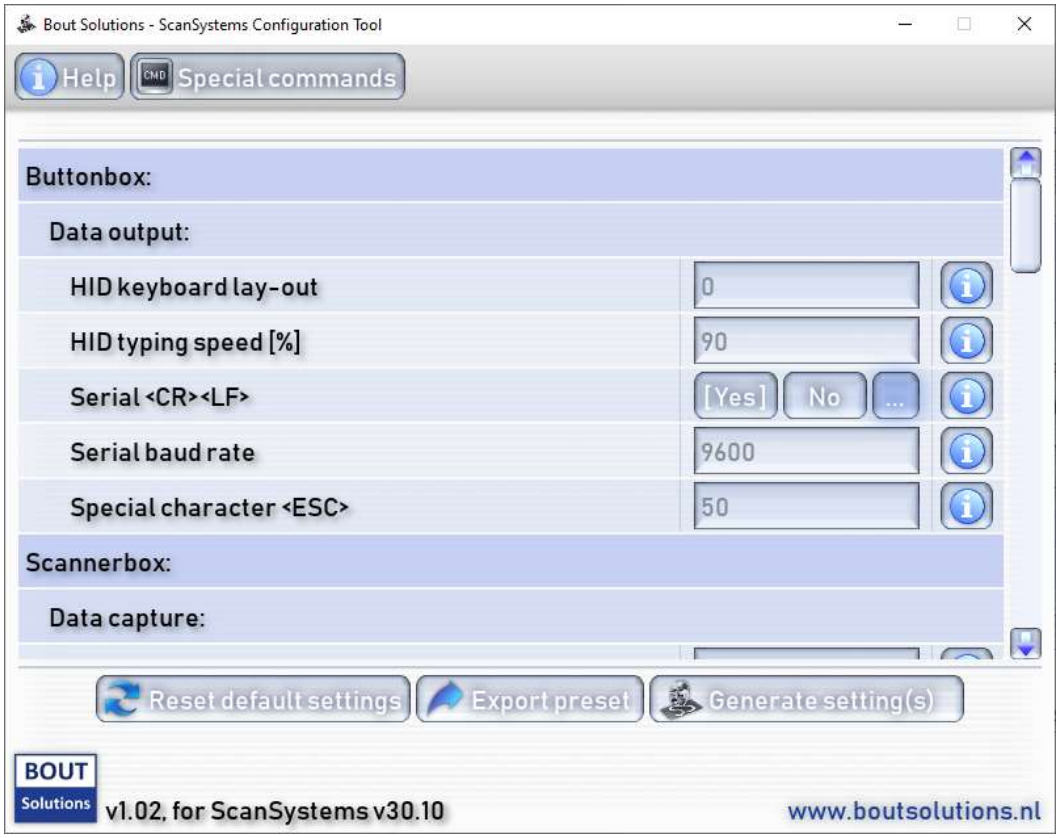
BOUT

Solutions



Getting Started Guide

Configuration Tool v1.02

Improves your logistic operations

Introduction

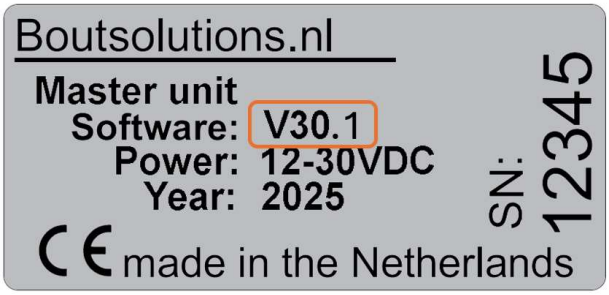
The ScanSystems Configuration Tool is an application for configuring the ScanSystems and executing special commands, such as unlocking demo mode, diagnosing issues, or performing a factory reset.

This guide explains how to use the Configuration Tool and the steps required to set up the ScanSystems. The Configuration Tool is intended for installers and retailers and supports Windows 7 and later.

Content

Installation

Before installing the Configuration Tool, make sure to download the version that matches your ScanSystems software. The software version can be found on the sticker located on the Scannerbox or Buttonbox, as shown in the example below.



The Configuration Tool is available at www.boutsolutions.nl. Follow the steps below to install the application:

1. Download the Configuration Tool (ZIP file).
2. Extract the ZIP file.
3. You will see several folders and the executable:
   "Bout Solutions – ScanSystems Configuration Tool v.a1.02 f30.exe".
4. Open the executable to start the application.

2D Scanner Requirements

The Configuration Tool requires a correctly connected and configured 2D scanner. Before beginning the 'Quick Setup', ensure the following:

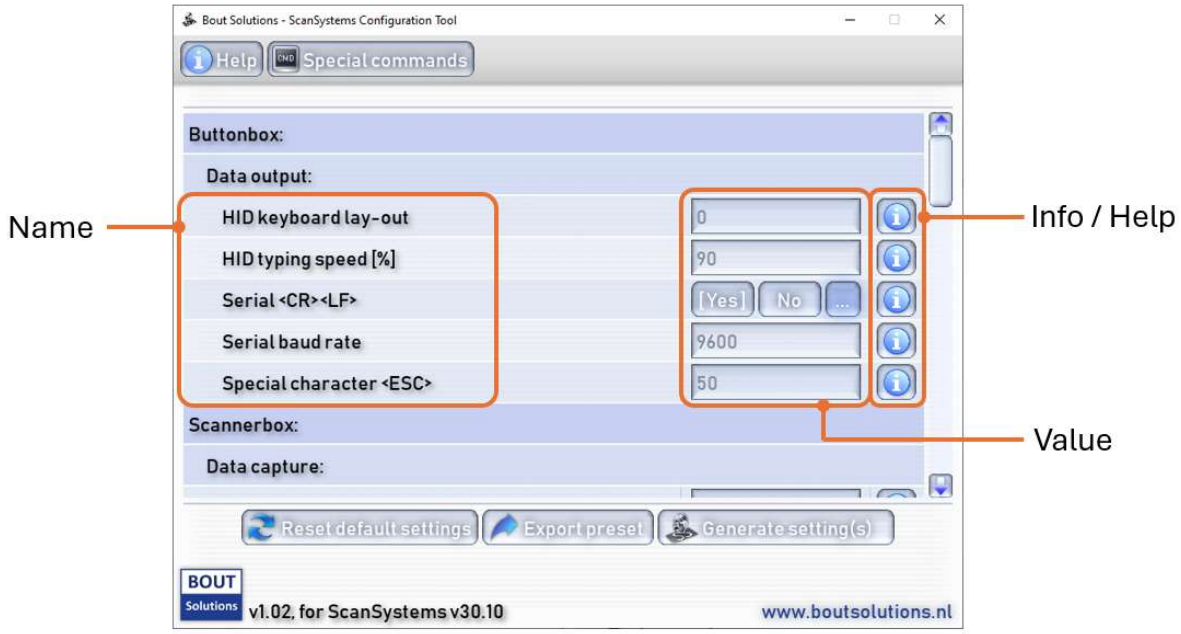
- The 2D Scanner is connected to the ScanSystems
- The trigger signal is set *(for Zebra scanners: GPIO 0 – Rising Edge)*.
- RS232 communication is enabled (Boud rate: 9600)
- The scanner uses <ETX> as the suffix
- The scanner is configured to send data within 2000 ms.
- The scanner is able to read QR codes

If you need guidance on configuring these settings on a Zebra scanner, refer to **Attachment 1: Zebra Scanner Configuration**, or visit www.boutsolutions.nl and follow the instruction video *"Aurora Focus Instructions video"*. Additional details can be found in the *"Bout solutions - ScanSystems manual"*.

Once the requirements for the 2D scanner have been fulfilled. The functionality can be verified by pressing the Buttonbox and confirming that data is being received. In these factory settings, it always takes 2 seconds before the data is typed. The next chapter explains how Quick Setup enhances the device's speed and efficiency.

Quick Setup

After opening the application, the main screen will appear as shown in the figure below. The main screen displays a list of all parameters for the ScanSystems.



