# Zebra Aurora Focus 9.2



**User Guide** 

#### 2025/04/09

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# **About this Guide**

This guide details using Zebra Aurora Focus to configure, deploy, and manage Fixed Industrial Scanning and Vision System jobs.

# **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: <u>zebra.com/support</u>.

When contacting support, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software/firmware 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.

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				

Table 1 Minimum Requireme
---------------------------

# Installation

Zebra Aurora Focus is available for download on the Zebra website: <u>Zebra Aurora Focus Software</u> <u>Downloads</u>. 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 functionality such as viewing and configuring connected or emulated devices and settings for Fixed Industrial or Machine Vision scanning jobs.

File Vi	ew Help					) Er	nglish — 🗆 🗙
�• Z	ebra <b>Aurora Focus</b> ™ 9	9.2					
	Menu						
	Get Started		Setup New Setup a camera o	Setup New Device		View Devices Manage all cameras on the r	network and USB
Ð	Setup New Device		and program jobs			ports.	
0	View Devices		SETON NEW 1				
Ŵ	Configuration Barcodes	Recent Activ	ities 🗸				Browse All 🗸 🗸
		Туре	Name	Model Name	IP	Last Accessed 🗸	-0- -0-
		Device	FS42 2MP Emulator	FS42	Emulator	04/01/2025 (a day ago)	
		Device	FS80 5.3MP Emulator	FS80	Emulator	04/01/2025 (a day ago)	
		Device	NS42 2MP Emulator	NS42	Emulator	03/27/2025 (6 days ago)	
		Device	NS42 2MP Emulator	NS42	Emulator	03/26/2025 (8 days ago)	
		Device	FS42 5MP Emulator	FS42	Emulator	03/26/2025 (8 days ago)	
		Device	NS42 5MP Emulator	NS42	Emulator	03/12/2025 (21 days ago)	
		Device	FS42 2MP Emulator	FS42	Emulator	11/25/2024 (4 months ago)	
		Device	NS42 2MP Emulator	NS42	Emulator	11/25/2024 (4 months ago)	
\$	Settings						

## Table 2 Zebra Aurora Focus Home

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

Click the Recent Activities drop-down menu to sort by:

- Recent Activities
- Recent Jobs

Recent Devices

Click the filter icon to filter by:

- Type
- Name
- Model Name
- IP
- Last Accessed

## **HID Keyboard Localization**

Zebra Aurora Focus supports the following HID keyboard languages:

- English (North America)
- French (France) Windows
- German Windows
- Spanish (Spain Windows)
- Italian Windows
- German Linux
- Czech Linux
- Spanish (Mexico) Linux
- French (France) Linux
- Polish Linux
- Spanish (Spain) Linux
- Italian Linux
- Portuguese (Brazil) Linux

# **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
Туре	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**.

## **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.

## **Viewing Devices**

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





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.
Restore Device	Select a backup file and restore the device configuration. The process also triggers a complete reboot of the device.
	WARNING: 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 device's Serial Number, Part Number, and Firmware Version before contacting technical support.

$\checkmark$		Name 🗸	/	Model Name	Part Number	IP		SN	Firmware	Status		
~	$\Psi$	FS4082b	1 Camera	FS40	FS40-WA50F4-2C00W	172.16.107.22	(USB)	0022	8.0	Managed	Manage	÷
			Overview		Communications		System			Status		
	2.81	· P. F.	FW Version:	8.0	Current Connection		DHCP Timeout (s):	30		Lens Type:	Wide Angle	
		D	SN:	21363520180022	Type.	Uptime:		02:08:08		External Illumination	True	
			Mfg. Date:	29DEC21	IP Mode (Static/DHCP): Static		Sensor Type:	5.1 MP	Mono	GPIO:		_
C	OPY VE Detai	RSION ILS					Focus Unit:	Diopter		Available GPIOs:	9	

Table 5Device 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.				

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.

## Table 5 Device Information (Continued)

## **Multi-Device Management**

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

File Vi	ew Help								🌐 Englist	-		×
🚸 Vie	w Devices	£ V	/S70 - Device S	Settings	× Zebra_Inspec	t_2024.04.29_20.1 (VS) -	Build 🗙					
≡	Menu	BACKUP	DEVICE	RESTORE DEVICE 1	UPDATE FIRMWARE 🛱	DOWNLOAD LOGS 📄		Р	RINT 📄 REFRE	H C	۹ :	ł
♠	Get Started		Name 🗸	Model Name	Part Number	IP	SN	Firmware	Status			
Ð	Setup New Device		FS4082b1 Camera	FS40	FS40-WA50F4-2C00W	172.16.107.22 (USB)	0022	CAAESS00-004-N27	Connected	Manage	÷	
0	View Devices											
Ŵ	Configuration Barcodes											
\$	Settings v7.0.34								A	DD VIA IP ADD	RESS	

## **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.

	bra <b>Auro</b>	ora Foc	us™								
≡	BACKUP DE	EVICE 👤	RESTORE DE	Update Firmware (4	devices)		- ×	5	PRINT 📄 REFRE	SH C	Q :
		Name 🗸	/ Mod	Camera	Firmware version	Build	Status		Status		
Ð	4	VS2078d	3	FS407013 Camera	CAAESS00-004-R01	RELEASE-527	Not Started	201		Managa	
			V52	FS409860 Camera	CAAESS00-004-R01	RELEASE-527	Not Started	RUT			
0		FS40f4f3 Camera	FS4	FS40f4f3 Camera	CAAESS00-004-R01	RELEASE-527	Not Started	R01			:
IÂI		FS40986	0	VS2078d3 Camera	CAAFFS00-004-R01	RELEASE-527	Not Started				
			FS4	About the process				R01			
	Ψ.Ψ	FS40701: Camera	<sup>3</sup> FS4	Update the firmware or FTP/FTPS server. The p will reboot after the up complete - DO NOT REP	date the firmware on the device via a .scnplg2 firmware file located on the local PC or P/FTPS server. The process will stop the running job, the LEDs will flash red, and the device I reboot after the update is successfully applied. This process will take a few minutes to mplete - DO NOT REMOVE POWER FROM THE DEVICE DURING THE UPDATE PROCESS.						:
				Device firmware and co Zebra Technologies Su device compatibility fo <b>Support &amp; Downloads</b>	vice firmware and corresponding Aurora Focus software downloads are available at the bra Technologies Support and Downloads website (Note: Firmware download pages list the vice compatibility for that version) - [Industrial Machine Vision and Fixed Scanners upport & Downloads   Zebra]						
				Install New Firmware v	ia:						
				FTP / FTPS Serve	r 💿 File Based Uploa	d					
				CHOOSE FILE							
				Forced Update	Dual Update	Persist Zebra In	tegrator Projects				
						CAN	CEL UPDATE FIRMWARE				
\$									A	DD VIA IP ADI	RESS

 $\ensuremath{\textbf{NOTE:}}$  Performing a backup interrupts the current job execution.

### **Restoring Multiple Devices**

K

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.

## **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.

File Edit View System Help				🕮 English	- 🗆 🗙
🎨 Get Started	🔓 FS40 - Device Settings		X Jobt (FS) - Build	×	
FS408251 Camera      Power Source: US8	900mA 🛕		CREATE CONFIGURATION S	NAPSHOT OPEN JOB	NEW JOB
	Beeper Beeper Enable				•
FS4082b1 Camera					
Disk Space Used 1.39/10.61 GB	Beeper Volume	High	~		
Device Settings ^	Beeper Tone	Medium	~		
Device Details	Beep on Job Succes	5			
General	Beeper Duration	Short	~		
Communication	Suppress Power Up	Beeps			
<ul> <li>GP10 Mapping</li> <li>Jobs</li> </ul>	Power	Power			

File Edit View System Help				🐵 English	- 🗆 🗙
St. Get Started	🔓 FS40 - Device Setting	s	bluß-(29, tdol. 🗙	×	
<ul> <li>FS4082b1 Camera</li> <li>Power Source: US</li> </ul>	8 900mA 🛕		CREATE CONFIGURATION	SNAPSHOT OPEN JOB	NEW JOB
FS4082b1 Camera	Beeper Beeper Enable				<b>A</b>
Disk Space Used 1.39/10.61 G8	Beeper Volume	High	~		
Device Settings	Beeper Tone	Medium	~		
Device Details	Beep on Job Suce	sess			
General	Beeper Duration	Short	~		
Communication	Suppress Power I	Up Beeps			
GPIO Mapping					
Jobs	Power Unrestricted USB	-A Power			

## Table 6General Settings

Setting	Description			
Beeper				
Beeper Enable	Enable the beeper sound on the device.			
Beeper Volume	<ul> <li>Configure the volume of the beeper.</li> <li>High</li> <li>Medium</li> <li>Low</li> <li>Off</li> </ul>			

Setting	Description
Beeper Tone	Configure the tone of the beeper.
	• High
	• Medium
	• Low
	• Off
Beep on Job Success	When enabled, the device beeps upon successful completion of a job.
Beeper Duration	Configure the tone of the beeper.
	• Short
	• Medium
	• Long
Suppress Power-Up Beeps	When enabled, the power-up warble beeps that sound upon device start- up play at a reduced level.
Power	
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.
Hardware Buttons	
Tune Button Enable	Turn on or off the Tune button on the device.
Trigger Button Enable	Turn on or off the Trigger button on the device.
Configuration Barcodes	
Enable Parameter Barcodes	When enabled, the device configuration can be changed using a barcode
Timeout	Configure the maximum time (ms) to attempt to generate the barcode before a timeout occurs.
360° LED	
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.
Configure Logging	
Logging Options	Select <b>Basic</b> or <b>All</b> to enable logging and generate files that provide additional information on job runs. Use the Web HMI to download the log files from the device.
Continuous Acquisition Ima	age Saving

#### **Table 6**General Settings (Continued)

Setting	Description
Continuous Acquisition Image Savin Debug Mode	When enabled, debug mode for Continuous Level and Presentation Trigger modes save all images for Continuous Trigger mode until the maximum image saved threshold is reached (the default is 100). The saved images provide insight into the frames acquired during a trigger session that did not result in a Pass. This mode differs from the standard No Read Image save functionality, which does not save No Read images during continuous image acquisition.
Maximum Images Saved	Define the maximum number of images saved during a continuous acquisition session. New sessions are started when switching jobs; jobs start after a device reboot and changes from Edit mode to Deploy mode.
New Sessions Clear Old Debug Images	Delete all previously saved images when a new session starts. This option is helpful to ensure all debug images are examined in the same session.

## Viewing and Downloading Logs

Enable logs that can be viewed using Perfetto Trace Viewer <u>ui.perfetto.dev/</u>. 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.

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.

## Zebra Aurora Focus Software Overview

₹\$ <b>.</b> s	etup Device	🔓 FS	40 - Device Settings	🗙 g (FS) - Ca	pture	×				
≡	Menu	🛓 Backı	IP Device 💧 Restore Device	Update Firmware	Download Logs				Print E	resh C <sup>t</sup> Q
A	Get Started		Name $\vee$	Model Name	Part Number	IP	SN	Firmware	Status	
Ð	Setup New Device	•	FS4082b1 Camera	FS40	FS40-WA50F4-2C00W	169.254.130.177	0022	CAAESS00-003-R24	Managed	Manage :
0	View Devices									Beep Beeper
η.	Configuration Barcodes									Backup Device Restore Device Firmware Update Download Logs Zebra Connectivity Gateway HMI Reboot Factory Reset
¢	Settings v6.2.6								[	ADD VIA IP ADDRESS

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

	Device Logs Autora Logs	± ±	
CALL DAGHEOMED	O RESULTS HISTORY	ADE LIST	ACTIVITY LOG



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

#### **Downloading All Logs**

Download logs using the Zebra Web HMI when All logs are enabled.

Download the logs in the **Activity Logs** section 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.

Click Enable Edit Mode to edit the configuration on the device	э.
--	----

Network Settings				
	Ethernet Port 1	USB		
Enable DHCP 🔥 Netw	vork controls are read-only when DHCP is enabled.			
Network		Current Network		
IP Address	0.0.0.0	IP Address		
Subnet Mask	0.0.0.0	Subnet Mask		
Default Gateway	0.0.0.0	Default Gateway		
DNS		Current DNS		
Preferred DNS Server		Preferred DNS Server		
Alternate DNS Server		Alternate DNS Server		
DNS Domain Name		DNS Domain Name		
General				
DHCP Timeout	30 s			
Host Name	F\$4082b1			

## **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.
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.

## **Table 7**Network Settings (Continued)

Setting	Description
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					
TCP/IP Settings						
Enable TCP/IP Control	Enabling the TCP/IP control interface allows the device to receive triggers over a TCP/IP connection.					
	<b>NOTE:</b> Disabling this interface when it is not in use is recommended.					
Same Port for Control and Result	TCP/IP input and output communications are on the same port number when enabled.					
Connection Type	Server (Default): Host systems attach the device to the Control Port Number, and the data is sent out with the Control Terminator.					
	Client - The device connects to a host system at the specified IP address, Port Number and use Control Terminator to send the data packet.					
IP Address	Enter the host IP address when the Connection Type is set to Client.					
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 the TCP/IP trigger is selected in the Capture chevron.					
Results						
Enable TCP/IP Results	Enabling the TCP/IP Results interface allows the device to output result data over a TCP/IP connection.					
	<b>NOTE:</b> Disabling this interface when it is not in use is recommended.					

Setting	Description						
Connection Type	The Server Host system attaches to the device using 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.						
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.						
Deploy Mode Heartbeat							
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.						

## Table 8 TCP/IP Settings (Continued)

Click **Test Connection** to check port availability before attempting to connect.

## **RS-232 Settings**

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

M

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

Т	able	9	RS-232	Settinas
	abic	•	10 202	Settings

Setting	Description
Control	Configure the device control settings over RS232
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.

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

Setting	Description
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.
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	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.				
	<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.				
Keyboard Country Type	Select your country from the list of available Keyboard Country Types.				
	English (North America)				
	French (France) Windows				
	German Windows				
	Spanish (Spain Windows)				
	Italian Windows				
	• German Linux				
	Czech Linux				
	Spanish (Mexico) Linux				
	French (France) Linux				
	Polish Linux				
	Spanish (Spain) Linux				
	Italian Linux				
	Portuguese (Brazil) Linux				
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.				
Control					
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.				
Results	· · · · · · · · · · · · · · · · · · ·				
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.

File Edit View Device Help									English -	- @ ×
🚸 View Devices	🔒 FS40 - D	evice Settings		>	< Zeb	ebra_Scan_2024.10.13_18.2 (FS) - Capture 🗙				
FS4082b1 Camera V Power Source: PoE+							CREATE CONFIGURATION SNAPSHOT	LOAD CURRENT JOB	OPEN JOB	NEW JOB
	🕽 12 pin	Connect	or							A
G	PIO	Direction		Signal Type						
G	PIO 0	Select	$\sim$							\$
FS4082b1 Camera	PIO 1	Input	^	Select	$\mathbf{\vee}$					-
Disk Space Used 1.48/10.61 GB	PIO 2	Select								•
Device Settings	PIO 3	Input Output								-
		Static High								
Device Details	PIU 4 🚹	Static Low	_							
2 General G	iPIO 5 🛕	Select	$\mathbf{\mathbf{v}}$							- 10
3 Communication	🖲 5 pin (	Connecto	r				External Illun	nination Mode PNP	Strobe	~ 🔺
GI GPIO Mapping	PIO	Direction		Signal Type						
Jobs	iPIO 6 🛕	Input	$\sim$	Select	~					\$
G	iPIO 7 🛕	Select	$\sim$							\$
G	iPIO 8 🛕	Select	$\sim$							\$

## 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: Normal or Hardware Trigger.
	Normal Trigger - signal is routed through the device software. Normal Trigger is useful for Continuous, Level, periodic, Presentation, and Burst modes.
	Hardware Trigger - signal is routed through the device hardware directly to the sensor, bypassing the processing of the trigger. Hardware Trigger is more responsive and useful for Single Trigger use cases.
Advanced Settings	Use Input to configure Input Debounce and Input Delay.
	Use Output to configure Pulse Width and Output Delay.

#### Table 13 GPIO Mapping (Continued)

Setting	Description
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 14Trigger 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
Show Image	Enable to configure Show Image settings. When enabled, the device sends the mages back to Aurora Focus. This takes cycle time. For the faster job times, the frequency of images being sent can be reduced or disabled by configuring these settings.
Show Image Mode	Determine the method to update Shown Images.
Update Every	Determine how frequently shown images are updated per inspection.

## **Table 14**Trigger Settings (Continued)

Item	Description
Triggered Image Buffering	Buffer images for triggers received while a job is in progress.
Maximum Image Queue Size	Determine the maximum number of images queued before images are dropped from the queue.
Drop Mode	Determine the approach to drop images when the queue is full.

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



## Table 15Acquisition

Setting	Description
Barcode Autotune	Force an automatic tune procedure that configures the camera to read the barcode or Datamatrix and adjust <b>Exposure</b> , <b>Gain Factor</b> and <b>Focus</b> .
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+
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	Select Millimeter, Inch, or Dioptor to configure the focus measurement units on the device.
	NOTE: Depending on the hardware version of your device, Millimeter and Inch measurements are available in addition to Diopter. 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.
Aiming Configuration	Enabling this feature projects an aiming pattern onto the surface where the camera is pointing, helping to position the camera by identifying the focal point of the field of view.
Internal Illumination	This setting is only available with Unrestricted USB Power, PoE, and 24V external power.
	Select the Light Intensity (0-10V), color (red, white, green, IR), and quadrant (top, bottom, left, right) of the 360° LED light.
Setting	Description
-----------------------	---
Light Intensity	Use the slider to increase light intensity by sliding to the right.
	Minimum: 1
	• Default: 4
	Maximum: 10
Torch Mode	When enabled, the internal lights of the device are powered with static DC voltage with no strobing or overdrive.
	Torch mode offers dimmer illumination, but allows for extended lighting durations.
	This can be helpful for use cases that do not have movement and necessitate an extended exposure time.
Red Light	Top: enable this setting to use the top     illuminator on the device.
	Bottom: enable this setting to use the bottom illuminator on the device.
	Right: enable this setting to use the suitable illuminator on the device.
	Left: enable this setting to use the left     illuminator on the device.
External Illumination	Internal and External illumination can be activated simultaneously on FS42 devices while connected to a 24V DC power supply. Select the Light Intensity (0-10V).
Light Intensity	This controls the analog voltage pin on the Analog Output Pin.
	Minimum: 1
	Default: 8
	Maximum: 10

## **Table 15**Acquisition (Continued)

See Also

Viewing Devices

# **Trigger Settings**

Different trigger settings are enabled based on the job mode.



**NOTE:** Datacode supports Single Shot, Level Continuous, Periodic Single Shot, Continuous, and Presentation modes.

- 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. This is helpful for use cases involving 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 images based on a user-defined number of trigger intervals and frequencies.
- Periodic Single Shot initiates a single image capture after a user-defined period of time. It is helpful for debugging.
- Continuous initiates a series of captures rapidly. Continuous is helpful for barcode scanning applications.
- Presentation Mode illuminates the scan window when the sensor detects motion. This mode is helpful for kiosk and retail point-of-sale applications.

# **Using the Filmstrip**

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



# **PLC Trigger Modes**

The device supports different use cases with single shot, level continuous, series (burst), periodic single shot, continuous, and presentation trigger modes.

#### Single Shot

When the job is in Single Shot trigger mode, the device runs one job on each trigger and decodes the barcode.



Toggle the trigger bit from 0 to 1 to perform a trigger. The job stops when the trigger is complete. Toggle the trigger bit to run the job again. Toggling the trigger bit from 0 to 1 runs the job one time.

#### **Level Continuous**

Level Continuous initiates an image capture on a level trigger for objects in motion. This trigger mode is helpful for use cases that involve a conveyor belt. This mode consistently captures the image for the duration specified in the Active Job Timeout setting. When that duration expires, the job stops capturing the image.



To trigger the job for the first time, the trigger bit state should be toggled from 0 to 1. The job runs for the time specified in Active Job Timeout and stops. Toggle the trigger bit state from 0 to 1 to trigger the job for the first time. Toggle the trigger bit from 0 to 1 before the Active Job Timeout to manually stop the job. Toggle the trigger bit from 0 to 1 again to trigger the job again.



NOTE: Toggling the trigger bit from 1 to 0 does not effect the job.

#### Series (Burst)

Burst mode initiates a series of image captures, which is helpful for use cases that require capturing a series of images based on a specified amount of trigger intervals and frequency.



In this mode, the first trigger event (toggling the trigger bit from 0 to 1) starts the burst sequence. Consecutive trigger events do not have any effect until the previous burst sequence is complete. The following trigger event (toggling the trigger bit from 0 to 1) starts the burst sequence again.

#### **Periodic Single Shot**

Periodic Single Shot mode initiates a single image capture after a specified time. This is helpful for debugging use cases.



Periodic Single shot maintains the triggering job periodically after a specified period. Send the trigger again to stop the job in progress. While using PLC, the first trigger (toggling the trigger bit from 0 to 1) starts the job, and a second trigger event (toggling the trigger bit from 0 to 1) stops the job.

#### Continuous

Continuous mode initiates a series of image captures rapidly. This mode is helpful for barcode scanning applications.

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While in Continuous Mode, the PLC behavior is the same as in Periodic Single Shot mode.

#### Presentation

Presentation mode illuminates the scan window when the sensor detects motion. This mode is helpful for kiosk and retail point-of-sale applications.



The first trigger event (toggling the trigger bit from 0 to 1) starts Presentation mode. Send the second trigger event (toggling the trigger bit from 0 to 1) before scanning the barcode to cancel Presentation mode.



**NOTE:** Presentation mode stops after the barcode successfully decodes and restarts when the next trigger event occurs.

# **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 configure 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.

TRIGGERED IMAGE BUFFERING		
Enabled	-	
Maximum Image Queue Size	1	250
Drop Mode	Drop Newest	$\sim$

# **Using Autofocus Barcodes**

Use calibration barcodes to set the device's focus settings 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:



5s delay



8s delay



13s delay

**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.

## 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.

Default Setup		÷
	Duplicate	9
+ ADD SETT	NG	

Delete a configuration by clicking the ellipses:

Default Setup				
Setup 2				
Setup 3		Ē	÷	
	Delete			



**NOTE:** FS10/xS20 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.** 

Settings Advanced	Image Banks	Symbologies	Data Formatting	ManyCode
All image setups have been added to the tool's	X 🖻 D	efault Setup (Bank (	D) ×	
configuration.	🗙 🖻 s	etup 1 (Bank 1) 🗙		

# Using Golden Image Compare

Use Golden Image Compare to inspect two images from the Filmstrip simultaneously.

