

123RFID Desktop



ZEBRA

User Guide

2024/06/17

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About This Guide

Icon Conventions

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



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



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



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



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



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

Notational Conventions

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

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

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

Service Information

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

When contacting support, please have the following information available:

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

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

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

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

Application Features

123RFID Desktop is a software tool that simplifies reader setup. The application finds and connects to a reader with three simple clicks and optimizes Zebra passive RFID fixed and handheld readers. Supported models include FX7500, FX9600, FXR90, ATR7000, RFD40, and RFD90.

- **Connect** - allows users to search for readers on the local subnet, USB port, or Bluetooth.
- **Read** - allows users to start an inventory, view summary metrics on tag reads, and sort, filter, and export tag data. Select an antenna and set the power level to begin building an inventory.
- **Configure** - allows users to configure reader and scanner settings. Settings can be saved to a file or as a printed report.
- **Firmware** - allows users to update the firmware on up to 20 devices.

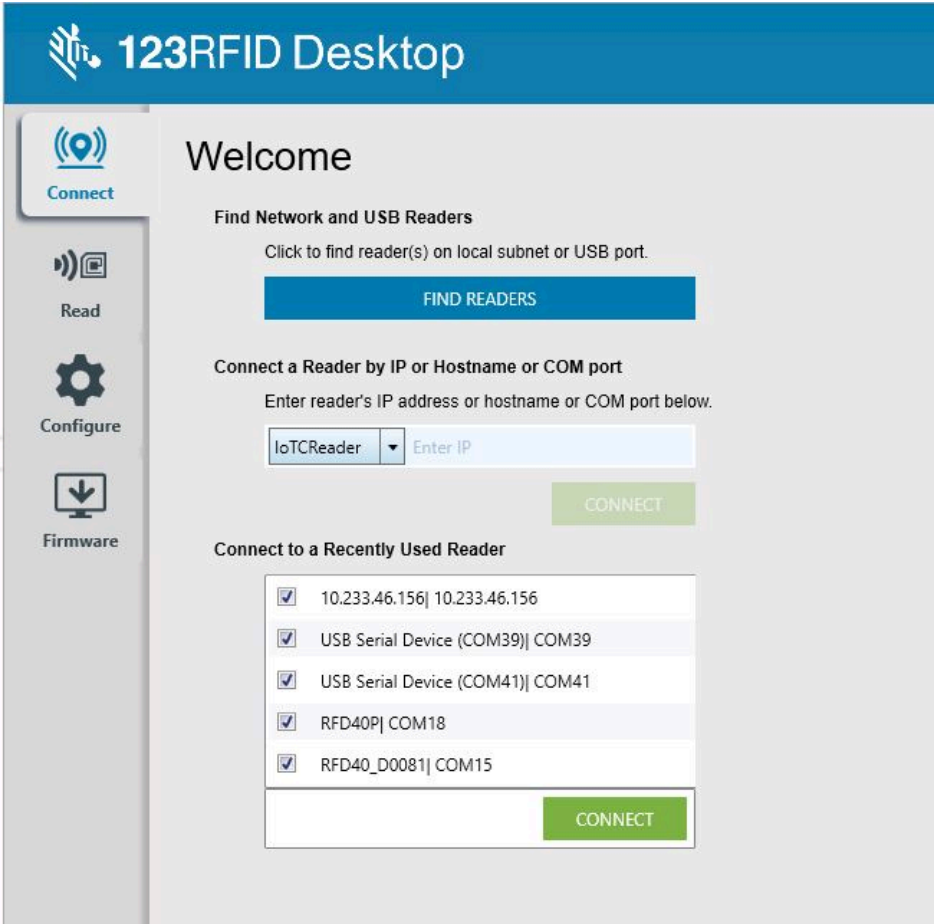


NOTE: The **Scan** tab is available only for connected sleds that have an imager.

Connect

Locate readers on the local subnet or via a USB port by clicking **Find Readers** or by entering the IP, hostname, COM port, or by Bluetooth and clicking **Connect**.

