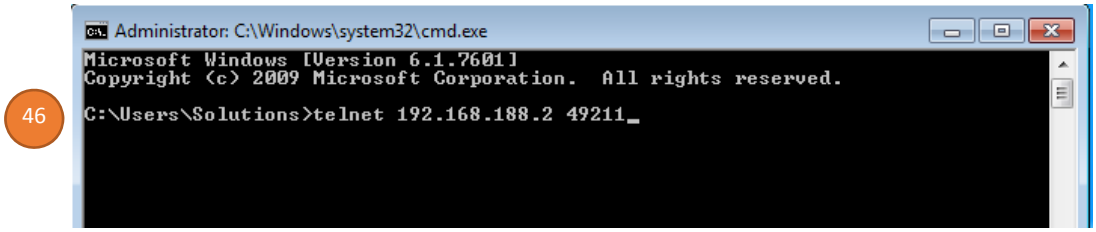
44. The results can be seen in a telnet client window when an inspection is completed in Edit mode using the Try Once or Try Loop buttons and in Run mode.

Opening Telnet Client to view results

If the Telnet Client has not been enabled in Windows, please go to the link below and follow the instructions to enable this Windows feature.

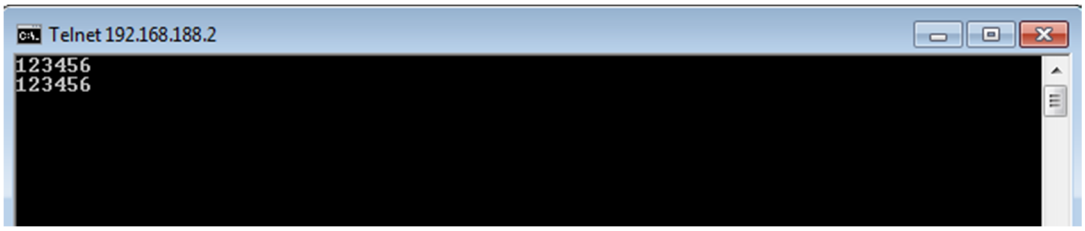
https://social.technet.microsoft.com/wiki/contents/articles/38433.windows-10-enabling-telnet-client.aspx

45. Click the Windows Start button, type cmd.exe and hit the Enter key.
46. In the cmd.exe window type the following command listed. Replace the 192.168.188.2 with your camera IP address. Note: Your camera IP address can be found if you click on the word Connect in AutoVISION. If using the Emulator use IP address: 127.0.0.1
    a. telnet 192.168.188.2 49211



46

47. Click the Try Once button in AutoVISION. Each time the Inspection is run the decoded text is shown in the Telnet window on a new line.



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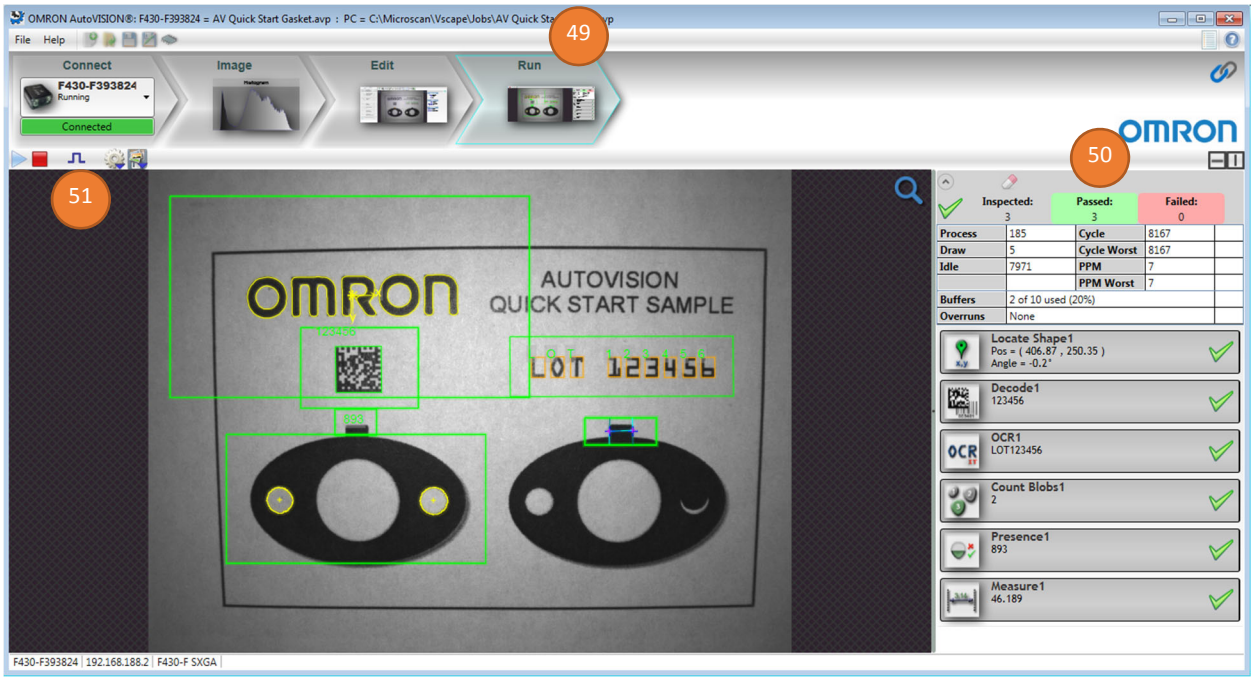
13. Save Job

