

# Zebra Aurora Focus



**ZEBRA**

## User Guide

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# About this Guide

## Icon Conventions

The documentation set is designed to give the reader more visual clues. The following visual indicators are used throughout the documentation set.



**NOTE:** The text here indicates information that is supplemental for the user to know and that is not required to complete a task.



**IMPORTANT:** The text here indicates information that is important for the user to know.



**CAUTION:** If the precaution is not heeded, the user could receive a minor or moderate injury.



**WARNING:** If danger is not avoided, the user CAN be seriously injured or killed.



**DANGER:** If danger is not avoided, the user WILL be seriously injured or killed.

## Notational Conventions

The following notational conventions make the content of this document easy to navigate.

- **Bold** text is used to highlight the following:
  - Dialog box, window, and screen names
  - Dropdown list and list box names
  - Checkbox and radio button names
  - Icons on a screen
  - Key names on a keypad
  - Button names on a screen

- Bullets (•) indicate:
  - Action items
  - List of alternatives
  - Lists of required steps that are not necessarily sequential.
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

## Service Information

If you have a problem with your equipment, contact Zebra Global Customer Support for your region. Contact information is available at: [zebra.com/support](https://zebra.com/support).

When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software type and version number

Zebra responds to calls by email, telephone, or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Customer Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your Zebra business product from a Zebra business partner, contact that business partner for support.

## Minimum PC Requirements

Review the table below to ensure that your setup provides the requirements to support the application.

**Table 1** Minimum Requirements

Item	Description
CPU	Intel or AMD 64-bit processor
Random Access Memory Files	4 GB (Recommended: 8GB)
GPU	GTX 1030, Intel UHD 620 or equivalent
Graphics Memory	2 GB (Recommended: 4GB)
Disk Space	4 GB free disk space
Monitor Resolution	1280 x 800 (Recommended: 1920 x 1080)
Operating System	Windows 10 or higher

## Installation

Zebra Aurora Focus is available for download on the Zebra website: [Zebra Aurora Focus Software Downloads](#). After the download is complete, install the application as the administrator and enable Zebra Aurora Focus in Windows Defender.

## Localization

Translate the Zebra Aurora Focus UI to other languages by selecting the desired language from the menu in the upper right corner of the home screen.



# Zebra Aurora Focus Software Overview

The Zebra Aurora Focus application provides a unified platform with an intuitive interface for setting up, deploying, and running Fixed Industrial Scanning or Vision System jobs to control enterprise-wide manufacturing and logistics automation solutions. This tool also can scale in support of new codes and increase scanning speed with the potential to upgrade to machine vision functionality via software license upgrade.

## Zebra Aurora Focus Features

The Zebra Aurora Focus application provides several differentiating features to rapidly process, evaluate and compare multiple images in various lighting conditions without altering any hardware configurations.

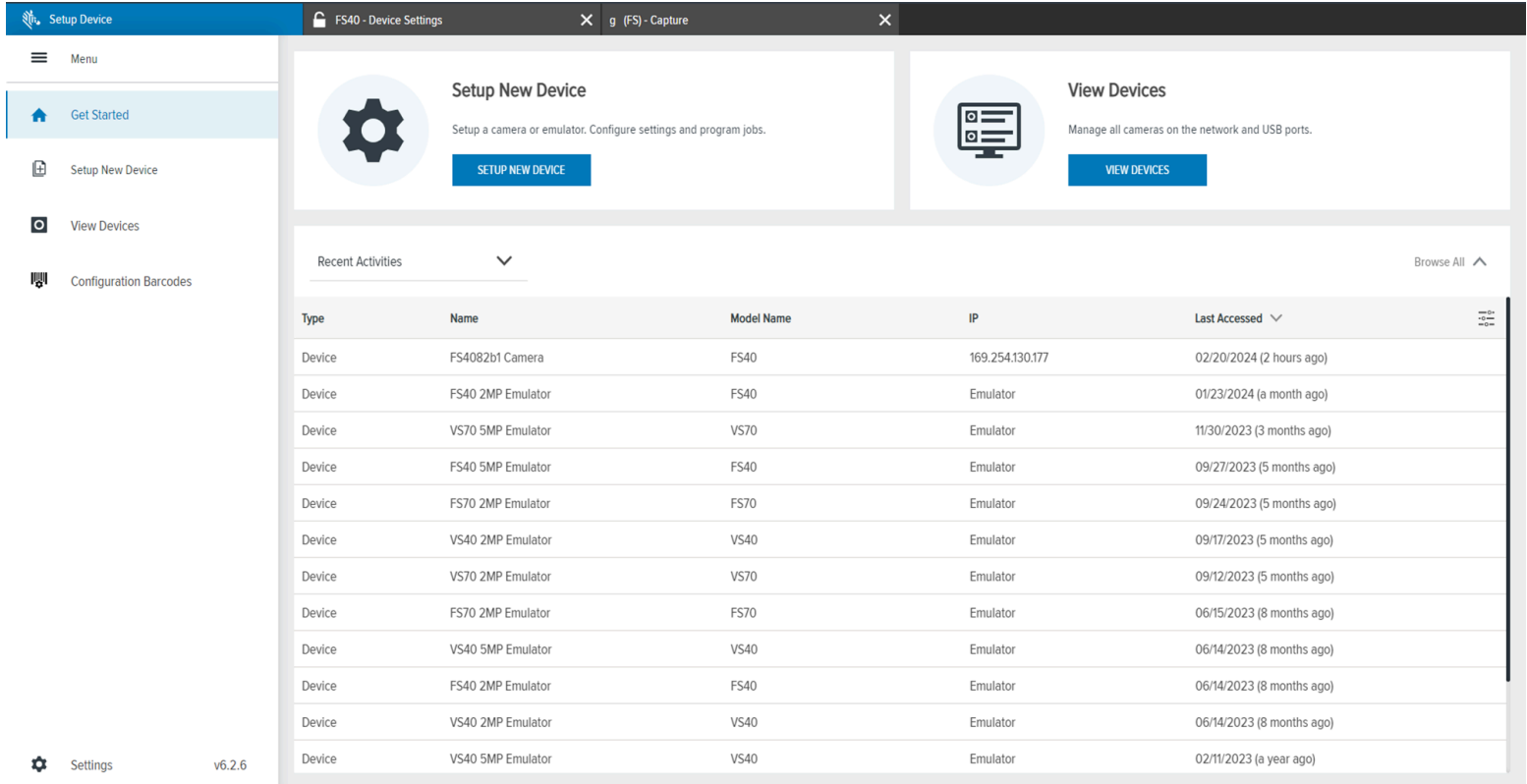
Features include:

- QuickDraw – enables the user to draw right on an image to create a tool with minimum steps.
- Object Locate and Pattern Matching – Zebra’s algorithms and intuitively crafted default settings enable users to consistently create and deploy efficient tools with less trial and error involved.
- Golden Image Compare – allows users to efficiently identify and resolve issues by comparing any image to an ideal image created at setup. This tool can significantly expedite troubleshooting activities by immediately diagnosing and correcting the source of degradation.
- Image Perfect - captures up to 16 different images, each with unique settings for focus, exposure, gain, and illumination control in one capture event.
- Deep Learning Optical Character Recognition (OCR) - uses Deep Learning tools to quickly read a variety of fonts within a user-defined region of interest (ROI) without training the tool with a large dataset.



## UI Overview

The Home screen features core functionality such as viewing and configuring connected or emulated devices and settings for Fixed Industrial or Machine Vision scanning jobs.



**Table 2** Zebra Aurora Focus Home

Setting	Description
<b>Setup New Device</b>	Provides access to the configuration of existing (previously connected) and virtual (emulated) device settings and program jobs.
<b>View Devices</b>	View connected devices on your network.
<b>Settings</b>	Click Settings to manage localization and notification settings or clear the cache. <b>Enable Automatic Fixturing</b> options and Image Capture Disk Management settings on the Job Management tab.

## Additional Help and Resources

Access additional help and resources by clicking **Help** from the top menu.

Additional resources include:

- User Guides

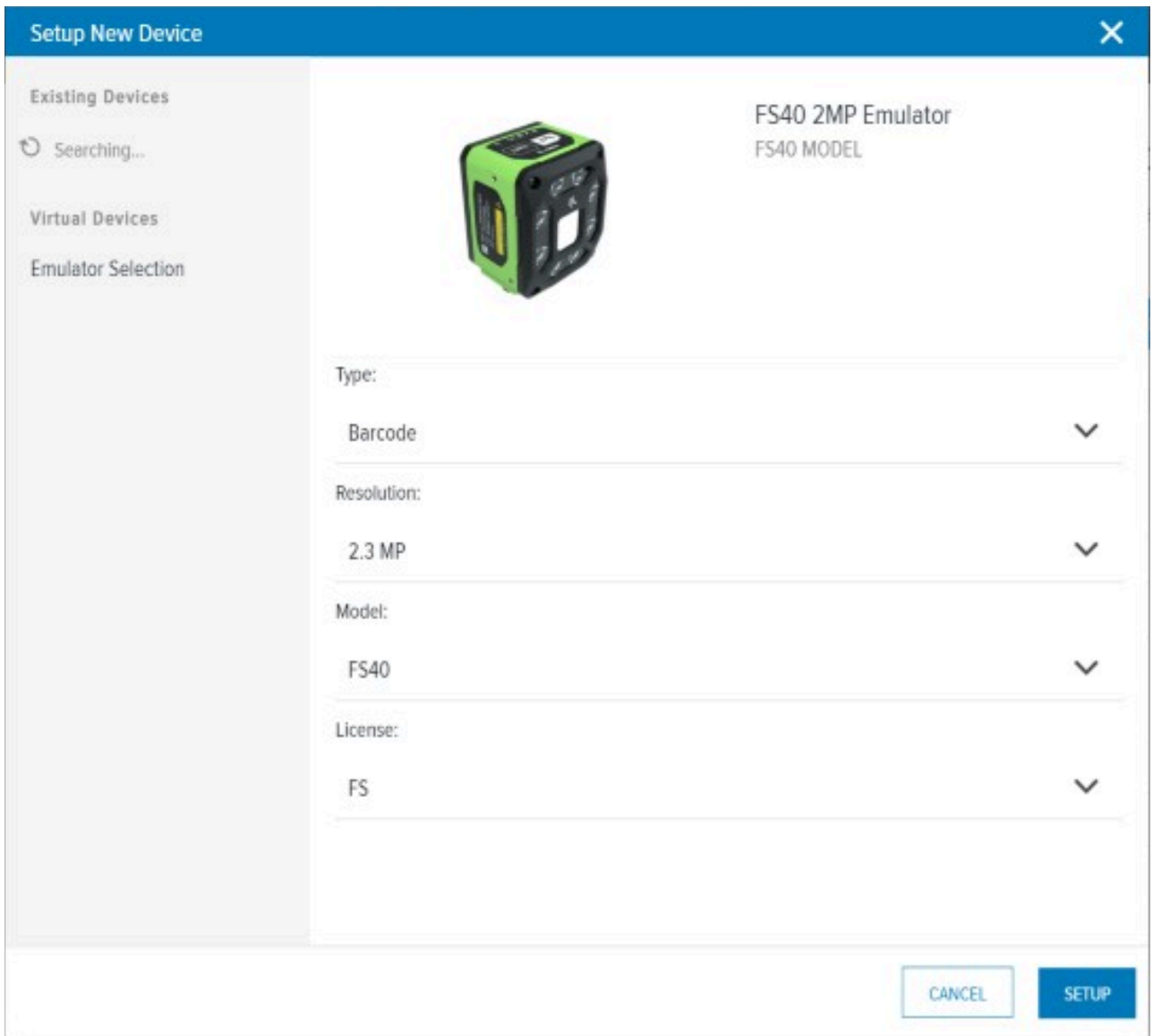
- How-to Videos
- Tutorials
- Support Central
- Licensing Information
- About the Application

### Device Discovery

Emulated devices are accessible under **Virtual Devices** on the **Setup New Device** screen. Devices that are physically connected to the system and are available to connect and set up are viewable under **Existing Devices**.

## Setting Up a New Device

Click **Setup New Device** on the home screen to configure an FS or VS Emulator.



Select Emulator Selection and configure the settings for your emulator from drop-down menu.

**Table 3** Setup New Device

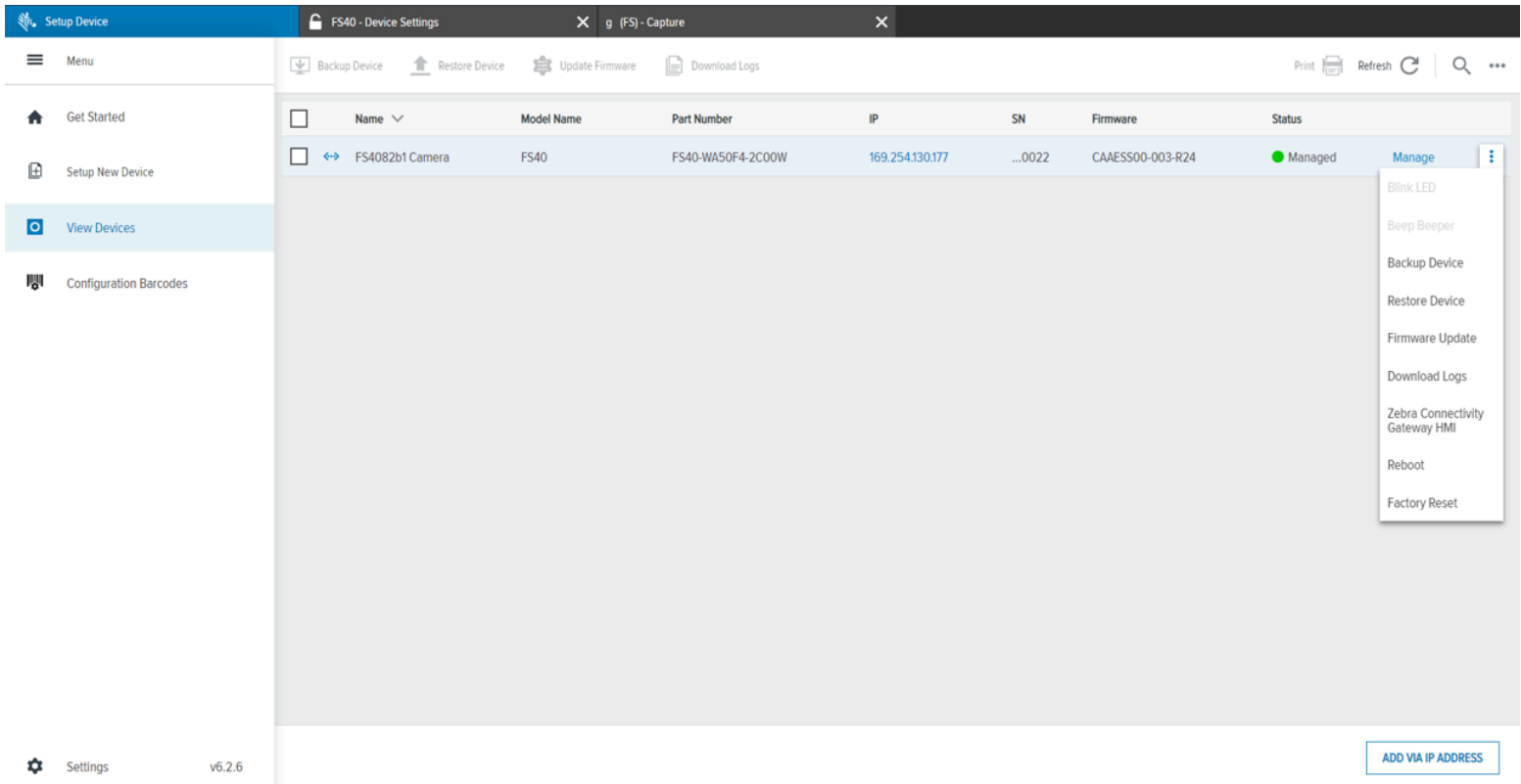
Setting	Description
Type	Select the toolset type for the emulator.
Resolution	Select the desired resolution of the emulator.
Model	Select a device model of the emulator.
License	Select the license type for the emulator.

## Adding Devices via IP Address

Connect to a camera by manually entering its IP address and clicking **Add Via IP Address** in the bottom right corner of the **View Devices** screen. Use this feature for devices with a known IP Address that are not automatically discoverable in Zebra Aurora Focus. You can also connect via IP address by entering the IP address (or hostname) into the **Add New Device via IP Address** form field and clicking **Connect**.

## Viewing Devices

Click **View Devices** to access additional device information such as name, part number, IP, serial number, firmware version, and status.




**NOTE:** Click the device IP address to access the Zebra Web HMI.

**Table 4** Device Information

UI Element	Description
Backup Device	Create a backup of the selected device. The resulting file is an encrypted archive that can be used only by the restore function.

**Table 4** Device Information (Continued)


UI Element	Description
Restore Device	Select a backup file and restore the device configuration. The process also triggers a complete reboot of the device.   <b>WARNING:</b> Applying a backup from one model type to another can create some issues.
Update Firmware	Use this command to update the device firmware. This operation can also be done using the Web HMI.
Download Logs	This command refreshes the list of discoverable devices on the network.
Zebra Connectivity Gateway HMI	Access the Zebra Connectivity Gateway HMI.
Reboot	Reboot the device.
Factory Reset	Perform a factory reset on the device.

Click on the device row to view additional device information.



**NOTE:** Copy the Serial Number, the Part Number, and the Firmware Version of the device before contacting technical support.

<input checked="" type="checkbox"/>	Name <span style="font-size: small;">▼</span>	Model Name	Part Number	IP	SN	Firmware	Status	
<input checked="" type="checkbox"/>	<a href="#">↔</a> FS4082b1 Camera	FS40	FS40-WA50F4-2C00W	169.254.130.177	...0022	CAAESS00-003-R24	<span style="color: blue;">●</span> Managed	Manage <span style="font-size: small;">⋮</span>



OVERVIEW	COMMUNICATIONS	SYSTEM	STATUS
FW Version: CAAESS00-003-R24	Current Connection Type: ETHERNET	DHCP Timeout (s): 30	Lens Type: Wide Angle
SN: 21363520180022	IP Mode (Static/DHCP): DHCP	Uptime: 5 days, 20:17:03	Illumination type: White, Red, Green, Infrared
Mfg. Date: 29DEC21		Sensor Type: 5.1 MP Mono	External Illumination: True
Core Service Version: 1.7.2-RC.8		Sensor Firmware: CAAFLS00-001-R07	External Illumination GPIO: True
ChiCore Library Version: 1.7.17-IMGKIT		Focus Calibration: Diopter Calibrated	Available GPIOs: 9

**Table 5** Device Information

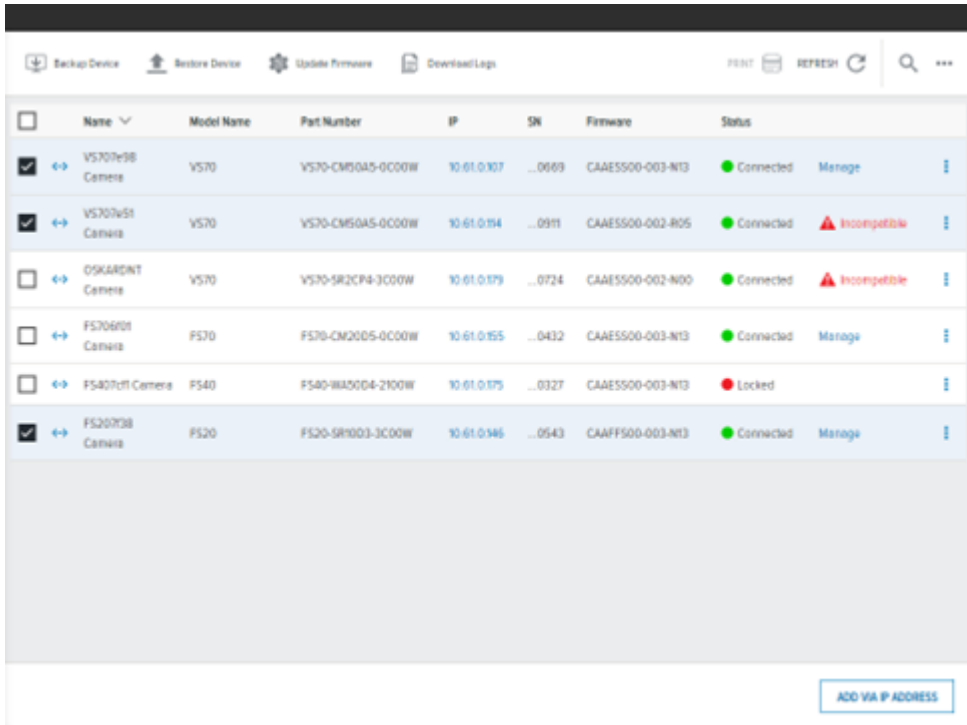
UI Element	Description
Overview	View device information including firmware version, serial number, manufacturing date, core services version, and ChiCore library version.
Communications	View communication settings including connection type and IP mode.

**Table 5** Device Information (Continued)

UI Element	Description
System	View system settings including DHCP timeouts, uptime, sensor type, and firmware version, and focus calibration type.
Status	View lens and illumination settings including lens type, illumination type, external illumination, external illumination GPIO, and number of available GPIOs.

## Multi-Device Management

Manage multiple cameras from Aurora Focus using **View Devices** list.

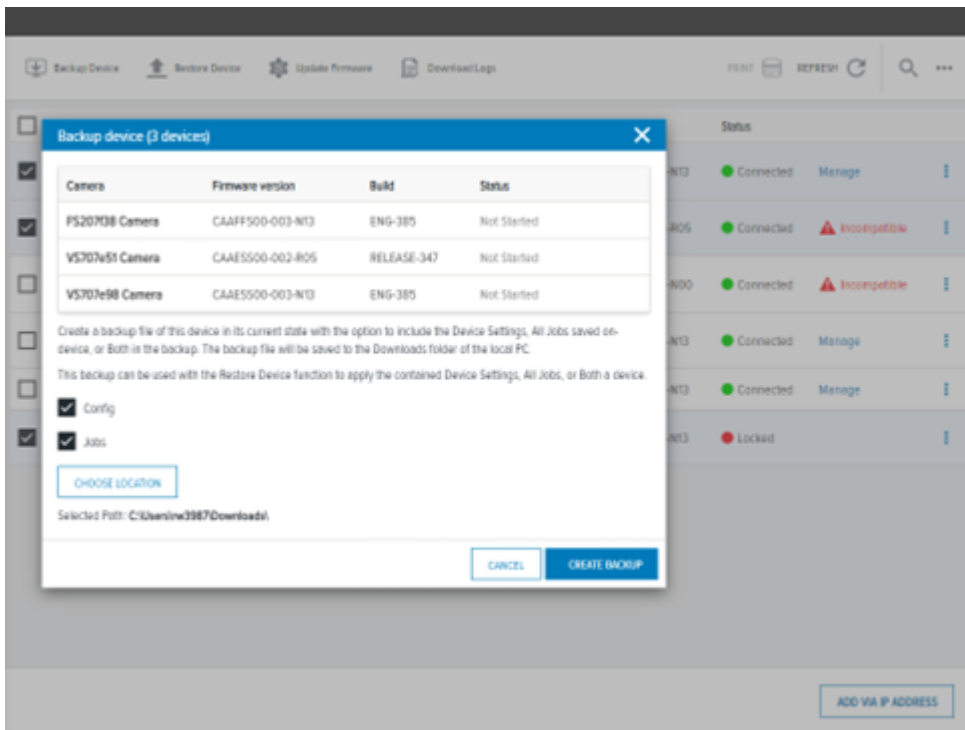


## Backing Up Multiple Devices

1. Select a device from the **View Devices** list to back up a device configuration, jobs, or both (default).

2. Click **Create Backup** to select a path to save the backup to.

The backup is performed on **Connected** devices. The status of the backup is shown in the **Status** column.



**NOTE:** Performing a backup interrupts the current job execution.

## Restoring Multiple Devices

To perform a restore on connected devices:

1. Select a device on the **View Devices** list to restore a backup.
2. Select the backup file.
3. Click **Restore Device** to initiate a device reboot.

## Updating Firmware on Multiple Devices

Select devices on the **View Devices** list to perform a firmware update.

Update devices using a file stored on an FTP/FTPS server or uploading the file to the device (default).

- Specify the host, username, password, file path, and if the server is running in FTPS mode, to use the FTP / FTPS Server option.
- Select a firmware file from the File Explorer to use the File Based Upload option.

Use **Dual Update** to update the primary device partition, reboot the device, update the secondary partition, and reboot the device again.

Use **Force Update** to apply the same firmware version to all devices.

Firmware updates are performed on Connected devices only.



**NOTE:** It is not possible to open more than one **Update Firmware** window.

## Network Setup

Zebra Aurora Focus can connect the device via Ethernet or USB-C-to-A(or C; host-side) cable to the Host PC. When connected, navigate to the **View Devices** screen to view all connected devices and their properties, such as **Name, Model Name, Part Number, IP Address, Serial Number, Firmware Version** and **Status**.

There are three options to connect a device to be discoverable in Zebra Aurora Focus:

1. Connect the device directly to a PC using a USB cable. Using this method does not have access to an internet source by default. In this case, bridge your internet connection using an adaptor. See Bridging an Internet Connection for additional information.
2. Use an M12-ETH cable to connect the device (M12) directly to the Ethernet port on the PC. This option does not provide access to outside internet by default. In this case, bridge your internet connection using an adaptor. See Bridging an Internet Connection for additional information.
3. Use an M12-ETH cable to connect the device (M12) to a switch or router (ETH) on the same subnet as the PC. In this setup, the device typically receives an IP address from the router provided by an Internet Service Provider and can reach outside internet to reach a license server. This is the recommended setup when performing license upgrades and typically does not require bridging a connection.

If access is restricted due to firewall:

- Contact the IT department to allow network traffic.
- Create a proxy server to allow traffic to the license server.
- Move the PC to a home network and attempt to connect again with a less restrictive firewall configuration.

### See Also

[Bridging an Internet Connection](#)

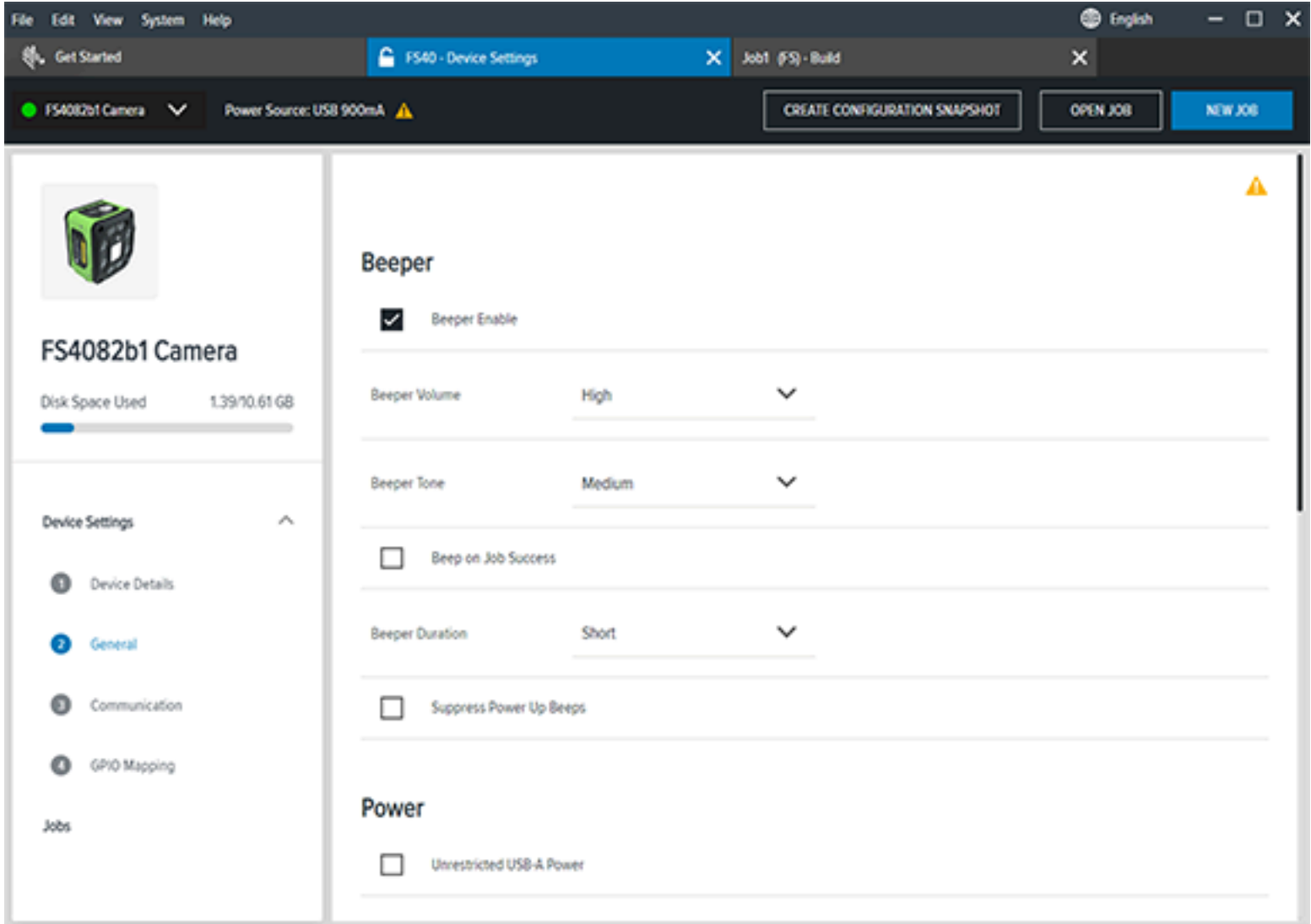
## Configuring Device Settings

Configurable device settings include details on the device, general beeper, power and LED settings, communication settings, and GPIO mapping.



## General Settings

Configure the beeper, power, and LED settings using the **General Settings** tab. Beeper settings can be set to turn on or off, and the beep's volume, tone, and duration can be configured to fit the needs of a specific use case.



**Table 6** General Settings

Setting	Description
<b>Beeper</b>	
Beeper Enable	Enables the beeper on the device.

**Table 6** General Settings (Continued)

Setting	Description
Beeper Volume	Configures the volume of the beeper. <ul style="list-style-type: none"> <li>• High</li> <li>• Medium</li> <li>• Low</li> <li>• Off</li> </ul>
Beeper Tone	Configures the tone of the beeper. <ul style="list-style-type: none"> <li>• High</li> <li>• Medium</li> <li>• Low</li> <li>• Off</li> </ul>
Beep on Job Success	When enabled, the device beeps upon successful completion of a job.
Beeper Duration	Configures the tone of the beeper. <ul style="list-style-type: none"> <li>• Short</li> <li>• Medium</li> <li>• Long</li> </ul>
Suppress Power-Up Beeps	When enabled, the power-up warble beeps that sound upon device start-up play at a reduced level.
<b>Power</b>	
Unrestricted USB-A Power	When enabled, the device receives unrestricted power from a USB-A power source. This is required to enable full-power internal lighting
<b>Hardware Buttons</b>	
Tune Button Enable	Turn on or off the Tune button on the smart camera.
Trigger Button Enable	Turn on or off the Trigger button on the smart camera.
<b>Configuration Barcodes</b>	
Enable Parameter Barcodes	When enabled, the device configuration can be changed using a barcode
Timeout	Configure the maximum time in ms to attempt to generate the barcode before a timeout occurs.
<b>360 LED</b>	
Number of Flashes	Use the slider to configure the number of flashes the LED illuminates upon decode.
Time per Flash	Use the slider to configure the number of times in ms the LED illuminates upon decode.
<b>Configure Logging</b>	

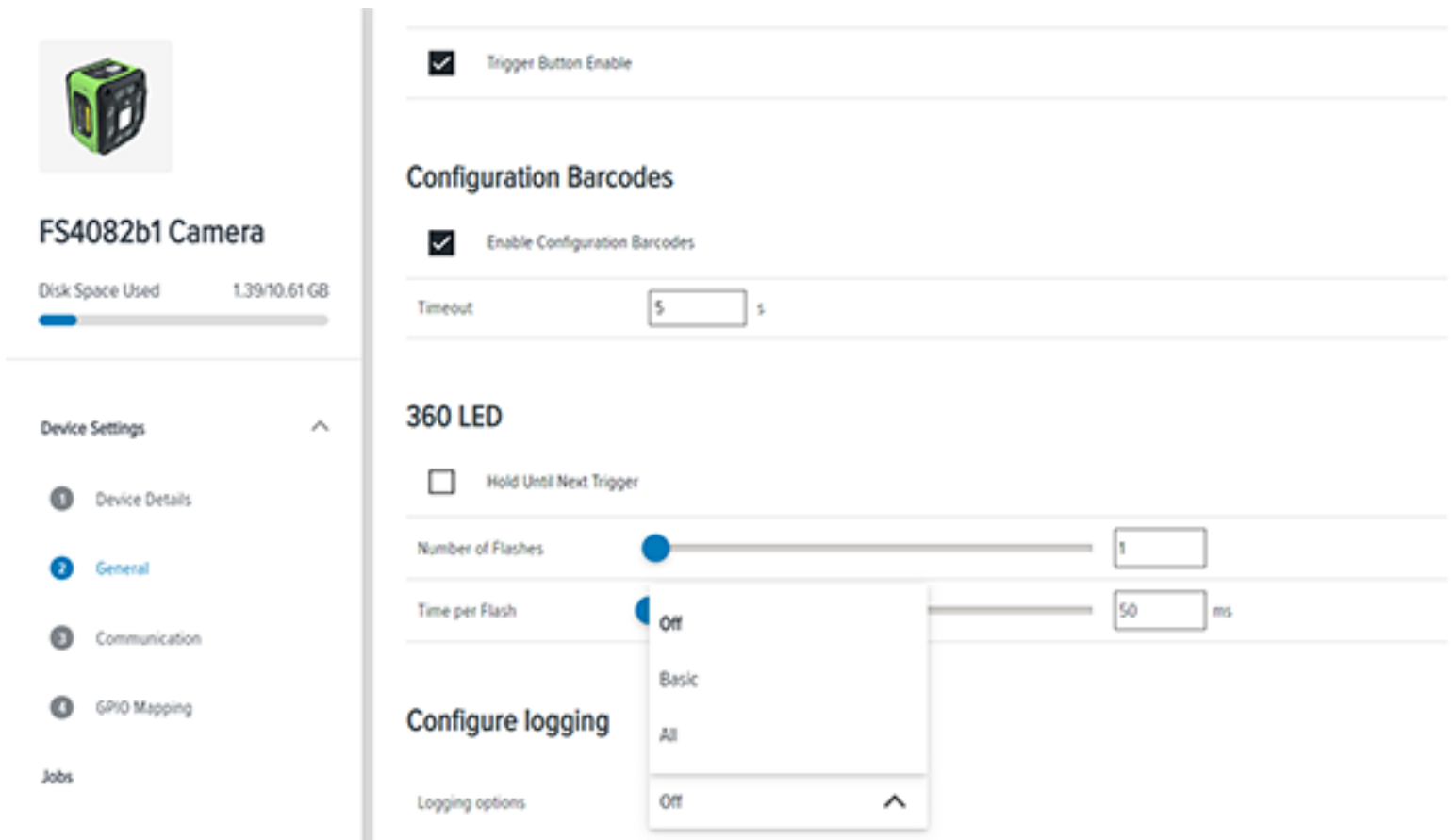
**Table 6** General Settings (Continued)

Setting	Description
Logging Options	Select <b>Basic</b> or <b>All</b> to enable logging to generate log files that provide additional information on job runs. Download the log files from the device using the web HMI.

## Viewing and Downloading Logs

Enable logs that can be viewed using Perfetto Trace Viewer [ui.perfetto.dev/](https://ui.perfetto.dev/). Logs are saved every two minutes on the device. Up to 10 log files are stored on the device (older logs are replaced by the newest).

To enable Perfetto Logs using Aurora Focus, set the **Logging Options** in the **Configure Logging** section of **General Settings** to **Basic** or **All**.



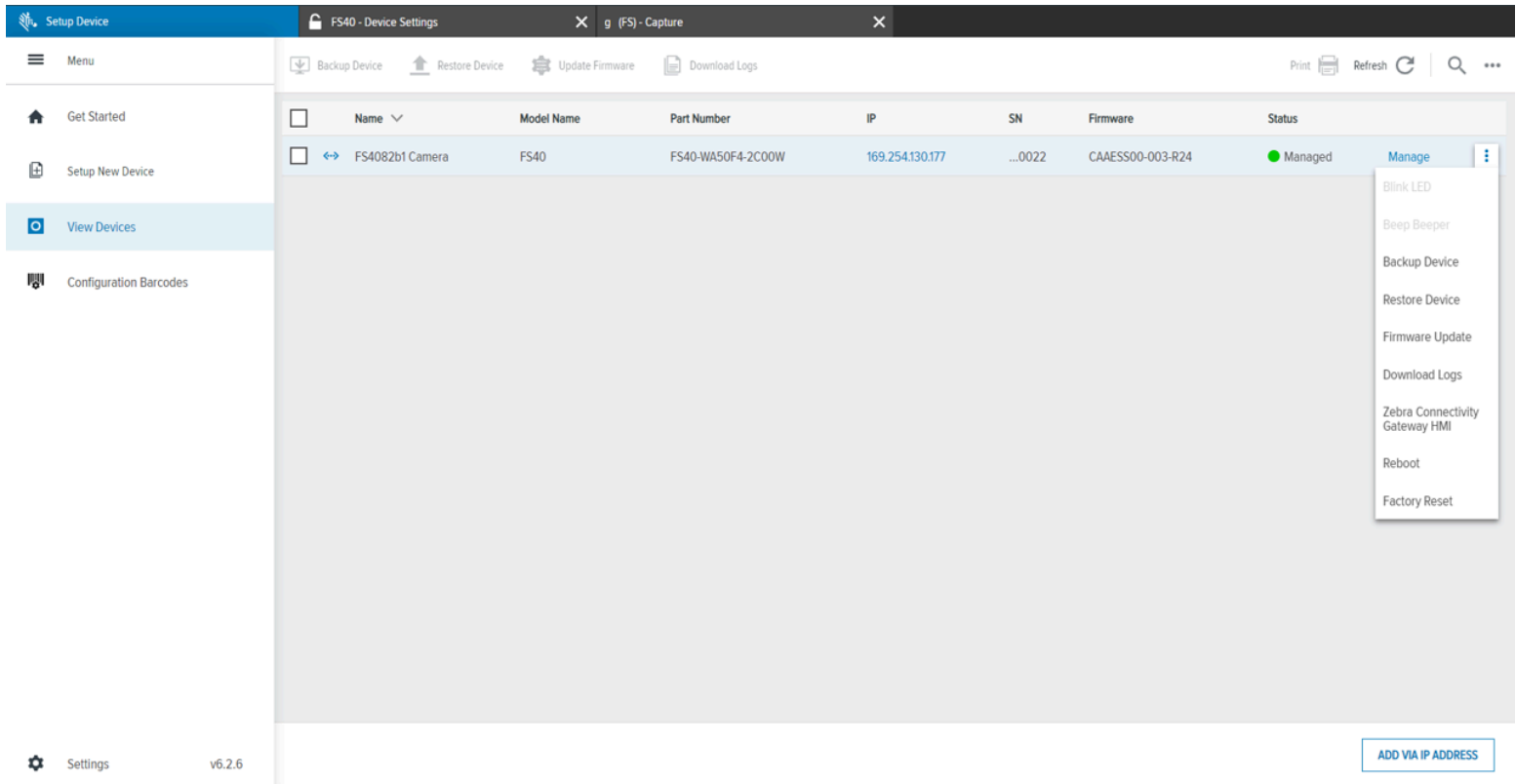
- Basic - provides standard device logging.
- All - provides logging for Zebra Support logs.

### Downloading Basic Logs

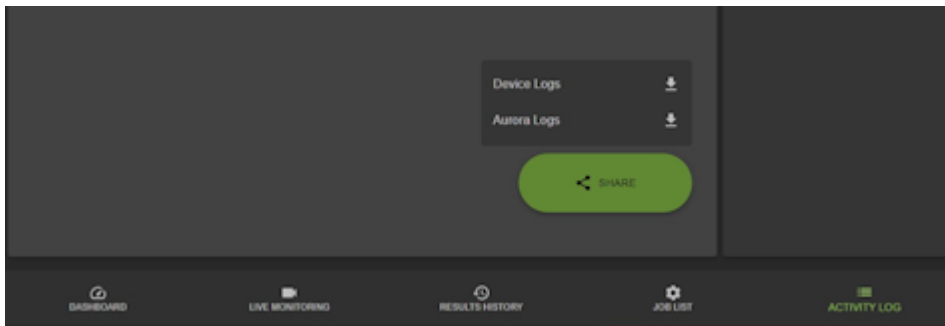
Download basic log information using Aurora Focus or the Zebra Web HMI when basic logs are enabled.

# Zebra Aurora Focus Software Overview

Using Aurora Focus, navigate to **View Devices** select a device and click **Download Logs** or click the ellipses to download logs from a subset of specific devices.



Using the Zebra Web HMI, navigate to the **Activity Logs** tab and click Share to download Device or Aurora Logs.



**NOTE:** Downloaded Log files must be unzipped.

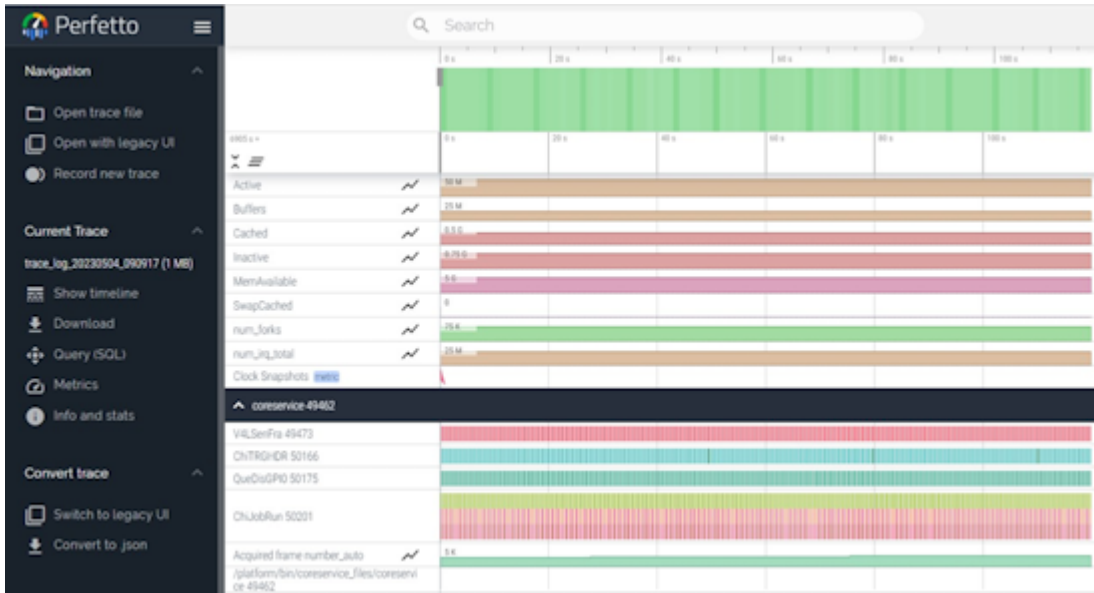
## Downloading All Logs

When All logs are enabled, download the logs using the Zebra Web HMI.

Access to download logs is available in the **Activity Logs** tab using the **Device Logs** option.

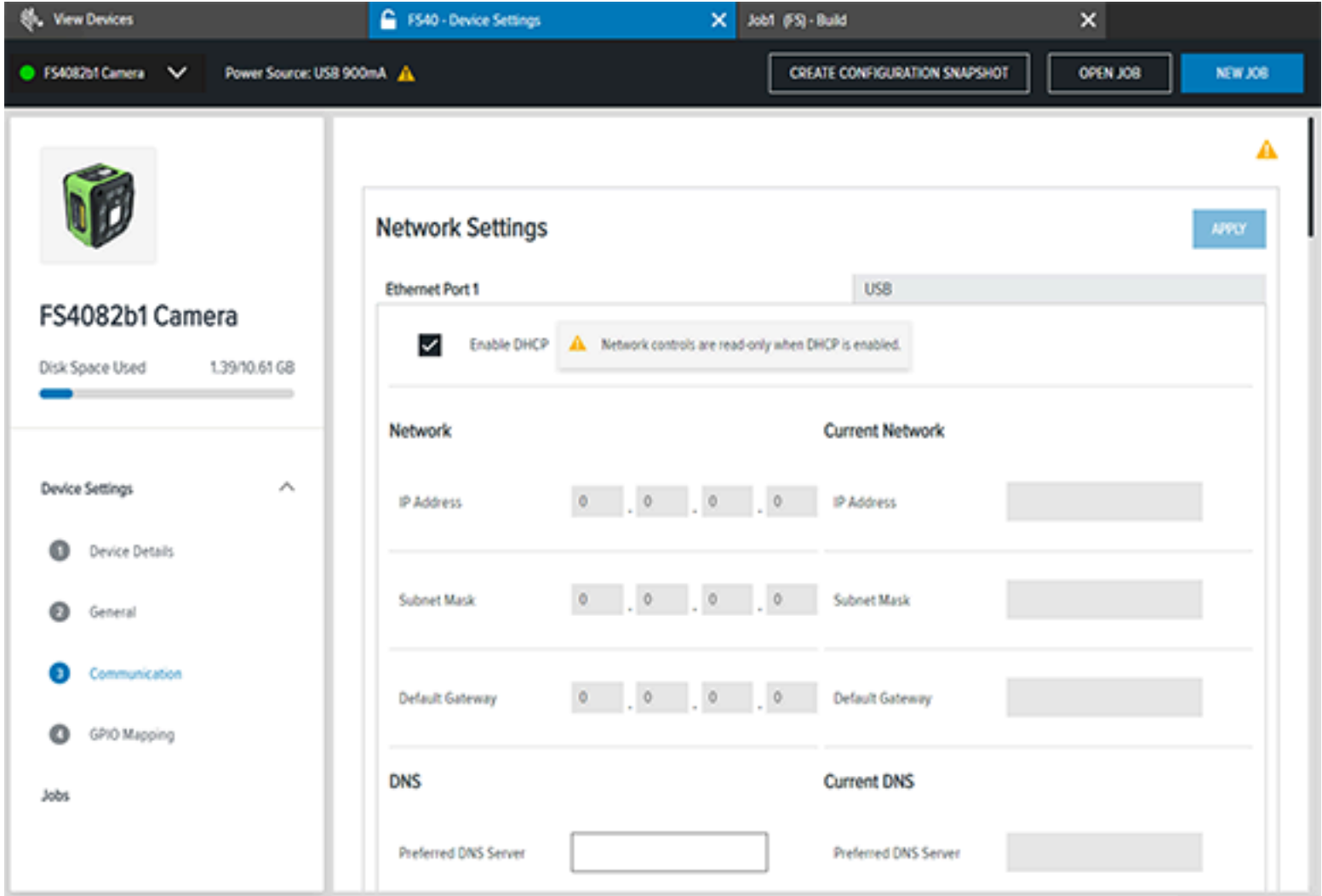
## Viewing Perfetto Logs

Drag and drop the log file onto the Perfetto UI or use the **Open trace file** option from the left menu to launch File Explorer and locate the log file to import.



## Communication Settings

Configurable communication settings include network, DNS, date/time, PLC protocol, and USB settings. Refer to the FS/VS Industrial Ethernet User Guide for additional information on PLC protocol and Industrial Ethernet.



### Network Settings

Configurable Network Settings include Network and DNS and General settings such as DHCP timeout and Host Name. Network settings vary for each Network interface: Ethernet Port 1, Ethernet Port 2, and USB.

**Table 7** Network Settings

Setting	Description
Enable DHCP	Enable DHCP to allow self-configuration of the device in an industrial network.
IP Address	Define the network IP address.



**Table 7** Network Settings (Continued)

Setting	Description
Subnet Mask	Define the network subnet mask.
Default Gateway	Set the default gateway to pass information to the device.
Preferred DNS Server	Set the preferred DNS server to connect the device to.
Alternate DNS Server	Set an alternate DNS server in case the preferred server is not available.
DNS Domain Name	Define a DNS domain name.
DHCP Timeout	Set a timeout for the time the device can use the DHCP server.
Host Name	Define the hostname.


## TCP/IP Settings

Configure TCP/IP settings, such as enabling TCP/IP Control, selecting a port number, selecting a terminator, or setting a trigger string.

**Table 8** TCP/IP Settings

Setting	Description
Enable TCP/IP Control	<p>Enabling the TCP/IP control interface allows the device to receive triggers over a TCP/IP connection.</p> <p> <b>NOTE:</b> It is recommended to disable this interface when not in use.</p>
Control Port Number	Select a port number that accepts ASCII command strings for the device.
Control Terminator	Select a terminator that follows the incoming ASCII command string.
Trigger String	Set a customizable trigger command. Sending this string to the Control Port with the Control Terminator triggers the deployed job on the camera when TCP/IP trigger is selected in the Capture chevron.
Enable TCP/IP Results	<p>Enabling the TCP/IP Results interface allows the device to output result data over a TCP/IP connection.</p> <p> <b>NOTE:</b> It is recommended to disable this interface when not in use.</p>
Connection Type	The Server Host system attaches to the device on the Result Port Number. The data is sent out with the Results Terminator. The device connects to a host system when the Client is enabled at the specified IP address. Port Number uses Result Terminator to send the data packet.
IP Address	If the Connection Type is set to Client, enter the IP address.

**Table 8** TCP/IP Settings (Continued)

Setting	Description
Results Port Number	When in Server mode, the port that the device sends the data out on. When in Client mode, the port on the device's host system connects to.
Results Terminator	For both Client and Server modes, the Results Terminator is the termination text of the string data package. The default setting is CR+LF.
Timeout	When in Client mode, the time the device attempts to connect to the host system.
Enable TCP/IP Heartbeat	When enabled, this setting prompts the device to send out a heartbeat message at the defined interval to the connected TCP result host. The host uses this heartbeat message to verify that the connection with the device is active.   <b>NOTE:</b> This setting only sends out a heartbeat message while a job is deployed. The heartbeat stops when the device is in Edit mode and resets after each TCP/IP output.
Heartbeat Interval	Set the heartbeat time interval.
Heartbeat Sequence	Create an arbitrary sequence of text and special characters for the heartbeat message.

## RS-232 Settings

Configure various RS-232 settings such as a terminator, trigger string, baud rate, or parity.



**NOTE:** Enabling RS-232 control enables the device to receive control messages from RS-232. For additional information, refer to the Connectivity Guidelines section.

**Table 9** RS-232 Settings

Setting	Description
Enable RS-232 Control	Enable or disable control messages issued to the device through the RS-232 serial port.
Control Terminator	Identify a terminator.
Trigger String	Identify a customizable trigger command. Sending this string to the Control Port with the Control Terminator triggered the active job on the device with TCP/IP Trigger is selected in the Capture chevron.
Results	Enable or disable the transmission of the result message to the serial port.
Speed (Baud Rate)	Configure the speed at which information is transferred to the device.
Data Bits	Determine the number of data bits per block of data transmitted.
Parity	Select an error-checking bit that returns a logic bit depending on the number of data bits expected.



**Table 9** RS-232 Settings (Continued)

Setting	Description
Stop Bits	Determine the number of bit periods to wait before sending the next start bit.

## Date/Time Settings

Configure date/time settings by providing an NTP server.



**NOTE:** There is no internal battery in the device, therefore, date and time settings are not preserved.

**Table 10** Date/Time Settings

Setting	Description
NTP Server 1	The IP address of the primary Network Time Protocol server to synchronize to. Default: 0.pool.ntp.org
NTP Server 2	The IP address of the second Network Time Protocol server to synchronize to. Default: 1.pool.ntp.org

## PLC Protocol

Determine the appropriate PLC protocol based on your use case.

Select the PLC protocol from None, EtherNet/IP, Profinet, or Modbus TCP. For additional information, refer to the FS/VS Smart Camera Series Industrial Ethernet User Guide.


**Table 11** PLC Protocol

Settings	Description
Industrial Ethernet/PLC Options	Select the desired industrial protocol for device communication.

## USB Settings

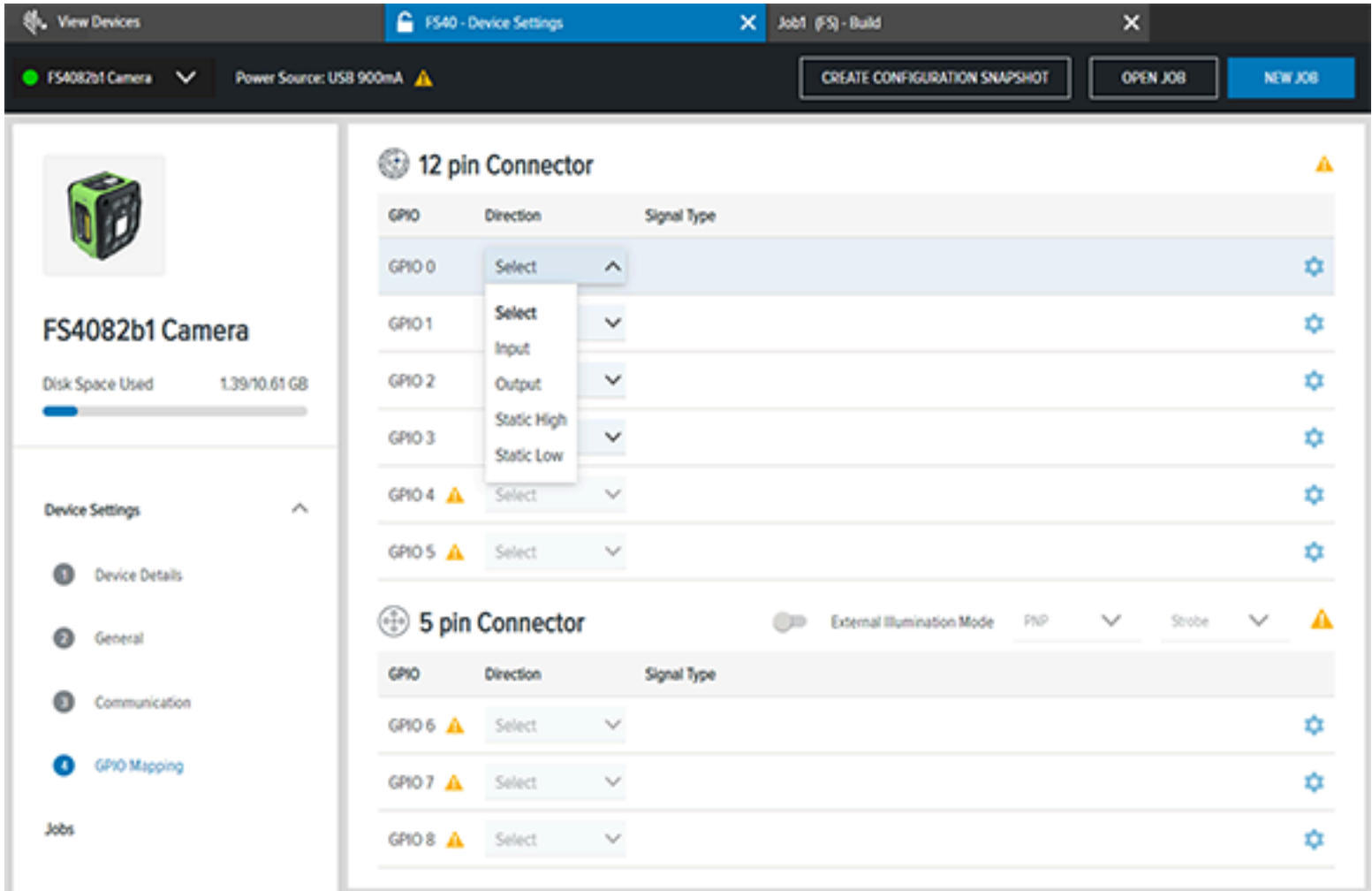
Enable specific USB settings such as a HID keyboard, keystroke delay, or terminator.

**Table 12** USB Settings

Settings	Description
Enable HID Keyboard	<p>Enabling the HID keyboard interface allows the device to output result data in a HID keyboard mode. This restarts USB communication as a Human Interface Device class keyboard to emulate keystrokes.</p> <p> <b>NOTE:</b> It is recommended to disable this interface when not in use. The device can be set to either HID keyboard or USB CDC-Serial mode. Both modes cannot be enabled simultaneously.</p>
Keyboard Country Type	Select your country from the list of available Keyboard Country Types.
Keystroke Delay	Set the delay (in ms) between emulated keystrokes when HID is enabled.
Special Key Keystroke Delay	Set the delay (in ms) between emulated special keystrokes when HID is enabled.
Enable USB CDC-Serial Control	Activate the management of special commands received by the CDC-Serial port.
Control Terminator	Set the message terminator that follows the incoming ASCII command string.
Trigger String	Command string used to trigger new image acquisition.
Enable USB CDC-Serial Results	Enable the transmission of the results over the CDC-Serial port.

## GPIO Mapping

Configure the GPIO on the 12-pin and 5-pin connectors by selecting the GPIO and configuring its direction and signal type. Enable External Illumination mode for the 5-pin connector by specifying its mode.



**Table 13** GPIO Mapping

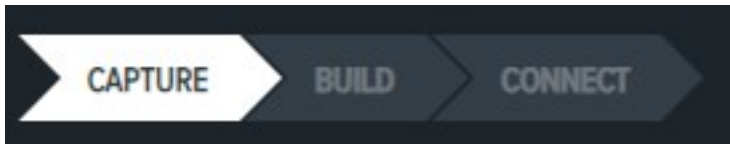
Setting	Description
Direction	Configure the input signals coming into the device, or the output signals sent out. Select the GPIO port configuration: Input, Output, Static High, and Static Low. Static High sources the current for an external load. Static Low sinks the current for an external load.
Signal Type	Configure the Signal Type, such as a manual or hardware trigger. Use the Input signal to connect to a hardware or software trigger. Use the Output to connect to Job Result, or use it as an External Light Strobe.

**Table 13** GPIO Mapping (Continued)

Setting	Description
Advanced Settings	Use Input to configure Input Debounce and Input Delay. Use Output to configure Pulse Width and Output Delay.
External Illumination Mode	Toggle this setting to automatically configure the pins in this port to power and control external illumination.

## Configuring Jobs

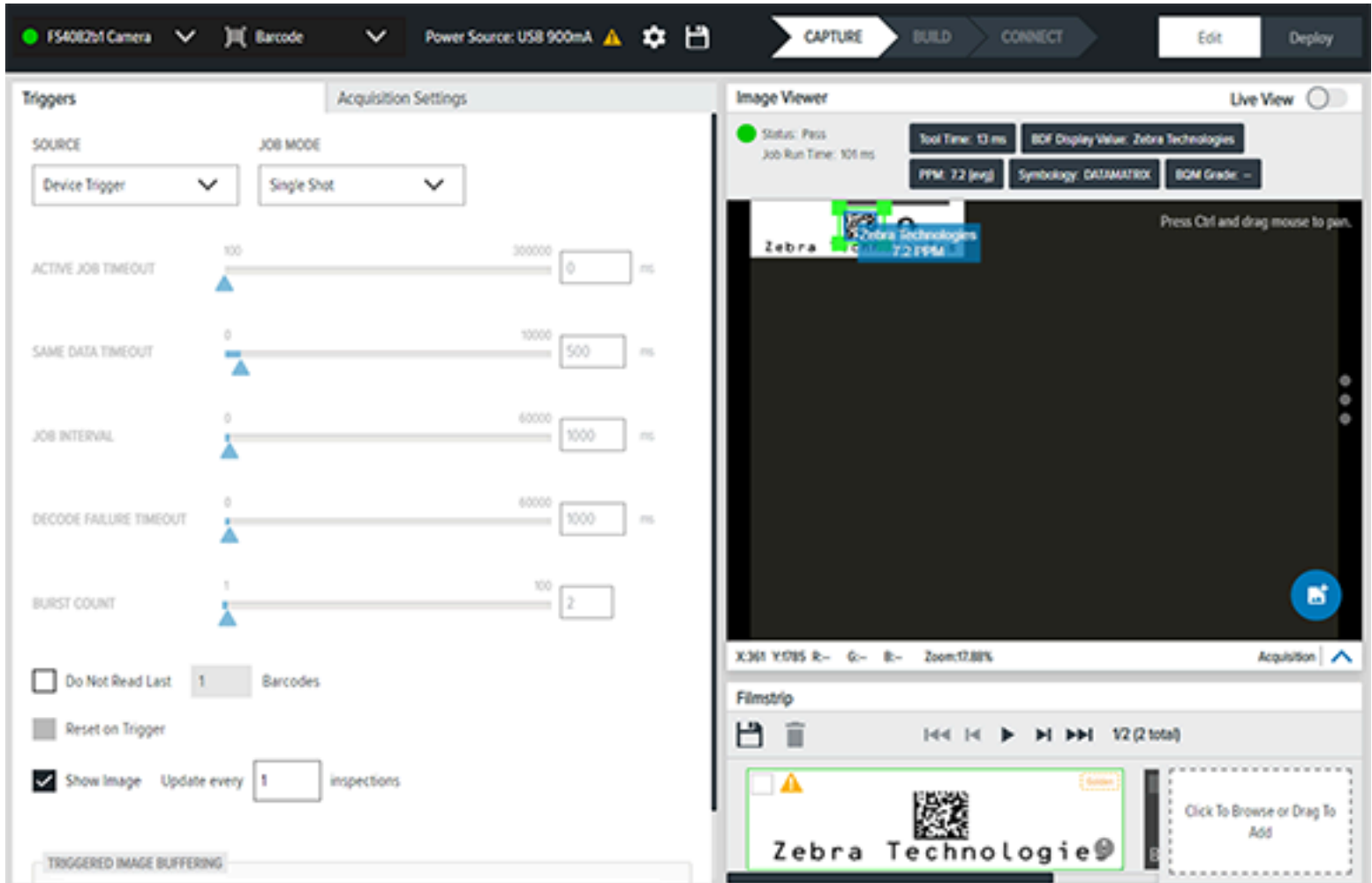
Configuration and deployment of FIS or MV jobs are facilitated using the Capture, Build, and Connect chevrons.



- **Capture** - configure the Job Mode and Source settings on the Triggers tab and imager settings on the Acquisition Settings tab.
- **Build** - depending on the toolset (FIS or MV), configure the settings and symbologies or tools used to complete a specific job.
- **Connect** - save and configure image settings and network connections such as Industrial Ethernet, Output Formatting, and GPIO Mapping.

## Capture

The Capture chevron configures **Triggers** and **Acquisition Settings** for Fixed Industrial Scanning or Machine Vision jobs.