Figure 1 Fixed Readers



NOTE: For RFD40 and RFD90, the drop-down under **Connect a Reader by IP or Hostname or COM port** states the model types.

View the **Available Readers** section and click **Connect** on one of the associated rows to connect to the specified reader.

Figure 2 Connected and Available Readers

The screenshot displays the 123RFID Desktop application interface. The top bar shows '2 Readers Connected' and navigation links for 'How to Videos' and 'Help with Discovery'. The main window is titled 'Reader Discovery' and is divided into two sections: 'Connected Readers' and 'Available Readers (14)'.

Connected Readers Table:

READ	DISCONNECT ALL	Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Antennas	Country Code
☐	DISCONNECT	IP 10.45.203.77:5086 RFD40-22055520100815.local.	RFD4031-G008700-US	10.45.203.77	212735201D0106	PAAFK300-004-R04	212735201D0108	30Sep21	●	USA
☐	DISCONNECT	IP 10.45.203.84:5086 RFD40-211555201D0064.local.	RFD4031-G108700-E8	10.45.203.84	211555201D0064	PAAFK300-004-R04	211555201D0064	04Jun21	●	ETSI

Available Readers (14) Table:

		Reader Name	Model	IP/COM Port	Firmware	Serial Number	Mfg. Date
PING	CONNECT	FX7500FE7B3 FX7500 RFID Reader	FX7500-4	10.45.203.94	3.21.21	17323010501565	2017-11-19
PING	CONNECT	FX9600F828F FX9600 RFID Reader	FX9600-8	10.45.203.72	3.21.23	17299010504038	2017-10-26
PING	CONNECT	10.45.203.57 FX9600F9924F	FX9600-8	10.45.203.93	3.21.21	19094010506807	2019-04-04
PING	CONNECT	ATR7000F30EFE ATR RFID Reader	ATR7000-480	10.45.203.241	2.16.29	19027010503649	2019-01-27
PING	CONNECT	ATR7000F3F316 ATR RFID Reader	ATR7000-480	10.45.203.242	3.21.24	-	-
PING	CONNECT	FX9600FC867A	FX9600-8	10.45.203.34	3.21.23	20269010554785	2020-09-25
PING	CONNECT	FX7500B09EE5 FX7500 RFID Reader	FX7500-4	10.45.203.62	3.21.21	17095010502847	2017-04-05
PING	CONNECT	FX75007FF625 FX7500 RFID Reader	FX7500-4	10.45.203.85	3.21.23	-	-
PING	CONNECT	IP 10.45.203.41:5086 RFD40-212735201D0067.local.	RFD40-212735201D0067.local.	10.45.203.41			
PING	CONNECT	IP 10.45.203.44:5086 RFD90-212295201E0002.local.	RFD90-212295201E0002.local.	10.45.203.44			

At the bottom right, there is a 'Fixed readers' dropdown, an 'Enter IP or hostname' input field, and buttons for 'PING', 'CONNECT', and 'FIND READERS'.

Connecting to the Multi-Slot Cradle

The 123RFID Desktop tool discovers, connects, and performs RFID and scanning operations for Zebra UHF RFID sleds using the multi-slot cradle. This section provides the steps necessary to discover and connect to the multi-slot cradle.

To discover and connect to the device:

1. Keep the device in the cradle and run 123RFID Desktop.
2. Click **Find Readers** to view available devices to connect to.
3. Click **Connect** next to the device to connect to it.

When connected, the device is listed under the **Connected Readers** section.

To connect to a device via IP address:

1. Keep the sled docked in the cradle for up to two minutes while the DHCP allocates the IP address.

Application Features

2. Choose any of the devices from the available readers section and click **Connect**.

123RFID Desktop 0 Readers Connected. How to Videos Help with Discovery

Reader Discovery

Connected Readers

Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Antennas	Country Code
-------------	-------	-------------	-----------	----------	---------------	-----------	----------	--------------

No readers connected.
1. Click FIND READERS below to discover readers.
2. Click CONNECT.