48. Go to the File menu > Save or click the Save icon
    a. **TIP**: Go to the File menu and select Archive Job… This will save the AutoVISION (Visionscape) job and will make an additional file Visionscape Archive file that has an .AVZ extension. The Visionscape Archive file contains the AutoVISION job and all the additional support files used by that job.

14. Run the Job

Download the job to the selected camera and run.

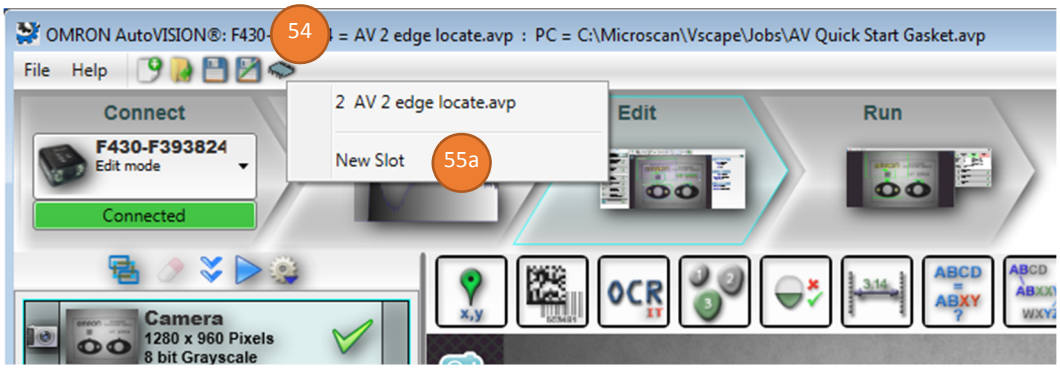
49. Select the Run view.
    a. The job is downloaded to the selected camera; once completed, the counters and tools are seen to the right of the image area.
50. Counters and Tool results
51. Trigger
    a. If the trigger was set to none, the inspection will start running continuously.
    b. If the camera was set to use a virtual trigger, click the Trigger icon to provide a trigger to the camera.



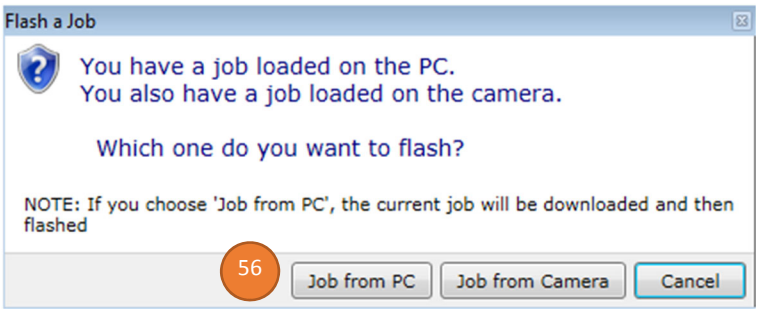
15. Save Job to flash memory on camera

Saving the job to flash memory on the camera is required to allow the camera to load and restart the job on power up.