**Table 14** Trigger Settings

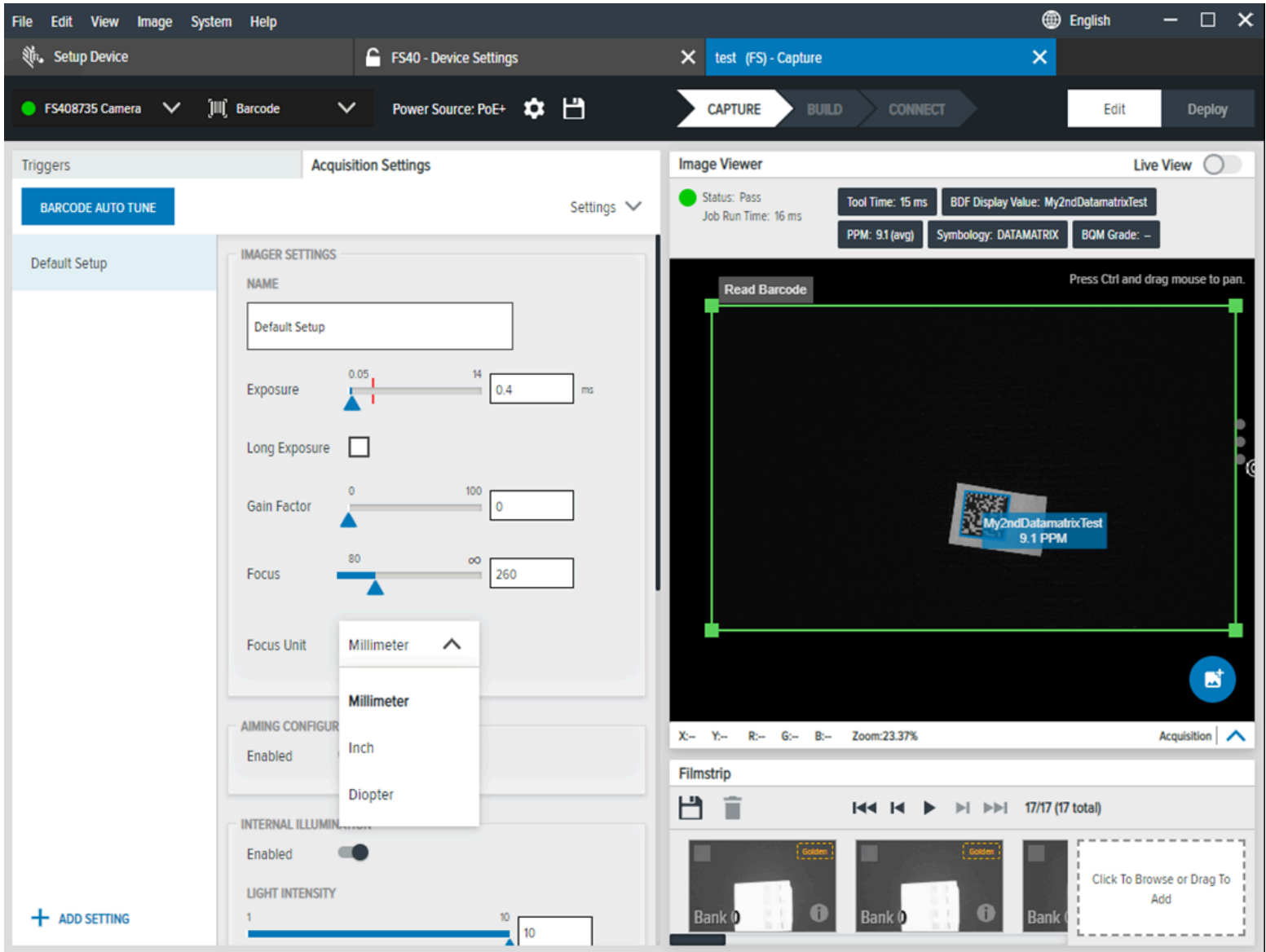
Item	Description
Source	Select the trigger source from GPIO, Device Trigger, Serial, PLC, TCP/IP Auto(Self), Test Trigger
Job Mode	Select the Job Mode between Single Shot, Level Continuous, Series (Burst), Periodic Single Shot, Continuous, Presentation

**Table 14** Trigger Settings (Continued)

Item	Description
GPIO Inputs	<p>When the Source trigger is set to GPIO, use this drop-down menu to select the GPIO input. This is useful if more than one GPIO is configured as Input. The number corresponds to the GPIO number, and the description is the current configuration of the GPIO, for example:</p> <ul style="list-style-type: none"> <li>• 0: Rising Edge</li> <li>• 1: Rising Edge</li> <li>• 4: Falling Edge</li> </ul>
Active Job Timeout	This is the maximum duration for the inspection Job
Do Not Read Last	Use this option to skip reading the last barcodes. Typically, presentation mode or continuous mode is used to ensure that codes are decoded twice.
Show Image	Disable this option to speed up the decoding.

Acquisition Settings determine the configuration used to capture images with the device.


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**Table 15** Acquisition

Setting	Description
Barcode Autotune	Use this button to force an automatic tune procedure that configures the camera to read the barcode or Datamatrix, adjusting. Exposure, Gain Factor and Focus.
Autotune Settings	Open the dialog to adjust the Autotune Settings.
Image Perfect+ Setup	The setup list on the left is the possible configuration for Image Perfect+.
Add Settings	Use this command to add a new setup to Image Perfect+

**Table 15** Acquisition (Continued)

Setting	Description
Name	Assign a name for the Image Acquisition Setup
Exposure	Exposure time in ms.
Long Exposure	Activate this option to adjust the exposure time from 33 to 750 ms.
Gain Factor	Use this slider to adjust the sensor gain factor from 0 to 100.
Focus	Use this slider to adjust the focus length.
Focus Unit	<p>Select Millimeter, Inch, or Diopter to configure the focus measurement units on the device.</p> <p> <b>NOTE:</b> Depending on the hardware version of your device, <b>Millimeter</b> and <b>Inch</b> measurements are available in addition to <b>Diopter</b>. While the millimeter and inch distance values calculated in the application may slightly differ from the real-world distance value, this does not impact the device's performance.</p>
Aiming Configuration	Enabling this feature projects an aiming pattern onto the surface where the camera is pointing and helps to position the camera by identifying the focal point of the field of view.
Internal Illumination	This setting can only be enabled with Unrestricted USB Power, PoE, and 24V external power.
Light Intensity	<p>Use the slider to increase light intensity by sliding to the right.</p> <ul style="list-style-type: none"> <li>• Minimum: 1</li> <li>• Default: 4</li> <li>• Maximum: 10</li> </ul>
Red Light	<ul style="list-style-type: none"> <li>• Top: enable this setting to use the top illuminator on the device.</li> <li>• Bottom: enable this setting to use the bottom illuminator on the device.</li> <li>• Right: enable this setting to use the suitable illuminator on the device.</li> <li>• Left: enable this setting to use the left illuminator on the device.</li> </ul>
External Illumination	External illumination can be activated only when a 24V DC power supply provides the power.



**Table 15** Acquisition (Continued)

Setting	Description
Light Intensity	This controls the analog voltage pin on the Analog Output Pin. <ul style="list-style-type: none"> <li>• Minimum: 1</li> <li>• Default: 8</li> <li>• Maximum: 10</li> </ul>

**See Also**

[Viewing Devices](#)

## Using Autofocus Barcodes

Use calibration barcodes to set the focus settings of the device automatically.



**NOTE:** This process only adjusts the focus setting on the device and does not adjust exposure or gain.

Bring one of the following calibration barcodes into the device field of view:

 <b>5s delay</b>	
	 <b>8s delay</b>
 <b>13s delay</b>	

1. Read one of the autofocus barcodes to start the focus tuning process based on the selected delay (8s, 13s, or 18s).



**NOTE:** Observe the status LED flash every 500ms during the delay, providing time to bring the test barcode into the field of view to tune the focus on it.

2. During this delay, bring the desired test barcode into the field of view for the autofocus process to use as a reference. It is recommended to tune the focus of the device with a barcode type that is commonly decoded in your use case.



**NOTE:** Do not use the calibration barcode as the test barcode to calibrate focus against.

3. After the delay, the autofocus process starts and continues for 5-15 seconds.
4. Listen for the confirmation beeper sequence indicating the focus calibration process is complete.



**NOTE:** Go to the ZETI section for instructions on adjusting the device's focus using the autofocus command.

**See Also**  
[autofocus](#)

## Trigger Settings

Based on the Job Mode, different trigger settings are enabled.

- Single Shot - initiates a single image capture. Single Shot helps inspect an image.

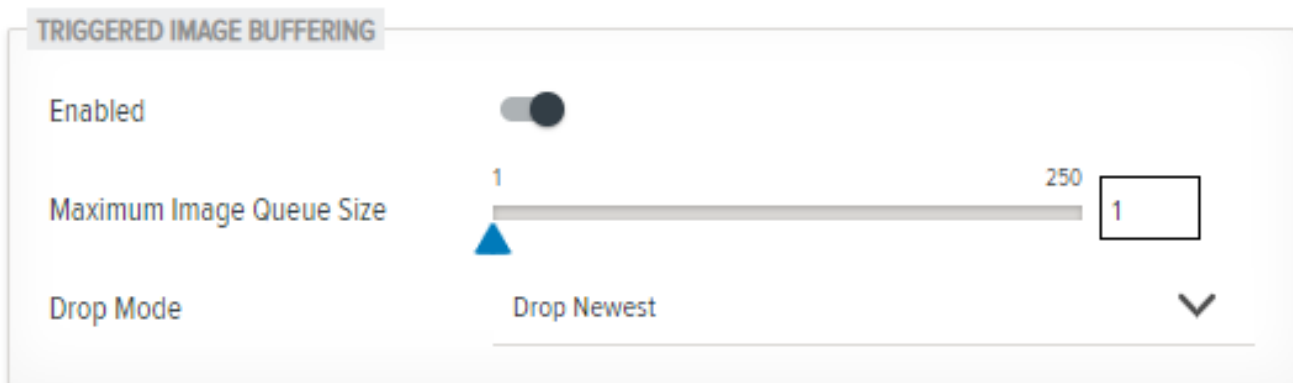
- Level Continuous - initiates an image capture on a level trigger for objects in motion. Level Continuous is helpful for use cases that involve a conveyor belt.
- Series (Burst Mode) - Initiates a series of image captures. Bust mode is helpful for use cases that require capturing a series of captures based on a user-defined amount of trigger intervals and frequency.
- Periodic Single Shot - initiates a single image capture after a user-defined period of time. Periodic Single Shot is helpful for debugging.
- Continuous - initiates a series of captures rapidly. Continuous is helpful for barcode scanning applications.
- Presentation - presents an illuminated scan window when the sensor detects motion. Presentation mode is helpful for kiosk and retail point-of-sale applications.

### Triggered Image Buffering

When Triggered Image Buffering is enabled, there is an image processing event and one buffer event between each trigger occurrence.

Increase the Maximum Image Queue Size to determine the size of the image queue.

Select the Drop Mode from the menu to determine when images should no longer be included in the queue.

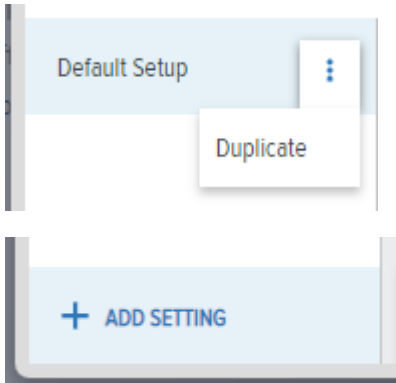


### Using ImagePerfect+

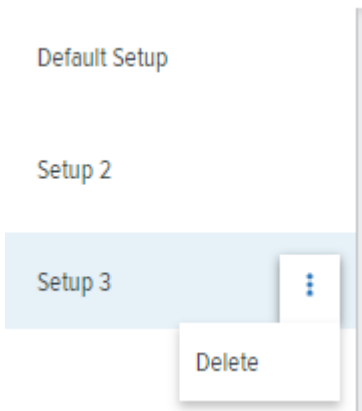
ImagePerfect+ is an intuitive functionality used to grab additional images from the same trigger using a set of Acquisition Settings. It is helpful in acquiring images with different shutters, gain, focus, or different illumination configurations.

Single Shot and Periodic Single Shot are supported for use with ImagePerfect+.

Click **Default Setup** to clone the current configuration or click **Add Settings** at the bottom of the page to create a new configuration.



Delete a configuration by clicking the ellipses:



**NOTE:** FS10/FS20/VS20 devices support a maximum of three Acquisition Settings.

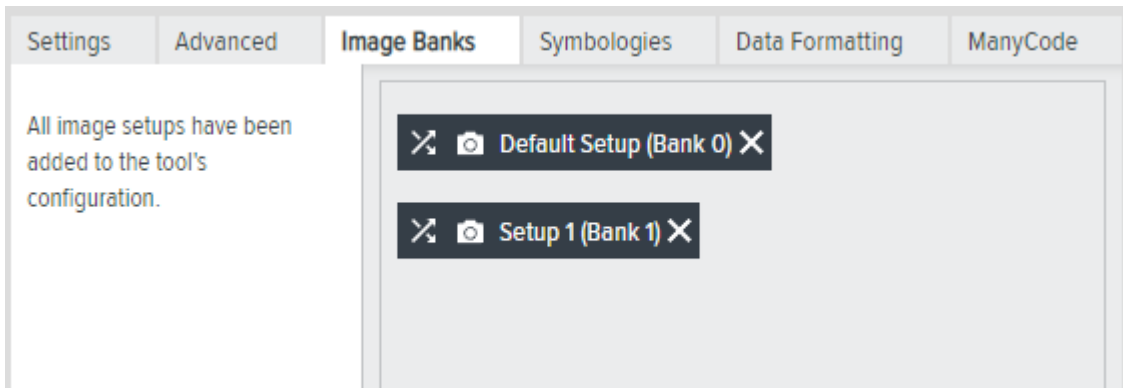


**NOTE:** xS40 and xS70 devices support a maximum of 16 Acquisition Settings.

### Saving ImagePerfect+ Images

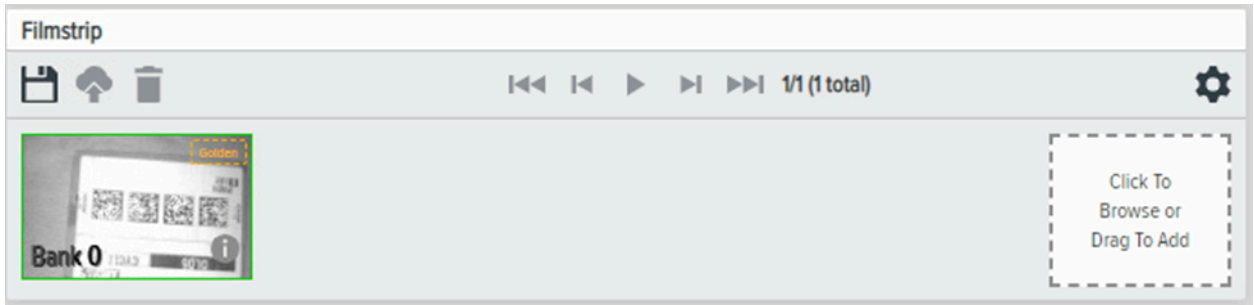
The smart camera saves only images processed by the decoder.

For the FTP to save bank\_0 and bank\_1, it is important to add both banks while configuring in Build > Image Banks.



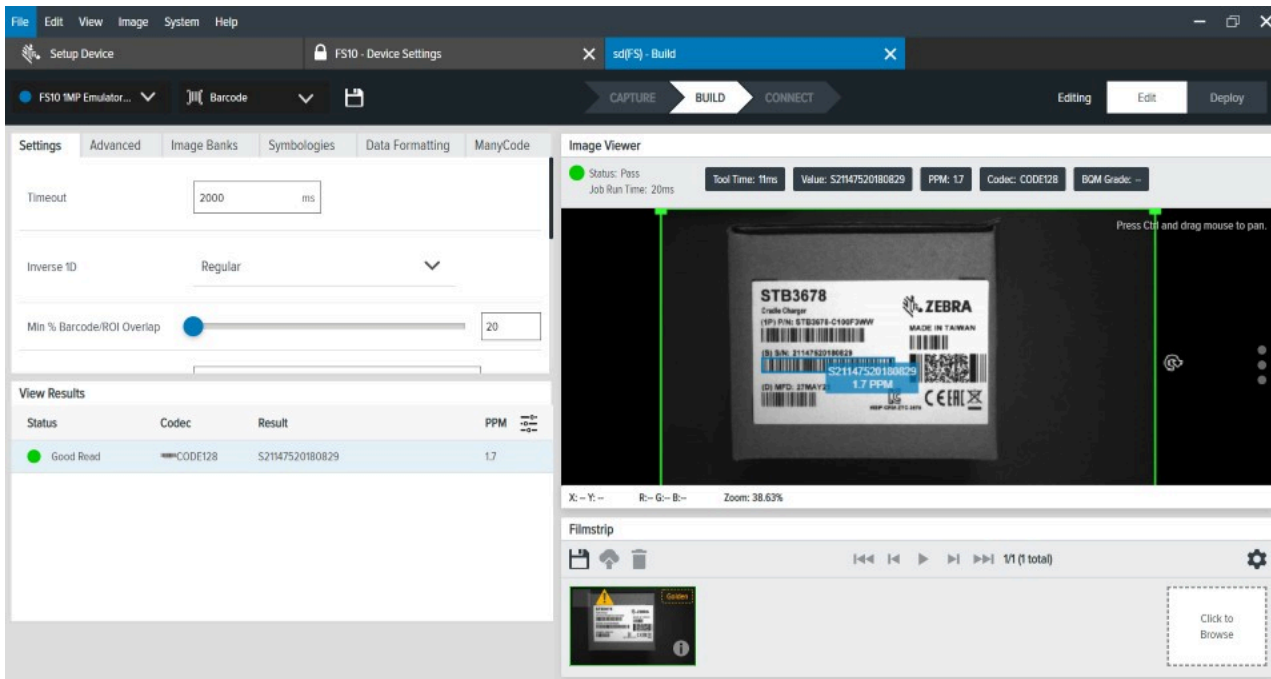
## Using the Filmstrip

Drag images onto the Filmstrip from your PC to add to the image bank.



## Build

The Build chevron facilitates job configuration and deployment for FIS and MV tools.



**Table 16** Build Settings

Settings	Description
View Results	View the results of recent jobs.
Image Viewer	Observe the tool's analysis of the image.

**Table 16** Build Settings (Continued)

Settings	Description
Filmstrip	View the series of images captured by the device or upload a previously captured set of images.
Deploy	Run the job as configured in Flowbuilder.

## Barcode Quality Metrics

Barcode Quality Metrics (BQM) are used to verify the quality of your printed barcode so you know you can count on it to perform in its necessary setting. Enabling BQM reports an overall grade for the decoded barcode and grading based on various sub-components.



**NOTE:** The BQM mechanism in Zebra Aurora Focus implements the ISO15415/ISO15416 standard. Per ISO specifications, the optical reference arrangement requires high resolution, such as an effective resolution of not less than ten pixels per module in width and height. Refer to ISO 15415 for additional information.

Zebra BQM measures the barcode quality in the captured image, not the barcode itself. BQM score stability is dependent upon image quality stability. To calculate the quality of the barcode, measure it in a strictly controlled manner using an image acquisition procedure.

BQM in Zebra Aurora Focus uses coarse grading. For example, the score step size is 1, per the ISO specs. A specific score of 2.9 is graded as 2 (C), although it is close to 3 a (B).

## BQM Best Practices



**NOTE:** While ISO specs recommend a minimum of 10PPM, achieving a PPM of 15 or greater is recommended to ensure consistent BQM results.

Follow the best practices outlined in this section to ensure optimal BQM performance.

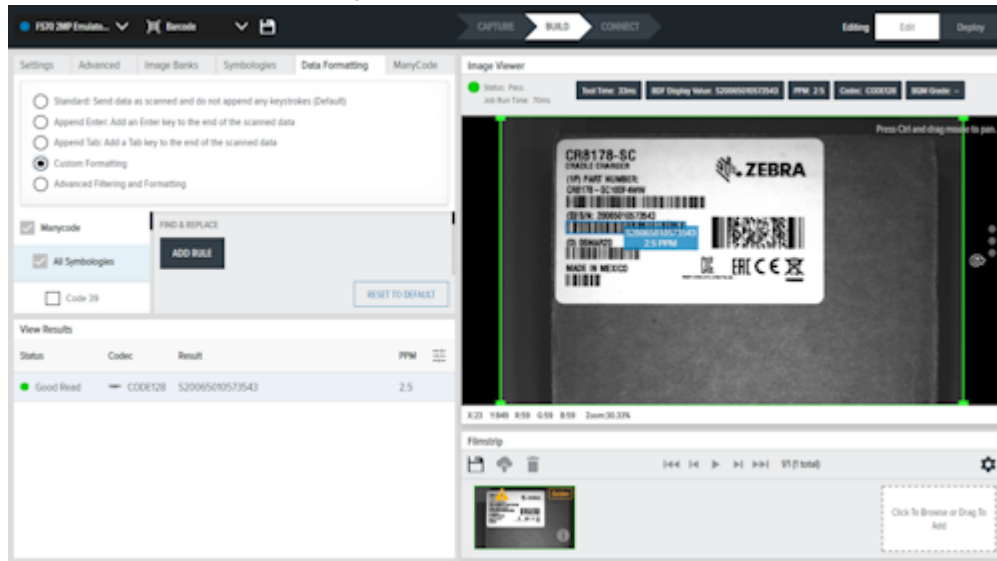
- Consistent lighting with high contrast, little to no gradient, and clear focus is critical to achieving optimal BQM results. Maximum pixel intensity should be between around 160 and 200 with reasonably good contrast. Ensure there are no defects or glare on the image; no specular spots should be present.
- Consider using a polarized light filter accessory to eliminate glare. A clean and consistent barcode is essential for BQM grading; a polarizer can be helpful to eliminate glare that could compromise the barcode image.
- Position the barcode close to the center of the Field of View (FOV) to minimize any optical distortion and ensure that the barcode is parallel to the camera plane on the device so the edges are parallel to the image border.

## Custom Formatting

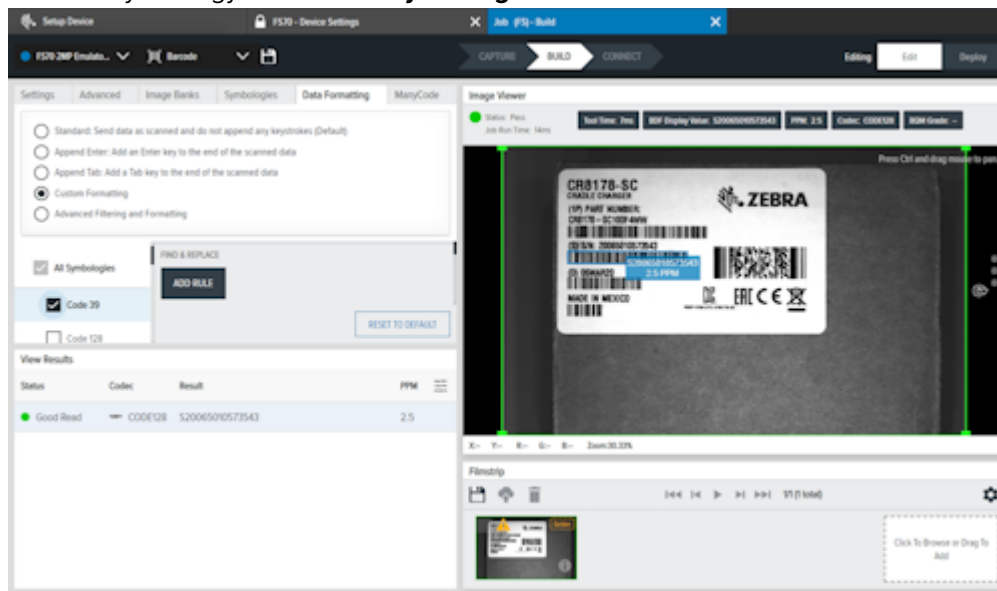
To configure **Custom Formatting**, access the **Data Formatting** tab from the **Build** chevron.

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1. Select the **Custom Formatting** radio button.



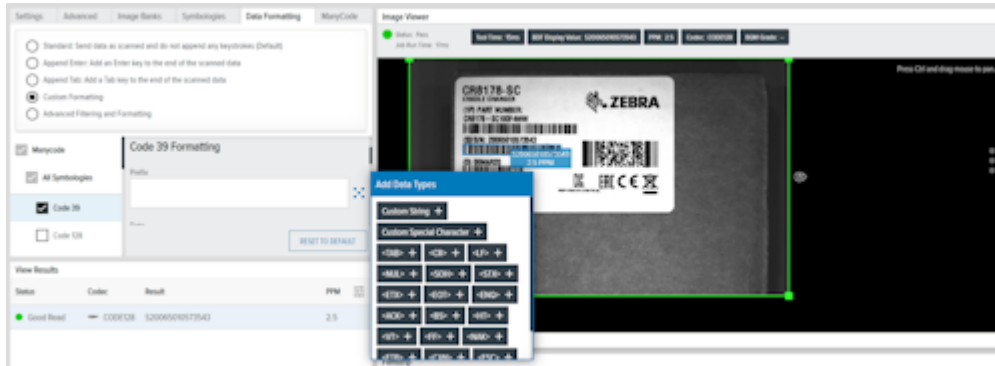
2. Select a Symbology from the **All Symbologies** list.



3. Depending on the symbology, click **Add Rule** to add a find and replace rule.
4. Click the icon next to the **Find** to add a data type to identify.
5. Next, click the icon next to **Replace With** to designate a data type to replace the data type identified in the Find form field.

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- Click the icon next to the **Prefix** form field to add a data type. Follow the same steps for **Data** and **Suffix**.



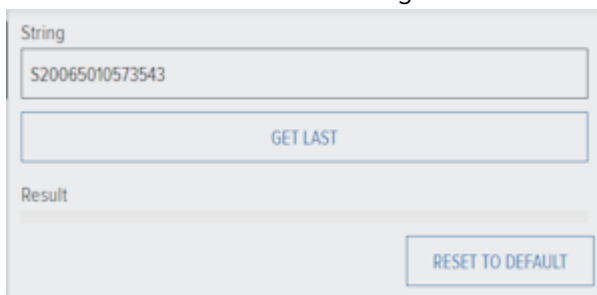
- Select a **Data Type Delimiter** from the drop-down.



- Select a **End Delimiter** from the drop-down.



- Click Get Last to retrieve the String or Result.

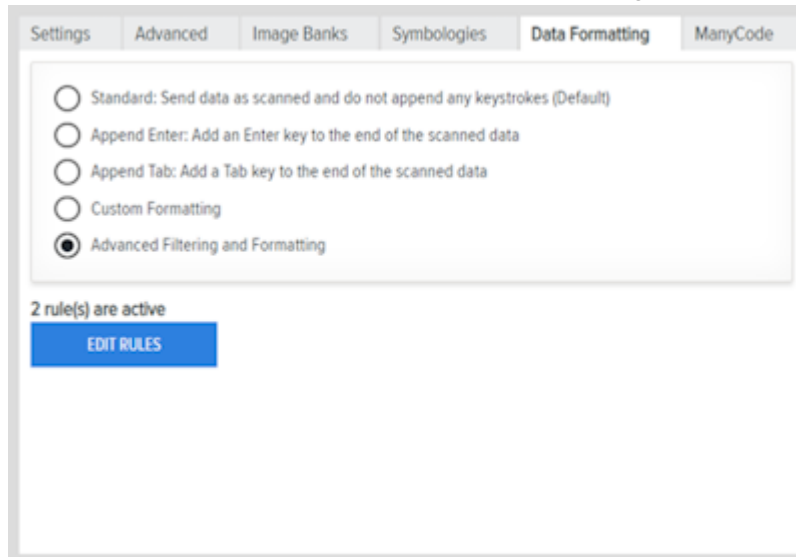




## Advanced Filtering and Formatting

To access **Advanced Filtering and Formatting**, select the **Data Formatting** tab.

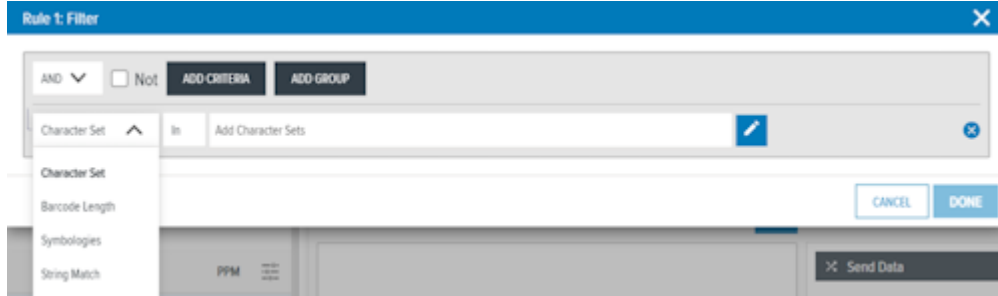
1. Select the **Advanced Filtering and Formatting** radio button.
2. Click **Edit Rules** to create a new rule or edit an existing rule. Rename the rule if necessary.



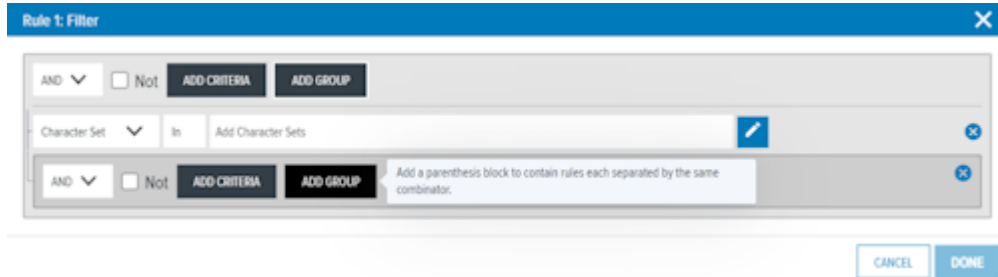
- To add a **Filter**, click **Edit** and select an **And** or **Or** operation from the drop-down menu or select the **Not** checkbox to invert the result.



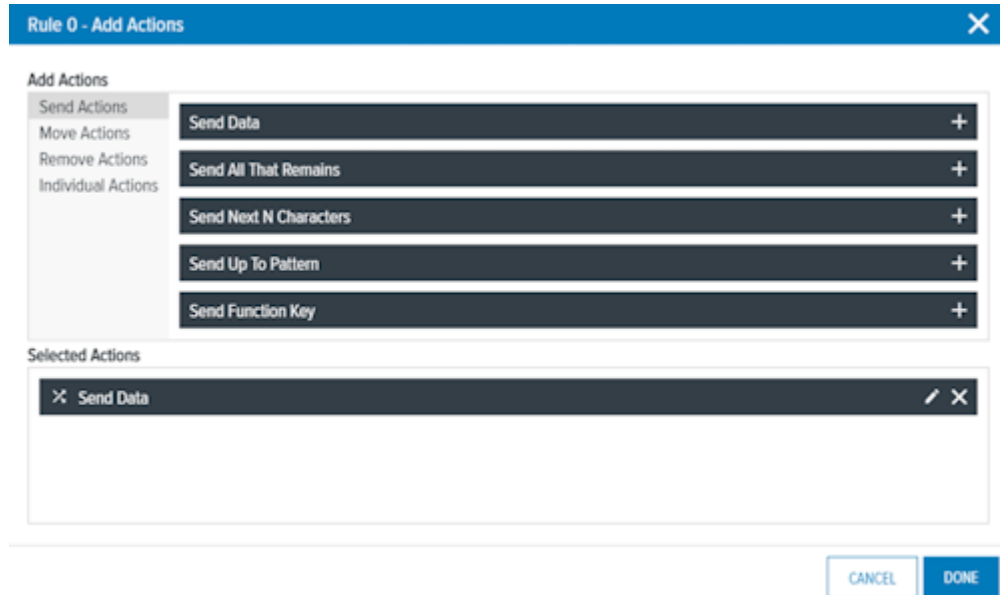
- Click **Add Criteria** to add a condition to the rule from the drop-down menu.



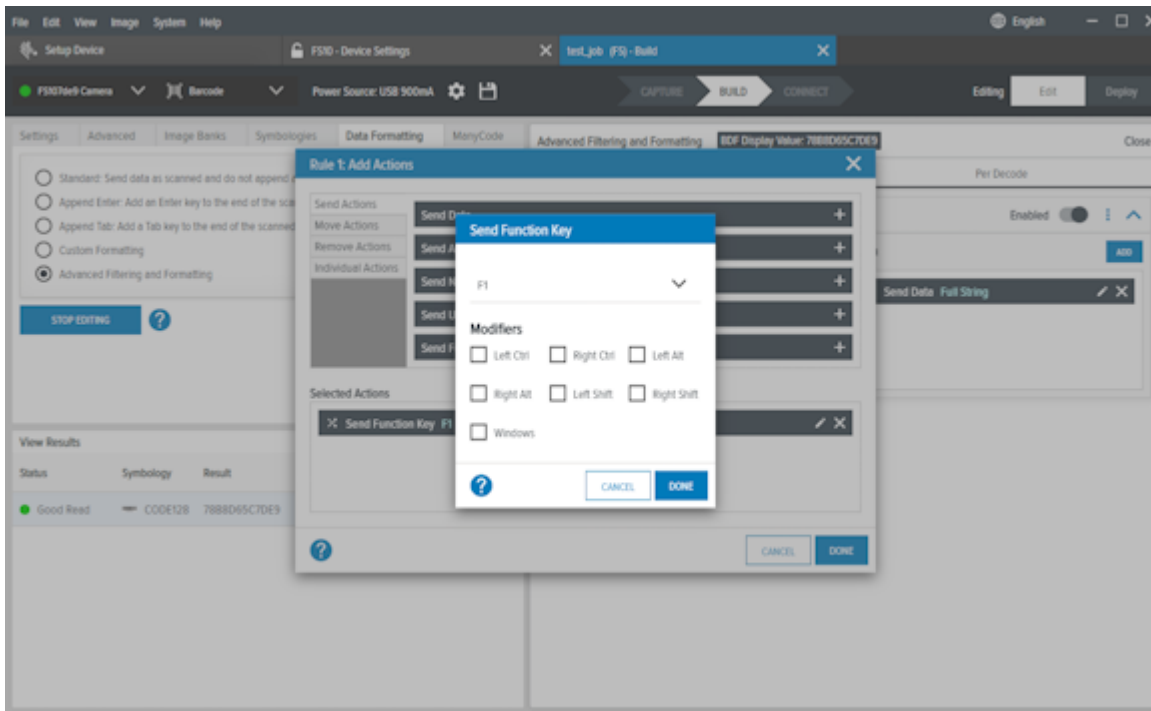
- Click **Add Group** to add a parenthesis block that contains rules separated by the same combinator.



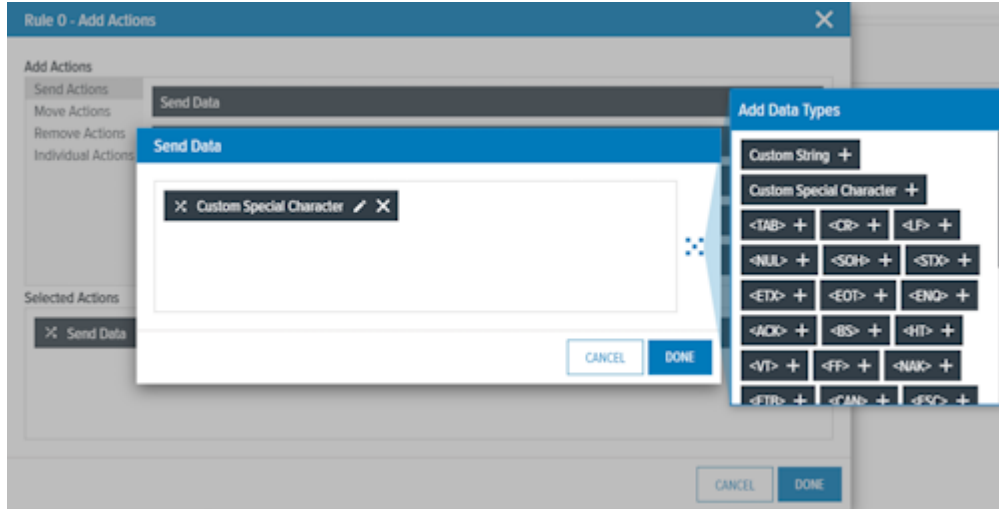
4. To add an **Action**, click **Add**.
  - a. Select a type of **Action** (send, move, remove, or individual).
  - b. Specify an **Action** to add to the list of selected actions by clicking the plus sign.



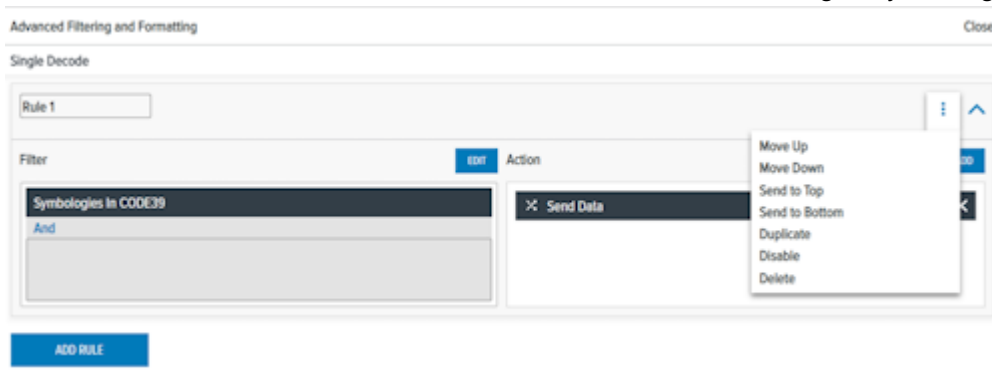
- c. Use **Send Function Key** to configure which function key to send as the keystroke for the HID output interface. The range of keys is from F1 to F24. Add modifiers when applicable, including Left Ctrl, Right Ctrl, Left Alt, Right Alt, Left Shift, Right Shift, and Windows.



- d. Edit the action by clicking the pencil icon on the selected action.

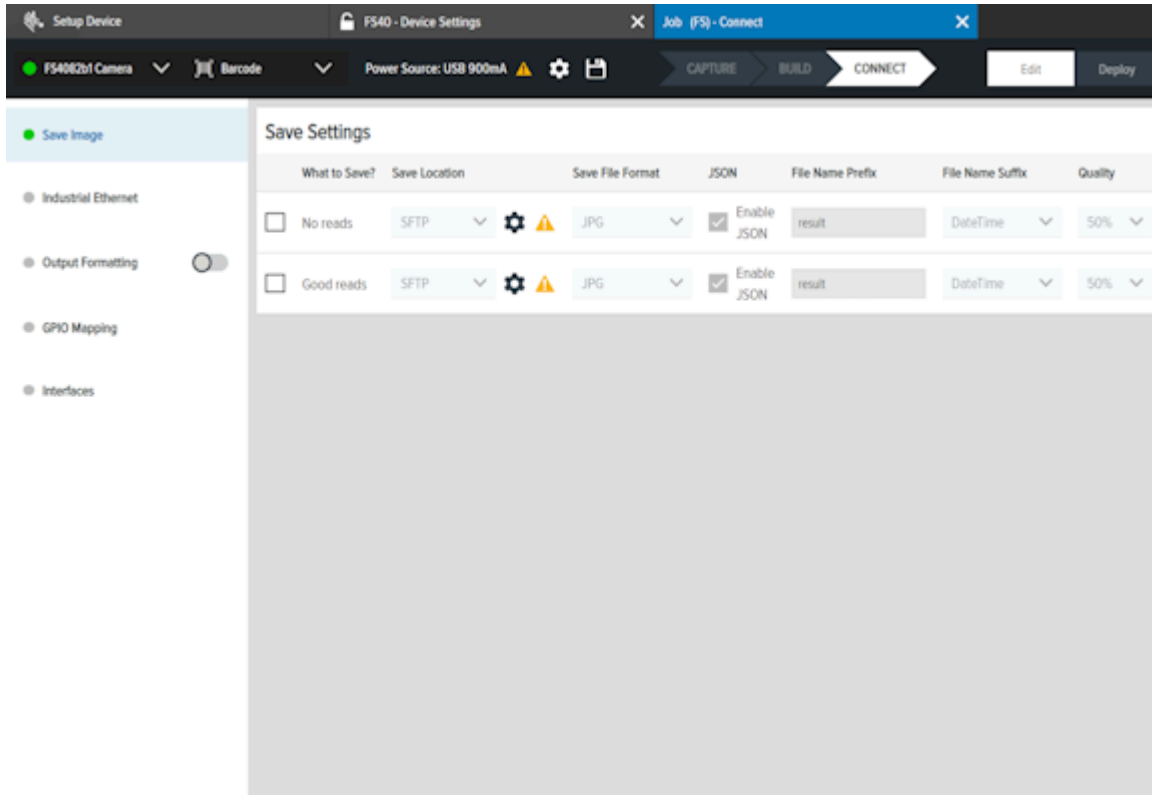


5. After a **Filter** and **Action** are identified for the rule, and rules are managed by clicking the ellipses.



## Connect

The Connect chevron provides access to Industrial Ethernet, Output Formatting, and GPIO mapping for configuration and the configuration of Save Image settings for pass/fail results.



**Table 17** Connect Settings

Setting	Description
What to Save	Decide to save failing, passing, or both types of results.
Save Location	Determine whether to save the results on the device or an (S)FTP server
Save File Format	Determine the image file format.
File Name Prefix	Choose a prefix for the file name.
File Name Suffix	Choose a suffix for the file name.
Quality	Choose quality for the images.



**NOTE:** Click the Gear Icon to configure advanced settings.

## Output Formatting

To access Output Formatting:

1. Navigate to the Connect chevron and click Output Formatting.



**NOTE:** Standard identification tools (Read Barcode, Read DPM, Read DPM & Barcode, and Datacode) will have their Decodes.formattedOutputValue output. If there is more than one standard identification tool, the additional tool's Decodes.formattedOutputValue will be appended to the existing result data. The output result will be in the order of the tools on the flowbuilder. For example, barcodeTool1barcodeTool2barcodeTool3



**NOTE:** Machine Vision Tools will add the overall job Success field (Pass/Fail) to the result output. If a standard identification tool is in the job, the job Success field is added to the front of the output result with a comma separator between the job success and barcode data.

For MV tools only: Pass

For MV tools and standard identification tools: Pass,barcodeTool1barcodeTool2barcodeTool3

2. Slide the toggle to the right to enable **Output Formatting** and customize the output result format.
3. Click the specified tool under **Tools** to add a **Results Field** or **Delimiter** to a **Prefix, Data,** or **Suffix** category.
4. Click the specified **Job** to add a **Results Field** or **Delimiter** to a **Prefix, Data,** or **Suffix** category.
5. Select a **Data Type Delimiter** from the dropdown menu.
6. Click **Copy** to copy the **Message Sample** to clipboard.

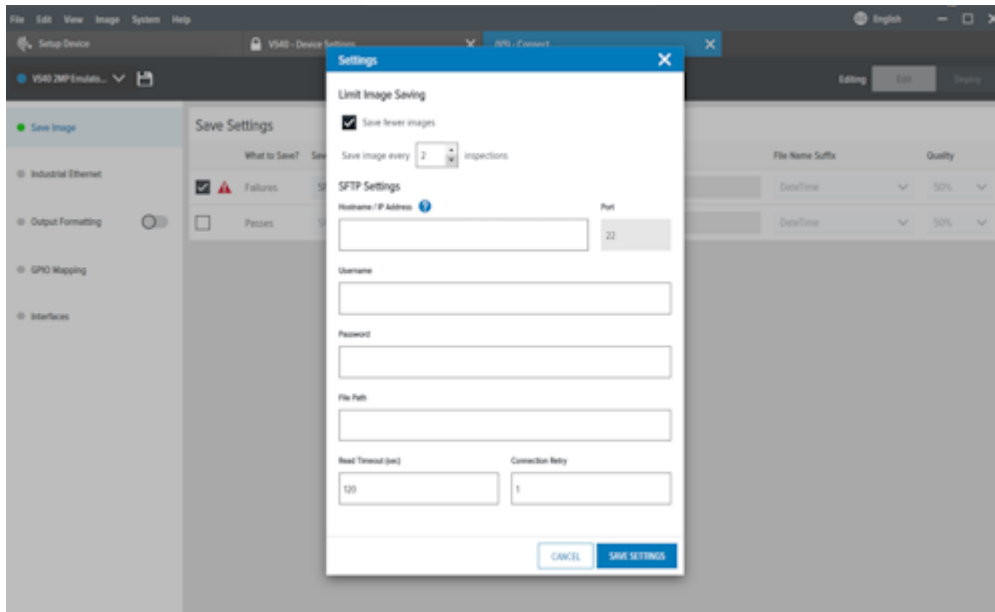
### Setting an Image Saving Limit

For use cases such as a pallet scan, it may be unnecessary to save hundreds of images of the same piece of the pallet because of the pallet's slow-moving speed. Configure the Save Image settings to store an image after a specific number of images have passed.

To configure Save Image settings:

1. Access the **Connect** chevron and navigate to the **Save Image** tab.

2. Click the associated checkbox for **Failures** or **Passes** to configure image save settings for a specific result type.



3. Click the **Save fewer images** checkbox to enable an image saving limitation and select a cadence to save an image after a specified number of images are captured.
4. Configure the following SFTP settings:
  - Hostname/IP Address
  - Username
  - Password
  - File Path
  - Next Timeout (sec)
  - Connection Retry
5. Click **Save Settings** to enable the changes.

## FTP File Saving

1. Download babyftp (free FTP solution): [pablosoftwaresolutions.com/html/baby\\_ftp\\_server.html](http://pablosoftwaresolutions.com/html/baby_ftp_server.html).
2. Navigate to Settings and define the home directory for files to be saved to.



**NOTE:** Babyftp does not have an option for credentialed access (SFTP).

3. Use the following credentials:

- Username = anonymous
- Password = <blank>

Determine the IP address of the host computer where the FTP resides.

1. In Aurora Focus, navigate to the **Connect** chevron, then **Save Image**.

2. Select **FTP** under **Save Location**.
3. Click the **Gear** Icon
4. Enter the IP address of the host PC.
5. Use the following credentials:
  - Username = anonymous
  - Password = <blank>
6. To save to a specific subdirectory on the FTP server, enter the following format:

```
/xyz/ (this will write to the folder identified below)
```

```
<FTP home directory>/xyz/
```

```
C:\Users\RMQ783\Desktop\babftp\xyz\
```

Save.



**NOTE:** Include a tilde (~) when providing the file path, for example, ~/myFilePath/

Deploy a job to observe the Pass/Fail images in the expected folder.



**NOTE:** For example, failed images are saved in the following directory after a Failed job run: Desktop\babyftp\VS407a8e\result\asf\fail. Each job run generates a .jpg and a JSON file.

## FTP Naming

The FTP file name is generated from different fields.

For example:

```
result_FtpJob_bank_0_2023-06-26T03-04-13.004479+00-00
```

- Parameter File Name Prefix as configured in the Connect chevron.
- JobName
- bank\_0 that identifies the first image acquired by ImagePerfect+
- The image timestamp with time representation up to microseconds.

It is recommended to align the image name with the setting name in **Acquisition Settings**.

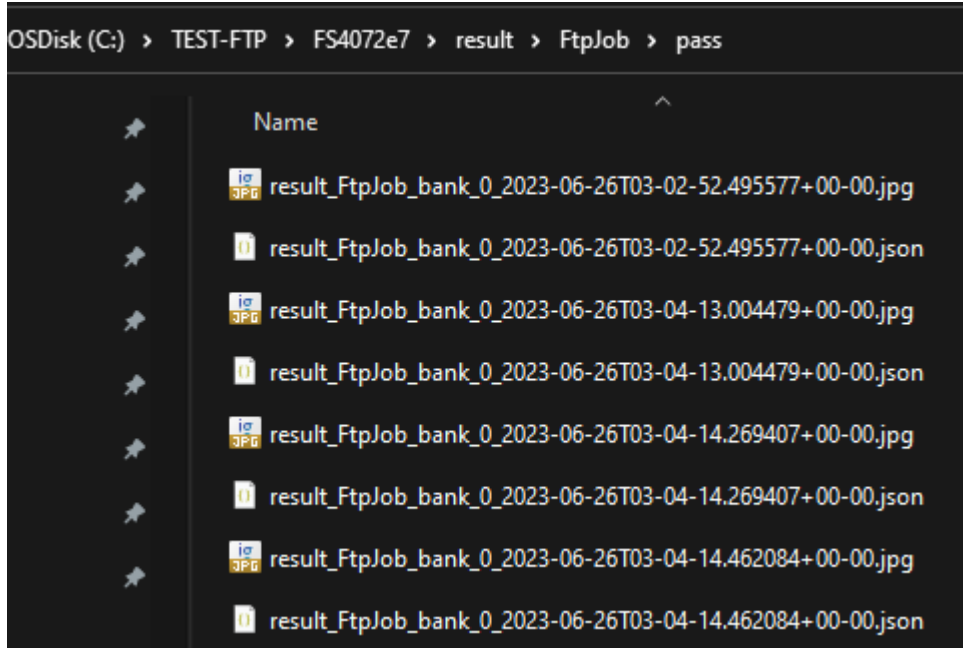
## FTP Folder Structure

The default FTP settings can generate a complex folder structure.

The file path is formed by:

- Host Name (as configured in **Communication > General > Host Name**)
- result
- JobName
- Pass or Fail (based on Good Read and No Read events)





## Applying a Simplified FTP Folder Structure

If the default folder structure is not necessary, disable the default folder structure and apply a simplified structure.

1. Enable Do not add pathname suffix in the Settings dialog for the FTP connection.

The screenshot shows a 'Settings' dialog box with the following fields and options:

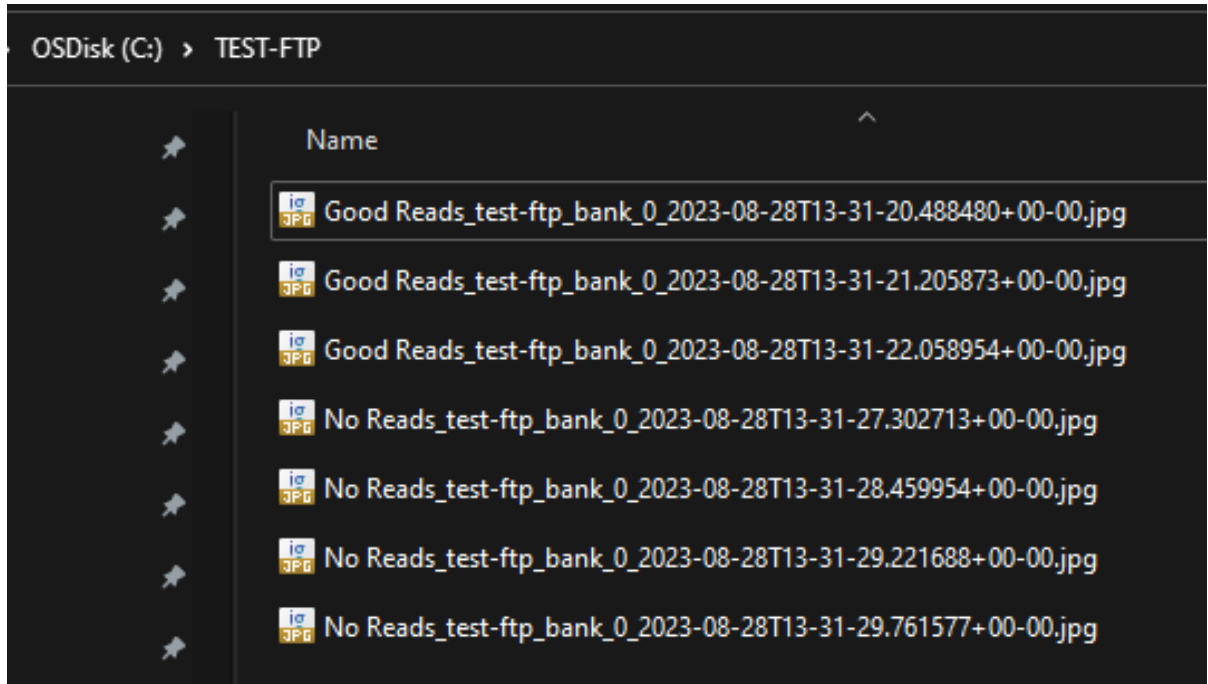
- Limit Image Saving:**
  - Save fewer images
  - Save image every  inspections
- FTP Settings:**
  - Hostname / IP Address \*  Port
  - Username \*
  - Password
  - File Path
  - Do not add pathname suffix
  - Read Timeout (sec)  Connection Retry
- Buttons: CANCEL, SAVE SETTINGS

2. To save pass or fail images only and avoid the JSON file, use the Connect chevron and deselect the Enable JSON checkbox.

The screenshot shows a 'Save Settings' dialog box with the following configuration:

What to Save?	Save Location	Save File Format	JSON	File Name Prefix	File Name Suffix	Quality
<input checked="" type="checkbox"/> No reads	FTP	JPG	<input type="checkbox"/> Enable JSON	No Reads	DateTime	50%
<input checked="" type="checkbox"/> Good reads	FTP	JPG	<input type="checkbox"/> Enable JSON	Good Reads	DateTime	50%

The following figure displays the resulting folder content. Use File Name Prefix to separate Good Reads from No Reads without using the folder structure.



### Saving a Series of Images in Burst Mode

Images collected using Series or Burst mode are saved to the FTP server.

SOURCE                      JOB MODE

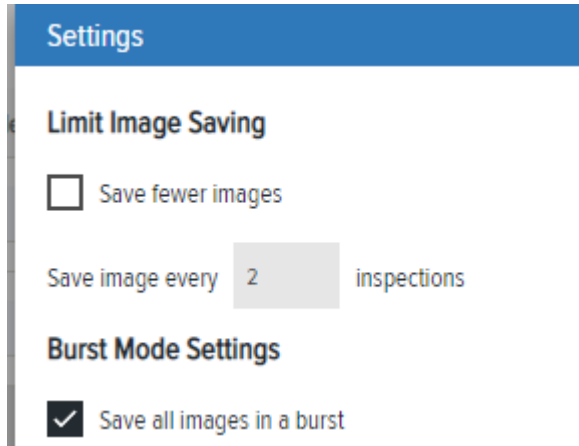
Test Trigger                      Series (Burst)

Get the Burst Count and disable Stop after successful inspection to retrieve the same number of images each time.

BURST COUNT                      1                      100                      3

Stop after successful inspection

In the FTP configuration dialog, configure Burst Mode Settings.



## Configuration Barcodes

The **Configuration Barcodes** tab generates barcodes using a device configuration snapshot. Use an existing configuration snapshot or select the currently managed device setup to deploy to multiple cameras.



**NOTE:** Configuration barcodes are generated and applied to fixed scanners (FS) only. Vision scanners (VS) cannot generate or apply configuration barcodes.

To generate a configuration barcode:

1. Navigate to the **Configuration Barcodes** tab.

2. Select a **Device Setup** to create a snapshot from the current managed device or load one from the PC.

The screenshot shows the 'Configuration Barcodes' page in the Zebra Aurora Focus software. The page has a dark header with the logo and a sidebar on the left with navigation icons. The main content area is white and contains the following elements:

- Select Device Setup:** A radio button is selected for 'Locally Saved Configuration Snapshot:'. To its right, a grey box contains the text 'No Configuration Snapshot currently loaded.' and a blue 'BROWSE' button. Below this, the 'Currently Managed Device: None' option is unselected.
- Barcodes Size:** A dropdown menu is set to 'Medium'.
- Replace Network Settings:** An unchecked checkbox.
- Replace Hostname:** An unchecked checkbox.
- GENERATE:** A blue button located at the bottom right of the form.



**NOTE:** If the device is not managed, you cannot select a setup from the device. When a device is not managed, its status is indicated next to the **Currently Managed Device** option.



**NOTE:** To create a saved configuration snapshot of a connected device, click **Create Configuration Snapshot** in **Devices Details**.

3. Configure the size of the barcode being exported. The options are Small, Medium, or Large. The default size is Medium.
4. Enable **Replace Network Settings** to replace the network settings from the configuration file with the network settings of the new device that the configuration is being deployed onto.
5. Enable **Replace Hostname** to replace the hostname in the configuration file with the hostname of the new device that the configuration is being deployed onto.
6. Click **Generate**.

Print barcodes



**Configuration Snapshot for FS4082b1 (FS40-WA50F4-2C00W)**

Date Created: Sep 27, 2023 10:36 PM

File name: zsnapshot\_FS40-WA50F4-2C00W\_2023-09-28T02-36-13Z.zsnapcfg



CANCEL

PRINT

SAVE AS PDF

# Accessing the Web HMI

Access the Web HMI by entering the device IP address into a web browser. To obtain the device IP address, select **View Devices** from the menu on the left of the Zebra Aurora Focus application.

Once logged in to the Zebra Web HMI, the application presents a dashboard that provides key hardware metrics such as average inspection per minute, total uptime, temperature, CPU load, communication status, average pass/fail, and resource utilization.

## Web HMI Top Menu

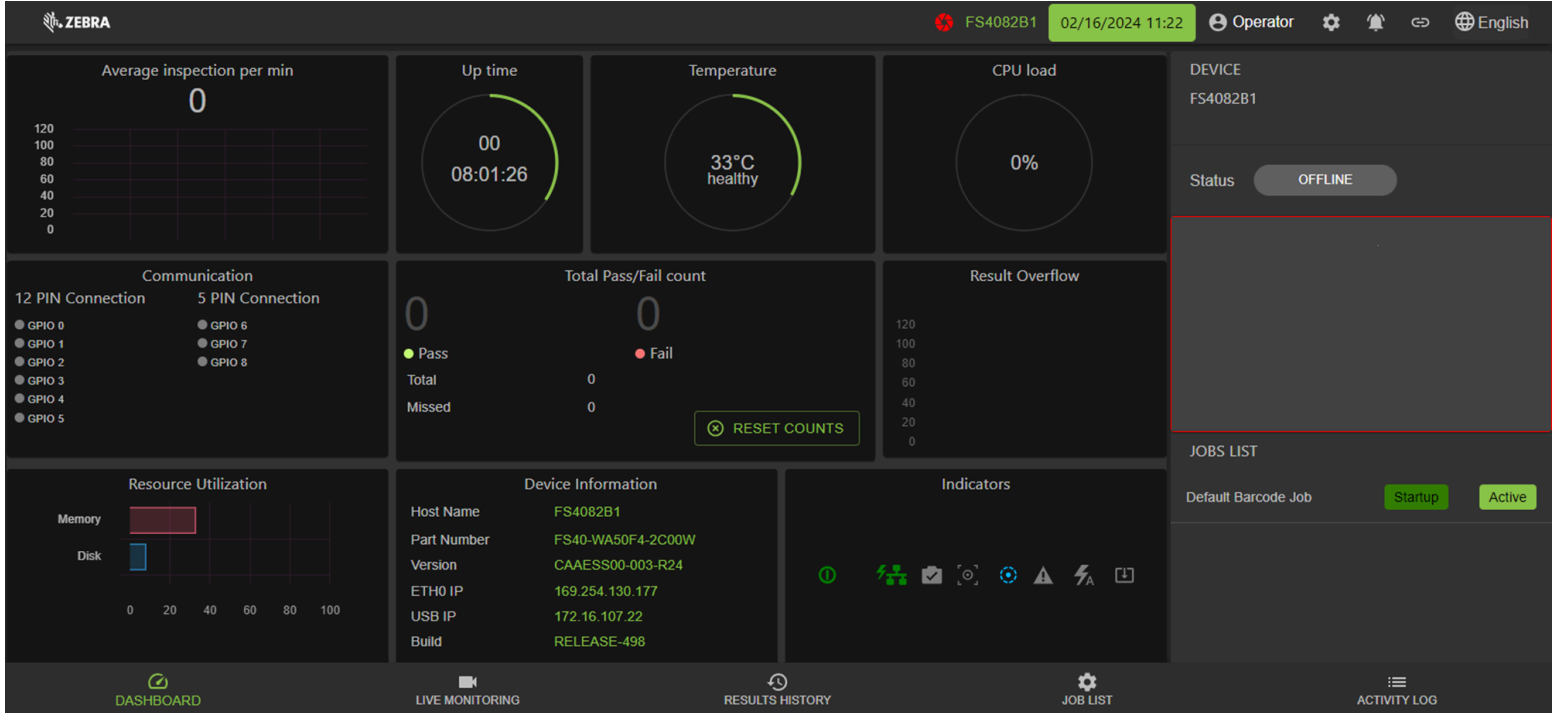
The Web HMI provides access to the following using the menu in the top right of the application:



- Device Status Icon - describes the state of the device:
  - Blue - indicates the device is managed and available in Zebra Aurora Focus.
  - Red - indicates a job is actively being edited or deployed in Zebra Aurora Focus.
  - Green - indicates the device is online and running.
- Hostname (FS4072E7) – displays the hostname of the camera.
- Timestamp - displays the current date and time.
- Profile Icon (Operator) - displays the current user role. Click the icon and provide the appropriate credentials to access other roles, such as Administrator.
- Gear Icon (Settings Menu) – provides access to updating the device firmware, selecting a language, restoring factory defaults, setting date and time settings, and backing up the device.
- Notification Icon - displays the current number of unread notifications.
- Localization - displays the current language of the UI.

## Web HMI Dashboard

The Web HMI dashboard provides insight into the device's details, such as resource utilization, uptime, temperature, and GPIO communication. Scanning metrics such as total pass/fail count and average inspection per minute are available on the dashboard.



**Table 18** Web HMI Dashboard Overview

Section	Description
Average Inspection Per Minute	Displays the number of scans per minute.
Up Time	Displays the total time the device has been running in a given session.
Temperature	Displays the operating temperature of the device.
CPU Load	Displays the current number of processes executed by the CPU.
Communication	Displays the pinout configuration of the GPIO.
Total Pass/Fail	Displays the total number of successful and unsuccessful reads.



**Table 18** Web HMI Dashboard Overview (Continued)

Section	Description
Result Overflow	Provides insight into the performance of the setup by displaying the number of results that were not sent out. This could be due to the amount of results data (size/frequency of data) greater than the output interface's throughput. If the system setup is correct, the graph shows 0. If the graph shows an interface greater than 0, an adjustment must be made to preserve the result data. For example, utilize an interface with greater throughput, decrease the amount of output data, or decrease inspection frequency).
Resource Utilization	Provides resource utilization by memory and disk.
Device Information	Provides device information such as Host Name, Part Number, Version, Ethernet IP, and Build number.
Indicators	Displays various device states including Power, PoE Network, Device Status, Focus, Calibration, Warning, Auto Flash, and Firmware Update.

## Live Monitoring with the Web HMI

The Live Monitoring feature allows users to view decode results as they occur in real time by clicking the Live Monitoring tab at the bottom of the interface.

The Web HMI also provides the capability to update the device firmware by selecting the settings icon in the top right corner of the application.



**Table 19** Live Monitoring with the Web HMI

Section	Description
Live Monitoring View	Provides real-time monitoring of the camera's view while processing jobs.
Recent Inspections	Lists all recent jobs and their status, the toolset used for the job, and total job time.

## Viewing Result History

The Results History tab provides job result information, such as status, execution time, and date. Trigger information, including total triggers, total pass/fail, and missed triggers, are available on the Job panel on the right.

## Accessing the Web HMI

The screenshot displays the Zebra Web HMI interface. At the top, the Zebra logo is on the left, and user information (FS4072E7, 02/17/2023 21:58, Operator) and language (English) are on the right. The main area is divided into a table and a sidebar.

id	Inspection	Result	Execution Time	Date
1	BARCODE_SCANNING_TOOL	Pass	197	2023-02-17T21:50:36.28957...
2	BARCODE_SCANNING_TOOL	Pass	37	2023-02-17T21:50:36.52826...
3	BARCODE_SCANNING_TOOL	Pass	34	2023-02-17T21:50:36.76341...
4	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:36.99819...
5	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:37.23347...
6	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:37.46884...
7	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:37.70341...
8	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:37.93842...
9	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:38.17330...
10	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:38.40839...