Available Readers (15)

	Reader Name	Model	IP/COM Port	Firmware	Serial Number	Mfg. Date
PING CONNECT	ATR7000F3F316 ATR RFID Reader ATR7000F3F316	ATR7000-480	10.45.203.242	3.21.24	-	-
PING CONNECT	FX7500FF625 FX7500 RFID Reader FX7500FF625	FX7500-4	10.45.203.85	3.21.23	-	-
PING CONNECT	FX7500B09E5 FX7500 RFID Reader FX7500B09E5	FX7500-4	10.45.203.62	3.21.21	17095010502847	2017-04-05
PING CONNECT	FX9600F828F FX9600 RFID Reader FX9600F828F	FX9600-8	10.45.203.72	3.21.23	17299010504038	2017-10-26
PING CONNECT	ATR7000F30EFE ATR RFID Reader ATR7000F30EFE	ATR7000-480	10.45.203.241	2.16.29	19027010503649	2019-01-27
PING CONNECT	FX7500FE7B3 FX7500 RFID Reader FX7500FE7B3	FX7500-4	10.45.203.94	3.21.21	17323010501565	2017-11-19
PING CONNECT	FX9600FC867A	FX9600-8	10.45.203.34	3.21.23	20269010554785	2020-09-25
PING CONNECT	FX9600FCAC00 FX9600 RFID Reader FX9600FCAC00	FX9600-4	10.45.203.75	3.21.23	20044010562043	2020-02-13
PING CONNECT	FX9600F28C7F FX9600 RFID Reader FX9600F28C7F	FX9600-8	10.45.203.60	3.10.30	18170010503268	2018-06-19
PING CONNECT	FX7500EFD0FA FX7500 RFID Reader FX7500EFD0FA	FX7500-4	10.45.203.80	3.21.23	17319010503769	2017-11-15

Fixed readers Enter IP or hostname PING CONNECT FIND READERS

If the connection is successful, the reader is listed in the **Connected Readers** section.

Application Features

2 Readers Connected

How to Videos

Help with Discovery

Connect

Read

Scan

Configure

Firmware

Reader Discovery

Connected Readers

	READ	DISCONNECT ALL	Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Antennas	Country Code
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☐	DISCONNECT		IP 10.45.203.84:5086 RFD40-211555201D0064.local.	RFD4031-G108700-E8	10.45.203.84	211555201D0064	FAAFK500-004-R04	211555201D0064	04Jun21	●	ETSI

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PING	CONNECT	FX9600EFB28F FX9600 RFID Reader	FX9600-8	10.45.203.72	3.21.23	17299010504038	2017-10-26
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PING	CONNECT	ATR7000F30EFE ATR RFID Reader	ATR7000-480	10.45.203.241	2.16.29	19027010503649	2019-01-27
PING	CONNECT	ATR7000F3F316 ATR RFID Reader	ATR7000-480	10.45.203.242	3.21.24	-	-
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PING	CONNECT	FX75007FF625 FX7500 RFID Reader	FX7500-4	10.45.203.85	3.21.23	-	-
PING	CONNECT	IP 10.45.203.41:5086 RFD40-212735201D0067.local.	RFD40-212735201D0067.local.	10.45.203.41			
PING	CONNECT	IP 10.45.203.44:5086 RFD90-212295201E0002.local.	RFD90-212295201E0002.local.	10.45.203.44			

Fixed readers

Enter IP or hostname

PING

CONNECT

FIND READERS

11

Read

Use the Read feature to manage an inventory. View summary metrics on tag reads by reader or sort, filter, and export tag data to a file. Select the antenna and set the power level to start an inventory.