- 1. Acquire a frame using the capture button 🖸 in the bottom right corner of the canvas.
- **2.** Select the frames to set as Golden Image candidates by clicking the transparent yellow rectangle icon in the top right corner of each frame in the filmstrip.



**3.** Next, capture a new image or select frames in the filmstrip to compare to the golden image.

Filmstrip			
Ľì Î	I44 I4	► ►I ►►I 1/3 (3 total)	
	Golden		Click To Browse or Drag To Add

4. Hover over the three dots on the right of the canvas to view the dialog box menu and select the yellow Golden Image compare icon at the bottom of the menu.

5. Select the Golden Image candidate to compare to the current image in the canvas and click Next.

#### **Golden Image Compare**

#### Select Golden Image



golden-image-1 Set up on Apr 29, 2024 8:16 PM



golden-image-2 Set up on Apr 29, 2024 8:16 PM



×

**6.** Observe the Golden Image Compare window to simultaneously inspect the Golden Image and the current image in the canvas side by side.



**7.** Hold the CTRL button on the keyboard while scrolling and zoom in or out using the scroll wheel on the cursor.



**NOTE:** Scroll to zoom in or out and inspect the same area of each image side-by-side. At the bottom of each image, use the window where the cursor is positioned to view a given pixel's XY position values and RGB color values.

# 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.
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**

Use Custom Formatting to retrieve specific data by adding rules and delimiters.

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

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 📑 next to Find to add a data type to identify.
- 5. Next, click in next to **Replace With** to designate a data type to replace the data type identified in the Find form field.
- 6. Click in next to the **Prefix** form field to add a data type. Follow the same steps for **Data** and **Suffix.**



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

The performance V	H man A H	Inches Inches	LANDER IN COMMUNICATION	Long Lot Daylog
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8. Select a End Delimiter from the drop-down.

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Code 39	19401		1				
Code 128	118		1				
Vew Results	INDRA						
Slatus Codec	Result	174					
• Good Read - CODES	28 520045070572543	25					

9. Click Get Last to retrieve the String or Result.

String	
S20065010573543	
GET LAST	
Result	
	RESET TO DEFAULT

## **Advanced Filtering and Formatting**

The following functionalities are not supported in Aurora Focus:

- Non-standard, customer-specific check digit calculations
- Location based Pattern Match requirements based on barcode positional dependencies such as Code 128 is on the left of a UPC
- Interjection of time delays between transmitted barcode data
- Non-ASCII values

To configure Advanced Filtering and Formatting settings in Aurora Focus:

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

Settings	Advanced	Image Banks	Symbologies	Data Formatting	ManyCode
O Sta	ndard: Send data	as scanned and do r	not append any keys	trokes (Default)	
O Ap	pend Enter: Add a	in Enter key to the er	nd of the scanned da	ta	
	pend Tab: Add a 1	ab key to the end of	the scanned data		
O Cur	stom Formatting				
Ad	vanced Filtering a	nd Formatting			
rule(s) an EDI	r RULES				

4. 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.

1	tule 1: Filter		×	
	AND 🔨	Not ADD CRITERIA ADD GROUP		
l	AND OR	t 🗸 In Add Character Sets	∠ 0	
			CANCEL DONE	ĺ

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

R	Rule 1: Filter X						
	AND 🗸 🗌 Not	ADD CRITERIA ADD GROUP					
l	Character Set	in Add Character Sets	0				
	Character Set		CANCEL DONE				
	Symbologies						
	String Match	PPM The	× Send Deta				

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

Rule 1: Filter	×
AND V Not ADD CRITESIA ADD GROUP	
Charader Set V In Add Charader Sets	٥
AD V Not ACO CRITERIA ACO GROUP Add a parenthesis block to contain rules each separated by the same combinator.	0
	CANCEL DONE

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

Rule 0 - Add Action	ns	×
Add Actions Send Actions Move Actions	Send Data	+
Remove Actions Individual Actions	Send All That Remains	+
	Send Next N Characters	+
	Send Up To Pattern	+
	Send Function Key	+
Selected Actions		
℅ Send Data		/ ×
		CANCEL DONE

**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.

File Edit View Image System Help				🖨 English	- 🗆 X
Setup Device	FS10 - Device Settings	X test_job (FS)-Build			
● FSUItel Carres ∨ 34 Becole ∨	Power Source: USB 900mA	La curne	BJED CONNECT	Edding Edit	Deploy
Settings Advanced Image Banks Symbol	ogies Data Formatting Mor	Advanced Filtering and Forma	ting EDF Display Value: 7080065C708	1	Close
O Standard: Send data as scanned and do not append	Rule L Add Actions		^	Per Decode	
Append Enter: Add an Enter key to the end of the sca Append Tab: Add a Tab key to the end of the scannee Caston Formatting	Send Actions Move Actions Remove Actions Send A	Send Function Key	+	Enabled	▲ E ●
Advanced Filtering and Formatting	Individual Actions Send N	PI V	+	Send Data Full String	- ×
550# ESITIVG	Send U Send P	Modifiers	+		
	Selected Actions	Right Alt Lieft Shift Right :	Det .		
View Results	A Send Function May 11	Windows			
Status Symbology Result		CANCEL DO	HE CONTRACTOR		
• Good Read - CODE128 7888D65C7DE9	_		_		
	0		GANGE DONE		

d. Edit the action by clicking Edit on the selected action.

Move Actions	Send Data		Add Data Types
Remove Actions Individual Actions	Send Data		Custom String +
			Custom Special Character +
	× custom special character <b>×</b> ×		<1AB> + <0R> + <1P> +
		24 J	♦NUD> + ≤SD> + SD> +
Selected Actions			<ed> + <en> + <en> +</en></en></ed>
× Send Data			400> + 48> + 411> +
		CANCEL DONE	<vr>+ <f> + <nw> +</nw></f></vr>
			4TTD + 47MD + 45SD +

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

Advanced Filtering and Formatting			Close
Single Decode			
Rule 1		1	^
Filter (DAT	Action	Move Up Move Down	
Symbologies in CODE39	× Send Data	Send to Bottom	<
And		Duplicate	
		Disable	
		Delete	
ADD RULE			

# **Using Match String**

Use Match String to determine if the code has a specific string present.

Match String supports the following tools:

- Datacode
- Deep Learning OCR
- Read Barcode

For cases where match string functionality is not necessary, ensure **Barcode String Match** is disabled.



In cases where the data code contains the given string, the job passes.

# Zebra Aurora Focus Software Overview

File	Edit View Image Device Help					🌐 English	- 🗆 x
۰.	View Devices	VS40 - Device Settings		X Zebra_Inspect_2025.02.11_13.5 (VS)	- Build 🗙		
•	VS407cd7 Camera 🗸 Power Source: PoE	<b>≎</b> 🖰				Editing Edit	Deploy
Tool	FlowBuilder	Results	7 <sup>K</sup>	Image Viewer			Live View 🔵
lden	Symbologies Data Matrix			Status: Pass     Tool Time: 336 ms     Job Run Time: 342 ms     Symbology: DATAMAT	BDF Display Value: This is a Data Matrix by TE RIX PPM: 9.7	:С-П	Visibility 🗸
î î î î	U QK					Press Ctrl and drag	mouse to pan.
87% 542	No Read String			<b>T</b>			
2003				F.	1 - Mar 14		1101
	Any		~		1472 (BA)		
Pres	C String Match			2	This is a Data Makix b	y TEC-IT	
U	Barcode String Match			-0.00	9.7PPM	and the	
Cour	LAST DECODE String Contains V	This is a Data Matrix		5			
-	RESET TO DEFAULT						
Ē	Enabled			X:882 Y:1174 R:171 G:171 B:171 Zoom:105.35%			Acquisition
:				Filmstrip			
	Drag and drop to add a tool				I I ► ►I ►►I 2/2 (2 total)		
	END CONFIGURE RESULTS :=			Bank 0 Bark Cubling and the second se			Click To Browse or Drag To Add

In cases where the data code does not contain the given string, the job fails.

# Zebra Aurora Focus Software Overview

File	Edit View Image Device Help					🌐 Engl	ish — 🗆 🗙
4.	View Devices	🕒 VS40 - Device Settings		X Zebra_Inspect_2025.02.	11_13.5 (VS) - Build 🗙		
•	VS407cd7 Camera 🗸 Power Source: PoE	¢ 🖰		CAPTURE 🔺 🛛 BUILD	CONNECT	Editing	Edit Deploy
Tool	FlowBuilder	Results	7	Image Viewer			Live View
	Symbologies Data Matrix			Status: Failed     Job Run Time: 295 ms	Time: 288 ms BDF Display Value:	Symbology: - PPM: -	Visibility 🗸
	QR			11. 11. 11. 11.		Press Ctri a	nd drag mouse to pan.
)11	No Read String						
3				R.	225		1181
	Polarity				12	1.19	
	Any		×	ê.	200	This is a Data Makix by TEC-IT	
0	String Match Barcode String Match				E+0	Real	
	LAST DECODE Exact String	Lexnect exactly this string		5		266	
*		respect exactly the standy				<b>H. N</b>	
	RESET TO DEFAULT						
F	Enabled			X:882 Y:1174 R:171 G:171 B:171	Zoom:105.35%		Acquisition
::				Filmstrip			
	Drag and drop to add a tool			La 🗉	H4 H > H	▶► 2/2 (2 total)	
				Colim	NAMES AND A DESCRIPTION OF A DESCRIPTION		Olish To Deserve
	•			A REPORT OF	83 83 HEADEN HA		or Drag To Add
	Advanced Pass/Fail Configuration			Bank 0 B	Silve Graning and D		

#### **Using Set and Get Match Strings**

Match Strings are configurable in Aurora Focus for Datacode, Deep Learning OCR, and Read Barcode tools.

1. Add the tool in FlowBuilder using the Build tab to view match string options.



2. Select the Barcode String Match mode from the drop-down menu.

String Match Barcode String Ma	atch	
LAST DECODE	Disabled 🔨	
	Disabled	
RESET TO DEFAUL	Exact String	
Enabled	String Contains	
	Regex	

- Disabled (Default) no match string is used, and every string is accepted.
- Exact string the result must match the exact string provided.
- String Contains the result must contain the given string.
- Regex result acceptance follows the given regex rule.



**NOTE: Barcode String Match** mode is disabled by default and the match string value is empty. In this case, the tool accepts all read codes.

**3.** Click **Last Decode** to use the last successful read string as the current match string value.

#### **Command Channels**

Match strings are set by channels that support controlling devices that use commands such as TCP/IP or Serial Port.



**NOTE:** Ensure that **Enable TCP/IP Control** and **Enable TCP/IP Results** are enabled in **Communication** settings.

File Edit View Device Help		
Niew Devices	C VS40 - Device Settings	×
VS407cd7 Camera V Power Source: PoE		
	TCP/IP Settings Control	
VS407cd7 Camera	Use Same Port For Cont	trol And Result
Disk Space Used 0.74/10.38 GB	Connection Type	Client Server
Device Settings	IP Address	0.0.0.0
1 Device Details	Control Port Number	107
2 General	Control Terminator	CR+LF 🗸
3 Communication	Trigger String Type	Toggle     Explicit
GPIO Mapping	Trigger String	TRIGGER
Jobs	Results	
	Enable TCP/IP Results	
	Connection Type	Client Server
	IP Address	0.0.0.0

Enabling **TCP/IP Results** is necessary if command results are required to be read from the channel. It is recommended to enable this setting even in cases where the return value is unnecessary for the set command because it can return useful information about possible errors.



**NOTE:** You cannot get a match string value if this option is disabled.

#### **Available Commands**

Parameters are preceded with two strings that inform what action should be performed and which job parameter it applies to.

The first string informs whether the command should get (**GetJobParameter**) or set (**UpdateJobParameter**) as the value. The second string informs which job parameter should be updated (in this case, use **matchstring**).

Provide the parameters in the following command line format:

--parameter\_name parameter\_value

For string parameters, use double quotes:

GetJobParameter matchstring --toolname "Datacode 1"

For boolean values, use true or false:

UpdateJobParameter matchstring --value "XYZ" -- persistent true

For the enum parameter, enter the parameter value without quotes:

GetJobParameter matchstring --format plain

In cases where arguments do not take any value, provide the argument name:

GetJobParameter matchstring --help

#### **Get Match String Commands**

If an optional argument is not provided, use the default value.

NOTE: Skipping a required parameter results in command failure

Get Match String command:

GetJobParameter matchstring [optional parameters]

Parameters:

K

Parameter	Argument	Optional	Description
help	no argument	Yes	Produce a help message with a description of all commands. If provided, other arguments are ignored, and only the help output is returned.
toolname	string ( <b>empty string</b> by default)	Yes	Friendly name of a tool. If provided, the result will contain only data for the given tool (and only if the given tool is found and supports a match string). Otherwise, the result contains data for all tools.
format	enum ( <b>plain</b> / base64)	Yes	The format used to present the match string in the result.

#### Table 17 Get/Set Command Parameters

Example input:

GetJobParameter matchstring --format plain

Example result:

```
[GetJobParameter result] Get match string result: ["GetMatchStringEntries",
[{"MatchMode":"STRING_EXACT","MatchString":"ABC","Toolname":"Datacode 1"}]]
```

#### **Set Match String Commands**

If an optional argument is not provided, use the default value.



**NOTE:** Skipping a required parameter results in command failure.

Set Match String Command:

UpdateJobParameter matchstring --value "match string value" [optional parameters]

Parameter	Argument	Optional	Description
help	N/A	Yes	Produce a help message with a description of all commands. If provided, other arguments are ignored, and only the help output is returned.
toolname	string ( <b>empty string</b> by default)	Yes	Friendly name of a tool. If provided, the match string is applied only to the tool with the given tool name; otherwise, it is applied to all tools supporting the match string.
			NOTE: If this parameter is omitted or an empty string, other parameters are applied to all tools supporting the match string.

#### Table 18 Set Match String Command Parameters

Parameter	Argument	Optional	Description
format	enum ( <b>plain</b> / base64)	Yes	<ul> <li>Format of provided match string. Setting the format to base64 makes the value parameter to be interpreted as base64.</li> <li><b>NOTE:</b> This applies only to the value you insert in the command and doesn't influence the way of storing match strings internally by Aurora Focus.</li> </ul>
persistent	bool ( <b>true</b> / false)	Yes	If true, setting the match string will be persistent (saved in the database). Otherwise, it will only be applied to a currently deployed job.
match_mode	enum string ( <b>unknown</b> / disabled / string_contains / string_exact / regex)	Yes	<ul> <li>Match mode:</li> <li>unknown - either previous mode from job is used or string_contains, if it was not set;</li> <li>disabled - every match string is accepted, regardless of set value;</li> <li>string_contains - result must contain given match string in any place;</li> <li>string_exact - result must exactly match the given match string;</li> <li>regex - result acceptance follows the given regex rule.</li> </ul>
value	string	No	Match string value. If the format parameter is set to base64, then the value is interpreted as base64; otherwise, it is plain text.

#### Table 18 Set Match String Command Parameters (Continued)

Example Input:

UpdateJobParameter matchstring --value "XYZ"

Example Result:

[UpdateJobParameter result] Set match string, success

## **Using Fixturing Tools**

Use fixturing tools to focus on a specific symbology in environments where codes are processed rapidly and may be presented in different orientations.



NOTE: All 1D and 2D symbologies are compatible with fixturing tools.

- 1. Create a new job.
- 2. Add the Read Barcode tool to the FlowBuilder.



- English File Edit View Image Device Help - 🗆 × Zebra\_Inspect\_2025.03.26\_01.0... (VS) - Build 🗙 🎨 Get Started NS42 - Device Settings CAPTURE Editing ● NS42 2MP Emul... 🗸 🌣 💾 BUILD Deploy Edit к<u>ч</u> Tools Image Viewer FlowBuilder Results Status: Pass Tool Time: 16 ms OCR Result: e c h n o l o g e Q Search Tools RUN Visibility 🗸 Job Run Time: 16 ms Locate Tools (5) • Press Ctrl and drag mouse to pan. 🕦 標準 Read Barcode Filter Tools (8) • 🕑 juj 🛦 Bank 0 📄 😣 🗸 Read Barcode 1 Zebra Technolog Identification Tools (2) Default Setup (Bank 0) [IIII] Read Barcode Deep Learning Based OCR 💙 juj 🛦 Bank 0 📄 😣 🗸 Deep Learning Base... [IIII] Deep Learning Based OCR \$ Presence/Absence Tools (7) 🔹 Drag and drop to add a tool Measurement Tools (3) • Counting Tools (4) ▼ CONFIGURE RESULTS  $\Xi$ END Flaw Detection (2) • X:593 Y:4 R:255 G:255 B:255 Zoom:28.03% Advanced Pass/Fail Configuration Filmstrip 19 🗎 ▶ ▶▶ 2/2 (2 total) 14 IA 🕨 A 311 Click To Browse or Drag To Add Zebra Technologie ZEBRA
- **3.** Add an additional tool, such as Deep Learning OCR.

4. Ensure that Manycode is disabled before using fixuring.



5. Select the first tool (Read Barcode) from the Fixture drop-down list.

FlowBuilder	Results	я <sup>к</sup>
RUN		
Read Barcode Read Barcode 1	🛦 <del>Bank 0</del> 📄 😣 🤇	~
Deep Learning Based OCR <b>JIII</b> Deep Learning Based OCR 1	🛦 <del>Bank 0</del> 📄 🙁 .	~
Fixture	Accelerate	
Read Barcode 1 🔨 🔴 S	et	
Read Barcode 1		
None	·	

**6.** Deploy the job and move the test image. Observe the Deep Learning OCR tool's ROI following the Barcode tool results.





# **Using Automation Wedge**

Automation Wedge transmits data captured by the smart camera to an application running on a Zebra mobile computer. Use Automation Wedge to enhance productivity by streamlining the process of collecting and utilizing data from physical sources.

- **1.** Navigate to the **Communication** section in **Device Settings**.
- 2. Click Enable SSI communication over USB in the USB settings section.

Niew Devices	🔓 FS42 - Device Settings	×		
● FS423b49 Camera ∨ Power Source: PoE+		CREATE CONFIGURATION SNAPSHOT	LOAD CURRENT JOB	OPEN JOB NEW JOB
	IE / PLC Options	None 🗸		
	USB Settings			APPLY
	USB Speed	<ul> <li>USB 2.0</li> <li>USB 3.0</li> </ul>		
FS423b49 Camera	Results			
•	Enable HID Keyboard			
Device Settings	Keyboard Country Type	English (North Amer ∨		
1 Device Details	Keystroke Delay	•	0 ms	
2 General	Special Key Keystroke Delay	•	0 ms	
3 Communication	SSI Communication			
GPIO Mapping	Enable SSI communicatio	n over USB 🛕		
Jobs	USB CDC-Serial Control	antrol		



**NOTE:** SSI mode can only be enabled if HID results, CDC results and CDC Control options are disabled.

3. Navigate to job settings and configure. Source and Job Mode settings from the drop-down menu on the Triggers tab.



•

**NOTE:** Only auto modes are supported in job settings when SSI mode is enabled. The job starts when the device receives the enable command.

Supported Trigger Sources: Auto/Self

Triggers						Ac	quisition
SOURCE		_	JOB MO	ODE			
Auto (Self)	^		Perio	odic Single	Shot	$\sim$	
GPIO 🔺		20					6000
Serial 🔺							
TCP/IP							
Auto (Self)		L		Barcodes	6		
Test Trigger		-					
Enabled				$\bigcirc$			
Show Image Mode				Count	С	Inter	val
					1		

Supported Trigger Modes: Presentation, Continuous and Periodic Single Shot

🕒 FS423b49 Camera 🗸	ĴЩÎ Barcode	e: PoE+	<b>¢</b> 🖰	CAP
Triggers	Acqu	isition Se	ttings	
SOURCE Auto (Self)	JOB MODE Periodic Single Shot			
JOB INTERVAL	External Triggers Single Shot A Level Continuous	60000	200	ms
Do Not Read Last	Series (Burst)			
Enabled	Presentation (Aggregate Mode)			
Show Image Mode	Periodic Single Shot			
Update every	Continuous Presentation			

4. Ensure that Aim Code Identifier is enabled when creating a new job in SSI mode.

🔵 FS423b49 Camera 🗸	ĴЩ, Barcode	V Power Se	ource: PoE+ 🌣	
Settings Advanced	Image Banks	Symbologies	Data Formatting	ManyCode
Decode Strategy	Fast			~
Detection Method	Finder Pat	ttern		~
Allow Rectangular Codes	$\checkmark$			
Enable Aim Code Identifier	<ul> <li>✓</li> </ul>			
Expected Module Size				

M

**NOTE:** An Aim Code Identifier is required for decoded data to be transmitted correctly. If it is not enabled, the first three characters may get removed from the barcode data sent to the device.

# **Deploy Mode**

Use Deploy mode to view the job results and decode summary.

Click **Deploy** while in **Edit** mode **Editor** to enter **Deploy** mode **Click Deploy** and view job results and decode summary for read count, total pass/fail, tool time, and quality information.



**NOTE:** The Filmstrip is not available while in Deploy mode.

File Edit Image System	Help		English	×
View Devices	CS40 - Device Settings		🗙 Zebra_Inspect_2024.0 (VS) - Data View 🥝 🗙	
🔍 VS407cda Camera 🗸	Power Source: 24V 🂠 💾		CAPTURE 🛦 🔰 BUILD CONNECT 🤗 Deployed Edited Statements	dit Deploy
	View Results		Image Viewer	
CLEAR 🗙 EXPORT 💻			Status: Pass Tool Time: 2 ms Brightness: 149.13 Job Run Time: 2 ms	Visibility 🗸
Status Name F	Result Detail	Job Time	Press Ctrl and	drag mouse to pan. 🌗
			Bightness 1       Default Setup (Bank 0)         S70       Chimase FS70 FIXED SCNR.2.3MP;FAST DPM         Chimase FS70 FIXED SCNR.2.3MP;FAST DPM       Chimase FS70 FIXED SCNR.2.3MP;FAST DPM         (19) Pixe: FS70-CM20D5-0C00W       Chimase FS70 FIXED SCNR.2.3MP;FAST DPM         (2) Sixe: 2033E320180701       Chimase FS70 FIXED SCNR.2.3MP;FAST DPM         (3) Sixe: 2033E320180701       Chimase FS70 FIXED SCNR.2.3MP;FAST DPM         (4) Maximum Maxim	:
Tool Performance			-	
Туре	Result			
Total Pass/Fail	• 0 • 0			
Percentage of Pass/Fail	-			
Average Job Run Time	-			
Min/Max Job Run Time	-		X: Y: R: G: B: Zoom:17.22%	Acquisition 🔨

# **Using Undo/Redo**

Use Undo or Redo to go back to the previous step in a job deployment or configuration.