Job Statistics:

- Total Triggers: 2252
- Total Pass: 2248
- Total Fail: 4
- Missed Triggers: 0

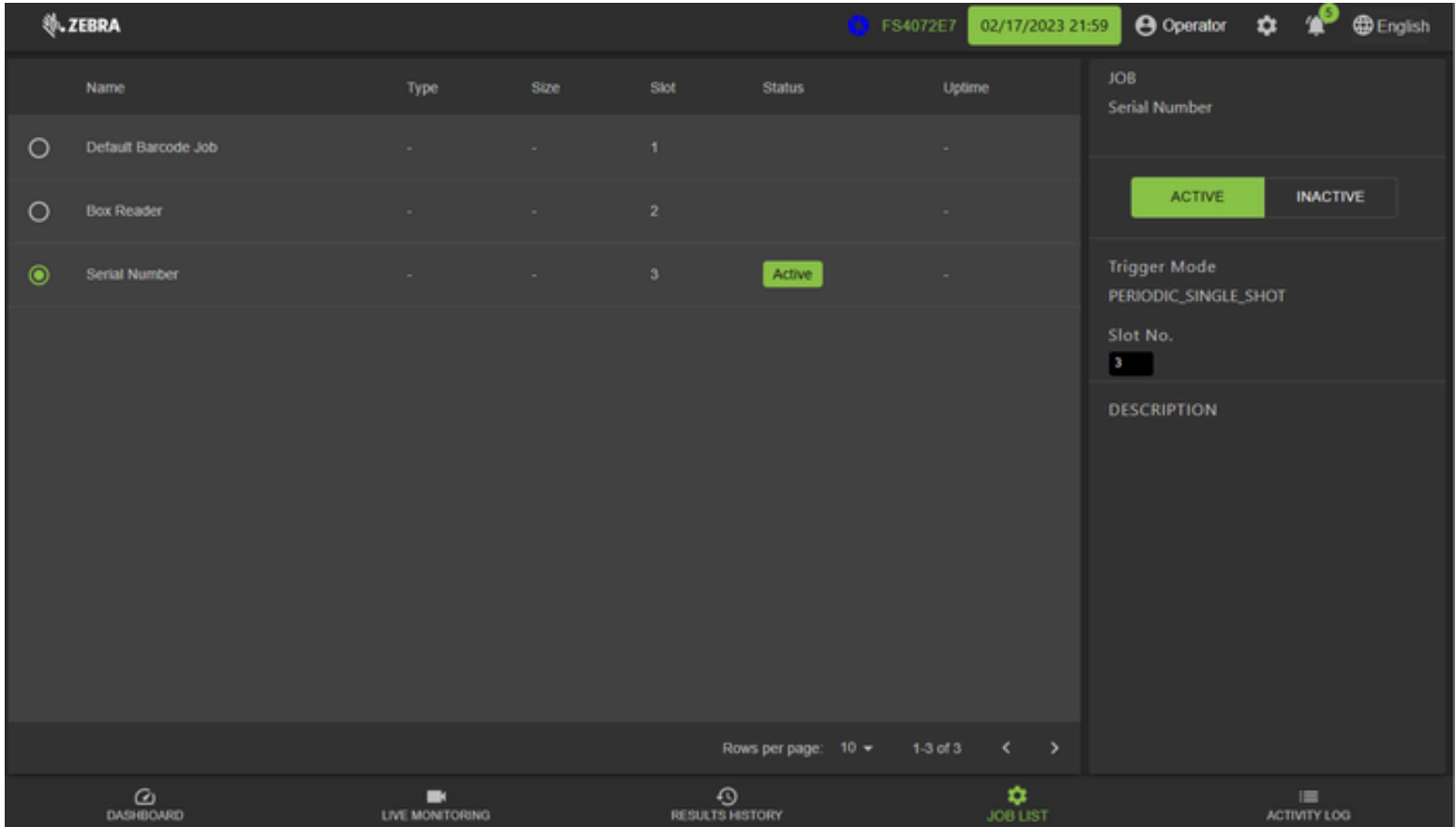
Navigation: 1 row selected, Rows per page: 10, 1-10 of 500. Bottom menu: DASHBOARD, LIVE MONITORING, RESULTS HISTORY (active), JOB LIST, ACTIVITY LOG.

**Table 20** Viewing Result History

Section	Description
Result History Table	Displays decode result information such as ID, status, execution time, and date.
Job Statistics	Select a job from the menu to view total triggers, pass/fail, and missed trigger details.

## Viewing the Job List

The job list provides information on the currently active jobs that can be run on the device. Additional details on the right of the list include filtering by active and inactive jobs, the trigger mode of the specified job, its slot number, and its description.

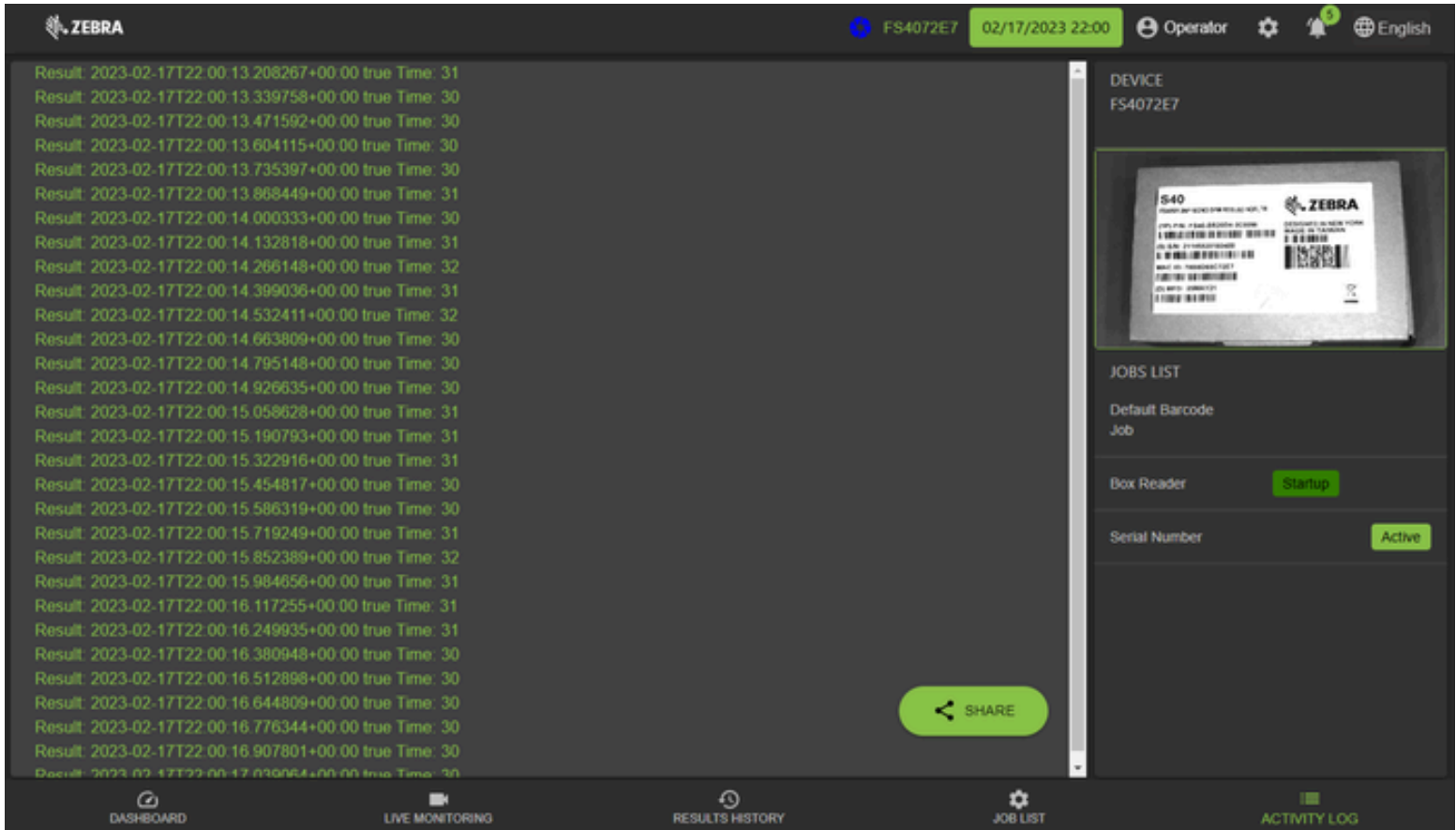


**Table 21** Job List

Section	Description
Job List	Displays each job's statistics, such as type, size, slot status, and uptime.
Current Job	Provides additional details on a specific job, including its Trigger Mode and description.

## Viewing the Activity Log

The Activity Log provides information on specific actions taken by the device, a live view of the device state, and a list of all currently active jobs and jobs deployed upon startup.



**Table 22** Viewing the Activity Log

Setting	Description
Activity Log	Lists all of the device's recent activities.
Live View	Real-time view from the camera of the device.
Job List	Displays all jobs sorted by jobs deployed upon startup and currently active jobs.

## Updating Device Firmware

To prepare for the firmware update procedure, the device must be connected to a PC using a USB or Ethernet cable or from Ethernet to a router (common network with a host PC). The USB connection provides power and communications to the device.



**NOTE:** A Factory Reset is required after applying a firmware update to a Connectivity Gateway license-enabled device.

For additional details on setting up the device, refer to the FS/VS Smart Camera Product Reference Guide.

Software Needed:

- Web Browser (Google Chrome, Mozilla Firefox, or equivalent)
- Firmware file on the local PC

### USB-A to USB-C Hardware Setup

Required hardware:

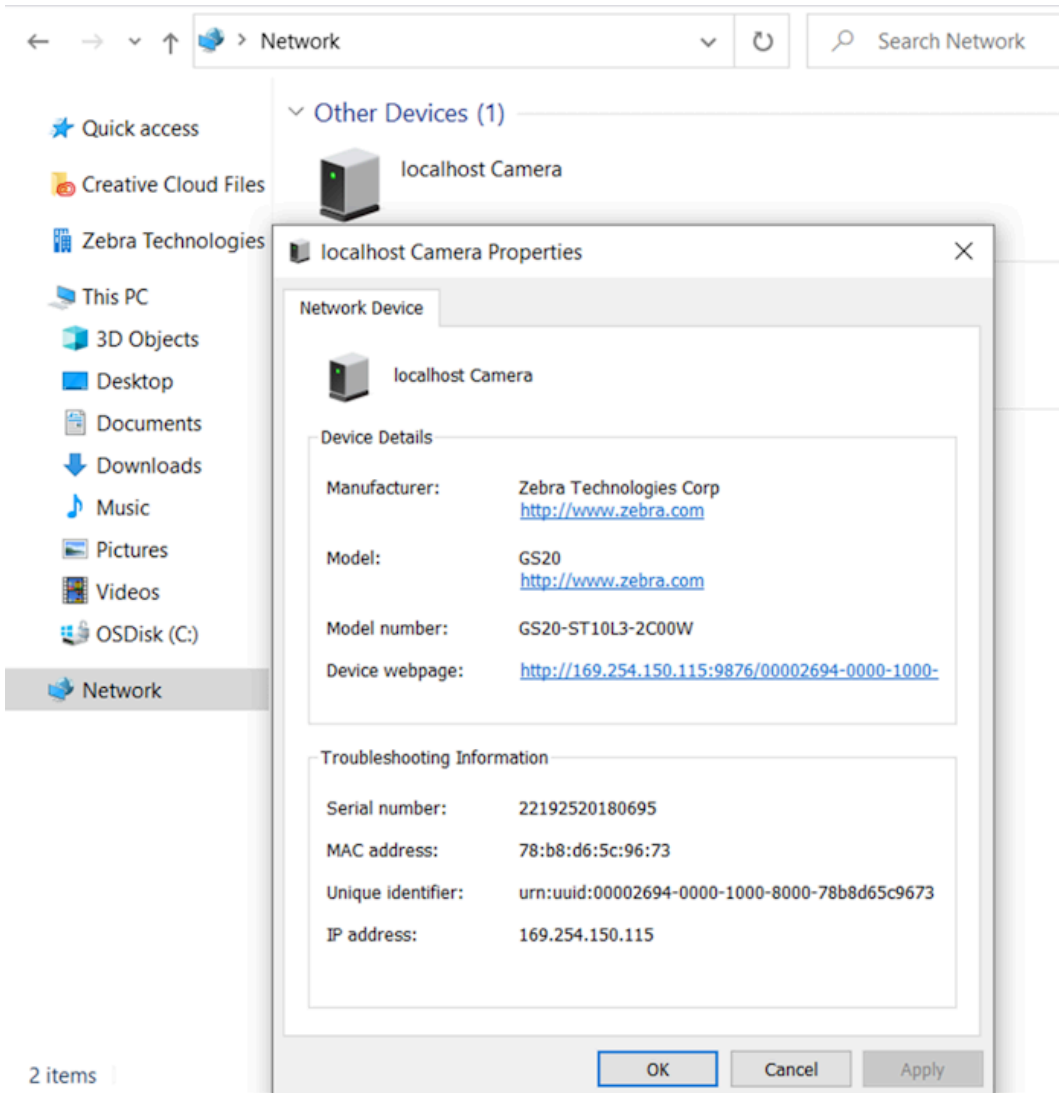
- Windows 10 or higher PC with USB-A or USB-C port
- USB-A to USB-C cable, Zebra P/N: CBL-USB0200-USA00 or
- USB-C to USB-C cable, Zebra P/N: CBL-USB0200-USC00

### Firmware Update

To perform a firmware update on the device, follow the steps below:

1. Open **File Explorer** on your host Windows desktop PC.
2. On the left window pane, scroll down and select **Network** to view devices on your network and identify a device.

3. Right-click on the device and select properties to obtain the device's IP address information.



4. Enter the IP address (or Hostname) into your browser.



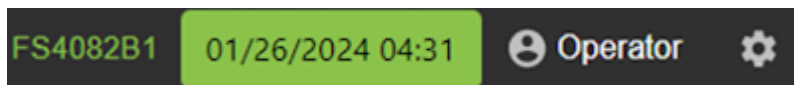
**NOTE:** This example refers to the hostname as localhost in the top left corner of the Properties window.



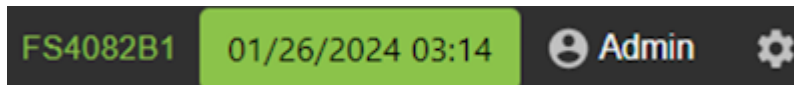
5. View the Zebra Web HMI and observe the build number RELEASE-xx (where xx is the build number) in the **Device Information** section of the dashboard.


Device Information	
Host Name	FS4082B1
Part Number	FS40-WA50F4-2C00W
Version	CAAESS00-003-R14
ETH0 IP	169.254.130.177
USB IP	172.16.107.22
Build	RELEASE-433

6. Click **Operator** to launch the login window.



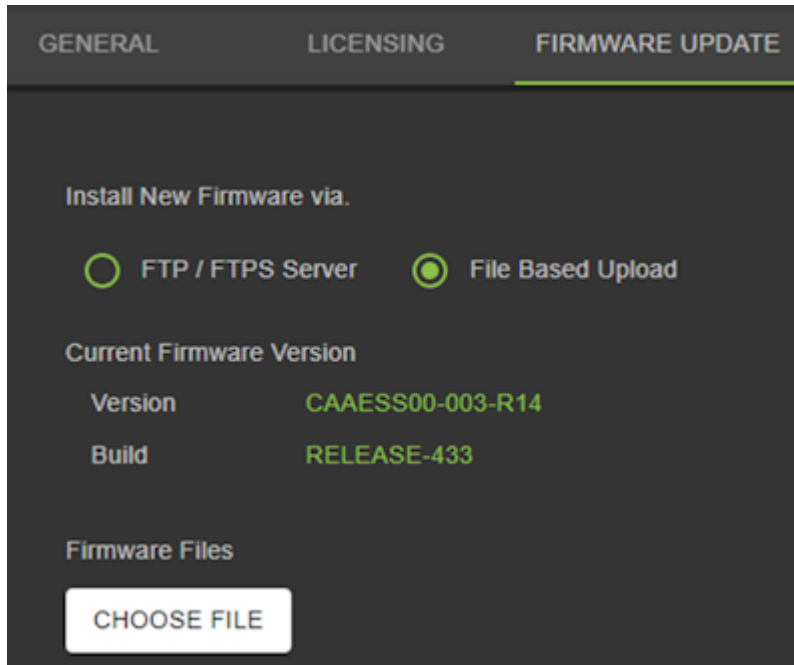
7. Enter the following login credentials:
  - a) User ID: admin
  - b) Password: admin
8. Click **Login**.
9. Observe that **Operator** now displays as **Admin**.



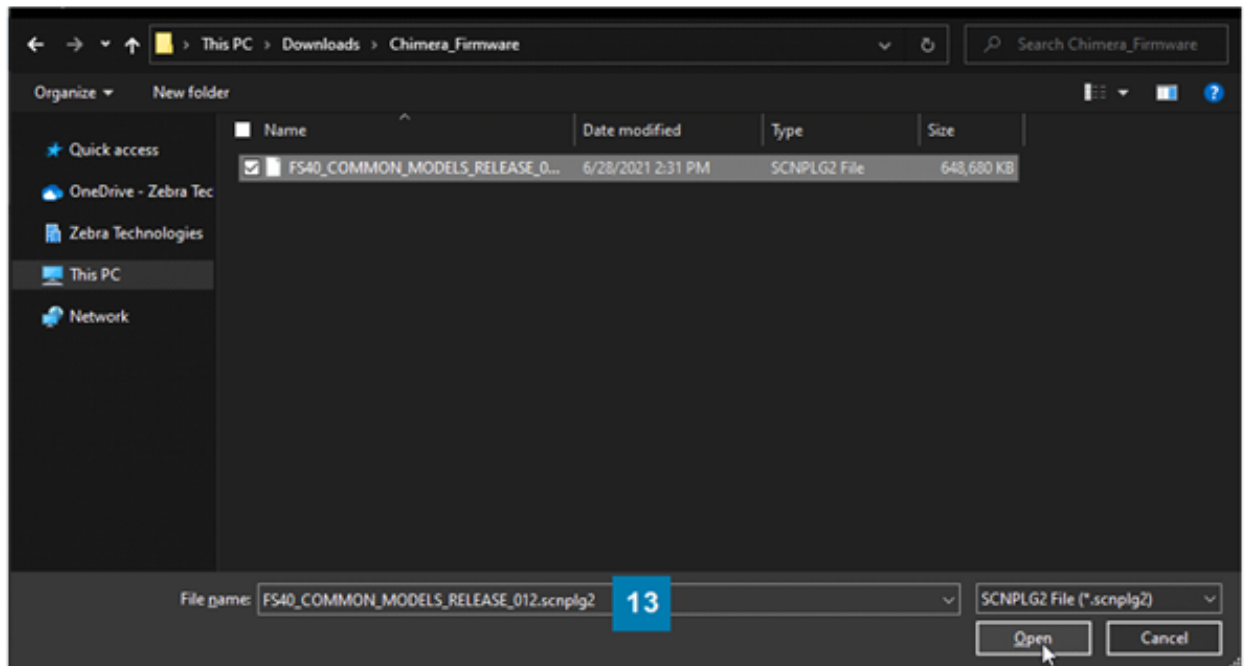
10. Click the Gear icon .
11. Click the **Firmware Update** tab.



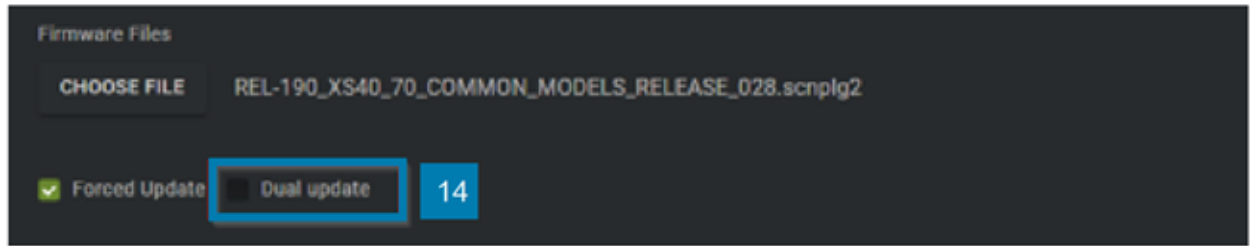
- Click **Choose File**, navigate to the location of the file stored on the Local PC, and select the latest firmware file.



- Click **Open**.



14. Select either **Forced Update** or **Dual Update**.



**NOTE:** Forced Update loads the device in cases where it is identical to the current firmware on the device.



**NOTE:** Dual Update loads the device firmware and updates the backup partition. This option typically takes longer (twice as long) than a forced update.

15. Click **Update**.



**NOTE:** The device LED blinks red and the upload progress displays on the screen. The device reboots after the upload is complete.

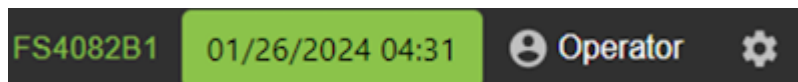
16. Refresh the browser window and view the build number in the device information field to confirm that it has been updated from the previous version.


## Performing a Factory Reset

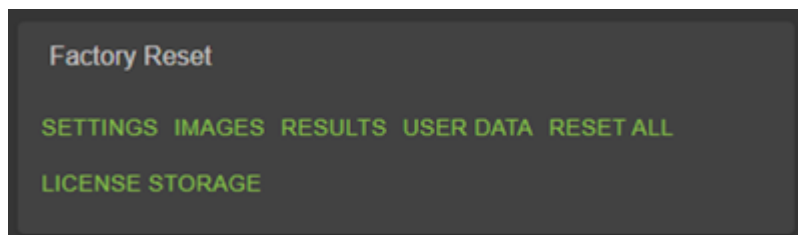


**NOTE:** A factory reset deletes all created Jobs on the camera. It is critical to save all Jobs and user-specific information before performing the factory reset.

1. Click the **Operator** icon to launch the login window.



2. Type the user ID (admin) in the **User ID** field
3. Type the password (admin) in the **Password** field.
4. Click **Login**.
5. Click the Gear icon .
6. On the General Tab, click the **Reset All** button in the **Factory Reset** field and wait for the device to reboot (approximately 45-60 seconds).



# Connectivity Gateway Solutions

The Zebra Connectivity Gateway provides asynchronous passthrough and synchronized leader-follower solutions for use cases requiring high-speed scan tunnels, sorting facilities, and multi-point or multi-side barcode scanning for parcels and boxes.

When assembling the Connectivity Gateway with the Gateway License, take into account the following device characteristics before determining which will act as a leader or follower.

- Fixed Scanning and Gateway devices can enable USB HID mode as output. However, GS20 devices do not natively support a USB port.
- Fixed Scanning and Gateway devices can support up to 9 total GPIO. GS20 devices have 4 total GPIO.
- It is recommended to implement no more than four followers in a given Connectivity Gateway solution. This implies that the Fixed Scanning and Gateway devices may act as a follower and a leader device simultaneously. If this is implemented in your system, expect a slight degradation in read rate performance in the device acting in both modes.

## Asynchronous Passthrough

In asynchronous leader-follower use cases, multiple devices send result data to a single leader device. The leader passes the data through as a single point of contact to the host.

Examples:

- High-speed scan tunnels.
- Humans present barcodes for scanning in a sorting facility.

Fixed Scanner Input:

- Generic
- TCPIP (Followers)

Fixed Scanner Output to Host:

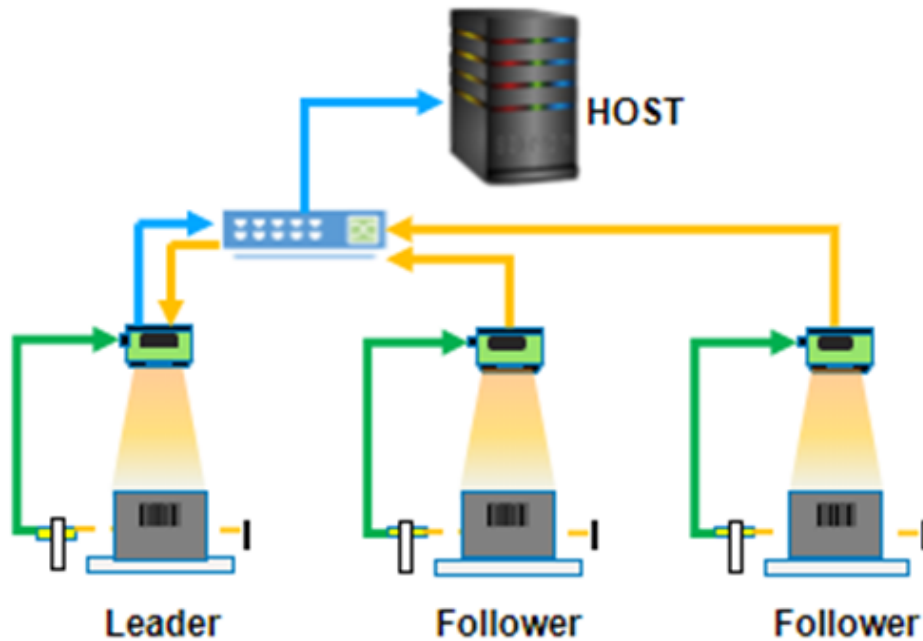
- TCPIP
- Industrial Communication
- Serial
- USB HID

Functionalities:

- Enable simple passthrough to send result data without changes.

- Enable advanced passthrough to change or add input text before the output.

**Figure 1** Asynchronous Passthrough



## Synchronized Leader Follower

In synchronized leader-follower use cases, the leader receives a trigger, activates the follower devices, receives the data from the followers, and sends the results to the host.

Examples:

- Multi-sided reading of parcels.
- Multi-point reading of barcodes on a tire rim (overhead view only).

Leader Input:

- Generic:
  - GPIO Trigger
- From Follower:

- Results:

Leader Output:

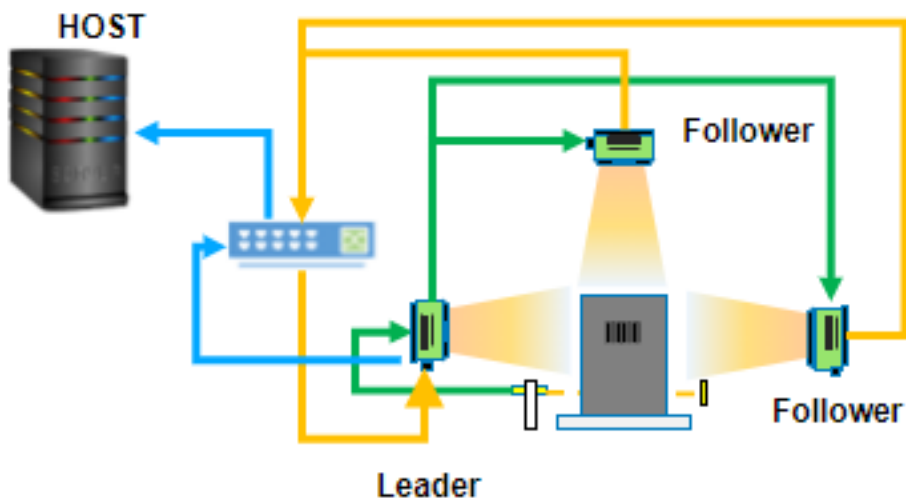
- To Host:
  - TCP/IP
  - Industrial Communication
  - Serial
  - USB HID

- To Follower:
  - Trigger
- To Machine/PLC:
  - Total Result String
  - Total Pass/Fail GPIO

Functionalities:

- Enable synchronous triggers from leader to follower devices.
- Recieve results from follower devices and apply pass/fail criteria.
- Send result data to the host, GPIO, or PLC.

**Figure 2** Synchronized Leader-Follower



# Using Fixed Industrial Scanning Tools

## Editing and Deploying FS Jobs

To set up a Fixed Scanning (FS) job, set decoder parameters, symbologies, OCR settings, code quality metrics, and data formatting rules.

Begin by configuring the decode parameters and selecting the appropriate set of symbologies. A symbology is chosen by clicking Symbologies Tab. Next, select specific symbologies to be deployed by clicking the corresponding checkboxes.

Once the job is in progress, monitor the Image Viewer and the **Filmstrip** controls to view job progress. The **Image Viewer** contains a status bar that displays the result and runtime. In the FS editor, the status bar displays the decode time, decoded value, PPM, and the type of symbology decoded.

**View Results** provides additional data on the decode and displays the results for each job instance.

## Using the Job Toolstrip

The Jobs Toolstrip provides access to available devices or emulators to apply the job to, the barcode type, and the detected power source. Save the configuration by clicking the disk icon.

**Table 23** Jobs Toolstrip


Setting	Description
Device/Emulator Selector	Select the device or emulator for the job to be deployed to.
Barcode Type	Select the applicable barcode type for the job.
Power Source	Displays the power source type that the device is connected to.
Save Options	Saves the job configuration.

## Fixed Industrial Scanner Settings

Configure Fixed Industrial Scanning settings such as timeout, adaptive ROI search, barcode string match, or a no-read string, depending on your use case.



**Table 24** Fixed Industrial Scanning Tool Settings

Setting	Description
Timeout	<p>The amount of time (ms) the tool should stop its process of searching for barcodes.</p> <p> <b>NOTE:</b> For high-speed barcode-reading applications (for example, a fast conveyor belt or high-speed turntable), set this value as low as possible, just above the average time to read a barcode. Deploy the application and obtain real-world data on the decode speed in your specific use case (for example, a range of 5-15ms). Set this to a value just above that speed (for example, 20ms). This allows the application to capture frames from high-speed subject images, increasing the odds of a good read.</p>
Inverse 1D	<ul style="list-style-type: none"> <li>Regular - reads dark foreground/light background barcodes.</li> <li>Inverse Only - reads light foreground/dark background codes only.</li> <li>Inverse Autodetect - reads both barcode types defined above.</li> </ul>

**Table 24** Fixed Industrial Scanning Tool Settings (Continued)

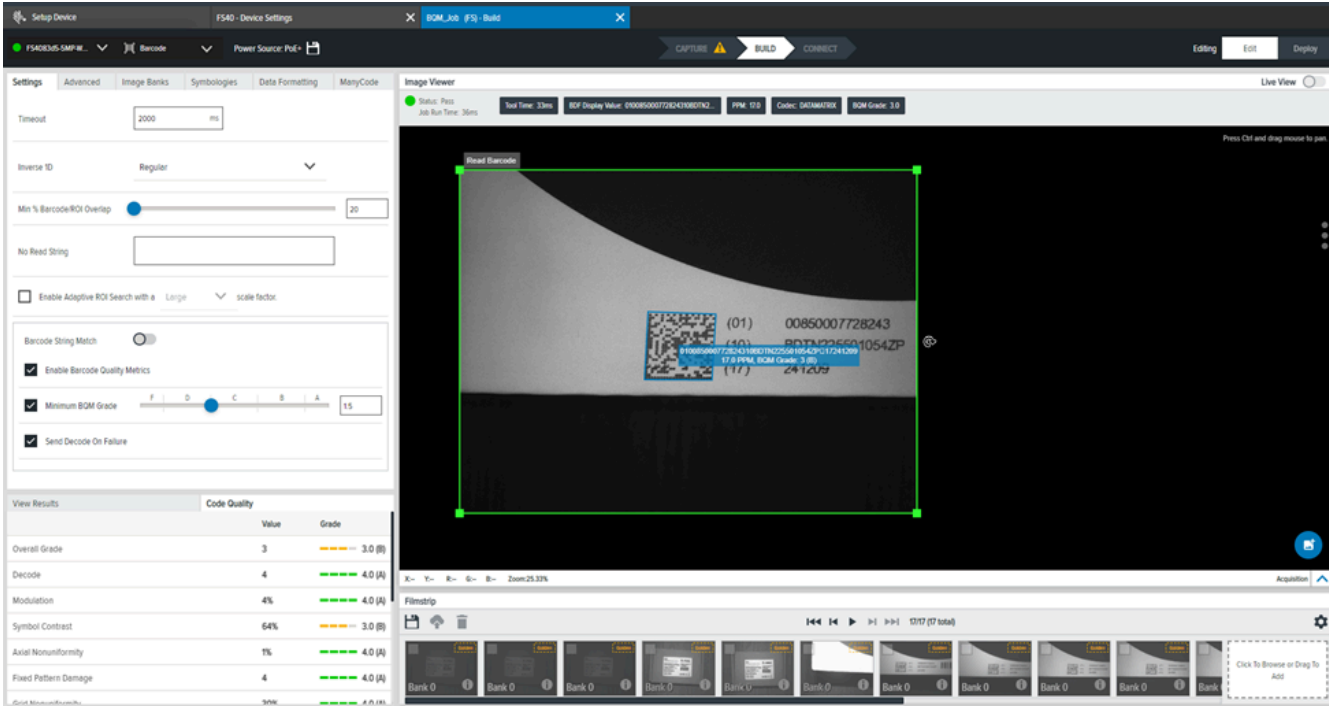
Setting	Description
Minimum Percentage Barcode/ROI Overlap	<p>Define the minimum percentage a barcode needs to be contained within the ROI to be read.</p> <ul style="list-style-type: none"> <li>For 1D barcodes, this applies only to the horizontal (X) dimension.</li> <li>For 2D barcodes, this applies to horizontal and vertical (X &amp; Y) dimensions.</li> </ul>
No Read String	Define the data that should be output if no barcode is read (in place of barcode data in a successful read, as opposed to no output at all).
Enable Adaptive ROI Search	Enabling this parameter allows the underlying barcode scanning algorithm to alter (shrink and reposition) the area of the ROI for subsequent reads based on the presence of past-read barcodes. This provides quicker and better-performing barcode reads. The small/medium/large drop-down settings alter how the adapted ROI component is generated.
Barcode String Match	Enable this setting to define the pass/fail criteria based on the contents of the decoded barcode. If the Match String matches and the substring within the barcode is, the barcode tool passes.
Minimum BQM Grade	Defines a minimum BQM threshold (produces a barcode-based pass/fail if it does not meet this minimum BQM score).
Send Decode on Failure	If a barcode is read but does not meet the <b>String Match</b> criteria, enabling this setting allows the barcode data to be output while the tool fails.

## Using BQM for Fixed Scanning Jobs

Barcode Quality Metrics are enabled on the Settings tab for FIS jobs.



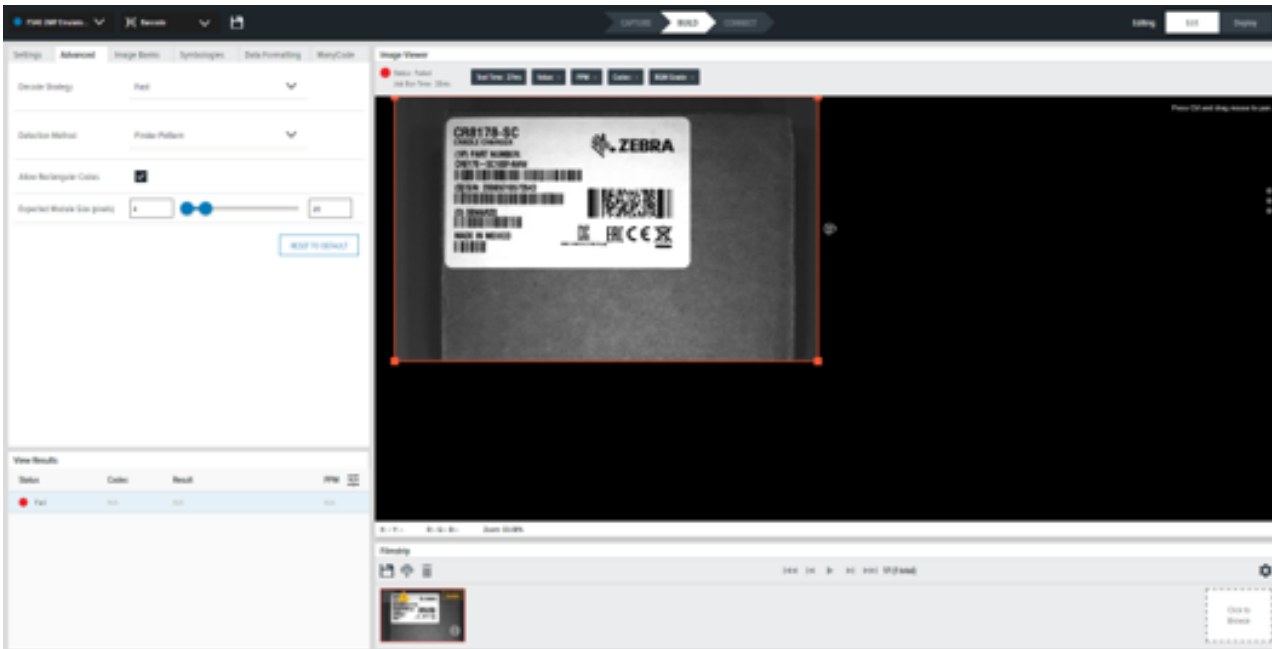
# Using Fixed Industrial Scanning Tools



After you have set the **Minimum BQM Grade**, observe the additional metrics displayed on the Code Quality tab in the **Results** section.

## Advanced

The Advanced tab provides access to additional Fixed Industrial Scanning tool settings



**Table 25** Advanced Fixed Industrial Scanning Tool Settings

Setting	Description
Decode Strategy	<p>Changes the variables to alter the balance of speed and performance.</p> <ul style="list-style-type: none"> <li>Fast – prioritize speed over decode performance</li> <li>Moderate - balanced</li> <li>Exhaustive – prioritize decode performance over speed</li> </ul>
Detection Method	<p>Determine the preferred method for detecting the data:</p> <ul style="list-style-type: none"> <li>Quiet Zone - helpful when over 8 pixels of buffer zone around the barcode is expected. This setting is unsuitable for use cases when the buffer area is less than 4 pixels.</li> <li>Uniform - uses a splatter pattern to uniformly analyze the whole image. This is helpful for images that have a lot of noise. If you are looking for a more random pattern, slightly favor the center of the image.</li> <li>Finder Pattern - uses a contrast map that helps find patterns with little or no noise.</li> </ul>
Allow Rectangular Codes	<p>Allows the reading of 2D rectangular barcodes in addition to square 2D barcodes.</p>
Expected Module Size (Pixels)	<p>Define the range (pixels) you expect a module to be in given barcodes to help increase read performance.</p> <p>A module is the smallest divisible unit of a barcode; for 1D, typically the width of a single thin line; for 2D, the pixel size. This setting is used as general guidance to increase performance but is not a strict threshold.</p>

## Image Banks

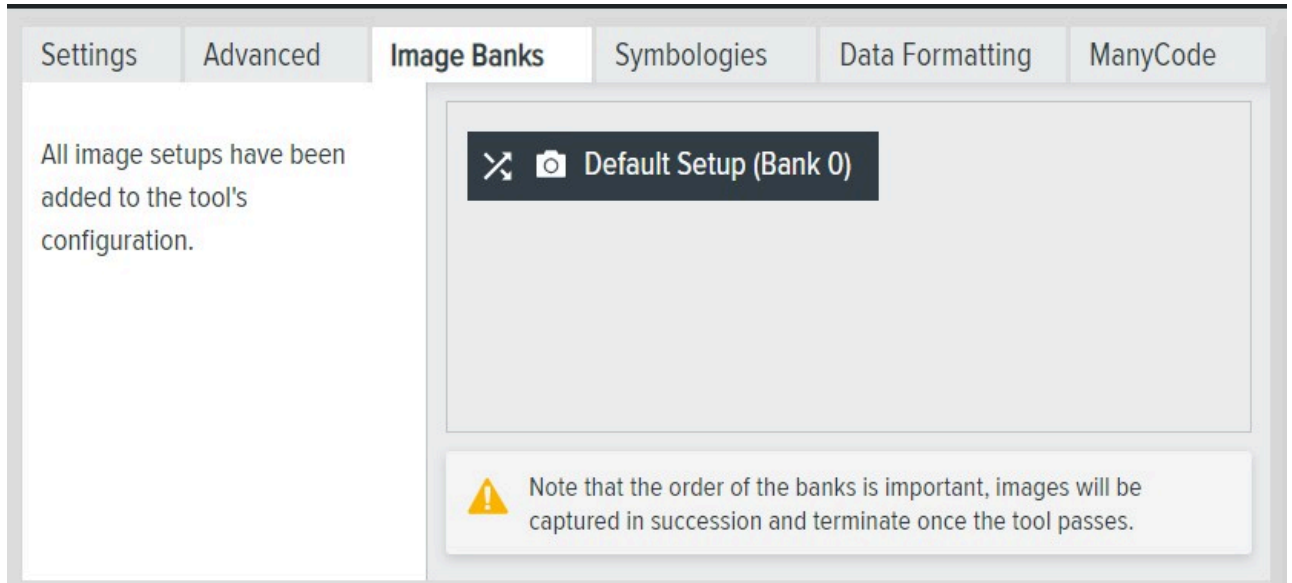
All available Image banks display on the left side of the table. The right side of the table provides a top-down sequence of image capture acquisition banks that are used for an **ImagePerfect** job.



**NOTE:** Image banks are taken in sequential order, starting from the top. After a barcode is successfully decoded, the sequence stops. For example, if there are four banks and the first two decode attempts fail, but the third one decodes successfully, the fourth acquisition attempt does not occur.

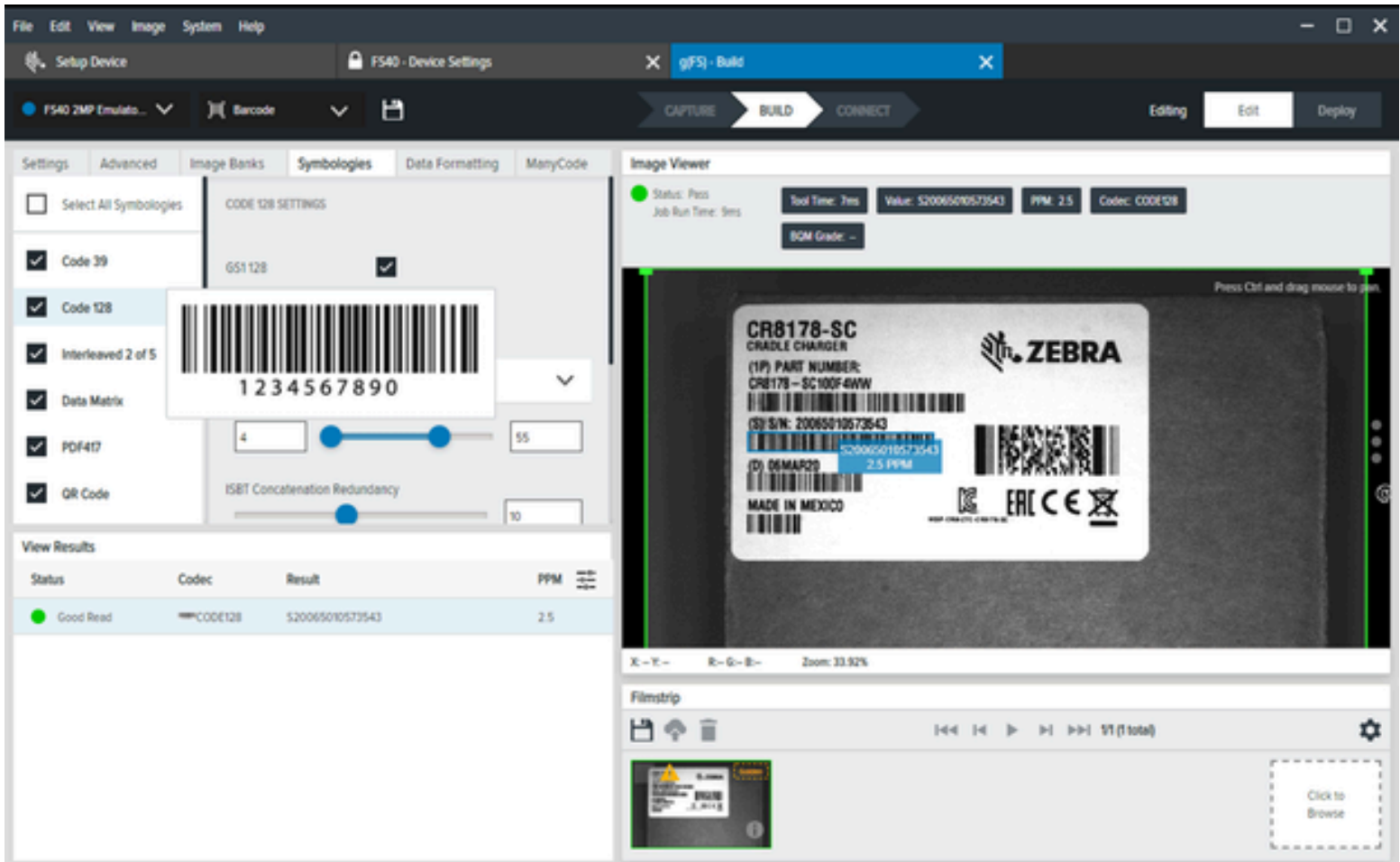
ImagePerfect provides multiple banks for a single job run and is commonly used for applications that require different focus levels in the same Field of Vision (FoV).

For example, two barcodes in the same FoV, one 12” away from the camera and the other 36” away from the camera. These barcodes require two different focus levels to be clear enough to read. ImagePerfect multiple-acquisition-bank functionality makes this possible.



## Symbologies

Configure the settings of each Symbology based on your use case.



**Table 26** Symbologies

Setting	Description
Code 39	Configurable settings include: <ul style="list-style-type: none"> <li>• Enable Trioptic</li> <li>• Enable Full ASCII Conversion</li> <li>• Select Code 39 Length</li> <li>• Enable Check Digit Verification</li> <li>• Enable Convert to Code 32</li> </ul>

**Table 26** Symbologies (Continued)

Setting	Description
Code 128	Configurable settings include: <ul style="list-style-type: none"> <li>• Enable GS1 128</li> <li>• Enable ISBT 128</li> <li>• Select Code 128 Length</li> <li>• ISBT Concatenation Redundancy</li> <li>• Emulate UCC128</li> <li>• Select ISBT Concatenation</li> <li>• Enable Ignore Code128 FNC4</li> </ul>
Interleaved 2 of 5	Configurable settings include: <ul style="list-style-type: none"> <li>• Select Interleaved 2 of 5 Length</li> <li>• Select Check Digit Verification</li> <li>• Transmit Check Digit</li> <li>• Enable Convert Interleaved 2 of 5 Length to EAN13</li> <li>• Enable Fabraban (Interleaved 2 of 5 Length)</li> </ul>
Data Matrix	Configurable settings include: <ul style="list-style-type: none"> <li>• Decode Data Matrix Mirror Images</li> <li>• Select Inverse Data Matrix</li> <li>• Enable GS1 Datamatrix</li> </ul>
PDF417	Configurable settings include: <ul style="list-style-type: none"> <li>• Enable MicroPDF</li> </ul>
QR Code	Configurable settings include: <ul style="list-style-type: none"> <li>• MicroQR Enable (Enabled by Default)</li> <li>• Enable GS1 QR</li> <li>• Select Linked QR Mode</li> </ul>

**Table 26** Symbologies (Continued)

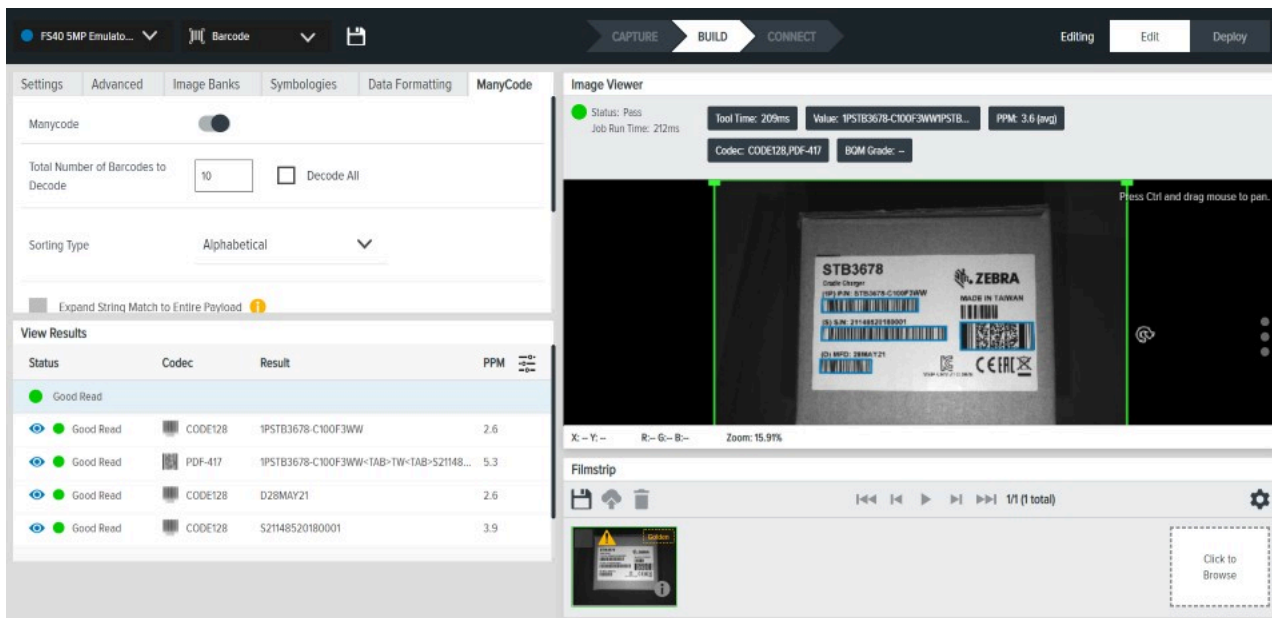
Setting	Description
UPC/EAN	<p>Configurable UPC-A settings include:</p> <ul style="list-style-type: none"> <li>• Select Interleaved 2 of 5 Length</li> <li>• Select Check Digit Verification</li> <li>• Transmit Check Digit</li> </ul> <p>Configurable UPC-E settings include:</p> <ul style="list-style-type: none"> <li>• Enable UPC-E</li> <li>• Select UPC-E Preamble</li> <li>• Transmit UPC-E Check Digit</li> <li>• Convert UPC-E to UPC-A</li> </ul> <p>Configurable UPC-E1 settings include:</p> <ul style="list-style-type: none"> <li>• Enable UPC-E1</li> <li>• Select UPC-E1 Preamble</li> <li>• Transmit UPC-E1 Check Digit</li> <li>• Convert UPC-E1 Check Digit to UPC-A</li> </ul> <p>Configurable EAN-13/JAN-13 settings include:</p> <ul style="list-style-type: none"> <li>• Enable EAN-13/JAN13</li> </ul> <p>Configurable EAN-8/JAN8 settings include:</p> <ul style="list-style-type: none"> <li>• Enable EAN-8/JAN8</li> <li>• Enable EAN-8/JAN8 Extend</li> </ul>
Code 93	<p>Configurable settings include:</p> <ul style="list-style-type: none"> <li>• Select Code 93 Length</li> </ul>
DotCode	<p>Configurable settings include:</p> <ul style="list-style-type: none"> <li>• Select DotCode Inverse</li> <li>• Select DotCode Mirror</li> <li>• Determine DotCode ECC Erasure</li> </ul>
MaxiCode	There are no configurable settings for Maxicode.
Aztec	<p>Configurable settings include:</p> <ul style="list-style-type: none"> <li>• Select Inverse Aztec</li> </ul>

**Table 26** Symbologies (Continued)

Setting	Description
MSI	<p>Configurable settings include:</p> <ul style="list-style-type: none"> <li>• Select MSI Length</li> <li>• Select MSI Check Digits</li> <li>• Enable Transmit Check Digit</li> <li>• Select MSI Check Algorithm</li> <li>• Enable MSI Reduced Quiet Zone</li> </ul>
CODABAR	<p>Configurable settings include:</p> <ul style="list-style-type: none"> <li>• Select Codabar Length</li> <li>• Enable CLSI Editing</li> <li>• Enable NOTIS Editing</li> <li>• Select Upper or Lower Case Start/Stop Characters</li> <li>• Select Security Level</li> <li>• Enable Mod 16 Check Digit Verification</li> <li>• Enable Transmit Codabar Check Digit</li> </ul>

## ManyCode

Use ManyCode to decode multiple barcodes simultaneously and determine their sorting arrangement.



**Table 27** ManyCode Tools

Setting	Description
ManyCode (Disable/Enable)	Enabling this setting allows the barcode to read multiple barcodes in a single iteration.
Total Number of Barcodes to Decode	Limits the number of barcodes to attempt during a single ManyCode scan iteration. For example, if you have eight barcodes in your field of view but set this to five, only the first five barcodes read are decoded, and the scan iteration ends.
Decode All	Explicitly defines no limit for the number of barcodes to attempt to read in a single scan iteration.
Sorting Type	Define how barcode results are sorted: <ul style="list-style-type: none"> <li>• Alphabetical</li> <li>• First Decoded</li> <li>• Top to Bottom</li> <li>• Left to Right</li> </ul>
Expand String Match to Entire Payload	The tool searches for a string match in the entire payload when enabled.
Enable Partial Results	If the number of decodes is less than the <b>Total Number of Barcodes to Decode</b> setting, enabling this setting still outputs these barcodes.
Enable Decode of Identical Symbols	By default, identical (duplicate) barcodes are only read once. When enabled, all duplicate barcodes are read.
Exhaustive Search Attempt	Sets the underlying ManyCode barcode algorithm to prioritize read performance over speed.



# Using Machine Vision Tools

## Deploying VS Jobs

To build and deploy a VS Job, start by selecting a machine vision tool and dragging it onto the FlowBuilder. Using Flowbuilder, stack additional tools onto the workflow or configure the intended results to deploy the Job. To streamline the creation of a specific toolset, use the QuickDraw tool.

## Common Machine Vision Tool Settings

Some Machine Vision tools share common settings, refer to the table below to understand how to configure them based on your use case.

**Table 28** Common Machine Vision Tool Settings

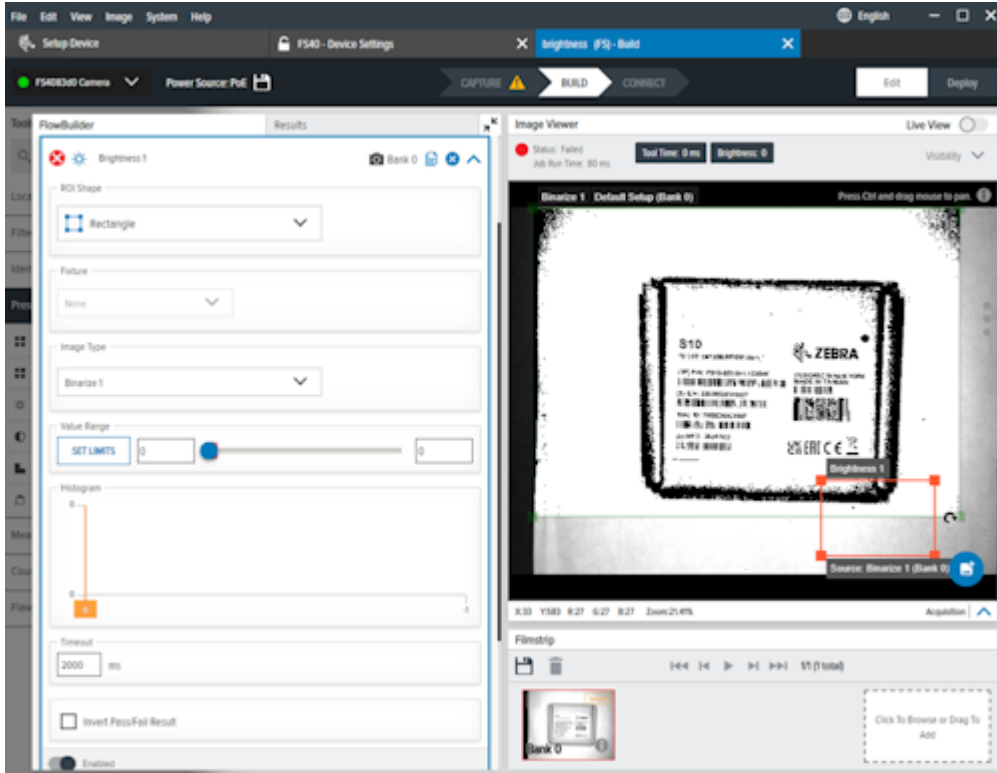
Setting	Description
ROI Type	Select a rectangular or circular Region of Interest (ROI).
Histogram	Displays the number of pixels between two values in a user-defined value range.
Timeout	Set a time limit to stop the execution of the inspection tool ending, producing a failed result.
Inverse Pass/Fail	Inverts the output result when enabled.

## Using Image Types

When using the **Image Type** drop-down menu to use a filter or tool output as the source image, the ROI of the tool must be fully contained within the ROI of the source images. If the tool's ROI exceeds the source's ROI, the tool automatically issues a failing result.

In the following image below, the **Brightness** tool uses the **Binarize** tools output as the source image. As a result, the ROI of the **Brightness** tool must be fully contained within the **Binarize** tools source ROI. If there is an overlap between the two ROIs, the **Brightness** tool issues a fail.

# Using Machine Vision Tools

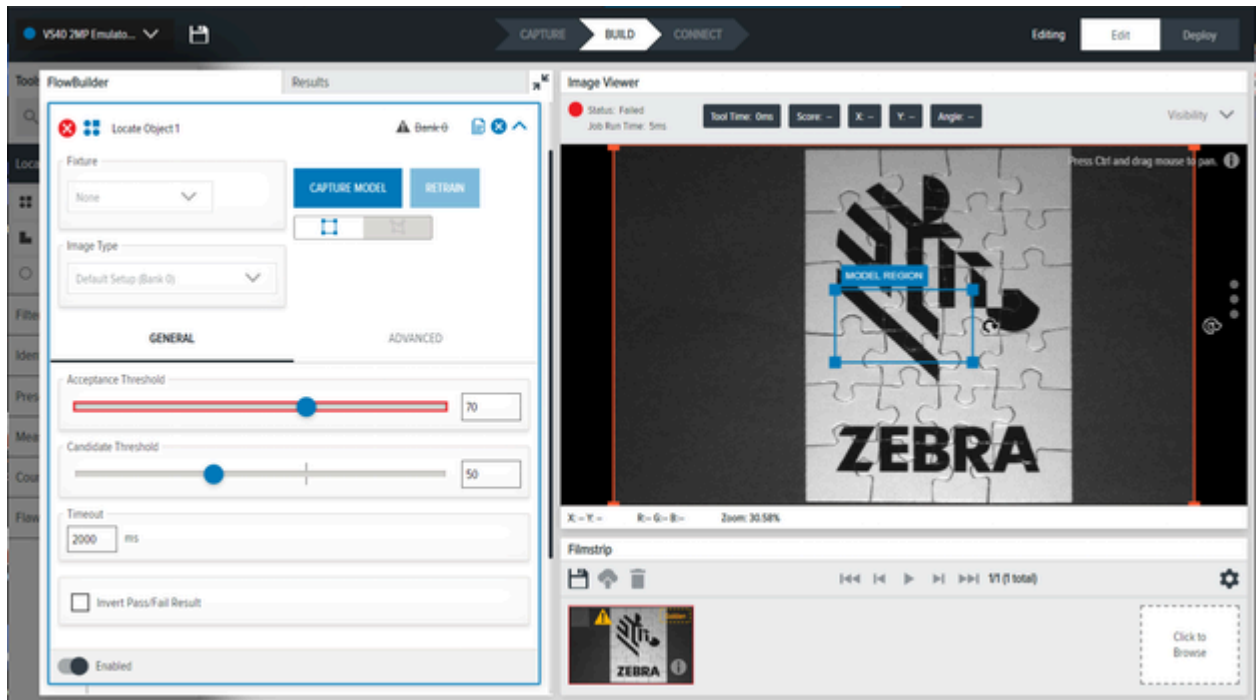


## Locate Tools

Locate tools find a single occurrence of a predefined template on an image by comparing object edges.

### Locate Object

Locate Object finds a specific pattern in a filmstrip based on an edge inside a user-defined region of interest.



**Table 29** Locate Object Settings

Setting	Description
Acceptance Threshold	Determines the minimum score of the valid object occurrence.
Candidate Threshold	Filters out objects below the acceptable threshold in the intermediate phases of the algorithm execution. Note that increasing value can improve performance. However, low-quality objects may not be found.

## General Locate Object Settings

Configure General Locate Object settings such as acceptance threshold, candidate threshold, and rotation threshold.

**Table 30** General Locate Object Settings

Setting	Description
Acceptance Threshold	The minimum match score required to be considered a passing match. If multiple object match scores exceed this minimum, the highest matching object score is used as the final match.
Candidate Threshold	The threshold for a match of the trained pattern to a pattern in the acquired image.
Rotation Threshold	The minimum match score required to be considered a passing match. If multiple object match scores exceed this minimum, the highest matching object score is used as the final match.

## Advanced Locate Object Settings

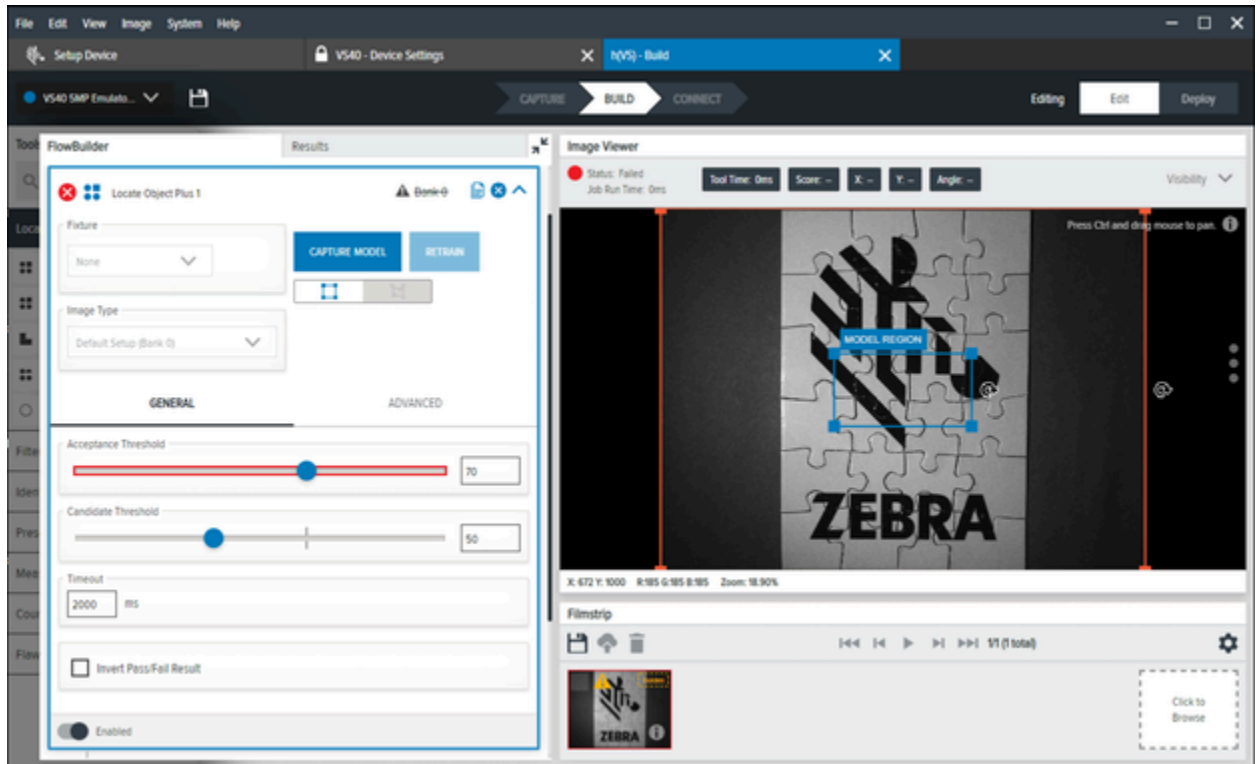
Configure Advanced Locate Object settings such as performance control, noise, rotation threshold, and scale deviation.

**Table 31** Advanced Locate Object Settings

Setting	Description
Performance Control	Select the best coarseness and search type combinations for a more performant search.
Noise	This filter removes pixel-level noise while preserving edge data. <ul style="list-style-type: none"> <li>Off - the object edges have no noise.</li> <li>Low - the object edges have a low level of noise. The object shape and the model shape are nearly identical.</li> <li>High - the object edges have a considerable noise level, or the object shape slightly differs from the model shape.</li> </ul>
Rotation Threshold	The minimum match score required to be considered a passing match. If multiple object match scores exceed this minimum, the highest matching object score is used as the final match.
Allow Scale Deviation	Allows locating objects slightly smaller or bigger than those used during model creation.

## Locate Object Plus

Locate Object Plus finds specific patterns in a specified region of interest and evaluates them based on advanced characteristics such as minimum edge contrast and scale factor.



## Advanced Locate Object Plus Settings

Configure Advanced Locate Object Plus settings such as performance control, noise, rotation threshold, minimum edge contrast and scale factor.