In the quick setup, you will configure only the most important parameters for a single scanner (basic setup). Adjusting these key settings will help make the system faster and more efficient.

1. HID typing speed [%]
    a. Set Hid typing speed typing [%] to 100.

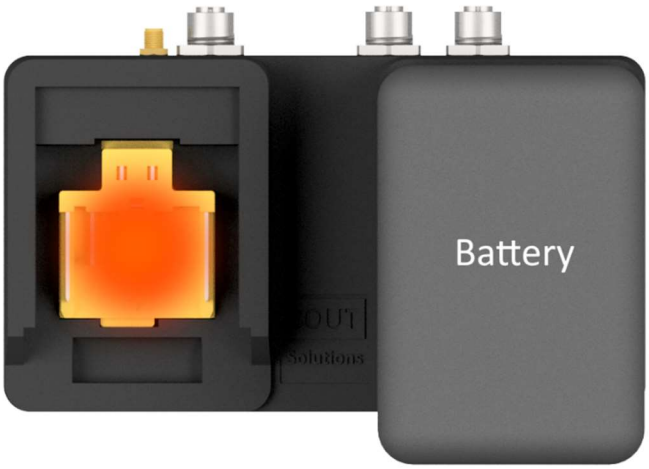
2. Data timeout
    a. Set the Data timeout to 27 (2025ms).

3. Single scanner mode
    a. Set single scanner mode to ‘Yes’.

After the settings are filled in, press the ‘Generate Setting(s)’ button. A QR Code will be generated and is ready to be scanned.

Scan the QR Code with the scanner connected to the ScanSystems.
The settings are applied automatically. To verify the settings, check the battery connector:

1. Lights orange for 4 seconds.
2. Then blinks orange twice.



In case the device has no battery power but is running on external power, remove the lid to view the indicator light. The colors will be red and yellow instead of orange.

Once the settings are loaded into the ScanSystems, the following changes occur:

1. HID types faster than before.
   - Note: not all devices support fast HID.

2. Data Timeout is set to 2025 milliseconds.
   - The ScanSystems waits 2025 milliseconds to receive data from the scanner. If no data is sent within this time, the box will not type anything on the screen.

3. Single Scanner Mode is set to Yes.
   - The ScanSystems prints the data after detecting <ETX> from one scanner and does not wait for the Data Timeout.

Now you are able to establish a wireless connection between the scanner and the input device using ScanSystems.

In the next chapters, the parameters and special commands are explained. Feel free to experiment with different parameters and to connect an additional scanner or external sensors if needed.

Note:
In many cases, it is necessary to configure the 2D scanners in Zebra Aurora, and to configure the ScanSystem using the Configuration Tool to ensure it meets the customer's requirements.

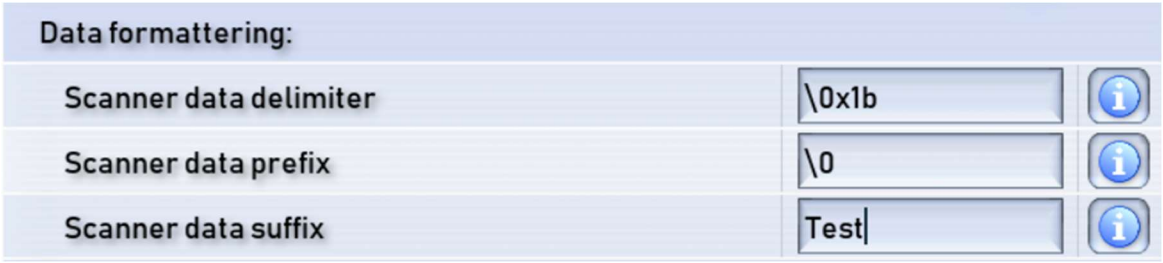
Parameters

In the quick setup, three parameters have already been configured. This section explains the more advanced parameters. The full parameter list with detailed information can be found in **Attachment 2: Parameter List**.

Data formatting

Data formatting allows you to add text or special characters to the data string. These can be entered in the Scanner Data Delimiter, Prefix, and Suffix fields.

Example:



- The system: **\0**[Data scanner 1]**<ESC>**[Data scanner 2]**Test**
- The Buttonbox will type: [Data scanner 1][Data scanner 2]test

Note: <ESC> must be entered in HEX in the configuration tool to be recognized. \0 and <ESC> are not typed because they have actions.

Special character <ESC>

Only <ESC> has a specific use in ScanSystems. It can be repeated to increase the delay:

- <ESC> = 50 ms delay
- <ESC><ESC> = 100 ms delay
- <ESC><ESC><ESC> = 150 ms delay, and so on

List of special characters that do not require HEX characters

- **** = Backslash
- **\n** = Enter
- **\0** = Empty string
- **\t** = Tab
- **\b** = Backspace
- **\r** = Carriage return

When using HEX characters, the system needs to have "\0x" before typing the hex characters. The hex code for ESC = 1b when using <ESC> it results in: "\0x1b"

In **Attachment 3: Extended ASCII** is a list of the first 31 hex characters (ASCII Control Characters)

Convert HEX to ASCII

This setting is mainly used for RFID tags. HEX 00 is ignored for fixed-length (RFID tag) data. Once this setting is enabled, the corresponding port cannot be used to read QR Codes, as QR Code data will be interpreted as HEX and converted to ASCII.

If both ports are set to ASCII and you want to return to the default configuration. Perform a hardware factory reset. For detailed instructions, see **Attachment 4: Hardware Reset Scansystems.**

Special commands

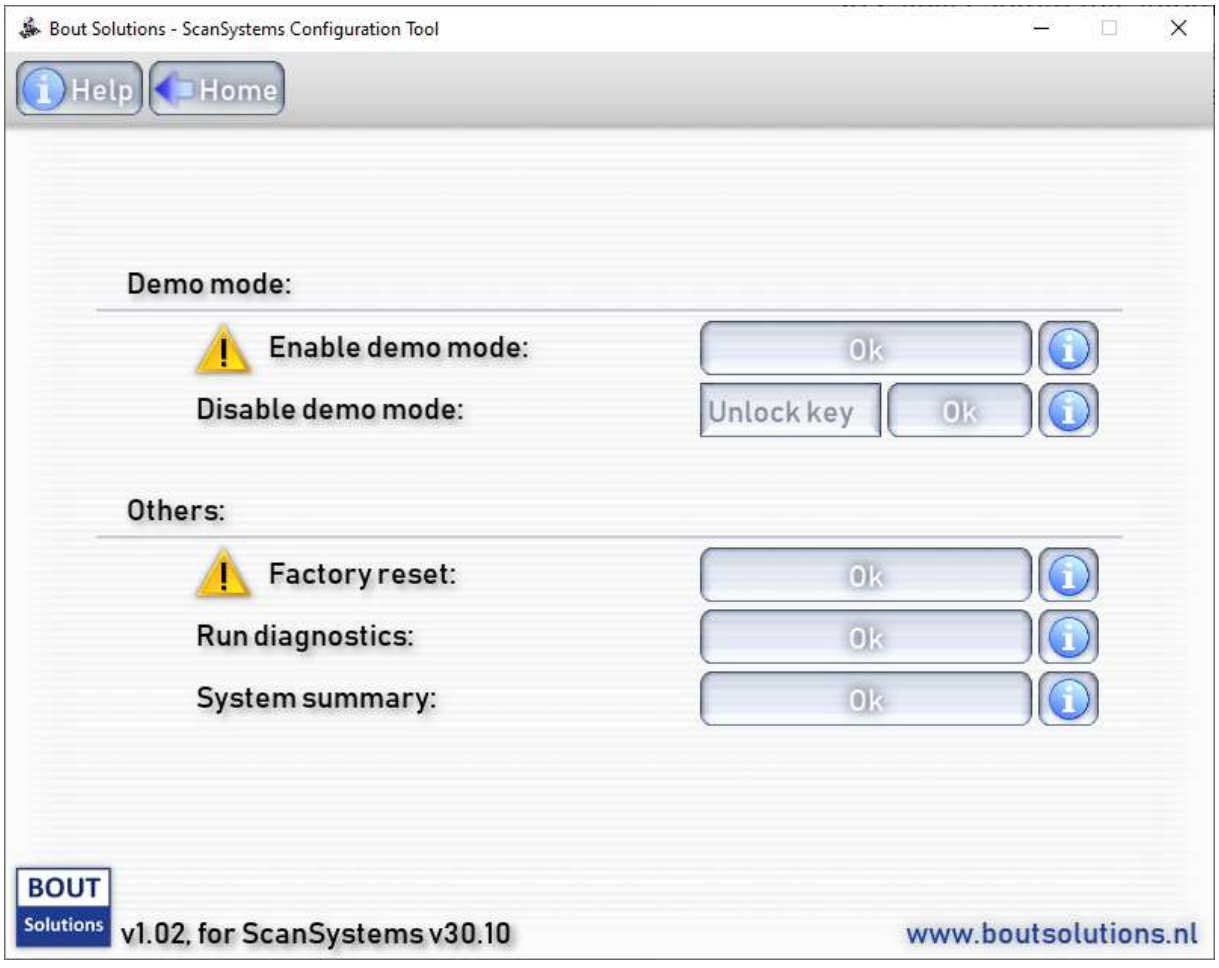
Special commands are used to adjust or retrieve system data.