Figure 3 Data View

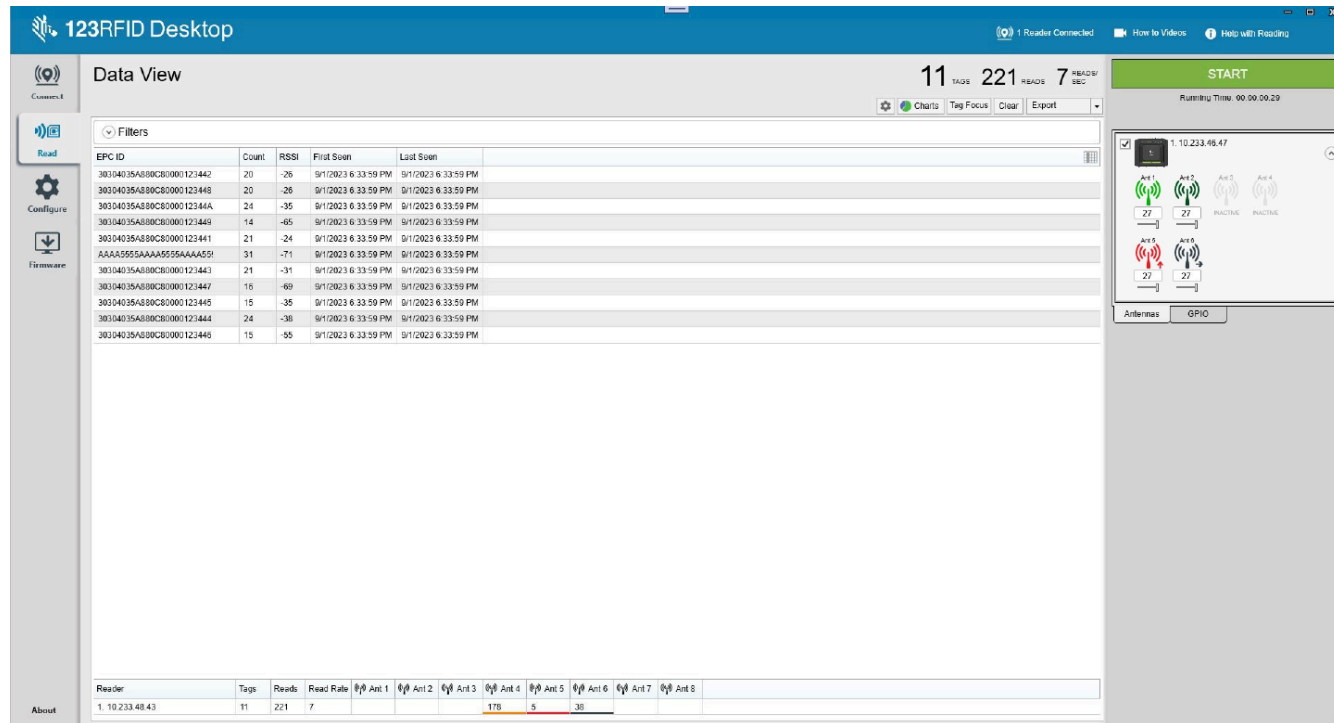


Table 1 Tag Read Options

Feature	Description
Start an Inventory	Click Start to start reading tags.
Highlight Tags	Click the Gear Icon  to highlight tags based on the last time seen.
Track Tags	Click Tag Focus to enable the tracking of applicable tags such as Monza4, 5, and R6.  NOTE: Tag Focus prevents read redundancy by suppressing tags that have already been read. This capability prevents multiple reads of the same tags, allowing for more accurate reading of hard-to-read tags.

Table 1 Tag Read Options (Continued)

Feature	Description
Export Tag Data	Click Export to download the inventory data for offline viewing. • Export Summary – download a snapshot of all the tag reads on the Read screen. • Export History – download the timeline data for tag reads.
View Tag Details	Click the spreadsheet icon.  to view tag details such as Tag ID and User Memory data.
View Performance Data	Click Charts  to view tag performance data. Use Pie Charts to visualize a distribution of tag reads across enabled devices.