**Table 32** Advanced Locate Object Plus Settings

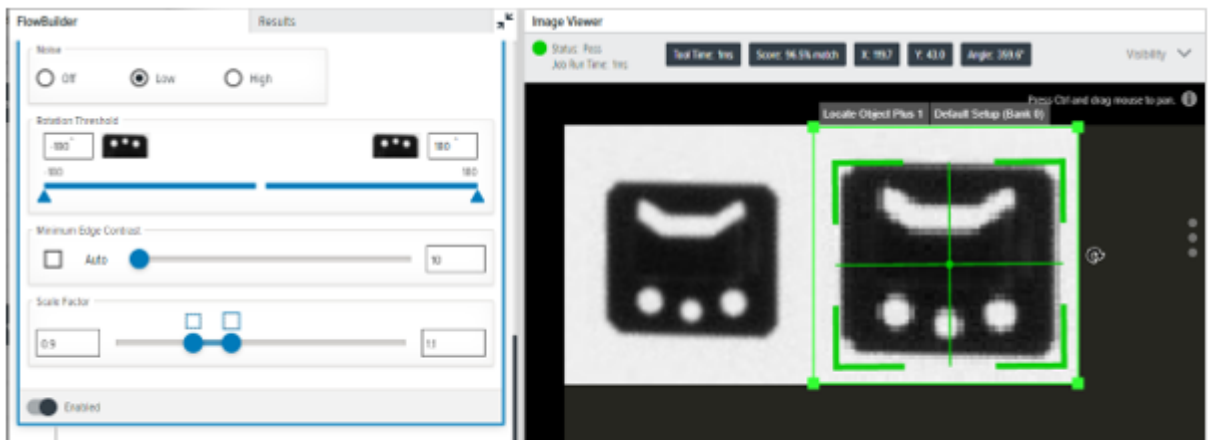
Setting	UI Element
Performance Control	Use the selector to choose the best coarseness and search type combinations for a more performant search.
Noise	Use this filter to remove pixel-level noise while preserving edge data.
Rotation Threshold	A minimum match score is required to be considered a passing match. If multiple object match scores are above this minimum, the highest matching object scores are used as the final match.
Minimum Edge Contrast	Manually sets the minimum contrast in the acquired image to match the trained patterns.

**Table 32** Advanced Locate Object Plus Settings (Continued)

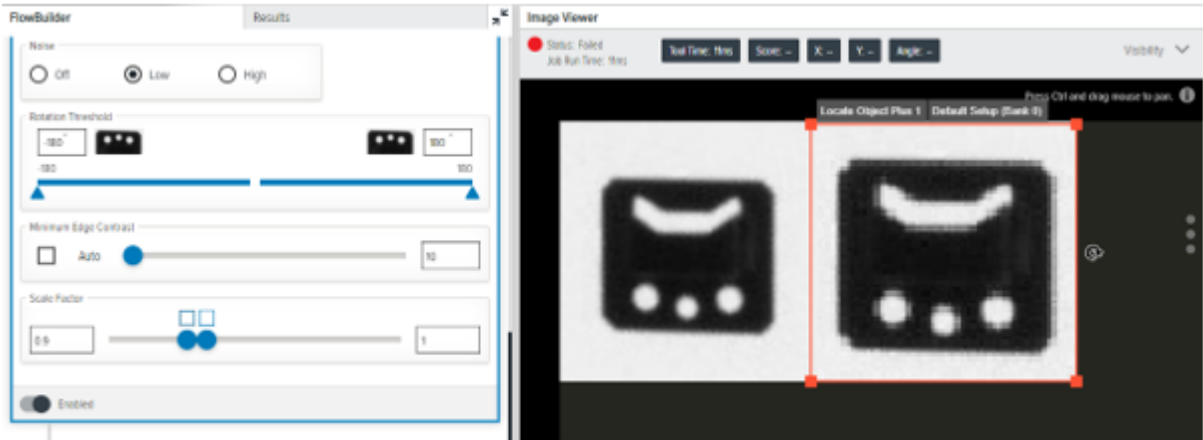
Setting	UI Element
Scale Factor	The Minimum Scale Factor and Maximum Scale Factor parameters determine the range of template scales that will be considered in the matching process. It enables locating objects that are slightly smaller or bigger than the object used during model creation. A wide range of possible scales introduces significant overhead (both in memory usage and computing time). As a result, it is recommended to limit the range whenever possible.



Smaller object used to model creation



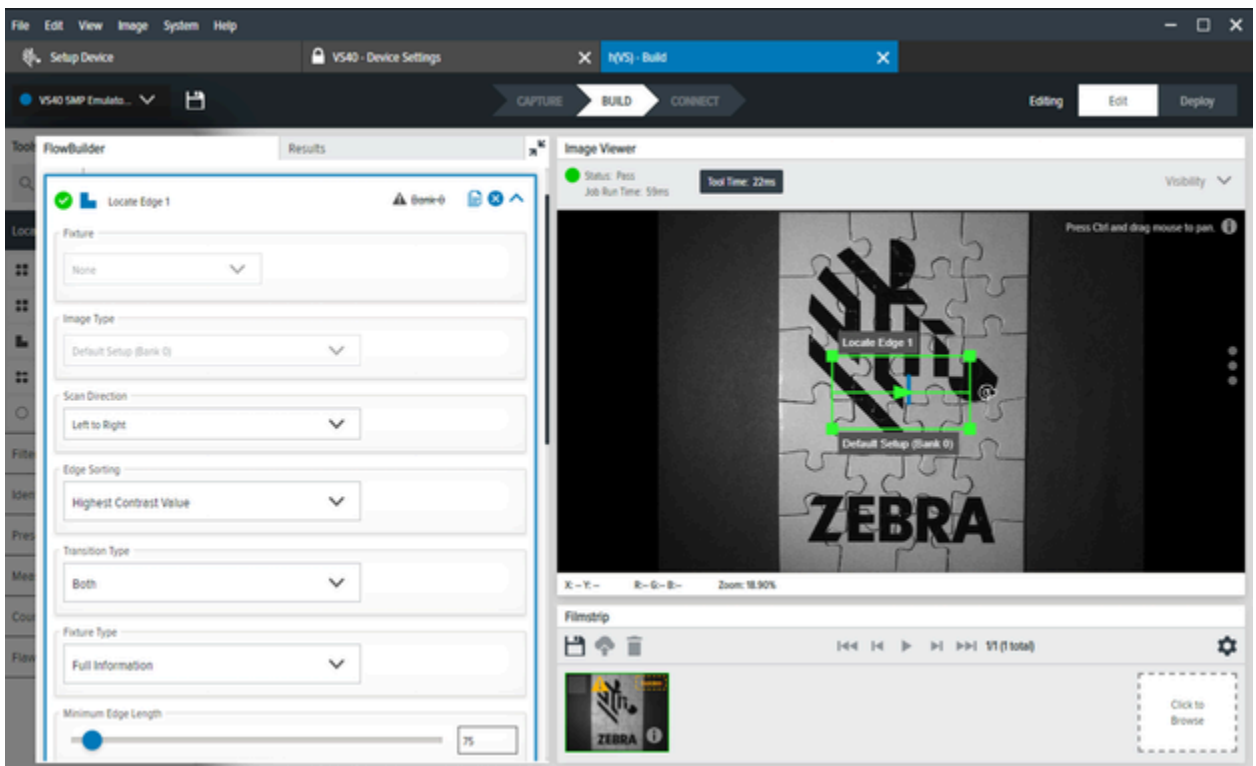
Max Scale Factor = 1.1



Max Scale Factor = 1

## Locate Edge

Locate Edge identifies transitions based on the highest contrast in a user-defined region of interest.



## General Locate Edge Settings

Configure General Locate Edge settings such as fixture, image type, scan direction, edge sorting, transition type, fixture type, minimum edge length, maximum gap, skew tolerance, edge contrast and edge profile.

**Table 33** General Locate Edge Settings

Setting	Description
Fixture	Select a previous tools' result to be used to position this tool's ROI.
Image Type	Select the type of image that the inspection type will use.
Scan Direction	Sets the direction that the tool uses when searching for edges.
Edge Sorting	Narrow down a collection of found edges to a single found edge.
Transition Type	Select the type of edge transition used to find the edge.
Fixture Type	Include all information, position only, or Y position only.
Minimum Edge Length	The minimum length in pixels for an edge to use.
Maximum Gap	The maximum size in pixels to consider in gaps for an edge.
Skew Tolerance	Degrees to attempt to measure a line if it is not straight.
Edge Contrast	Threshold acceptance to consider a line.
Edge Profile	Displays the contrast score of the features across a region of interest.

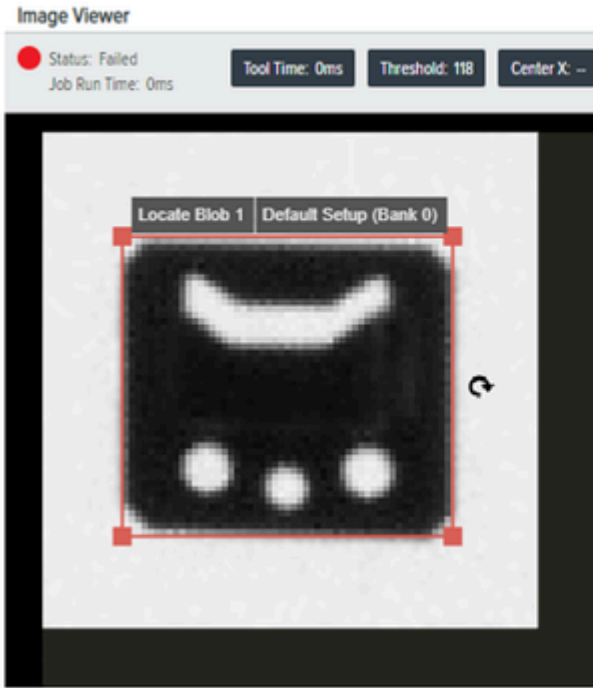
## Locate Blob

A blob is a set of connected light-or dark-colored pixels. The Locate Blob tool detects blobs that pass specific filter parameters within a region of interest.

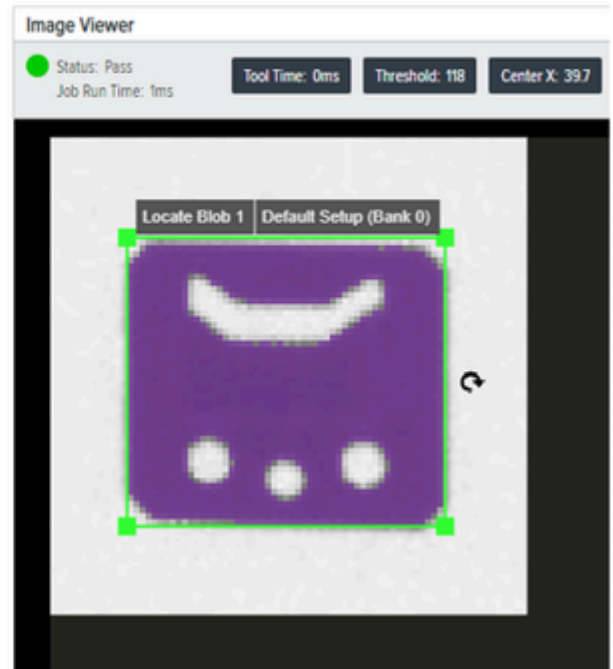
This filter is helpful for quickly segmenting an image. The Locate Blob tool performs a series of operations on the image, including; thresholding using the **Threshold** parameter and removing holes by setting **Fill Holes**.

Filter Boundary blobs by setting **Allow Boundary** blobs.





Allow Boundary Blobs = False



Allow Boundary Blobs = True



Fill Holes = False



Fill Holes = True

## General Locate Blob Settings

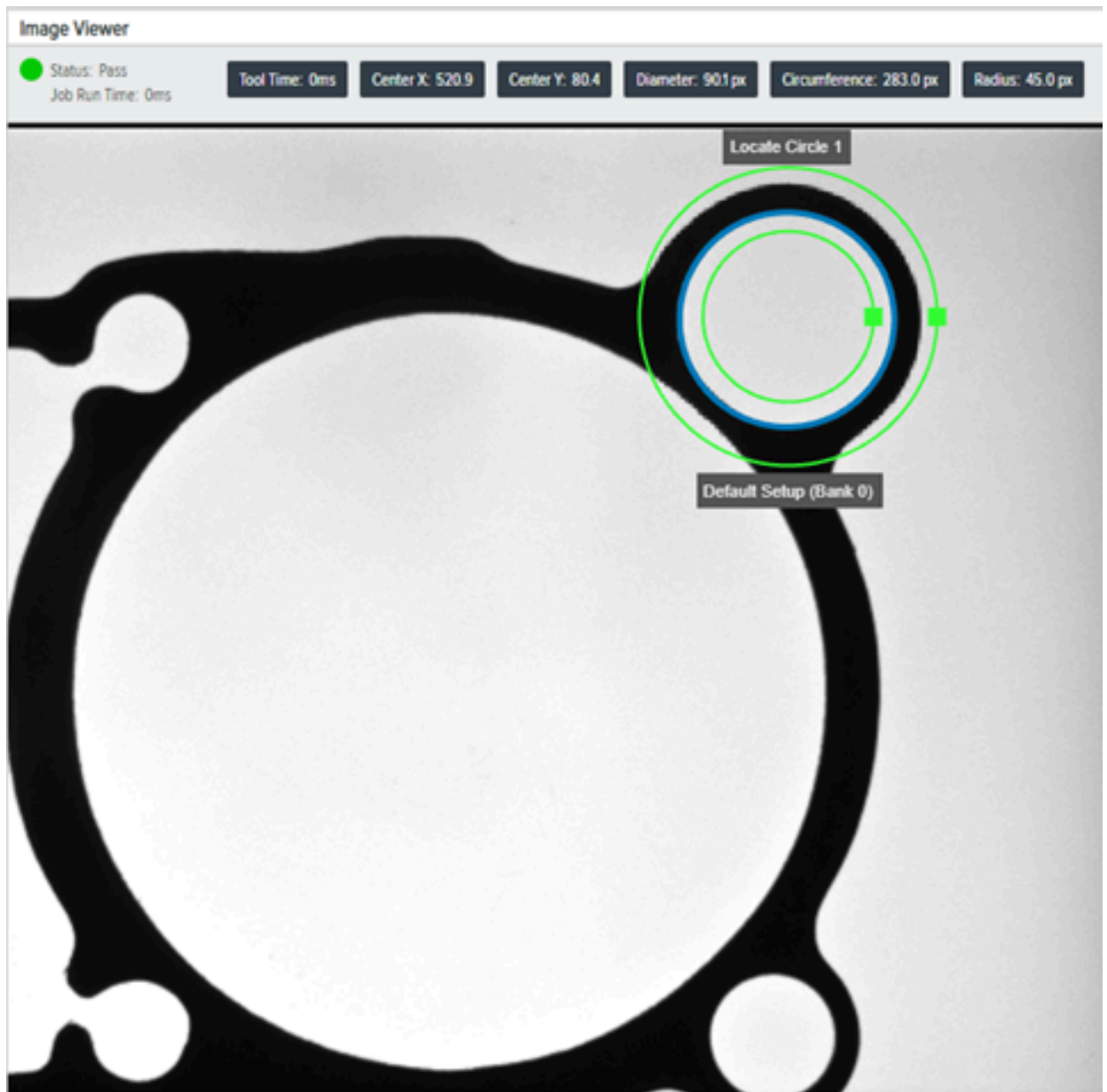
Configure General Locate Blob settings such as fixture, image type, threshold, histogram result, filters and sorting.

**Table 34** General Locate Blob Settings

Setting	Description
Fixture	Select a previous locate tool result that is used to position the tool's ROI.
Image Type	Select the image that the inspection tool will use.
Threshold	Select a threshold for black or white blobs. This value is automatically set to 117.
Histogram Result	Visual representation of the number of pixels found at each grayscale level.
Filters	Apply filters to set the criteria used to consider a blob as valid.
Sorting	Defines the priority for selecting the blob to return.

## Locate Circle

Locate Circle finds a circle model inside a user-defined region of interest that fits the specified parameters.



## General Locate Circle Settings

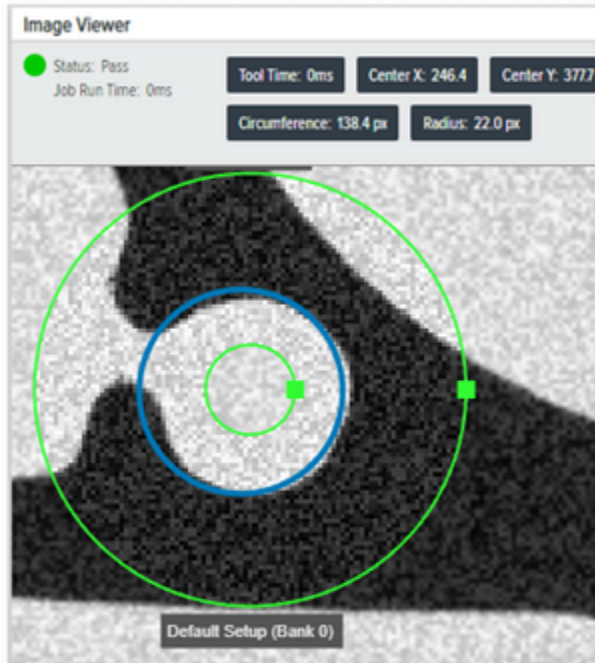
Configure General Locate Circle settings such as find by, transition type, maximum edge magnitude, edge profile, and scale calibration.

**Table 35** General Locate Circle Settings

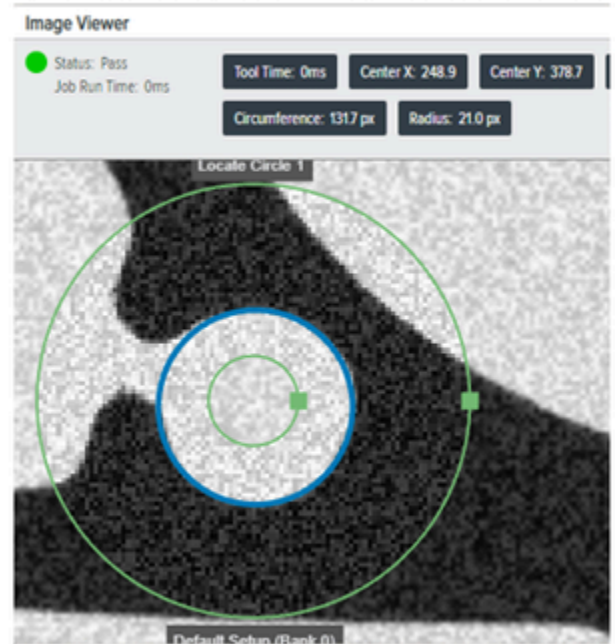
Setting	Description
Find By	<p>Describes which result is reported as filter output:</p> <ul style="list-style-type: none"> <li>• Best Score - searches for the best match to the detected edges within a given ROI.</li> <li>• Largest Circle - returns the largest circle that matches the edges found in a given ROI.</li> <li>• Smallest Circle - returns the smallest circle that matches the edges found in a given ROI.</li> </ul>
Transition Type	<p>Determines what is considered an edge in a given image.</p> <ul style="list-style-type: none"> <li>• Blended - any change in pixel intensity determines an edge.</li> <li>• Both - changes from dark to bright pixels or changes from dark to bright pixels determine an edge.</li> <li>• Dark to Light - changes from dark to bright pixels determine an edge.</li> <li>• Light to Dark - changes from bright to dark pixels determine an edge.</li> </ul>
Maximum Edge Magnitude	The minimum acceptable edge strength.
Edge Profile	Displays the contrast score of the features across the region of interest.
Scale Calibration	Calibrates pixel values to engineering units.

## Advanced Locate Circle Settings

When **Enable Outlier Suppression** is enabled, the resulting output resembles the output example below:



Enable Outlier Suppression = False



Enable Outlier Suppression = True

**Table 36** Advanced Locate Circle Settings

Setting	Description
Scan Width	Defines the width of the area neighboring each scanning line that should be considered when calculating the results in pixels.
Scan Count	Sets the number of scanning segments used around the circumference when defining the circle edge.
Maximum Incompleteness	Sets the percentage of points in the circle edge that are allowed to be missing while still providing a passing result.
Enable Outlier Suppression	Allows the suppression of influence of values far from most others on the result using Tukey's M-estimator.

## Filter Tools

Filter Tools are facilitated by the use of a kernel. A kernel is repeatedly centered at each pixel within the dimensions of the region that is being transformed. Every pixel is either added to the resulting region or not, depending on the operation-specific condition set on the minimum number of kernel pixels that have to overlap with actual input region pixels in the given position of the kernel.

### Binarize

The Binarize Tool converts the image to monochrome.

The operation transforms each pixel value to the maximum or minimum level, creating a binary image. The result of the transformation depends on the pixel intensity:

- Pixel values in the range (MinValue, MaxValue) are transformed to the maximum level.

- Other pixel values are transformed to the minimum level.



Original Image



Result

**Table 37** Binary Settings

Setting	Description
Fixture	Select a previous tool's result to position this tool's ROI.
Image Type	Select which image to use with this tool.
Threshold	The algorithm detects the best threshold to use for the filter.
Histogram Result	Visual Representation of the number of pixels found at each greyscale level.

## Dilate

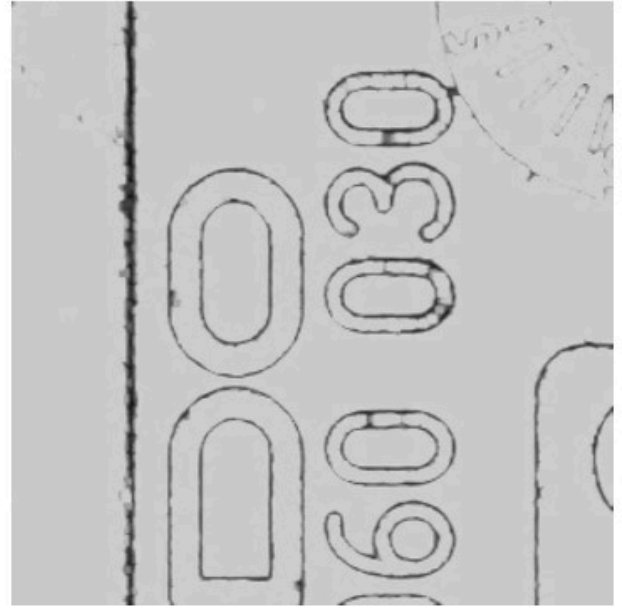
The Dilate Tool replaces each pixel with a maximum of pixels within the kernel. This tool also thickens bright features in an image and reduces dark features.

The operation replaces each pixel with the brightest pixel in its neighborhood, thus shrinking dark areas and expanding the bright ones.

The following displays a Dilate tool result with three Kernel Rows and three Kernel Columns:



Original Image



Result

**Table 38** 4

Settings	Description
Fixture	Select a previous locate tool's result that is used to position this tool's ROI.
Image Type	Select which image this inspection tool uses.
Kernel	Select the kernel values used to calculate the filter output.

## Erode

The operation replaces each pixel with the darkest pixel in its neighborhood, thus shrinking bright areas and expanding the dark ones.

The following displays an Erode tool result with three Kernel Rows and three Kernel Columns:



Original image



Result

Table 39

Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Type	Select which image this inspection tool will use.
Kernel	Select the kernel values used to calculate the filter output.

## Open

The Open tool decreases the image's overall brightness and enhances the remaining bright features by contrast.

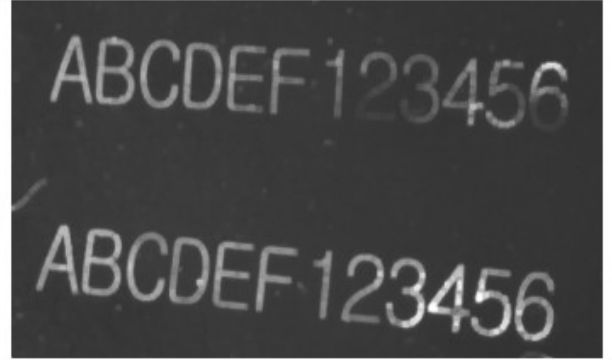
Removes small bright structures from an image (or fills in dark ones) by applying consecutive erosion and dilation.

The following displays an Open tool result with three Kernel Rows and three Kernel Columns:





Original image



Result

**Table 40** Open Settings

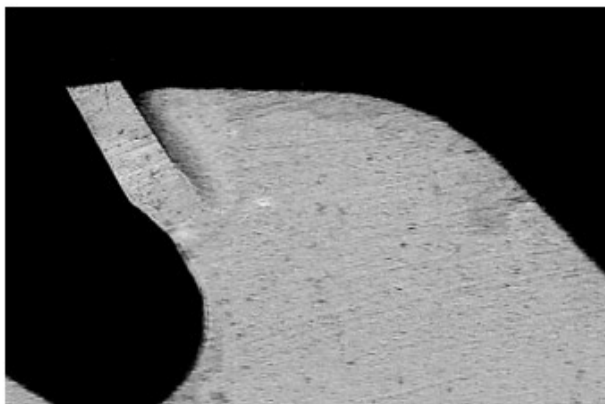
Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Type	Select which image this inspection tool will use.
Kernel	Select the kernel values used to calculate the filter output.

## Close

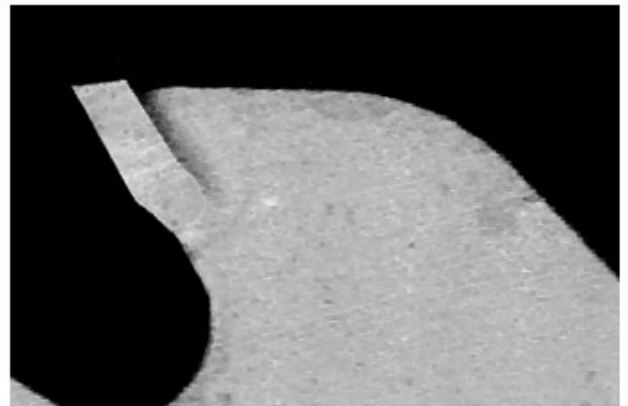
The Close tool increases the image's overall brightness and enhances the remaining dark features by contrast.

Removes small bright structures from an image (or fills in dark ones) by applying consecutive erosion and dilation.

The following displays an Open tool result with three Kernel Rows and three Kernel Columns:



Original Image



Result

**Table 41** Close Settings

Settings	Description
Fixture	Select a previous locate tool's result that is used to position this tool's ROI.
Image Type	Select which image this inspection tool will use.
Kernel	Select the kernel values used to calculate the filter output.

## Gradient Full

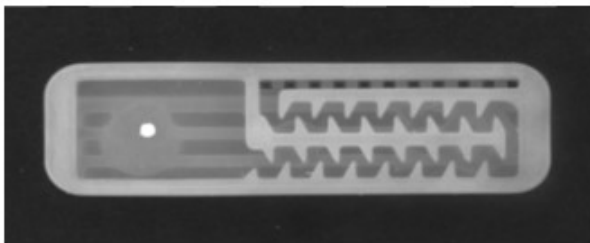
The Gradient Full tool brightens horizontal and vertical edges within the defined area of interest.

Method of estimation of the vectors' magnitude:

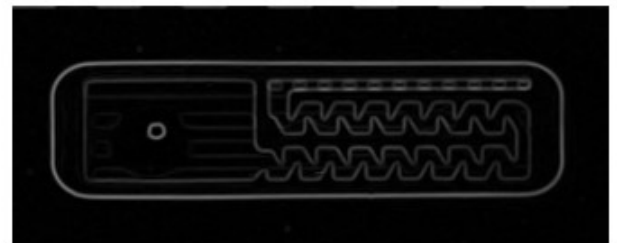
$$\text{Hypot} - \frac{\sqrt{x^2 + y^2}}{4}$$

**x- horizontal gradient component**

**y- vertical gradient component**



Original Image



Result

**Table 42** Gradient Vertical Settings

Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Type	Select which image this inspection tool will use.
Scale	Increases the brightness of the edges in the output result. This input is used to scale the output edge brightness values.

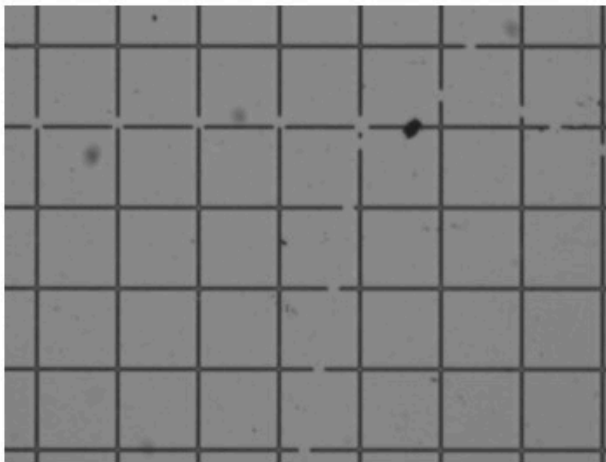
## Gradient Horizontal

The Gradient Horizontal tool brightens horizontal edges within the defined region of interest.

Method of estimation of the vectors' magnitude:

$$\text{Vertical} - \frac{\sqrt{y^2}}{4}$$

y- vertical gradient component



Original Image



Result

**Table 43** Gradient Vertical Settings

Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Type	Select which image this inspection tool will use.
Scale	Increases the brightness of the edges in the output result. This input is used to scale the output edge brightness values.

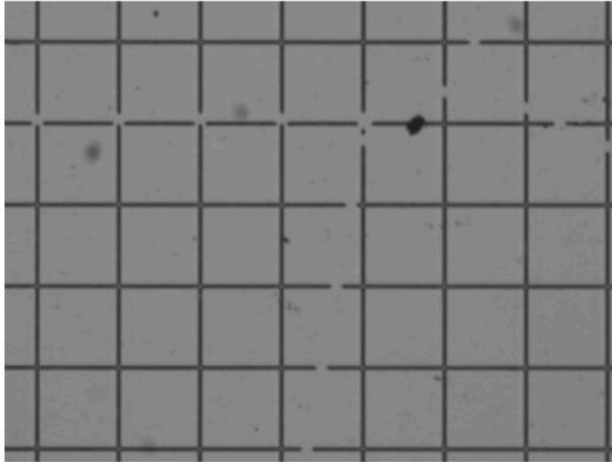
## Gradient Vertical

The Gradient Vertical tool brightens vertical edges within the defined region of interest.

Method of estimation of the vectors' magnitude:

$$\text{Horizontal-} \frac{\sqrt{x^2}}{4}$$

**x- horizontal gradient component**



Original Image



Result

**Table 44** Gradient Vertical Settings

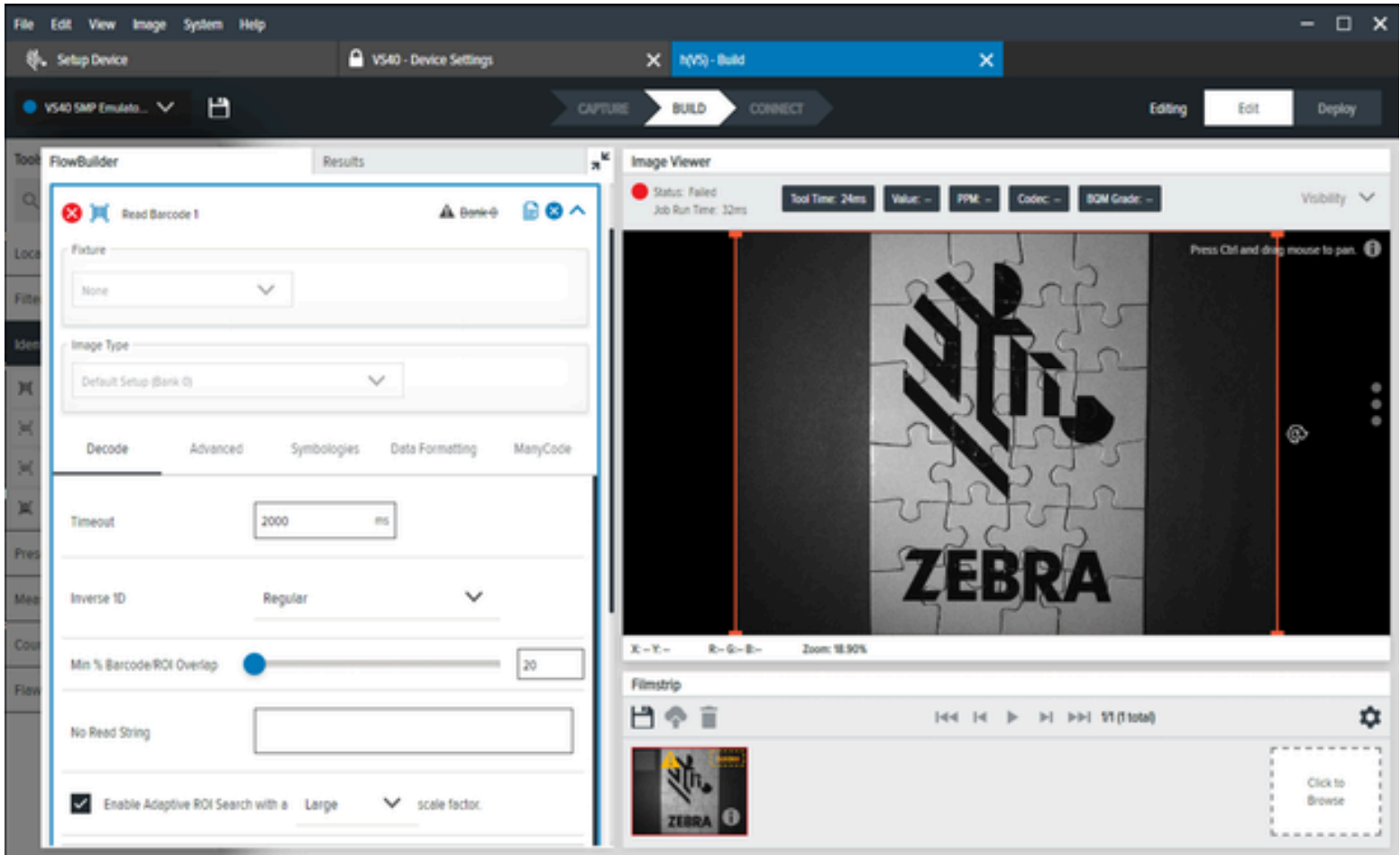
Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Type	Select which image this inspection tool will use.
Scale	Increases the brightness of the edges in the output result. This input is used to scale the output edge brightness values.

## Identification Tools

Use the Identification Tools to read barcodes, DPM, Datacode, and Deep Learning OCR.

## Read Barcode

Configure barcode decode settings such as Inverse 1D, ROI overlap, or ROI search.



**Table 45** Read DPM and Barcode Settings

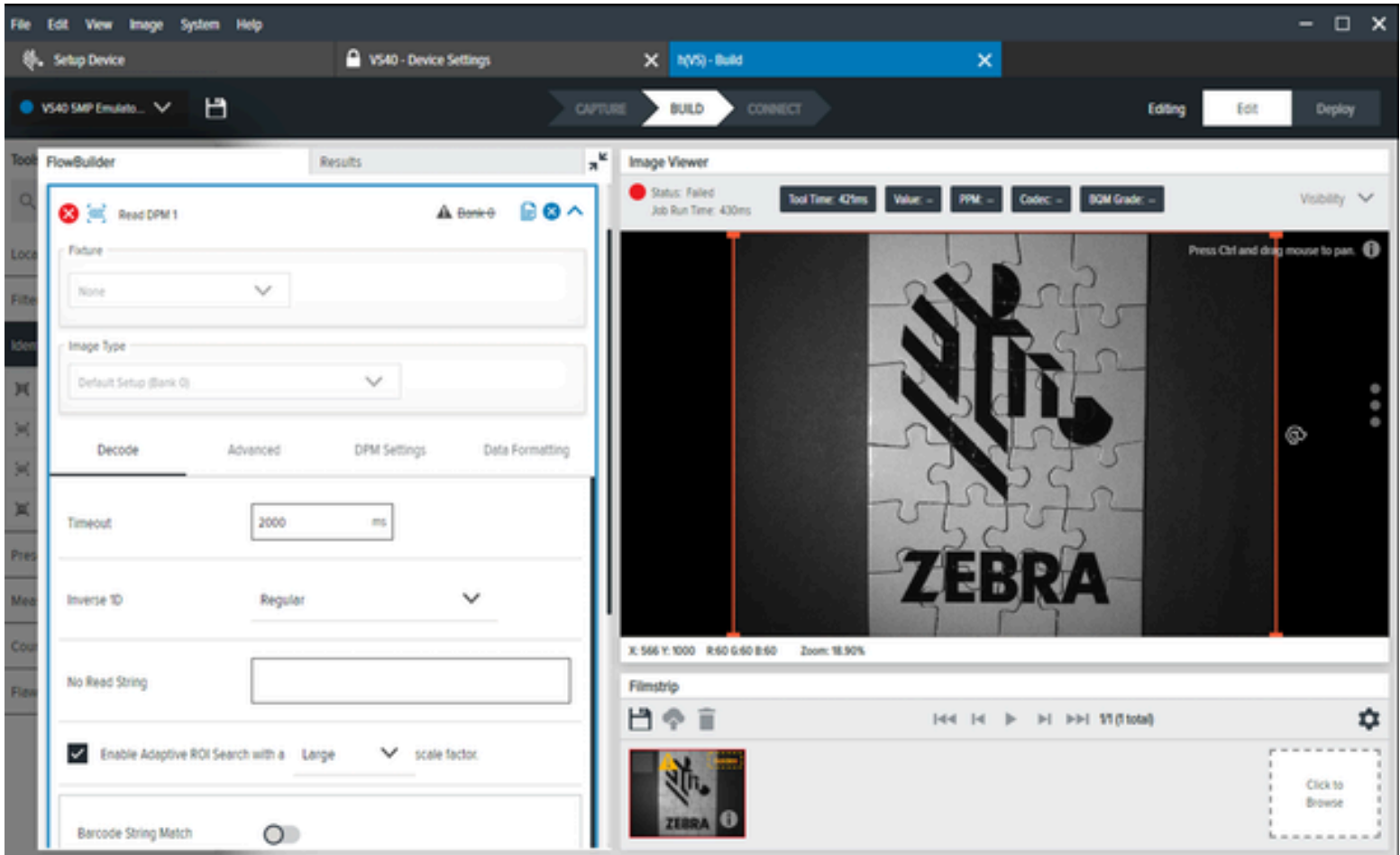
Settings	Description
Inverse 1D	Choose the type of barcode to read.
Minimum Percentage Barcode/ROI Overlap	Define the minimum percentage a barcode needs to be contained within ROI to decode. For 1D barcodes, this applies only to the horizontal (X) dimension. For 2D barcodes, this applies to horizontal and vertical (X & Y) dimensions.
No Read String	Define the data that should be output if no barcode is read (in place of barcode data in a successful read, as opposed to no output at all).

**Table 45** Read DPM and Barcode Settings (Continued)

Settings	Description
Enable Adaptive ROI Search	Enabling Adaptive ROI allows the underlying barcode scanning algorithm to alter (shrink and reposition) the area of the ROI for subsequent reads based on the presence of past-read barcodes, providing better-performing barcode reads. The small/medium/large drop-down settings alter the generation of the adapted ROI component.
Barcode String Match	Enable this setting to define the pass/fail criteria based on the contents of the decoded barcode.
Enable Barcode Quality Metrics	Enable this checkbox to enable BQM outputs (Overall Grade)
Minimum BQM Grade	<p>Enable this option to use a threshold for issuing a pass or fail based on the BQM “overall grade” for each barcode scan.</p> <p>For example, By setting the threshold between C and D, if a barcode achieves a BQM grade of A, B, or C, the job/tool issues a pass. If the overall grade is a D or an F, it will issue a fail.</p>
Send Decode on Failure	<p>By default, if a barcode is read but has a failing BQM grade (as defined by the <b>Minimum BQM Grade</b> threshold above), its data is not output (to either the <b>Deploy</b> screen or various outputs such as TCP/IP/Serial/USB).</p> <p>If this is enabled, the decoded data is still output, even if the BQM Overall Grade is a failing grade (as per the <b>Minimum BQM Grade</b> threshold).</p>

## Read DPM

Configure DPM decode settings such as Inverse 1D, barcode string match, or ROI search.

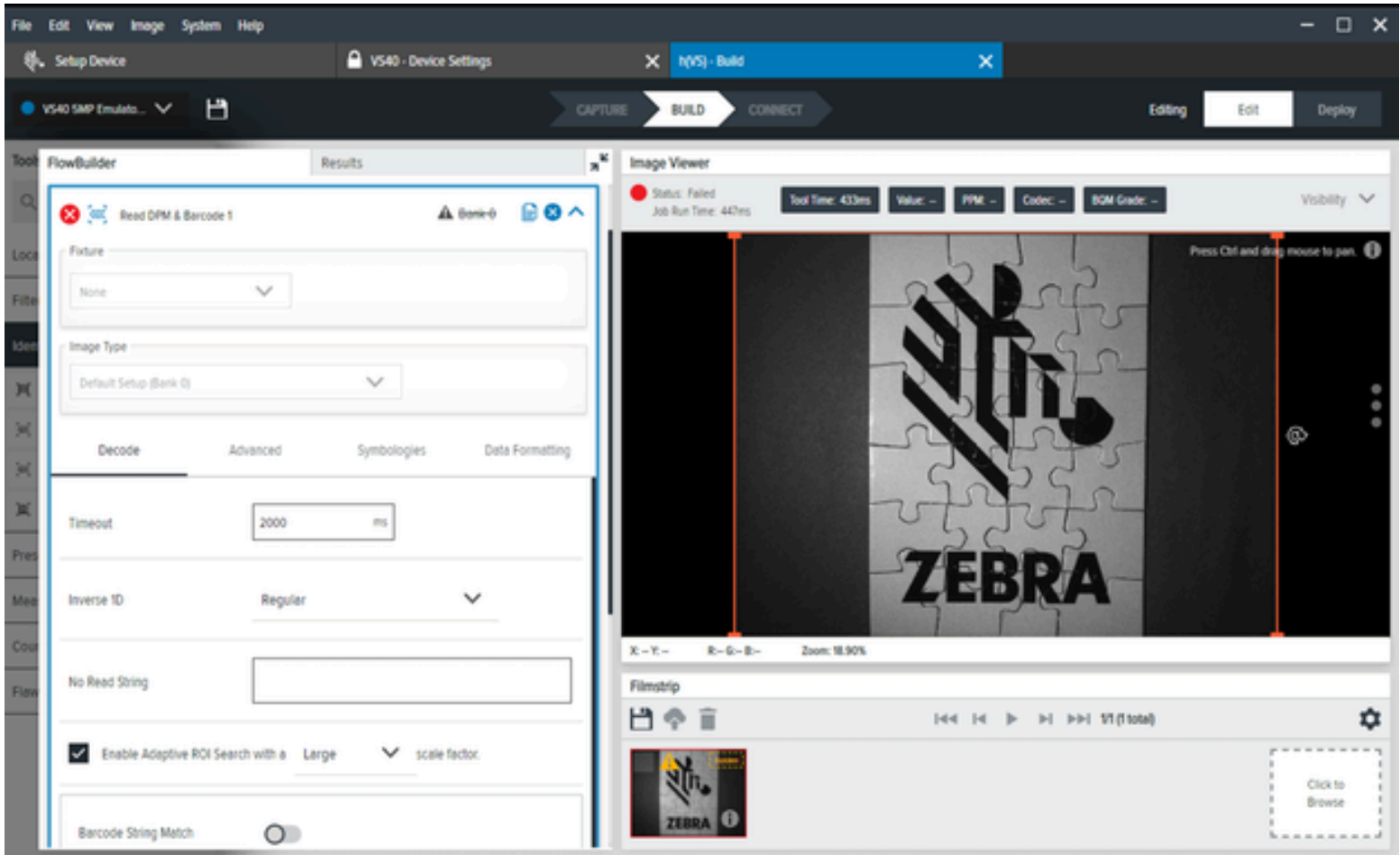


**Table 46** Read DPM Settings

Settings	Description
Inverse 1D	Choose the type of barcodes to read.
No Read String	Define the data to be output if no barcode is read.
Enable Adaptive ROI Search	Enabling Adaptive ROI allows the underlying barcode scanning algorithm to alter (shrink and reposition) the area of the ROI for subsequent reads based on the presence of past-read barcodes. This provides better-performing barcode reads. The small/medium/large drop-down settings alter how the adapted ROI component is generated.
Barcode String Match	Enable this setting to define pass/fail criteria based on the contents of the decoded barcode.

## Read DPM and Barcode

Configure DPM and barcode decode settings such as Inverse 1D, a no-read string, or barcode string match.



**Table 47** Read DPM and Barcode Settings

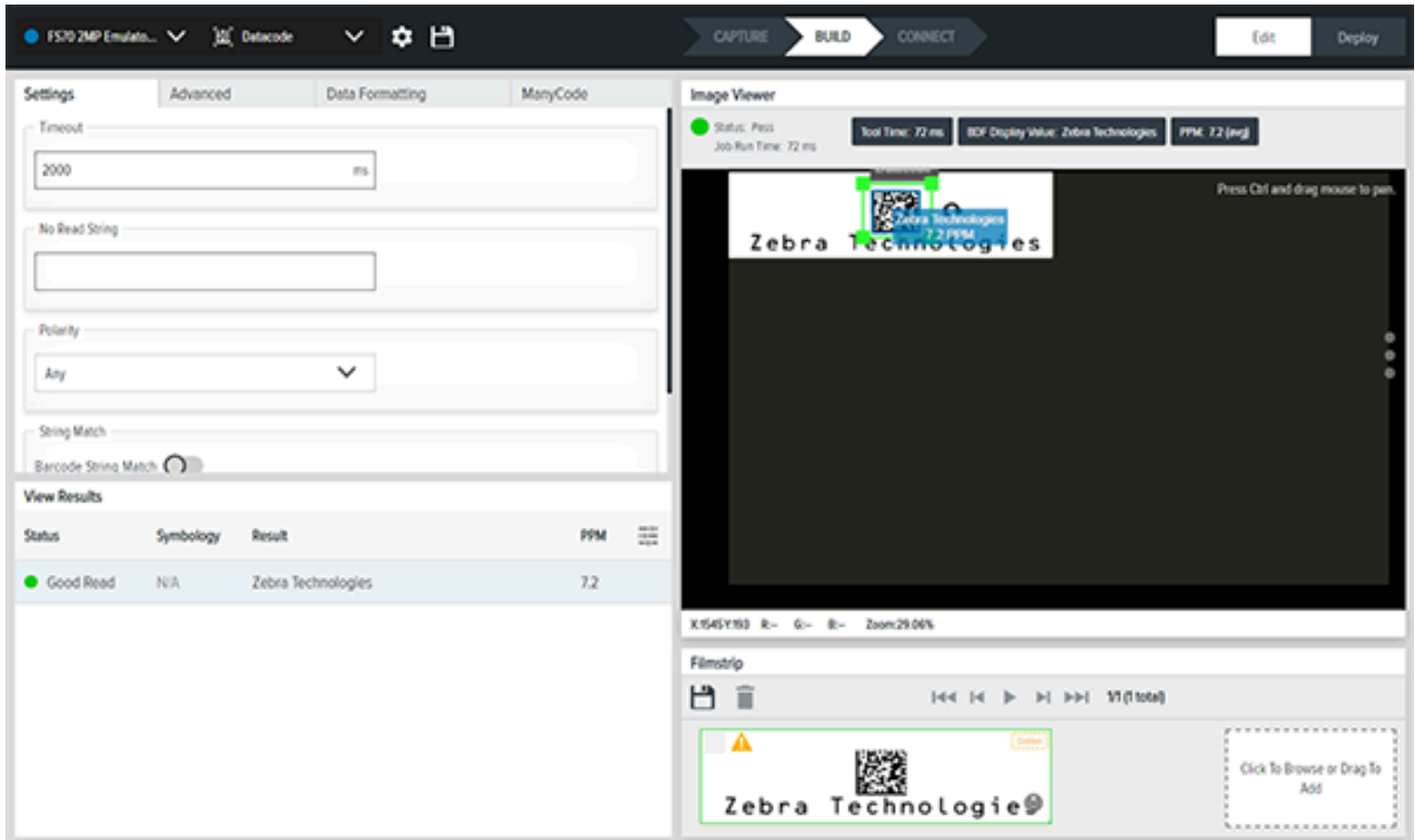
Settings	Description
Inverse 1D	Choose what type of barcodes you want to be able to read.
No Read String	Define the data that should be output if no barcode is read (in place of barcode data in a successful read instead of no output at all).
Enable Adaptive ROI Search	Enabling Adaptive ROI allows the underlying barcode scanning algorithm to alter (shrink and reposition) the area of the ROI for subsequent reads based on the presence of past-read barcodes. This provides better-performing barcode reads. Drop-down settings alter how the adapted ROI component is generated.
Barcode String Match	Enable this setting to define pass/fail criteria based on the contents of the decoded barcode.



## Datocode

Configure Datocode settings such as a No Read String, Module Size, or Search Strategy. This tool is useful for reading 2D Datamatrix symbology barcodes that are difficult to decode.

### General Datocode Decode Settings



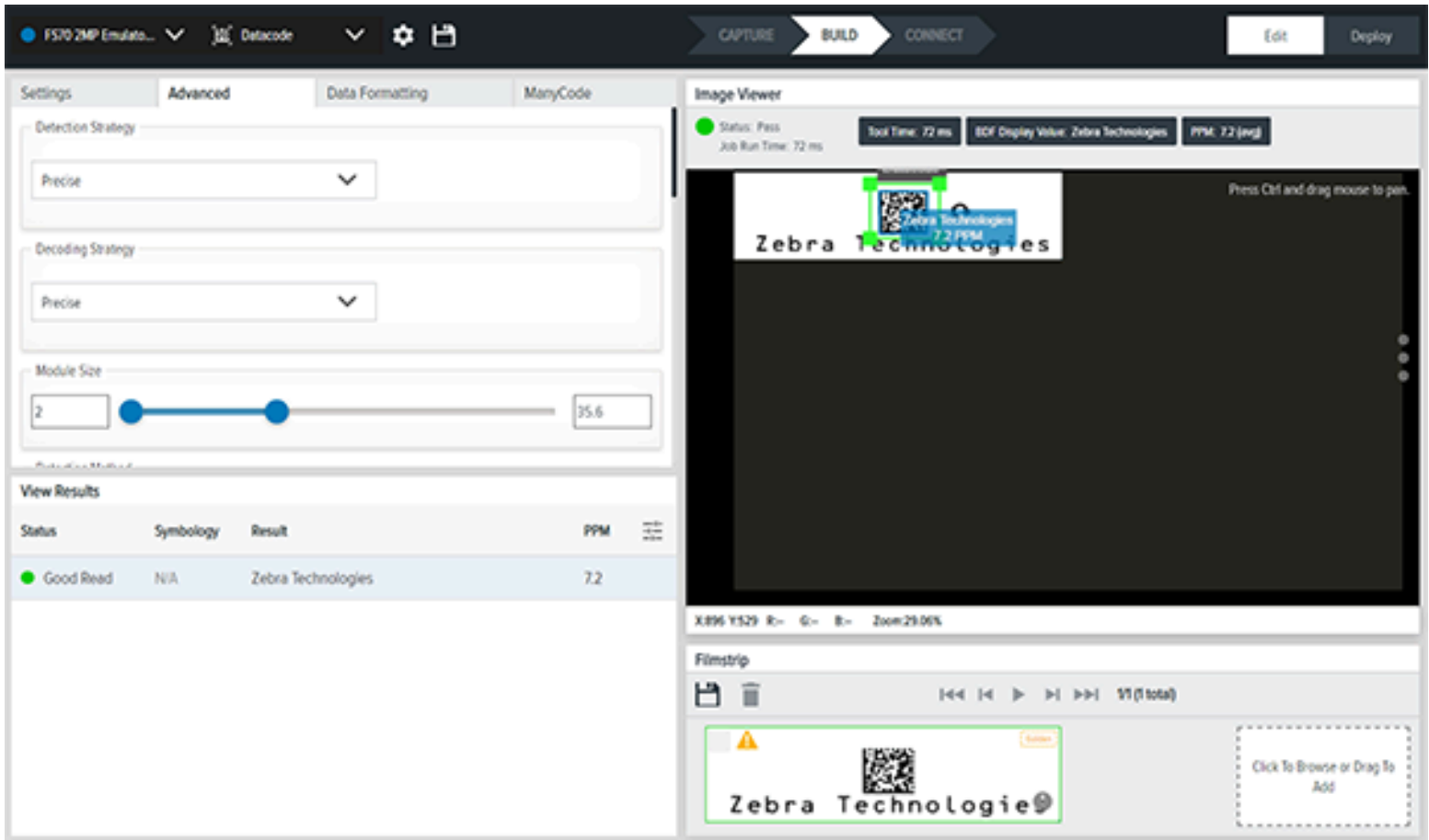
**Table 48** General Datocode Decode Settings

Setting	Description
Timeout	Set a time limit to stop the execution of the inspection tool, resulting in a failure.
No Read String	Specify a no read string.
Polarity	Select a polarity for the decode. <ul style="list-style-type: none"> <li>Any</li> <li>Bright</li> <li>Dark</li> <li>Mixed</li> </ul>

**Table 48** General Datacode Decode Settings (Continued)

Setting	Description
String Match	Enable String Match to decode successfully when the value matches the string provided.

**Advanced Datacode Decode Settings**



**Table 49** Advanced Datacode Decode Settings

Setting	Description
Detection Strategy	Select a search strategy based on speed or precision: <ul style="list-style-type: none"> <li>• Super Fast</li> <li>• Fast</li> <li>• Precise</li> <li>• Strict</li> <li>• Extended</li> </ul>

**Table 49** Advanced Datacode Decode Settings (Continued)

Setting	Description
Decoding Strategy	Specify the precision of the implemented decode strategy. <ul style="list-style-type: none"> <li>• Super Fast</li> <li>• Fast</li> <li>• Precise</li> <li>• Strict</li> <li>• Extended</li> </ul>
Module Size	Determine the minimum and maximum range for modules.
Detection Method	Specify how code candidates are located.
Finder Tradeoff	Optimize parameters for weak or jagged edges.
Contrast Threshold	Set a contrast threshold for Datacode to use.
Line Count	Limit the number of Datamatrix modules in a row and column.
Allow Distortion	Select a distortion level: <ul style="list-style-type: none"> <li>• Low</li> <li>• Medium</li> <li>• High</li> </ul>
Expected Gap Size	Specify the distance between neighboring modules.
Maximum Code Slant	Specify the maximum deviation from the right angle in the corner of the Finder Pattern.
Use Super Resolution	Determine the image up-scaling method for low-resolution codes depending on minimum module size.
Allow Mirrored	Allow mirrored codes.
Allow Broken Finder Pattern	Attempt to create a candidate if there are gaps in the Finder Pattern.
Allow Rectangular	Allow rectangular codes.
Allow Perspective Distortion	Allow codes with perspective distortion.

## Deep Learning OCR

The Deep Learning OCR tool reads text from images using Deep Learning Optical Character Recognition. This tool locates and recognizes characters. Without additional training, it is suitable for reading characters:

- Horizontally-oriented,
- Height between 85% and 115% of Char Height (in pixels)

- Contain Latin letters (upper- or lower-case), digits, or one of: !#\$%&()\*+,-./:;<=>?@[^\_`{|}~"'\€£¥.

The Deep Learning OCR ROI may be used to limit the analyzed area, which, in most cases, leads to improved performance. Moreover, it may be used to adjust to text that is not horizontally oriented.

The Average Character Height should be set to the average height of characters (specifically, capital letters) in the analyzed area. For example, if an image contains two kinds of characters: one is 24 pixels high and the second is 40 pixels high, the Average Character Height should be set to 32, irrespective of the number of characters of each kind.

Character Width Scale helps reshape fonts with exceptionally narrow or wide symbols to a more typical aspect ratio. Character Width Scale will scale the analyzed area on the horizontal axis. It may improve the quality of results. Furthermore, it may help read a text with tight spaces between subsequent characters.

To limit the set of recognized characters, Character Range may be used. This string must be formatted according to the following rules:

- Allowed characters must be separated with commas,
- for ease of use, a continuous range of letters or digits may be written as starting\_character-ending\_character, e.g. A-Z or 1-6,
- comma and backslash have to be prepended with a backslash.

For example, Character Range equal to A-F,g-o,0-9,X,Y,Z,-,\,\, will result in recognizing only ABCDEFXYZghijklmno0123456789-\, characters.


The Minimum Confidence parameter may be used to change the minimum score of a character. By default, this threshold is set to 80%.

The Contrast Threshold and Text Color parameters set a desired contrast interval of a character, which are used to reduce the number of false positives:

- Text Color: Bright; only characters with contrast greater than Contrast Threshold are returned.
- Text Color: Dark; only characters with contrast lower than -Contrast Threshold are returned.
- Text Color: Any, only characters with contrast lower than -Contrast Threshold or greater than Contrast Threshold is returned.



**Table 50** Deep Learning OCR Settings

Setting	Description
Minimum Confidence	Sets a minimum required score for a character to include in the algorithm or output.   <b>NOTE:</b> Adjusting this value downwards can help include decodes of slightly lesser confidence to ultimately get the desired output. For example, the above example is too strict and ultimately does not decode various characters. Lowering this value from 99 to 98 yields a favorable result.
Average Character Height	Use the slider to select a value close to the average pixel height of text that is trying to be decoded. Performance improves the closer this value is to the average character height (in pixels). <ul style="list-style-type: none"> <li>• Minimum Value: 8</li> <li>• Default Value: 25</li> <li>• Maximum Value: 200</li> </ul>

**Table 50** Deep Learning OCR Settings (Continued)

Setting	Description
Text Color	<p>Set a required polarity for a character to be returned.</p> <ul style="list-style-type: none"> <li>• Minimum Value: -100</li> <li>• Default Value: 0</li> <li>• Maximum Value: 100</li> </ul> <p>Default Value: Any</p>
Contrast Threshold	<p>Sets a threshold for a contrast of found characters.</p> <p>Default value: 0.0f</p>
Character Width Scale Percentage	<p>Scales image width by the given factor (%).</p> <ul style="list-style-type: none"> <li>• Minimum Value: 10%</li> <li>• Default Value: 100%</li> <li>• Maximum Value: 1000%</li> </ul>
Character Range	<p>Limits the set of wanted characters.</p> <p>Default value: \"A-Z,a-z,0-9,\\\\\\\\\\\\\\\\,/,,-\\</p>
String Match	<p>Defines a string that must be contained within the decoded OCR output for the tool to pass (for example, substring). By default, the tool passes if the match string is contained in the resulting OCR output. This allows additional characters to be added before and after the string.</p> <p>Enable the Regex checkbox and use the syntax <code>^&lt;stringToExactMatch\$</code> to implement the exact match behavior.</p> <p>RegEx can also be used for complex string match logic. Refer to the RegEx section for more details.</p>
Timeout	<p>Sets a time after which the tool fails.</p>
Invert	<p>Flips the results of this tool.</p>

To use Deep Learning Based OCR with RegEx, enable the RegEx checkbox and provide an expression for the OCR tool to locate. The following example searches for the expression `^22\d{3}`.

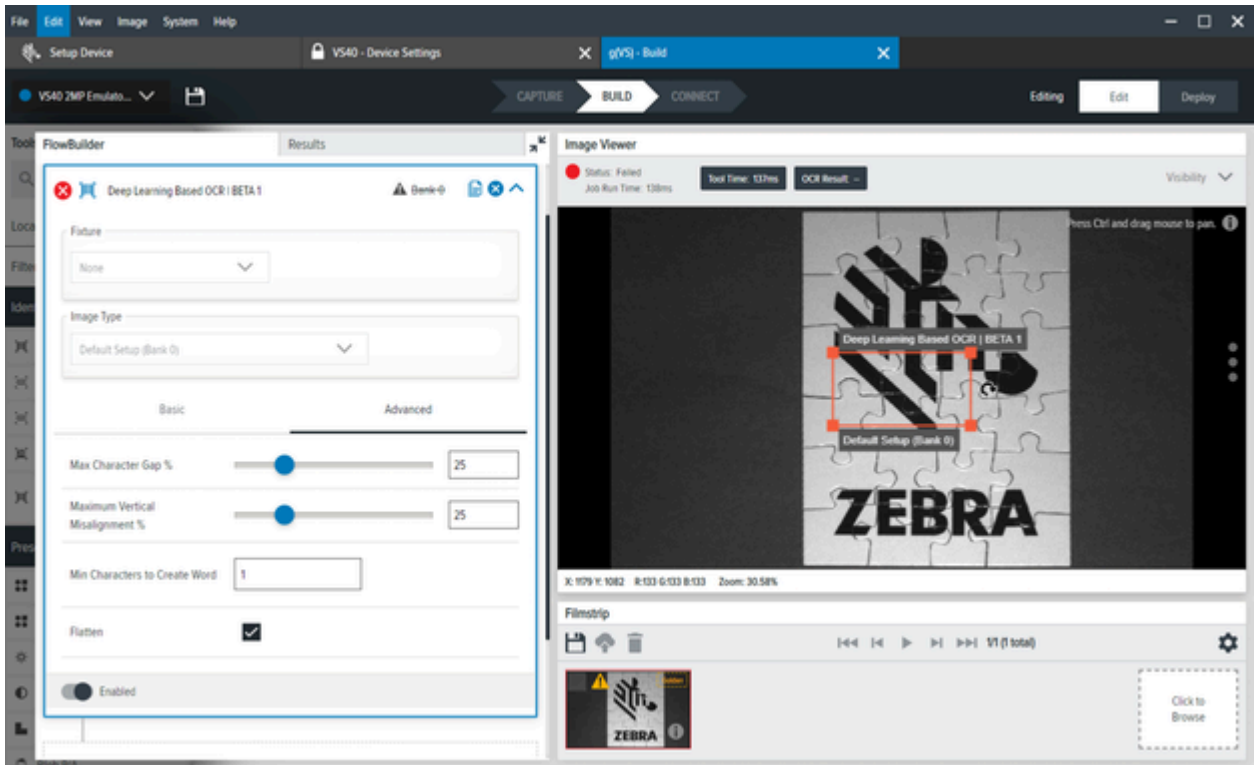
# Using Machine Vision Tools

The screenshot displays a machine vision software interface with the following components:

- FlowBuilder (Left Panel):** Configured for "Object PIA 1". It includes a "RUN" button, a "ZEBRA" logo, and various settings:
  - Feature: None
  - Image Type: Default Setup (Bank 0)
  - Buttons: RECAPTURE, RETAIN
  - GENERAL: Acceptance Threshold (70), Candidate Threshold (50), Timeout (2000 ms), Invert Pass/Fail Result (unchecked), Enabled (checked).
  - ADVANCED: END, CONFIGURE RESULTS
  - Advanced Pass/Fail Configuration (unchecked)
- Image Viewer (Right Panel):** Shows a live view of a Zebra S10 device. A green bounding box highlights the Zebra logo on the label. Metadata at the top includes: Status: Pass, Job Run Time: 6ms, Tool Time: 5ms, Score: 95.5% match, X: 763.0, Y: 471.5, Angle: 309.9°.
- Filmstrip (Bottom):** A sequence of frames showing the device being inspected. The current frame is highlighted with a checkmark.

## Advanced Deep Learning OCR Settings

Configure Advanced Deep Learning OCR settings such as character gap percentage, vertical misalignment percentage, minimum characters to create a line, and flatten.





**Table 51** Advanced Deep Learning OCR Settings

Setting	Description
Minimum Character Gap Percentage	<p>The maximum horizontal gap between joint characters' boxes is denoted as a percentage of A char height.</p> <ul style="list-style-type: none"> <li>• Minimum Value: 0%</li> <li>• Default Value: 25%</li> <li>• Maximum Value: 100%</li> </ul>
Maximum Vertical Misalignment Percentage	<p>The Maximum vertical misalignment between joint character boxes is denoted as a percentage of A char height.</p> <p>Default value: 0.25f</p> <ul style="list-style-type: none"> <li>• Minimum Value: 0%</li> <li>• Default Value: 25%</li> <li>• Maximum Value: 100%</li> </ul>



**Table 51** Advanced Deep Learning OCR Settings (Continued)

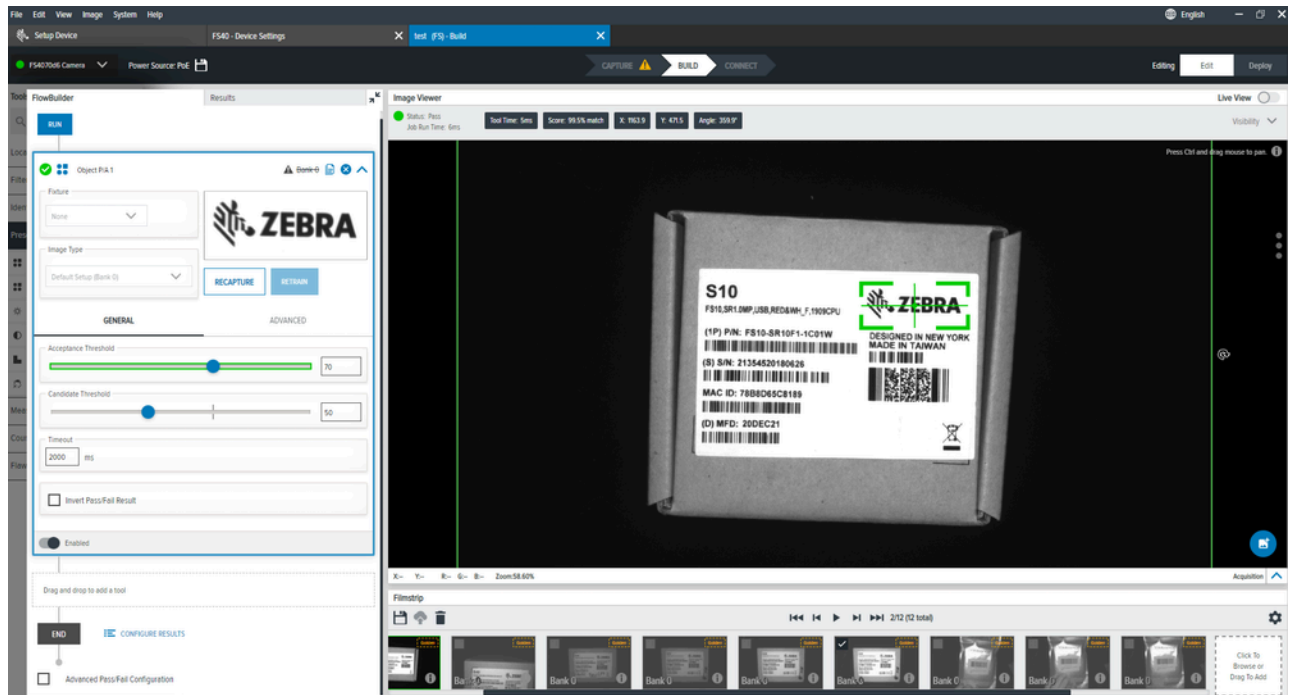
Setting	Description
Minimum Characters to Create a Line	Determine the minimum number of characters to create a line. Default value: 1   <b>NOTE:</b> can also be described as a Block or Word for the utilization of this tool.
Flatten	If True, it concatenates the words on the line into a single result string. Otherwise, each word is a separate result string. Default value: False.   <b>NOTE:</b> It is generally recommended to enable this setting.