Demo Mode: Demo mode is designed for non-production purposes, such as demonstrating the system with a demo kit. It is important **never** to enable demo mode if you are not able to disable it again.

Factory Reset: Performing a factory reset can be useful when you want to restore all settings to their default values. Be aware that all current settings in the Scannerbox will be lost when performing a reset.

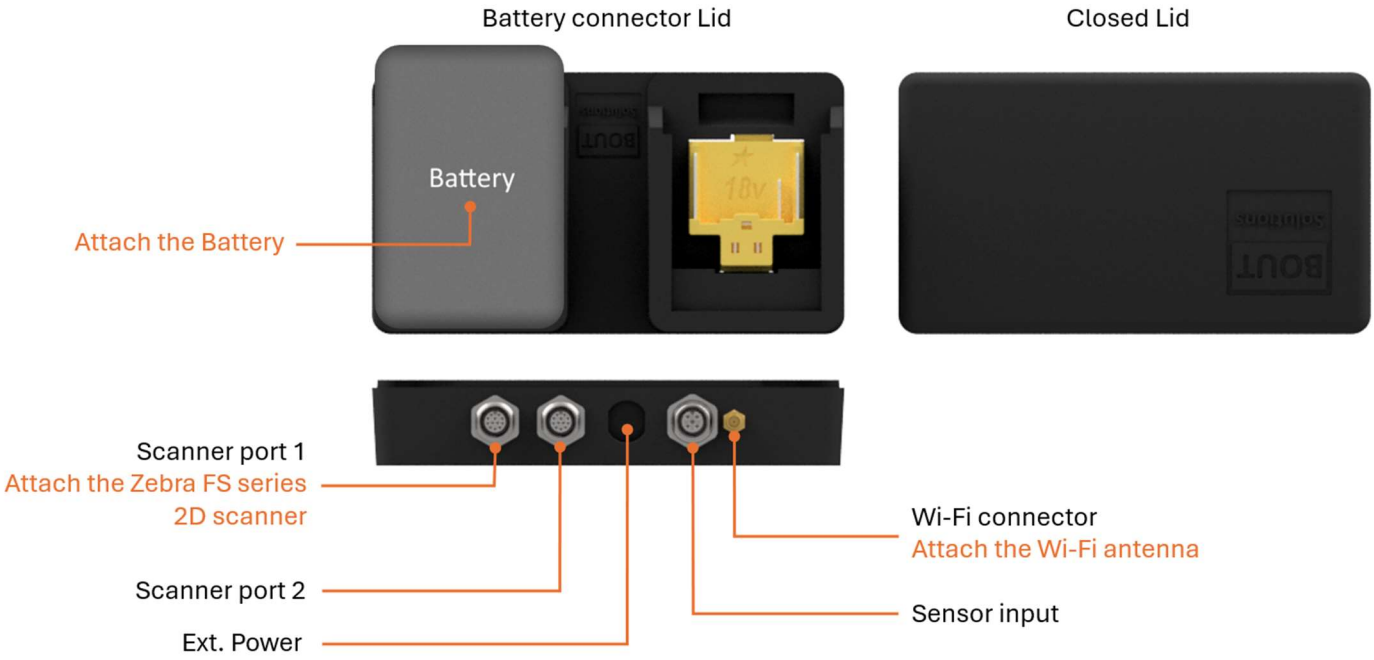
Run Diagnostics / System Summary: Running diagnostics or System summary outputs all data via HID or Serial.

To safely capture this information, it is recommended to open Notepad or another text application, so that the system data is not inadvertently typed in a critical location. When using a serial connection, use a terminal application to receive and view the data.