Click Edit from the top menu and select Undo or Redo to revert back or forward while building a job.
#### Zebra Aurora Focus Software Overview



# Connect

The Connect chevron provides access to Industrial Ethernet, Output Formatting, Script Formatting, GPIO mapping and Interface configuration.

File	Edit View Image Device	Help					🌐 Ei	nglish	- 0	×
÷.	Get Started		S42 - Device Settings	×	Zebra_Inspect_2024.11.26_0	(VS) - Connect 🗙				
•	NS42 5MP Emul 🗸 🌣	Ľ		CAPTURE	BUILD CONNECT		Editing	Edit	Deploy	y
•	Save Image	Save Image	)							
•	Industrial Ethernet	Passe	es s							
•	Output Formatting									
•	Script Formatting									
•	GPIO Mapping									
•	Interfaces									

#### Table 19Connect Settings

Setting	Description
Save Image	Enable save settings for Failures or Passes.
Industrial Ethernet	Configure User Control Data and Results data, add tools or jobs for configuration, and review the message sample.
Output Formatting	Enable Output Formatting to customize the formatting for all or specific results, including Serial, TCPIP, and HID, by enabling filters or delimiters.
Script Formatting	Enable Script Formatting to open the JavaScript editor and create scripts for specific use cases.
GPIO Mapping	Configure GPIO Mapping by clicking <b>Edit Device Settings</b> .

#### Table 19 Connect Settings (Continued)

Setting	Description
Interfaces	Configure HID or RS-232 interfaces by clicking <b>Edit Device Settings</b> .



NOTE: Click 🔯 to configure advanced settings.

#### **Output Formatting**

Use Output Formatting to customize data output from identification and Machine Vision Tools. Access Output Formatting using the **Connect** chevron to adjust delimiter settings for each tool or job.

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 Delimeter to a Prefix, Data, or Suffix category.
- 4. Click the specified Job to add a Results Field or Delimeter to a Prefix, Data, or Suffix category.
- 5. Select a Data Type Delimeter from the dropdown menu.
- 6. Click Copy to copy the Message Sample to clipboard.

#### **FTP File Saving**

- 1. Download babyftp (free FTP solution): 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.

Settings	×						
Limit Image Saving							
Save fewer images							
Save image every 2 inspections							
FTP Settings							
Hostname / IP Address * 🕜 Port							
172:16:125:205 21							
Usemame*							
anonymous							
Password							
Enter password							
File Path							
Enter file path							
Do not add pathname suffix							
Read Timeout (sec) Connection Retry							
120 1							
CANCEL SAVE SETTIN	IGS						

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

Sav	ve Settings											
	What to Save?	Save Location			Save File Format		JSON	File Name Prefix	File Name Suffix		Quality	
~	No reads	FTP	~	¢	JPG	~	L Enable JSON	No Reads	DateTime	~	50%	~
~	Good reads	FTP	~	¢	JPG	~	L 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.

OSDisk (C:) > TEST-FTP					
*	Name				
*	📴 Good Reads_test-ftp_bank_0_2023-08-28T13-31-20.488480+00-00.jpg				
*	📴 Good Reads_test-ftp_bank_0_2023-08-28T13-31-21.205873+00-00.jpg				
*	🛃 Good Reads_test-ftp_bank_0_2023-08-28T13-31-22.058954+00-00.jpg				
*	No Reads_test-ftp_bank_0_2023-08-28T13-31-27.302713+00-00.jpg				
*	No Reads_test-ftp_bank_0_2023-08-28T13-31-28.459954+00-00.jpg				
*	No Reads_test-ftp_bank_0_2023-08-28T13-31-29.221688+00-00.jpg				
*	No Reads_test-ftp_bank_0_2023-08-28T13-31-29.761577+00-00.jpg				

#### 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	$\sim$	Series (Burst)	$\sim$

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



In the FTP configuration dialog, configure **Burst Mode Settings**.

Settings					
Limit Image Saving					
Save image every	Save image every 2 inspections				
Burst Mode Settings					
✓ Save all images in a burst					

#### **Generating a Configuration Barcode**

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.

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.

File Vi	ew Help			🌐 English	-	×
🎨 Co	nfiguration Barcodes	🔓 VS70 - Device Settings	X Zebra_Inspect_2024.04.29_20.1 (VS) - Build X			
$\equiv$	Menu					
A	Get Started	Configuratio	n Barcodes			
Ð	Setup New Device	Select Device Setup	Locally Saved Configuration Snapshot: No Configuration Snapshot currently loaded.	E		
0	View Devices		Currently Managed Device: None			
I∰I	Configuration Barcodes	Barcodes Size	Medium 🗸			
		Replace Network Settings				
		Replace Hostname				
\$	Settings v7.0.34					



**NOTE:** If the device is not managed, you cannot select a setup from the device. 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 POF

×

# **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, consider the following device characteristics before determining which devices acts as a leader or follower.

- Fixed Scanning and Gateway devices enable USB HID mode as output. However, GS20 devices do not natively support a USB port.
- Fixed Scanning and Gateway devices 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.





# 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:
  - TCPIP
  - 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



# **Gateway Licensing**

Licenses for the Connectivity Gateway solution are available for xS40/70 devices using the Zebra Web HMI.

Click the Licensing tab to activate a new license and view active licenses,

÷								LHOST 12/15/2022	23:01 🕑 Admin	\$ ۲	Henglish
GENERAL	LICENSING	FIRMWARE UPDATE	ACCOUNT SETTINGS	APPLICATION							
Manage License N	Method										
Online	Offline										
Licensing Server	Licensing Server URL										
https://zebra-lie	icensing.flexnetoperati	ions									
Activation ID											
44dd-58ae-11a	a3-4465-907f-2a64-87	/f0-!									
ACTIVATE LICE	ACTIVATE LICENSE										
Active Licenses											
License Index		License Name	License Ve	rsion	Expiry Dat	e	License Count	Host		Re	elease



**NOTE:** GS20 devices include a license by default.

#### **Compatible PLC Devices**

The Connectivity Gateway supports communication to and from the following PLC models.

PLC	Protocols
Siemens	S7 TCP/IP
	Logo!
	\$7-200
	\$7-300
	S7-400
	S7-1200
	S7-300 (ERPC)
	ET 200 Pro
	S7-1500
	SINUMERIK 840D
	PCS 7
Rockwell	ControlLogix CPU
	CompactLogix CPU
	Micro800 CPU
Mitsubishi	QCPU (Built-in Ethernet)

PLC	Protocols
	LCPU (Built-in Ethernet)
	RCPU (Built-in Ethernet)
	FX3CPU
	FX5CPU
	GOT
	ACPU
Omron	CS1 CPU
	CJ1 CPU
	CV1 CPU
	NJ CPU
	CP1 CPU
	NX CPU
	CJ2 CPU
	NE1S CPU
Modbus	TCP/IP

# **Setting Up Follower Devices**

Set up follower devices for the Connectivity Gateway using the Web HMI.

- 1. Navigate to the **Setup** screen using the left menu on the **Home** screen.
- If you are in triggered mode and intend to update the port that the device is monitoring for an incoming trigger string, enter the desired port into the Trigger Input field (0 to 65535) and click **Update**.
- To configure the IP and Port address of the host, enter the desired IP address and port into the Output IP and Output Result fields. Click **Update** for the changes to update the field values.
- To set up the TCP port to act as a Server, select this option from the Mode menu and click the icon above the menu to edit the server settings.
- 2. Click Update to enable the changes and update the field values. Select Server to use the TCP port as a server.



**NOTE:** When the Leader to Host port acts as a Server, a timeout occurs after five seconds of inactivity. In some cases, you may need to set up a heartbeat to keep the connection alive by sending a string (for example, HB) from the host machine to the device IP address and the specified server port with a frequency higher than every five seconds.

- 3. Once the form fields are populated, click Commit Changes.
- **4.** Observe the message and wait for at least two minutes before sending the next trigger to the Connectivity Gateway.



**NOTE:** Inactivity Timeout is the time the device waits for the next TCP message before the connection is lost. This setting is only applicable when the leader device operates in Server mode. The default setting of one day is helpful for stable network connections. However, lower

timeout options should be used along with a heartbeat from the host to recognize dropped connections quicker on unstable networks. If your network is unstable, set up a heartbeat to maintain the connection by sending a string (for example, HB) from the host machine to the leader's device IP address and specify the server port with a frequency higher than the inactivity timeout.

# **Configuring Follower Devices**

Click Config on the Home screen to configure GPIO, Filtering, Triggering, Timeout, and Run Mode settings.



#### **GPIO** Triggering

Define a pulse width for the signal to trigger a device over the input of your choice.

2. In the top left GPIO section, select the desired trigger pin (either In 0 or In 1) and click Update.

i GPIO In	Pulse     CONFIG		GPIO Pass/Fail
Trigger Pin Rising (1) N/A Falling (0)	Trigger: 100 ms Pass/Fail: 100 ms GPIO Enabled	Pass Pin Mirroring N/A	Fail Pin N/A CONFIG
	CONFIG	CONFIG	
String Filtering	Serial	Trigger Strings	No Read String
String Filter Filter Type Mode	String Filter	Start: TRIGGER Stop: TRIGGER	String NOREAD No Read St
Disabled T Exclude T	UPDATE	CONFIG	
i Failure Timeout	Results Delay	Leader to Host     Terminators	Run Mode Mode
Timeout Timeout (ms) 500 ms 500	Relative     Delay (ms)	CRLF CRLF	
	0 ms 0		Level CONFIG
UPDATE	UPDATE	UPDATE	UPDATE

- 3. Click Config to edit the Trigger Pulse and Pass/Fail Pulse fields.
- **4.** Enter the desired values and click **Update**.
  - Trigger Pulse: specifies the pulse width for the signal that triggers the follower devices.
  - Pass/Fail Pulse: specifies the pulse width for the pass/fail result signal.



**NOTE:** If you configure the same output for GPIO Pass/Fail and as an input for the follower device (for example, trigger input), the trigger input for the follower device takes precedence.

#### **GPIO Mirroring**

Use the HMI to turn GPIO Mirroring on or off and inverse the mirroring to allow Input 0 and Input 1 to mirror to Out1 and Out0.

- Enabled GPIO Mirroring: the output signal goes high whenever the input pin that it is mirroring goes high.
- Disabled GPIO Mirroring: the output signal goes high for its predefined pulse width and then goes low immediately after.

- Enabling Opposite pins: input 0 mirrors Out0, and Input1 is mirrored to Out1 by default. Enabling opposite inverses the mirroring to allow Input0 and Input1 to mirror Out1 and Out0, respectively.
- 1. Navigate to the **Configuration** screen using the left menu on the **Home** screen.
- 2. Locate the GPIO Mirroring section and toggle GPIO Mirroring to enable.

GPIO In	Pulse	CONFIGURATION	6	GPIO Pass/Fail
Trigger Pin O Rising (1) N/A O Falling (0) Trigger Pin N/A ( ) TUPDATE	Trigger: 100 ms Pass/Fail: 100 ms	GPIO Mirroring Enabled CONFIG	Pass Pin N/A Pass N/A ( )	Fail Pin N/A CONFIG
String Filtering	6	Serial († Trigger S	Strings	No Read String
String Filter Filter Type Disabled	String Filter	Start: TRI Stop: TRI CONFIG	igger Igger FIG	NOREAD No Read St Enabled
<ul> <li>Failure Timeout</li> <li>Timeout</li> <li>Timeout (ms)</li> <li>500 ms</li> </ul>	<ul> <li>Results Delay</li> <li>Absolute</li> <li>Relative</li> <li>Delay</li> <li>0</li> </ul>	r Leader to Terminators CRLF elay (ms) Output vi	o Host Terminators CRLF	Run Mode       Mode       Level       Current Mode       Level       CONFIG
UPDATE	UPDATE	UPD	ATE	UPDATE

- 3. Click **Config** and select an **Input Pin** and an **Output Pin** from drop-down.
- 4. Click Update to apply the changes.

#### **GPIO** Pass/Fail

Use the HMI to configure GPIO Pass/Fail on an output pin of your choice.

- **1.** Determine which output to use for Pass/Fail. The output triggers followers and cannot be used to output scanning results.
- 2. Navigate to the Configuration screen using the left menu on the Home screen.

3. Use the top-right GPIO Pass/Fail section to select Pass and Fail pins from the drop-down menu.

i GPIO In	Pulse     CONF		GPIO Pass/Fail
Trigger Pin O Rising (1) N/A O Falling (0) Trigger Pin N/A ( )	Trigger: 100 ms Pass/Fail: 100 ms CONFIG	IO Mirroring Pass Pin N/A Pass N/A ( )	Fail Pin N/A Fail N/A ( )
i String Filtering	Serial	Trigger Strings	No Read String
String Filter	String Filter	Start: TRIGGER Stop: TRIGGER CONFIG	String NOREAD No Read St Enabled UPDATE
i       Failure Timeout         Timeout       Timeout (ms)         500 ms       500	<ul> <li>Results Delay</li> <li>Absolute</li> <li>Relative</li> <li>Delay (ms)</li> <li>0 ms</li> </ul>	<ul> <li>Leader to Host</li> <li>Terminators</li> <li>CRLF</li> <li>CRLF</li> <li>Output via TCP</li> </ul>	Image: Book of the second s
UPDATE	UPDATE	UPDATE	UPDATE

4. Set the toggle to Enabled and click Update.

#### **String Filtering**

The device supports string filtering modes such as exclude and include and string filters such as exact match, start with, ends with, contains, and RegEx.

- Exclude: the device excludes barcode results that match the specified string filter.
- Include: the device only includes barcode results that match the specified string filter.

Supported string filters include:

- Disabled: disables string filtering.
- Exact Match: filters strings that exactly match the input string.
- Start With: filters string matches at the beginning of the string.
- Ends With: filters string matches at the end of the string.
- Contains: filters string matches anywhere in the string.

- **RegEx:** uses a regular expression to define string filtering.
- To set up string filtering:
- **1.** Navigate to the **Configuration** screen using the left menu on the **Home** screen.
- 2. Use the String Filtering section to select the desired Mode, Input, String Filter, and Filter Type.

GPIO In	i Pulse	CONFIG	JRATION	0	GPIO Pass/Fail	:: ×
Trigger Pin O Rising (1) N/A O Falling (0 N/A ()	Trigger: 100 ms Pass/Fail: 100 ms	GPIO N Enabled	<b>Airroring</b>	Pass Pin N/A Pass N/A ( )	Fail Pin N/A Fail N/A ( )	CONFIG
			CONFIG			
String Filtering		Serial	Trigger	Strings	i No Read	String
String Filter	String Filter		Start: TF Stop: TF	RIGGER	String NOREAD	No Read St
Disabled   Exclude		CONFIG	CO	NFIG		UPDATE
i Failure Timeout	i Resu	ts Delay	i Leader	to Host	i Run M	ode
Timeout Timeout (ms)		Absolute Relative	Terminators CRLF	CRLF	Mode Level	•
	Delay O ms	Delay (ms) 0 	Output	via TCP	Current Mode	
UPDATE	UP	DATE	UPE	DATE	UPD	ATE

**3.** Click **Update** to apply the changes.

# **Serial Triggering**

Set up a Serial Trigger from the host to the Connectivity Gateway.



**NOTE:** There is no serial connection between the leader and the follower devices; triggering between the devices occurs over TCP/IP.

× CONFIGURATION :3 0 0 GPIO In 0 Pulse GPIO Pass/Fail Rising (1) Trigger: 100 ms Trigger Pin Pass Pin Fail Pin 6 **GPIO Mirroring** N/A Pass/Fail: 100 ms N/A N/A Falling (0) CONFIG Trigger Pin Pass Enabled N/A() N/A() N/A() UPDATE CONFIG CONFIG UPDATE 0 6 Serial 0 0 String Filtering **Trigger Strings** No Read String Start: TRIGGER String String Filter String Filter No Read St... NOREAD Stop: TRIGGER Filter Type Mode Enabled Disabled Exclude CONFIG UPDATE CONFIG UPDATE 0 0 0 0 Results Delay Failure Timeout Leader to Host Run Mode Mode Terminators Absolute Terminators CRLF Level CRLF Relative Timeout (ms) Timeout 500 500 ms Delay (ms) Output via TCP Delay **Current Mode** 0 0 ms Level CONFIG UPDATE UPDATE UPDATE UPDATE

2. Locate the Serial section and click Config to set the serial settings for the device.

State Baud Rate Data Bits FC (DTR/RTS)   Enabled 9600 8 Disabled   State 9600 8 1   Output via Serial Parity Stop Bits   None 1 *	State Baud Rate Data Bits FC (DTR/RTS)   State 9600 8 Disabled   Disabled 9600 8 Disabled   State 9600 8 0   9600 8 0   Output via Serial Parity Stop Bits   Parity 1 *				
Enabled 9600   State Baud Rate   Disabled 9600   9600 8   9600 8   9600 8   0utput via Serial Parity   None 1   Parity Stop Bits   1 *	Enabled 9600 8 Disabled   State Data Bits * Flow Control   Disabled 9600 8 *   Output via Serial Parity Stop Bits   None 1     Parity None   None 1     CANCEL	State	Baud Rate	Data Bits	FC (DTR/RTS)
Disabled     •     <	Jisabled Image: state of the state of	Enabled	9600	8 Data Bile	Disabled
Output via Serial Parity Stop Bits   None 1     Parity None     Parity None     None 1     APPLY CANCEL	Output via Serial   Parity   None   Parity   None   I     Stop Bits   1     APPLY     CANCEL	Disabled •	9600 <b>-</b>	8	Disabled T
None 1   Parity Stop Bits   None 1     APPLY CANCEL	None 1     Parity   None   I     Stop Bits   1     APPLY     CANCEL	Output via Serial	Parity	Stop Bits	
APPLY	APPLY Total CANCEL	-	None	1	
APPLY CANCEL	APPLY		None	Stop Bits	•
APPLY CANCEL	APPLY CANCEL				
					CANCEL

**3.** Configure the form fields and click**Confirm** to enable the settings on the device.

#### **TCP/IP Triggering**

Before setting up TCP/IP triggering on the device, configure the Host to Leader port and follower devices.





**3.** Select the terminator for each trigger from the drop-down menu and click **Update** to apply the changes.





**NOTE:** Serial Interface does not support a null terminator.

# **Failure Timeout**

Set a failure timeout to account for trigger input delays.



2. Use the bottom left Failure Timeout section to specify a timeout.

3. Click Update for the changes to take effect.



**NOTE:** Ensure your failure timeout accounts for any trigger input delays specified on the follower side.

#### **Run Mode**

The Connectivity Gateway operates in Single Shot, Continuous, or Level mode.

- **1.** Ensure that you set up continuous mode between leader and followers before selecting an operating mode.
- 2. Navigate to the **Configuration** screen from the **Home** screen using the left navigation menu.

# 3. Use the bottom right Run Mode section on the Configuration screen to change between Single Shot, Continuous and Level modes.

i GPIO In	Pulse     CONFIGU	JRATION <b>(</b>	GPIO Pass/Fail
Trigger Pin O Rising (1) N/A O Falling (0) Trigger Pin N/A ( )	Trigger: 100 ms Pass/Fail: 100 ms Enabled CONFIG	lirroring Pass Pin N/A Pass N/A ()	Fail Pin N/A CONFIG
String Filtering	Serial	Trigger Strings	No Read String
String Filter Filter Type Disabled Exclude	String Filter	Start: TRIGGER Stop: TRIGGER CONFIG	String NOREAD No Read St Enabled UPDATE
i       Failure Timeout         Timeout       Timeout (ms)         500 ms       500	i       Results Delay         i       Absolute         i       Relative         Delay       Delay (ms)         0       0	<ul> <li>Leader to Host</li> <li>Terminators CRLF</li> <li>CRLF</li> <li>Output via TCP</li> </ul>	Run Mode Mode Level Current Mode Level CONFIG
UPDATE	UPDATE	UPDATE	UPDATE

4. Click Config to edit Run Mode settings.

- 5. Configure the required trigger settings:
  - Level Mode determines how a level starts and stops.
  - Grace Period the amount of time to wait after a level stop signal is received to accept incoming barcodes before rejecting them.
  - Output Mode determines how barcodes are output over all configurable host interfaces while running in level mode.
  - Output Delimiter determine the delimiting characters separating the barcode output after a level session when running in **Level End** output mode.



- 6. Click Update for the changes to take effect.
- **7.** Observe the warning screen indicating that scan data is erased after the changes are implemented. Acknowledge the warning to proceed with your changes.

#### **Administrator Settings**

Accessible administrator settings include network, GPIO, PLC, ZETI, database, and alerts.

#### Setting Up a Network

Configure network settings, including the hostname, IP address, subnet, gateway, and DNS server.

Access **Network Config** from the **Admin Settings** menu to edit the hostname and server settings and click **Update** to save each setting.

# Connectivity Gateway Solutions

	RETURN HOME	
HOSTNAME FS4082b1	•	SUBNET
Hostname	IP	Subnet
UPDATE	UPDATE	UPDATE
GATEMAY	DWS SERVER	DHCP True
Gateway	DNS Server	Disaal.ED *
UPDATE	UPDATE	UPDATE
NTP SERVER 1 0.pool.ntp.org		NTP SERVER 2 1.pool.ntp.org
NTP Server		NTP Server
UPDATE		UPDATE

# **Configuring GPIO**

Configure GPIO settings such as Mode, Edge Sense, and Debounce.

1. Access GPIO Config from the Admin Settings menu.



2. Select the GPIO pin from dropdown and configure the Mode, Edge Sense, and Debounce settings.



**3.** Click **Confirm** to apply the changes.

#### Attributes

Provide the Attribute ID or value to set or retrieve the response.

1. Access Attributes from the Admin Settings screen.



2. Enter the Attribute ID and Attribute Value and click Get or Set to retrieve the response.

Attribute ID 67331	Attribute Value	GET	SET	
	Get Re:	sponse		
	BA	СК		

# **Configuring the Database**

Configure the database to set a data capacity or clear interval.

- 1. Click Database Config on the Admin Settings menu.
- 2. Enable a **Database Cap** by sliding the toggle to the right and selecting an entry capacity from the dropdown menu.
- 3. Enter a Clear Interval in ms.

Databas	e Cap	Ena	bled	Cap 1000 Barcoo	ies 🔹		UPDATE	
1000 Ba	rcodes	•	•					
	Clear	Interval	<u> </u>					
	500	0 ms	Clear Interval			DATE		
			BAC	CK				

4. Click Update to apply the changes.

# **Enabling Alerts**

Enable alerts to understand the timeout intervals of the follower and leader devices or if the read rate drops.

1. Click Alert Config on the Admin Settings menu to enable alerts.



2. Enable an alarm for Follower Heartbeat, Host Heartbeat, Read Rate, or Trigger Overrun by sliding the corresponding toggle to the right.