## Presence/Absence Tools

Use Presence/Absence tools to detect specific objects or patterns within a user-defined region of interest.

### Object Presence Absence

The Object Presence Absence tool verifies the presence or absence of a specific pattern or object within a user-defined region of interest.



**Table 52** General Object Presence Absence Settings

Settings	Description
Acceptance Threshold	Select a minimum match score required to be considered a passing match. If multiple object match scores exceed this minimum, the highest matching object score is used as the final match.
Candidate Threshold	The threshold for a match of the trained pattern to a pattern in the acquired image.

### Advanced Object Presence Absence Settings

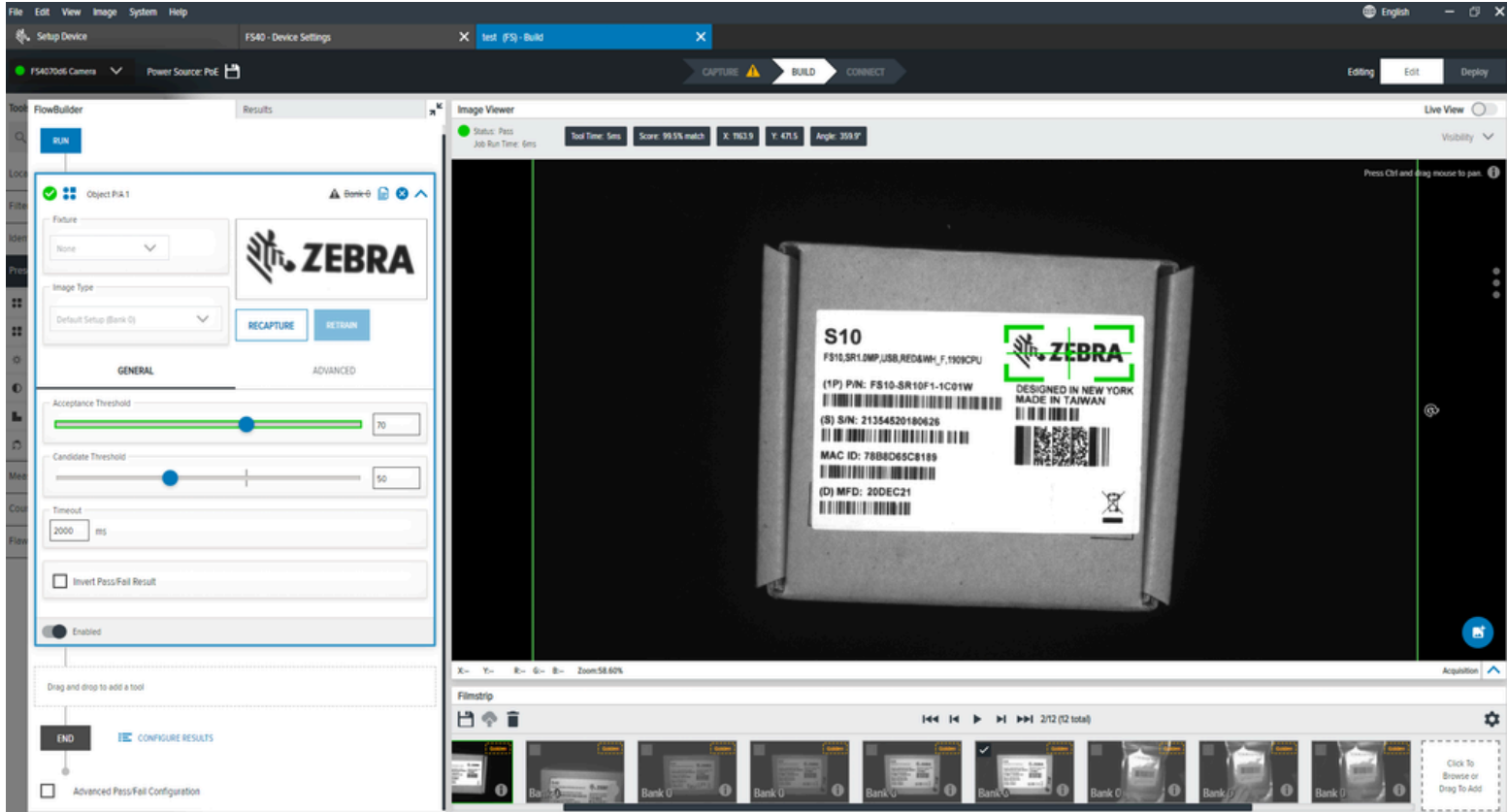
Configure Advanced Object Presence Absence settings such as performance control, noise, rotation threshold, and scale deviation.

**Table 53** Advanced Object Presence Absence Settings

Settings	Description
Performance Control	A selector to choose the best coarseness and search type combinations for a more performant search.
Noise	This filter removes pixel-level noise but preserves edge data.
Rotation Threshold	A minimum match score is required to be considered a passing match. If multiple object match scores are above the minimum, the highest matching object score is not used as the final match.
Allow Scale Deviation	When enabled, this setting allows the location of objects slightly smaller or larger than the object used during the creation of the model.

## Object Plus Presence Absence

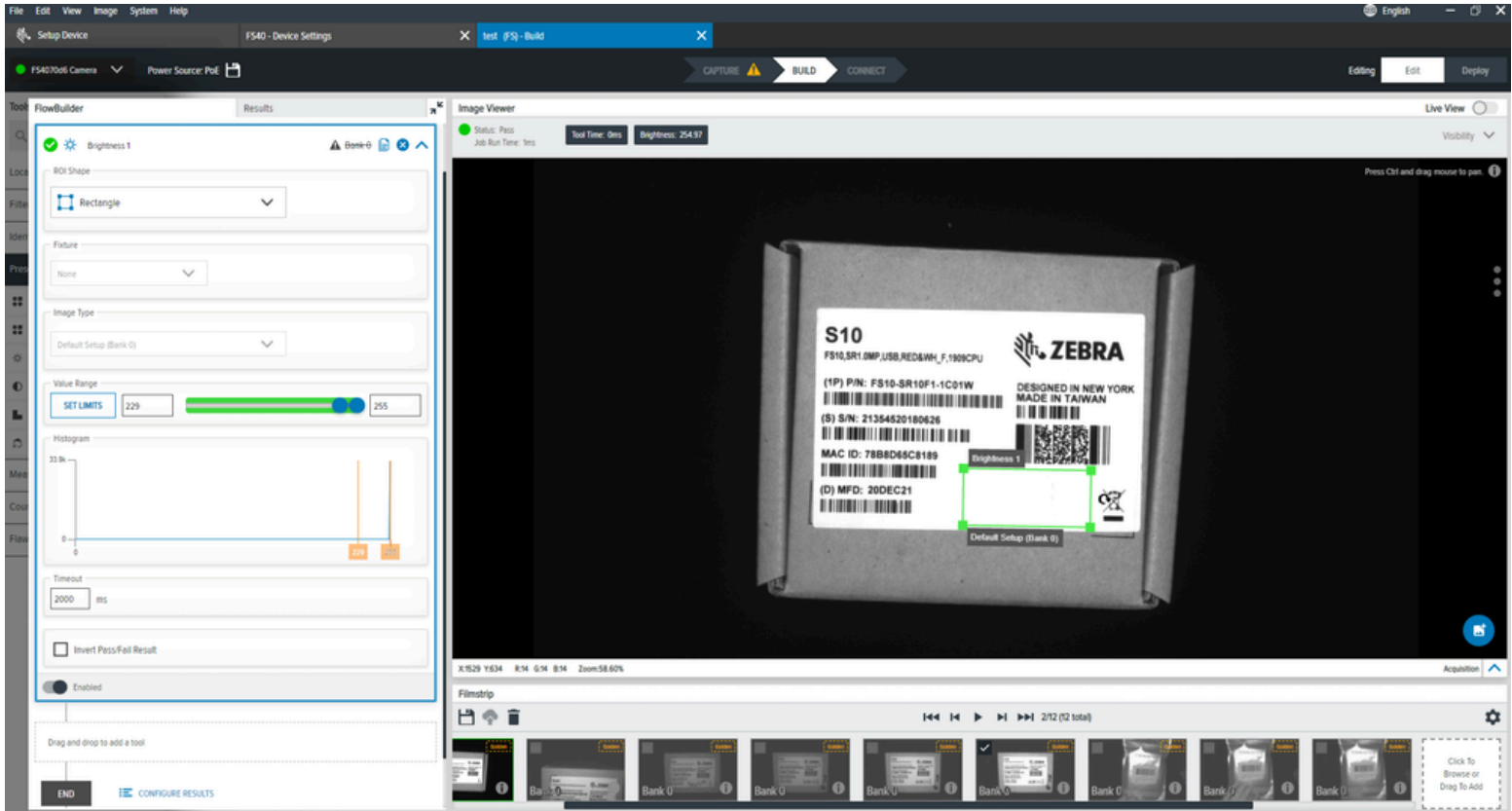
The Object Plus Presence Absence tool finds specific patterns in a specified region of interest and evaluates them based on advanced characteristics such as minimum edge contrast and scale factor.



Settings	Description
Acceptance Threshold	The minimum match score required to be considered a passing match. If multiple object match scores exceed this minimum, the highest matching object score is used as the final match.
Candidate Threshold	The threshold for a match of the trained pattern to a pattern in the acquired image.

## Brightness

The Brightness tool calculates the average pixel brightness value in a user-defined region of interest.

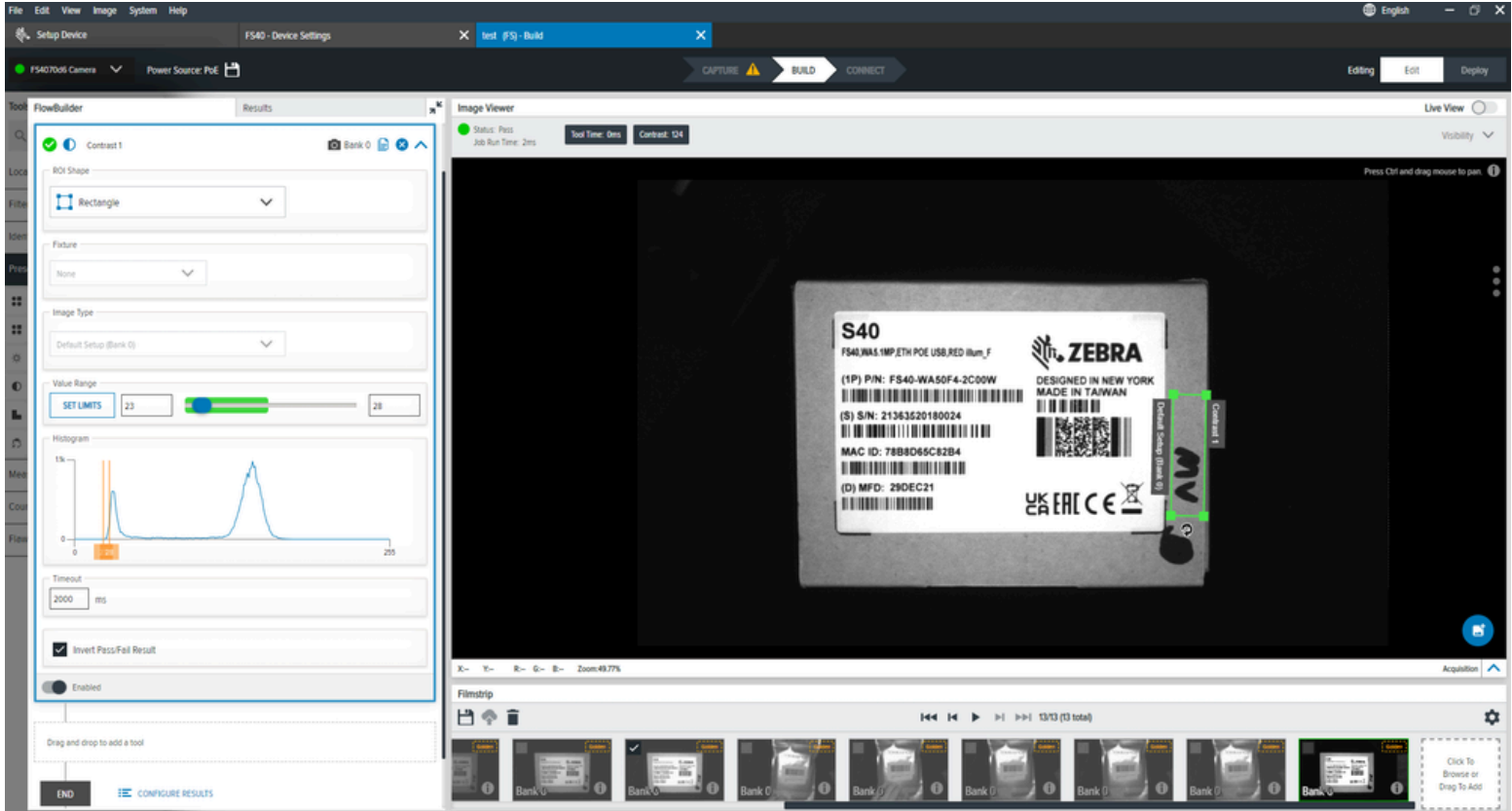


**Table 54** General Brightness Settings

Settings	Description
Fixture	Determine the fixture for the ROI shape.
Image Type	Select which image this inspection tool should use.
Value Range	Set the minimum and maximum values.
Histogram	Shows the number of pixels at each value.

## Contrast

The Contrast Tool calculates the maximum and minimum pixel intensity difference in a user-defined region of interest.

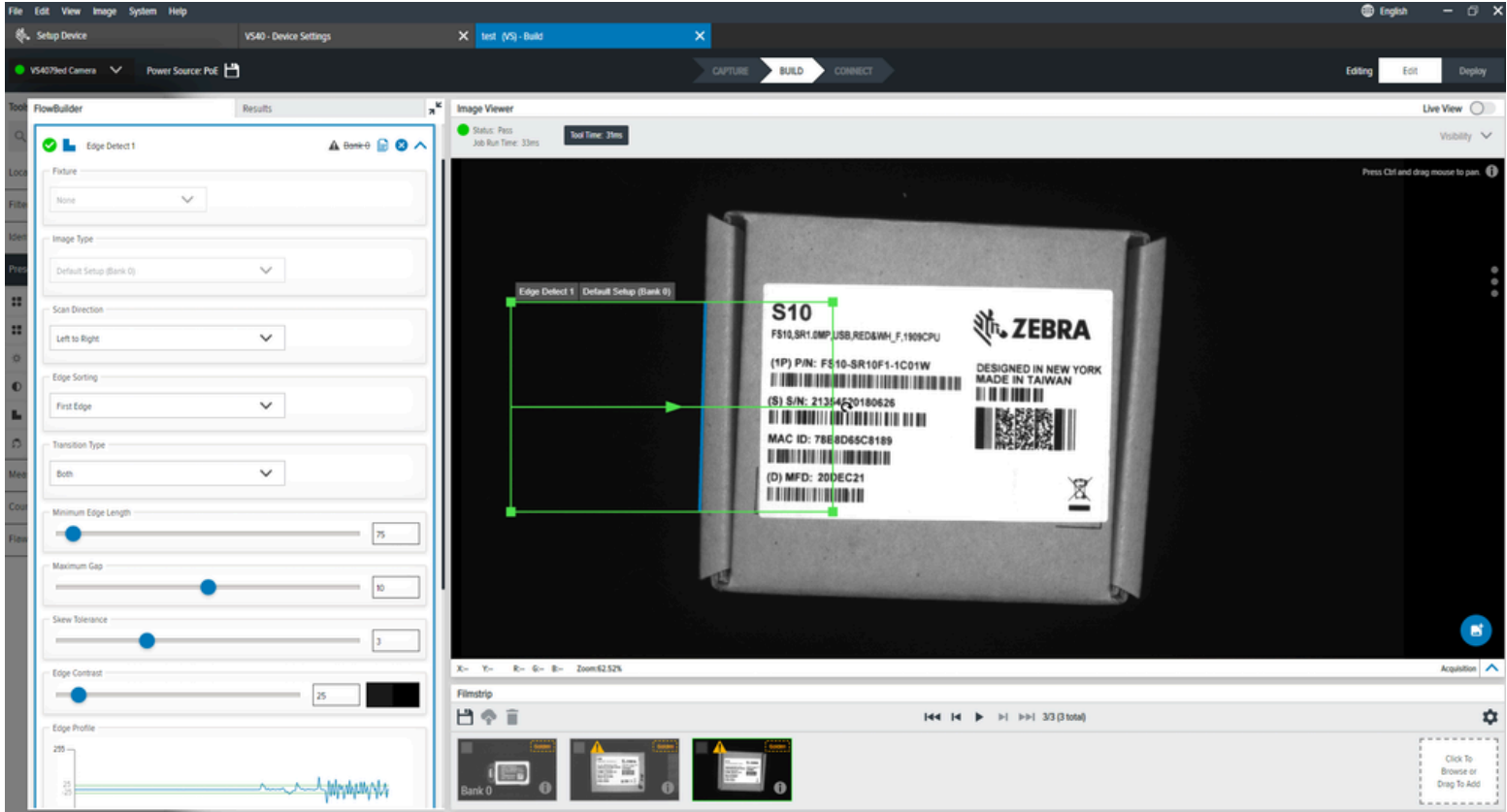


**Table 55** Contrast Settings

Settings	Description
Image Type	Select which image this inspection tool should use.
Value Range	Set the minimum and maximum values.
Histogram	Shows the number of pixels at each value.

## Edge Detect

The Edge Detect tool identifies transitions based on the highest contrast in a user-defined region of interest.



**Table 56** Edge Detect Settings

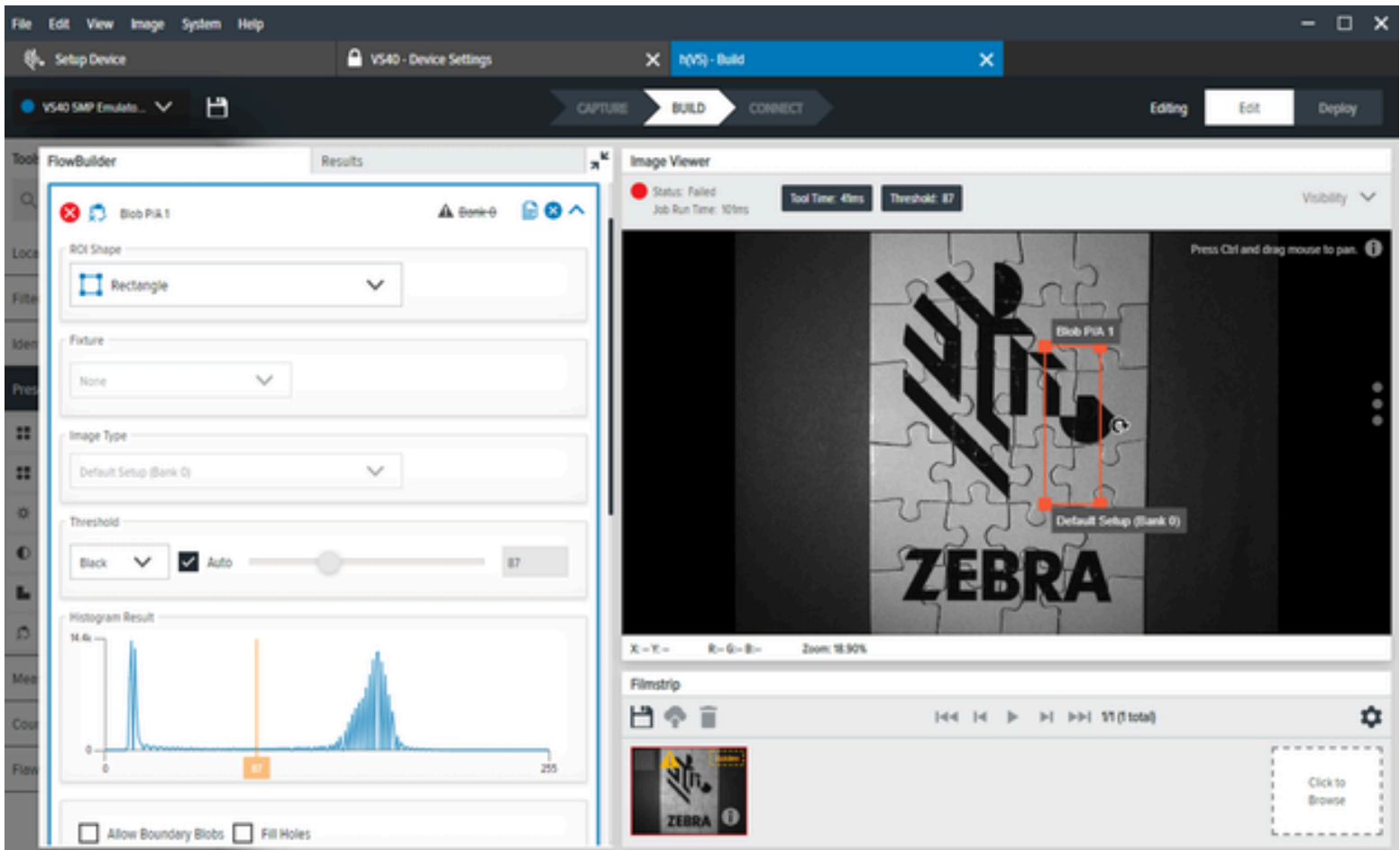
Settings	Description
Fixture	Select a previous locate tool result to position this tool's ROI.
Image Type	Select which image type this tool uses.
Scan Direction	Set the direction that the tool uses when searching for edges.
Edge Sorting	Refine a collection of found edges to a single best edge.
Transition Type	Select the type of edge transition used to find the edges.
Minimum Edge Length	The minimum length in pixels of an edge to use.
Maximum Gap	The maximum size in pixels to consider in gaps of the edge.
Skew Tolerance	Degrees to attempt to match the skew of the line if it is not straight.
Edge Contrast	Threshold acceptance to consider a line.

**Table 56** Edge Detect Settings (Continued)

Settings	Description
Edge Profile	Displays the contrast score of the features across the region of interest.

## Blob Presence Absence

The Blob Presence/Absence tool verifies the presence or absence of a blob within a user-defined region of interest.



**Table 57** Blob Presence Absence

Setting	Description
Image Type	Select which image this tool should use.
Threshold	The algorithm detects the best threshold for the tool to use
Histogram Result	Sets the number of pixels at each value.

**Table 57** Blob Presence Absence (Continued)

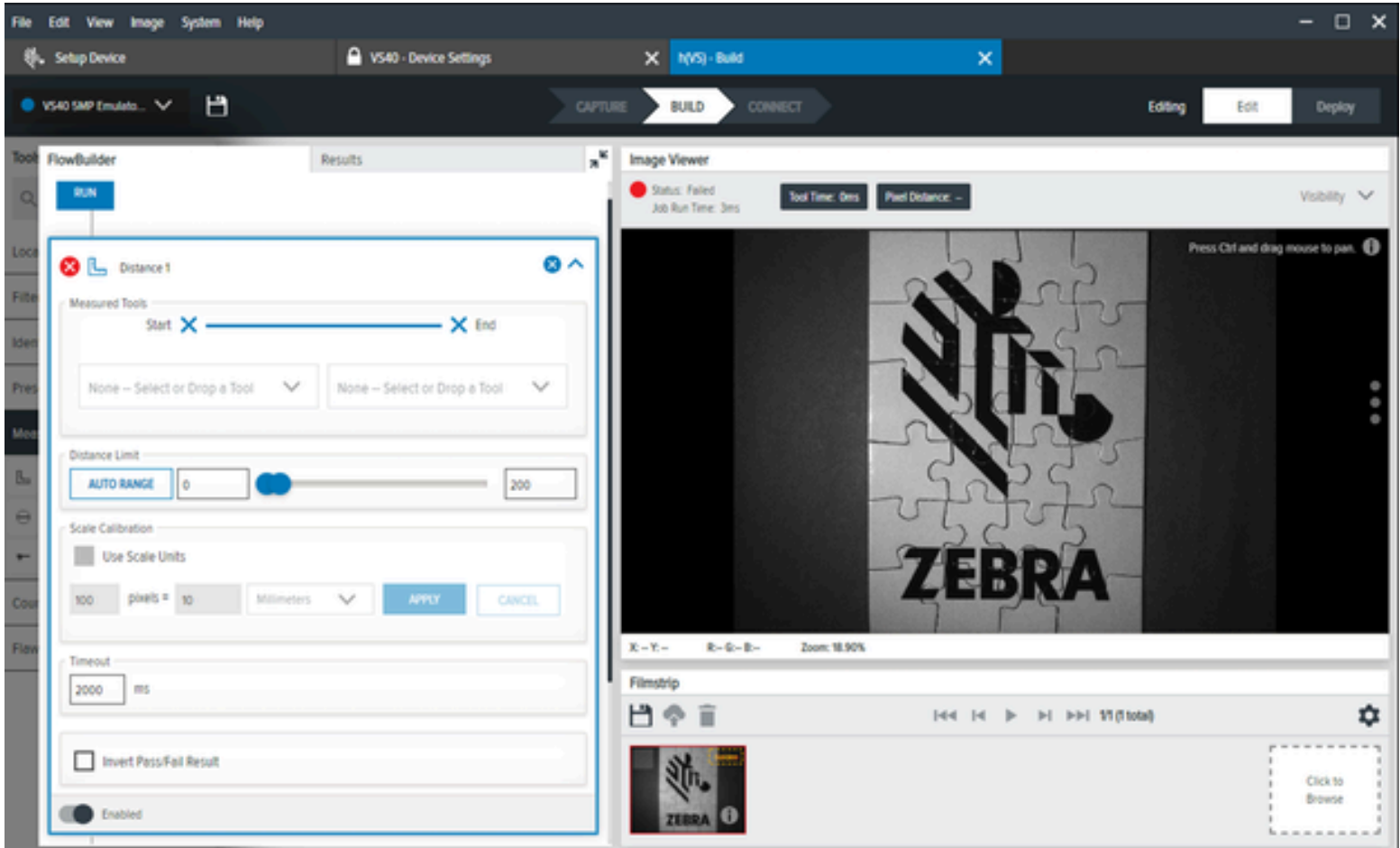
Setting	Description
Filters	Apply filters to set the criteria used to consider a blob valid for this tool.
Sorting	Define the priority for selecting a blob to return.

## Measurement Tools

Use measurement tools to measure the distance between two objects, the width of an object, or the diameter of a circle in the region of interest.

### Distance

The Distance tool determines the space between two specifically defined objects or patterns in an image.



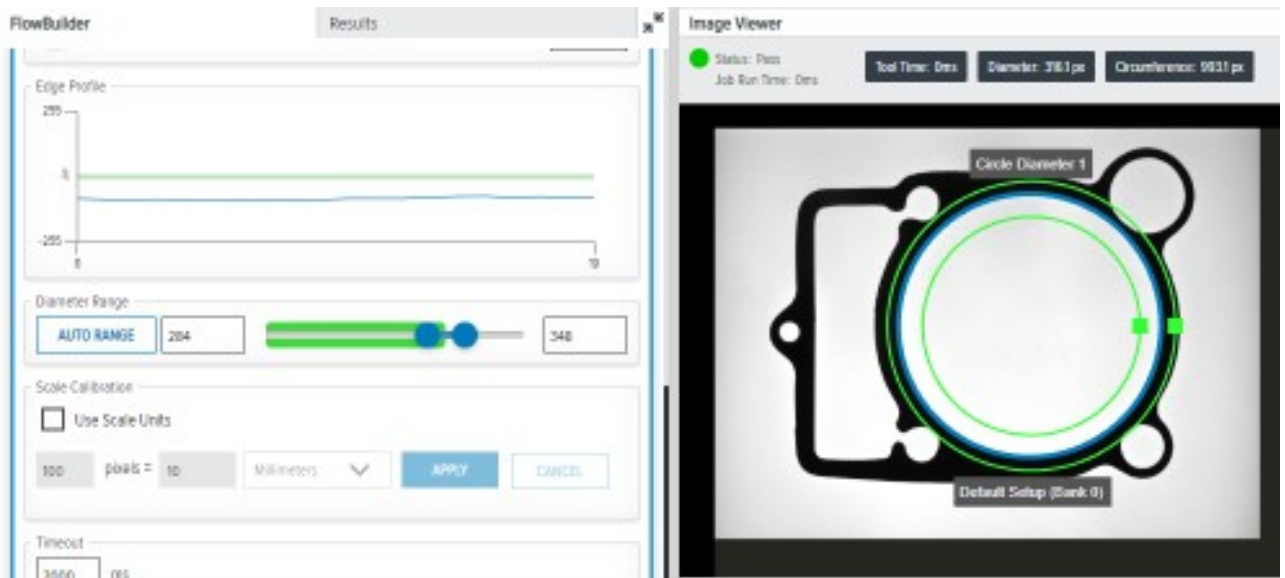


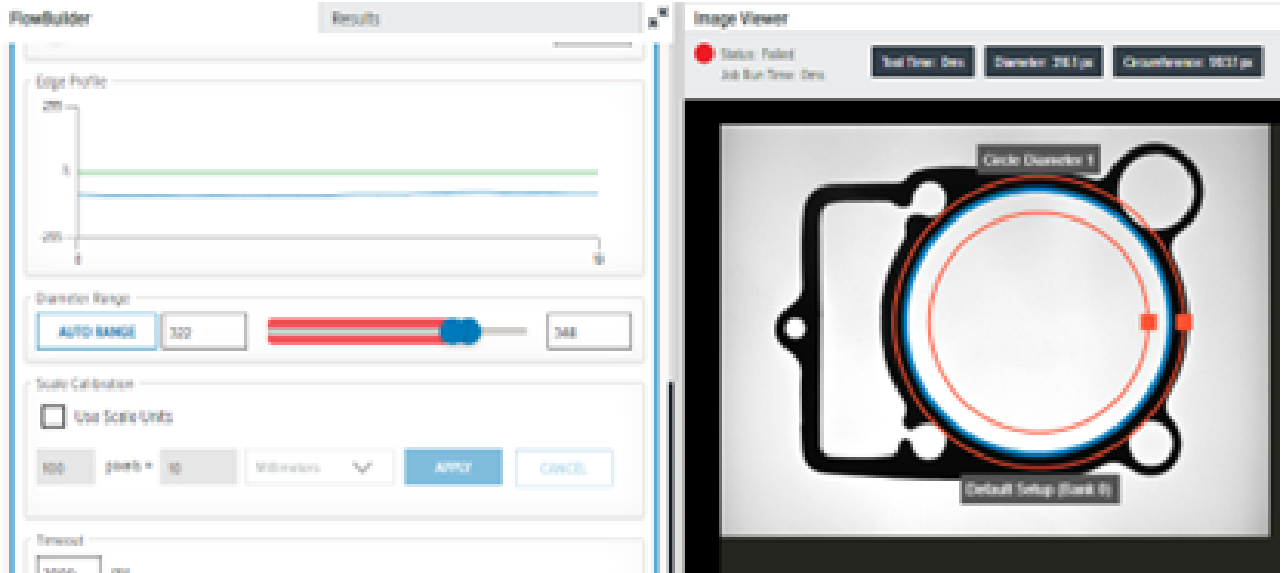
**Table 58** Distance Tool Settings

Settings	Description
Measured Tools	<p>There are four different options for where to measure edges:</p> <ul style="list-style-type: none"> <li>• Left - measures from left or top of an edge.</li> <li>• Middle - measures from the middle of an edge</li> <li>• Right - measures from right/bottom of an edge</li> <li>• Perpendicular/Bottom - creates a measuring line perpendicular to this edge, extending until it intersects with another edge. Select an edge on one side.</li> </ul>
Distance Limit	Determine the minimum and maximum values.
Scale Calibration	Calibrate pixel values to engineering units measured in centimeters, millimeters, microns, or inches.

## Circle Diameter

The Circle Diameter tool measures the diameter of a circle located in the user-defined region of interest.





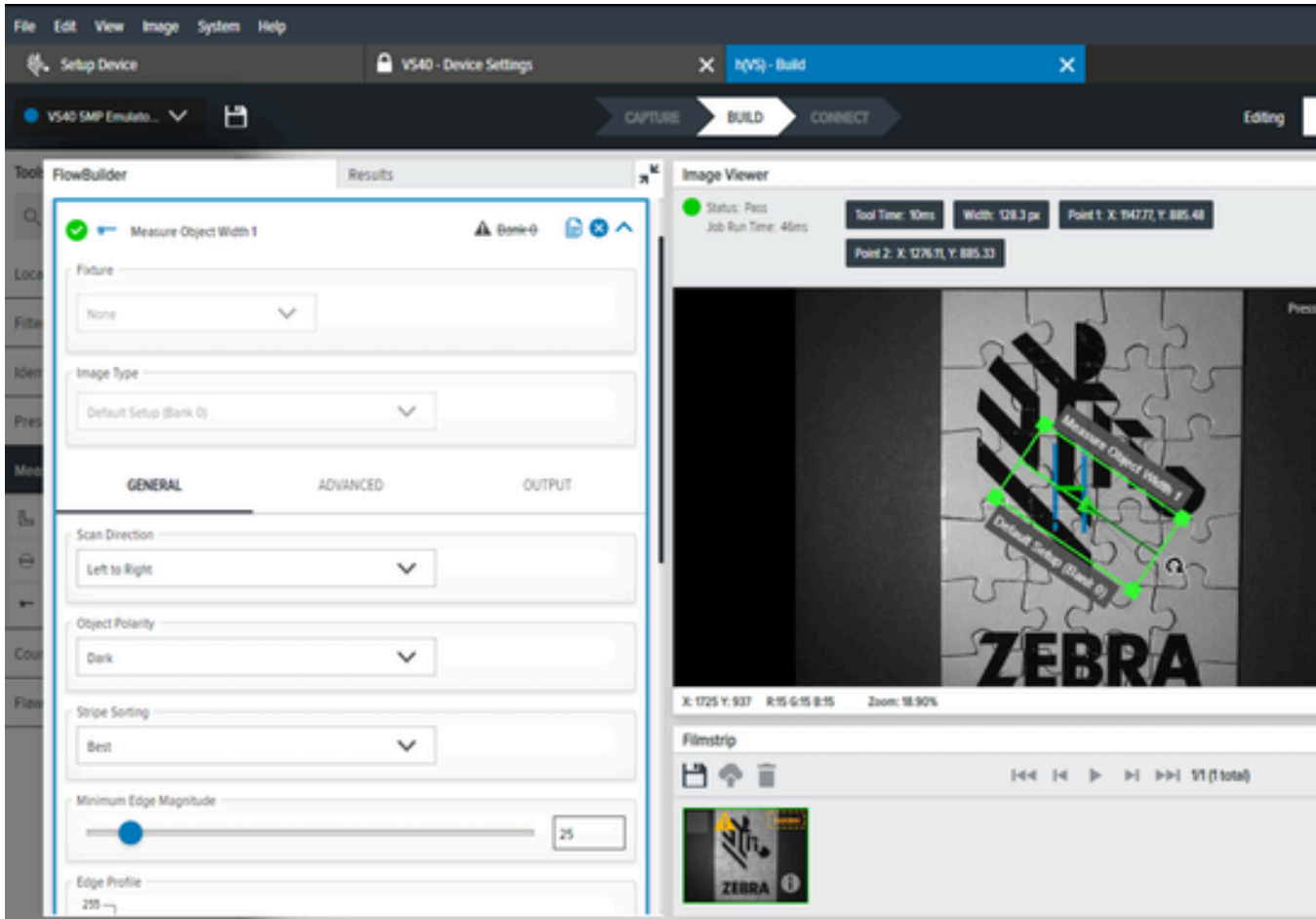
**Table 59** Circle Diameter Settings

Settings	Description
Find By	Define the approach used to search for the circle: <ul style="list-style-type: none"> <li>• Best Score</li> <li>• Largest Circle</li> <li>• Smallest Circle</li> </ul>
Transition Type	Select the type of edge transition used to find the circle: <ul style="list-style-type: none"> <li>• Both</li> <li>• Blended</li> <li>• Dark to Light</li> <li>• Light to Dark</li> </ul>
Minimum Edge Magnitude	Sets the minimum contrast value used to define the edge of the circle.
Edge Profile	Displays the contrast score of the features across ROI.
Diameter Range	The Diameter range parameter defines the diameter value for which the tool returns a pass or fail status.
Scale Calibration	Calibrates pixel values to engineering units.

## Measure Object Width

The Measure Object Width tool measures the width of an object present in an image.

The tool performs a series of scans along Scan Count parallel scan segments constructed from Measure Object Width ROI. The obtained points are then used for computing two parallel segments using a slightly modified segment-fitting routine. The Outlier Suppression parameter supports the process. Finally, the stripe widths and fitted segments' direction compute the object width.



**Table 60** Measure Object Width Settings

Setting	Description
Scan Direction	Set the direction that the tool uses when searching for edges.
Object Polarity	Determine the contrast type for the target object.
Stripe Sorting	Determine the mode of selection for the edges of the object.
Minimum Edge Magnitude	Set the minimum contrast value used to define object edges.
Edge Profile	Displays the contrast score of the features across the region of interest.

**Table 60** Measure Object Width Settings (Continued)

Setting	Description
Distance Limit	Configure the minimum and maximum distance values.
Scale Calibration	Calibrate scale values to engineering units.

### Advanced Measure Object Width Settings

Configure Advanced Measure Object Width settings such as scan width, scan count, and object outlier suppression.

**Table 61** Advanced Measure Object Width Settings

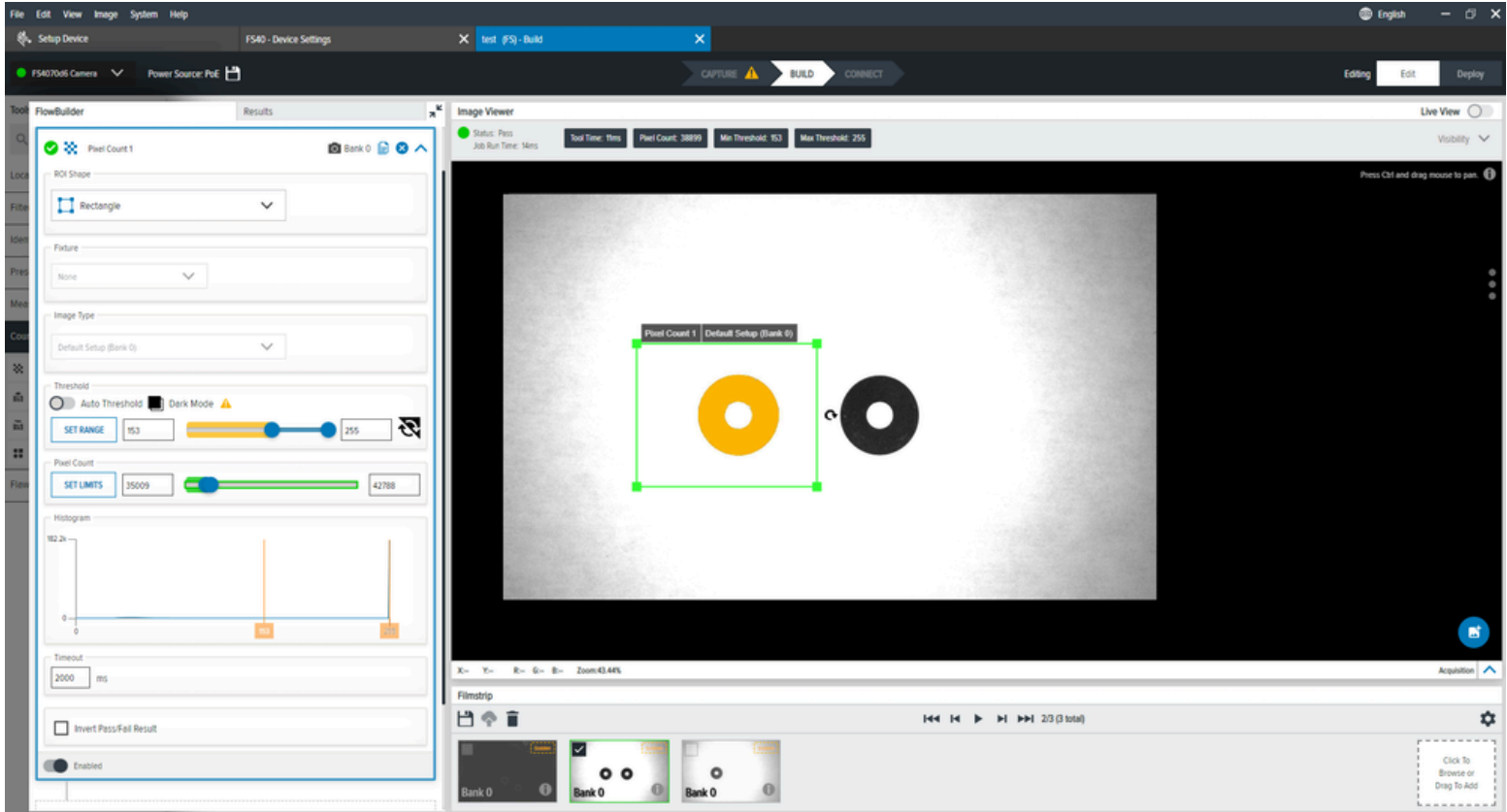
Setting	Description
Scan Width	Defines the minimum number of pixels to consider when searching for an edge.
Scan Count	Sets the number of scanning segments used across the region of interest to find object edges.
Object Outlier Suppression	When enabled, this setting reduces the impact of outlier points found on edges by suppressing the influence of values in a significant variance of most others on the result using Tukey's M-estimator.

## Counting Tools

Counting tools determine the instances of particular objects within a user-defined region of interest.

## Pixel Count

The Pixel Count tool provides the number of pixels of a user-specified value (0-255) within a user-defined region of interest.

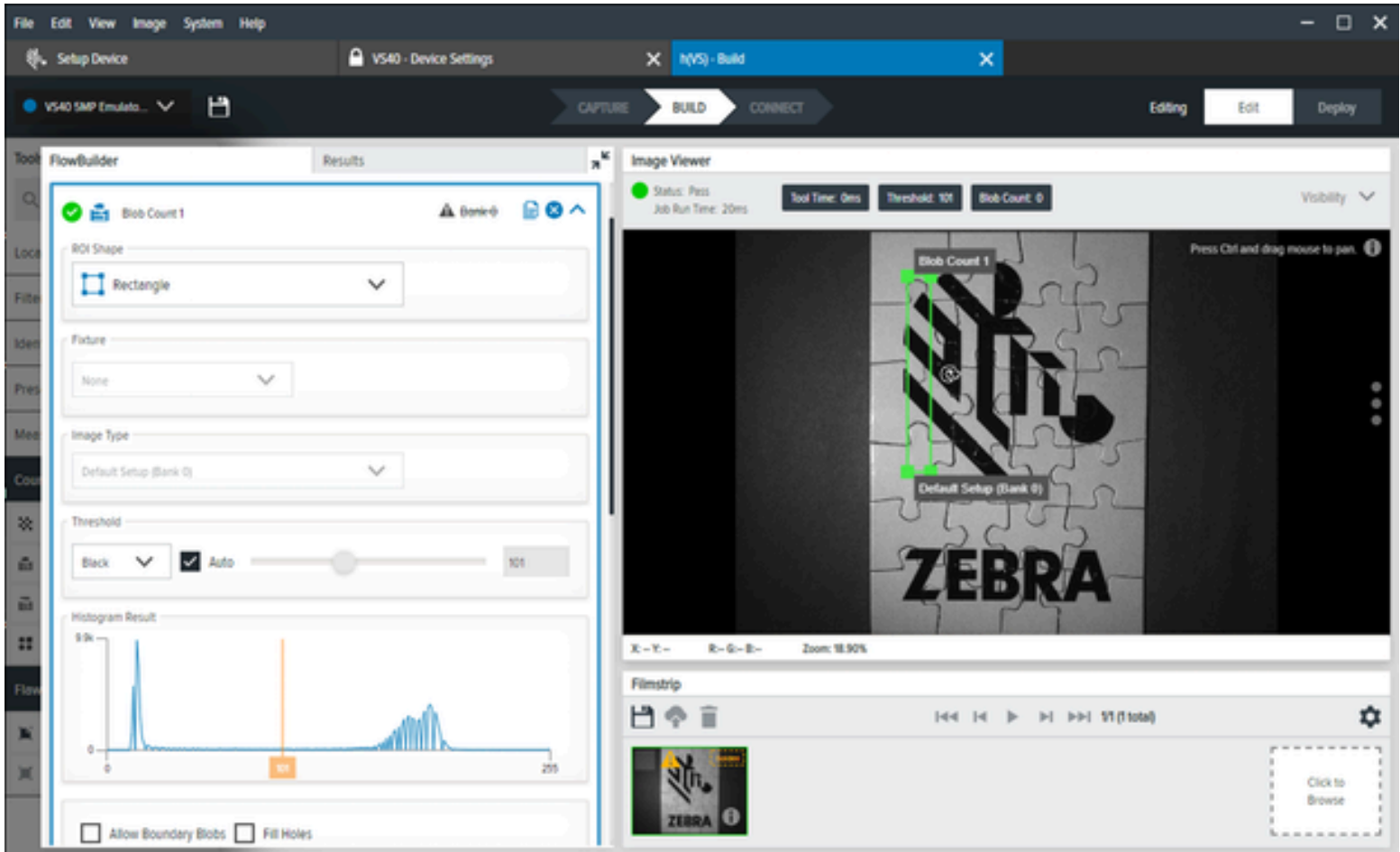


**Table 62** General Pixel Count Settings

Setting	Description
Threshold	The minimum and maximum threshold values for Pixel count.
Pixel Count	The minimum and maximum pixel count values are considered for passing.
Histogram	Shows the number of pixels at each value.

## Blob Count

The Blob Count tool counts the number of blobs that pass certain filter parameters within a region of interest.

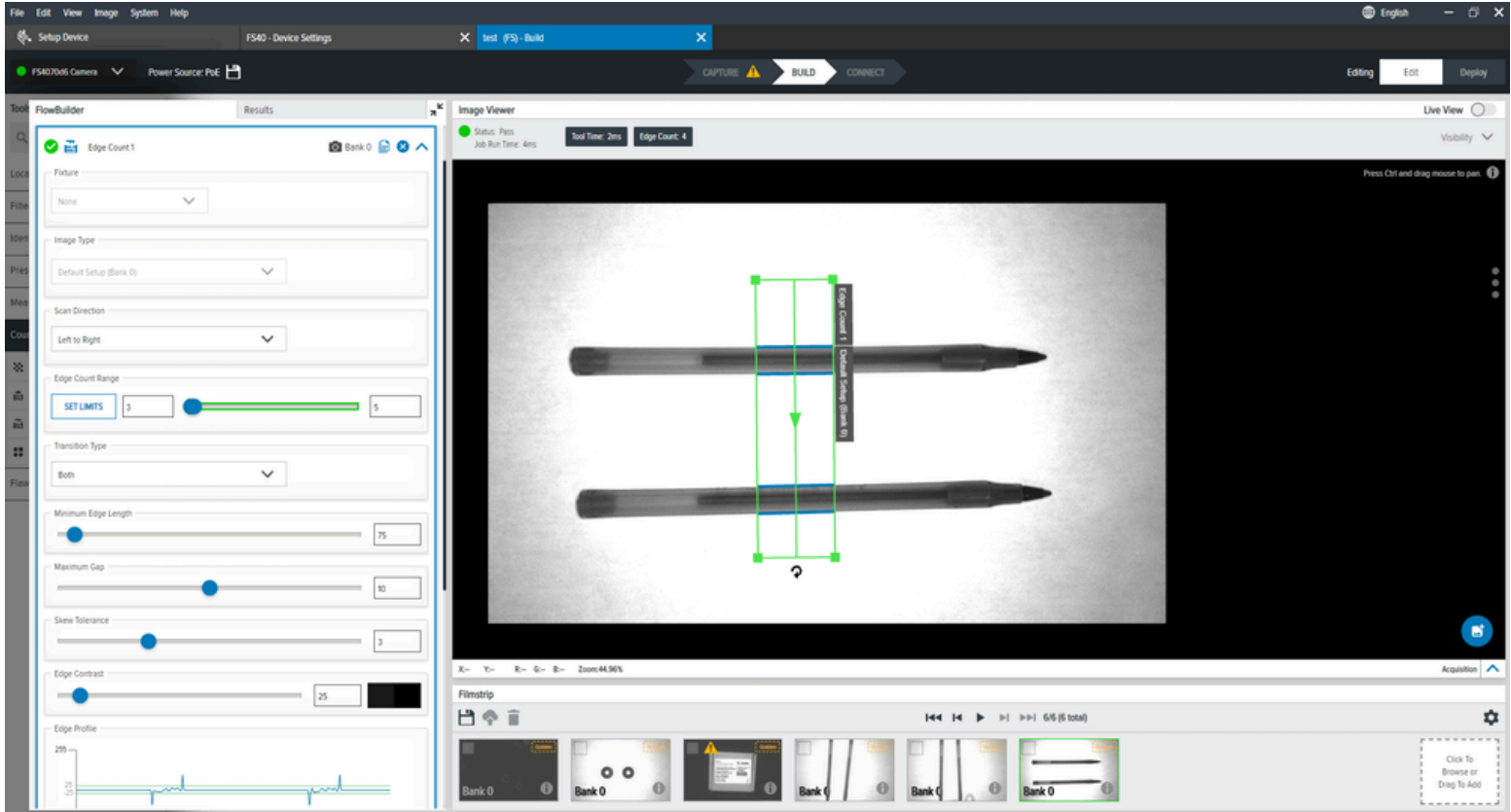


**Table 63** Blob Count Settings

Settings	Description
Threshold	Determine the black or white threshold from the drop-down and use the slider to change the threshold value.
Histogram Result	Visual representation of the number of pixels found at each greyscale level.
Blob Count	The minimum and maximum blob count values are considered for passing.
Filters	Apply filters to set the criteria to consider a blob valid for this tool.

## Edge Count

The Edge Count tool identifies transitions based on the highest contrast level in a user-defined region of interest.



**Table 64** Edge Count Settings

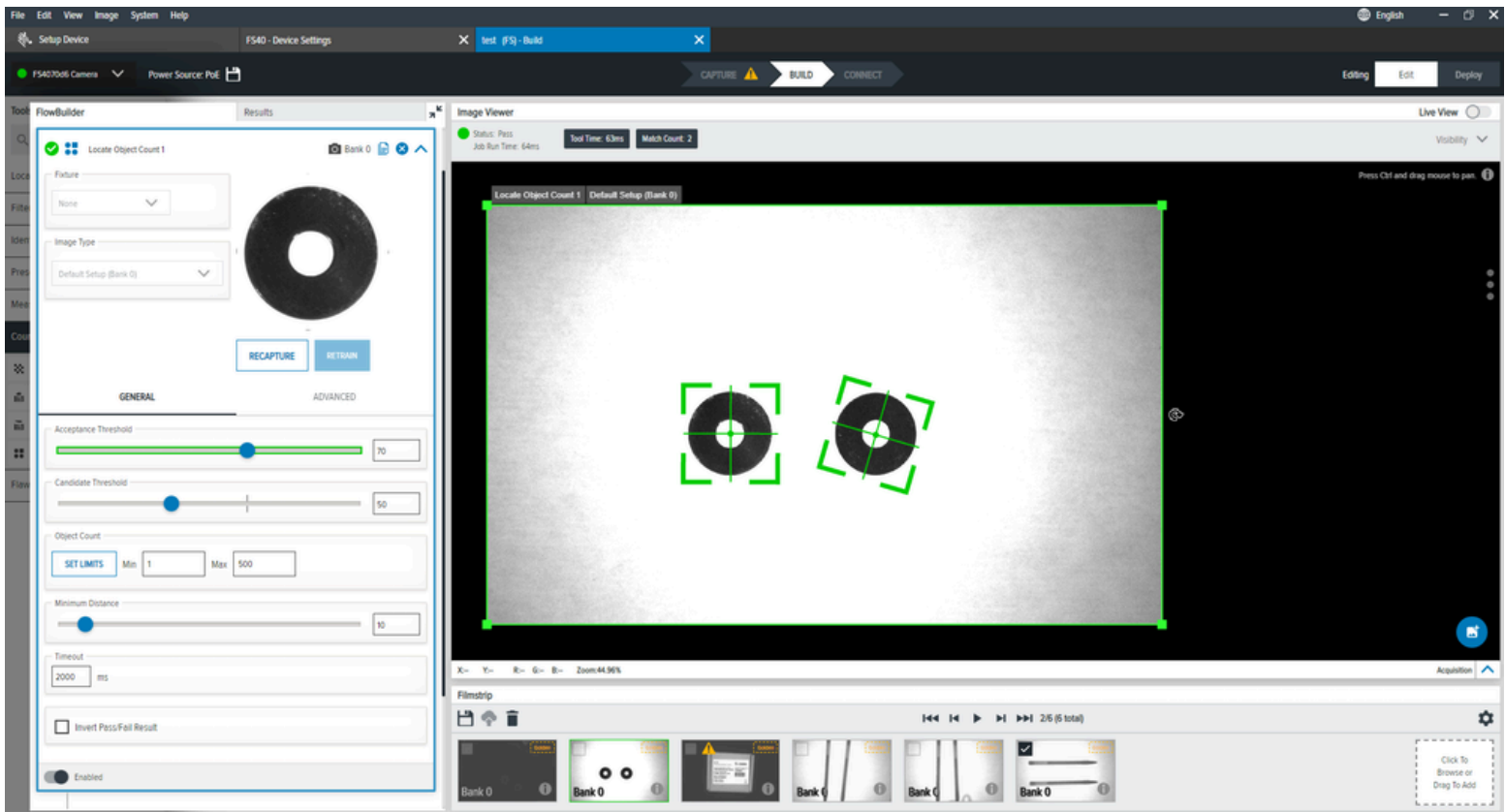
Settings	Description
Scan Direction	Set the direction that the tool uses when searching for edges. <ul style="list-style-type: none"> <li>Left to Right</li> <li>Right to Left</li> <li>Top to Bottom</li> <li>Bottom to Top</li> </ul>
Edge Count Range	The minimum and maximum count value that is considered a pass.
Transition Type	Select the type of edge transition used to find the circle starting from the center outwards.
Minimum Edge Length	The minimum length in pixels of an edge to use.

**Table 64** Edge Count Settings (Continued)

Settings	Description
Maximum Gap	The maximum size in pixels to consider in gaps of the edge.
Skew Tolerance	of degrees to attempt to match the skew of the line if it is not straight.
Edge Contrast	Threshold acceptance to consider a line.
Edge Profile	Displays the contrast score of the features across the region of interest.

## Locate Object Count

Use the Locate Object Count tool to find a pattern in the image and set a match threshold for a candidate to be considered a match.





**Table 65** General Locate Object Count Settings

Settings	Description
Acceptance Threshold	The minimum match score required to be considered a passing match. If multiple object match scores are above this minimum, the highest matching object score is the final match.
Candidate Threshold	The threshold matches the trained pattern to a pattern in the acquired image.
Object Count	The minimum match score required to be a passing match. If multiple object match scores are above this minimum, the highest matching object score becomes the final match.
Minimum Distance	Set the minimum distance required between found objects.

### Advanced Locate Object Count Settings

Configure Advanced Locate Object Count settings such as performance control, noise, inverting the pass/fail result, and setting a minimum distance.

**Table 66** Advanced Locate Object Count Settings

Settings	Description
Performance Control	Use the selector to choose the best coarseness and search type combinations for a more performant search.
Noise	Removes pixel-level noise but preserves edge data.
Invert Pass/Fail Result	Inverts the result from the tool.
Minimum Distance	Sets the Minimum distance required between identified objects.

## Flaw Detection

Flaw Detection tools perform a pixel-to-pixel comparison of two images. This is helpful for cases where the object's surface or shape is complex.

- Edges - comparison based on objects' edges. This method is helpful when defects occur on the object's edge, pixel comparisons fail due to different light reflections, or when checking the object's surface is unnecessary.
- Intensity - comparison based on pixel intensity. Using this method, two images are compared pixel-by-pixel, and the defect is classified based on pixel intensity differences. This technique helps find defects like smudges or scratches.

The model uses a previously prepared image to compare images from the device. This technique provides a quick comparison inspection when specific conditions are met, such as stable lighting conditions, camera position, and precise object positioning.

## Edges

The Edge tool compares edges given input image with an image stored in a model created in the Training tab. As a result, the tool creates a region containing only pixels with different edges.

This method helps find defects in the object's shape. Due to its resilience against pixel gray level changes, it is helpful in applications with changing light conditions.

Parameter Maximum Distance defines the maximum distances of two edges that should be treated as the same edge.

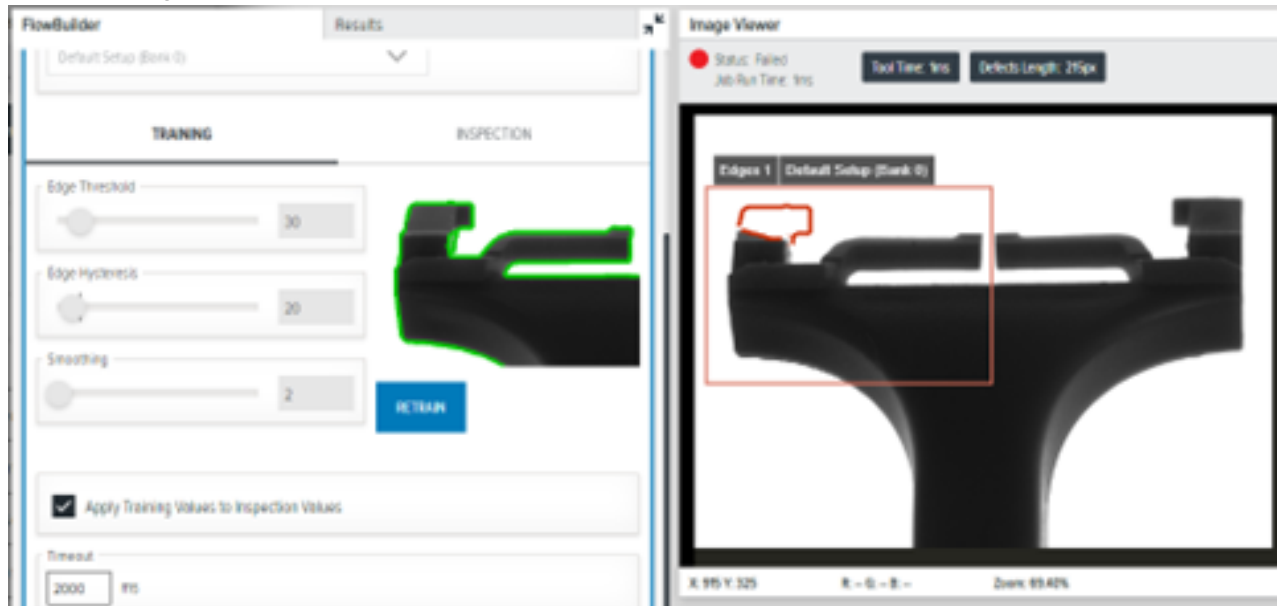
The **Edge Threshold** and **Edge Hysteresis** parameters in the **Inspection** tab should have the same value as in the **Training** tab.



**NOTE:** Increasing the Edge Hysteresis connects more pixels by detecting edges.

If the input image's brightness significantly differs from the brightness of the golden image used in the **Training** tab.


Decrease the **Edge Threshold** slightly to concentrate on missing edges or increase the value to focus on excessive edges.



**Table 67** Edges Settings

Setting	Description
Edge Threshold	Determine a sufficient edge strength. Edges of at least 30 are detected on the input image.

**Table 67** Edges Settings (Continued)

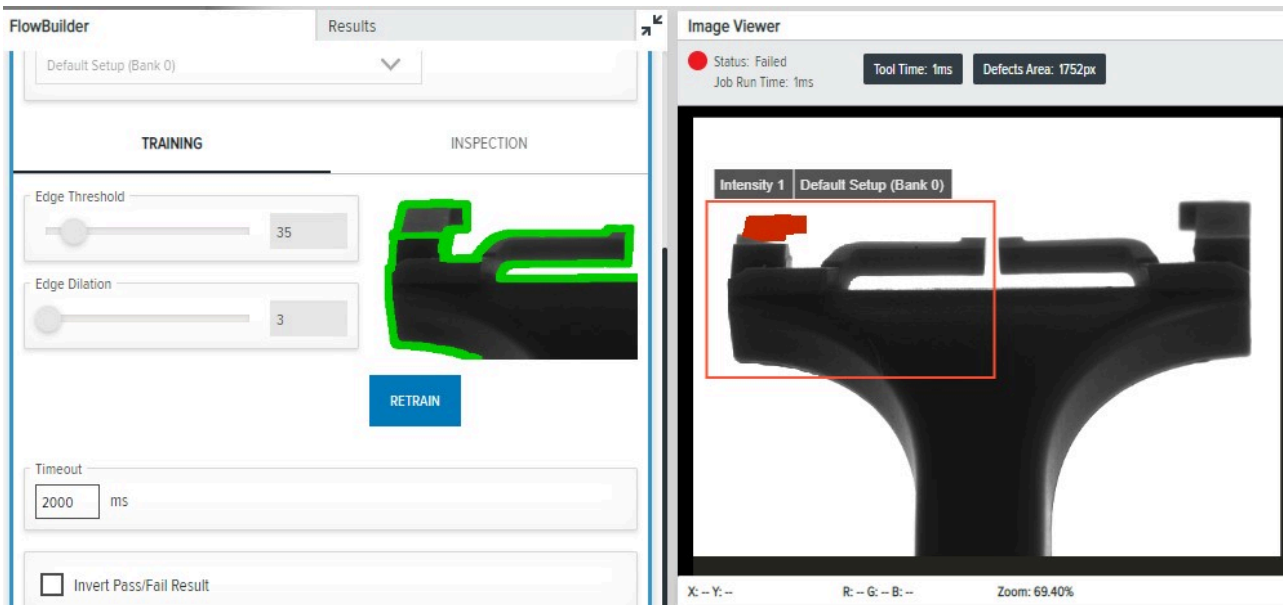
Setting	Description
Edge Hysteresis	<p>Determine the value by which the edge threshold decreases for edge points neighboring sufficiently strong edges.</p> <p> <b>NOTE:</b> Use this parameter to control how weak adjacent pixels can be connected to a strong pixel. A higher value connects more pixels</p>
Smoothing	Determine the tool's amount of horizontal and vertical smoothing to improve edge detection.

## Intensity

The intensity Tool detects edges given input image with an image stored in a model created in the Training tab and then, as a result, creates a region containing only pixels where edges are different.