Attachment 1: Zebra Scanner Configuration

Hardware configuration Scannerbox



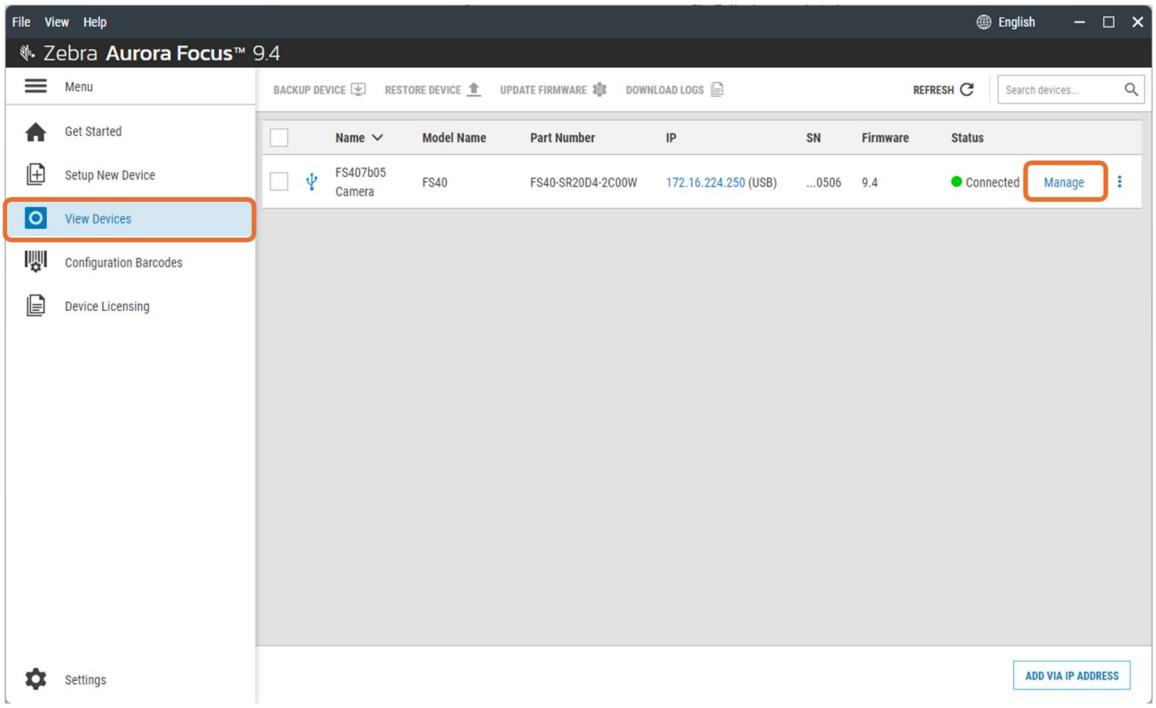
Hardware configuration Buttonbox

Software configuration

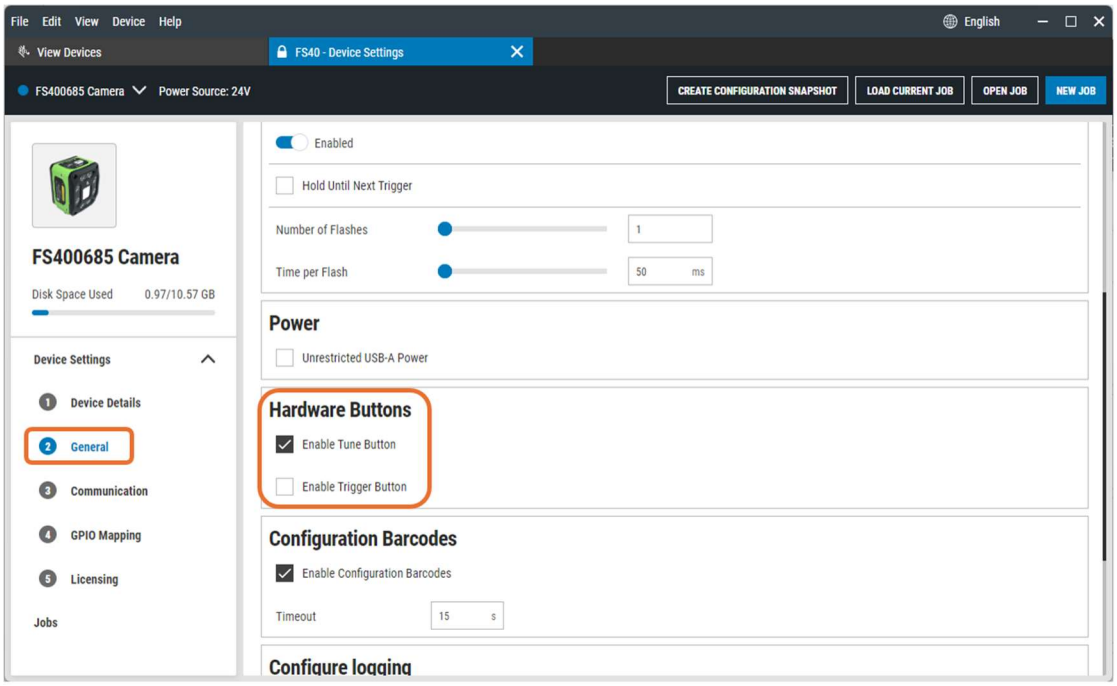
Attach the zebra FS series scanner to the pc with Zebra Aurora focus software. The latest software and scanner software can be found on www.zebra.com. When updating firmware make sure to check boxes Forced Update and Dual Update.

Note:
This manual provides an example using Zebra Aurora 9.4. The images shown may differ in other versions.

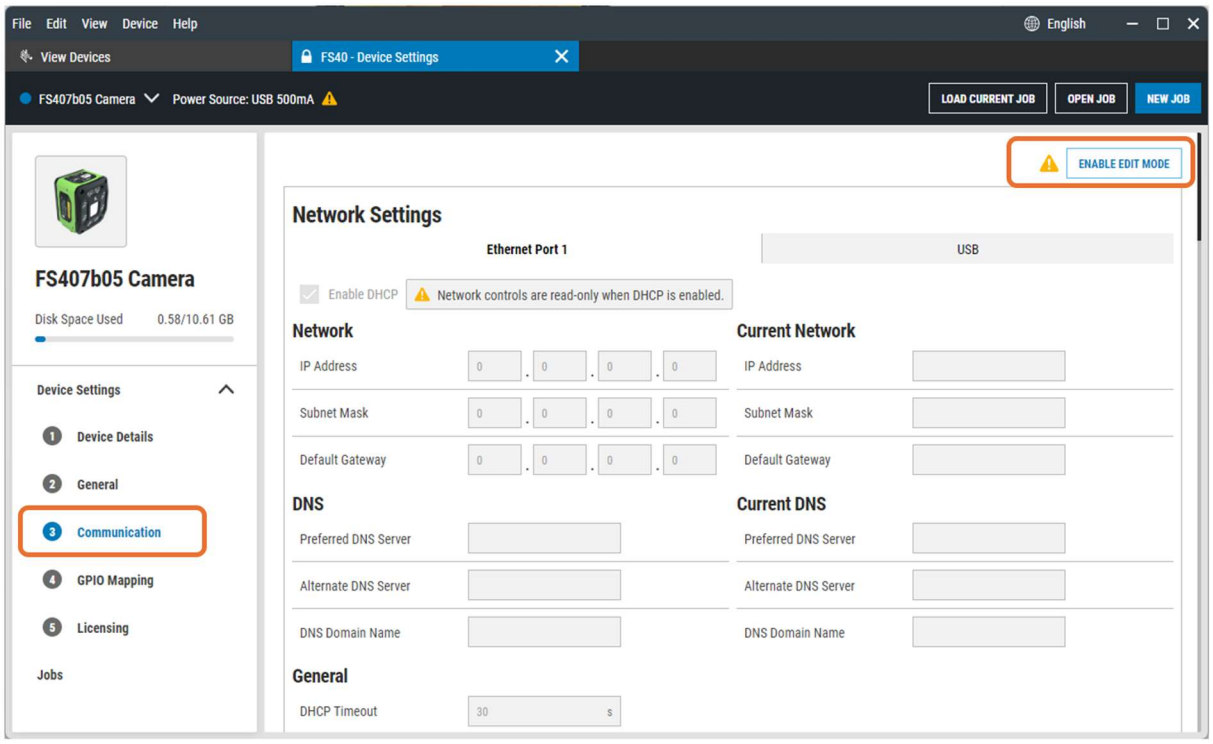
Open Zebra Aurora Focus > View Devices > Manage



General > Hardware Buttons: enable/disable tune button as desired.