Follower Heartbeat Warning		Host Heartbeat Warning	
Read Rate Alarm		Trigger Overrun Alarm	
	BACK		

- Follower Heartbeat: enables a heartbeat (timeout interval) for follower devices.
- Host Heartbeat: enables a heartbeat (timeout interval) for the host device.
- Read Rate: enables a notification on the Home screen if the read rate drops below 95% over 1000 scans.
- Trigger Overrun: enables a notification on the Home screen when triggering occurs faster than the result is received from the follower or when a failure timeout occurs.

# **Using ZETI with Follower Devices**

Use Zebra Easy Text Interface (ZETI) to execute specific commands and retrieve a response.

1. Access **ZETI** from the **Admin Settings** menu.



- 2. Select a follower from the drop-down menu and enter a command.
- 3. Click Exec to execute the command and observe the Status and Response.

Follower 🔻	Command		EXEC	Status
		Response		
		<b>B</b> AOK		
		BACK		

#### **Split Codes**

Configure follower devices for Split Code functionality using Zebra Aurora Focus.

- 1. Create a new job for the follower device and navigate to the Build tab in Zebra Aurora.
- 2. Navigate to the **Symbologies** section. Ensure that only the symbologies necessary for the application are enabled.
- **3.** Navigate to the **ManyCode** tab. Configure the total number of Barcodes to Decode (3 max). Sort by symbology and enable partial results.
- 4. Navigate to the Data Formatting tab and select Advanced Formatting.
- 5. Select ManyCode and input the following:
  - Prefix: None
  - Data
    - Many Code String
    - Custom String "~~\$\$~~"
  - Suffix: None
  - Delimiter
    - Data Type: None
    - End: None
    - ManyCode String: None
- 6. Select All Symbologies
  - Prefix: None
  - Data
    - Symbology
    - Custom String ","
    - Full String: Base 64
    - Custom String: "~~##~~"
  - Suffix: None
  - Delimiter
    - Data Type: None
    - End: None

# **PLC Configuration**

Create a PLC device to connect to the Connectivity Gateway.

1. Select PLC Config from the Admin Settings menu.



2. Select Create PLC from the PLC Configuration menu.


**3.** On the Create PLC screen, select the **Manufacturer** and **Model** of the PLC, specify a **Friendly Name** for the PLC, and enter the **IP Address**.

Manufacturer		Model	
Rockwell	-	ControlLogix CPU	•
Name		IP Address	
Friendly Name		IP Address	
CREATE		CA	NCEL

**4.** Click **Confirm** and observe the confirmation message.

#### Sending Results to a PLC Device

Use the Connectivity Gateway to send results to the connected PLC device.

1. Navigate to the Admin Settings screen from the left menu on the Home screen and click PLC Config.

2. Click Results Tag on the PLC Configuration screen.



**3.** Select the PLC device from the menu and enter a value for the trigger.

Results Device		Results Tag				
PLC		Results Tag (STRING 4096)				
Device	•	Tag Name				
APPLY		CANCE	L			

4. On the PLC Configuration screen, toggle Output via PLC to On (green).





**NOTE:** The results tag supports a string of up to 4096 characters, including the CR+LF terminator.

**5.** After the configuration is complete, navigate to the **Control PLC** screen, select the PLC device from the menu, and click **Start** to begin sending results.

## **Modbus Configuration**

Configure a Modbus device and define a specific coil to monitor.

1. Navigate to the Admin Settings menu from the Home screen and click Modbus Config.



- 2. Slide the toggle to the right to enable **Modbus Triggering** or **Output to Modbus**.
- **3.** Click **Control Device** to access controls to the Modbus device.

Select the Modbus device from the menu and click Start to begin controlling the device. Click Stop to end the session or Delete to remove the device. When you are finished controlling the device, click Back to return to the Admin Settings menu.



5. Click **Results** to access Modbus results and configure where results are sent to.



6. Select the Modbus device from the menu and define a Holding Register.

Results Device			Starting Register
			40001
Modbus Device			Starting Register
Device	-	Holding Registe 40001	er
		(ex. 40001)	
APPLY			CANCEL

- 7. Click **Confirm** to save changes and return to the **Admin Settings** menu.
- 8. Click Create Device to configure the device information.
- 9. Provide the required device information and click **Create** to return to the **Admin Settings** menu.

Name		IP			Port	
Device Name		IP Address			Port 502	
Coils	Discrete In	puts	Input Re	gisters	Holding Registers	
Coils 1	Discrete Inputs 0		Input Registers 0	5	Holding Registers 4096	
CREATE				C	ANCEL	

10. Click Monitoring to monitor a specific coil on the Modbus device

**11.** Select a Modbus device from the menu and determine a coil number to monitor.

Trigger Device			Monitoring Coil
			1
Modbus Device		Coil Number	Coil to Monitor
Device	•	1	
APPLY			CANCEL

# 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.

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



**NOTE:** Use Google Chrome for optimal performance while using the Web HMI.

## Web HMI Top Menu

The Web HMI provides access to the following options 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 20 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.

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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	Power, PoE Network, Device Status, Focus, Warning, Auto Flash, and Firmware Update.
Status	Status       READY         Ready - the camera is waiting for a trigger, or there are no active jobs.         Status       BUSY         Busy - the camera is processing one or more triggers.         Status       COTING         Editing - Zebra Aurora Focus is editing a job.

#### Table 20 Web HMI Dashboard Overview (Continued)

# 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.

## Accessing the Web HMI

👫 ZEBRA				😚 FS40	02/17	/2023 21:56	e Operato	¢ ،	<b>*</b> 🖗	€English
				JOB Serial N	lumber					
S40 F\$40SR 2W	P MONO DPM REDLED NOFLTR	<b>ᢤ. ZEBRA</b>		Recent Status	Inspections Codec	Result	РРМ	BQM	Job Time (r	ns)
(1P) P/N: (5) S/N: 2	F\$40-\$R20D4-2C00W 11455201 11455201	DESIGNED IN NEW YOR) MADE IN TAIWAN 00W, 2.6 ppm	*	Pass	CODE128	1PFS40- SR20D4- 2C00W	2.6	N/A		
MAC ID: 7	78B8D65C72E7			Pass	CODE128	1PFS40- SR20D4- 2C00W	2.6	N/A		
				Pass	CODE128	1PFS40- SR20D4- 2C00W	2.6	N/A		
200М •		-		Pass	CODE128	1PFS40- SR20D4- 2C00W	2.6	N/A		
				Pass	CODE128	1PFS40- SR20D4- 2C00W	2.6	N/A	30	
				Pass	CODE128	1PFS40- SR2004-	26	N/A		
DASHBOARD	LIVE MONI	FORING	RESULTS HISTORY		JOB	LIST		A	CTIVITY LOG	

#### Table 21 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

∜•. ZEB	RA			💮 FS4072E7	02/17/2023 21:	🛚 😝 Operator 🛛 🌣	📌 🕀 English
	Inspection	Result	Execution Time	Date	I.	Job	
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:36.28957		Serial Number	•
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:36.52826			
	BARCODE_SCANNING_TOOL	Pass	34	2023-02-17T21:50:36.76341			
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:36.99819			
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:37.23347			
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:37.46884		Total Triggers	
	BARCODE_SCANNING_TOOL	Pass		2023-02-17121:50:37.70341		Total Pass	2248
	BARCODE_SCANNING_TOOL	Pass	33	2023-02-17T21:50:37.93842		Total Fail	
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:38.17330		Missed Triggers	
	BARCODE_SCANNING_TOOL	Pass		2023-02-17T21:50:38.40839			
1 row select	led		Row	s per page: 10 👻 1-10 of 500	< >	VIEW RESU	LT DETAILS
	C DASHEOARD	LIVE MONITORING	RESULTS	) HISTORY	JOB LIST		CTIMITY LOG

#### Table 22Viewing 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.

<i>.</i>	ZEBRA					😚 FS4072E7	02/17/2023 21	📁 😝 Operator 🂠 🌾 🕀 English
	Name	Туре	Size	Slot	Status	Uptir	ne	JOB Serial Number
0	Default Barcode Job							
0	Box Reader							ACTIVE
	Serial Number				Active			Trigger Mode PERIODIC_SINGLE_SHOT
								Slot No. 3
								DESCRIPTION
				R	ws per page:	10 <del>•</del> 1-3 of 3	< >	
	Ca DASHBOARD 0	IVE MONITORING		RESULTS H	ISTORY		JOB LIST	

#### Table 23 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 24Viewing 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**

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) to update the firmware. The USB connection provides power and communications to the device.



**NOTE:** Conduct a Factory Reset 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. Requirements:

- 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**

This section outlines performing a Firmware Update on the device.

- 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.

$\leftarrow \rightarrow \ \texttt{C}$	▲ Not secure   gs209341/	Ah	☆	Ф
🕸. ZEBRA	SS GS209341 10/24/2023 05:01	e Ope	rator	۵

**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 🛄
- **11.** Click the **Firmware Update** tab.

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



13. 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. 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.

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**

A factory reset deletes all created jobs on the camera.



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



- a) User ID: admin
- **b)** Password: admin
- 3. Click Login.
- 4. Click 🔯.
- 5. On the **General** tab, click **Reset All** in the **Factory Reset** field, and wait for the device to reboot (approximately 45-60 seconds).



# Using Fixed Industrial Scanning Tools

Use Fixed Industral Scanning symbologies and tools and set image banks and format data.

## **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 25	Jobs <sup>-</sup>	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.

File Edit View	v Image Device Help					🌐 English	- @ ×
🚸 View Device	25	🔒 FS40 - Dev	vice Settings		X Zebra_Scan_2024.10.13_18.23.35 (FS) - Build X		
😑 FS4082b1 Ca	amera 🗸 [IIII] Barcode	✓ Power Source	:: PoE+ 🏟 💾		CAPTURE BUILD CONNECT	Editing Edit	Deploy
Settings Ad	dvanced Image Banks	Symbologies Da	ata Formatting	ManyCode	Image Viewer	L	ive View 🔵
					Joldus, Fass Jool Time: 4 ms BDF Display Value: Zebra Technologies PPM: 7.2 Symbology: DATAMATRIX BQM Grade: – Job Run Time: 5 ms		
Inverse 1D Min % Barcode No Read String	Regular P/ROI Overlap		20	<b>~</b>	Zebra Technologies	Press Ctrl and	drag mouse to pan.
Enable Ac	daptive ROI Search with a	arge $\checkmark$ scale facto	or.				•
Barcode Strin	ng Match D						
	Current Results	De	eployed Results	I			
Status	Symbology Result		Р	PM			
Good Read	🐹 DATAMATRIX Zebra T	Technologies	7.	2	X:252 Y:692 R: G: B: Zoom:43.58%		Acquisition
					Filmstrip		
					💾 🗎 144 14 >> 11/1 (1 total)		
					Zebra Technologie		Click To Browse or Drag To Add

#### Table 26 Fixed Industrial Scanning Tool Settings

Setting	Description				
Timeout	The amount of time (ms) the tool should stop its process of searching for barcodes.				
	<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.				
Inverse 1D	<ul> <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>				

Setting	Description
Minimum Percentage Barcode/ROI Overlap	Define the minimum percentage a barcode needs to be contained within the ROI to be read.
	• For 1D barcodes, this applies only to the horizontal (X) dimension.
	<ul> <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.

Table 26	Fixed Industrial Scanning Tool Settings (Continued)
	Tixed industrial Searning Tool Searnings (Continued)

# Using BQM for Fixed Scanning Jobs

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



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

# Advanced

File Edit View Image D	evice Help			Inglish 🌐 🕀	- 🗆 🗙
🚸 Get Started		🔓 FS40 - Device Settings		X Zebra_Scan_2024.10.13_15.25.03 (FS) - Build X	
😑 FS4082b1 Camera 🗸	[IIII] Barcode 🗸 🗸	Power Source: PoE+ 🂠 占	Ċ	CAPTURE BUILD CONNECT Editing Edit	t Deploy
Settings Advanced In	mage Banks Sym	bologies Data Formatting	ManyCode	Image Viewer	Live View
Decode Strategy	Fast		$\sim$	Status: Pass     Job Run Time: 5 ms     BQM Grade: -	: DATAMATRIX
Detection Method	Finder Pattern		~	Press Ctri a	nd drag mouse to pan.
Allow Rectangular Codes	$\checkmark$			Zebra Technoy2ppMS (S	
Enable Aim Code Identifier					
Expected Module Size (pixels)	4	20			• • •
RESET TO DEFAULT					
Current Result	s	Deployed Results			
Status Symbolog	y Result		PPM		
<ul> <li>Good Read</li> <li>Mathematical Data</li> </ul>	IATRIX Zebra Techno	logies	7.2	X: Y: R: B: Zoom:17.23%	Acquisition 🔨
				Filmstrip	
				Image:	
				A Zebra Technologie	Click To Browse or Drag To Add

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



**NOTE:** All Advanced detection methods apply to both 1D and 2D barcodes.

	Table 27	Advanced Fixed	Industrial	Scanning	Tool Settings
--	----------	----------------	------------	----------	---------------

Setting	Description
Decode Strategy	Changes the variables to alter the balance of speed and performance.
	<ul> <li>Fast – This strategy is designed to be fast but may not find a barcode if it is hard to find.</li> </ul>
	<ul> <li>Moderate - This strategy is helpful for most use cases with a moderate increase in analysis times.</li> </ul>
	<ul> <li>Exhaustive – This strategy does an exhaustive search to find hard to find barcodes. This method can sometimes lengthen analysis time significantly.</li> </ul>

Setting	Description
Detection Method	Determine the preferred method for detecting the data:
	<ul> <li>Uniform - uses a splatter pattern to uniformly analyze the whole image. This is helpful for 1D and 2D barcodes that have a lot of noise. If you are looking for a random pattern, slightly favor the center of the image.</li> </ul>
	<ul> <li>Quiet Zone - specialized to find 2D barcodes fast and helpful when over 8 pixels of buffer zone around the barcode is expected. This setting may not be helpful for use cases when the buffer area is less than 4 pixels or 1D barcodes.</li> </ul>
	• Finder Pattern - uses a contrast map that finds patterns with little or no noise. This method is applicable to 1D and 2D barcodes.
Allow Rectangular Codes	Allows the reading of 2D rectangular barcodes in addition to square 2D barcodes.
Expected Module Size (Pixels)	Define the range (pixels) you expect a module to be in given barcodes to help increase read performance.
	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 serves as a general guidance to increase performance, but is not a strict threshold.

Table 27	Advanced Fixed Ind	ustrial Scanning	Tool Settings	(Continued)
				\ = = : :

## **Image Banks**

All available Image banks display on the left side of the table. The right side of the table provides a topdown 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.

Settings	Advanced	Image Banks	Symbologies	Data Formatting	ManyCode
All image setups have been added to the tool's configuration.		× 0	Default Setup (Bar	nk 0)	
		A Note captu	that the order of the I ired in succession and	banks is important, image d terminate once the tool	s will be passes.

# **Symbologies**



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

Table 28	Symbologies
----------	-------------

Setting	Description					
Code 39	Configurable settings include:					
	Enable Trioptic					
	Enable Full ASCII Conversion					
	Select Code 39 Length					
	Enable Check Digit Verification					
	Enable Convert to Code 32					

Setting	Description
Code 128	<ul> <li>Configurable settings include:</li> <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	<ul> <li>Configurable settings include:</li> <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	<ul> <li>Configurable settings include:</li> <li>Decode Data Matrix Mirror Images</li> <li>Select Inverse Data Matrix</li> <li>Enable GS1 Datamatrix</li> </ul>
PDF417	<ul><li>Configurable settings include:</li><li>Enable MicroPDF</li></ul>
QR Code	<ul> <li>Configurable settings include:</li> <li>MicroQR Enable (Enabled by Default)</li> <li>Enable GS1 QR</li> <li>Select Linked QR Mode</li> </ul>

## Table 28 Symbologies (Continued)

Setting	Description
UPC/EAN	Configurable UPC-A settings include:
	Select Interleaved 2 of 5 Length
	Select Check Digit Verification
	Transmit Check Digit
	Configurable UPC-E settings include:
	Enable UPC-E
	Select UPC-E Preamble
	Transmit UPC-E Check Digit
	Convert UPC-E to UPC-A
	Configurable UPC-E1 settings include:
	Enable UPC-E1
	Select UPC-E1 Preamble
	Transmit UPC-E1 Check Digit
	Convert UPC-E1 Check Digit to UPC-A
	Configurable EAN-13/JAN-13 settings include:
	Enable EAN-13/JAN13
	Configurable EAN-8/JAN8 settings include:
	Enable EAN-8/JAN8
	Enable EAN-8/JAN8 Extend
Code 93	Configurable settings include:
	Select Code 93 Length
DotCode	Configurable settings include:
	Select DotCode Inverse
	Select DotCode Mirror
	Determine DotCode ECC Erasure
MaxiCode	There are no configurable settings for Maxicode.
Aztec	Configurable settings include:
	Select Inverse Aztec

## Table 28 Symbologies (Continued)

Setting	Description					
MSI	Configurable settings include:					
	Select MSI Length					
	Select MSI Check Digits					
	Enable Transmit Check Digit					
	Select MSI Check Algorithm					
	Enable MSI Reduced Quiet Zone					
CODABAR	Configurable settings include:					
	Select Codabar Length					
	Enable CLSI Editing					
	Enable NOTIS Editing					
	Select Upper or Lower Case Start/Stop Characters					
	Select Security Level					
	Enable Mod 16 Check Digit Verification					
	Enable Transmit Codabar Check Digit					

Table 28	Symbologies	(Continued)
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# ManyCode

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

FS40 5MP Emulato	✓ )II( Barcod	· · · · ·			CAPTURE B		Editing	Edit	Deploy
Settings Advanced	Image Banks	Symbologies Data Formatting	ManyCo	ode Image	lewer				
Manycode				Stat	s: Pass Iun Time: 212ms	Tool Time: 209ms Value: 1PSTB3678-C100F3W	WIPSTB PPM: 3.6 (avg)		
Total Number of Barcod Decode	es to 10	Decode All			4	Codec: CODE128,PDF-417 BOM Grade: -		Press Ctrl and dr	rag mouse to pan.
Sorting Type	Alphabe	tical 🗸				STB3678	物.ZEBRA	Ъц П	
Expand String Ma	tch to Entire Payload	0				INP. P.N. BTEMTSCHOOPTAW	MADE IN TAWKAN		
View Results						18) S.N. 21144520180001		Ŷ	
Status	Codec	Result	PPM			IDI MFD: 31MAY21	CEIRI 2		•
Good Read						11	CONTRACTOR OF THE		
💿 😑 Good Read	CODE128	1PSTB3678-C100F3WW	2.6	X: - Y: -	R: 6: 8:	Zoom: 15.91%			
💿 😑 Good Read	PDF-417	1PSTB3678-C100F3WW <tab>TW<tab>S21148</tab></tab>	5.3	Filmstri	<b>)</b>				_
💿 鱼 Good Read	CODE128	D28MAY21	2.6	184	i i	144 14 3	► ►I ►►I 1/1 (1 total)		\$
💿 🌘 Good Read	CODE128	\$21148520180001	3.9						Click to Browse

## Table 29 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:
	Alphabetical
	First Decoded
	Top to Bottom
	Left to Right
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</b> <b>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.
Apply Across Level Selection	This option is only active in Level Continuous mode while Read Multiple Barcodes is enabled.

# **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.

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.

#### Table 30 Common Machine Vision Tool Settings

## **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, 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.



NOTE: Aurora Focus imposes a 1GB size limit on all models.

If the total size of all models within a specific region exceeds this limit, use one of the following strategies to reduce the size:

- reduce the ROI size to keep only unique parts of the object
- increase edge contrast to keep only the most important edges (reduce noisy edges)
- reduce scale (if possible)
- reduce rotation (if possible)

## Using Machine Vision Tools



 Table 31
 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.

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.

Table 32	<b>General Locate</b>	Object	Settings
			<u> </u>

Setting	Description
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.

#### Table 32 General Locate Object Settings (Continued)

## **Advanced Locate Object Settings**

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

Table 33	Advanced Locate	Object Settings
Table 33	Advanced Locale	Object Jettings

Setting	Description
Performance Control	Select the best coarseness and search type combinations for a more performant search.
Noise	<ul><li>This filter removes pixel-level noise while preserving edge data.</li><li>Off - the object edges have no noise.</li></ul>
	<ul> <li>Low - the object edges have a low level of noise. The object shape and the model shape are nearly identical.</li> </ul>
	<ul> <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.

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 34 Advanced Locate Object Plus Settings
#### Table 34 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





# Locate Edge

Locate Edge identifies transitions based on the highest contract 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.

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.

 Table 35
 General Locate Edge Settings

### 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.

## Using Machine Vision Tools



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.

Concrate Blob Setting
-----------------------

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.

Setting	Description
Find By	Describes which result is reported as filter output:
	<ul> <li>Best Score - searches for the best match to the detected edges within a given ROI.</li> </ul>
	• Largest Circle - returns the largest circle that matches the edges found in a given ROI.
	• Smallest Circle - returns the smallest circle that matches the edges found in a given ROI.
Transition Type	Determines what is considered an edge in a given image.
	Blended - any change in pixel intensity determines an edge.
	<ul> <li>Both - changes from dark to bright pixels or changes from dark to bright pixels determine an edge.</li> </ul>
	• Dark to Light - changes from dark to bright pixels determine an edge.
	Light to Dark - changes from bright to dark pixels determine an edge.
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.

Table 37	General	Locate	Circle	Settinas

### 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

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 39Binary 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 images display a Dilate tool result with three Kernel Rows and three Kernel Columns.



### Table 40 Dilate Tool 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 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 images display an Erode tool result with three Kernel Rows and three Kernel Columns.

## Using Machine Vision Tools



Original image

Result

### Table 41

Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Туре	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 images display an Open tool result with three Kernel Rows and three Kernel Columns:





Original image

Result

### Table 42Open Settings

Settings	Description
Fixture	Select a previous locate tool's result to position this tool's ROI.
Image Туре	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 image displays an Open tool result with three Kernel Rows and three Kernel Columns:





Original Image



Settings	Description
Fixture	Select a previous locate tool's result that is used to position this tool's ROI.
Image Туре	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:

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

# x- horizontal gradient component

# y-vertical gradient component



Original Image



Result

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:



# y-vertical gradient component

						1.1		:		
	-	_	- 10		_		-			
					1.					
Here .				6						

Original Image

Result

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:

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

# x- horizontal gradient component



Original Image

Result

#### Table 46Gradient 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.

## Using BQM for Identification Tools

Statistics similar to Code Quality metrics are accessible for Identification tools such as Read Barcode by using Advanced Data Formatting (ADF).

To access and output various BQM statistics using the Advanced Data Formatting configuration:

1. Navigate to the Data Formatting tab

2. Click the Select Advanced Formatting radio button



- 3. Click Add Data Types in the Data section.
- 4. Scroll to observe various BQM-related statistics that you can send to your output.