This method is especially useful for finding defects in the object's shape. Due to its invulnerability to color changes, it may be used in appliances with changing light conditions. Parameter Maximum Distance defines the maximal distances of two edges that should be treated as the same edge.

The **Edge Threshold** and **Edge Hysteresis** parameters in the **Inspection** tab should have the same value as in the **Training** tab. The values should be changed, however, if the input image's brightness is significantly different from the brightness of the golden image used in the **Training** tab. The **Edge Threshold** can also be decreased slightly if one wants to concentrate on missing edges or increased to concentrate on excessive edges.



**Table 68** Intensity Settings

Setting	Description
Edge Threshold	Determine the minimum strength of the edges on the model where comparison is not performed.
Edge Dilation	Define how far from the detected edges comparison should not be performed.

# Upgrading a FS/VS Tools License

## FS/VS Licensing

There are two license types, Device Emulator Licenses and Device Upgrade Licenses. Device Emulator Licenses must be activated online. Device Upgrade licenses can be acquired online or offline using a .bin file. The activation of both licenses requires an Activation ID provided in the Entitlement Notification email.



**NOTE:** Ensure that your Date/Time is up to date before applying licenses. If the Date/Time is out of sync, unexpected behavior may occur, such as Device Upgrade Licenses appearing to be successfully applied, yet the tool that should be unlocked does not display in ToolBox when creating a job (for example, the OCR tool). If your clock is out of sync, update it using the Zebra Web HMI and reboot the device afterward. Verify that the time is updated by viewing the top-right bar in the Web HMI (green box) and restart Aurora Focus.

## Acquiring a License

For the customers, partners, and distributors that require a FS/VS Industrial Scanner product license for FS Decode and VS Machine Vision Tools through your Account Manager.

A perpetual license is a permanent license that is available for the lifespan of the device.

## License Acquisition Modes

Licenses can be acquired online or offline.

- Licensing Server (Online mode)
- Capability Response .bin File (Offline Mode)



**NOTE:** The upgrade and deactivation process for a license requires the device to be connected to an Ethernet network with an active internet connection. The device cannot utilize a computer's Internet connection (over USB-C or direct Ethernet connection to the computer) to perform the upgrade. When using an FS10 device, manually connect using a bridge.

### See Also

[Bridging an Internet Connection to FS/VS Devices](#)

## Acquiring an Activation ID

The Activation ID is the unique 32-bit alpha-numeric number provided when the license is procured.

This number acts as the key to enable the device to activate the license. An example of the Activation ID is **xssn-ixa3-tdgb-elsi-mxd8-q6kq-cw50-20bp**

**Figure 3** Entitlement Email

Thank you for your Zebra Technologies software order. This email confirms receipt of your order and provides you with the associated Activation ID(s) for your licenses and link to access software downloads. Your use of the software is subject to your agreement of the terms and conditions of any end user license agreement associated with the software and may not be copied or further distributed unless authorized by Zebra Technologies Corporation.

We appreciate your feedback to help improve services related to Zebra Software Licensing, and kindly request you to fill out a quick anonymous satisfaction survey available [here](#).

1. Please validate the information below is correct. If incorrect, please contact [Zebra Technical Support](#) before proceeding.
  - o Account Name: Information Not Available  
Account Type: End Customer  
Contact Name:  
Contact Email:
  - o Account Name: Automation Distribution Inc  
Account Type: Zebra Distributor  
Contact Name:  
Contact Email:
2. Use the Activation ID(s) to activate the licenses you recently purchased with Sales Order ID: 92940778
  - o Activation ID: xssn-ixa3-tdgb-elsi-mxd8-q6kq-cw50-20bp  
Product Name: Upgrade License for Deep Learning OCR for FS models  
Product Description: Upgrade License for Deep Learning OCR for FS models  
Sales Order ID: 92940778  
Purchase Order ID: 85523089  
Quantity: 4  
Start Date: May 8, 2023  
Expiration Date: Permanent
3. Zebra Software Licenses Portal Access:
  - o End Customer, First Time User:
    - Click [here](#) to register with your entitlement ID  
Entitlement ID: 0rge-tkty-nbgo-n8ke-9hqr-5ymr-27i8-bizw
  - o Already have access, click [here](#)
  - o Distributor/Partner, First Time User
    - Please register for 'Software License Management' access within [Partner Gateway](#) > Connecting Tools > Sales Enablement section
    - If the "Software License Management" access option is not available within the Partner Gateway, please contact the Partner Interaction Center for access



**NOTE:** Refer to the link shared in the confirmation e-mail when the license is procured for credentials.

## Obtaining an Emulator License Key

If no hardware devices are discoverable by Aurora Focus, a license is required to access emulated devices. Follow the link to create an account and register for the application, and set up jobs on emulated devices.

After the account has been successfully created, a confirmation email is sent with the Activation IDs for the licenses and account details, such as the start and expiration date of the license. Licenses are valid for one year after activation.



**NOTE:** After activating the emulator license, the host PC is locked with the associated account on the licensing server.



**NOTE:** The confirmation email stores essential information used to verify the account and renew an expired license. Save this email for future reference.

### Activating an Emulator License with Zebra Aurora

To connect to the device from Zebra Aurora while online, launch the browser from within the application to connect to the Web HMI and enter the Activation ID.

To activate a license if the device is offline (intranet) or USB-only:

1. Connect the device to the desktop application.
2. Navigate to the license file on the License Manager screen.
3. Download the license file to the device.

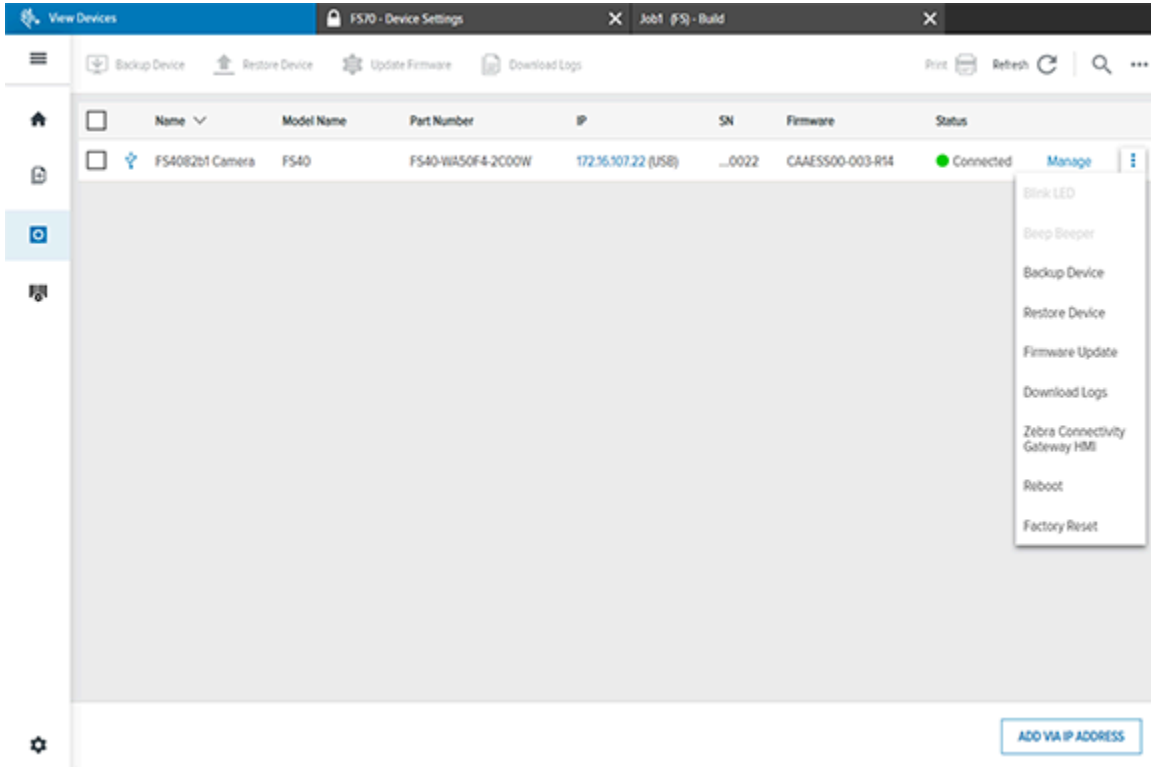
### Applying a Device Upgrade License (Online)



**NOTE:** Suppose you use a USB or Ethernet cable directly connected from the device to your laptop. In that case, the device cannot leverage the host-laptop internet connection without manual bridging/sharing of internet connection across adaptors. For more information, go to the Bridging an internet Connection to FS/VS Devices section.

# Upgrading a FS/VS Tools License

1. Open the Zebra Web HMI by entering the device's IP address into a web browser or clicking the IP address link under **View Devices** in Zebra Aurora Focus.



2. Log in to the HMI using the default credentials for an administrator account:
  - a. Username: admin
  - b. Password: admin



3. Select the gear icon to access the settings menu.



4. Select the **Licensing** tab.
5. Select the **Online** option from the ACQUIRE LICENSE METHOD.
6. Enter the following Licensing Server URL in the LICENSING SERVER URL form field: [zebra-licensing.flexnetoperations.com/flexnet/deviceservices](https://zebra-licensing.flexnetoperations.com/flexnet/deviceservices)
7. Enter the **Activation ID** that is provided via email when the license is procured.



**NOTE:** To circumvent a firewall while contacting the cloud-based license server. For detailed instructions, visit: [supportcommunity.zebra.com/s/article/ZSL-Licensing-Server-Connectivity](https://supportcommunity.zebra.com/s/article/ZSL-Licensing-Server-Connectivity)

8. Click **Activate License** to acquire the license. Available Licenses contain the following information:
  - a) License Index: Lists the license number
  - b) License Name: This is the feature name of the license, for example, xS-feature-vspkg.
  - c) License Version: Lists the license version number.
  - d) Expiration Date: Expiration date for the trial license. For a Perpetual license, this field shows permanently.
  - e) License Count: Lists the number of licenses allocated to the device.
  - f) Host ID: A unique number for the license server to identify the device. This number has both the devices' Part Number and Serial number. The example shown below is VS40-WA50P4-2100W\_12345678901234.
  - g) Release: Click **Discard** to release the license back to the license server from the device.

## Applying a Device Upgrade License (Offline)

Ensure you have the Device ID and the Activation ID information before downloading the capability response.

### Downloading the Offline License Upgrade .bin File

To download the Capability Response (Offline License Upgrade .bin File) from the licensing server:

1. Visit the following link and log in to enter the Zebra Licensing Server at: [zebra-licensing.flexnetoperations.com/](https://zebra-licensing.flexnetoperations.com/).
2. Enter the Username and Password.



Username\*

zslsystemtest@mailinator.com

Password\*

.....

\*Mandatory fields

Sign in

Don't have an account? [Register now](#)

Forgot your password? [Reset Password](#)

Need to change your password? [Change Password](#)

3. The **Software Licenses Portal** displays:

The screenshot shows the Software Licenses Portal interface. At the top is a navigation bar with tabs: Home, Activation & Entitlements, License Support, Devices, Downloads, and Accounts & Users. Below the navigation bar is the main heading "Software Licenses Portal".

The "Recent Entitlements" section contains a table with the following data:

Activation ID	Product	Product description	Last modified
f0c4-ba5f-d451-4ba7-b4...	WFC Voice Device License Avaya Aura PREM	WFC Voice Device License - Avaya Aura Premium	Jul 7, 2021
c9e2-3c87-c213-4f1d-a...	WFC Voice Client SW Avaya Aura PREM 8.2	WFC Voice Client Software - Avaya Aura Premium 8.2. Note: This software product requires the WFC Voice Device License - Avaya Aura	Jul 7, 2021

Other sections visible include "Your Downloads" (with a message about entitlements), "Recent Releases" (with a message about entitlements), and "Announcements".

4. Click the **Devices** drop-down arrow and select **Create Device**.

5. On the **New Device** screen:

- Enter the **ID** in the format <Part\_Number>\_<Serial\_Number>
- Enter the **Name** (same as the ID)



**NOTE:** Do not select the **Runs license server** checkbox and leave **Site Name** empty.

- Select your **Account** from the drop-down list.



**NOTE:** Zebra (Zebra Technologies) is used as an example.

## Device **New Device**

Name:\* VS40-WA50P4-2100W\_123456789

Runs license server? ?

ID Type:\* STRING ▼ ?

ID:\* VS40-WA50P4-2100W\_123456789

Account: Zebra (Zebra Technologies) ▼

Site name:

- Click **Save**. Observe the **Device created successfully** screen to confirm the device is configured correctly.

 Device created successfully.

# Device VS40-WA50P4-2100W\_12345678901234

[Back to list](#)

View

Action

## Device Details

ID : VS40-WA50P4-2100W\_12345678901234  
Name : VS40-WA50P4-2100W\_12345678901234  
Site Name :  
Status : ACTIVE  
Series : Series.Zebra  
Model : Model-Zebra  
Account : Zebra (Zebra Technologies)  
Vendor Dictionary : (None)

- Select **Action** to expand drop-down.

8. Next, select **Map By Activation ID**.

Device VS40-WA50P4-2100W\_12345678901234

[Back to list](#)

View ▾

Action ▾

Device D

Map Entitlements

Map By Activation ID

Remove Licenses

Download Capability  
Response

0180564

Summary

Status : ACTIVE

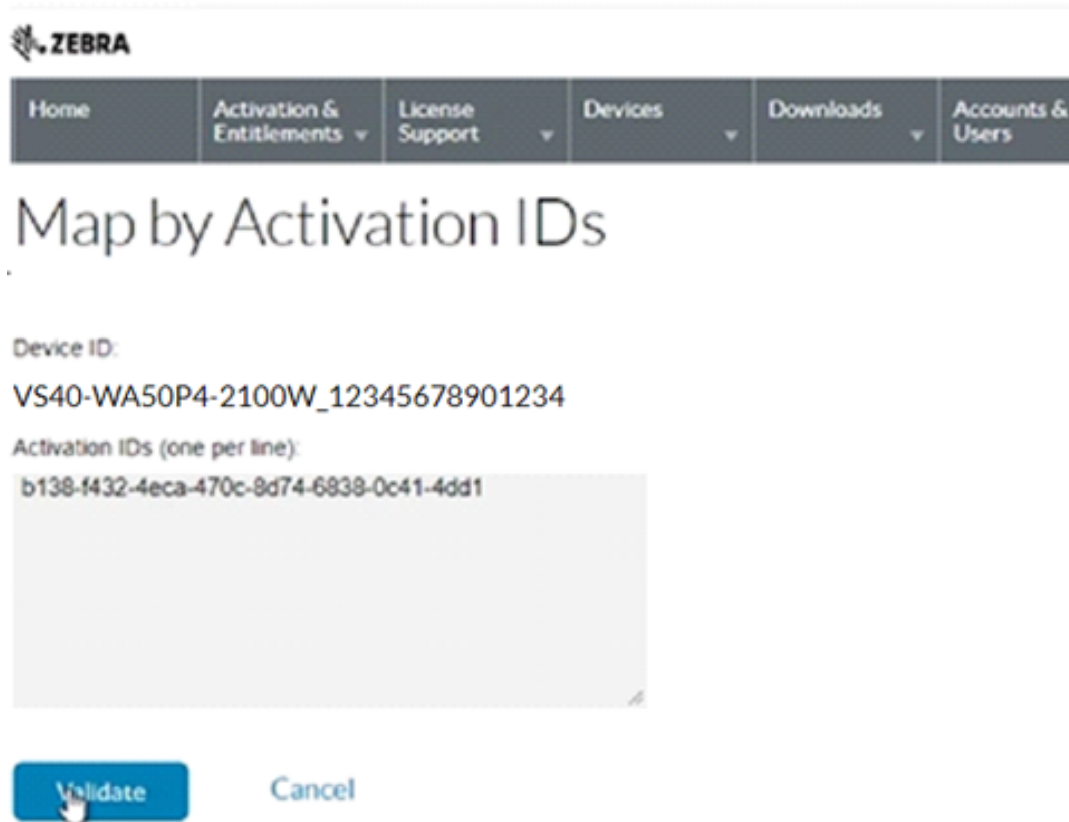
Series : Series Zebra

Model : Model-Zebra

Account : Zebra\_Internal (ZEBRA INTERNAL)

Vendor Dictionary : (None)

9. On the **Map by Activations IDs** screen, enter the **Activation ID**. If you have multiple IDs, ensure each ID is entered on a separate line.



**ZEBRA**

Home Activation & Entitlements License Support Devices Downloads Accounts & Users

### Map by Activation IDs

Device ID:  
VS40-WA50P4-2100W\_12345678901234

Activation IDs (one per line):  
b138-f432-4eca-470c-8d74-6838-0c41-4dd1

Validate Cancel

10. Click **Validate**. Observe the **Validation successful** message to confirm that the **Activation ID** is valid.
11. Edit the **Quantity to Add** for all the licenses mapped to a single device.



**NOTE:** For a standalone license, the value should be 1 to map one license to one device.

12. Click **Save**.

13. Observe the **Entitlement successfully mapped** message.

The screenshot shows the Zebra portal interface. At the top, there is a navigation bar with links for Home, Activation & Entitlements, License Support, Devices, Downloads, and Accounts & Users. The main content area displays the details for a specific device: VS40-WA50P4-2100W\_12345678901234. Below the device name, there are buttons for 'View' and 'Action'. The 'Device Details' section lists the following information: ID: VS40-WA50P4-2100W\_12345678901234, Name: VS40-WA50P4-2100W\_12345678901234, Site Name: VS40-WA50P4-2100W\_12345678901234, Status: ACTIVE, Series: Series Zebra, Model: Model Zebra, Account: Zebra\_Internal (ZEBRA INTERNAL), and Vendor Dictionary: (None). Below this, the 'Model Details' section states: 'The device model does not include any pre-installed licenses.' At the bottom, there is a 'Licenses' table with the following data:

Product	Activation ID	Status	Qty mapped	Expiration	Owner
VS Advanced Package License, Version 3.0		License generated	1	Permanent	ZEBRA INTERNAL

14. Click **Action** to expand the menu and select Download Capability Response. The bin file is available in the Download folder.

The screenshot shows the Zebra portal interface with a green notification banner at the top that says 'Entitlements successfully mapped'. Below the notification, the device details for VS40-WA50P4-2100W\_12345678901234 are displayed. The 'Action' button is expanded, showing a dropdown menu with the following options: 'Map Entitlements', 'Map By Activation ID', 'Remove Licenses', 'Download Capability Response', and 'Response'. The 'Download Capability Response' option is highlighted. Below the device details, the 'Model Details' section states: 'The device model does not include any pre-installed licenses.' At the bottom, there is a 'Licenses' table with the following data:

Product	Activation ID	Status	Qty mapped	Expiration	Owner
VS Advanced Package License, Version 3.0	3138-1432-4cca-470c-6d74-6838-0c41-898f	License not generated	1	Permanent	ZEBRA INTERNAL

After the download, verify that the device is accessible in the directory.



**NOTE:** The attached files follow a specific naming convention and must not be renamed. The files do not apply correctly if they are renamed. Also, ensure that Windows does not append any text to the filename, such as (1).

## Applying a License in Offline Mode

Use the offline license acquisition method when an internet connection is unavailable.



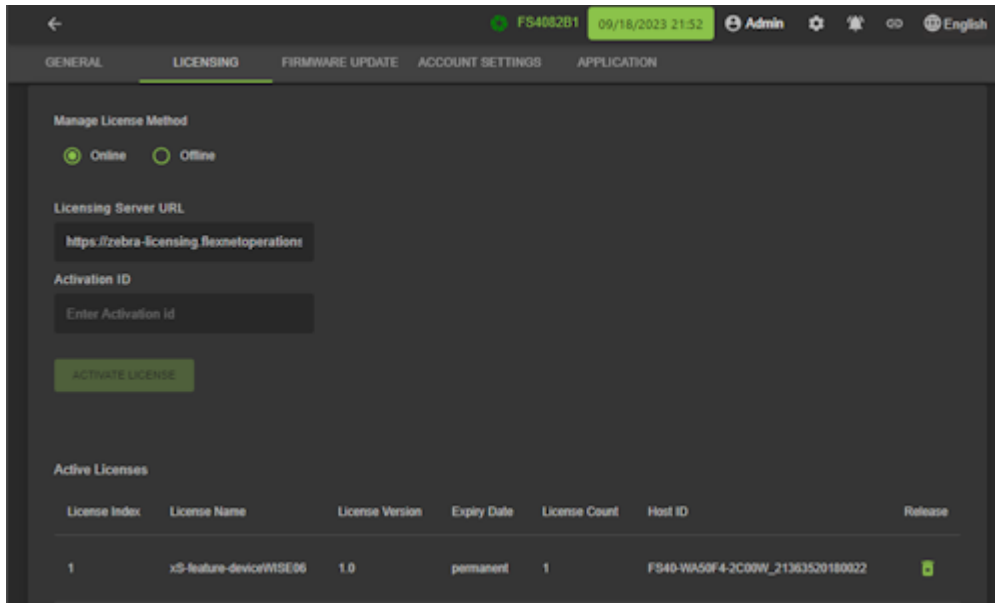
**NOTE:** The Capability Response (Offline License Upgrade .bin File) must be downloaded from the server to acquire a license with this method.

To acquire the license in the offline mode:

1. Download the Capability Response (Offline License Upgrade .bin File).



- On the **Licensing** screen, select the offline option from the **Acquire License Method** option.



- Click **Choose File** and locate the bin file acquired as part of downloading the capability response.
- Click **Activate License** to activate the license and observe the **Available License(s)** list.

License Index	License Name	License Version	Expiry Date	License Count	Host ID	Release
1	xS-feature-fast1D2D	1.0	permanent	1	VB40-WA50F4-2100W_000072	

- Start a new job in Aurora Focus to utilize the upgraded toolset.
  - Close any current jobs if they are still open in the application.
  - Starting a new job displays the newly enabled tools available with the upgraded license.



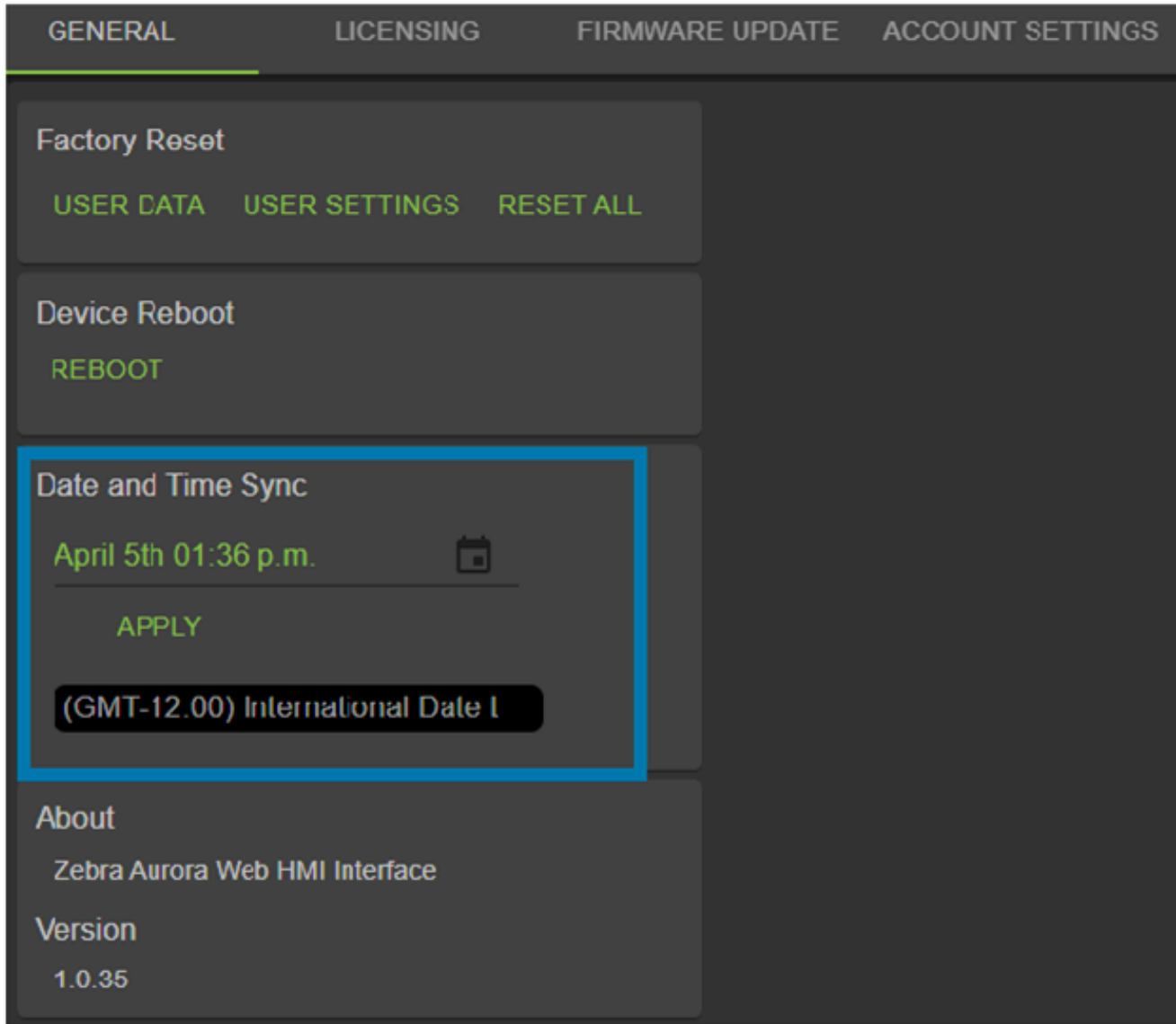
**NOTE:** The device name, model name, and part number remain unchanged after a license upgrade. New tools based on the new license are available upon creating a new job.

## Time Tampering

License operations such as acquiring and returning licenses are time-dependent. The device must be configured with the current date and time. Failing to do so can result in errors when acquiring and releasing licenses. The device time can be set automatically via the NTP server or configured manually in the **Date and Time Sync** window.



**NOTE:** Clock Wind Back detection is enabled by default in the device firmware—any backtracking of date or time results in a license error.



## License Types

The Zebra Web HMI refers to the License Name when describing license types that apply to FS/VS devices.

The following table outlines the available licenses and the corresponding License Name referenced in the Zebra Web HMI.

**Table 69** License Types

License Type	Part Number	License Name
VS Sensor Package	LIC-SEN001-0100	xs-feature-vspkg:1.0
VS Standard Package	LIC-SEST01-0100	xs-feature-vspkg:2.0
FS DPM Full Package	LIC-DPM001-0200	xs-feature-fspkg:3.0

**Table 69** License Types (Continued)

License Type	Part Number	License Name
FS Fast 1D/2D	LIC-2DF001-0200	xs-feature-fast1D2D:1.0
VS OCR	LIC-OCR002-0100	xs-feature-OCR02
FS OCR	LIC-OCR003-0100	xs-feature-OCR03
Connectivity Gateway Solution License (for FS20 and VS20 devices)	LIC-20LF-0000	xs-feature-deviceWISE04
Connectivity Gateway Solution License (for FS40, FS70 and VS40, VS70 devices)	LIC-47LF-0000	xs-feature-deviceWISE05



**NOTE:** Upgrades are available from a Sensor to a Standard Toolset and from an FS License to an MV License.

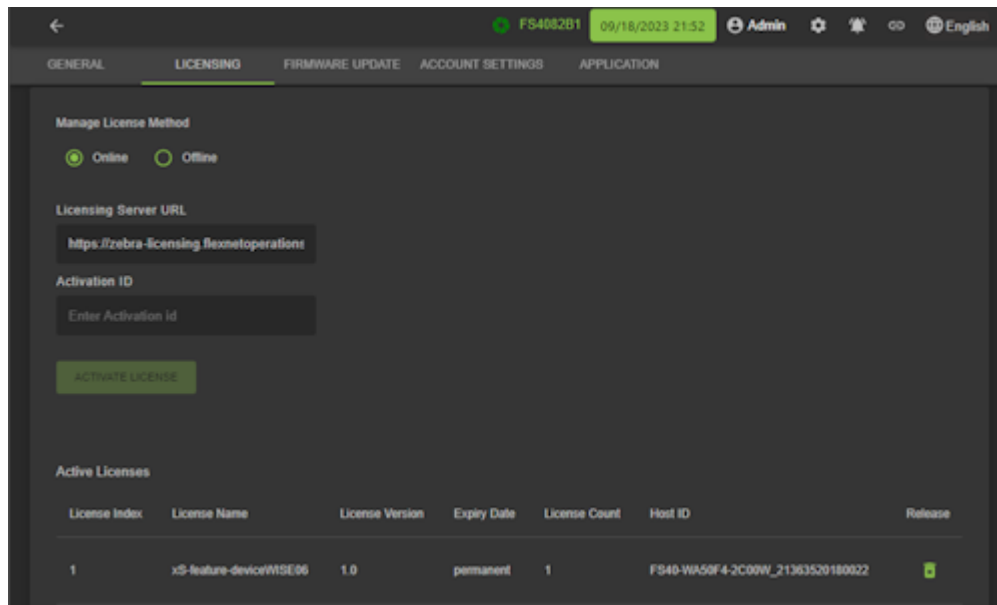
## Returning a License



**NOTE:** The device must be connected to the internet to return a license.

Users can return the license to the cloud server regardless of the method used to acquire the license (offline or online) initially.

1. On the **LICENSING** screen, select **Online** option in the **ACQUIRE LICENSE METHOD** section.



2. In the **LICENSING SERVER URL** field, enter the licensing server URL.
3. Click to release the license back to the license server.
4. After removing the licenses, the empty **ACTIVE LICENSES** list window displays.

## Fixed Industrial Scanning Toolset

The following tools are available with a specific license type.

**Table 70** Fixed Industrial Scanning Tools

Tool	Standard 2D	Fast 2D	DPM with Fast 2D	OCR
Barcode Reading	X	X	X	
Fast 2D (60 fps)		X	X	
DPM			X	
Locate Object				X
Deep Learning OCR				X

## Machine Vision Toolsets

The following tools are available with a specific license type.

**Table 71** Machine Vision Tools

Type	Tool	Sensor	Sensor Plus	Standard
Locate Tools	Locate Object	X	X	X
	Locate Object Plus			X
	Locate Edge	X	X	X
	Locate Blob			X
	Locate Circle	X	X	X
Filter Tools	Binarize			X
	Dilate			X
	Erode			X
	Open			X
	Close			X
	Gradient Full			X
	Gradient Horizontal			X
	Gradient Vertical			X
Identification Tools	Read Barcode		X	X
	Read DPM			X
	Read DPM and Barcode			X
	Datacode			X
	Deep-Learning Based OCR			
Presence/ Absence Tools	Object P/A	X	X	X

**Table 71** Machine Vision Tools (Continued)

Type	Tool	Sensor	Sensor Plus	Standard
	Object Plus P/A			X
	Brightness	X	X	X
	Contrast	X	X	X
	Edge Detect	X	X	X
	Blob P/A			X
Measurement Tools	Distance	X	X	X
	Circle Diameter	X	X	X
	Measure Object Width			X
Counting Tools	Pixel Count	X	X	X
	Blob Count			X
	Edge Count	X	X	X
	Locate Object Count	X	X	X
Flaw Detection	Edges			X
	Intensity			X

## Bridging an internet Connection to FS/VS Devices

To add a license to an FS/VS device using an online licensing server, the device must have access to the internet. The device can be connected through an Internet-connected router. But in cases where that is not possible or convenient, the internet connection of a laptop or desktop computer running Windows can be shared with the devices. To share internet to a device connected to the computer over USB, these steps must be performed on the device first (does not need to be done for devices connected over Ethernet):

1. Open Aurora Focus.
2. Manage the device to which you want to share internet.
3. Navigate to the **Communication** tab.
4. Click **Enable Edit Mode** and **OK** if prompted with a warning about stopping jobs.
5. Navigate to the **USB** tab under **Network Settings**.
6. Select **Enable DHCP**, and click **Apply**.

To share the internet connection to a device when connected over USB or when plugged into a PoE switch that is plugged into the computer or dock's ethernet port:

1. Navigate to **Windows Control Panel > Network and Sharing Center > Change adapter settings**.
2. Right-click on the connection that provides internet. This is typically Wi-Fi but can also be Ethernet.
3. Click **Properties**.
4. Click the **Sharing** tab.
5. Select **Allow other network users to connect through this computer's internet connection..**

6. In the **Home networking connection** drop-down, select the connection you want to share internet over if the option appears. This may be something such as Ethernet" or Ethernet 5. If there is only one option for the connection, drop-down does not display.
7. If there are multiple Ethernet options, to find out which adapter is using the USB RNDIS, open a cmd prompt and type ipconfig /all, and locate the USB IP of your device (typically matches a DHCP Server as shown in the screenshot below). Locate the Ethernet adapter name for that section. Select that option in the menu.
8. Click **OK**.
9. Reconnect and reboot the device.

To share the internet connection to multiple devices connected over USB and Ethernet simultaneously:

1. Navigate to the **Windows Control Panel > Network and Sharing Center > Change adapter** settings.
2. Ctrl-click the USB or ethernet connections that the devices are connected to so they are highlighted simultaneously.
3. Right-click any of the highlighted connections and click **Bridge connections**.
4. Right-click the connection that is providing internet.
5. Click **Properties**.
6. Click the **Sharing** tab.
7. Select **Allow other network users to connect through this computer's internet connection**.
8. On the **Home networking connection** menu, select the bridged connection you just made if the option appears at all. If there is only one option for the connection, the drop-down will not display.
9. Click **OK**.
10. Reconnect and reboot the device(s).

**Figure 4** Identifying the DHCP Server

```

Ethernet adapter Ethernet 2:
    Connection-specific DNS Suffix . . . : 
    Description . . . . . : Remote NDIS Compatible Device
    Physical Address. . . . . : 56-00-14-F8-1A-EB
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::e20e:c047:5143:1b5%9(Preferred)
    IPv4 Address. . . . . : 172.16.111.241(Preferred)
    Subnet Mask . . . . . : 255.255.0.0
    Lease Obtained. . . . . : Tuesday, May 23, 2023 5:07:05 PM
    Lease Expires . . . . . : Friday, June 2, 2023 5:07:05 PM
    Default Gateway . . . . . : 172.16.1.1
    DHCP Server . . . . . : 172.16.92.50
    DHCPv6 IAID . . . . . : 630091326
    DHCPv6 Client DUID. . . . . : 00-01-00-01-2B-EA-E3-78-B0-0C-D1-40-02-4E
    DNS Servers . . . . . : fec0:0:0:ffff::1%1
                           fec0:0:0:ffff::2%1
                           fec0:0:0:ffff::3%1
    NetBIOS over Tcpi. . . . . : Enabled
    
```

To test that a device has access to the internet, SSH into it and run **ping google.com**. If the connection to the server is successful, the device can connect to a licensing server over the internet.

# Connectivity Guidelines

Connectivity options are configurable in Device Settings. To access Device Settings, select a device on the View Devices tab and click Manage. On the Device Settings tab, click Communication to configure connectivity settings.

## Network Communication

Follow the procedures in this section to set a static IP address or change the hostname.

### Setting a Static IP Address



**NOTE:** DHCP is the default mode for IP addressing.

1. Disable the **Enable DHCP** checkbox.
2. Change the network-related settings based on your network configuration. For example:
  - a. Open a command prompt
  - b. Type the command: ipconfig
    - a. All TCP/IP network configuration values display on the host PC
  - c. Identify a valid network interface:
  - d. In Zebra Aurora Focus, enter the following values:
    - a. IP Address: 192.168.4.xxx (where xxx is any value from 1-255)
    - b. Subnet Mask: 255.255.252.0
    - c. Default Gateway: 192.168.4.1
3. Click **Apply** when complete. The device reboots with the new static IP address.

### Changing the Hostname

To change the hostname on the device:

1. Locate the hostname field.



2. Enter the desired hostname:



**NOTE:** The hostname must be alphanumeric and have a maximum length of 26 characters.

3. Click **Apply** when complete.



**NOTE:** The device, application, and network hardware may need to be power-cycled for the hostname change to occur.



**NOTE:** The new hostname is visible following the device reboot.

## TCP/IP Communication

Configure TCP/IP communication settings to send and accept triggers.

### Setting Up TCP/IP Triggering

To set up TCP/IP triggering, follow the steps to enable TCP/IP output in device settings, configure jobs on the device to accept TCP/IP triggers, and send TCP/IP triggers to the device.

### Enabling TCP/IP Output in Device Settings



**NOTE:** TCP/IP output is disabled by default and must be explicitly enabled in the device's settings.

1. Select the representative communication type tab. For example, Ethernet Port 1
2. Scroll to TCPIP Settings
3. Check the Enable TCP/IP Control checkbox (disabled by default)



**NOTE:** Make note of the **Control Part Number** and **Trigger String** fields. This information is required to send a TCP/IP trigger from external software.

4. Click **Apply** in the TCP/IP settings window. Click **OK** in the following prompt.

### Configuring Jobs to Accept TCP/IP Triggers

1. Create or open a job on the device.
2. Within the job tab, click the Connect chevron and navigate to the **Triggers** tab.
3. Ensure the **Trigger Source** is set to **TCP/IP**.
4. Click Deploy when the configuration is complete.

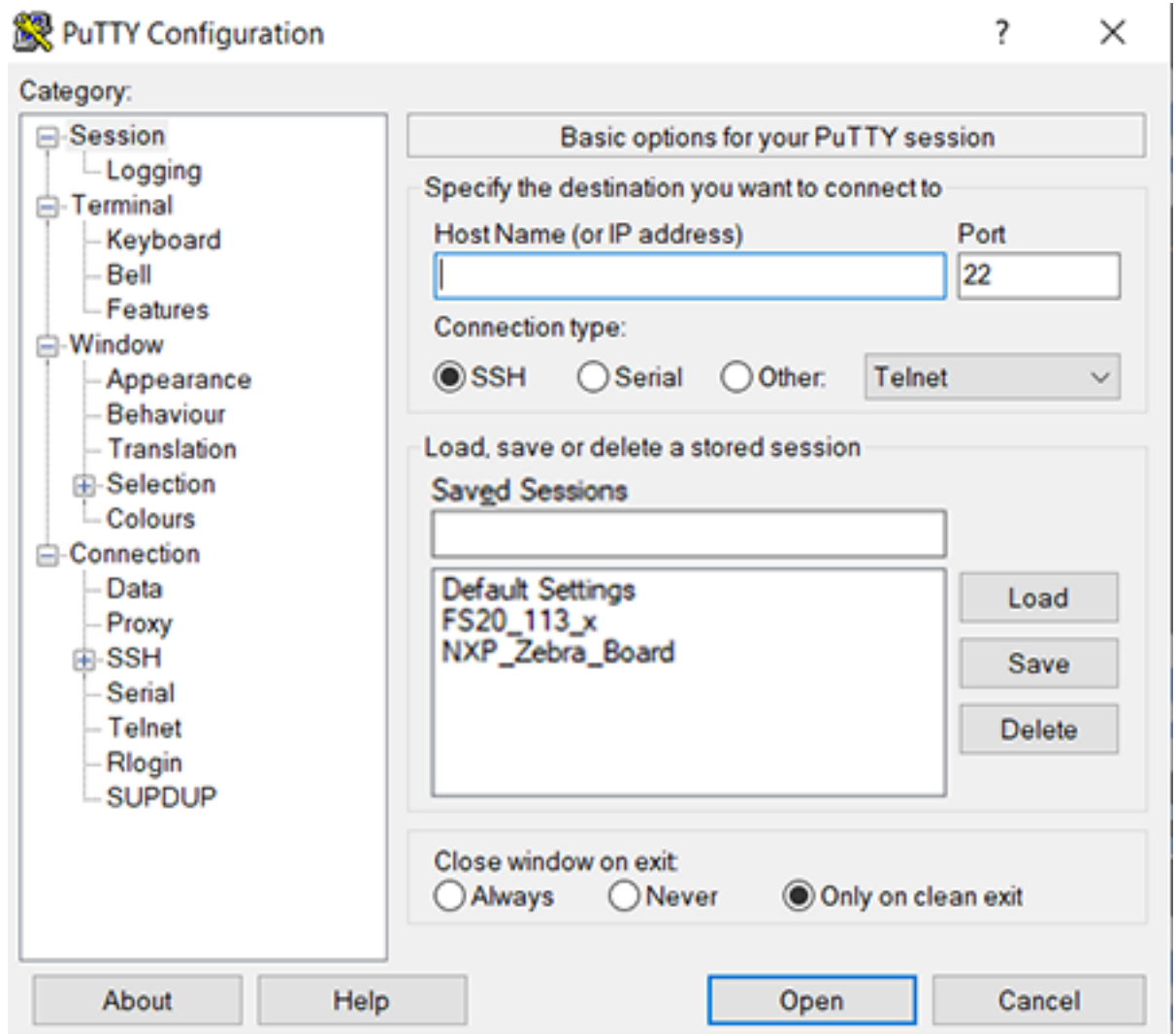
### Sending TCP/IP Triggers to the Device

1. Open a TCP/IP client terminal software.



**NOTE:** The following steps use PuTTY (putty.org) as an example. Hercules and MobaXterm are also compatible.

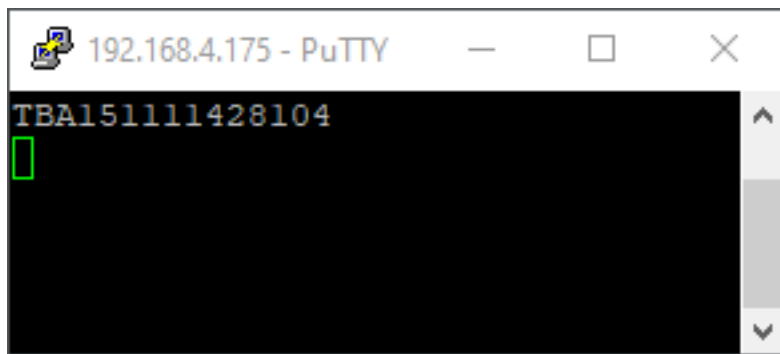
2. Click **Session** to establish a connection to the device.
3. Enter the control port number of the device.
4. Select **Telnet** as the connection type.
5. Click **Open** to open a terminal.



6. If successful, observe a blank terminal with a green cursor.



7. Type the Trigger String (as defined in Zebra Aurora Focus) and click **Enter**.
  - a. Enter the default Trigger string TRIGGER and click **Enter**.
8. Observe the device successfully trigger a job.



### Listening for TCP/IP Output Events

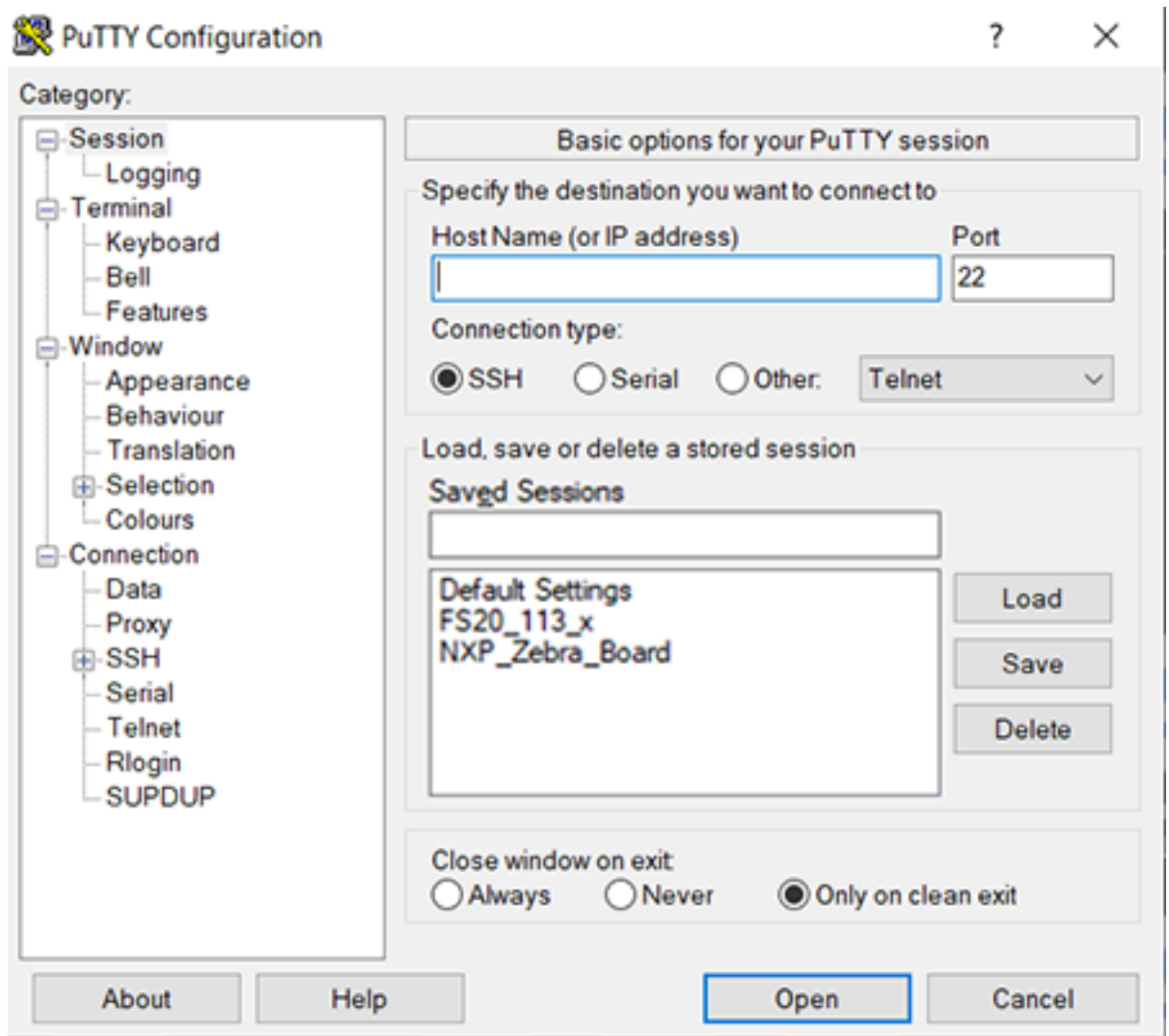
1. Open a TCP/IP client terminal software such as PuTTY.
2. Click **Session** to establish a connection to the device.
3. Enter the IP address and the results port number of the device.



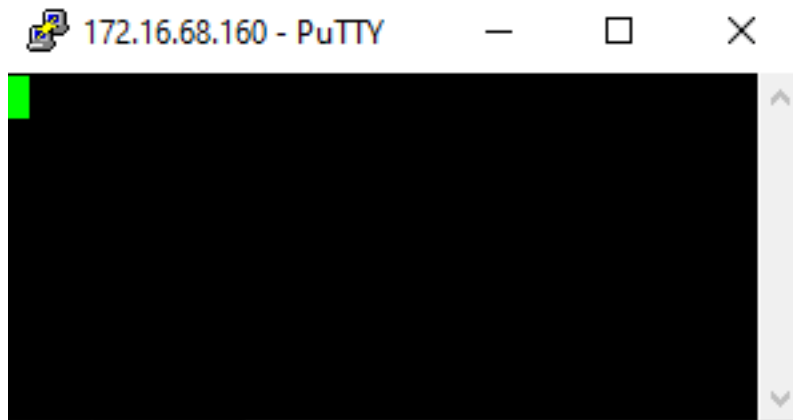
**NOTE:** The default results port number is 25250.

4. Select **Telnet** as the connection type.

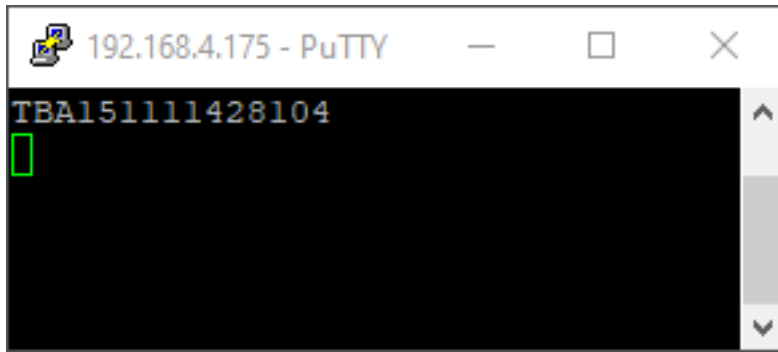
- Click **Open** to open a terminal.



- If successful, a blank terminal window with a green cursor displays.



7. Trigger the job as it is configured. Observe the results of the job in the terminal window.



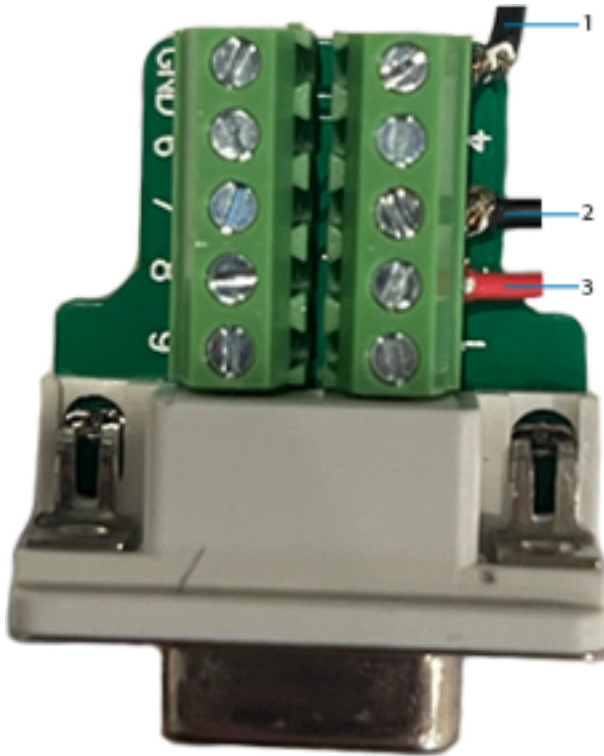
### Setting up RS-232 Hardware

The following accessories are necessary for a serial interface connection.

- Power/GPIO Flying Leads cable
- USB to Serial Adaptor
- DB9 RS-232 D-SUB Serial Adaptor

1. Connect the following wires from the flying leads cables to the DB9 Serial adaptor.

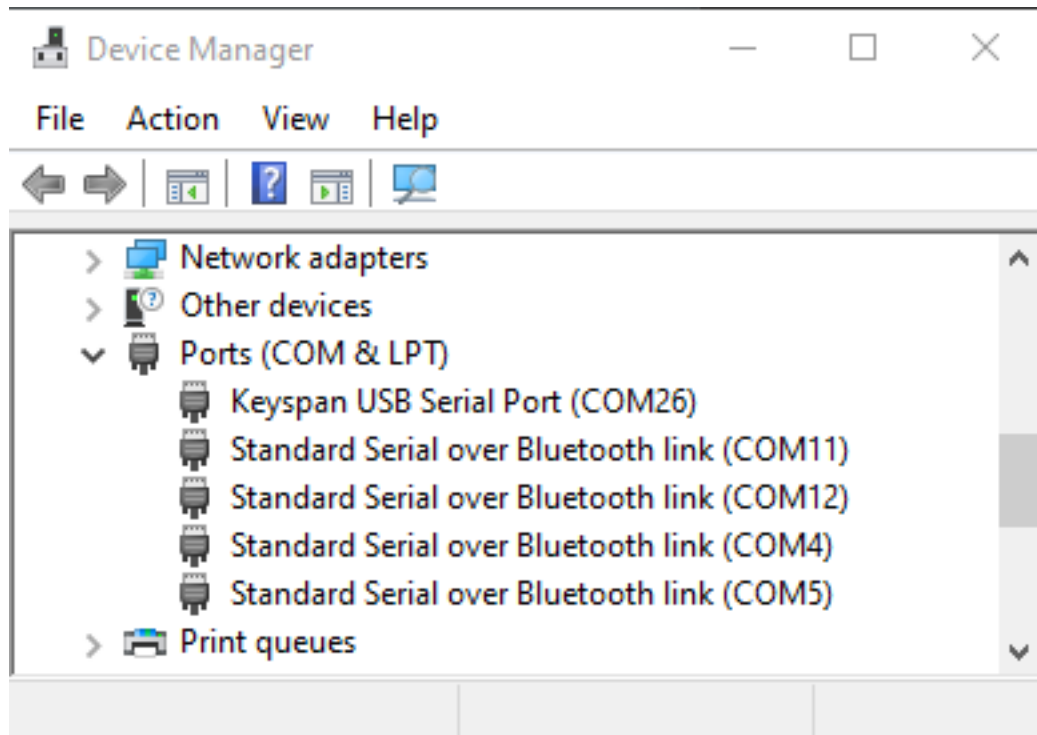
**Figure 5** Flying Leads to DB9 Serial Adapter Wire Diagram



Callout	Port Number	Type	Flying Leads Color
1	2	Tx	Yellow
2	3	Rx	White-Brown
3	5	GRD	Direct to Ground

2. Connect DB9 Serial Adapter (female) to USB-to-Serial adapter (Male).
3. Connect USB-to Serial adapter USB end into host PC.
4. Identify the COM port associated with the USB-to-Serial adaptor.

5. Identify the COM port associated with the USB-to-Serial adaptor using Device Manager on a Windows PC.
  - a) Expand the Ports field and identify the USB-to-Serial adaptor.



## Setting up RS-232 Triggering

Follow the steps in this section to enable RS-232 output in device settings or configure a job on the device to accept serial triggers.

### Enabling RS-232 Output in Device Settings



**NOTE:** TCP/IP output is disabled by default and must be explicitly enabled in the device's settings.

1. Select the respective communication type tab. For example, Ethernet Port 1 or USB.
2. Scroll down to RS-232 settings.
3. Check the **Enable RS-232 Control** checkbox (disabled by default).



**NOTE:** Observe the **Trigger String** and keep this value for reference to send a Serial trigger from external software.

4. Click **Apply** in the RS-232 area and **OK** on the resulting prompt to save the configuration.

### Configuring a Job on the Device to Accept Serial Triggers

1. Create or open a job on the device using Zebra Aurora Focus.
2. On the Job tab, click the **Capture** chevron and navigate to the **Triggers** tab to set the **Trigger Source** to **Serial**.
3. Complete the job configuration and click **Deploy** to send the job to the device.

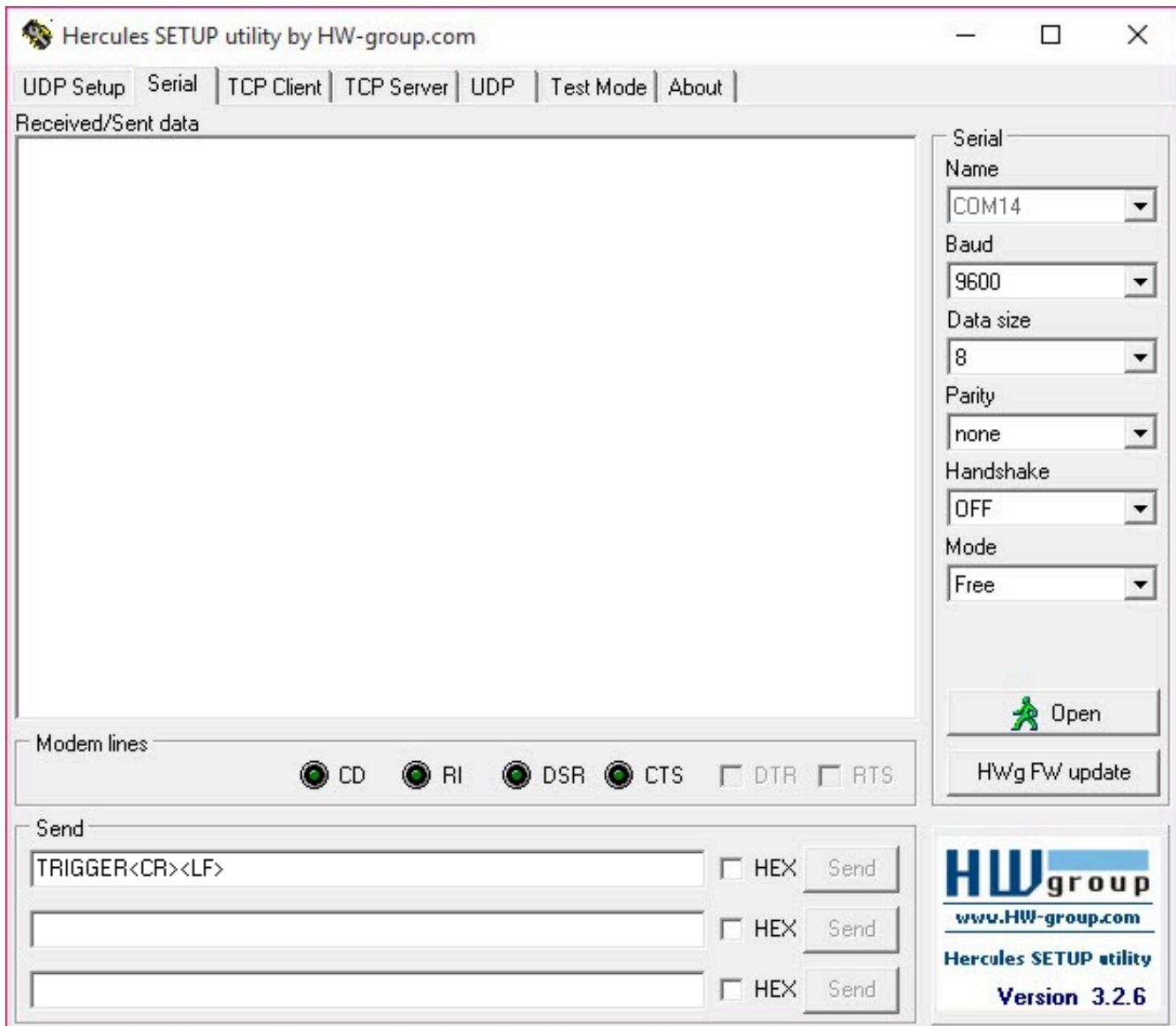
Confirm that the device is able to accept Serial (RS-232) triggers.

### Sending a Serial Trigger to the Device

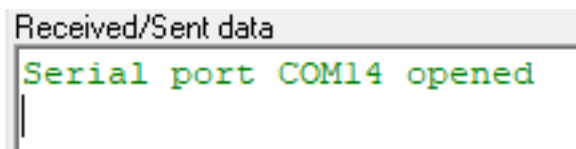
1. Open a Serial client terminal software such as PuTTY.
2. Establish a connection to the device by clicking **Serial** tab.
3. Enter the **COM port** settings:
  - Name: COM port number as defined in Device Manager.
  - Speed, Baud, and Parity as defined in Device Settings using Zebra Aurora Focus.
  - Stop Bits: 1
  - Handshake/Mode: Off



- Click **Open** to establish a serial connection.

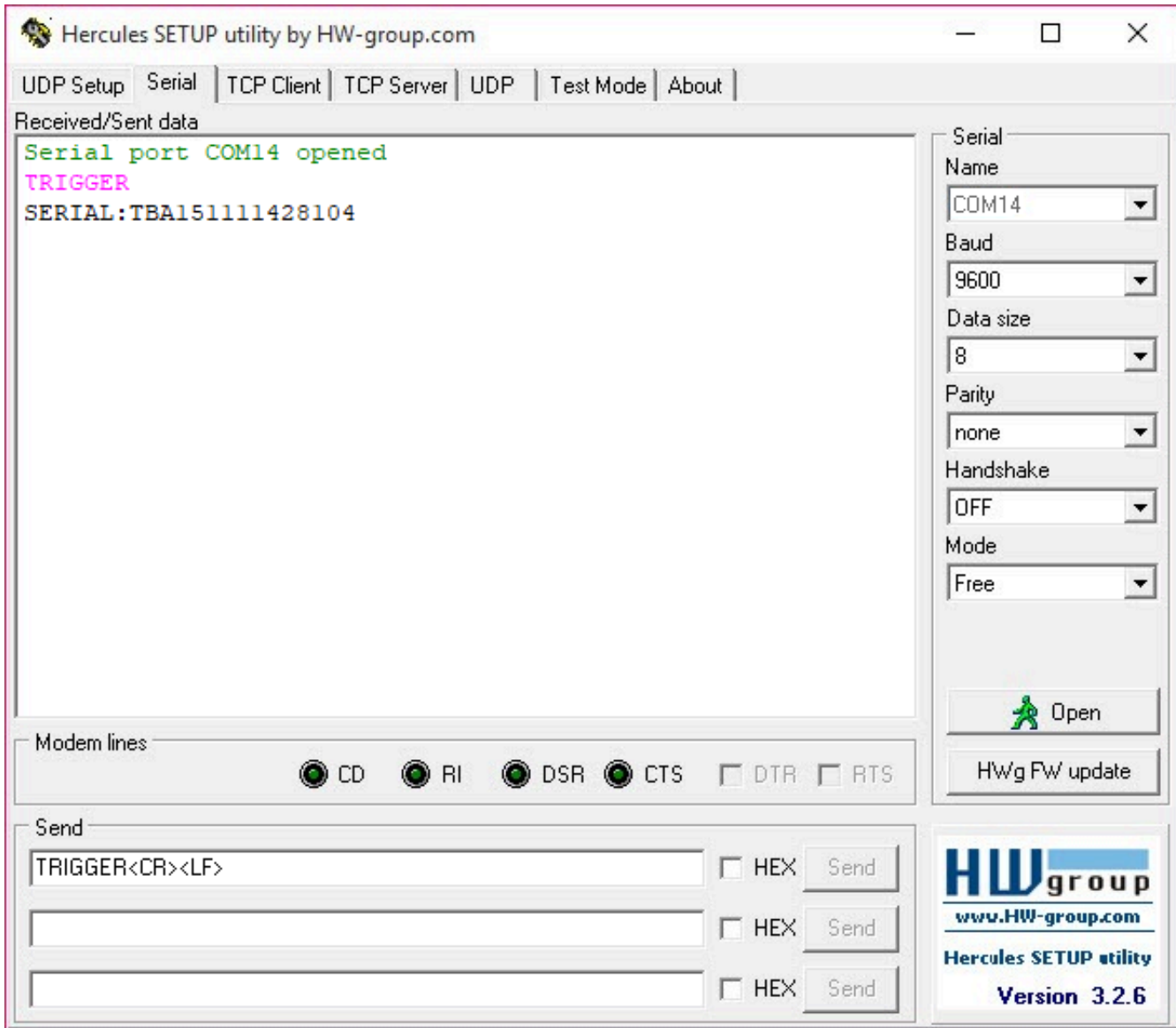


- If a connection is successfully established, observe the Serial Port COM opened message.



- Type the **Trigger String** as defined in **Settings** in Zebra Aurora Focus and click **Enter**.

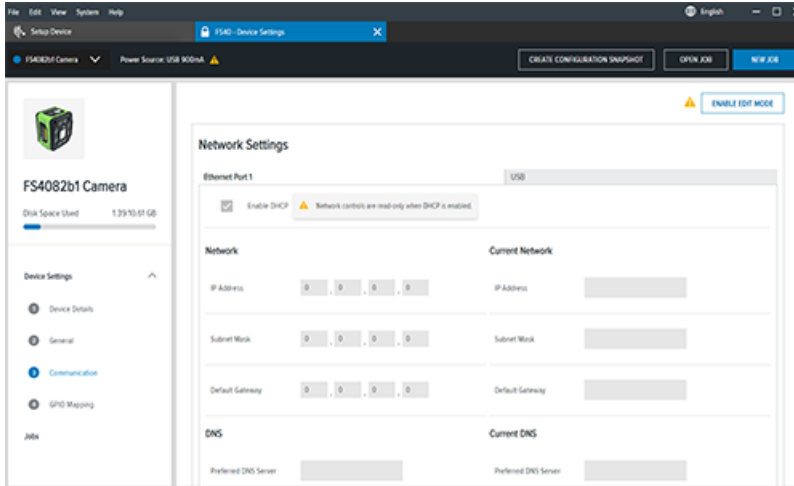
7. Enter **TRIGGER** as the default **Trigger String** and click **Send** to send a trigger using serial.