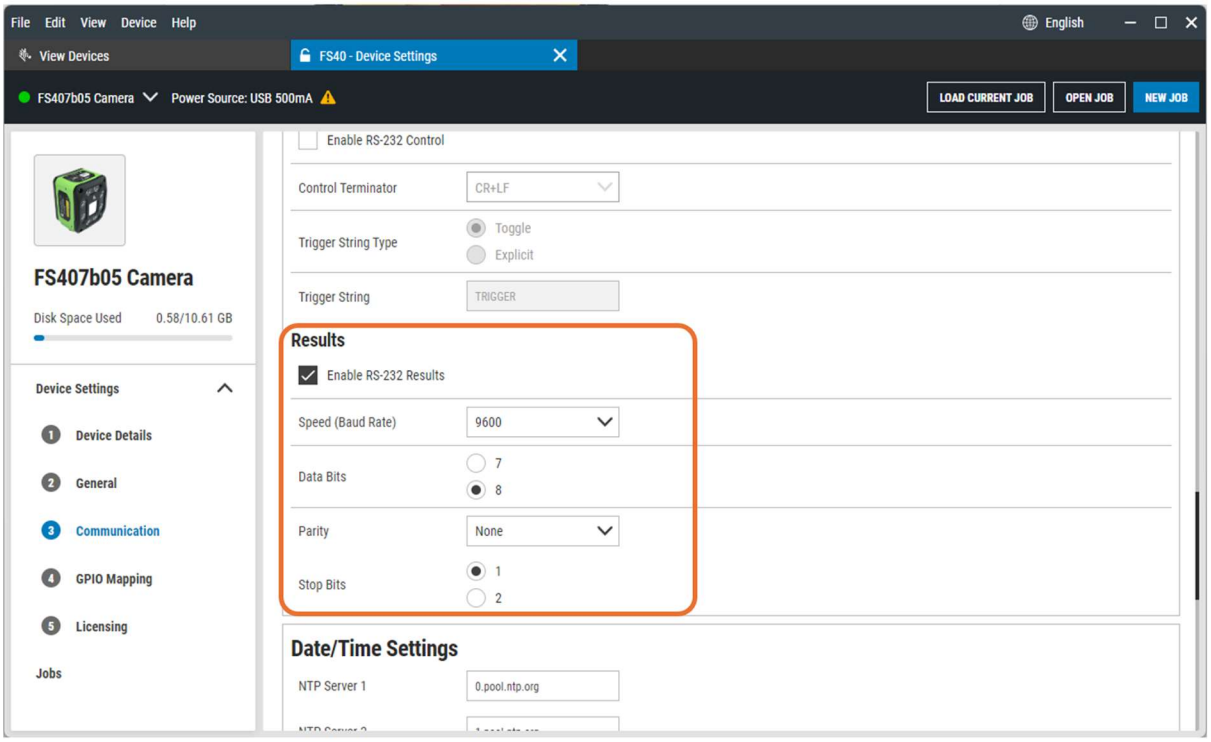


Communication > Enable Edit Mode

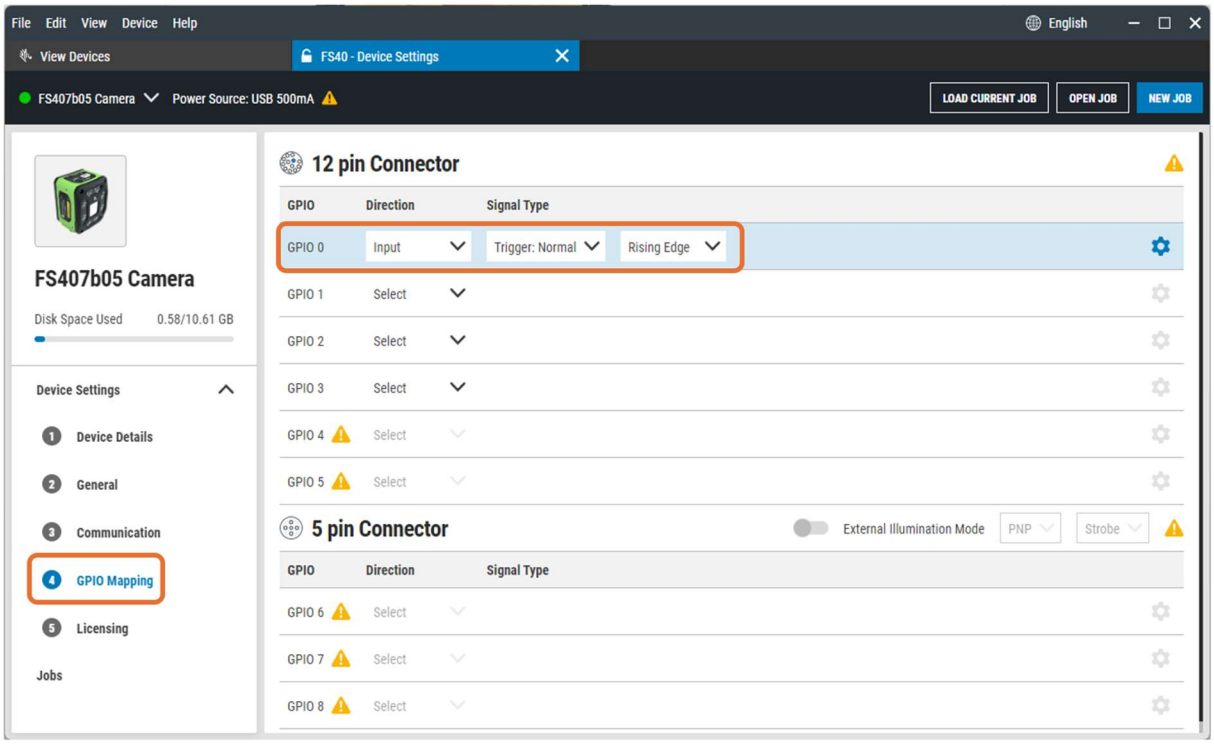


Scroll down to > RS-232 Settings > Enable RS-232 Results:

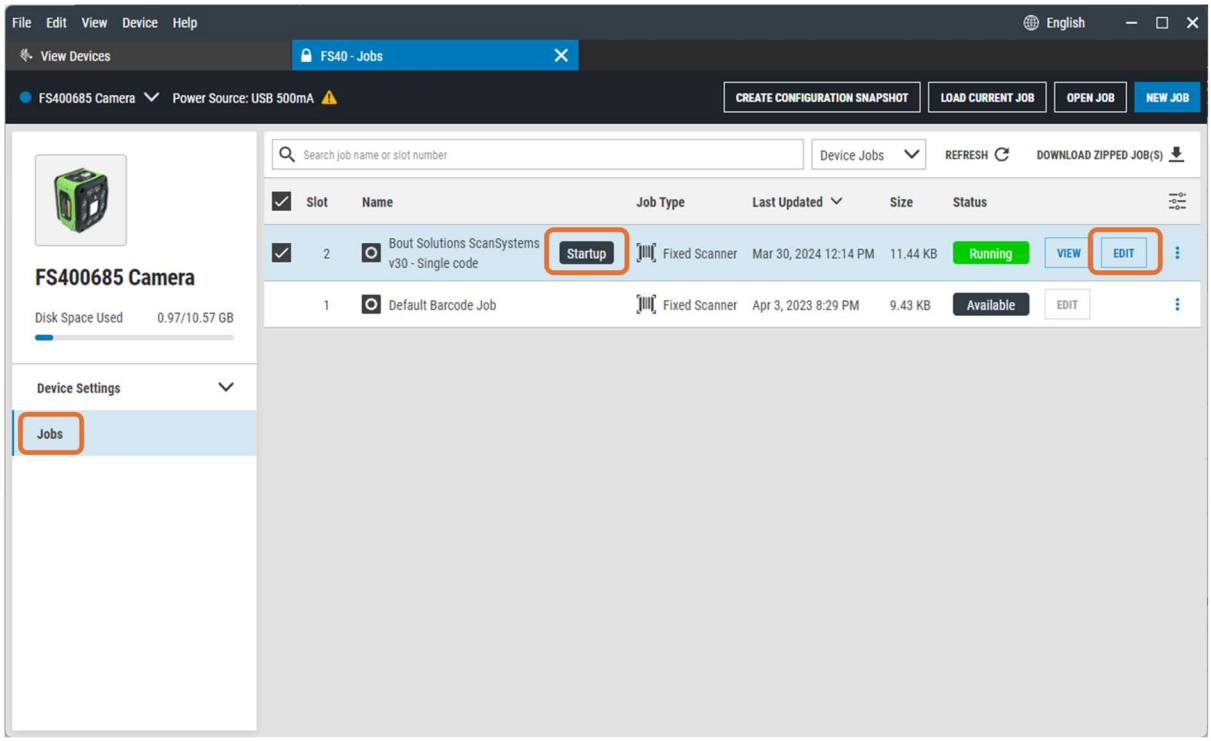
Make sure the settings are the same as inside the orange square.