# **Read Barcode**

File	Edit View Image Device H	elp		🌐 English 🗕 🗇 🗙
<u>ښ.</u> ۱	/iew Devices	🕒 VS70 - Device Settings	X Zebra_Inspect_2024.10.14_13.0 (VS) - Build X	
• v	'S70 2MP Emul 🗸 🏟 💾		CAPTURE BUILD CONNECT	Editing Edit Deploy
Tool	FlowBuilder	Results	Image Viewer	
٩	Read Barcode		Status: Pass Job Run Time: 3 ms BDF Display Value: Zebra Technologies PPM: 7.1 Symbology: DATAMATRIX BQM Grade: 0.0	Visibility 🗸
Loca	Contract Read Barcode 1	🛦 <del>Bank 0</del> 📄 😣 🔨		Press Ctrl and drag mouse to pan. 🕕
Filte	Fixture None	$\sim$		
Iden				
	Default Setup (Bank 0)	$\checkmark$		:
R S	Decode Advanced	Symbologies Data Formatting ManyCode	Zebra Technologes	•
)00	Inverse 1D	Regular ×		
Pres Mea	Min % Barcode/ROI Overlap	20		
Cou	No Read String		X:20 Y:505 R: G: B: Zoom:40.07%	
Flaw	Enable Adaptive ROI Search	h with a 🛛 Large 🗸 scale factor.	Filmstrip	
	Derrede Oprine Match		Image:	
	Enable Barcode Quality M	letrics		Click To Browse or Drag To Add
	2D DataMatrix BQM Parameters		Zebra Technologie	

 Table 47
 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).	

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)		
2D DataMatrix BQM Parameters	Enable or disable parameter options to include in BQM calculations. <b>NOTE:</b> These settings are applicable to 2D DataMatrix barcodes only,		
Minimum BQM Grade	Enable this option to use a threshold for issuing a pass or fail based on the BQM overall grade for each barcode scan. 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, the BQM grade is a fail.		
Send Decode on Failure	By default, if a barcode is read but has a failing BQM grade (as defined by the <b>Minimum BQM</b> <b>Grade</b> threshold above), its data is not output (to either the <b>Deploy</b> screen or various outputs such as TCPIP/Serial/USB). When enabled, the decoded data is output even if the BQM Overall Grade is a failing grade based on the <b>Minimum BQM Grade</b> threshold.		

### Table 47 Read DPM and Barcode Settings (Continued)

# Read DPM

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

File	Edit View Image Device Help			🌐 English 🛛 🗕 🗶
۰.	View Devices	VS70 - Device Settings	X         Zebra_Inspect_2024.10.14_13.0         (VS) - Build         X	
•	VS70 2MP Emul 🗸 🌣 💾		CAPTURE BUILD CONNECT	Editing Edit Deploy
Tool	FlowBuilder	Results	Image Viewer	
٩	RUN		Status: Pass Job Run Time: 2 ms     BDF Display Value: Zebra Technologies     PPM: 7.2     Symbology: DATAMATRIX     BQM Grade: -	Visibility 🗸
Loca	Read DPM			Press Ctrl and drag mouse to pan. 👔
Iden	Read DPM 1	🛦 Bank O 📄 😵 🗸		
	None	$\sim$		
5 G	Image Type		Read DPM 1 Default Setup (Bank 0)	_ :
5 J	Default Setup (Bank 0)	~	CENTRE CONTRACTOR	
[ <u>1</u> 2]	Decode Advanced	DPM Settings Data Formatting	Zebra Technologies	
]00(	Timeout 2000	ms		
Pres	Inverse 1D Regula	ar 🗸 🗸		
Cou	No Read String		X:573 Y:485 R: 6: B: Zoom:40.07%	
Flaw	Enable Adaptive ROI Search with a	Large 🗸 scale factor.	Filmstrip	
	Barcode String Match			
	Enabled		Zebra Technologie	Click To Browse or Drag To Add

#### Table 48Read 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.

File	Edit View Image Device Help			🌐 English 🗕 🗇 🗙
st.	View Devices	S70 - Device Settings	X Zebra_Inspect_2024.10.14_13.0 (VS) - Build X	
	VS70 2MP Emul 🗸 🌣 💾		CAPTURE BUILD CONNECT	Editing Edit Deploy
Tool Q	FlowBuilder RUN	Results 7	Image Viewer           Status: Pass Job Run Time: 3 ms         Tool Time: 2 ms         BDF Display Value: Zebra Technologies         PPM: 7.2         Symbology: DATAMATRIX         BQM Grade: -	Visibility 🗸
Loca Filte	Read DPM & Barcode Read DPM & Barcode 1	🛦 Bank Ə 📄 X		Press Ctrl and drag mouse to pan. 🚺
)Щ)	None	~		:
× × ×	Default Setup (Bank 0)           Decode         Advanced           Timeout         2000	Symbologies Data Formatting	Zebra Technologies	•
Pres Mea	Inverse 1D Regular	~		
Cou	No Read String		Y+. Y D'. C'. B'. Tony-40.07%	
Flaw	Enable Adaptive ROI Search with a	arge 🗸 scale factor.	Filmstrip	
	Barcode String Match		Image: International state         Image: Imag	
	Enable Barcode Quality Metrics			Click To Browse or Drag To Add
	Enabled		Zebra Technologie 🕼	

#### Table 49 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.

## Datacode

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

#### **General Datacode Decode Settings**

General Datacode decode settings include defining a timeout string, no read string, polarity, and string match.



Table 50	General Datacode 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.	
	• Any	
	Bright	
	• Dark	
	• Mixed	
String Match	Enable String Match to decode successfully when the value matches the string provided.	

#### Advanced Datacode Decode Settings

Advanced Datacode decode settings include defining a detection strategy, decoding strategy, module size, detection method, finder tradeoff, contrast threshold, line count, distortion, gap size, code slant, super resolution, perspective level, edge tracker, mirrored codes, broken patterns, rectangular codes and codes with broken corners.

File	Edit View Image Device Help			🌐 English 🛛 🗖 🗙
ą., 1	View Devices	🔓 VS70 - Device Settings	X Zebra_Inspect_2024.10.14_13.0 (VS) - Build X	
• \	/S70 2MP Emul 🗸 🏟 💾		CAPTURE BUILD CONNECT	Editing Edit Deploy
Tool	FlowBuilder	Results	Image Viewer	
٩	RUN		Status: Pass     Tool Time: 1434 ms     BDF Display Value: Zebra Technologies     Symbology: DATAMATRIX     PPM: 7.1	Visibility 🗸
Loca Filte	Datacode Datacode 1	🛦 Bank-0 📄 ⊗ 🔨		Press Ctrl and drag mouse to pan. 🚺
Iden	Fixture			
<u>ju</u> (	None	$\sim$	Datacode 1	
	Image Type Default Setup (Bank 0) Settings Advanced	Data Formatting ManyCode	Zebra T (Peraut Setup (Bank 0)) Logies	
Sunt.	Detection Strategy		2cbru reembrogres	
'imf	Precise	~		
Pres	Decoding Strategy			
Mea	Precise	~		
Cou	Module Size		X:6 Y:284 R: G: B: Zoom:62.64%	
Flaw	2	40	Filmstrip	
	Detection Method		Image:	
	Finder Edges	~		Click To Browse
	Balanced	~	Zebra Technologie 🕒	or Drag To Add

#### Table 51 Advanced Datacode Decode Settings

Setting	Description
Detection Strategy	Specify the step of image downsampling used for finding codes at different scales.
	Super Fast
	• Fast
	• Precise
	Strict
	Extended

Setting	Description	
Decoding Strategy	Specify the precision of outline detection:	
	Super Fast	
	• Fast	
	Precise	
	Strict	
	Extended	
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	Specify a distortion level:	
	• None	
	• Low	
	• Medium	
	• High	
Expected Gap Size	Specify the distance between neighboring modules.	
	• Zero	
	• Small	
	• Medium	
	• Large	
Maximum Code Slant	Specify the maximum deviation from the right angle in the corner of the Finder Pattern.	
Use Super Resolution	Specify the image up-scaling method for low- resolution codes depending on minimum module size:	
	• Auto	
	• Yes	
	• No	

### Table 51 Advanced Datacode Decode Settings (Continued)

Setting	Description	
Perspective Level	Specify a perspective distortion of the code grid:	
	• None	
	• Low	
	• High	
Edge Tracker	Specify how strongly to preserve the continuity of an edge	
	• Very Weak	
	• Weak	
	• Medium	
	• Strong	
	Very Strong	
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 Broken Corner	Attempt to create a candidate if the bottom-left corner of the code is occluded.	

### Table 51 Advanced Datacode Decode Settings (Continued)

## **Using Accelerated Tools**

Deep Learning Object Character Recognition (OCR) and Anomaly Detection tools can be accelerated to speed up a specified tool during job execution and reduce overall tool time.



NOTE: Acceleration is available on FS42 and NS42 devices only.

1. Enable acceleration by sliding the Accelerate toggle to the right.

FlowBuilder	Results	
Deep Learning Based OCR Deep Learning Based OCR 1	<u> 8 ank 0</u> 📄 🙁 🗸	~
Fixture Vone	Accelerate	
Image Type Default Setup (Bank 0)		



**NOTE:** In this mode, the Region of Interest (ROI) can be moved or rotated but not resized. Tool settings **Average Character Height** and **Character Width Scale** % are not editable while in Accelerate mode. Move the slider to the left to disable Accelerated mode and edit tool settings.

**2.** After **Accelerate** is enabled, the **Optimization** overlay displays, and all settings are blocked and transferred to the device.

Optimization



**NOTE:** For optimal performance, jobs should contain only one accelerated tool. Jobs containing more than one accelerated tool can negatively impact performance and increase execution time.

3. All accelerated tools are marked on the FlowBuilder by the green Accelerated indication.

FlowBuilder		Results	<b>د</b> م
RUN			
Deep Le	arning Based OCR earning Base	🛦 <del>Bank 0</del> 📄	Accelerated
Deep Le	arning Based OCR earning Base	<b>A</b> Bank 0 📄	Accelerated



**NOTE:** If a job is saved with the **Accelerate** setting enabled and later opened on a device that does not support this setting, it is automatically switched back to its standard state without acceleration.

### **Deep Learning OCR**

The Deep Learning Optical Character Recognition (OCR) tool reads text from images using Deep Learning.

This tool locates and recognizes characters without additional training:

- Horizontally-oriented
- Height between 85% and 115% of Char Height (in pixels)
- Contain Latin letters (upper case or lower case), digits, or one of: !#\$%&()\*+,-./:;<=>?@[^\_`{|}^""\€£¥

Use the Deep Learning OCR region of interest to limit the analyzed area, which can lead to improved performance. Moreover, it may be used to adjust to text that is not displayed horizontally.



Setting	Description
Minimum Confidence	<ul> <li>The Minimum Confidence parameter may be used to change a character's minimum score. By default, this threshold is set to 80%.</li> <li><b>NOTE:</b> Adjusting this value downward can help include decodes of slightly lesser confidence to get the desired output. For example, the above example is too strict and does not decode various characters. Lowering this value from 99 to 98 yields a favorable result.</li> </ul>

Setting	Description
Average Character Height	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.
	Use the slider to select a value that is close to the average pixel height of text that is trying to be decoded. Performance improves when this value is closer to the average character height (in pixels).
	Minimum Value: 8
	Default Value: 25
	Maximum Value: 200
Character Spacing	Distance between characters denoted as a fraction of CharHeight.
Text Color	Set a required polarity for a character to be returned.
	Bright: Only characters with contrast greater than Contrast Threshold are returned.
	Dark: Only characters with contrast lower than Contrast Threshold are returned.
	Any: Only characters with contrast lower than Contrast Threshold     or greater than Contrast Threshold is returned.
	Default Value: Any
Contrast Threshold	Sets a threshold for a contrast of found characters.
	Default value: 0
Character Width Scale	Scales image width by the given factor (%).
reicentage	Minimum Value: 10%
	Default Value: 100%
	Maximum Value: 1000%
Character Range	Enable Character Range to limit the set of recognized characters.
	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, for example: 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,-,\ results in recognizing only ABCDEFXYZghijkImno0123456789- characters.

### Table 52 Deep Learning OCR Settings (Continued)

Setting	Description
Character Range	Provides the option to limit the set of desired characters when returning the result.
String Match	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.
	Enable the RegEx checkbox and use the syntax ^ <stringtoexactmatch\$ behavior.<="" exact="" implement="" match="" td="" the="" to=""></stringtoexactmatch\$>
	RegEx can also be used for complex string match logic. Refer to the RegEx section for more details.
Timeout	Sets a time after which the tool fails.
Invert Pass/Fail Result	Flips the results of this tool.

Table 52	Deep L	earning OCR	Settings	(Continued)

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  $^22\d{3}$ .



## 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.

File	Edit View Image Device Help			🌐 English 🛛 🗖 🗙
÷.	Get Started	🔓 VS40 - Device Settings	X Zebra_Inspect_2024.10.13_16.3 (VS) - Build X	
• \	/S40 5MP Emul 🗸 🏟 💾		CAPTURE BUILD CONNECT	Editing Edit Deploy
Tool	FlowBuilder	Results 7	Image Viewer	
٩			Status: Pass     Tool Time: 1656 ms     OCR Result: Z e b r a T e c h n o l o g i e s     Job Run Time: 1656 ms	Visibility 🗸
Loca	Deep Learning Based OCR Ueep Learning Based OCR Deep Learning Based OCR 1	🛦 Bank 0 📄 😣 🔨		Press Ctrl and drag mouse to pan. 🚺
Iden Jul( Swy)	Fixture None			
<u>.</u>	Basic	Advanced		
æ	Max Character Gap %	25		
Pres	Maximum Vertical Misalignment %	25		
Mea Cour	Min Characters to Create Word		X:1426Y:434 R: G: B: Zoom:42.23%	
Flaw	Flatten		Filmstrip	
	_		법 🗎 (11 total)	
	Crabled  Drag and drop to add a tool		▲ Zebra Technologie	Click To Browse or Drag To Add

#### Table 53 Advanced Deep Learning OCR Settings

Setting	Description
Minimum Character Gap Percentage	The maximum horizontal gap between joint characters' boxes is denoted as a percentage of A char height.
	Minimum Value: 0%
	Default Value: 25%
	Maximum Value: 100%
Maximum Vertical Misalignment Percentage	The Maximum vertical misalignment between joint character boxes is denoted as a percentage of A char height.
	Default value: 0.25f
	Minimum Value: 0%
	Default Value: 25%
	Maximum Value: 100%

Setting	Description
Minimum Characters to Create a Line	Determine the minimum number of characters to create a line.
	NOTE: 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.

#### Table 53 Advanced Deep Learning OCR Settings (Continued)

# **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 54 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 55	Advanced Obj	ect 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 56 General Brightness Settings

Settings	Description
Fixture	Determine the fixture for the ROI shape.
Image Туре	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.



Settings	Description
ROI Shape	Select a Rectangle or Circle shape for the Region of Interest
Fixture	Select the output from a locate or scanning tool's previous result to position the current tool's ROI.
Image Туре	Select which image this inspection tool should use.
Value Range	Set the minimum and maximum values.
Outlier Suppression	Specify the amount of extreme pixel values to exclude when calculating the final contrast. Its meaning is the percentage of outlier (noise) we suppress while calculating contrast value.
Histogram	Shows the number of pixels at each value.

## **Using Outlier Suppression**

Outlier Suppression is the percentage of the noise suppressed when calculating the contrast value.

The following histograms provide visual examples of different levels of suppression:

Figure 3 High Suppression (5%) / Contrast: 20











### Figure 6 No Suppression (0%) / Contrast: 226


# **Edge Detect**

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



#### Table 58Edge 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.

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 59Blob Presence Absence

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

## **Using Anomaly Detection**

Aurora Deep Learning Editor is required to run Anomaly Detection in Aurora Focus.



**NOTE:** Anomaly Detection is available on FS42 and NS42 devices only.

#### **Acquiring Images**

Images can be acquired and saved via FTP or directly onto the device.

- 1. If you acquire the images live in an industrial environment, use Image Saving via FTP or directly onto the device. For more information on setting up image saving, refer to the FTP File Saving section in the Aurora Focus User Guide.
- **2.** If you save the images via FTP, they are saved directly to the host PC using Aurora Deep Learning Editor.
- **3.** If you save the images directly onto the device, access them using the Aurora Focus Web HMI. For more information, refer to the Accessing the Web HMI section in the Aurora Focus User Guide.

#### **Preparing Images**

It is important to properly organize and label the images when training the model.

- **1.** Collect a series of images using periodic single-shot mode in Aurora Focus.
- 2. Save the images to the local host/PC
- **3.** Create separate folders for Bad and Good images for testing purposes.



4. Click 🔰 to import the images into Aurora Deep Learning Editor and label them.

#### **Using Aurora Deep Learning Editor**

Aurora Focus and Deep Learning Editor are directly connected and require compatible versions.

- 1. The upper left corner of the home screen provides tools for training images. Click **Add** to add new images to the editor.
- 2. Images added using Toggle Class and Select type can be marked as ready to be trained on.







**NOTE:** In some cases, it may be helpful to include irregular images marked as test images to train the model.

- **4.** The **Training Parameters** to decrease or increase the complexity and downscaling of the model. Both contribute to the training time and the working time of the model. The effect of enabling these settings is observable by clicking **Pre-processing** above the previewed image.
- 5. After the settings are configured, click **Run** to start generating the model.



**NOTE:** If the Deep Learning Editor is being run for the first time, the first click launches the Deep Learning Service, and the second starts generating the model.



## **Creating a Model**

The Anomaly Detection tool in Aurora Focus uses the Aurora Deep Learning Editor.

1. Add the Anomaly Detection tool from Presence/Absence tools list.



2. Click Create Model to use an existing model or create a new one.

Anomaly Detection			Accelerated
Anomaly Detection 1		🛦 Ban	<del>k 0</del> 🚫 🔨
Model			
CREATE MODEL			
Select model	$\sim$	EDIT	LOAD
Loaded model:			
Thresholds			
DEFAULT 1		255	
Heatmap			
Palette Iron			$\sim$
Scale		1	
- Timeout			
10000			ms
Enabled			



**NOTE:** Anomaly Detection requires the latest version of Aurora Deep Learning Editor. To download the latest version, open Zebra Aurora Focus while connected to an FS42 or NS42 device or emulator and add the Anomaly Detection tool. The dialog box provides a direct link to download the latest version of Deep Learning Editor.

Deep Learning Editor	×
Anomaly Detection tool requires <i>Deep Learning Editor v9.0</i> to be installed. Please download and install application.	
Download Deep Learning Editor v9.0	
	CLOSE

**3.** If you are using an existing model, click **and** navigate to the location of the model on your PC and click the folder icon.

🚯 Deep Learning Editor 9.0			-		×
					⊕ EN
<ul> <li>Use existing model</li> </ul>				~	
Create new model	Anomaly Detection 2			~	·
i Please select a path to	folder containing the pluginconfig.xml file.				
		0	K	E	kit

4. If you are creating a new model, select the model type from the dropdown and click OK.

酸 Deep Learning Editor 9.0	)	_		×
				🏶 EN
$\bigcirc$ Use existing model			$\sim$	
Create new model	Anomaly Detection 2		~	]
i Please select type of a	model that you would like to create.			
		ОК	Ex	tit

a) Click 📃 to select a location for the model on your PC.

Neep Learning Configuration	$\times$
Select model location on disk	
C:\ad-test\AD_4-4	
Convert path to: Absolute Relative	
Please select either an empty directory where a new model configuration will be stored or an existing model configuration that you want to re-use.	
You may need up to a few hundreds of megabytes of free space there.	
OK Cancel	



NOTE: Model editing is done in Deep Learning Editor.

#### **Understanding Thresholds**

Threshold values inform the classification of the images in the dataset by providing scores and confidence levels.

After the training phase, scores are calculated for every training sample and presented as a histogram; good samples are marked with green bars and bad samples with red bars. All images with scores between T1 are marked Good, and images above T2 are classified as Bad. If the score is below T1 and T2, the result has a low confidence level.

Training with many samples from both groups is recommended to achieve a more robust threshold.

The histogram tool displays green bars representing correct samples and red bars representing anomalous samples. T marks the main threshold, and T1 and T2 define the area of uncertainty.

- Images that have scores within 0-T1 are marked as Good, Confident: Yes
- Images that have scores within T1-T are marked as Good, Confident: No
- Images that have scores within T-T2 are marked as Bad, Confident: No
- Images that have scores within T-T2 are marked as Bad, Confident: Yes
- If both thresholds are equal (T1=T2=T), there is no area of uncertainty. Results are marked as Confident: Yes
- Confident: No indicates the score is close to the threshold. In this case, perform another inspection.

The following histogram displays well-separated groups, indicating that the model has good accuracy:

#### Figure 7 Uncertainty Threshold



The following histogram displays groups in close proximity, indicating that the model has poor accuracy:





The following histogram provides a real-world example in Aurora Deep Learning Editor:

Figure 9 Aurora Deep Learning Editor Example



This example shows 36 images in the model with clear grouping between Good and Bad images, indicating that the model has good accuracy.

#### **Using Pro Mode**

Enable Pro Mode to access advanced parameters such as Network Depth, Complexity, and Device.

1. Toggle the button to the right to enable Pro Mode Pro



**2.** Observe the following additional parameters:

- Network Depth the size of the network's internal memory. Use higher depth for images containing complex patterns or a wide variety of objects.
- Complexity higher density provides more precise heatmaps but can increase execution time.
- Device provides information on the device the training is being performed on.
- Pre-Processing
  - Downsample each level reduces the width and height of the images by a factor of two.
- Augmentations
  - Rotate Angle rotate samples by a random angle between 0 and the parameter value.
  - Flip Up-Down reflect samples along the x-axis.
  - Flip Left-Right reflect samples along the y-axis.
  - Minimum Scale Percentage minimum value of random scale factor applied to samples.
  - Maximum Scale Percentage maximum value of random scale factor applied to samples.
  - Luminance Percentage change brightness of samples by a random percentage (between ParameterValue and +ParameterValue) of pixel values (0-255)

#### Editing and Deploying Models in Aurora Focus

Load an existing model in Aurora Focus to edit and deploy on a set of images.

**1.** Select the model from the drop-down menu.

Anomaly Detection Anomaly Detection 1		Accelerated
CREATE MODEL		
Select model	^	EDIT LOAD
AD_3-18		
Thresholds DEFAULT 33.33		78.05
Heatmap		
Palette Iron		$\sim$
Scale		1
Timeout		
10000		ms
Enabled		

- a) Click Load to deploy the model on a set of images in Aurora Focus.
- b) Click Edit to edit the model in Deep Learning Editor.
- **2.** Configure the model settings as necessary:
  - Thresholds use thresholds to classify an image as good or bad. Images that score below Threshold 1 (T1) are marked as good, and images above Threshold 2 (T2) are marked as bad. Classification results have low confidence if the threshold is between T1 and T2.