Filtering Tags

Filter tags based on an Asset Tags List (ATL) or by reader in Data View. Use Data View to filter by EPC pattern, RSSI value, or Last Time Seen.

1. Click **Filters** to select the following filter options.

Figure 4 Data View

123RFID Desktop 2 Readers Connected How to Videos Help with Reading

Data View 0 TAGS 0 READS 0 READS/SEC

Filters
Apply Asset Tag List Select a file Show Data From All Readers

EPC ID	Count	RSSI	First Seen	Last Seen
[Empty table body]				

ATR Reader	Tags	Reads	Read Rate	400	401	402	403	404	405	406	407	408	409	410
ATR7000F30F0B.008ASD.ZEBRA.LAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Reader	Tags	Reads	Read Rate	Ant 1	Ant 2	Ant 3	Ant 4	A
1. FX7500F1122C.008ASD.ZEBRA.LAN	0	0	0	0	0			

START
Running Time: 00:00:00:00

Antennas
1. ATR7000F30F0B.008ASD.ZEBRA.LAN (36)
2. FX7500F1122C.008ASD.ZEBRA.LAN (Ant 1: 30, Ant 2: 30, Ant 3: INACTIVE, Ant 4: INACTIVE)

GPIO

2. Click **Select a File** to filter tags based on an ATL file.
3. Click **All Readers** to filter by reader.
4. Click the cylinder icon  to filter tag data at the application level by:
 - a) EPC Pattern - specify whether the filtered EPC data will include/exclude the filter string.
 - b) RSSI Value - filter tags that have RSSI value greater than the RSSI filter specified only.
 - c) Time Last Seen - filter tags that were last seen in the time duration specified only.

Editing Tag Details

Access and locate tags based on EPC ID.

1. Select the row and click the Tag Details icon  to edit tag details.

The screenshot displays the 123RFID Desktop application window. The top status bar shows "1 Reader Connected". On the left sidebar, there are icons for Connect, Read, Configure, Firmware, and About.

Data View

EPC ID	Count	RSSI	First Seen	Last Seen
300833B2DD09014000000000	808	-67	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM
000000000000000000000002A5	68	-44	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM
E280689400040017790E874	68	-45	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM
A2FF33B2DD09014000000000	68	-60	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM
2F330000AABBA00AAABA00AA	68	-40	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM
2F2403447334C310000EDCE	68	-51	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM
AAB8222DD0901400000000AA	37	-68	7/6/2021 10:48:13 AM	7/6/2021 10:48:13 AM

Filters

[Filter input field]

Edit Tag Details Dialog

Access Operations | Tag Locate

EPC: 00 00 00 E280689400040017790E874 [WRITE]
CRC PC PASSWORD 96 bits

TID: E2 -80 -68 -84-20-00-40-01-77-90-BB-74
108 bits

USER: 0 00 Unsupported [WRITE]
WORD OFFSET PASSWORD 0 bits

00 KIR Password Mem READ WRITE [LOCK]
PASSWORD MEMORY BANK LOCK PRIVILEGE

00 [KILL]
PASSWORD

[READ] Read EPC was successful. [HEX] [ASCII]

Antennas Section

- 1 RFD40 CSM Device1 (COM2) 100%
- Fastest Read Profile

- 2.** Next, click the **Tag Locate** tab to start locating tags based on the EPC ID.

Edit Tag Details

Access Operations | **Tag Locate**

EPC: 00 00 00 303600CC416B02AD9CE1943E

CRC PC PASSWORD 96 bits

TID: E2 -00 -38 -11-60-00-64-11-01-C4-B1-B7-01-02-00-00-1
468 bits

USER: 0 00 00-00-00-00-00-00-00-00-00-00-0C

WORD OFFSET PASSWORD Showing 188 bits

00

PASSWORD MEMORY BANK LOCK PRIVILEGE

00

PASSWORD

Read EPC was successful.