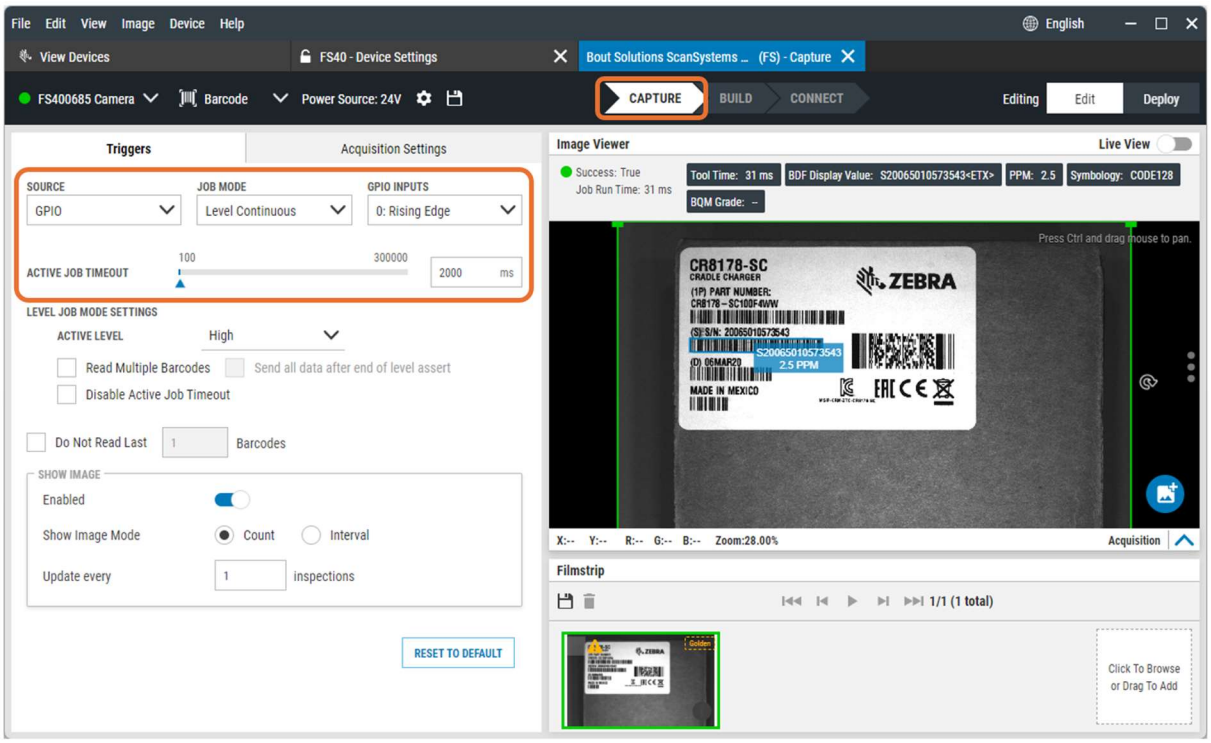
GPIO Mapping > GPIO 0 > Input > Trigger: Normal > Rising Edge



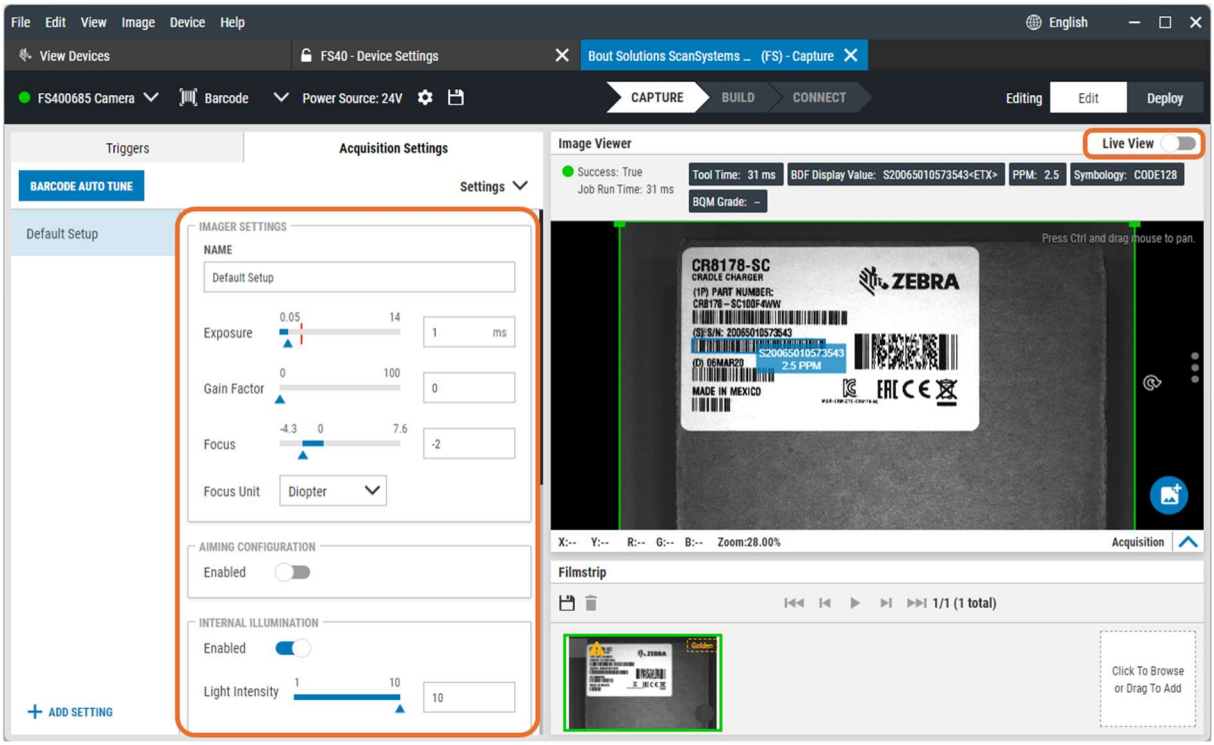
Jobs > Make sure the job is in “Startup” mode > Edit



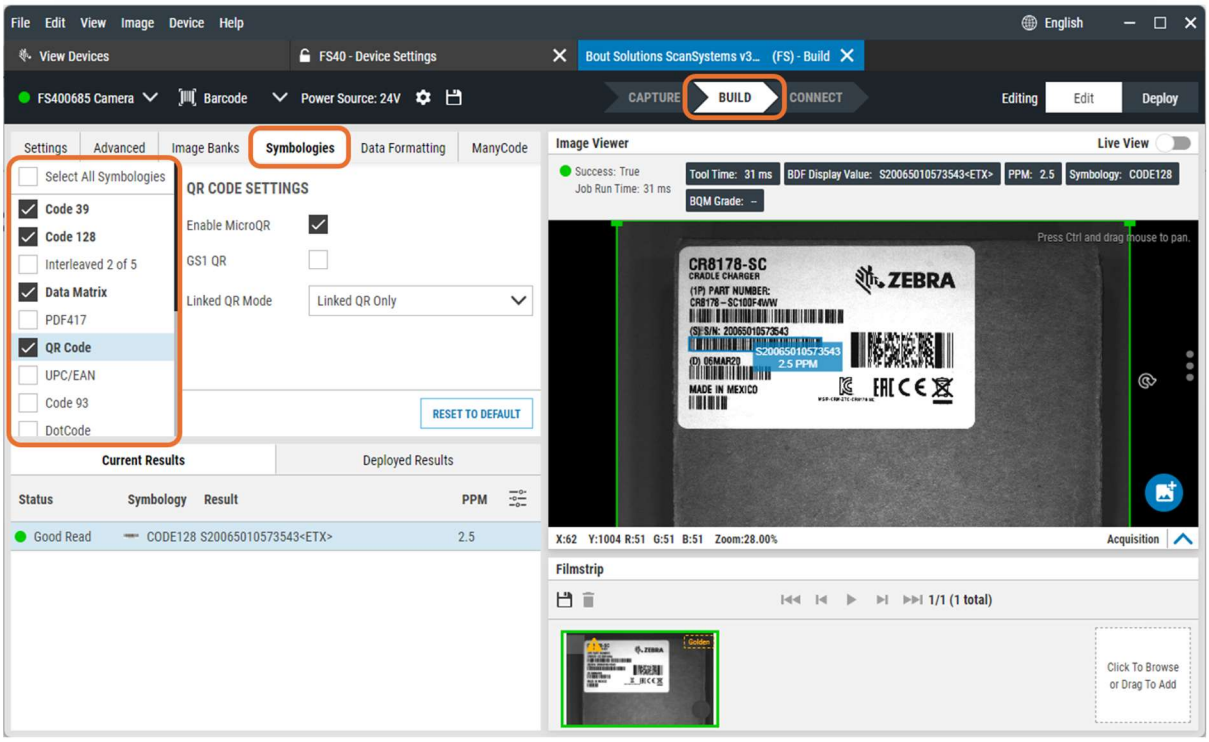
Capture > GPIO > Level Continuous > 0: Rising Edge > Active Job Timeout: 2000 ms