NOTE: For additional information on thresholds, go to Understanding Thresholds

• Heatmap - change the visualization settings of the heatmap that appears when reviewing results.

# **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 60	Distance	<b>Tool Settings</b>
----------	----------	----------------------

Settings	Description
Measured Tools	There are four different options for where to measure edges:
	Left - measures from left or top of an edge.
	Middle - measures from the middle of an edge
	Right - measures from right/bottom of an edge
	• Perpendicular/Bottom - creates a measuring line perpendicular to this edge, extending until it intersects with another edge. Select an edge on one side.

Settings	Description
Distance Limit	Determine the minimum and maximum values.
Scale Calibration	Calibrate pixel values to engineering units measured in centimeters, millimeters, microns, or inches.

#### Table 60 Distance Tool Settings (Continued)

## **Circle Diameter**

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

FlowBuilder	Results	8 <sup>46</sup>	Image Viewer	
Erige Profile			Status: Pass Job Run Time: Dims	Tool Time: Des Diameter: 3161 ps Gecambereror: 5631 ps
		_		Circle Diameter 1
-255 -				
Diameter Range				
AUTO RANGE 204		348	P	
Scale Calibration		1		
Use Scale Units				
100 pixels = 10	Millineters 🗸 APPLY	CANCEL	-	Default Schap (Sank 0)
Tineout				
2550 05				
FlowBuilder	Results	*	Image Viewer	
< filme hofie			Status: Failed Job Run Tene: Des.	Teal Time: Des Diameter: 261 (a. Cesambrence: 263) (a.
270-				
1			-	
Daneter Range				
AUTO BANGE 322		- 348	q	
/ Scale Calibration				
Use Scale Units				
too then a	Minden M. ANY	10010		
100 Part 10				Debut Setup (Eark II)
/ Terest				

Settings	Description
Find By	Define the approach used to search for the circle:
	Best Score
	Largest Circle
	Smallest Circle
Transition Type	Select the type of edge transition used to find the circle:
	• Both
	• Blended
	Dark to Light
	Light to Dark
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.

#### **Table 61**Circle Diameter Settings

## **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.

## Using Machine Vision Tools



Table 62Measure 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.
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 63
 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 64 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 65Blob 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 66Edge Count Settings

Settings	Description
Scan Direction	Set the direction that the tool uses when searching for edges.
	Left to Right
	Right to Left
	Top to Bottom
	Bottom to Top
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 66 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.



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.

Table 67	General Locate	Object	Count Settings
----------	----------------	--------	----------------

#### **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.

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-bypixel, 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.





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

#### Table 69 Edges Settings (Continued)

Setting	Description			
Edge Hysteresis	Determine the value by which the edge threshold decreases for edge points neighboring sufficiently strong edges.			
	<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			
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 70 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.

# **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.

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
FS Fast 1D/2D	LIC-2DF001-0200	xs-feature-fast1D2D:1.0
VSOCR	LIC-OCR002-0100	xs-feature-OCR02
FS OCR	LIC-OCR003-0100	xs-feature-OCR03
NS Anomaly Detection	LIC-AD002-0100	NSx2-feature-AD02
FS Anomaly Detection	LIC-AD003-0100	FSx2-feature-AD03

#### Table 71 License Types

#### Table 71 License Types (Continued)

License Type	Part Number	License Name
Gateway Connectivity License for FS10 devices	LIC-10LF-0000	xs-feature-deviceWISE03
Gateway Connectivity License for FS20 and VS20 devices	LIC-20LF-0000	xs-feature-deviceWISE04
Gateway Connectivity License for FS40, FS42, FS70, VS40, and VS70 devices	LIC-47LF-0000	xs-feature-deviceWISE05
Gateway Connectivity Full License for all devices in the FS and VS family	LIC-EXLF-0000	xs-feature-deviceWISE06



**NOTE:** Upgrades are available from a Sensor Toolset to a Standard Toolset and from an Fixed Scanning License to a Machine Vision License.

# **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

# **Enabling the 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 a license. An example of the Activation ID is xssn-ixa3-tdgb-elsi-mxd8-q6kq-cw50-20bp.

#### Figure 10 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**.

- Please validate the information below is correct. If incorrect, please contact Zebra Technical Support before proceeding.
  - Account Name: Information Not Available Account Type: End Customer Contact Name: Contact Email:
  - Account Name: Automation Distribution Inc Account Type: Zebra Distributor Contact Name: Contact Email:
- Use the Activation ID(s) to activate the licenses you recently purchased with Sales Order ID: 92940778
  - Activation ID: xssn-ixa3-tdgb-elsi-mxd8-q6kg-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:
  - 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
  - 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.

# Applying a Device Upgrade License (Online)



**NOTE:** If you are using a USB or Ethernet cable directly connected from the device to your laptop, 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.

# 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.

File	Vie	ew Help								@ E	nglish —	· D	×
th.	Vie	w Devices	🔓 VS4	40 - Device Settings	× Zebra_Ins	spect_2024.10.13_16.3 (VS) - Bui	ild 🗙						
=	=	Menu	BACKUP DE	VICE 🛬 RESTORE DEVICE	1 UPDATE FIRMWARE	DOWNLOAD LOGS				PRINT 层 🖡	efresh C	Q	:
1		Get Started		Name $\checkmark$	Model Name	Part Number	IP	SN	Firmware	Status			
Ŀ	Ē	Setup New Device	Ψ	FS4082b1 Camera	FS40	FS40-WA50F4-2C00W	172.16.107.22 (USB)	0022	8.0	Connected	Manage	-	
0	D	View Devices											
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×	2	Settings									ADD VIA IP A	DDRESS	]
		3	l og in	to the HMI us	ing the defau	It cradantials for	an administrator	2000	<b></b>				
		۷. ا	LUY III	to the multus	ing the deldu		an auninistidioi	accour	it.				

- a. Username: admin
- b. Password: admin

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

∜•.zebra			FS4072E7 02/17/2023 21:5	s 😝 Operator 🏚 🍄 🖶 English
Average inspection per min 449	Up time Ten 00 00:07:59	nperature 29°C healthy	CPU load 39%	DEVICE F54072E7 Status ONLINE
Communication 12 PIN Connection 5 PIN Connection © ono 0 © ono 7 © ono 1 © ono 7 © ono 2 © ono 8 © ono 3 © ono 4 © ono 5	Total Pass/Fail cour 1277 4 • Pass • Fi Total 1281 Missed 0	nt ail © RESET COUNTS	Result Overflow	Market Hard Hondowski (Strandowski) Market Hard Hard Hard Hard Hard Hard Hard Hard
Resource Utilization	Device Information           Host Name         FS4072E7           Part Number         FS40-SR2004-2000W		Indicators	Box Reader Startup Serial Number Active
0 50 100	Verseen CAAE:3500-002-R06 ETH0 IP 169.254.114.231 USB IP Build RELEASE:348		🤧 🖉 (o) 🛦 🗲 E	
DASHBOARD	LIVE MONITORING	RESULTS HISTORY	JOB LIST	III ACTIVITY LOG

- 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:<u>zebra-</u> licensing.flexnetoperations.com/flexnet/deviceservices
- 7. Enter the Activation ID that is provided via email when the license is procured.

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**NOTE:** To circumvent a firewall while contacting the cloud-based license server. For detailed instructions, visit: <u>supportcommunity.zebra.com/s/article/ZSL-Licensing-Server-Connectivity</u>

- 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 license's feature name, 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 device's license server.

# 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: <u>zebra-licensing.flexnetoperations.com/.</u>
- **2.** Enter the Username and Password.

ジャン ZEBRA
Username*
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:

Home Activati Entitlem	icenses Pr	Devices Downlo	ads Accor v Users	unts ő	•
Recent Entitlements			Ser	all	- Your Downloads
Activation ID	Product	Product description	Last modified		The accounts you are currently assigned to do not have any
fdc4-ba5f-d451-4ba7-b4	WFC Voice Device License Avaya Aura PREM	WFC Voice Device License - Avaya Aura Premium	Jul 7, 2021	L	entitlements. Please contact your system administrator.
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 Lifense - Susua Sura	Jul 7, 2021		
0			Sei	all	6 <u>1</u> 6
Recent Releases					Announcements
Description			Date		
The accounts you are curr system administrator.	ently assigned to do not ha	we any entitiements. Please	contact your		

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:** Some serial numbers are prefixed with the letter S, do not include the letter S in the Serial Number you include in your Device ID because this causes the process to fail.



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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 N	lew Device
Name:*	VS40-WA50P4-2100W_123456789
	Runs license server?
ID Type:*	STRING 🖌 🚱
ID:*	VS40-WA50P4-2100W_123456789
Account:	Zebra (Zebra Technologies)
Site name:	

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

Device created success	fully.
Device Details	-WA50P4-2100W_12345678901234
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)

7. Select Action to expand drop-down.

8. Next, select Map By Activation ID.



**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.

t.ZEBRA								
Home	Acti Enti	vation & tlements 👻	License Support	* Devices	-	Downloads	•	Accounts & Users
Map by Activation IDs								
Device ID:								
VS40-WA5	50P4-21	00W_123	456789012	234				
Activation IDs (one per line):								
b138-f432-4eca-470c-8d74-6838-0c41-4dd1								
				11				
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.

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

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

Device vs40-	WA50P4-2100W_12345678901234
Back to list View Action Device D Map Ent Map By A Remove Downloa Respons	Itlements Activation ID Licenses Id Capability
Status : Series : Model : Account : Vendor Dictionary :	ACTIVE Series Zebra Model-Zebra Zebra_Internal (ZEBRA INTERNAL) (None)

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).
2. On the Licensing screen, select the offline option from the Acquire License Method option.



- 3. Click Choose File and locate the bin file acquired as part of downloading the capability response.
- 4. Click Activate License to activate the license and observe the Available License(s) list.
- 5. 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. Backtracking of date or time results in a license error.

GENERAL	LICENSING	FIRMWARE U	IPDATE	ACCOUNT SETTINGS
Factory Reset	JSER SETTINGS RES	ET ALL		
Device Reboot REBOOT				
Date and Time S	Sync			
April 5th 01:36	p.m.			
APPLY				
(GMT-12.00) I	nternational Date L			
About				
Zebra Aurora We	b HMI Interface			
Version				
1.0.35				

# **Returning a License**

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



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

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

÷				FS4082B1 09/1	8/2023 21:52	ldmin ¢	۰ 🕊	C English
	LICENSING	FIRMWARE UPDATE	ACCOUNT SETTIN	IGS APPLICA				
Manage License	Method							
Online	() offine							
Licensing Serv	er URL							
https://zebra	licensing flexnetoper	ations						
Activation ID								
Active Linearce								
Active Ocense								
License Index	License Name	License Versi	ion Expiry Date	License Count	Host ID			Release
	xS-leature-device/	NSE06 1.0	permanent		FS40-WA50F4-2C0	ow_213635201	10022	8

2. In the LICENSING SERVER URL field, enter the licensing server URL.

- **3.** Click  $\boxed{\mathbf{Z}}$  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 72 Fixed Industrial Scanning Tools

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

# **Machine Vision Toolsets**

The following tools are available with a specific license type.

Туре	ΤοοΙ	Sensor	Essential (NS42 Only)	Standard
Locate Tools	Locate Object	Х	Х	Х
	Locate Object Plus		Х	Х
	Locate Edge	Х	Х	Х
	Locate Blob		Х	Х
	Locate Circle	Х	Х	X
Filter Tools	Binarize		Х	X
	Dilate		Х	X
	Erode		Х	Х
	Open		Х	Х
	Close		Х	Х
	Gradient Full		Х	Х
	Gradient Horizontal		Х	X
	Gradient Vertical		Х	X
Identification	Read Barcode		Х	Х
IOOIS	Read DPM			X
	Read DPM and Barcode			X

#### Table 73 Machine Vision Tools

Туре	ΤοοΙ	Sensor	Essential (NS42 Only)	Standard
	Datacode			Х
Presence/	Object P/A	Х	Х	Х
Absence Loois	Object Plus P/A		Х	Х
	Brightness	Х	Х	Х
	Contrast	Х	Х	Х
	Edge Detect	Х	Х	X
	Blob P/A		Х	Х
Measurement	Distance	Х	Х	X
TOOIS	Circle Diameter	Х	Х	Х
	Measure Object Width		Х	Х
Counting Tools	Pixel Count	Х	Х	Х
	Blob Count		Х	Х
	Edge Count	Х	Х	X
	Locate Object Count	Х	Х	X
Flaw Detection	Edges		Х	X
	Intensity		X	X

Table 73	Machine	Vision	Tools	(Continued)
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## **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).



Ethernet adapter Ethernet 2:
Connection-specific DNS Suffix . :
Description Remote NDIS Compatible Device
Physical Address
DHCP Enabled Yes
Autoconfiguration Enabled : Yes
Link-local IPv6 Address : fe80::e20e:c047:5143:1b5%9(Preferred)
IPv4 Address
Subnet Mask
Lease Obtained Muesday, May 23, 2023 5:07:05 PM
Lease Expires Friday, June 2, 2023 5: <u>0</u> 7:05 PM
Default Gateway : 172.16.1.1
DHCP Server
DHCPv6 IAID 630091326
DHCPv6 Client DUID
DNS Servers fec0:0:0:ffff::1%1
fec0:0:0:ffff::2%1
fec0:0:0:ffff::3%1
NetBIOS over Tcpip : 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.

# 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 12 Flying Leads to DB9 Serial Adapter Wire Diagram



Pin	Color	Description
1	Yellow	OUT1
2	White/Yellow	TXD
3	Brown	RXD
4	White/Brown	IN1
5	Violet	RTS
6	White/Violet	COMMON_IN
7	Red	DC_IN
8	Black	GND
9	Green	COMMON_OUT
10	Orange	INO
11	Blue	OUTO
12	Grey	CTS
SHELL	Bare	SHIELD

- 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

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

Second Se	- 🗆 X	
UDP Setup Serial TCP Client TCP Server UDP Test Mode	About	
Received/Sent data	1	Serial Name COM14 Baud 9600 Data size 8 Parity none Handshake OFF Mode Free
Modern lines	CTS T DTR T RTS	👷 Open HWg FW update
Send		
TRIGGER <cr><lf></lf></cr>	HEX Send	HWgroup
	HEX Send	www.HW-group.com
	HEX Send	Hercules SETUP utility Version 3.2.6

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

ļ	Received/Sent data						
	Serial	port	COM14	opened			

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

Server Serue and Server and Serve	- 🗆 X
UDP Setup Serial TCP Client TCP Server UDP Test Mode About	
Received/Sent data	Serial
Serial port COM14 opened	Name
SERIAL: TBA151111428104	COM14 -
	Baud
	9600 👻
	Data size
	8 🗸
	Parity
	none 💌
	Handshake
	OFF 💌
	Mode
	Free
Modem lines CD IN RI IN DSR IN CTS IN DTR IN RTS	📌 Open HWg FW update
Send	
TRIGGER <cr><lf></lf></cr>	HUgroup
HEX Send	www.HW-group.com
HEX Send	Version 3.2.6

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.

Network Settings						
	Ethernet Port 1	USB				
Enable DHCP 🔺 Ne	twork controls are read-only when DHCP is enabled.					
Network		Current Network				
IP Address	0.0.0.0	IP Address				
Subnet Mask	0.0.0.0	Subnet Mask				
Default Gateway	0.0.0.0	Default Gateway				
DNS		Current DNS				
Preferred DNS Server		Preferred DNS Server				
Alternate DNS Server		Alternate DNS Server				
DNS Domain Name		DNS Domain Name				
General						
DHCP Timeout	30 s					
Host Name	FS4082b1					

- **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.

RS-232 Settings			APRY
Control Enable R5-232 Control			
Control Terminator	CR+LF	~	
Trigger String	TRIGGER		

4. Click Apply within the RS-232 Settings area

#### **Connectivity Guidelines**

RS-232 Settings			APRY
Control			
Enable R5-232 Co	entrol 🛕		
Control Terminator	CR+LF	~	
Trigger String	TRISSER		
Results Enable RS-232 Re	suits		
Speed (Saud Rate)	9600	*	
Data Bits	07 🖲 8		
Parity	None	~	
Stop Bits	● 1 ○ 2		

#### 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.

- Session	Basic options for your PuTTY :	session	
Logging Terminal Keyboard Rell	Specify the destination you want to conr Serial line COM15	Speed 9600	
Bell Features Window Appearance Behaviour Translation Translation Colours Connection Data Provy	Connection type:		
	Load, save or delete a stored session Saved Sessions Default Settings NXP	Load	
		Delete	
SUPDUP	Close window on exit: Always Never Only on clean exit		

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 may occur while using the application and solutions that could correct the problem, such as rebooting the device and reconnecting the USB cable.

Problem	Solution
Installation	
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.
Software	
The device becomes idle while configuring an inspection task.	Perform a factory reset. This can resolve issues that may occur after updating the firmware version.
Device	
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.	Type regedit to access the Registry Editor on your PC, and manually delete the Zebra Aurora Focus folder under Computer \HKEY_LOCAL_MACHINE\SOFTWARE\Zebra\

#### Table 74 Troubleshooting

# Firmware Troubleshooting

Table 75	Firmware	Troubleshooting
----------	----------	-----------------

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

#### Figure 13 Managed Device Update Firmware Error

Update Firmware			- >
Camera	Firmware version	Build	Status
FS107dcd Camera	CAAFFS00-003-R18	RELEASE-438	Update Error
About the process			
Update the firmware on the stop the running job, the LE will take a few minutes to c	device via a .scnplg2 firmware f Ds will flash red, and the device omplete - DO NOT REMOVE POW	ile located on the local will reboot after the up I'ER FROM THE DEVICE I	PC or FTP/FTPS server. The process will date is successfully applied. This process DURING THE UPDATE PROCESS.
Device firmware and corresponding Aurora Focus software downloads are available at the Zebra Technologies Support and Downloads website (Note: Firmware download pages list the device compatibility for that version) - [Industrial Machine Vision and Fixed Scanners Support & Downloads   Zebra]			
nstall New Firmware via:			
O FTP / FTPS Server (	File Based Upload		
CHOOSE FILE			
selected File: C:\Zebra Aurora Release\2023-07-18 Aurora 6.0.22 Jalapeno_R10-402\FS10_XS20_COMMON_MODELS_CAAF FS00-003-R10_RELEASE_010.scnplg2			
Forced Update	Dual Update		
FS107dcd Camera - Firmwa	re update failed. Device is currer	ntly managed	
			CLOSE

# License Troubleshooting

Table 76	License 7	Troubleshooting
----------	-----------	-----------------

Problem	Solution
Offline licenses are not recognized correctly.	<b>1.</b> Deactivate the offline licenses on both devices in the Web HMI.
	<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.
	<b>3.</b> Perform a factory reset on License Storage.
	<b>4.</b> After the device reboots, reconfirm the time information is accurate.
	<b>5.</b> Regenerate new offline licenses and apply them to the devices.
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.

#### Troubleshooting

Gerver HelpStartStopSettingsAboutThread IDMessage31836FTP Server started on port 21.23940220 Welcome to Baby FTP Server23940Client connected from 172.16.114.23123940AUTH TLS23940530 Please login with USER and PASS.23940AUTH SSL23940530 Please login with USER and PASS.23940331 User name ok, need password.23940230 User logged in.23940230 User logged in.23940230 User logged in.23940SYST23940S15 UNIX emulated by Baby FTP Server.23940S22 Command not implemented.23940232 Server directory.239402394023940S12 Command not implemented.23940257 "/" is current directory.23940200 Type set to l.	×	_	y FTP Server [1 connections]	🗊 Bab
StartStopSettingsAboutThread IDMessage31836FTP Server started on port 21.23940220 Welcome to Baby FTP Server23940Client connected from 172.16.114.23123940AUTH TLS23940S30 Please login with USER and PASS.23940AUTH SSL23940S30 Please login with USER and PASS.23940S30 Please login with USER and PASS.23940S30 Please login with USER and PASS.23940S31 User name ok, need password.23940230 User logged in.23940230 User logged in.23940SYST23940S02 Command not implemented.23940257 "/" is current directory.23940257 "/" is current directory.23940200 Type set to 1.			Help	Server
Thread ID         Message           31836         FTP Server started on port 21.           23940         220 Welcome to Baby FTP Server           23940         Client connected from 172.16.114.231           23940         AUTH TLS           23940         530 Please login with USER and PASS.           23940         AUTH SL           23940         AUTH SSL           23940         S30 Please login with USER and PASS.           23940         S30 Please login with USER and PASS.           23940         USER anonymous           23940         331 User name ok, need password.           23940         230 User logged in.           23940         230 User logged in.           23940         SYST           23940         S15 UNIX emulated by Baby FTP Server.           23940         S02 Command not implemented.           23940         PWD           23940         S27 ''/' is current directory.           23940         257 ''/' is current directory.           23940         200 Type set to 1.			Stop Settings About	D Start
31836       FTP Server started on port 21.         23940       220 Welcome to Baby FTP Server         23940       Client connected from 172.16.114.231         23940       AUTH TLS         23940       530 Please login with USER and PASS.         23940       AUTH SSL         23940       530 Please login with USER and PASS.         23940       530 Please login with USER and PASS.         23940       USER anonymous         23940       331 User name ok, need password.         23940       PASS anonymous@example.com         23940       230 User logged in.         23940       SYST         23940       215 UNIX emulated by Baby FTP Server.         23940       FEAT         23940       502 Command not implemented.         23940       257 "/" is current directory.         23940       200 Type set to 1.	_		ID Message	Thread
23940Client connected from 172.16.114.23123940AUTH TLS23940530 Please login with USER and PASS.23940AUTH SSL23940530 Please login with USER and PASS.23940USER anonymous23940331 User name ok, need password.23940PASS anonymous@example.com23940230 User logged in.23940SYST23940215 UNIX emulated by Baby FTP Server.23940502 Command not implemented.23940257 "/" is current directory.23940257 "/" is current directory.23940200 Type set to 1.			FTP Server started on port 21. 220 Welcome to Baby FTP Server	31836 23940
23340AUTH TES23940530 Please login with USER and PASS.23940AUTH SSL23940530 Please login with USER and PASS.23940USER anonymous23940331 User name ok, need password.23940PASS anonymous@example.com23940230 User logged in.23940SYST23940215 UNIX emulated by Baby FTP Server.23940502 Command not implemented.23940257 ''/' is current directory.23940257 ''/' is current directory.23940200 Type set to I.			Lient connected from 172.16.114.231	23940
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23940         PASS anonymous@example.com           23940         230 User logged in.           23940         SYST           23940         215 UNIX emulated by Baby FTP Server.           23940         FEAT           23940         502 Command not implemented.           23940         PWD           23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			331 User name ok, need p <mark>assword.</mark>	23940
23940       230 User logged in.         23940       SYST         23940       215 UNIX emulated by Baby FTP Server.         23940       FEAT         23940       502 Command not implemented.         23940       PWD         23940       257 "/" is current directory.         23940       TYPE I         23940       200 Type set to I.			PASS anonymous@example.com	23940
23940         SYST           23940         215 UNIX emulated by Baby FTP Server.           23940         FEAT           23940         502 Command not implemented.           23940         PWD           23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			230 User logged in.	23940
23940         215 UNIX emulated by Baby FTP Server.           23940         FEAT           23940         502 Command not implemented.           23940         PWD           23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			SYST	23940
23940         FEAT           23940         502 Command not implemented.           23940         PWD           23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			215 UNIX emulated by Baby FTP Server.	23940
23940         502 Command not implemented.           23940         PWD           23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			FEAT	23940
23940         PWD           23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			502 Command not implemented.	23940
23940         257 "/" is current directory.           23940         TYPE I           23940         200 Type set to I.			PWD	23940
23940 TYPE I 23940 200 Type set to I.			257 "/" is current directory.	23940
23940 200 Type set to I.			IYPE I	23940
			200 Type set to I.	23940
2394U PASV			PASV	23940
		 	·	TDC