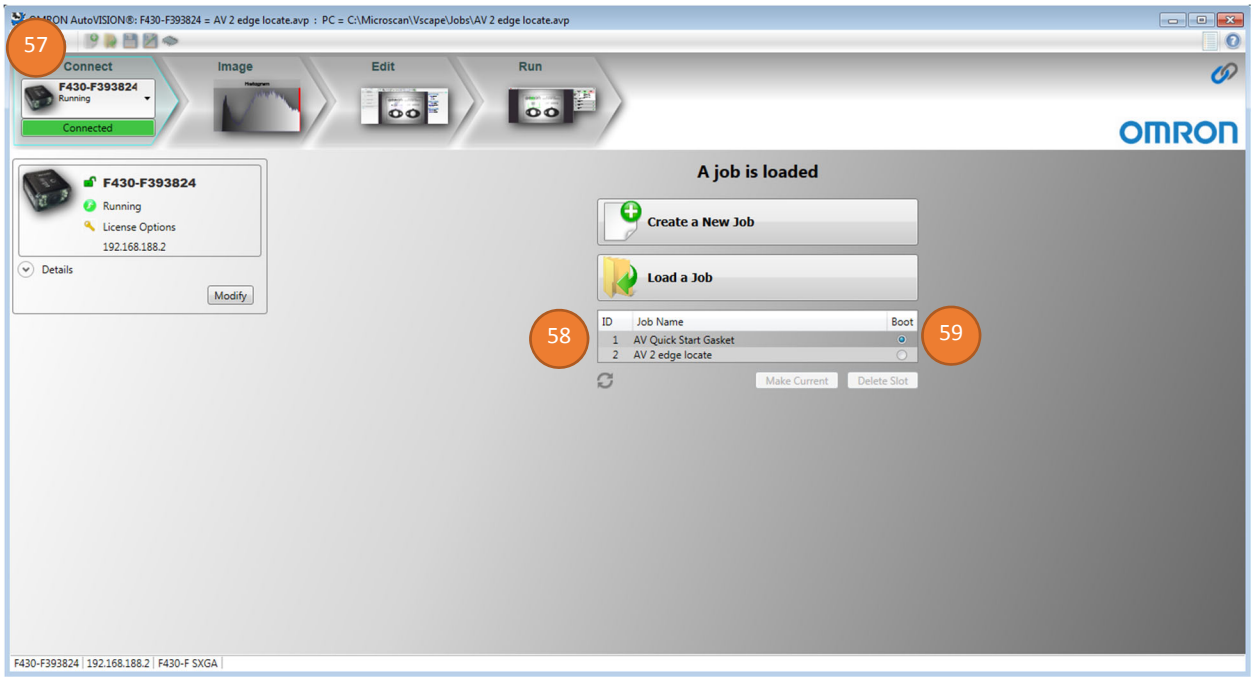
52. Select the Edit view.
53. Confirm that the job is correct and has been saved to the PC.
    a. **TIP:** It is recommended that you select File > Archive Job… This will save the job to the PC and create an Archive file (*.avz) that contains the job and additional support files used by the job.
54. Select the camera flash memory icon
55. Select the memory slot to write
    a. Select New Slot to write this job to the camera.
    b. If jobs exist on the camera, selecting an existing slot will overwrite that memory slot.



56. A pop-up window may appear which will allow you to select the desired job to save to the camera.

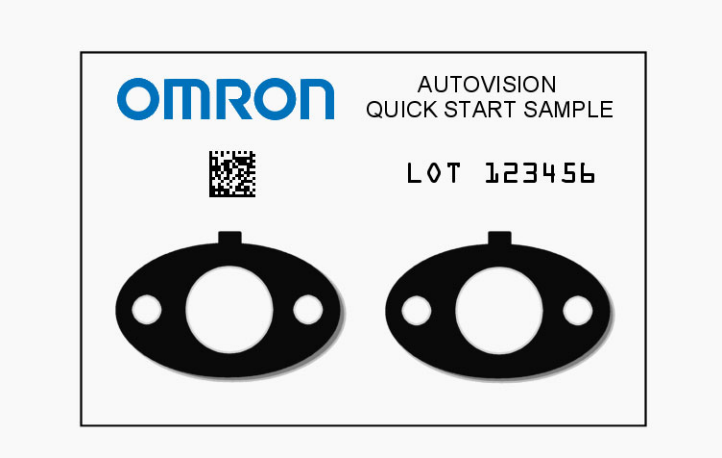


57. Select Connect view
    a. **TIP:** Click on the word “Connect” above the camera selection.
58. Below the “Load a Job” button is a listing of the jobs stored in flash memory on the camera.
59. If multiple jobs are stored in flash memory, select the desired job slot that should be loaded on camera power up.

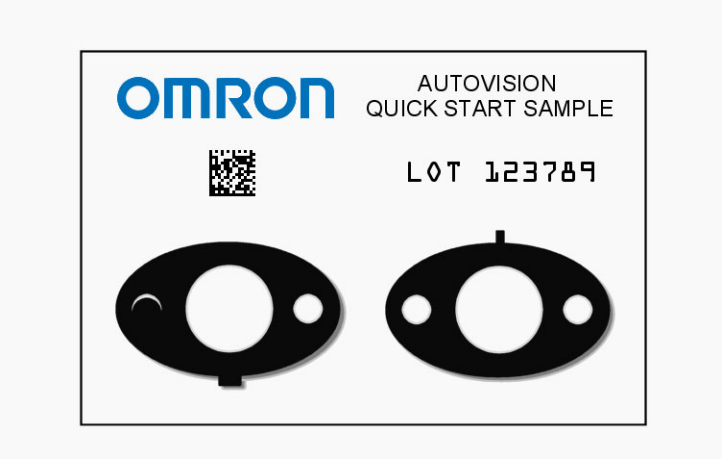

57
Connect
F430-F393824
Running
Connected
Image
Edit
Run
OMRON
F430-F393824
Running
License Options
192.168.188.2
Details
Modify
A job is loaded
Create a New Job
Load a Job
58
ID
Job Name
Boot
1 AV Quick Start Gasket
2 AV 2 edge locate
59
Make Current
Delete Slot
F430-F393824 | 192.168.188.2 | F430-F SXGA

Appendix A – Quick Start Samples

Good Sample



Bad Sample



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