## RS-232 Results



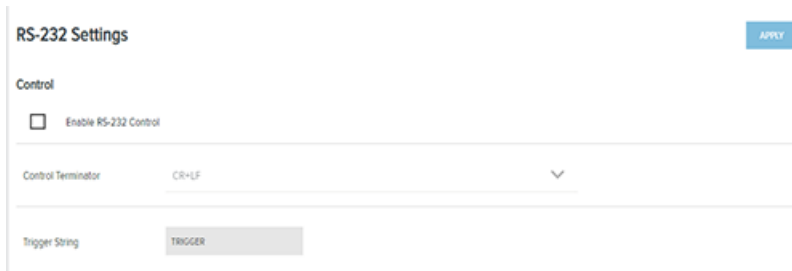
**NOTE:** RS-232 output is disabled by default and must be explicitly enabled in Device Settings.



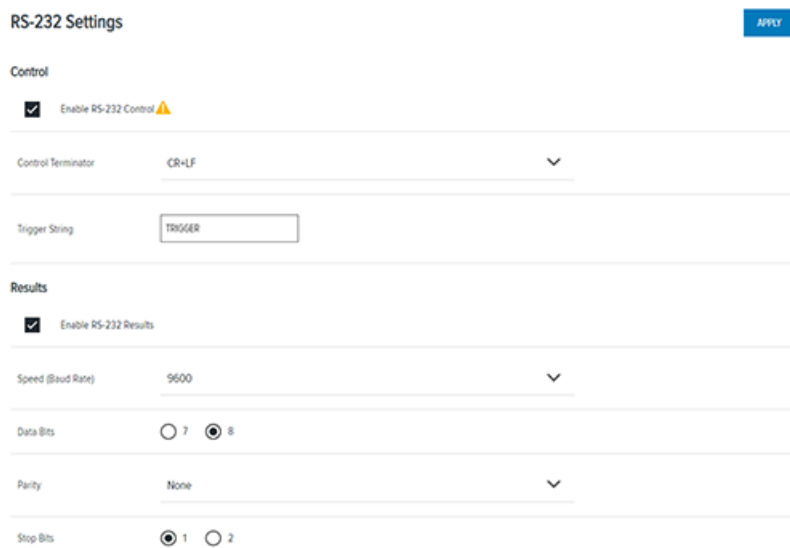
1. Select the associated communication type tab.
2. Scroll down to **RS-232 Settings**.
3. Ensure that the **Enable RS-232 Results** checkbox is checked



**NOTE:** Record the **Speed, Data Bits, Parity, Stop Bits** you may need these settings later to listen for RS-232/Serial results from external software.

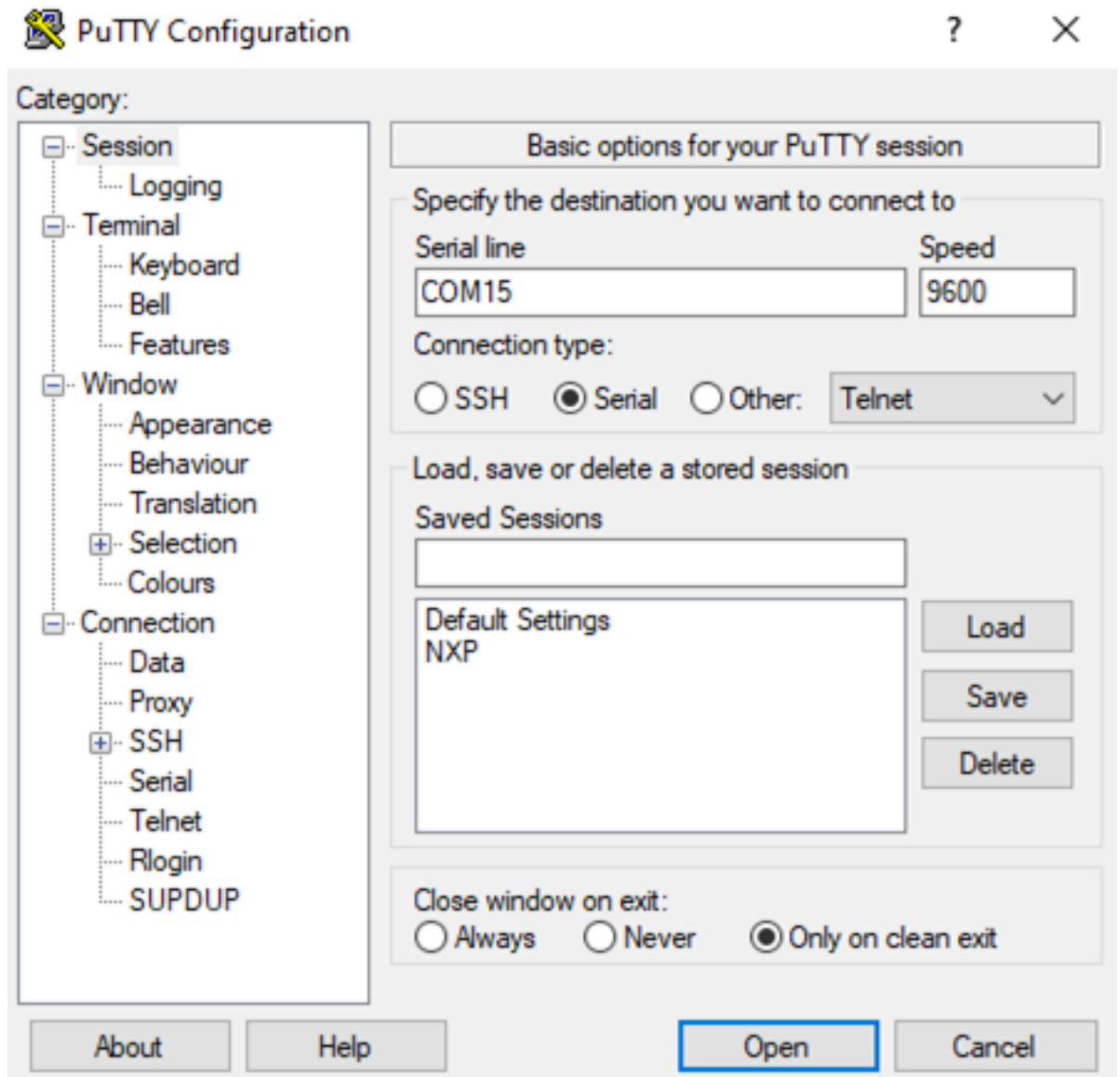


4. Click **Apply** within the **RS-232 Settings** area

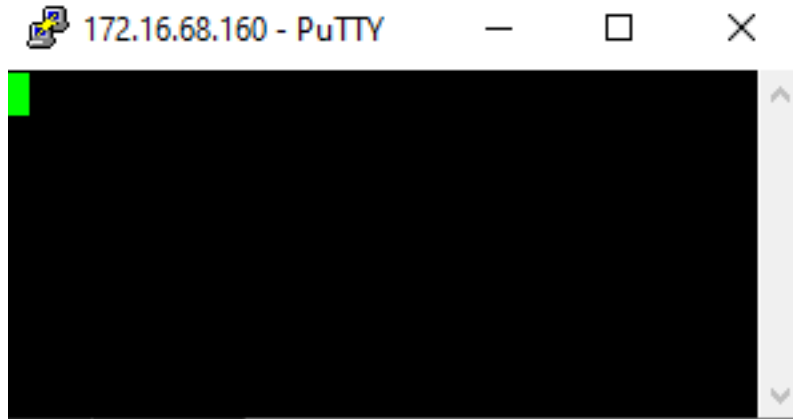


## Listening to RS-232 Output Events

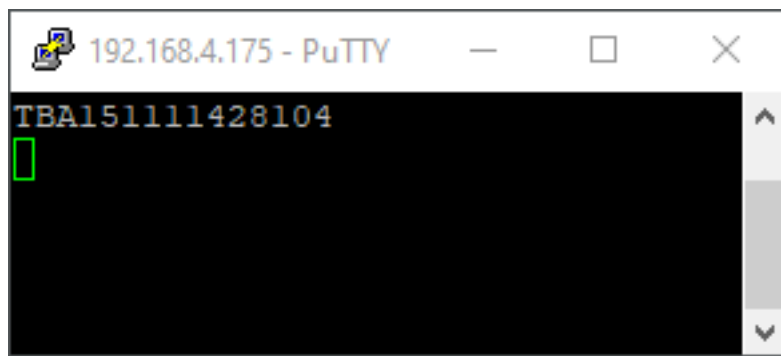
1. Open an RS-232 client terminal software such as PuTTY.
2. Establish a connection to the device by clicking Session.
3. Set **Serial Line** to the COM Port Number.
4. Set **Speed** to the Serial speed defined in Aurora Focus.
5. Click **Open** to open a serial connection in terminal.



6. If the connection is successful, observe the terminal window with a green cursor.



7. Trigger the job and observe the results in the terminal window to confirm that the device is configured as expected.



## Listening for USB-CDC Output Events

To set USB CDC-Serial Results as job output, enable USB CDC-Serial Output in **Device Settings** using Aurora Focus.

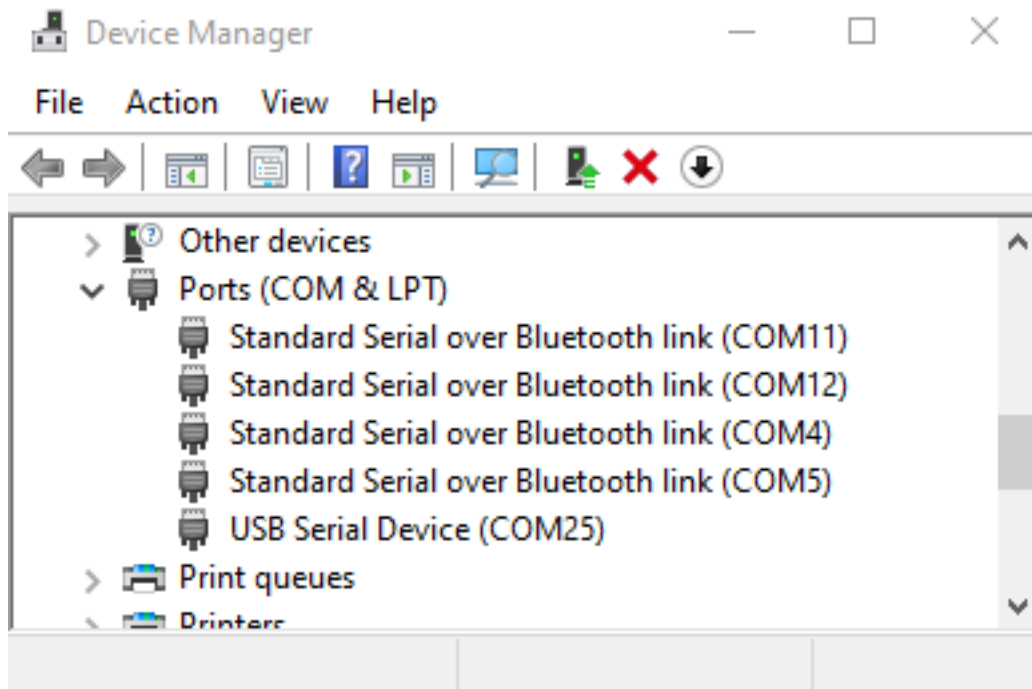
### Setting Up CDC-Serial Output in Device Settings

1. Select the associated communication type tab.
2. Scroll to **USB Settings**.
3. Ensure that the **Enable USB CDC-Serial Results** checkbox is enabled.
4. Click **Apply** within the USB Settings.
5. Click **OK**.

### Listening Over USB CDC-Serial Connection

The process of listening over USB CDC-Serial connections is similar to the RS-232 setup outlined in the previous section.

1. After enabling USB CDC-Serial Results, navigate to Device Manager to identify the COM port associated with your USB connection.
2. Follow the instructions outlined in the RS-232 sections using the COM port in Device Manager.



## USB Settings

Configure USB settings such as enabling a HID Keyboard or adding a Keystring Delay.

### Enabling HID Keyboard

Checking this setting will enable USB-HID output. Job result/output will be streamed over a USB connection to the host PC as if the device was a keyboard. The output streams into any field with focus, such as notepad, excel, or other host-based apps.



**NOTE:** When this setting is applied, the device will automatically reboot. If USB is your sole way of communicating with the device (as opposed to via ethernet cable) and you have a job that automatically starts on startup, it may be difficult to communicate with the device if the job is running and sending output over the USB simultaneously. Ensure that you have de-selected the other options before enabling HID.

### Adding a Keystring Delay

Sometimes data is sent over USB faster than the receiving application receives them. This is commonly seen with some remote applications where latency is a factor. Compensate for this by adding a keystroke delay, where a certain pause (typically in ms) is inserted between each character so no characters (data) are missed.

## PLC Protocol

For specific details on Industrial Ethernet, EtherNet/IP, PROFINET Interface, and Modbus TCP, refer to the FS/VS Industrial Ethernet User Guide.

# Troubleshooting

This section describes potential issues that could arise while using the application and solutions that could correct the problem, such as rebooting the device and reconnecting the USB cable.

**Table 72** Troubleshooting

Problem	Solution
<b>Installation</b>	
Run as Administrator	If you receive an error when attempting to install Aurora Focus, try again by right-clicking the Aurora Focus icon on your PC and selecting Run as Administrator.
Backward Compatibility	Aurora Focus does not connect to a device with older firmware. This may cause a break in functionality if the device is not updated.
<b>Device</b>	
External illumination does not turn on when running a job created with a previous firmware version.	Enable external illumination.
External illumination does not turn off when in NPN mode.	Switch back to PNP mode before powering off the device.
On FS10 devices, specific hubs cause USB interfaces (RNDIS and HID) to break upon HID keyboard re-enumeration.	Disconnect and reconnect the USB cable.
Firmware updates fail if the memory consumption on the device is currently high.	Reboot the device and upgrade.
Uninstalling the InstallShield does not always remove all of the registry entries.	regedit and manually delete the Zebra Aurora Focus folder under Computer \HKEY_LOCAL_MACHINE\SOFTWARE\Zebra\

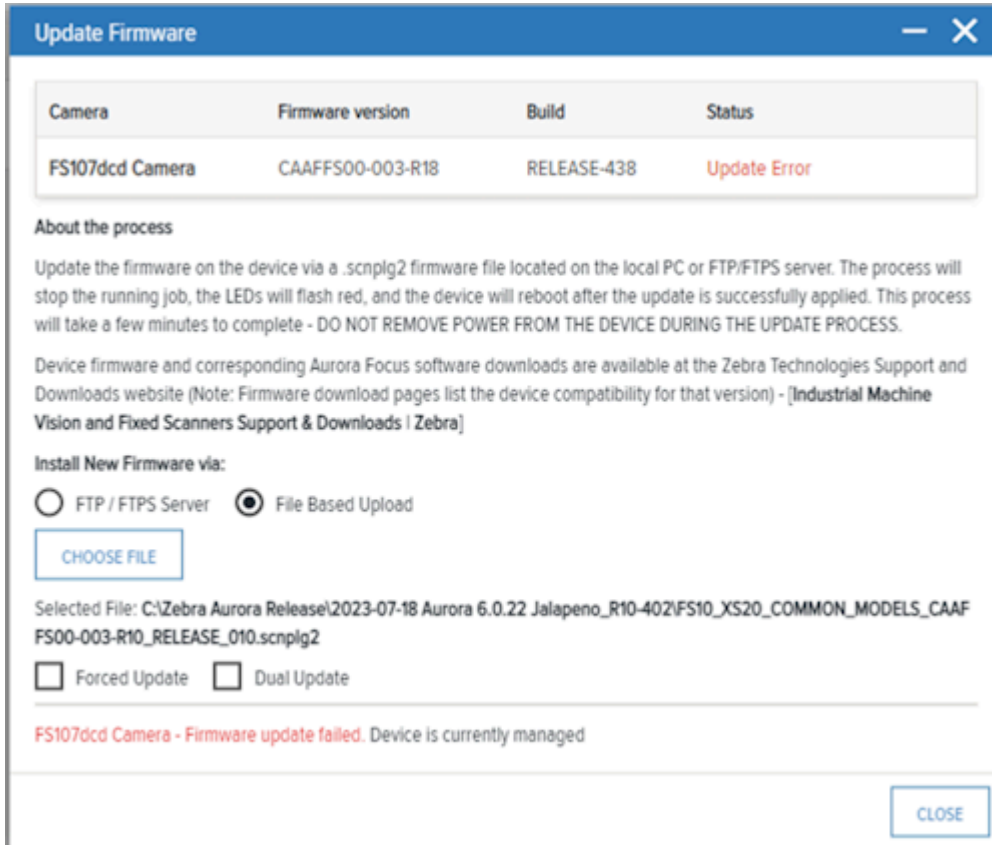


## Firmware Troubleshooting

**Table 73** Firmware Troubleshooting

Problem	Solution
The firmware update procedure fails.	If the device status is set to Managed, close the device and retry.

**Figure 6** Managed Device Update Firmware Error



## License Troubleshooting

**Table 74** License Troubleshooting

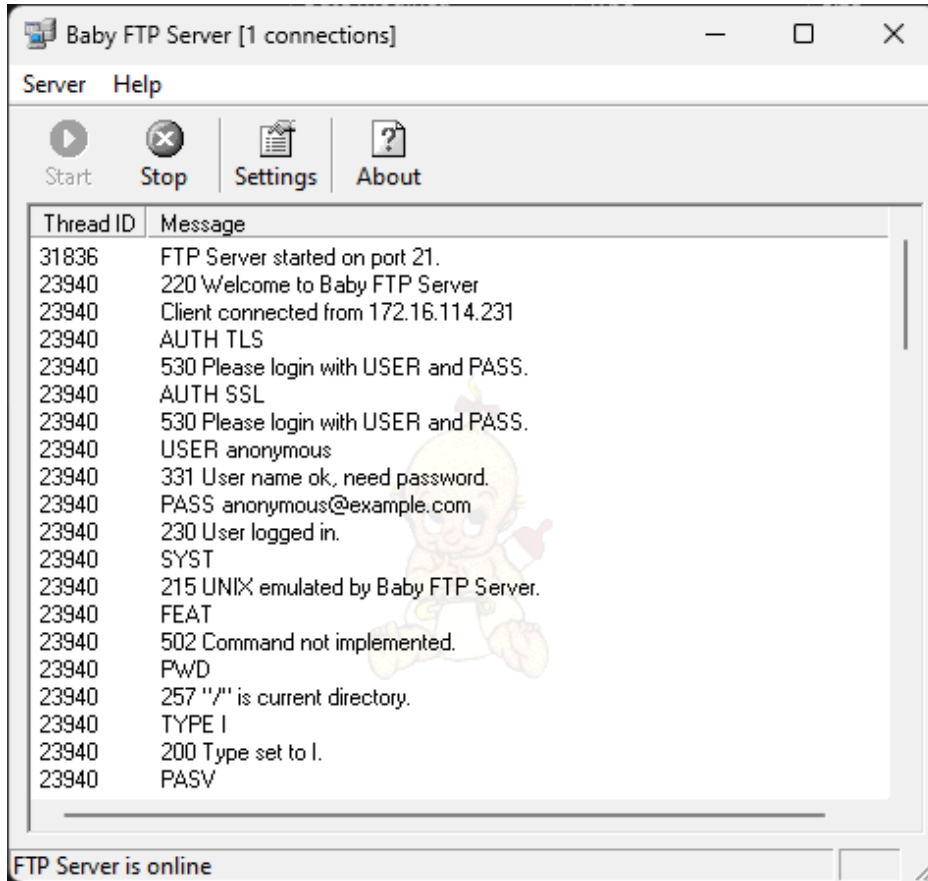
Problem	Solution
Offline licenses are not recognized correctly.	<ol style="list-style-type: none"> <li><b>1.</b> Deactivate the offline licenses on both devices in the Web HMI.</li> <li><b>2.</b> Perform a date and time sync. Confirm that the date, timezone, and time are accurate within a minute of the current local time.</li> <li><b>3.</b> Perform a factory reset on License Storage.</li> <li><b>4.</b> After the device reboots, reconfirm the time information is accurate.</li> <li><b>5.</b> Regenerate new offline licenses and apply them to the devices.</li> </ol>
Error x700000024 displays when attempting to apply an online or offline license.	Perform a License Storage reset on the device and try again after rebooting.

## FTP Troubleshooting

If the FTP server is not saving images correctly, it could be a result of an issue with the firewall, folder access or invalid permissions.

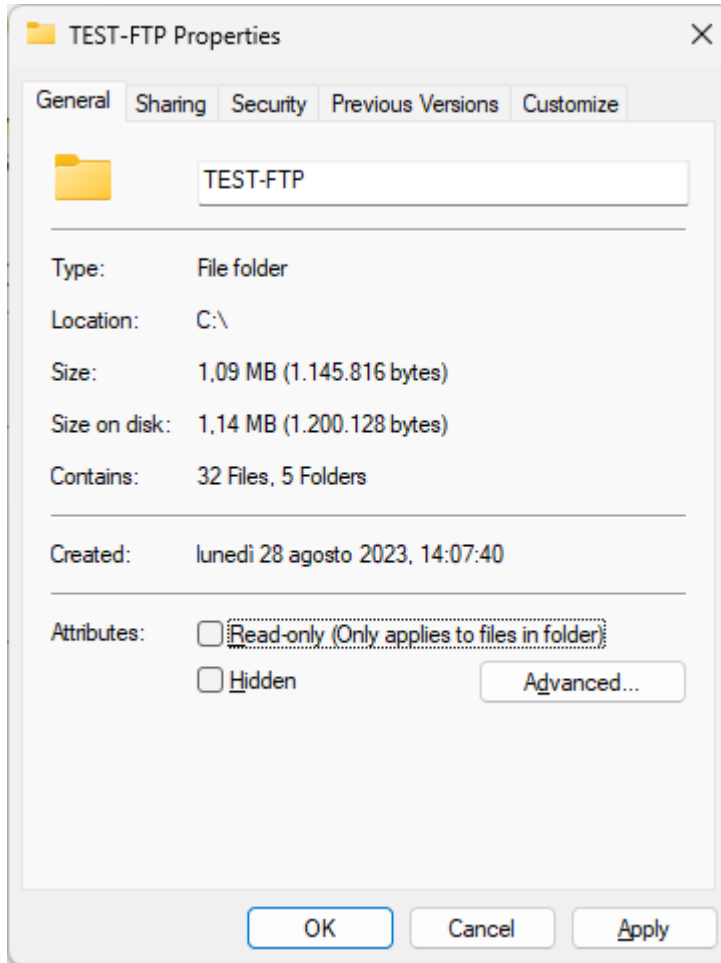
### Firewall Settings

If the FTP server is not receiving messages, as in the image below, review the firewall settings.



### Invalid Folder Attributes

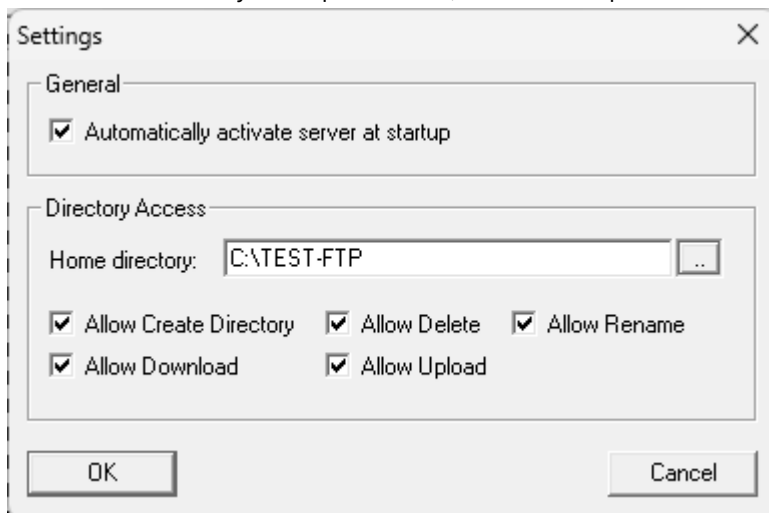
In cases where the FTP server application cannot write on the destination folder. Select the folder and use the ALT+ENTER command to open the properties window and verify that the Read-only checkbox is not enabled.



**Invalid Permissions**

The FTP server configuration prevents certain operations. If the log of the FTP server application shows a critical file transfer error.

To create a directory and upload a file, activate all options as shown in the following figure:

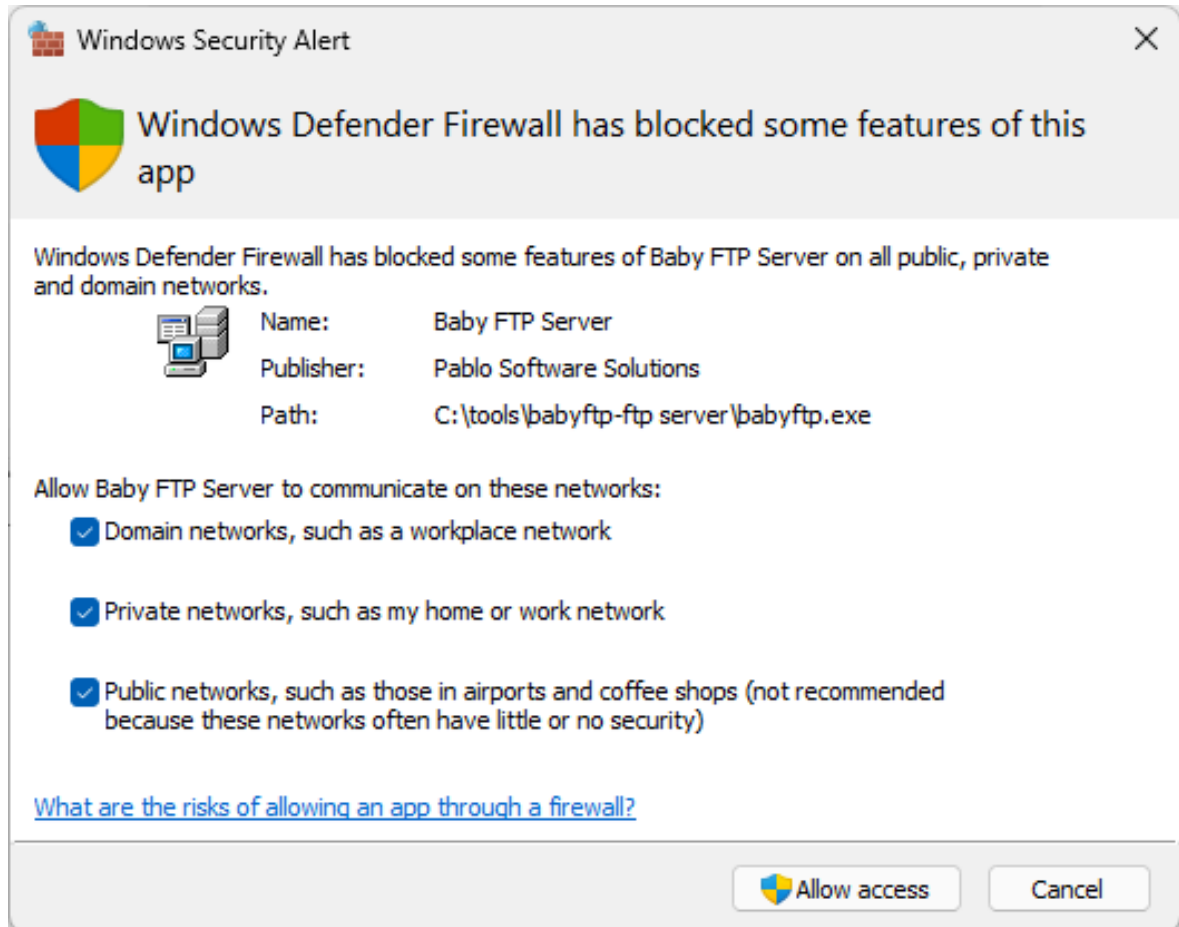


## Testing the FTP Connection

Before using the smart camera, test the FTP connection using an FTP client.

This may also trigger the Windows Defender Firewall for the FTP server application. This operation can be done automatically.

Enable the FTP server for all networks.

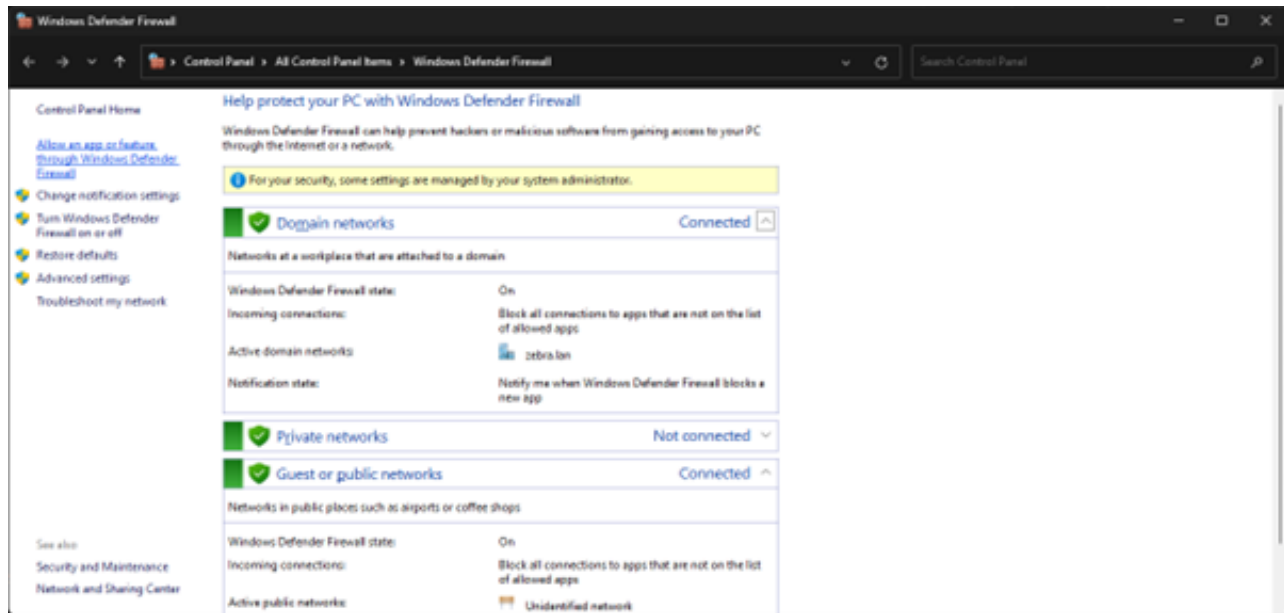


## Configuring the Firewall

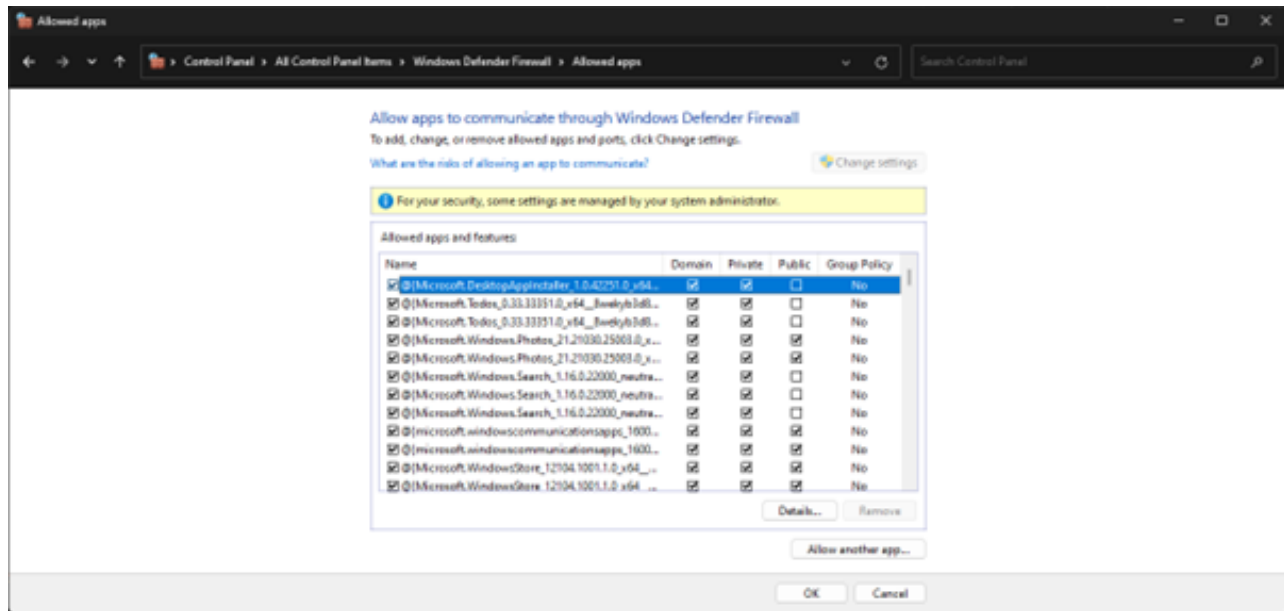
If there is no communication between the smart camera and the FTP Server application, add the FTP server application to the Windows Firewall Rules using the following procedure:

1. Open Windows Defender Firewall

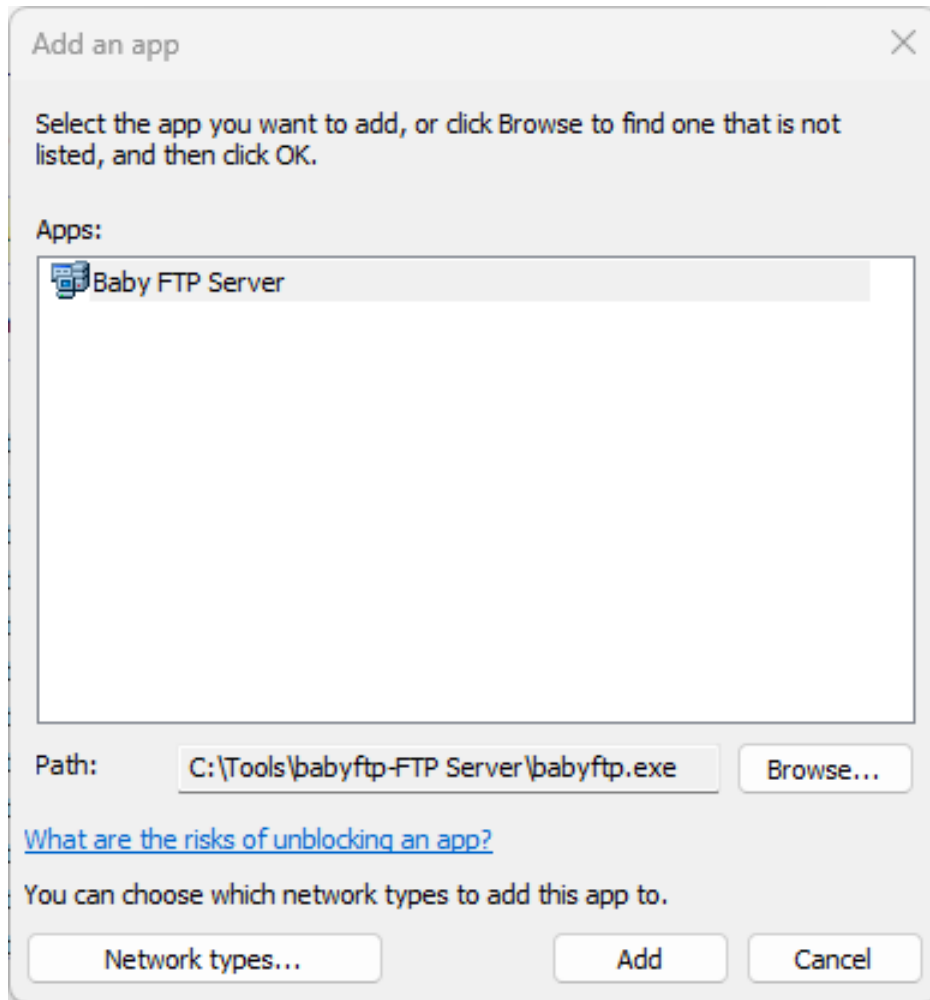
2. Click Allow an app or feature ....



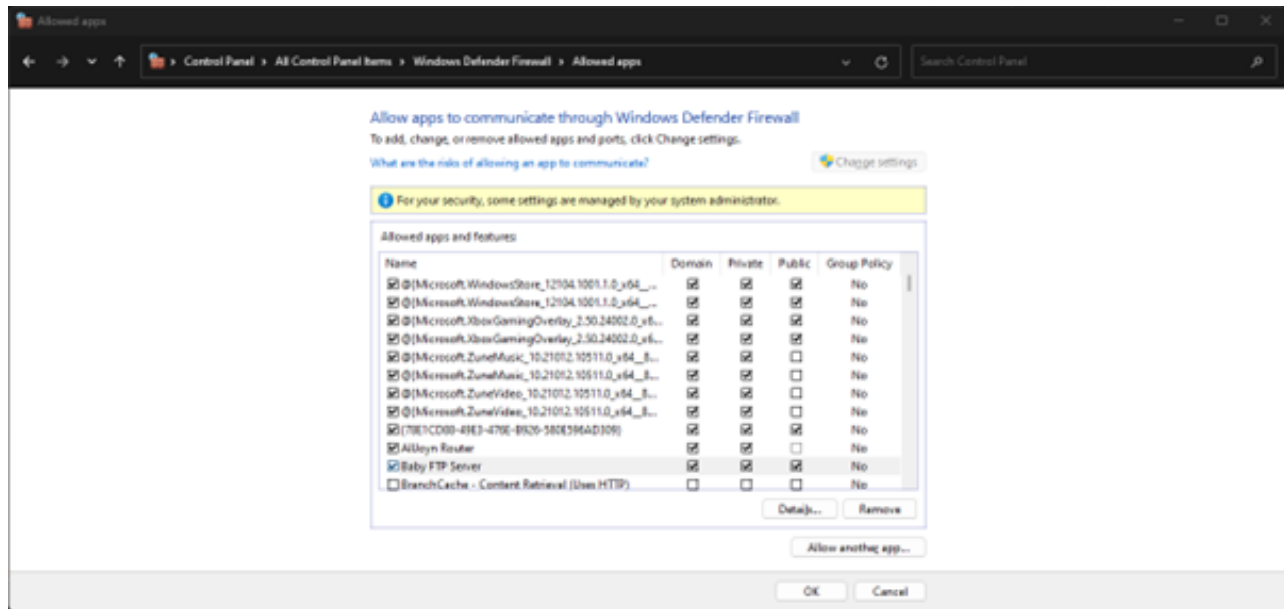
3. Click Allow another app...



4. Select the executable of the FTP server:



5. Select all networks:



6. Click OK to apply the settings.



# RegEx Overview

RegEx is used for filtering code to identify specific objects. This section provides details on what to look for in your code to confirm that RegEx is functioning properly, what data is constant, and what data can change. If you intend to change the data, you must provide the data type or reduce the data to a specific number of characters when possible.

For a full list of filtering commands to identify various data types, characters, and fixed positions or serial use of specific data, refer to [rexegg.com/regex-quickstart.html](https://rexegg.com/regex-quickstart.html)

## RegEx Examples

RegEx refers to a regular expression sequence of characters that specifies a pattern for the application to identify in the image. This section provides examples of common RegEx use cases and outlines the procedure to utilize them in Zebra Aurora Focus.

All five codes were read without a filter:

# RegEx Overview

Barcode String Match

No Read String

Enable Barcode Quality Metrics

Exhaustive 2D Attempt



View Results

Status	Codec	Result	PPM
Good Read			
Good Read	CODE39	01DEC20	1.9
Good Read	CODE39	CN	2.9
Good Read	CODE39	1PCBL-USB03000-USC00	1.2
Good Read	CODE39	Q1	2.9
Good Read	CODE39	2P	2.9

Filter (w) for all strings that include matches any word character (equivalent to [a-zA-Z0-9\_]):

Minimum Coverage Percentage

---

Barcode String Match

Select Last Decode \w  Regex

---

No Read String  

---

Enable Barcode Quality Metrics

---

Exhaustive 2D Attempt

---

**View Results**

Status	Codec	Result	PPM
<span style="color: green;">●</span> Good Read			
<span style="color: blue;">👁</span>	CODE39	001DEC20	19
<span style="color: blue;">👁</span>	CODE39	CN	29
<span style="color: blue;">👁</span>	CODE39	1PCBL-USB03000-USC00	12
<span style="color: blue;">👁</span>	CODE39	Q1	29
<span style="color: blue;">👁</span>	CODE39	2P	29

Read Barcode

(1P)P/N: CBL-USB03000-USC00

(D)MFD: 01DEC20

(2P)REV:

(Q)QUANTITY: 1

MADE IN CHINA

X: 256 Y: 104 R: 104 G: 104 B: 104 Zoom: 01.03% --% Size Available

Filmstrip

Filter (d) for all images with at least one number:

# RegEx Overview

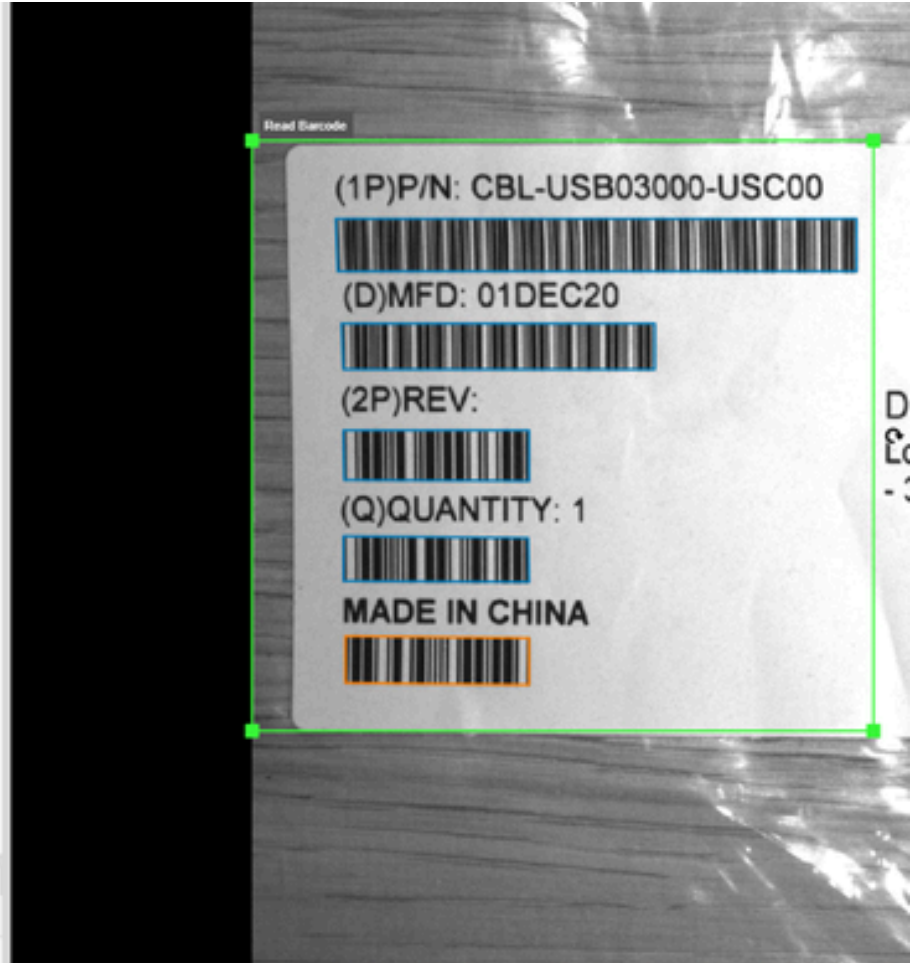
Barcode String Match

Select Last Decode   Regex

No Read String

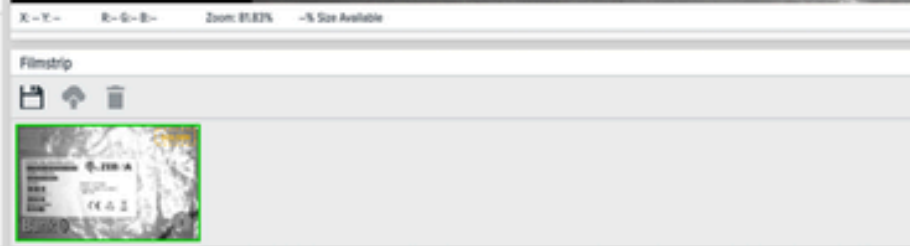
Enable Barcode Quality Metrics

Exhaustive 2D Attempt



View Results

Status	Codec	Result	PPM
Good Read			
	CODE39	01DEC20	1.9
	CODE39	PCBL-USB03000-USC00	1.2
	CODE39	Q1	2.9
	CODE39	2P	2.9



Filter (d0) to all numbers that are followed by zero:

Barcode String Match

Select Last Decode   Regex

No Read String

Enable Barcode Quality Metrics

Exhaustive 2D Attempt

---

**View Results**

Status	Codec	Result	PPM
Good Read	CODE39	01DEC20	1.9
Good Read	CODE39	1PCBL-USB03000-USC00	1.2

Filter (d1) to all numbers followed by the number one:

The screenshot displays a barcode scanning application interface. On the left, there are settings for 'Barcode String Match' (toggle on), 'Select Last Decode' (dropdown set to 'left'), and a checked 'Regex' option. Below these are fields for 'No Read String', 'Enable Barcode Quality Metrics', and 'Exhaustive 2D Attempt'. The main area shows a scanned label with a green bounding box. The label text includes: (1P)P/N: CBL-USB03000-USC00, (D)MFD: 01DEC20, (2P)REV:, (Q)QUANTITY: 1, and MADE IN CHINA. Each line of text is accompanied by a barcode. At the bottom left, a 'View Results' table shows a 'Good Read' status for the CODE39 codec with the result 'D01DEC20' and a PPM of 1.9. The bottom right shows a 'Filmstrip' view of the scanned image.

Status	Codec	Result	PPM
Good Read	CODE39	D01DEC20	1.9

Filter `(\d$)` to every code with a number as its last digit:

Minimum Coverage Percentage

---

Barcode String Match

Select Last Decode   Regex

---

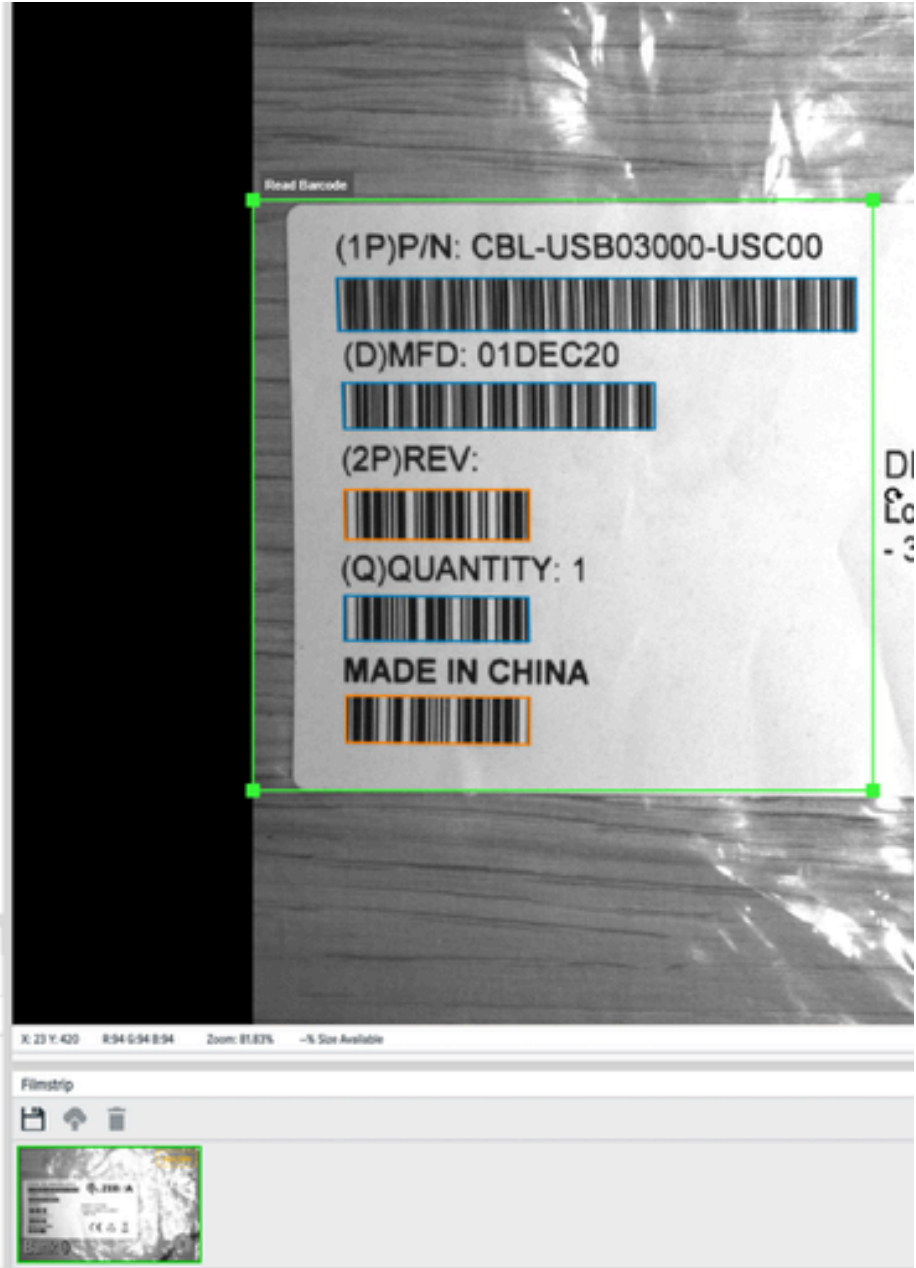
No Read String

---

Enable Barcode Quality Metrics

---

Exhaustive 2D Attempt



Filter (^d) to get any code with a number at the beginning:

The interface includes the following settings:

- Minimum Coverage Percentage
- Barcode String Match:
- Select Last Decode:   Regex
- No Read String:
- Enable Barcode Quality Metrics
- Exhaustive 2D Attempt

The scan results table is as follows:

Status	Codec	Result	PPM
Good Read	CODE39	1PCBL-USB03000-USC00	1.2
	CODE39	2P	2.9

The scanned label contains the following text and barcodes:

- (1P)P/N: CBL-USB03000-USC00
- [Barcode]
- (D)MFD: 01DEC20
- [Barcode]
- (2P)REV:
- [Barcode]
- (Q)QUANTITY: 1
- [Barcode]
- MADE IN CHINA
- [Barcode]

Filter (C) for a string that has the letter C:



The screenshot shows a barcode scanning application interface. On the left is a settings panel, and on the right is a live scan of a shipping label with a green bounding box around the label area.

**Settings Panel:**

- Barcode String Match:
- Select Last Decode:   RegEx
- No Read String:
- Enable Barcode Quality Metrics:
- Exhaustive 2D Attempt:

**View Results Table:**

Status	Codec	Result	PPM
Good Read	CODE39	D01DEC20	1.9
Good Read	CODE39	CN	2.9
Good Read	CODE39	1PCBL-USB03000-USC00	1.2

**Label Text:**

(1P)P/N: CBL-USB03000-USC00  
 (D)MFD: 01DEC20  
 (2P)REV:  
 (Q)QUANTITY: 1  
 MADE IN CHINA

Filter [DU] by a list. This example is the letter D or U:

# RegEx Overview

The screenshot displays a barcode scanning application interface. On the left, there are settings for decoding, including a dropdown for 'Select Last Decode' set to '[DU]', a checked 'Regex' option, a 'No Read String' input field, and checkboxes for 'Enable Barcode Quality Metrics' and 'Exhaustive 2D Attempt'. The main area shows a barcode image with a green bounding box around the label. The label text is: (1P)P/N: CBL-USB03000-USC00, (D)MFD: 01DEC20, (2P)REV:, (Q)QUANTITY: 1, and MADE IN CHINA. Below the image is a 'View Results' table with columns for Status, Codec, Result, and PPM. The table shows two entries: a 'Good Read' with Codec CODE39 and Result D01DEC20 (PPM 1.9), and another 'Good Read' with Codec CODE39 and Result 1PCBL-USB03000-USC00 (PPM 1.2). A 'Filmstrip' view at the bottom shows a sequence of frames with a green bounding box around the label.

Select Last Decode [DU]  Regex

No Read String

Enable Barcode Quality Metrics

Exhaustive 2D Attempt

**View Results**

Status	Codec	Result	PPM
Good Read	CODE39	D01DEC20	1.9
Good Read	CODE39	1PCBL-USB03000-USC00	1.2

X: 772 Y: 178 R: 191 G: 191 B: 191 Zoom: 81.83% --S: Size Available

Filmstrip

Look for a specific string in the code (\USB):

The interface is divided into three main sections: settings, a live scan view, and results.

**Settings:**

- Barcode String Match:  (toggle)
- Select Last Decode:   Regex
- No Read String:
- Enable Barcode Quality Metrics:
- Exhaustive 2D Attempt:

**Live Scan View:**

A label for a USB cable is shown with a green bounding box. The text on the label is:

- (1P)P/N: CBL-USB03000-USC00
- [Barcode]
- (D)MFD: 01DEC20
- [Barcode]
- (2P)REV:
- [Barcode]
- (Q)QUANTITY: 1
- [Barcode]
- MADE IN CHINA
- [Barcode]

**View Results:**

Status	Codec	Result	PPM
Good Read	CODE39	9PCBL-USB03000-USC00	1.2

Below the table is a thumbnail of the scanned label.

Look for any data filter (^\*):

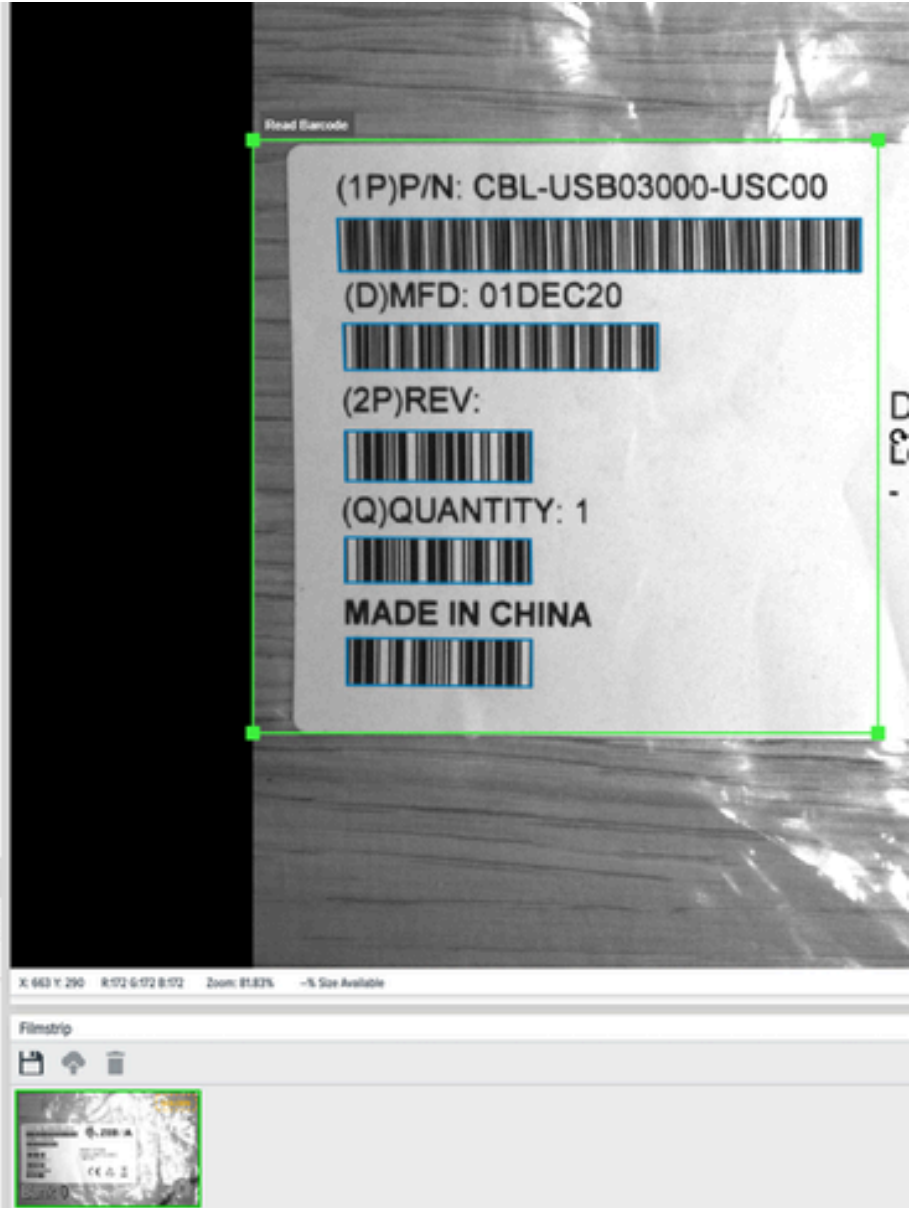
Barcode String Match

Select Last Decode   Regex

No Read String

Enable Barcode Quality Metrics

Exhaustive 2D Attempt



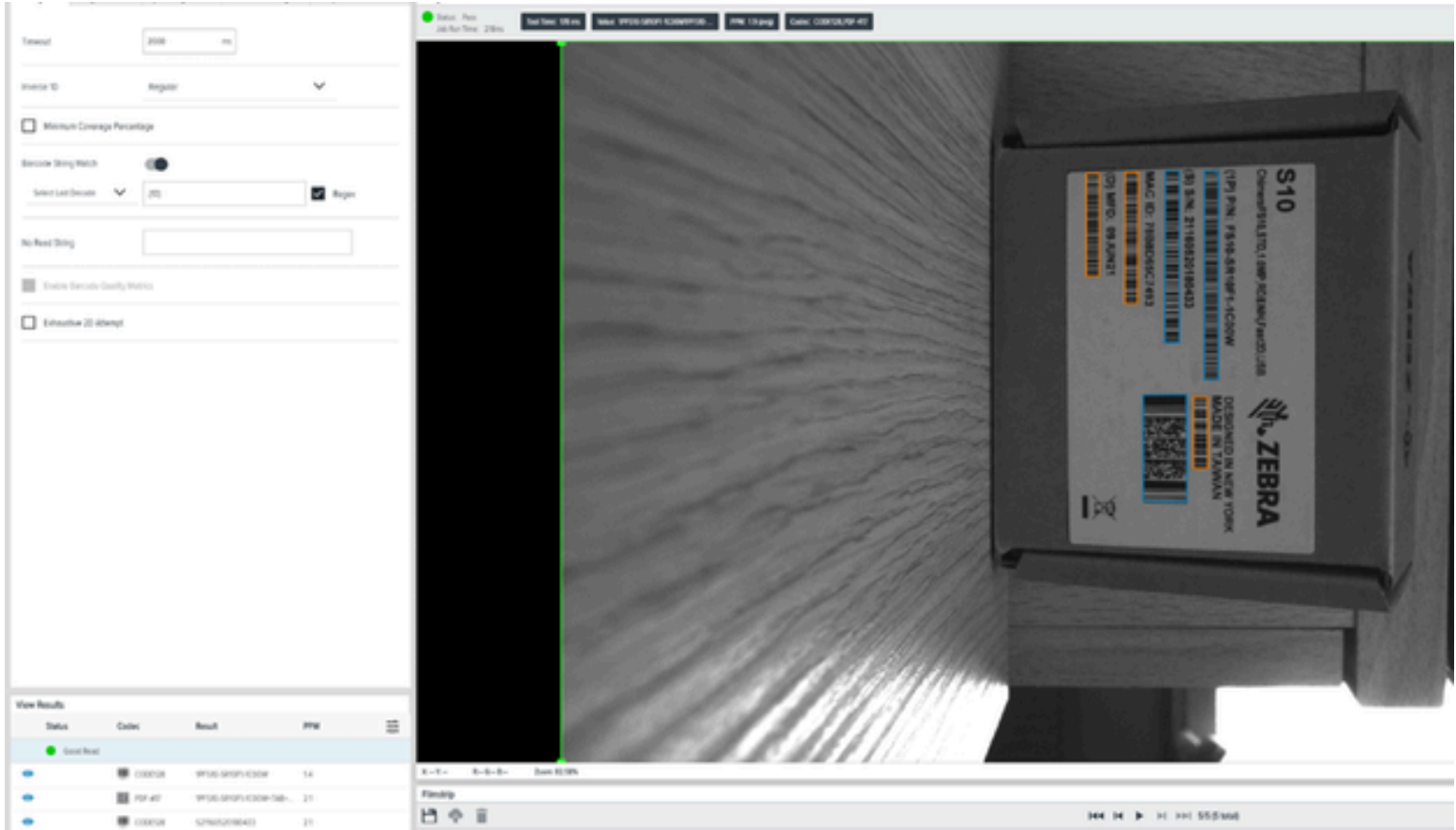
Look for two specific prefix data filters (^78|^S2):

- ^ sets the anchor to the first char or string in the code
- | is the logical OR



Look for a minimum code length (`{11}`):

- `.` allows any sign
- `{11}` is the number of signs needed for the result to be true. All orange codes are shorter than 11 signs.



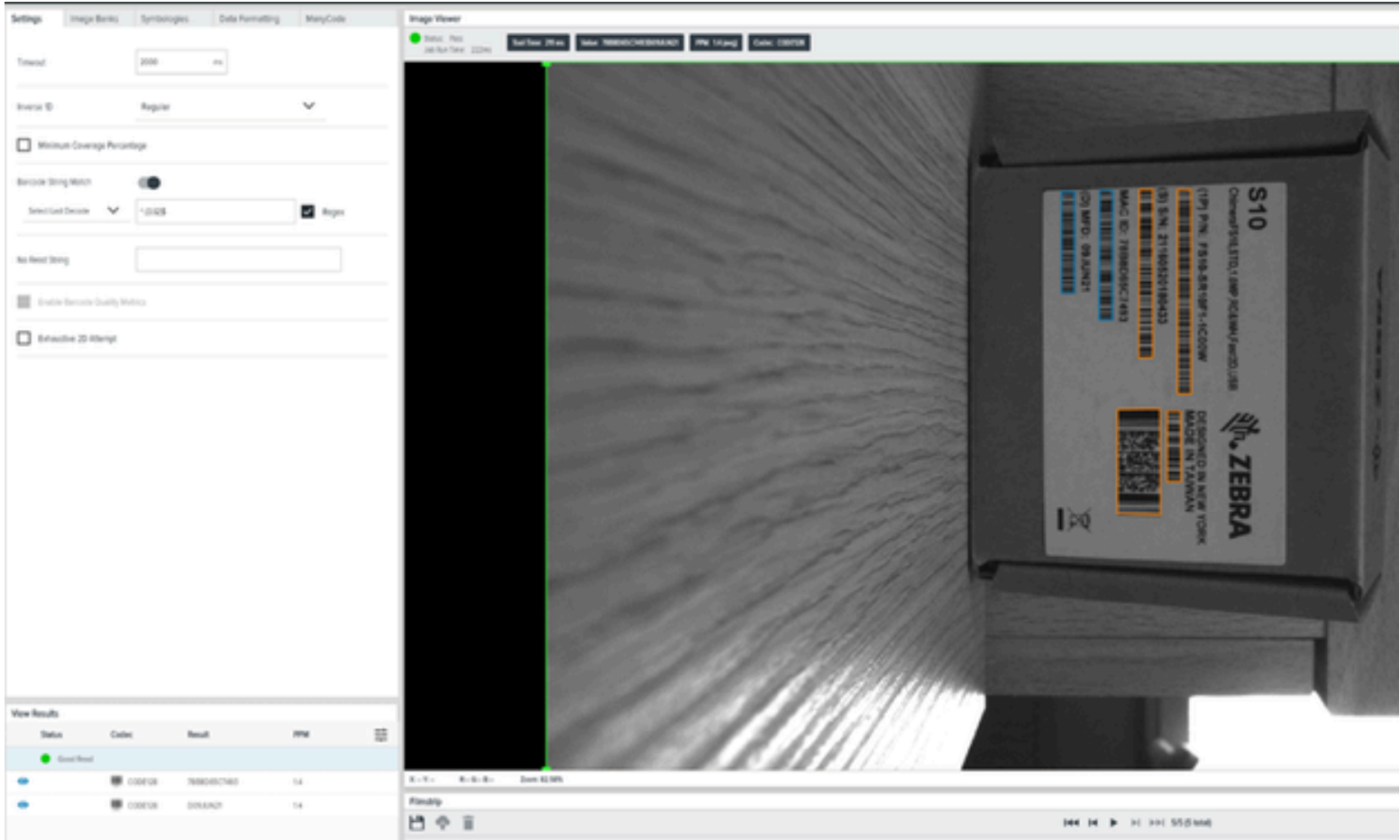
Look for a code length range (`^{3,12}$`):

- “^” anchor at the start of the code
- “\$” anchor at the end of the code

Specify the desired output by providing the information inside the brackets:

- . allows any sign.
- **{3,12}** the first number is the minimum number of signs needed to be true, and the second number represents the maximum

All codes with two or fewer signs are ignored, such as the TW on top of the PDF417 code. Codes with a length of 13 or more signs are also ignored.