#### **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.

TEST-FTP P	Properties	×
General Shari	ng Security Previous Versions Customize	
	TEST-FTP	
Type:	File folder	
Location:	C:\	
Size:	1,09 MB (1.145.816 bytes)	
Size on disk:	1,14 MB (1.200.128 bytes)	
Contains:	32 Files, 5 Folders	
Created:	lunedì 28 agosto 2023, 14:07:40	
Attributes:	Read-only (Only applies to files in folder)	
	Hidden Advanced	
	OK Cancel <u>A</u> pply	

#### **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:

Settings	×
General	
Automatically activate server at startup	
Directory Access	
Home directory: C:\TEST-FTP	
🔽 Allow Create Directory 🔽 Allow Delete 🔽 Allow Rename	
✓ Allow Download ✓ Allow Upload	
OK Cancel	

# **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.

🚋 Windows Security Alert								
Windows Defender Firewall has blocked some features of this app								
Windows Defender Firewall has blocked some features of Baby FTP Server on all public, private								
	Name:	Baby FTP Server						
	Publisher:	Pablo Software Solutions						
	Path:	C:\tools\babyftp-ftp server\babyftp.exe						
Allow Baby FTP Server to communicate on these networks:								
🗸 Private netw	orks, such as m	ny home or work network						
Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)								
What are the risks of allowing an app through a firewall?								
		Allow access Cancel						

# **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 ....

1	Windows Defender Finewell					•	×
4	> v 🛧 🎦 - Contro	il Panel > All Control Panel Items > Windows Defe	~ C				
•• ••	Control Panel Home Allow an app or fusition proparty Windows Defender Executed Change notification settings from Windows Defender Freewall on or off Restore defaults Advanced settings Troubleshoot my network	Help protect your PC with Windows Defi Windows Defender Frewall can help provent hockers through the interest or a network. For your security, some settings are managed to Doggain networks Networks at a workplace that are attached to a dom Windows Defender Frewall state: Incoming cannectione:	ender Firewall er malicious software from gaining access to your PC yyour system administrator. Connected ain On Block all connections to agos that are not on the list of allowed apps				
		Active domain networks Notification state:	Debratan Notify me when Windows Defender Finewall blocks a new app				
		Private networks     Guest or public networks     Networks in public places such as argorts or coffee	Not connected ~ Connected ^ shops				
	See also Security and Maintenance Network and Sharing Canter	Windows Defender Firewall state Incoming connections Active public networks:	On Block all connections to apps that are not on the list of allowed apps Unidentified network				

3. Click Allow another app....

See Allowed apps						-	•	×
← → ✓ ↑ Sentrol Panal → All Control Panal I	terns > Windows Defender Firewall > Allowed apps				~ ¢			
	Allow apps to communicate through Window To add, change, or remove allowed apps and ports, click C What are the risks of allowing an app to communicate? To review security, some settings are managed by your Allowed apps and features Name Childeneon DestroyApproced in 10.000010 (vol. Childeneon DestroyApproced in 10.00000 (vol. Childeneon DestroyApproced in 10.000000 (vol. Childeneon DestroyApproced in 10.000000 (vol. Childeneon DestroyApproced in 10.00000000000000000000000000000000000	vs Defer system at system at 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	hinder Fin nys hindstatt 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Public Public Public Public Public Public Public Public Public	Change setting Group Policy No			
				0	Genol			

**4.** Select the executable of the FTP server.

Add an app		$\times$							
Select the app you want to add, or click Browse to find one that is not listed, and then click OK.									
Apps:									
Baby FTP Server									
Path: C:\Tools\babyftp-FTP Server\b	abyftp.exe	Browse							
What are the risks of unblocking an app?									
You can choose which network types to add t	his app to.								
Network types	Add	Cancel							

5. Select all networks.

늘 Alcowed apps								-	0	×
🔶 🧼 👻 🛧 🎦 🎽 Control Panel > All Control Panel	hems > Windows Defender Finewall > Allowed apps	~ 0	][	isarch Control Panal		ر				
	Allow apps to communicate through Window To tidl, change, or remove allowed apps and ports, click O What are the risks of allowing an app to communicate? For your security, some settings are managed by you	vs Defer hange sett r system a	ider Fin ings. Iministrat	ewall Dr.	🗣 Chagge sett	ings				
	Allowed apps and features									
	Name      O(Microsoft, WindowsStore, 12004, 1001,1,0,164,      O(Microsoft, WindowsStore, 12004, 1001,1,0,164,      O(Microsoft, WindowsStore, 12004, 1001,1,0,164,      O(Microsoft, Zunek/Asie, 1021002, 105110, 146,      O(Microsoft, Zunek/Asie, 1021002, 105110, 146,)      O(Microsoft, Zunek/Asie, 1021002, 105110, 146,))      O(Microsoft, Zunek/Asie, 1021002, 105110, 146,))	Comain 22 23 24 24 24 25 24 25 25 25 25 25 25 25 25 25 25 25 25 25	hinter of a constraint of a co		Group Policy No No No No No No No No No No	1				
	BranchCache - Content Rational (User HTIP)	0	(	Detaija.	No Remov					
				OK	Gen	al I				

6. Click OK to apply the settings.

RegEx is used to filter 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 <u>rexegg.com/regex-quickstart.html</u>

### **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	0				3.
No Read String				]	
Enable Barcode (	Quality Metrics				Read Barcode
Exhaustive 2D At	5empt				(1P)P/N: CBL-USB03000-USC00 (D)MFD: 01DEC20 (2P)REV: (Q)QUANTITY: 1 (Q)QUANTITY: 1 MADE IN CHINA
View Results					
Status	Codec	Result	PPM	-	
- Good Read			12		X: 282 Y: 193 R:09 6:09 8:09 Zoon: 81.82% -% Sun Available
	C00639	0010ec.20	15		Filmstip
	000009		2.9		日 今 前
		PCBL 03803000 05000	2.0		
0	CODE39	29	2.9		The second secon

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

Minimum Coverage	e Percentage			
Barcode String Match Select Last Decode	• •		Regex	
No Read String	I			Read Barcole
Enable Barcode G	ully Metrics			(1P)P/N: CBL-USB03000-USC00
Exhaustive 2D Atte	mpt			(D)MFD: 01DEC20
				(2P)REV:
				(Q)QUANTITY: 1
				MADE IN CHINA
				A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER
View Results	Co. Luc			The second se
- Good Read	Codec	Result	ma 2	the second s
	<b>III</b> CODE29	0010EC20	19	X 256 Y. 104 R 104 G 104 B 104 Zoom: 81.875 % Son Available
	C00639	ON	2.9	
	CODE39	19CBL-USB03000-USC00	12	
•	CC0639	2	2.9	The second secon

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

Barcode String Match Select Last Decode	v (1		Regex			
No Read String					Free Encode	
Enable Barcod	e Quality Metrics				(1P)P/N: CBL-USB03000-USC00	ľ
Exhaustive 20)	Aflempt				(D)MFD: 01DEC20 (2P)REV: (Q)QUANTITY: 1 MADE IN CHINA	Del
View Results Status	Codec	Result	PFM	44		12.00
— 😑 Good Read					A CALL AND	
۲	CCCE29	D04DEC20	19		A S S S S S S S S S S S S S S S S S S S	
	CODE39	9PCBL-USB03000-USC00	1.2			
0	CCOE29	01 29	29			

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

Barcode String Match Select Last Decode	v [10	•	Regex					NE	ANN A
No Read String	1			-		Read	laroote	<u>n</u>	
Enable Barcool	e Quality Metrics			- 1			(1P)P/N: CBL-USB03000-US	C00	Ľ
Exhaustive 2D	ktenpt						(D)MFD: 01DEC20 (2P)REV: (Q)QUANTITY: 1 MADE IN CHINA		002.
Vew Results				-			1		
Status	Codec	Result	PPM	-					b
- Good Read					t=t= R=R=R=	200% \$1.82%	4. Sze Avaliták		
•	CODEN	9 9FC8L-U5803000-U5C00	12	ł	Rindrip				

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

Barcode String Match Select Last Decode	• u		Repex			大学の
No Read String	I				Read Eacode	G
Enable Barcode Gud	ity Metrics . pt				(1P)P/N: CBL-USB03000-USC00 (D)MFD: 01DEC20 (2P)REV:	DE
					(Q)QUANTITY: 1 MADE IN CHINA	- 31
View Results						100
Status	Codec	Result	РРМ	-		R
Good Read	CC0829	D01D8C20	19		X 46 Y 240 R57 5 Y 250 Autor Finalso	

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

Minimum Coverage Percentage						1
Barcode String Match						
Select Last Decode	vd -		Regex		and the second sec	
No Read String	I				Read Barcole	2
Eneble Barcode Quali	ty Metrics				(1P)P/N: CBL-USB03000-USC00	
Extraustive 20 Attemp	¢.				(D)MFD: 01DEC20 (2P)REV: (Q)QUANTITY: 1 (Q)QUANTITY: 1 MADE IN CHINA	De
View Results						
Status C	Codec	Result	PPM	#		
- Good Read			12		X 23 Y-420 R54 654 854 Zoon: 8142% -% Son Available	
	CODE39	DOIDEC20	13		Filmstip	
	00000	Procession of the	M		日本主	
	CODES!	91 91	19			

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

Minimum Cove	rage Percentage			11
Barcode String Match	• • •		Regex	
No Read String	I			Red Becole
Enable Earcod	ie Quality Metrics			(TP)P/N: CBE-05B03000-05C00
Exhaustive 20	Attempt :			(D)MFD: 01DEC20 (2P)REV: (Q)QUANTITY: 1 (Q)QUANTITY: 1 (MADE IN CHINA
View Results	for the			
- Good Rea	Codec d	Result	/m :	
0	<b>III</b> CCCE29	#CBL-U5803000-U5C00	12	X: 828 Y: 907 - 8:901-6:981 8:991 - Zoon: 81.82% - % Soe Available
•	💭 сооезо	2	29	Firmship

Filter (\C) for a string that has the letter C:
Barcode String Match			-			No.
Select Lest Decode	×		Regex		Contraction of the Party of the	2000
No Read String	1				Read Barcode	1
Enable Barcode	Quality Metrics				(1P)P/N: CBL-USB03000-USC00	)
Exhaustive 20 A	tienpt					
					(D)MFD: 01DEC20	
						DE
						Loc
					(Q)QUANTITY: 1	- 3M
					MADE IN CHINA	
						_
					10	
				_		
View Results						1.52
Stetus	Codec	Result	1794			
	C00539	00106020	19	X 289 X 213 R 152 6 152 8 152 2x	n: ELDX -X Sor Analable	
	C00639	CN .	2.9	Filmstrip		
	CODE 29	PCBL-US803000-USC00	12	11 † î		
				Trail		

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

	-				And a second sec	
Select Last Decode	V [D4]		Reger.		and the second s	
No Read String	I				Paul Earcole	2
Enable Barcode Qu	ally Webics				(1P)P/N: CBL-USB03000-USC00	
Exhaustive 20 Atte	mpt				(D)MED: 01DEC20	
					(2P)REV:	D
						£o
					(Q)QUANTITY: 1	- 3
					MADE IN CHINA	
						1
View Results						
Status	Codec	Result	PPM	-		
- 🗧 Good Read					X: 772 Y: 08 R:19 G:19 8:19 Zoom: 81.82% -% Size Available	
	CODE 39	D01DEC20	19		Finalda	
	CODE39	IPC8L-US803000-USC00	12			

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

Barcode String Match Select Last Decode	( <b>1</b> ) 1/3		Ropes	
No Read String	I			Paral Barcole
Enable Barcode Quality	Métrics			(1P)P/N: CBL-USB03000-USC00
Enhaustive 2D Attempt				(D)MFD: 01DEC20 (2P)REV: (Q)QUANTITY: 1 MADE IN CHINA
View Results Status Co	dec Resu	t	PPM	#
- 🔴 Good Read				
•	I costa - 908	Lusecados USCOD	12	X 205 X 200         R 200 & 2000: BL2X         -A Soc Available           Filmstrip         Image: Control of the social state of

Look for any data filter ( $\$ ):

Barcode String Match Select Last Decode	• •		Regex		STATES OF
No Read String	1			Pead Execute	
Enable Barcocle	Quality Metrics			(1P)P/N: CBL-USB03000-USC00	
Exhaustive 2D A	thempt			(D)MFD: 01DEC20	
					E
				(Q)QUANTITY: 1	-
View Results Status	Codec	Result	ррм		ě.
- Good Read					
0	🗰 ccotas	00106C20	19	X 663 Y 290 R 572 6 572 8 572 Zoom 81.87% -% Soe Available	
0	CODE39	CN .	2.9	Filmstrp	
	🗰 ccot39	IPC8L-US803000-USC00	12		
0	CCOE39	29	2.9 2.9	Sama (raz)	

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

- ^ sets the anchor to the first char or string in the code
- I 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.

Settings Image Barris	Syntotopes De	to Formatting ManyCode	Image Vewer	
			Tomac Aug An Ray Town When	harlow then have Nation/JANN Addedse. We 15 East Contra
Timeoul	200 10			and the second se
marge 10	Report	~		
-			_	
thrimum Coverage Perc	stap		_	
Barcola Strog Match				
Sectadora V	76218	E hope		
No Read String				
These beyond body	mais			
C trains 2 mere			_	
				IFQ S
				No. of the Hold State of the St
Yee heals				
Seta Ca	ec Real	114	22	
• test find	CODEN THEORY.CO.	and an and an an	1012 01510	Les EIA
			Finally	
			13 4 2	had be be used and an and a second

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 b,e true, and the second number represents the maximum

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

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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.
- I is the logical OR

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

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



# 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.

# **Enabling Telnet Connections**

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

- **1.** Press Win + R to open Run.
- 2. Search for the Control Panel and click OK
- 3. Search for the Control Panel and click Programs and Features
- 4. Using the left panel, click Turn Windows Features On or Off
- 5. Enable telnet client Windows features dialog.
- 6. 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.

allegory.		
Session Logging Terminal Keyboard Bell	Basic options for your PuTTY se Specify the destination you want to connect Host Name (or IP address)	Port
- Features Window - Appearance	Connection type: SSH Serial Other: Teln	et v
- Translation - Colours - Connection - Data	Load, save or delete a stored session Saved Sessions Default Settings	Load
- Proxy ⊕-SSH - Serial - Telnet		Save
-Riogin -SUPDUP	Close window on exit. Always Never ( Only on c	lean exit

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
aimor
getimagersettings

# **ZETI Commands**

Use ZETI commands to make changes on the device and retrieve result data.

## autotune

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

#### Table 77 autotune

Command	Short	Parameter	Data	Range	Example
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness true .focus true .method barcode command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness false .focus true .method barcode command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness true .focus false .method barcode command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness false .focus false .method barcode command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness true .focus true .method dpm command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness true .focus false .method dpm command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness false .focus true .method dpm command: autotune,ok
autotune	at	.brightmess .focus .method	true/false true/false barcode/ dpm	-	autotune .brightness false .focus false .method dpm 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 78 backup

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

Command	Short	Parameter	Data	Range	Example
backuprestore	br	action. path	0 basa64 data	-	br .action 0 .path base64_data
			base64_data		command:br,ok



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

# deletejob

Use the deletejob command to delete a job on the device. Provide the job number as an argument

#### Table 80 deletejob

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

## dwload

Use the dwload command to upload the dwx configuration file to the host.



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

#### Table 81 dwload

Command	Short	Parameter	Range	Example
dwload	dwload	-	-	dwsideload base64_data
				command: dwsideload,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</lf></cr>

#### exposure

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

#### Table 83exposure

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 the firmwareupdate command to update the device firmware.



 $\label{eq:NOTE: The firmware update command is not supported on FS10 devices.$ 

#### Table 85firmwareupdate

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 1 1 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

## getcodes

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

#### Table 88 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 89	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 90getimage

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

# getimagersettings

Use the getimagersettings command to retrieve the value of all the parameters mentioned in the following table.

#### Table 91getimagersettings

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 91 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 92getgpiostatus

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

# getgpiosetting

Use the getgpiosetting command to update the device firmware.

#### Table 93getgpiosetting

Command	Short	Parameter	Range	Example
getgpiosetting	ggs	Pin number, mode	-	ggs .pin 1 .mode command:ggs,ok
getgpiosetting	ggs	Pin number, strobe	-	{response} 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 93 getgpiosetting (Continued)

Command	Short	Parameter	Range	Example
getgpiosetting	ggs	Pin number, debounce	-	ggs .pin 1 .debounce
				(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 the getjoblist command to retrieve the list of all jobs loaded on the device.

#### Table 94 getjoblist

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

# getlogfiles

Use the getlogfiles command to retrieve device or perfetto logs.

Device Logs

Generate a log.tar and retrieve the tar file.

#### Table 95 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 96Perfetto 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 97getquantity

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 98getresultimage

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

## help

Use the help command to return all supported ZETI commands.

#### Table 99 help

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

# internallight

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

#### Table 100 internallight

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

## loadjob

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

#### Table 101 loadjob

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

# protocolconfig

Use the protocolconfig command to set global parameters.



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

#### Table 102 protocolconfig

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

#### reboot

Use the reboot command to reboot the device.

#### Table 103 reboot

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

# setgpiosetting

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

#### Table 104 setgpiosetting

Command	Short	Parameter	Range	Example
setgpiosetting	sgs	Pin number, mode,	-	sgs .pin 1 .mode 0
		Number		command:sgs,ok
setgpiosetting	sgs	Pin number, reset,	-	sgs .pin 1 .strobe 0
		Number		command:sgs,ok
setgpiosetting	sgs	Pin number,	-	sgs .pin 1 .reset 0
		strobe, Number		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,	-	sgs .pin 1 .delay 0
		Number		command:sgs,ok
setgpiosetting	sgs	Pin number,	-	sgs .pin 1 .mode pulsewidth 0
		pulsewidth, Number		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 105 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 a job on a specified slot by passing the required job number as an argument. The withresult parameter gives the resulting JSON of the last result as a response after the trigger.

#### Table 106 trigger

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

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

#### Table 107trigger (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.jobData.	end_criteria	GPIO	gjd .jt.end_criteria .slot 3
setjobdata	trigger		DEVICE	command: gjd,ok
	.jt		SERIAL	{response}
			PLC	sjd .jt.end_criteria AUTO
			TCP_IP	.slot 3
			AUTO	command: sjd,ok
			TEST_TRIGGER	
getjobdata	.jobData.	show_image	true/false	gjd .jt.show_image .slot 3
setjobdata	trigger			command: gjd,ok
	.jt			{response}
				sjd .jt.show_image true
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	no_read	Int	gjd .jt.no_read_same_barcode .slot 3
setjobdata	trigger	_same_		command: gjd,ok
	.jt	barcode		{response}
				sjd .jt.no_read_same_barcode 1
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	reset_dnr	true/false	gjd .jt.reset_dnr_on_trigger .slot 3
setjobdata	trigger	_on_trigger		command: gjd,ok
	.jt			{response}
				sjd .jt.reset_dnr_on_trigger true
				.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 subparameters displayed in the following table

## Table 108trigger\_settings

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.jobData.	same_barcode	Number	gjd .jts.same_barcode_timeout
setjobdata	trigger	_timeout	(0-500 ms)	.slot 3
	trigger_settings			command: gjd,ok
	.jts			{response}
				sjd .jts.same_barcode_timeout 1
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	job_interval	Number	gjd .jts.job_interval
setjobdata	trigger		(0-60000	.slot 3
	trigger_settings		ms)	command: gjd,ok
	.jts			{response}
				sjd .jts.job_interval 1
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	burst_count	Number	gjd .jts.burst_mode
setjobdata	trigger		(1-100)	.slot 3
	trigger_settings			command: gjd,ok
	.jts			{response}
				sjd .jts.burst_count 1
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	presentation_	Number	gjd .jts.presentation_sensitivity
setjobdata	trigger	sensitivity		.slot 3
	trigger_settings			command: gjd,ok
	.jts			{response}
				sjd .jts.presentation_sensitivity 1
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	decode_	Number	gjd .jts.decode_failure_timeout
setjobdata	trigger	failure_timeou	t (0-60000	.slot 3
	trigger_settings		ms)	command: gjd,ok
	.jts			{response}
				sjd .jts.decode_failure_timeout 1
				.slot 3
				command: sjd,ok

Table 108	trigger_	_settings	(Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata	.jobData.	active_level.	LOW	gjd .jts.active_level
setjobdata	trigger		HIGH	.slot 3
	trigger_settings			command: gjd,ok
	.jts			{response}
				sjd .jts.active_level 1
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	fast_hw	true/false	gjd .jts.fast_hw_trigger_enabled
setjobdata	trigger	_trigger_		.slot 3
	trigger_settings	enabled		command: gjd,ok
	.jts			{response}
				sjd .jts.fast_hw_trigger_enabled true
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	read_multiple	true/false	gjd .jts.read_multiple_barcodes
setjobdata	trigger	_barcode		.slot 3
	trigger_settings			command: gjd,ok
	.jts			{response}
				sjd .jts.read_multiple_barcodes true
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	send	true/false	gjd .jts.send_aggregate_level_assert_data
setjobdata	trigger	_aggregate		.slot 3
	trigger_settings	_level_assert_		command: gjd,ok
	.jts	data		{response}
				sjd .jtssend_aggregate_level_assert_data true
				.slot 3
				command: sjd,ok
getjobdata	.jobData.	disable_active	true/false	gjd .jts.disable_active_job_timeout
setjobdata	trigger	_job_timeout		.slot 3
	trigger_settings			command: gjd,ok
	.jts			{response}
				sjd .jts.disable_active_job_timeout true
				.slot 3
				command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.jobData.	same_data	true/false	gjd .jts.
setjobdata	trigger	_timeout		same_data_timeout_must_leave_fov
	trigger_settings	_must_leave		.slot 3
	.jts	_fov		command: gjd,ok
				{response}
				sjd .jts.
				same_data_timeout_must_leave_fov true
				.slot 3
				command: sjd,ok