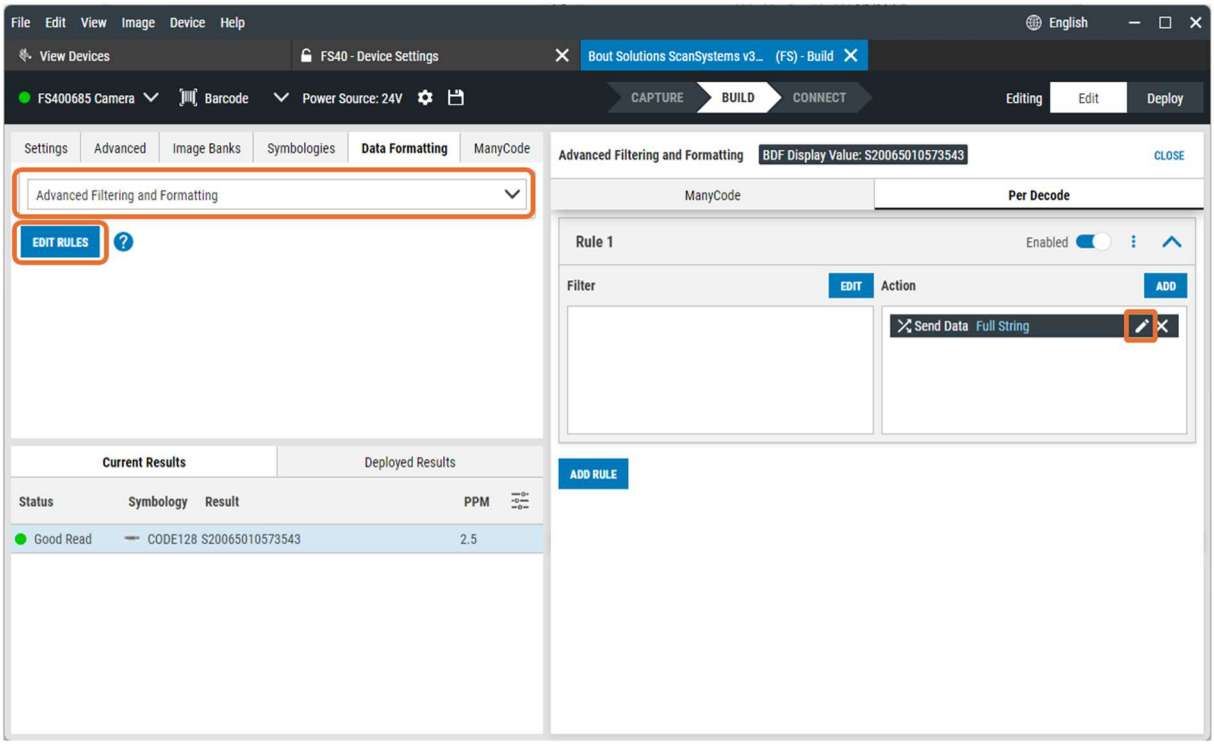
Adjust the acquisition settings to the area you want to scan with the Zebra scanner. Verify your adjustments by enabling Live View.



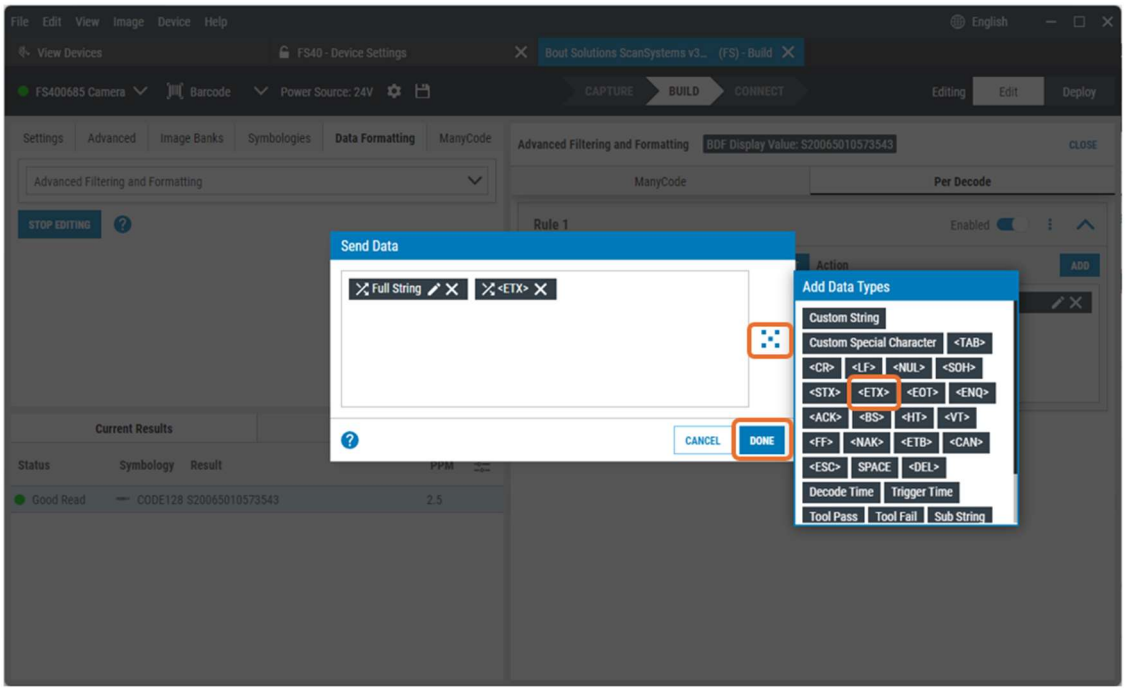
Build > Symbologies > Enable QR Code and the symbologies the scanner needs to scan.



Data Formatting > Advanced Filtering and Formatting > Edit Rules > Pencil



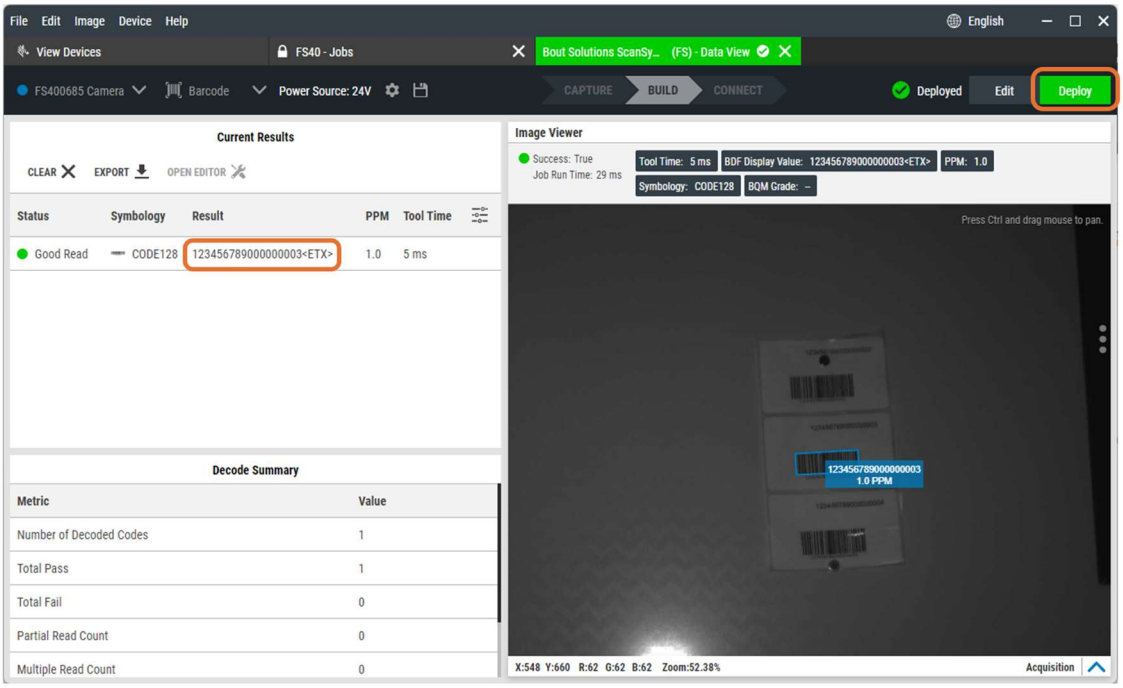
Five dots > “<ETX >”> Done



Deploy > The scanner is now configured and can be triggered using the button box.