Look for a code length range and an identifier (`^78.{3,12}$`):

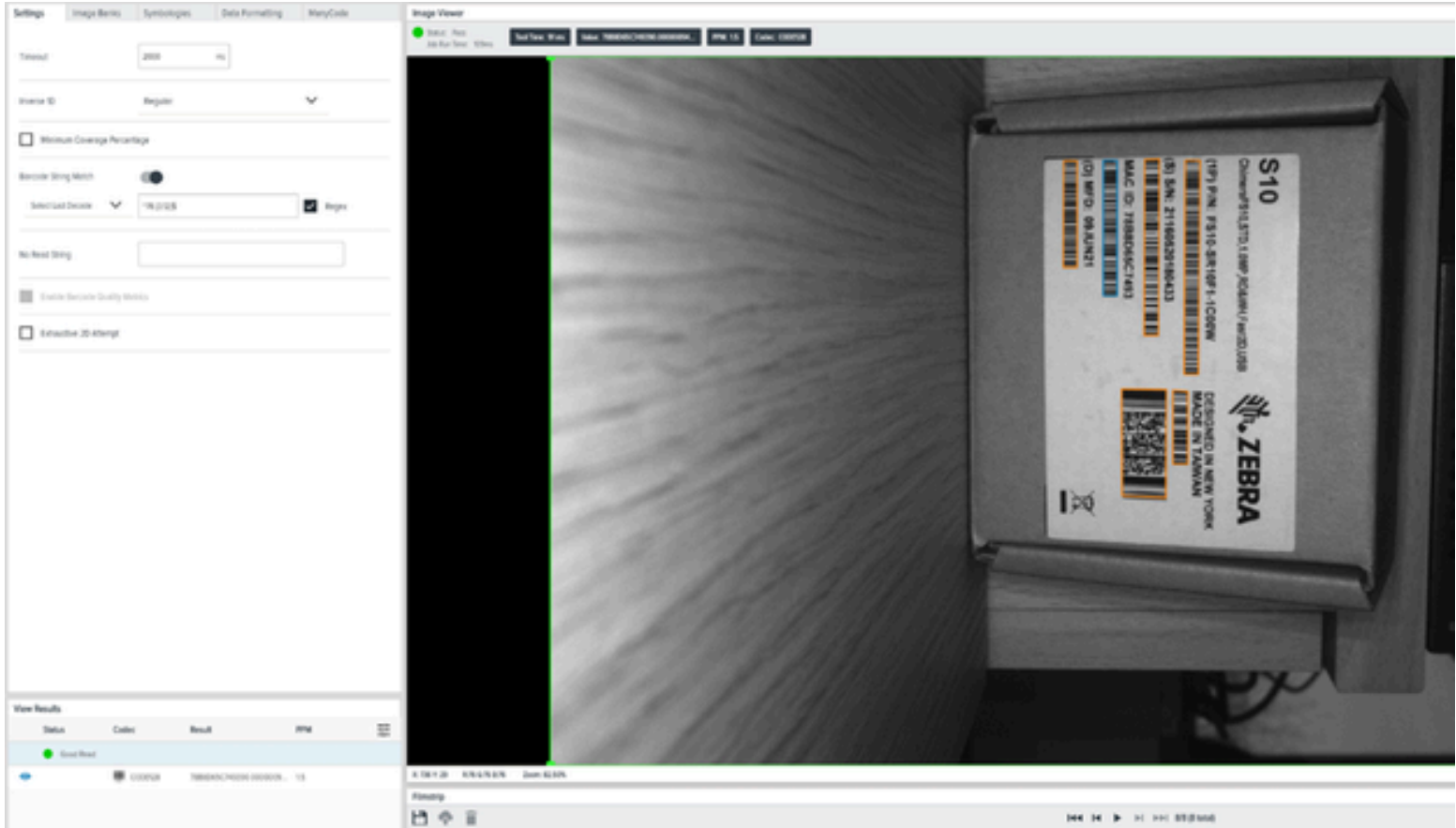
- `^` anchor at the start of the code.
- `$` anchor at the end of the code.

Specify the desired output by providing the information inside the brackets:

- `.` allows any sign.
- `78` is the identifier needs to be at the beginning of the string.
- `{3,12}` the first number is the minimum number of signs needed to be true, and the second number represents the maximum.

All codes with two or fewer signs are ignored, such as the TW on top of the PDF417 code. Codes with a length of 13 or more signs are ignored as well.





Look for anything else, then look for a code length range and an identifier (`^(?!^78.{3,12}$)`) with inverse logic:

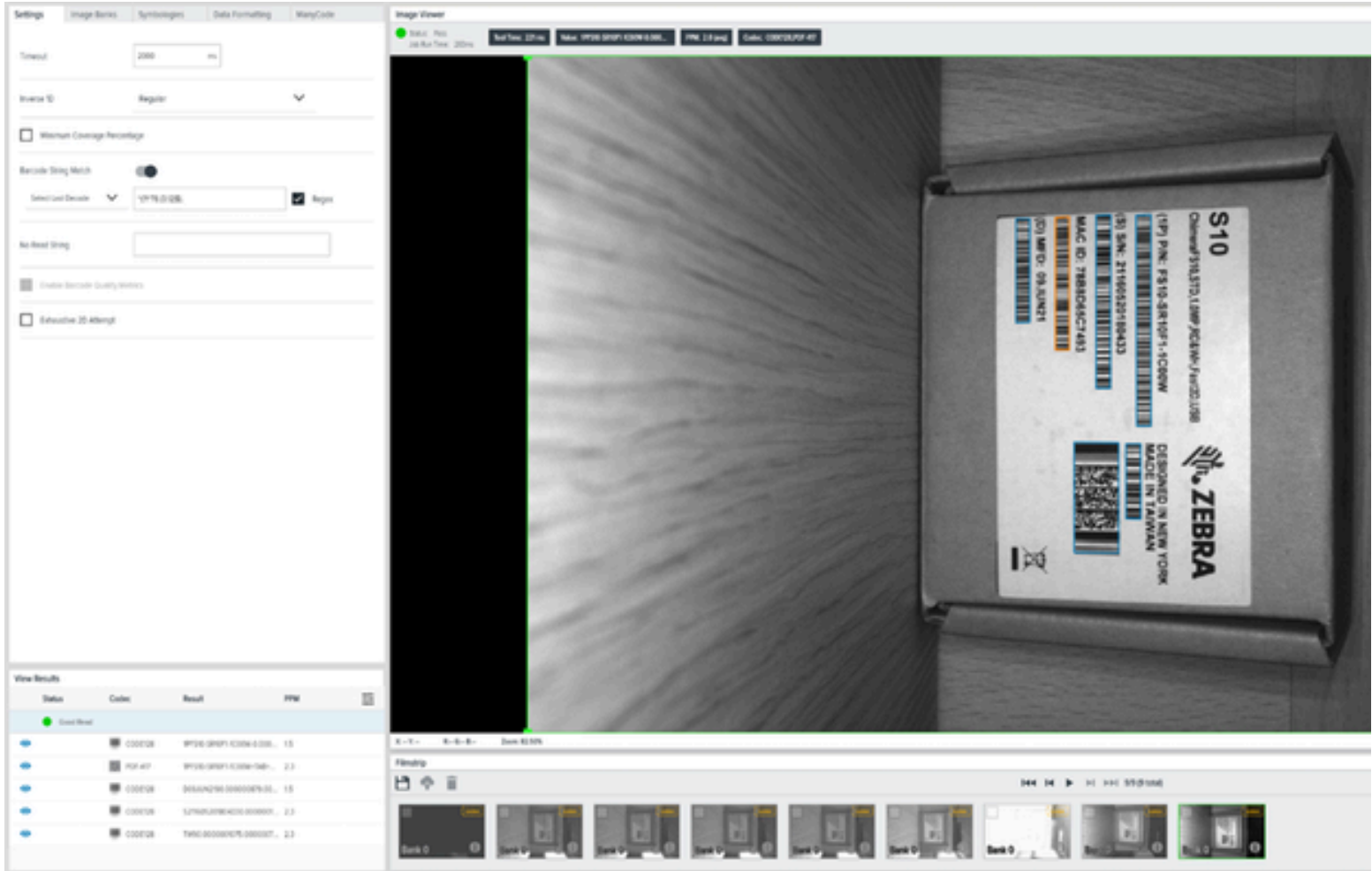
- `^` allows any sign.
- `$` is the identifier needs to be at the beginning of the string.

Specify the desired output by providing the information inside the brackets.

- `.` allows any sign.
- `78` is the identifier needs to be at the beginning of the string.
- `{3,12}` the first number is the minimum number of signs needed to be true, and the second number represents the maximum

Use the syntax `^(?!pattern)`, where the pattern is the pattern for negative pattern matching:





Look for a numeric code with a length of 13 and starts with a four or a numeric code with a length of 20 that starts with a 0 (^4\d{12})|^0\d{19}):

- ^ anchor at the start of code ^4 means the specific number 4 needs to be the first number in the code.
- \d allows numbers only (0-9).
- {12} number of signs needed to be true, and the second number represents the maximum. It's one less than the code length because the full string consists of the fixed first number + 12 numbers.
- | is the logical OR

# RegEx Overview

The screenshot displays a software interface for barcode scanning. On the left is a 'Settings' panel with various options like 'Timeout', 'Inverse ID', and 'Barcode String Match'. The 'Barcode String Match' section has a text input field containing the regex pattern `^FIS\{13\}` and a checked 'Regex' checkbox. The main area is an 'Image Viewer' showing a video feed of a Zebra box with a label. The label contains several barcodes and text, including 'S10', 'ZEBRA', and 'DESIGNED IN NEW YORK'. Below the video feed is a 'View Results' table with columns for Status, Codec, Result, and PPM. The table shows several rows of scan results, including the serial number '5279605209043300000001'.

Status	Codec	Result	PPM
Good Read	CODE128	FIS10 SR10F1-K00W-0.000...	1.5
	PDF-417	FIS10 SR10F1-K00W-54B...	2.3
	CODE128	D05AUN290.000000879.00...	1.5
	CODE128	5279605209043300000001...	2.3
	CODE128	T990.000000075.0000007...	2.3

Find the serial number field of the FIS/MV Zebra Boxes (`^S\d{13}`):

- `^`
- `\d` allows numbers only (0-9).
- `{13}`

# RegEx Overview



# Using Zebra Easy Text Interface

Zebra Easy Text Interface (ZETI) is a set of commands used to retrieve information from the device over telnet Port 23 by default.

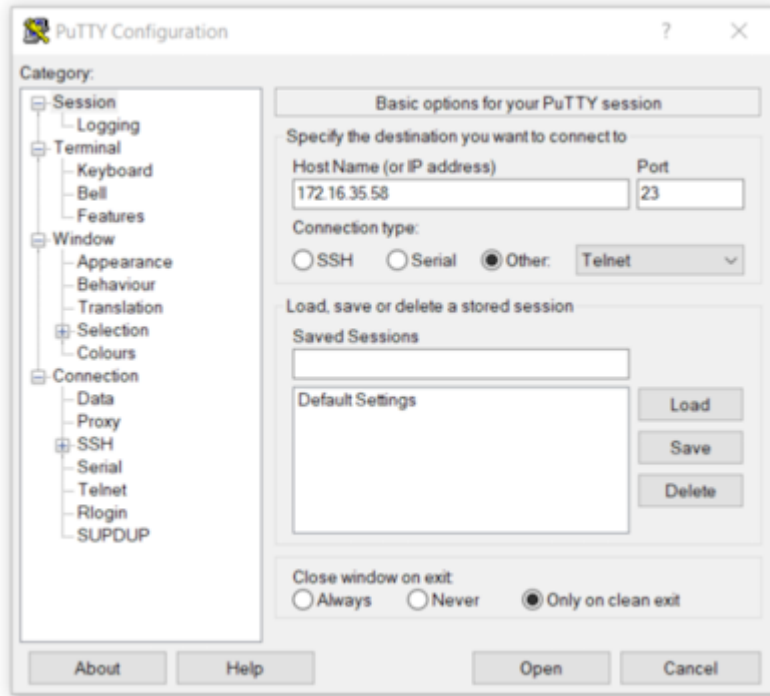
## Telnet Connections

Use a PC-based terminal over ZETI with a device.

To enable Telnet:

- Press Win + R to open Run.
- Search for the Control Panel and click **OK**.
- On the Control Panel, click **Programs and Features**.
- Using the left panel, click **Turn Windows Features On or Off**.
- enable telnet client Windows features dialog
- In the Windows Features dialog, scroll down and select Telnet Client.

You can also use a terminal client such as Teraterm or Putty. The following image displays the procedure using Putty.



After opening the session, type the command name and press enter.

```
ASCII Connected
help
*****
Supported Commands
*****
trigger
getimage
getquantity
getcodes
getdecodes
internallight
gain
focus
exposure
autoexposure
autofocus
aimer
getimagersettings
```

## ZETI Commands

### aimer

Use the aimer command to control the aimer by passing on/off as an argument.

**Table 75** aimer

Command	short	Parameter	Data	Range	Example
aimer	ai	-	On/Off	-	aimer on command: aimer,ok

## autoexposure

Use the autoexposure command to enable or disable the autoexposure feature by passing a Boolean value as an argument.

**Table 76** autoexposure

Command	Short	Parameter	Data	Range	Example
autoexposure	ae	-	true/false	-	autoexposure true command: autoexposure,ok

## autofocus

Use the autofocus command to enable or disable the autofocus feature through barcode reading by passing a Boolean value as an argument.

**Table 77** autofocus

Command	short	Parameter	Data	Range	Example
autofocus	af	-	true/ false	-	autofocus true command: autofocus,ok

## autotune

Use the autotune command to adjust the focus settings of the device based on the specified parameter.

**Table 78** autotune

Command	short	Parameter	Data	Range	Example
autotune	at	.brightness .focus .method	true/false	-	autotune .brightness true .focus true .method barcode command: autotune,ok

## backuprestore

backup

Use the backuprestore command to backup a file by passing a backup parameter as CONFIG and the action as 1.

**Table 79** backup

Command	Short	Parameter	Data	Range	Example
backuprestore	br	backup	CONFIG, JOB_DATA, ALL	-	br .backup CONFIG .action 1 command:br,ok

**Table 79** backup (Continued)

Command	Short	Parameter	Data	Range	Example
backuprestore	br	action	1		br .backup CONFIG .action 1 command:br,ok

restore

Use the backuprestore command to restore a file to the device.

**Table 80** restore

Command	Short	Parameter	Data	Range	Example
backuprestore	br	action. path	0 base64_data	-	br .action 0 .path base64_data command:br,ok



**NOTE:** Use a Python script to restore the file to the device.

## deletejob

Use deletejob to update the device firmware.

**Table 81** deletejob

Command	short	Parameter	Data	Range	Example
deletejob	dj	-	Number	-	deletejob 1 command:deletejob,ok

## dwsideload

Use the dwsideload command to upload the dwx configuration file to the device.



**NOTE:** Use a python script to transfer the .dwx file to the device.

**Table 82** dwsideload

Command	Short	Parameter	Range	Example
dwsideload	dws	file.dwx (base64 format)	-	python dwsideload file.dwx <CR><LF> command: dwsideload,ok

## exposure

Use the exposure command to set the exposure value by passing an argument.

**Table 83** exposure

Command	short	Parameter	Range	Example
exposure	ex	-	0.05 to 14	exposure 1 command: exposure,ok

## factoryreset

Use the factoryreset command to return the device to its default state

**Table 84** factoryreset

Command	short	Parameter	Data	Range	Example
factoryreset	fr	device_settings	-	-	factoryreset device_settings command: factoryreset,ok

## firmwareupdate

Use firmwareupdate to update the device firmware.



**NOTE:** The firmwareupdate command is not supported on FS10 devices.

**Table 85** firmwareupdate

Command	short	Parameter	Data	Range	Example
firmwareupdate	fwu	-	ftp server username ftp server password ftp server url firmware name (scnplg2) force update keepfile	-	fwu user pass 172.16.35.58 abc.scnplg2 11 command:fwu,ok

## focus

Use the focus command to set the focus value by passing an argument.



**Table 86** focus

Command	short	Parameter	Range	Example
focus	fo	-	-6 to 8	focus 7 command: focus,ok

## gain

Use the gain command to set the gain value by passing an argument.

**Table 87** gain

Command	short	Parameter	Range	Example
gain	ga	-	0 to 100	gain 2 command: gain,ok

## getattribute

Using the getattribute command we can get the value for the required attribute by passing attribute number as a argument

**Table 88** getattribute

Command	short	Parameter	Data	Range	Example
getattribute	gat	Number	Attribute Number	-	getattribute 65048 command: getattribute,ok

## getcodes

Use the getcodes command to retrieve the code and value of the last operation.

**Table 89** getcodes

Command	short	Parameter	Data	Range	Example
getcodes	gc	-	-	-	getcodes command: getcodes,ok

## getdecodes

Use the getdecodes command to retrieve the decoded value of the last operation.

**Table 90** getdecodes

Command	short	Parameter	Data	Range	Example
getdecodes	gd	-	-	-	getdecodes command: getdecodes,ok

## getimage

Use the getimage command to capture a new image that is not counted as a trigger and download the image as a base64 buffer. The buffer contains a BMP file.

**Table 91** getimage

Command	short	Parameter	Range	Example
getimage	gi	Base64	-	getimage command: getimage,ok 3073440 /9j/4AAQSkZJRgABAQAAAQABAAD

## getimagersettings

Using the getimagersettings command to retrieve the value of all the parameters mentioned in the following table:

**Table 92** getimagersettings

Command	short	Parameter	Range	Example
getimagersettings	gis	aimer	-	getimagersettings aimer command: getimagersettings,ok
getimagersettings	gis	external_light	-	getimagersettings external_light command: getimagersettings,ok
getimagersettings	gis	imager	-	getimagersettings imager command: getimagersettings,ok
getimagersettings	gis	internal_light	-	getimagersettings Internal_light command: getimagersettings,ok
getimagersettings	gis	gain	-	getimagersettings gain command: getimagersettings,ok
getimagersettings	gis	focus	-	getimagersettings focus command: getimagersettings,ok

**Table 92** getimagersettings (Continued)

Command	short	Parameter	Range	Example
getimagersettings	gis	exposure	-	getimagersettings exposure command: getimagersettings,ok
getimagersettings	gis	autoexposure	-	getimagersettings autoexposure command: getimagersettings,ok
getimagersettings	gis	autofocus	-	getimagersettings autofocus command: getimagersettings,ok

## getgpiostatus

Use the getgpiostatus command to get the value of the requested pin by passing a pin number as the argument.

**Table 93** getgpiostatus

Command	Short	Parameter	Data	Range	Example
getgpiostatus	gst	Number	Pin number	-	getgpiostatus 1 command:getgpiostatus,ok {response}

## getgpiosetting

Use getgpiosetting to update the device firmware.

**Table 94** getgpiosetting

Command	Short	Parameter	Range	Example
getgpiosetting	ggs	Pin number, mode	-	ggs .pin 1 .mode command:ggs,ok {response}
getgpiosetting	ggs	Pin number, strobe	-	ggs .pin 1 .strobe command:ggs,ok {response}
getgpiosetting	ggs	Pin number, reset	-	ggs .pin 1 .reset command:ggs,ok {response}
getgpiosetting	ggs	Pin number, edge	-	ggs .pin 1 .edge command:ggs,ok {response}

**Table 94** getgpiosetting (Continued)

Command	Short	Parameter	Range	Example
getgpiosetting	ggs	Pin number, debounce	-	ggs .pin 1 .debounce command:ggs,ok {response}
getgpiosetting	ggs	Pin number, delay	-	ggs .pin 1 .delay command:ggs,ok {response}
getgpiosetting	ggs	Pin number, pulsewidth	-	ggs .pin 1 .pulsewidth command:ggs,ok {response}

## getjoblist

Use a getjoblist command to retrieve the list of all jobs loaded on the device

**Table 95** getjoblist

Command	short	Parameter	Data	Range	Example
getjoblist	gjl	-	-	-	getjoblist command: getjoblist,ok

## getlogfiles

Device Logs

Generate a log.tar and retrieve the tar file.

**Table 96** Device Logs

Command	Short	Parameter	Range	Example
getlogfiles	glf	devicelogs	-	getlogfiles devicelogs command:getlogfiles,ok

Perfetto Logs

Use a python script to retrieve the latest Perfetto logs.

**Table 97** Perfetto Logs

Command	Short	Parameter	Range	Example
getlogfiles	glf	Number	1-10	getlogfiles 10 command:getlogfiles,ok

## getquantity

Use the getquantity command to retrieve the number of codes of the last operation.

**Table 98** getquantity

Command	Short	Parameter	Data	Range	Example
getquantity	gq	-	-	-	getquantity command: getquantity,ok

## getresultimage

Use the getresultimage command to download the last inspected image as a base64 buffer. The resulting image is a JPG file.

**Table 99** getresultimage

Command	Short	Parameter	Data	Range	Example
getresultimage	gri	-	Base64	-	getresultimage command: getresultimage,ok 90326 /9j/4AAQSkZJRgABAQAAQABAAD

## help

Use the help command to return all supported ZETI commands.

**Table 100** help

Command	short	Parameter	Data	Range	Example
help	he	None	-	-	help Supported Commands trigger getimage getquantity ... list of all supported commands

## internallight

Use the internal light command to enable or disable the internal light feature by passing On or Off as an argument.

**Table 101** internallight

Command	short	Parameter	Data	Range	Example
internallight	il	-	on/off	-	internallight on command: internallight,ok

## loadjob

Use loadjob to load the job passing slot number as an argument to ensure that the required job is loaded

**Table 102** loadjob

Command	short	Parameter	Data	Range	Example
loadjob	lj	-	Number	-	loadjob command:loadjob,ok

## protocolconfig

Use a protocolconfig command to set global parameters.



**NOTE:** Logs are not recorded on Telnet if .echo is off while using protocolconfig.

**Table 103** protocolconfig

Command	short	Parameter	Data	Range	Example
protocolconfig	pc	.echo	on/off	-	protocolconfig .echo off command:protocolconfig,ok

## reboot

Use this command to reboot the device.

**Table 104** reboot

Command	short	Parameter	Data	Range	Example
reboot	re	None	-	-	reboot command:reboot,ok

## setattribute

Use the setattribute command to set a value for the required attribute by passing the attribute number as the first argument and the value as the second argument

**Table 105** setattribute

Command	short	Parameter	Data	Range	Example
setattribute	sa	-	Attribute Number, Value	-	setattribute 65048 3 command: setattribute,ok

## setgpiosetting

Use the setgpiosetting command to retrieve the attribute values of a pin.

**Table 106** setgpiosetting

Command	Short	Parameter	Range	Example
setgpiosetting	sgs	Pin number, mode, Number	-	sgs .pin 1 .mode 0 command:sgs,ok
setgpiosetting	sgs	Pin number, reset, Number	-	sgs .pin 1 .strobe 0 command:sgs,ok
setgpiosetting	sgs	Pin number, strobe, Number	-	sgs .pin 1 .reset 0 command:sgs,ok
setgpiosetting	sgs	Pin number, edge, Number	-	sgs .pin 1 .edge 0 command:sgs,ok
setgpiosetting	sgs	Pin number, debounce, Number	-	sgs .pin 1 .debounce 0 command:sgs,ok
setgpiosetting	sgs	Pin number, delay, Number	-	sgs .pin 1 .delay 0 command:sgs,ok
setgpiosetting	sgs	Pin number, pulsewidth, Number	-	sgs .pin 1 .mode pulsewidth 0 command:sgs,ok

## setgpiostatus

Use the setgpiostatus command to set the value for the required pin by passing a pin number as the first argument and the value as the second argument.

**Table 107** setgpiostatus

Command	Short	Parameter	Data	Range	Example
setgpiostatus	sst	Number, Number	Pin number, value	-	setgpiostatus 1 0 command:setgpiostatus,ok

## trigger

Use the trigger command to trigger an active job.

**Table 108** trigger

Command	Short	Parameter	Data	Range	Example
trigger	tr	-	Number	-	trigger command: trigger,ok

- getjobdata(gjd) – Get the data from specified job.
- setjobdata(sjd) – Set the data from specified job.

getjobdata .jobData.trigger.mode .slot 3

Settings related to jobData.trigger are configured using get/setjobdata with the sub parameters displayed in the following table:

**Table 109** trigger

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. trigger .jt	mode	NONE SINGLE_SHOT LEVEL BURST PERIODIC_SINGLE_SHOT CONTINUOUS PRESENTATION	gjd .jt.mode .slot 3 command: gjd,ok {response} sjd .jt.mode CONTINUOUS . slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger .jt	start_criteria	GPIO DEVICE SERIAL PLC TCP_IP AUTO TEST_TRIGGER	gjd .jt.start_criteria .slot 3 command: gjd,ok {response} sjd .jt.start_criteria AUTO .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger .jt	end_criteria	GPIO DEVICE SERIAL PLC TCP_IP AUTO TEST_TRIGGER	gjd .jt.end_criteria .slot 3 command: gjd,ok {response} sjd .jt.end_criteria AUTO .slot 3 command: sjd,ok



**Table 109** trigger (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. trigger .jt	show_image	true/false	gjd .jt.show_image .slot 3 command: gjd,ok {response} sjd .jt.show_image true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger .jt	no_read _same_ barcode	Int	gjd .jt.no_read_same_barcode .slot 3 command: gjd,ok {response} sjd .jt.no_read_same_barcode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger .jt	reset_dnr _on_trigger	true/false	gjd .jt.reset_dnr_on_trigger .slot 3 command: gjd,ok {response} sjd .jt.reset_dnr_on_trigger true .slot 3 command: sjd,ok

getjobdata .jobData.meta.description .slot 3

Settings related to jobData.meta are configured using the get/setjobdatawith the sub parameters displayed in the following table:

**Table 110** meta

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. meta .jm	description	String	gjd .jm.description .slot 3 command: gjd,ok {response} sjd .jm.description String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. meta .jm	device	String	gjd .jm.device .slot 3 command: gjd,ok {response} sjd .jm.device String .slot 3 command: sjd,ok

**Table 110** meta (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. meta .jm	filePath	NullString	gjd .jm.filePath .slot 3 command: gjd,ok {response} sjd .jm.filePath String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. meta .jm	title	String	gjd .jm.title .slot 3 command: gjd,ok {response} sjd .jm.title String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. meta .jm	zoom_level	Number	gjd .jm.zoom_level .slot 3 command: gjd,ok {response} sjd .jm.zoom_level String .slot 3 command: sjd,ok

getjobdata .jobData.trigger.trigger\_settings.same\_barcode\_timeout .slot 3

Settings related to jobData.trigger.trigger\_settings are configured using get/setjobdata with the sub-parameters displayed in the following table

**Table 111** trigger\_settings

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	same_barcode _timeout	Number (0-500 ms)	gjd .jts.same_barcode_timeout .slot 3 command: gjd,ok {response} sjd .jts.same_barcode_timeout 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	job_interval	Number (0-60000 ms)	gjd .jts.job_interval .slot 3 command: gjd,ok {response} sjd .jts.job_interval 1. slot 3 command: sjd,ok

**Table 111** trigger\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	burst_count	Number (1-100)	gjd .jts.burst_mode .slot 3 command: gjd,ok {response} sjd .jts.burst_count 1.slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	presentation_ sensitivity	Number	gjd .jts.presentation_sensitivity .slot 3 command: gjd,ok {response} sjd .jts.presentation_sensitivity 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	decode_ failure_timeout	Number (0-60000 ms)	gjd .jts.decode_failure_timeout .slot 3 command: gjd,ok {response} sjd .jts.decode_failure_timeout 1 .slot 3 command: sjd,ok
getjobdata setjobdata	jobData. trigger. trigger_settings .jts	active_level	LOW HIGH	gjd .jts.active_level .slot 3 command: gjd,ok {response} sjd .jts.active_level 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger. trigger_settings .jt	fast_hw_ _trigger_ enabled	true/false	gjd .jts.fast_hw_trigger_enabled .slot 3 command: gjd,ok {response} sjd .jts.fast_hw_trigger_enabled true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	read_multiple_ _barcode	true/false	gjd .jts.read_multiple_barcodes .slot 3 command: gjd,ok {response} sjd .jts.read_multiple_barcodes true .slot 3 command: sjd,ok

**Table 111** trigger\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	send _aggregate _level_assert_ data	true/false	gjd .jts.send_aggregate_level_assert_data .slot 3 command: gjd,ok {response} sjd .jtssend_aggregate_level_assert_data true .slot 3 command: sjd,ok
getjobdata setjobdat	.jobData. trigger. trigger_settings .jts	disable_active _job_timeout	true/false	gjd .jts.disable_active_job_timeout .slot 3 command: gjd,ok {response} sjd .jts.disable_active_job_timeout true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. trigger. trigger_settings .jts	same_data _timeout _must_leave _fov	true/false	gjd .jts.same_data_timeout_must_leave_fov .slot 3 command: gjd,ok {response} sjd .jts.same_data_timeout_must_leave_fov true .slot 3 command: sjd,ok

getjobdata .jobData.imager\_setups.aimer

Settings related to jobData.image\_setups are configured using the getjobdata/setjobdata with the sub-parameters displayed in the following table:

**Table 112** imager\_setups

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. imager_setups .ji	aimer	true/false	gjd .ji.0.aimer .slot 3 command: gjd,ok {response} sjd .ji.0.aimer.true . slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	imager .auto_exposure	true/false	gjd .ji.0.imager.auto_exposure .slot 3 command: gjd,ok {response} sjd .ji.0.imager.auto_exposure . slot 3 command: sjd,ok

**Table 112** imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. imager_setups .ji	bank	Number	gjd .ji.0.bank .slot 3 command: gjd,ok {response} sjd .ji.0.bank true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	external_light .enabled	true/false	gjd .ji.0.external_light.enabled .slot 3 command: gjd,ok {response} sjd .ji.0.external_light.enabled true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	external_light .intensity	Number	gjd .ji.0.external_light.intensity .slot 3 command: gjd,ok {response} sjd .ji.0.external_light.intensity 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .color	WHITE BLUE RED INFRARED GREEN YELLOW DPM	gjd .ji.0.internal_light.color .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.color true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	imager .auto_focus	true/false	gjd .ji.0. imager.auto_focus .slot 3 command: gjd,ok {response} sjd .ji.0.imager.auto_focus true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	imager .exposure	Number (0.5 to 14)	gjd .ji.0.imager.exposure .slot 3 command: gjd,ok {response} sjd .ji.0.imager.exposure 0.6 .slot 3 command: sjd,ok

**Table 112** imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. imager_setups .ji	imager .gain	Number (0 to 100)	gjd .ji.0.imager.gain .slot 3 command: gjd,ok {response} sjd.ji.0.imager.gain 2 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	imager .focus	Number (-7 to +7)	gjd .ji.0.imager.focus .slot 3 command: gjd,ok {response} sjd .ji.0.imager.focus 3 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	imager .long_exposure	Number (1 to 10)	gjd .ji.0.imager.long_exposure .slot 3 command: gjd,ok {response} sjd .ji.0.imager.long_exposure 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .enabled	true/false	gjd .ji.0.internal_light.enabled .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.enabled true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .intensity	Number	gjd .ji.0.internal_light.intensity .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.intensity 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .max_duration	Number	gjd .ji.0.internal_light.max_duration .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.max_duration 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .regions.bottom	true/false	gjd .ji.0.internal_light.regions.bottom .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.regions.bottom true .slot 3 command: sjd,ok

**Table 112** imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .regions.top	true/false	gjd .ji.0.internal_light.regions.top .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.regions.top true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .regions.right	true/false	gjd .ji.0.internal_light.regions.right .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.regions.right true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .regions.left	true/false	gjd .ji.0.internal_light.regions.left .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.regions.left true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	internal_light .torch_mode	true/false	gjd .ji.0.internal_light.torch_mode .slot 3 command: gjd,ok {response} sjd .ji.0.internal_light.torch_mode true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	name	String	gjd .ji.0.name .slot 3 command: gjd,ok {response} sjd .ji.0.name STRING .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	auto_tune .brightness	true/false	gjd .ji.0.auto_tune.brightness .slot 3 command: gjd,ok {response} sjd .ji.0.auto_tune.brightness true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	auto_tune .max_exposure	Number	gjd .ji.0.auto_tune.max_exposure .slot 3 command: gjd,ok {response} sjd .ji.0.auto_tune.max_exposure 1 .slot 3 command: sjd,ok

**Table 112** imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. imager_setups .ji	auto_tune .tune_focus	true/false	gjd .ji.0.auto_tune.tune_focus .slot 3 command: gjd,ok {response} sjd .ji.0.auto_tune.tune_focus true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. imager_setups .ji	auto_tune .method	String	gjd .ji.0.auto_tune.method .slot 3 command: gjd,ok {response} sjd .ji.0.auto_tune.method STRING .slot 3 command: sjd,ok

getjobdata .jobData.industrial\_ethernet.input.mode .slot 3

Settings related to jobData.industrial\_ethernet are configured using the getjobdata/setjobdata with the sub-parameters displayed in the following table:

**Table 113** industrial\_ethernet

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input .mode	ENTRY RAW	gjd .jie.input.mode .slot 3 command: gjd,ok {response} sjd .jt.input.mode RAW . slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input .switch_bits	true/false	gjd .jie.input.switch_bits .slot command: gjd,ok {response} sjd .jie.input.switch_bits true . slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .data_type	String	gjd .jie.input.config.0.data_type .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.data_type STRING .slot 3 command: sjd,ok



**Table 113** industrial\_ethernet (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .field	String	gjd .jie.input.config.0.field .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.field STRING .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .field_size	Number	gjd .jie.input.config.0.field_size .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.field_size 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .isBase64	true/false	gjd .jie.input.config.0.isBase64 .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.isBase64 true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .order	Number	gjd .jie.input.config.0.order .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.order 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .type	String	gjd .jie.input.config.0.type .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.type String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	input.config .type_id	String	gjd .jie.input.config.0.type_id .slot 3 command: gjd,ok {response} sjd .jie.input.config.0.type_id String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output .mode	ENTRY RAW	gjd .jie.output.mode .slot 3 command: gjd,ok {response} sjd .jie output.mode RAW .slot 3 command: sjd,ok

**Table 113** industrial\_ethernet (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output .switch_bits	true/false	gjd .jie.output.switch_bits .slot 3 command: gjd,ok {response} sjd .jie.output.switch_bits true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .data_type	String	gjd.jie.output.config.0.data_type .slot 3 command: gjd,ok {response} sjd .jie.output.config.0.data_type String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .field	String	gjd .jie.output.config.0.field .slot 3 command: gjd,ok {response} sjd .jie.output.config.0.field String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .field_size	Number	gjd .jie.output.config.0.field_size .slot 3 command: gjd,ok {response} sjd .jie.output.config..0.field_size 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .isBase64	true/false	gjd .jie. output.config.0.isBase64 .slot 3 command: gjd,ok {response} sjd .jie. output.config.0.isBase64 true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .order	Number	gjd .jie.output.config.0.order .slot 3 command: gjd,ok {response} sjd .jie. output.config.0.order 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .type	String	gjd .jie. output.config.0.type .slot 3 command: gjd,ok {response} sjd .jie.output.config.0.type String .slot 3 command: sjd,ok

**Table 113** industrial\_ethernet (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .type_id	String	gjd .jie.output.config.0.type_id .slot 3 command: gjd,ok {response} sjd .jie.output.config.0.type_id String .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .default.codec		gjd .jie.output.config.0.default.codec .slot 3 command: gjd,ok {response} sjd .jie.output.config.0.default.codec 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .default.ppm		gjd .jie.output.config.0.default.ppm .slot 3 command: gjd,ok {response} sjd .jie.output.0.config.default.ppm 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. industrial_ ethernet .jie	output.config .default.quality_score		gjd .jie. output.config.0.default.quality_score .slot 3 command: gjd,ok {response} sjd .jie. output.config.0.default.quality_score 1 .slot 3 command: sjd,ok

getjobdata .jobData.save\_options.conditions .slot 3

Settings related to jobData.save\_options are configured using getjobdata/setjobdata with the sub parameters displayed in the following table:

**Table 114** save\_options

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. save_options .js	conditions	NO_READ GOOD_READ	gjd .js.0.conditions .slot 3 command: gjd,ok {response} sjd .js.0.conditions NO_READ .slot 3 command: sjd,ok

**Table 114** save\_options (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. save_options .js	destination	ON_DEVICE FTP SFTP	gjd .js.destination .slot 3 command: gjd,ok {response} sjd .js.0.destination ON_DEVICE . slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	enabled	true/false	gjd .js.0.enabled .slot 3 command: gjd,ok {response} sjd .js.0.enabled true .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	file_prefix	String	gjd .js.0.file_prefix .slot 3 command: gjd,ok {response} sjd .js.0.file_prefix ZEB .slot command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	file_suffix	DATETIME INDEX	gjd .js.0.file_suffix .slot 3 command: gjd,ok {response} sjd .js.0.file_suffix INDEX .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	format	BMP JPG	gjd .js.0.format .slot 3 command: gjd,ok {response} sjd .js.0.format JPG .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	id	Number	gjd .js.0.id .slot 3 command: gjd,ok {response} sjd .js.0.id 2 .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	remote_settings	ftp/sftp server settings	gjd .js.0. remote_settings .slot 3 command: gjd,ok {response} sjd .js.0.remote_settings {ftp server settings} .slot 3 command: sjd,ok

**Table 114** save\_options (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. save_options .js	size	FULL_QUARTER ONE_SIXTEENTH ONE_SIXTY_FOURTH	gjd .js.0.size .slot 3 command: gjd,ok {response} sjd .js.0.size FULL .slot 3 command: sjd,ok
getjobdata setjobdata	.jobData. save_options .js	trigger	String	gjd .js.0.trigger .slot 3 command: gjd,ok {response} sjd .js.0.trigger IMAGES_PER_RESULT .slot 3 command: sjd,ok

getjobdata .job\_run\_data.graph.nodes.BARCODE.configuration.type .slot 2

Settings related to job\_run\_data.graph.nodes.BARCODE.configuration are configured using getjobdata/setjobdata with the sub-parameters displayed in the following table:

**Table 115** BARCODE.configuration

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	roi.data.height	Number	gjd .jrc.roi.data.height .slot 3 command: gjd,ok {response} sjd .jrc.roi.data.height 3 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	roi.data.rotation	Number	gjd .jrc.roi.data.rotation .slot 3 command: gjd,ok {response} sjd .jrc.roi.data.rotation 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	roi.data.width	Number	gjd .jrc.roi.data.width .slot 3 command: gjd,ok {response} sjd .jrc.roi.data.width 1 .slot 3 command: sjd,ok

**Table 115** BARCODE.configuration (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	roi.data.x	Number	gjd .jrc.roi.data.x .slot 3 command: gjd,ok {response} sjd .jrc.roi.data.x 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	roi.data.y	Number	gjd .jrc.roi.data.y .slot 3 command: gjd,ok {response} sjd .jrc.roi.data.y 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	roi.type	RECTANGLE POLYGON CIRCLE ANNULUS	gjd .jrc.roi.type .slot 3 command: gjd,ok {response} sjd .jrc.roi.type ANNULUS .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	source_images .type	ACQUISITION TOOL	gjd .jrc.source_images.type .slot 3 command: gjd,ok {response} sjd .jrc.source_images.type TOOL .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	source_images .value	String	gjd .jrc.source_images.value .slot 3 command: gjd,ok {response} sjd .jrc.source_images.value TOOL .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	Enabled	true/false	gjd .jrc.enabled .slot 3 command: gjd,ok {response} sjd .jrc.enabled true .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	Invert	true/false	gjd .jrc.invert .slot 3 command: gjd,ok {response} sjd .jrc.invert true .slot 3 command: sjd,ok

**Table 115** BARCODE.configuration (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	data_formatting	COMPLEX	gjd .jrc.data_formatting .slot 3 command: gjd,ok {response} sjd .jrc.data_formatting COMPLEX .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	localData .friendly_name	String	gjd .jrc.localData.friendly_name .slot 3 command: gjd,ok {response} sjd .jrc.localData.friendly_name 'Reads'.slot 3 command: sjd,ok 'Reads'
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .jrc	localData .barcode_data_ formatting_mode	STANDARD TRAILING_TAB ADVANCED TRAILING_LINE _BREAK	gjd .jrc.localData. barcode_data_formatting_mode .slot 3 command: gjd,ok {response} sjd .jrc.localData. barcode_data_formatting_mode STANDARD .slot 3 command: sjd,ok

getjobdata .job\_run\_data.graph.nodes.BARCODE.configuration.barcode\_data\_formatting  
.all\_symbologies.data\_types.encoding .slot 2

Settings related to

job\_run\_data.graph.nodes.BARCODE.configuration.barcode\_data\_formatting.all\_symbologies are configured using the getjobdata/setjobdata with the sub parameters displayed in the following table:

**Table 116** barcode\_data\_formatting .all\_symbologies

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .all_symbologies .jra	data_type _delimiter	NONE SPACE COMMA TAB LINEBREAK	gjd .jra.data_type_delimiter .slot 3 command: gjd,ok {response} sjd .jra.data_type_delimiter TAB ZEB . slot 3 command: sjd,ok

**Table 116** barcode\_data\_formatting .all\_symbologies (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .all_symbologies .jra	data_types. encoding	TEXT BASE64	gjd .jra.data_types. encoding .slot 3 command: gjd,ok {response} sjd .jra.data_types. encoding TEXT . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .all_symbologies .jra	data_types.type	DECODED_STRING PPM SUBDECODED _STRING ANGLE SYBOLOGY CENTER_X CENTER_Y	gjd .jra.data_types_type .slot 3 command: gjd,ok {response} sjd .jra.data_types_type ANGLE .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .all_symbologies .jra	end_delimiter	NONE SPACE COMMA TAB LINEBREAK	gjd .jra.end_delimiter .slot 3 command: gjd,ok {response} sjd .jra.end_delimiter TAB .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .all_symbologies .jra	Prefix	String	gjd .jra.prefix .slot 3 command: gjd,ok {response} sjd .jra.prefix STRING .slot 3 command: sjd,ok



**Table 116** barcode\_data\_formatting .all\_symbologies (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .all_symbologies .jra	suffix	String	gjd .jra.suffix .slot 3 command: gjd,ok {response} sjd .jra.suffix STRING . slot 3 command: sjd,ok

getjobdata .

job\_run\_data.graph.nodes.BARCODE.configuration.barcode\_data\_formatting.many\_code.prefix .slot 2

gjd .jrm.prefix .slot 2

Settings related to

job\_run\_data.graph.nodes.BARCODE.configuration.barcode\_data\_formatting.many\_code are configured using the getjobdata /setjobdata with the sub parameters displayed in the following table:

**Table 117** many\_code

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .many_code .jrm	data_type_ delimiter	NONE SPACE COMMA TAB LINEBREAK	gjd .jrm.data_type_delimiter .slot 3 command: gjd,ok {response} sjd .jrm.data_type_delimiter TAB .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .many_code .jrm	data_types. encoding	TEXT BASE64	gjd .jrm.data_types. encoding .slot 3 command: gjd,ok {response} sjd .jrm.data_types. encoding TEXT .slot 3 command: sjd,ok

**Table 117** many\_code (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .many_code .jrm	data_types.type	DECODED_STRING PPM SUBDECODED _STRING ANGLE SYMBOLOLOGY CENTER_X CENTER_Y	gjd .jrm.data_types.type .slot 3 command: gjd,ok {response} sjd .jrm.data_types.type ANGLE .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .many_code .jrm	end_delimiter	NONE SPACE COMMA TAB LINEBREAK	gjd .jrm.end_delimiter .slot 3 command: gjd,ok {response} sjd .jrm.end_delimiter TAB .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .many_code .jrm	Prefix	String	gjd .jrm.prefix .slot 3 command: gjd,ok {response} sjd .jrm.prefix STRING .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. barcode_data_ formatting .many_code .jrm	suffix	String	gjd .jrm.suffix .slot 3 command: gjd,ok {response} sjd .jrm.suffix STRING . slot 3 command: sjd,ok

getjobdata .job\_run\_data.graph.nodes.BARCODE.configuration.ocr.max\_lines .slot 2

The settings related to job\_run\_data.graph.nodes.BARCODE.configuration.ocr can be configured using the getjobdata/setjobdata along with the sub parameter as shown in the below table

**Table 118** BARCODE.configuration.ocr

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	acceptance_ threshold	Number	gjd .jro.acceptance_thr eshold .slot 3 command: gjd,ok {response} sjd .jro.acceptance_threshold 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	check_digit_ modulus	Number	gjd .jro.check_digit_mo dulus .slot 3 command: gjd,ok {response} sjd .jro.check_digit_modulus 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	check_digit_vali dation	NONE PRODUCT_ADD_ RIGHT_TO_LEFT DIGIT_ADD_ RIGHT_TO_LEFT PRODUCT_ADD_ LEFT_TO_RIGHT DIGIT_ADD_ LEFT_TO_RIGHT PRODUCT_ADD_ RIGHT_TO_LEFT_ SIMPL E_REMAINDER DIGIT_ADD_ RIGHT_TO_LEFT_ SIMPLE_R EMAINDER HEALTH_INDUSTRY _HIBCC43	gjd .jro.check_digit_validation .slot 3 command: gjd,ok {response} sjd .jro.check_digit_validation DIGIT_ADD_RIGHT_TO_LEFT .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	max_characters	Number	gjd .jro.max_characters .slot 3 command: gjd,ok {response} sjd .jro.max_characters 1 .slot 3 command: sjd,ok

**Table 118** BARCODE.configuration.ocr (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. ocr .jro	min_characters	Number	gjd .jro.min_characters .slot 3 command: gjd,ok {response} sjd .jro.min_characters 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	max_lines	Number	gjd .jro.max_lines .slot 3 command: gjd,ok {response} sjd .jro.max_lines 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	ocr_a	true/false	gjd .jro.ocr_a .slot 3 command: gjd,ok {response} sjd .jro.ocr_a true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	ocr_b	true/false	gjd .jro.ocr_b .slot 3 command: gjd,ok {response} sjd .jro.ocr_b true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	ocr_a_variant	FULL_ASCII BANKING	gjd .jro.ocr_a_variant .slot 3 command: gjd,ok {response} sjd .jro.ocr_a_variant BANKING . slot 3 command: sjd,ok

**Table 118** BARCODE.configuration.ocr (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	ocr_b_variant	FULL_ASCII BANKING LIMITED PASSPORT TRAVEL_ DOCUMENT_ VERSION_1 TRAVEL_DOCUMENT _VERSION_2 VISA_TYPE_A VISA_TYPE_B ISBN_10_OR _13_DIGIT_BOOK _NUMBERS OCR_B_ICAO _TRAVEL _DOCUMENTS ISBN_10_DIGIT _BOOK _NUMBERS AUTO_DETECT_2_ OR_3_LINE_TRAVEL_ DOCUMENT	gjd .jro.ocr_b_variant .slot 3 command: gjd,ok {response} sjd .jro.ocr_b_variant PASSPORT . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	ocr_redundancy	Number	gjd .jro.ocr_redundancy .slot 3 command: gjd,ok {response} sjd .jro.ocr_redundancy 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .ocr .jro	ocr_template	String	gjd .jro.ocr_template .slot 3 command: gjd,ok {response} sjd .jro.ocr_template STRING . slot 3 command: sjd,ok

**Table 118** BARCODE.configuration.ocr (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. ocr .jro	orientation	NONE 270 180 90 OMNIDIRECTIONAL	gjd .jro.orientation .slot 3 command: gjd,ok {response} sjd .jro.orientation NONE . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. ocr .jro	polarity	REGULAR INVERSE	gjd .jro.polarity .slot 3 command: gjd,ok {response} sjd .jro.polarity REGULAR . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. ocr .jro	quiet_zone	Number	gjd .jro.quiet_zone .slot 3 command: gjd,ok {response} sjd .jro.quiet_zone 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. ocr .jro	subset_of_characters	String	gjd .jro.subset_of_characters .slot 3 command: gjd,ok {response} sjd .jro.subset_of_characters STRING . slot 3 command: sjd,ok

getjobdata .job\_run\_data.graph.nodes.BARCODE.configuration.decode.Inverse1D .slot 2

The settings related to job\_run\_data.graph.nodes.BARCODE.configuration.decode can be configured using the getjobdata/setjobdata along with the sub parameter as shown in the below table

**Table 119** BARCODE.configuration.decode

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	adaptive_roi_ scale_factor	SMALL MEDIUM LARGE	gjd .jrd.adaptive_roi_scale_factor .slot 3 command: gjd,ok {response} sjd .jrd.adaptive_roi_scale_factor SMALL . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	Inverse1D	Number	gjd .jrd.Inverse1D .slot 3 command: gjd,ok {response} sjd .jrd.Inverse1D 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. allow_rectangular _codes	true/false	gjd .jrd.advanced_decode_settings. allow_rectangular_codes .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. allow_rectangular_codes true .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. contrast_threshold	Number	gjd .jrd.advanced_decode_settings. contrast_threshold .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. contrast_threshold 1 .slot 3 command: sjd,ok
getjobdata setjobdat	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. decode_strategy	FAST MODERATE EXHAUSTIVE	gjd .jrd.advanced_decode_settings. decode_strategy .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. decode_strategy FAST .slot 3 command: sjd,ok

**Table 119** BARCODE.configuration.decode (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. detection_method	UNIFORM FINDER_PATTERN QUIET_ZONE	gjd .jrd.advanced_decode_settings. detection_method .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. detection_method UNIFORM . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. max_module_size	Number	gjd .jrd.advanced_decode_settings. max_module_size .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. max_module_size 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. min_module_size	Number	gjd .jrd.advanced_decode_settings. min_module_size .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. min_module_size 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. min_row_count	Number	gjd .jrd.mode .slot 3 command: gjd,ok {response} sjd .jrd.mode CONTINUOUS . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. max_row_count	Number	gjd .jrd.advanced_decode_settings. max_row_count .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. max_row_count 1 . slot 3 command: sjd,ok



**Table 119** BARCODE.configuration.decode (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. min_column_count	Number	gjd .jrd.advanced_decode_settings. min_column_count .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. min_column_count 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	advanced_decode_ settings. max_column_count	Number	gjd .jrd.advanced_decode_settings. max_column_count .slot 3 command: gjd,ok {response} sjd .jrd.advanced_decode_settings. max_column_count 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	Priority	NONE 1D 2D	gjd .jrd.priority .slot 3 command: gjd,ok {response} sjd .jrd.priority NONE . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	barcode_dpm	true/false	gjd .jrd.barcode_dpm .slot 3 command: gjd,ok {response} sjd .jrd.barcode_dpm true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	decode_all_ barcodes	true/false	gjd .jrd.decode_all_barcodes .slot 3 command: gjd,ok {response} sjd .jrd.decode_all_barcodes true . slot 3 command: sjd,ok

**Table 119** BARCODE.configuration.decode (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	dpm	true/false	gjd .jrd.dpm .slot 3 command: gjd,ok {response} sjd .jrd.dpm true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	enable_adaptive_ roi_search	true/false	gjd .jrd.enable_adaptive_roi_search .slot 3 command: gjd,ok {response} sjd .jrd.enable_adaptive_roi_search true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	enable_bqm	true/false	gjd .jrd.enable_bqm .slot 3 command: gjd,ok {response} sjd .jrd.enable_bqm true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	enable_identical_ decode_symbols	true/false	gjd .jrd.enable_identical_decode_symbols .slot 3 command: gjd,ok {response} sjd .jrd.enable_identical_decode_symbols true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	enable_partial_ results	true/false	gjd .jrd.enable_partial_results .slot 3 command: gjd,ok {response} sjd .jrd.enable_partial_results true . slot 3 command: sjd,ok

**Table 119** BARCODE.configuration.decode (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	enable_string_ match_on_ entire_payload	true/false	gjd .jrd.enable_string_match_on_ entire_payload .slot 3 command: gjd,ok {response} sjd .jrd.enable_string_match_on_ entire_payload true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	exhaustive_ manycode	true/false	gjd .jrd.exhaustive_manycode .slot 3 command: gjd,ok {response} sjd .jrd.mode exhaustive_manycode true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	match_mode	DISABLED STRING_EXACT STRING_CONTAINS REGEX	gjd .jrd.match_mode .slot 3 command: gjd,ok {response} sjd .jrd.match_mode DISABLED . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	match_string	String	gjd .jrd.match_string .slot 3 command: gjd,ok {response} sjd .jrd.match_string STRING . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	multicode	true/false	gjd .jrd.multicode .slot 3 command: gjd,ok {response} sjd .jrd.multicode true . slot 3 command: sjd,ok

**Table 119** BARCODE.configuration.decode (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	no_read_string	String	gjd .jrd.no_read_string .slot 3 command: gjd,ok {response} sjd .jrd.no_read_string STRING . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	ocr	true/false	gjd .jrd.ocr .slot 3 command: gjd,ok {response} sjd .jrd.ocr true . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration .decode .jrd	number_barcodes _to_decode	Number	gjd .jrd.number_barcodes_to_decode .slot 3 command: gjd,ok {response} sjd .jrd.number_barcodes_to_decode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	percentSymbolInRoi	Number	gjd .jrd.percentSymbolInRoi .slot 3 command: gjd,ok {response} sjd .jrd.percentSymbolInRoi 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. decode .jrd	sorting_type	ALPHABETICAL FIRST_DECODED HORIZONTAL VERTICAL SYMBOLGY	gjd .jrd.sorting_type .slot 3 command: gjd,ok {response} sjd .jrd.sorting_type VERTICAL . slot 3 command: sjd,ok

getjobdata .job\_run\_data.graph.nodes.BARCODE.configuration.symbology\_settings.  
CODE128.Code128Length1 .slot 2

The settings related to job\_run\_data.graph.nodes.BARCODE.configuration.barcode\_data\_formatting.  
symbology\_settings are configured using getjobdata/setjobdata with the sub parameters displayed in the  
following table:

**Table 120** BARCODE.configuration.symbology\_settings

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 .Code128Length1	Number	gjd .jrs.CODE128.Code128Length1 .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.Code128Length1 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 .Code128Length2	Number	gjd .jrs.CODE128.Code128Length2 .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.Code128Length2 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 .GS1_128	Number	gjd .jrs.CODE128.GS1_128 .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.GS1_128 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 .ISBT_ Concatenation	Number	gjd .jrs.CODE128.ISBT_Concatenation .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.ISBT_Concatenation 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 . ISBT_ Concatenation_ Redundancy	Number	gjd .jrs.CODE128. ISBT_Concatenation_Redundancy .slot 3 command: gjd,ok {response} sjd .jrs.CODE128. ISBT_Concatenation_Redundancy 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 .ISBT128	Number	gjd .jrs.CODE128.ISBT128 .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.ISBT128 1 slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE128 .IgnoreCode 128FNC4	Number	gjd .jrs.CODE128.IgnoreCode128FNC4 .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.IgnoreCode128FNC4 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 .Code39 CheckDigit Verification	Number	gjd .jrs.CODE39.Code39CheckDigitVerification .slot 3 command: gjd,ok {response} sjd .jrs.CODE39.Code39CheckDigitVerification 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 .Code39 FullASCII Conversion	Number	gjd .jrs.CODE39.Code39FullASCIIConversion .slot 3 command: gjd,ok {response} sjd .jt.CODE39.Code39FullASCIIConversion 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 .ConvertCode39 toCode32	Number	gjd .jrs.CODE39.ConvertCode39toCode32 .slot 3 command: gjd,ok {response} sjd .jrs.CODE39.ConvertCode39toCode32 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 .LengthforCode39 Length1	Number	gjd .jrs.CODE39.LengthforCode39Length1 .slot 3 command: gjd,ok {response} sjd .jrs.CODE39.LengthforCode39Length1 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 .LengthforCode39 Length2	Number	gjd .jrs.mode .slot 3 command: gjd,ok {response} sjd .jrs.mode CONTINUOUS .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 . TransmitCode39 CheckDigit	Number	gjd .jrs.CODE39.TransmitCode39CheckDigit .slot 3 command: gjd,ok {response} sjd .jrs.CODE39.TransmitCode39CheckDigit 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE39 .TriopticCode39	Number	gjd .jrs.CODE39.TriopticCode39 .slot 3 command: gjd,ok {response} sjd .jrs.CODE39.TriopticCode39 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE93 .LengthforCode93 Length1	Number	gjd .jrs.CODE93.LengthforCode93Length1 .slot 3 command: gjd,ok {response} sjd .jrs.CODE93.LengthforCode93Length1 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	CODE93 .LengthforCode93 Length2	Number	gjd .jrs.CODE93.LengthforCode93Length2 .slot 3 command: gjd,ok {response} sjd .jrs.CODE93.LengthforCode93Length2 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DATAMATRIX .DPM_Mode	Number	gjd .jrs.DATAMATRIX.DPM_Mode .slot 3 command: gjd,ok {response} sjd .jrs.DATAMATRIX.DPM_Mode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DATAMATRIX .Decode_Data_ Matrix_Mirror_ Images	Number	gjd .jrs.DATAMATRIX. Decode_Data_Matrix_Mirror_Images .slot 3 command: gjd,ok {response} sjd .jrs.DATAMATRIX. Decode_Data_Matrix_Mirror_Images 1 . slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DATAMATRIX .InverseDataMatrix	Number	gjd .jrs.DATAMATRIX.InverseDataMatrix .slot 3 command: gjd,ok {response} sjd .DATAMATRIX.InverseDataMatrix 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DATAMATRIX .GS1_Datamatrix	Number	gjd .jrs.DATAMATRIX.GS1_Datamatrix .slot 3 command: gjd,ok {response} sjd .jrs.DATAMATRIX.GS1_Datamatrix 1 .slot 3 command: sjd,ok



**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DOTCODE .ECCErasure DotCode	Number	gjd .jrs.DOTCODE.ECCErasureDotCode .slot 3 command: gjd,ok {response} sjd .jrs.DOTCODE.ECCErasureDotCode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DOTCODE .InverseDotCode	Number	gjd .jrs.DOTCODE.InverseDotCode .slot 3 command: gjd,ok {response} sjd .jrs.DOTCODE.InverseDotCode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DOTCODE .MirrorDotCode	Number	gjd .jrs.DOTCODE.MirrorDotCode .slot 3 command: gjd,ok {response} sjd .jrs.DOTCODE.MirrorDotCode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	DOTCODE .PrioritizeDotCode	Number	gjd .jrs.DOTCODE.PrioritizeDotCode .slot 3 command: gjd,ok {response} sjd .jrs.DOTCODE.PrioritizeDotCode 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	I25 .ConvertI2of5to EAN13	Number	gjd .jrs.I25.ConvertI2of5toEAN13 .slot 3 command: gjd,ok {response} sjd .jrs.I25.ConvertI2of5toEAN13 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	I25 .Febraban (I2of5)	Number	gjd .jrs.I25.Febraban(I2of5) .slot 3 command: gjd,ok {response} sjd .jrsI25.Febraban(I2of5) 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	I25 .Lengthfor12of5 Length1	Number	gjd .jrs.I25.Lengthfor12of5Length1 .slot 3 command: gjd,ok {response} sjd .jrs.I25.Lengthfor12of5Length1 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	I25 .Lengthfor12of5 Length2	Number	gjd .jrs.I25.Lengthfor12of5Length2 .slot 3 command: gjd,ok {response} sjd .jrs.I25.Lengthfor12of5Length2 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	I25 .Transmit12of5 CheckDigit	Number	gjd .jrs.I25.Transmit12of5CheckDigit .slot 3 command: gjd,ok {response} sjd .jrs.I25.Transmit12of5CheckDigit 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	MAXICODE	Number	gjd .jrs.MAXICODE .slot 3 command: gjd,ok {response} sjd .jrs.MAXICODE 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	PDF-417 .MicroPDF	Number	gjd .jrs.PDF-417.MicroPDF .slot 3 command: gjd,ok {response} sjd .jrs.PDF-417.MicroPDF 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	QRCODE .GS1_QR	Number	gjd .jrs.QRCODE.GS1_QR .slot 3 command: gjd,ok {response} sjd .jrs.QRCODE.GS1_QR .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	QRCODE .Linked_QR_Mode	Number	gjd .jrs.QRCODE.GS1_QR .slot 3 command: gjd,ok {response} sjd .jrs.QRCODE.GS1_QR 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	QRCODE .MicroQREnable	Number	gjd .jrs.QRCODE.MicroQREnable .slot 3 command: gjd,ok {response} sjd .jrs.QRCODE.MicroQREnable 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .Bookland_Format	Number	gjd .jrs.UPCEAN.Bookland_Format .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.Bookland_Format 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .BooklandEAN	Number	gjd .jrs.UPCEAN.BooklandEAN .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.BooklandEAN 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .Convert_UPC_ E_to_A	Number	gjd .jrs.UPCEAN.Convert_UPC_E_to_A .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.Convert_UPC_E_to_A 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .Convert_UPC_ E1_to_A	Number	gjd .jrs.UPCEAN.Convert_UPC_E1_to_A .slot 3 command: gjd,ok {response} sjd .jrs.mode UPCEAN.Convert_UPC_E1_to_1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .EAN_13_JAN13	Number	gjd .jrs.UPCEAN.EAN_13_JAN13 .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.EAN_13_JAN13 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .EAN_8_JAN8	Number	gjd .jrs.UPCEAN.EAN_8_JAN8 .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.EAN_8_JAN8 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .EAN_8_JAN_8_ Extend	Number	gjd .jrs.UPCEAN.EAN_8_JAN_8_Extend .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.EAN_8_JAN_8_Extend 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .ISSN_EAN	Number	gjd .jrs.UPCEAN.ISSN_EAN .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.ISSN_EAN 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .Transmit_UPC_E1_ Check_Digit	Number	gjd .jrs.UPCEAN. Transmit_UPC_E1_Check_Digit .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN. Transmit_UPC_E1_Check_Digit 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .TransmitUPC_A CheckDigit	Number	gjd .jrs.UPCEAN.TransmitUPC_ACheckDigit .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.TransmitUPC_ACheckDigit 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UCC_Coupon_Extended_Code	Number	gjd .jrs.UPCEAN.UCC_Coupon_Extended_Code .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UCC_Coupon_Extended_Code 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_EAN_JAN Supplementals	Number	gjd .jrs.UPCEAN.UPC_EAN_JANSupplementals .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_EAN_JANSupplementals 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC/EAN / JAN_Supplementa _Redundancy	Number	gjd .jrs.UPCEAN.UPC/EAN / JAN_Supplemental_Redundancy .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC/EAN / JAN_Supplemental_Redundancy 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_A	Number	gjd .jrs.UPCEAN.UPC_A .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_A 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_A_ Preamble	Number	gjd .jrs.UPCEAN.UPC_A_Preamble .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_A_Preamble 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_E	Number	gjd .jrs.UPCEAN.UPC_E .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_E 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_E_ Preamble	Number	gjd .jrs.UPCEAN.UPC_E_Preamble .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_E_Preamble 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_E1	Number	gjd .jrs.UPCEAN.UPC_E1 .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_E1 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC_E1_ Preamble	Number	gjd .jrs.UPCEAN.UPC_E1_Preamble .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UPC_E1_Preamble 1 .slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UserDefined Supp1	Number	gjd .jrs.UPCEAN.UserDefinedSupp1 .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UserDefinedSupp1 1 .slot 3 command: sjd,ok

**Table 120** BARCODE.configuration.symbology\_settings (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UserDefined Supp2	Number	gjd .jrs.UPCEAN.UserDefinedSupp2 .slot 3 command: gjd,ok {response} sjd .jrs.UPCEAN.UserDefinedSupp2 1 .slot 3 command: sjd,ok

## uploadjob

Use uploadjob to upload the job to the device.



**NOTE:** Using this command requires the zjob in base64 format as an argument.

**Table 121** uploadjob

Command	short	Parameter	Data	Range	Example
uploadjob	uj	-	zjob (base64 format)	-	Uploadjob base64_data command:uploadjob,ok



**NOTE:** Use a python script to transfer large base64 files.