#### Table 108 trigger\_settings (Continued)

#### meta

getjobdata .jobData.meta.description .slot 3

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

#### Table 109 meta

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

#### Table 109 meta (Continued)

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

#### imager setups

getjobdata .jobData.imager\_setups.aimer

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

#### Table 110imager\_setups

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

## Table 110 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

## Table 110imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
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
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

## Table 110 imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
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
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

## Table 110 imager\_setups (Continued)

Command	Parameter	Sub Parameter	Range	Example
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.O.name .slot 3 command: gjd,ok {response} sjd .ji.O.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
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

### industrial ethernet

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

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

 Table 111
 industrial\_ethernet

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

Table 111	industrial_	_ethernet	(Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. industrial_ ethernet	input.config .order	Number	gjd .jie.input.config.0.order .slot 3 command: gjd,ok {response}
	.jie			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
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

## **Table 111**industrial\_ethernet (Continued)

Command	Parameter	Sub Parameter	Range	Example
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.config0.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
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
Command	Parameter	Sub Parameter	Range	Example
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getjobdata	.jobData.	output.config		gjd .jie. output.config.0.default.quality_score
setjobdata	industrial_	.default.quality_		.slot 3
	ethernet	score		command: gjd,ok
	.jie			{response}
				sjd .jie. output.config.0.default.quality_score 1
				.slot 3
				command: sjd,ok

#### Table 111industrial\_ethernet (Continued)

#### save options

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:

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.jobData.	conditions	NO_READ	gjd .js.0.conditions .slot 3
setjobdata	save_options		GOOD_READ	command: gjd,ok
	.jt			{response}
				sjd .js.0.conditions NO_READ. slot 3
				command: sjd,ok
getjobdata	.jobData.	destination	ON_DEVICE	gjd .js.0.destination .slot 3
setjobdata	save_options		FTP	command: gjd,ok
	.jt		SFTP	{response}
				sjd .js.0.destination ON_DEVICE .slot 3
				command: sjd,ok
getjobdata	.jobData.	enabled	true/false	gjd .js.0.enabled .slot 3
setjobdata	save_options			command: gjd,ok
	.jt			{response}
				sjd .js.0.enabled true .slot 3
				command: sjd,ok

## Table 112save options (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.jobData. save_options .jt	file_prefix	String	gjd .js.0.file_prefix .slot 3 command: gjd,ok {response} sjd .js.0.file_prefix ZEB .slot 3
getjobdata setjobdata	.jobData. save_options .jt	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 .jt	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 .jt	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 .jt	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
getjobdata setjobdata	.jobData. save_options .jt	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

#### **Table 112**save options (Continued)

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

#### barcode configuration

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 in the following table:

 Table 113
 BARCODE.configuration

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

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

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	Parameter .job_run_data. graph.nodes. BARCODE. configuration .jrd	Sub Parameter match_string .all (update all similiar tools in a job) .base64 (when base64 encoded string to be given) .friendly_name (update string should be within single quotes based on friendly name of a tool)	Range	Examplestring should be within single quotessjd.jrd.match_string 'string to be matched'To update all match strings of ocr tools in ajobsjd.jrd.match_string 'string to bematched' .allTo update all match strings of ocr tools in ajob of a given slot numbersjd.jrd.match_string 'string to bematched' .all .slot 19To update match string ( base64 encoded)to a tool , it should not be within any quotessjd.jrd.match_stringaGVsbG8gdBiYXNINg .base64To update match string (base64 encoded) toall toolssjd.jrd.match_string aGVsbG8gdBiYXNINg.base64 .allTo update match string (base64 encoded) toall toolssjd.jrd.match_string aGVsbG8gdBiYXNINg.base64 .allTo update match string (base64 encoded) toall toolssjd.jrd.match_string aGVsbG8gdBiYXNINg.base64 .allTo update match string (base64 encoded) toall tools with a given slot numbersjd.jrd.match_string aGVsbG8gdBiYXNINg.base64 .all .slot 19To update match string to a particular toolbased on friendly namesjd.jrd.match_string 'this is to change onlyocr2'
				.friendly_name 'ocr2' To update match string to a particular tool based on friendly name to a particular job of
				<b>given slot number</b> sjd .jrd.match_string 'this is to change only ocr2'
				.friendly_name 'ocr2'.slot 19
				To update base64 encoded match string sjd .jrd.match_string aGVsbG8qdBiYXcdeferqtrrytthtyjNUTyvyvylNq
				.base64
				.friendly_name 'ocr1'
				To update base64 encoded match string slot based
				sjd .jrd.match_string aGVsbG8gdBiYXcdefergtrrytthtyjNUTyvyvylNg
				.base64
			293	.friendly_name 'ocr2' .slot 19
				command: sjd,ok

 Table 113
 BARCODE.configuration (Continued)

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

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	localData	String	gjd .jrc.localData.friendly_name .slot 3
setjobdata	graph.nodes.	.friendly		command: gjd,ok
	BARCODE.	_name		{response}
	configuration			sjd .jrc.localData.friendly_name 'Reads'.slot 3
	.jrc			command: sjd,ok
				'Reads'
getjobdata	.job_run_data.	localData	STANDARD	gjd .jrc.localData.
setjobdata	graph.nodes.	.barcode	TRAILING_TAB	barcode_data_formatting_mode .slot 3
	BARCODE.	_data_	ADVANCED	command: gjd,ok
	configuration	formattin	TRAILING_LINE	{response}
	.jrc	g_mode	_BREAK	sjd .jrc. localData. barcode_data_formatting_mode
				STANDARD .slot 3
				command: sjd,ok

#### data formatting

 $get job data\ .job\_run\_data.graph.nodes.BARCODE.configuration.barcode\_data\_formatting$ 

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

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

Table 114 barcode	_data_	_formatting	.all_	_symbologies	(Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	Suffix	String	gjd .jra.suffix .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jra.suffix STRING . slot 3
	barcode_data_			command: sjd,ok
	formatting			
	.all_symbologies			
	.jra			

#### manycode

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 in the following table:

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

#### Table 115 many\_code

Table 115	many_code	(Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	data_types	DECODED_STRING	gjd .jrm.data_types.type .slot 3
setjobdata	graph.nodes.	.type	PPM	command: gjd,ok
	BARCODE.		SUBDECODED	{response}
	configuration.		_STRING	sjd .jrm.data_types.type ANGLE .slot 3
	barcode_data_		ANGLE	command: sjd,ok
	formatting		SYMBOLOGY	
	.many_code		CENTER_X	
	.jrm		CENTER_Y	
getjobdata	.job_run_data.	end_delimiter	NONE	gjd .jrm.end_delimiter .slot 3
setjobdata	graph.nodes.		SPACE	command: gjd,ok
	BARCODE.		СОММА	{response}
	configuration.		ТАВ	sjd .jrm.end_delimiter TAB .slot 3
	barcode_data_		LINEBREAK	command: sjd,ok
	formatting			
	.many_code			
	.jrm			
getjobdata	.job_run_data.	Prefix	String	gjd .jrm.prefix .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrm.prefix STRING .slot 3
	barcode_data_			command: sjd,ok
	formatting			
	.many_code			
	.jrm			
getjobdata	.job_run_data.	Suffix	String	gjd .jrm.suffix .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrm.suffix STRING . slot 3
	barcode_data_			command: sjd,ok
	formatting			
	.many_code			
	.jrm			

## decode

 $get job data.job\_run\_data.graph.nodes.BARCODE.configuration.decode.Inverse1D\ .slot\ 2$ 

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 116
 BARCODE.configuration.decode

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	adaptive_roi_	SMALL	gjd .jrd.adaptive_roi_scale_factor
setjobdata	graph.nodes.	scale_factor	MEDIUM	.slot 3
	BARCODE.		LARGE	command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.adaptive_roi_scale_factor SMALL
	. ) _ 4			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	Inverse1D	Number	gjd .jrd.Inverse1D .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.Inverse1D 1
	decode			.slot 3
	.jrd			command: sjd,ok
getjobdata	.job_run_data.	advanced_decode_	true/false	gjd .jrd.advanced_decode_settings. allow_rectangular_codes .slot 3
Secjobuata	BARCODE	allow_rectangular		command: gjd,ok
	configuration	_codes		{response}
	decode			sjd .jrd.advanced_decode_settings. allow_rectangular_codes true
	.jrd			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	advanced_decode_	Number	gjd .jrd.advanced_decode_settings.
setjobdata	graph.nodes.	settings.		contrast_threshold .slot 3
	BARCODE.	contrast_threshold		command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.advanced_decode_settings. contrast_threshold 1
				.slot 3
				command: sjd,ok

 Table 116
 BARCODE.configuration.decode (Continued)

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.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
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

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	advanced_decode_	Number	gjd .jrd.advanced_decode_settings. max_row_count .slot 3
Sel Jobuala	graph.nodes.	max row count		command: gjd,ok
	BARCODE.			{response}
	decode			sjd.jrd.advanced_decode_settings. max_row_count1
	.jrd			.slot 3
				command: sjd,ok
getjobdata setjobdata	.job_run_data.	advanced_decode_ settings.	Number	gjd .jrd.advanced_decode_settings. min_column_count .slot 3
2009020000	BARCODE.	min_column_count		command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.advanced_decode_settings. min_column_count 1
	.jrd			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	advanced_decode_	Number	gjd .jrd.advanced_decode_settings.
setjobdata	graph.nodes.	settings.		max_column_count .slot 3
	.job_run_data.	max_column_count		command: gjd,ok
	graph.nodes.			{response}
	BARCODE.			sjd .jrd.advanced_decode_settings.
	configuration.			.slot 3
	decode			command: sjd.ok
	.jrd			
	BARCODE.			
	configuration.			
	decode			
	.jrd			
getjobdata	.job_run_data.	Priority	NONE	gjd .jrd.priority .slot 3
setjobdata	graph.nodes.		1D	command: gjd,ok
	BARCODE.		2D	{response}
	configuration.			sjd .jrd.priority NONE
	decode			.slot 3
	.jrd			command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	barcode_dpm	true/false	gjd .jrd.barcode_dpm .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.barcode_dpm true
	decode			.slot 3
	.jrd			command: sjd,ok
getjobdata	.job_run_data.	decode_all_	true/false	gjd .jrd.decode_all_barcodes .slot
setjobdata	graph.nodes.	barcodes		3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.decode_all_barcodes true
	.jrd			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	dpm	true/false	gjd .jrd.dpm .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.dpm true
	decode			.slot 3
	.jrd			command: sjd,ok
getjobdata	.job_run_data.	enable_adaptive_	true/false	gjd .jrd.enable_adaptive_roi_search
setjobdata	graph.nodes.	roi_search		.slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.enable_adaptive_roi_search
	.jrd			true
				.slot 3
				соттала: ѕја,ок
getjobdata	.job_run_data.	enable_bqm	true/false	gjd .jrd.enable_bqm .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.enable_bqm true
	decode			.slot 3
	.jrd			command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	enable_identical_	true/false	gjd .jrd.enable_identical_decode_
setjobdata	graph.nodes.	decode_symbols		symbols .slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.enable_identical_decode_
	.jrd			symbols true
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	enable_partial_	true/false	gjd .jrd.enable_partial_results .slot
setjobdata	graph.nodes.	results		
	BARCODE.			command: gjd,ok
	configuration.			{response}
	decode			slot 2
	.jrd			command: sid ok
getjobdata	.job_run_data.	enable_string_	true/faise	gjd .jrd.enable_string_match_on_
setjobdata	graph.nodes.	entire payload		entire_payload .slot 3
	BARCODE.	enerre_payroad		
	configuration.			{response}
	decode			optire_payload true
	. JIU			slot 3
				command: sid ok
act ichdoto	tob wyp data	exhaustive	true/false	cid ird ovbaustive manusade clet
getjobdata	. Job_run_data.	manycode		3
Secjobuaca	BARCODE			command: gjd,ok
	configuration.			{response}
	decode			sjd .jrd.mode exhaustive_manycode
	.jrd			true
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	match_mode	DISABLED	gjd .jrd.match_mode .slot 3
setjobdata	graph.nodes.		STRING_EXACT	command: gjd,ok
	BARCODE.		STRING_CONTAINS	{response}
	configuration.		REGEX	sjd .jrd.match_mode DISABLED
	decode			.slot 3
	.jrd			command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	match_string .all (update all similiar	String	string should be within single quotes
Seejobaaca	BARCODE.	<pre>tools in a job) .base64 (when base64 encoded string is to be provided) .friendly_name (update based on the</pre>		sjd .jrd.match_string 'string to be matched'
	configuration. decode			To update all match strings of barcode tools in a job:
	.jrd			sjd .jrd.match_string 'string to be matched' .all
	friendly name of a tool)	friendly name of a tool)		To update all match strings of barcode tools in a job of a given slot number:
				sjd .jrd.match_string 'string to be matched' .all .slot 19
				To update match string (base64 encoded) to a tool, it should not be within any quotes:
				sjd .jrd.match_string aGVsbGBiYXNINg .base64
				To update match string (base64 encoded) for all tools:
	3			sjd .jrd.match_string aGVsbGBiYXNINg .base64 .all
				To update match string (base64 encoded) to all tools with a given slot number:
			sjd .jrd.match_string aGVsbGBiYXNINg .base64 .all .slot 19	
				To update the match string to a specific tool based on a friendly name:
				sjd .jrd.match_string 'this is to change only barcode1' .friendly_name 'barcode1'
				To update the match string to a specific tool based on a friendly name to a specific job of a given slot number:
				sjd .jrd.match_string 'this is to change only barcode1' .friendly_name 'bar2' .slot 19
		30	04	To update base64 encoded match string:
				sjd .jrd.match_string
				aGVsbGBiYXNINg
				.base64 .friendly_name 'barcode1'
				To update base64 encoded match string slot base:

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	multicode	true/false	gjd .jrd.multicode .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.multicode true
	decode			.slot 3
	.jrd			command: sjd,ok
getjobdata	.job_run_data.	no_read_string	String	gjd .jrd.no_read_string .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.no_read_string STRING
	decode			.slot 3
	.jrd			command: sjd,ok
getjobdata	.job_run_data.	ocr	true/false	gjd .jrd.ocr .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.ocr true
	decode			.slot 3
	.jrd			command: sjd,ok
getjobdata	.job_run_data.	number_barcodes	Number	gjd .jrd.
setjobdata	graph.nodes.	_to_decode		number_barcodes_to_decode
	BARCODE.			.slot 3
	configuration.			command: gjd,ok
	decode			{response}
	.jrd			sjd .jrd.
				number_barcodes_to_decode 1
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	percentSymbolInRoi	Number	gjd .jrd.percentSymbolInRoi .slot 3
setjobdata	graph.nodes.			command: gjd,ok
	BARCODE.			{response}
	configuration.			sjd .jrd.percentSymbolInRoi 1
	decode			.slot 3
	.jrd			command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	sorting_type	ALPHABETICAL	gjd .jrd.sorting_type .slot 3
setjobdata	graph.nodes.		FIRST_DECODED	command: gjd,ok
	BARCODE.		HORIZONTAL	{response}
	configuration.		VERTICAL	sjd .jrd.sorting_type VERTICAL
	decode		SYMBOLOGY	.slot 3
	.jrd			command: sjd,ok

### symbology settings

getjobdata .job\_run\_data.graph.nodes.BARCODE.configuration.symbology\_settings. CODE128.Code128Length1 .slot 2

gjd .jrm.prefix .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 117 BARCODE.configuration.symbology\_settings

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	CODE128	Number	gjd .jrs.CODE128.Code128Length1
setjobdata	graph.nodes.	.Code128Length1		.slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.CODE128.Code128Length11
	.jrs			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE128	Number	gjd .jrs.CODE128.Code128Length2
setjobdata	graph.nodes.	.Code128Length2		.slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.CODE128.Code128Length2 1
	.jrs			.slot 3
				command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	CODE128	Number	gjd .jrs.CODE128.GS1_128
setjobdata	graph.nodes.	.GS1_128		.slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.CODE128.GS1_128 1
	.jrs			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE128	Number	gjd .jrs.CODE128.ISBT_Concatenation
setjobdata	graph.nodes.	.ISBT_		.slot 3
	BARCODE.	Concatenation		command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.CODE128.ISBT_Concatenation 1
	.jrs			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE128	Number	gjd .jrs.CODE128.
setjobdata	graph.nodes.	. ISBT_		ISBT_Concatenation_Redundancy
	BARCODE.	Concatenation_		.slot 3
	configuration.	Redundancy		command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.CODE128. ISBT_Concatenation_Redundancy 1
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE128	Number	gjd .jrs.CODE128.ISBT128
setjobdata	graph.nodes.	.ISBT128		.slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.CODE128.ISBT128 1
	.jrs			.slot 3
				command: sjd,ok

Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs .job_run_data. graph.nodes.	CODE128 .IgnoreCode 128FNC4 CODE39 .Code39	Number	gjd .jrs.CODE128.lgnoreCode128FNC4 .slot 3 command: gjd,ok {response} sjd .jrs.CODE128.lgnoreCode128FNC4 1 .slot 3 command: sjd,ok gjd .jrs.CODE39. Code39CheckDigitVerification
	BARCODE. configuration. symbology_settings .jrs	CheckDigit Verification		.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 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata	.job_run_data.	CODE39	Number	gjd .jrs.CODE39.
setjobdata	graph.nodes.	.LengthforCode39		LengthforCode39Length1
	BARCODE.	Lengthl		.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.CODE39.
				LengthforCode39Length11
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE39	Number	gjd .jrs.mode
setjobdata	graph.nodes.	.LengthforCode39		.slot 3
	BARCODE.	Length2		command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.mode CONTINUOUS
	.jrs			.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE 39	Number	gjd .jrs.CODE39.
setjobdata	graph.nodes.	.TransmitCode39		TransmitCode39CheckDigit
	BARCODE.	CheckDigit		.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.CODE39.
				TransmitCode39CheckDigit 1
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	CODE39	Number	gjd .jrs.CODE39.
setjobdata	graph.nodes.	.TriopticCode39		TriopticCode39
	BARCODE.			.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.CODE39.
				TriopticCode391
				.slot 3
				command: sjd,ok

Table 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
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. LengthforCode93Length11 .slot 3 command: sjd,ok
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

Table 117	BARCODE.c	onfiguration	n.symbology_	_settings (	Continued)
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Command	Parameter	Sub Parameter	Range	Example
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
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

Table 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
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 .jrsl25.Febraban(I2of5) 1 .slot 3 command: sjd,ok

Table 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE.	I25 .LengthforI2of5 Length1	Number	gjd .jrs. I25.LengthforI2of5Length1 .slot 3 command: gjd,ok
	configuration. symbology_settings			{response} sjd .jrs.
	.jrs			I25.LengthforI2of5Length11.slot 3 command: sjd,ok
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE.	I25 .LengthforI2of5 Length2	Number	gjd .jrs. 125.Lengthforl2of5Length2 .slot 3
	<pre>configuration. symbology_settings . jrs</pre>			command: gjd,ok {response} sid .jrs.
				I25.LengthforI2of5Length2 1 .slot 3 command: sjd,ok
getiobdata	.job run data.	125	Number	aid .irs.
setjobdata	graph.nodes.	.TransmitI2of5		I25.TransmitI2of5CheckDigit
	BARCODE.	CheckDigit		.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.
				I25.TransmitI2of5CheckDigit 1
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	MAXICODE	Number	gjd .jrs.MAXICODE
setjobdata	graph.nodes.			.slot 3
	BARCODE.			command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.MAXICODE 1
	.jrs			.slot 3
				command: sjd,ok

Table 117	BARCODE.configuration.symbology_	_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings	PDF-417 .MicroPDF	Number	gjd .jrs.PDF-417.MicroPDF .slot 3 command: gjd,ok {response} sjd .jrs.PDF-417.MicroPDF 1
	.jrs			.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
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

Table 117	BARCODE.configuration.symbology	_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
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
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

Table 117	BARCODE.configuration.symbology	_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
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 117	BARCODE.configuration.symbology_	_settings (Continued)
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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

Table 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example
getjobdata setjobdata	.job_run_data. graph.nodes. BARCODE. configuration. symbology_settings .jrs	UPCEAN .UPC/EAN /JAN _Supplemental _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
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

Table 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter Range		Example
getjobdata	.job_run_data.	UPCEAN	Number	gjd .jrs.
setjobdata	graph.nodes.	.UPC_E_		UPCEAN.UPC_E_Preamble
	BARCODE.	Preamble		.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.
				UPCEAN.UPC_E_Preamble 1
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	UPCEAN	Number	gjd .jrs.
setjobdata	graph.nodes.	.UPC_E1		UPCEAN.UPC_E1
	BARCODE.			.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.
				UPCEAN.UPC_E11
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	UPCEAN	Number	gjd .jrs.
setjobdata	graph.nodes.	.UPC_E1_		UPCEAN.UPC_E1_Preamble
	BARCODE.	Preamble		.slot 3
	configuration.			command: gjd,ok
	symbology_settings			{response}
	.jrs			sjd .jrs.
				UPCEAN.UPC_E1_Preamble 1
				.slot 3
				command: sjd,ok
getjobdata	.job_run_data.	UPCEAN	Number	gjd .jrs.UPCEAN.UserDefinedSupp1
setjobdata	graph.nodes.	.UserDefined		.slot 3
	BARCODE.	Suppl		command: gjd,ok
	configuration.			{response}
	symbology_settings			sjd .jrs.UPCEAN.UserDefinedSupp11
	.jrs			.slot 3
				command: sjd,ok

	Table 117	BARCODE.configuration.symbology_settings (Continued)
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Command	Parameter	Sub Parameter	Range	Example	
getjobdata	.job_run_data.	UPCEAN	Number	gjd .jrs.	
setjobdata	graph.nodes.	.UserDefined		UPCEAN.UserDefinedSupp2	
	BARCODE.	Supp2		.slot 3	
	configuration.			command: gjd,ok	
	symbology_settings			{response}	
	.jrs			sjd .jrs.	
				UPCEAN.UserDefinedSupp21	
				.slot 3	
				command: sjd,ok	

# uploadjob

Use the upload job command to upload the job to the device.



**NOTE:** This command requires the zjob in base64 format as an argument.

#### Table 118 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.



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