After the trigger is activated, the scanner images are displayed in Zebra Aurora Focus. When a barcode is successfully captured, the result will include the barcode data followed by the end character.

Result: 123456789000000003 + <ETX>



Attachment 2: Parameter

Device	Category	Parameter	Information
Buttonbox	Data output	HID Keyboard lay-out	'0' = English (US) '1' = French (BE) '2' = German (DE) '3' = French (FR) '4' = Swedish (SW) '5' = Italy (IT)
		HID typing speed [%]	100% = 2ms per event (fast) 1% = 150ms per event (slow) Lower values prevent tekst errors on slow devices
		Serial <CR><LF>	This option only works when the Buttonbox is using USB-Serial output. (HID Jumper removed) 'Yes' = Auto-convert to when typing data. 'No' = Just type , without appending in front of it.
		Serial baud rate	This option only works when the Buttonbox is using USB-Serial output. (HID Jumper removed) Change the USB-Serial output baud rate.
		Special character <ESC>	Duration in ms to pause whenever the Buttonbox encounters the <ESC> delay character during tekst output
Scannerbox	Data capture	Data timeout	Maximum time the Scannerbox waits for scanner data (1 unit = 75ms). For example, 10 = 750ms. Default is 27 = 2025ms.
		Single scanner mode	'Yes' = Send data after one scanner's data has been captured. 'No' = Wait for data from both scanners or until the 'data timeout' expires. Enabling the 'Yes' option improves timing efficiency when using a single scanner.
	Data formattering	Scanner data delimiter	Add text or special characters between scanner 1 and scanner's 2 data. This setting is ignored if only one scanner's data is present.
		Scanner data prefix	Add text or special characters in front of all scanner data.
		Scanner data suffix	Add text or special characters after all scanner data.
	Duplicate scanner data	Duplicates current round	Detect duplicate codes in current scanner data (all scanners). '-1' = Duplicate data in a round is not allowed (all data discarded). '0' = If duplicates occur, only one scanner's data is kept. '1' = No duplicate check within the round.
		Duplicates last round	Detect duplicate codes in last scan (all scanners). 'Yes' = Check all scanner's duplicates from last round. 'No' = Check duplicates for each scanner from last round. This setting only applies to sensor triggers. Requires: Remove Duplicate data = Yes

Scannerbox	Duplicate scanner data	Remove duplicate data	'Yes' = Check duplicates for each scanner's data from last round. 'No' = No duplicate check. This setting only applies to sensor triggers. No cross-scanner comparison.
		Retain data	'Yes' = Retain non-triggered scanner data (all scanners) for next round duplicate check. 'No' = Discard non-triggerd scanner data. This setting only applies to sensor triggers. Requires: Remove Duplicate data = Yes
	Other	Convert HEX to ASCII scanner 1	'Yes' = Convert HEX to extended ASCII. 'No' = No conversion. Setting mainly used for RFID tags. HEX 00 is ignored for fixed-length (RFID tag) data.
		Convert HEX to ASCII scanner 2	'Yes' = Convert HEX to extended ASCII. 'No' = No conversion. Setting mainly used for RFID tags. HEX 00 is ignored for fixed-length (RFID tag) data.
	RFID	Continuously scan for tags	'Yes' = Continuously look for tags and capture data when triggered. 'No' = Scan only when system is triggered.
		Data Storage	This feature requires one RFID scanner and one additional scanner. Trigger the additional scanner to store the RFID tag in range. Trigger the RFID scanner to output and clear the stored tag. -1 = Do not store RFID data 0 = Store data from RFID scanner 1 only 1 = Store data from RFID scanner 2 only 2 = Store data from either RFID scanner. Option '2' requires two RFID scanners
		Signal filter scanner 1	'0' = All tags in range. '255' = Detects only nearby tags.
		Signal filter scanner 2	'0' = All tags in range. '255' = Detects only nearby tags.
		Working area	'1' = China 920 - 924 MHz '2' = US 902 - 928 MHz '3' = EU 865 - 867 MHz '4' = China 840 - 845 MHz '6' = Korea 917 - 923 MHz

Scannerbox	Trigger Signal - Double I/O:	Alt. trigger mode	'No' = Waits for both double I/O sensor I/O's to be HI, until 'Alt. trigger mode timeout [ms]' expires. - A single HI I/O activates its corresponding scanner - Two I/O's activate both scanners (Trigger Signal - Single I/O settings are disabled) 'Yes' = Requires IO1 to be HIGH when the distance is <100cm, and IO2 to be HIGH when the distance is <60cm. When approaching, the scanner will trigger at 100cm. When moving away, the scanner will trigger again at 60cm. Hardware configuration: Sensor connector moved from PHOTOCELL to EXT I/O on PCB.
		Alt. trigger mode timeout [ms]	Maximum time the Scannerbox waits for double I/O sensor I/O's to be HI. Requires: 'Alt. trigger mode' = 'No' Hardware configuration: Sensor connector moved from PHOTOCELL to EXT I/O on PCB.
		Double I/O sensor polarity	'Yes' = Double I/O sensor is HI when not triggerd. (NC) 'No' = Double I/O sensor default behavior. (NO) Hardware configuration: - Sensor connector moved from PHOTOCELL to EXT I/O on PCB.
	Trigger Signal - General:	Sensor threshold [ms]	Time threshold before sensor changes state in ms.
		Sensor trigger polarity	'Yes' = Sensor is HI when not triggered. (NC) 'No' = Sensor default behavior. (NO)
	Trigger Signal - Single I/O:	Scanner 1 trigger polarity	'Yes' = Change polarity (NC) 'No' = Default Polarity (NO)
		Scanner 2 trigger polarity	'Yes' = Change polarity (NC) 'No' = Default Polarity (NO)
		Sensor active scanner	'1' = Only trigger scanner 1. '2' = Only trigger scanner 2. '3' = Trigger both scanners. Requires: Sensor Rising/Falling Edge = No Special scanmode = No
		Sensor rising/falling edge	'Yes' = System triggers on rising and falling edges. 'No' = System triggers only on rising edge.
		Special scan mode	'Yes' = Choose a scanner using Buttonbox button 2 or 3. Button 2 = scanner 1. Button 3 = scanner 2. Button 2 and 3 simultaneously = all scanners. Trigger the selected scanner with the sensor or button 1. 'No' = default button layout.
		Switch scanner with sensor	'Yes' = Scan with Scanner 1 on HI edge and Scanner 2 on LO edge. 'No' = Do not switch scanners. Requires: Sensor Rising/Falling Edge = Yes Special scanmode = No

Attachment 3: Extended ASCII

Hex	Name	Description
0	NUL	String terminator, empty byte
1	SOH	Start of Header
2	STX	Start of Text
3	ETX	End of Text
4	EOT	End of Transmission
5	ENQ	Enquiry
6	ACK	Acknowledge
7	BEL (\a)	Beep / alert
8	BS (\b)	Backspace
9	TAB (\t)	Horizontal tab
0A	LF (\n)	Newline
0B	VT (\v)	Vertical tab
0C	FF (\f)	Form Feed / page break
0D	CR (\r)	Return to start of line
0E	SO	Shift Out
0F	SI	Shift In

Hex	Name	Description
10	DLE	Data Link Escape
11	DC1	Device Control 1 (XON)
12	DC2	Device Control 2
13	DC3	Device Control 3 (XOFF)
14	DC4	Device Control 4
15	NAK	Negative Acknowledge
16	SYN	Synchronize
17	ETB	End of Transmission Block
18	CAN	Cancel
19	EM	End of Medium
1A	SUB	Substitute
1B	ESC	Start of ANSI codes
1C	FS	File Separator
1D	GS	Group Separator
1E	RS	Record Separator
1F	US	Unit Separator

Attachment 4: Hardware Reset ScanSystems

1. Carefully open the Scannerbox.
2. Inside, you will see the PCB with the DIP switches.
3. To perform a hardware factory reset:
    - Ensure the Scannerbox is powered on.
    - Move all DIP switches fully to the left.
    - Finally, move them back fully to the right.