Online Reader Configuration

Configure the reader using the 123RFID Desktop configuration wizard or load a saved configuration onto the reader.

Click **Edit Configuration on Reader** to edit the reader's settings and use the configuration tool to do the following:

- Assign names to the reader and the connected antennas.
- Set reader settings or reset them to factory defaults.
- Change the reader's region configuration.
- Create rules for your GPIO (General Purpose Input/Output) accessories on when to trigger inventory and output results.
- Save/print configurations to a file.
- Deploy the configuration file to a new device.

Click **Load a Saved Config File to a Reader** to load a saved configuration file to another connected reader from the PC.

Operating Mode Configuration

Use Operating Mode to configure a tag's antenna, trigger, communication settings, and applications.



NOTE: This feature is for IoT Readers.

Figure 5 Fixed Reader Operating Mode

The screenshot displays the 123RFID Desktop application interface. On the left is a vertical sidebar with icons and labels for 'Connect', 'Read', 'Configure' (highlighted with a gear icon), and 'Firmware'. The main area has a blue header with the '123RFID Desktop' logo. Below the header, there's a 'BACK' button and a reader status card showing an icon and the IP address '10.233.46.47'. The main content area is titled 'What do you want to do?' and prompts the user to select an action. Two large blue buttons are available: 'Load a "Saved Config" File to Reader' and 'Edit Reader Specific Configuration'. Below these, the 'IoT Connector Inventory Specific Settings' section is shown, which includes a 'Next' button and several configuration options: 'Mode' (Simple, Conveyor, Inventory, Portal, Custom - selected), 'Environment' (High Interference, Low Interference, Very High Interference (DRM), Auto Detect, Demo - selected), 'Tag ID Filter' (Operation: Disable, Match: prefix, Value: empty), 'Tag reporting' (Type: Periodic all antennas, Duration: 0 Seconds), 'RSSI Filter' (RSSI threshold slider from -85dBm to -28dBm, currently at -60dBm), and 'Cellular band filter' (Pre-selection checked).

The following settings are available to configure:

- **Mode** configure tag reporting protocol for different use cases. The options are
 - **Simple** - report all unique read tags.
 - **Inventory** - report all unique read tags in a given time interval, default 1 second.
 - **Portal** - report all unique read tags after the GPI start trigger.
 - **Conveyer** - report all unique read tags for each antenna.
 - **Custom** - report tag reads as defined by the user.

- **Environment** specify the amount of RFID interference in a given environment.
 - **High Interference (Default)** - operating in the presence of multi or dense readers.
 - **Low Interference** - operating in the presence of another reader, causing interference for a short time.
 - **Very High Interface** - the number of readers in the environment is greater than the number of available channels, or multiple readers operating in close proximity.
 - **Auto Detect** - use the application to access the environment and adjust.
 - **Demo** - demonstrate maximum reader performance in environments where there are no other readers.
- **Tag ID Filter** - filter tag reporting by ID defined by the user.
 - **Operation** - set the operation for the filter: include, exclude, or disable.
 - **Match** - match tag ID using prefixes, suffixes, or regex.
- **Tag Reporting** - set tag reporting to continuous, periodic (all antennas), or periodic (per antenna).
- **Cellular Band Filter** - provide noise cancellation for external non-RFID interference.

Region Configuration for Online Devices

Configure the appropriate settings based on the region where the reader is used.

Due to differing frequency requirements, there are several versions of the hardware.

The software limits the list of choices presented to those compatible with the hardware in use. Note that if only one option is compatible with the hardware, that option is selected automatically.

The following are the definitions of different fields that can be set:

- **Region of Operation** - choose the region for the country of operation. Select from the drop-down list that presents the regions that have given regulatory approval to be used with the current board.



NOTE: Region of operation configuration is applicable to worldwide readers only.

- **Communication Standard** - choose the communication standard from the list of standards supported by the chosen region. If a region supports only one standard the same is chosen automatically.
- **Frequency Hopping** - turn on the frequency hopping option. This option is displayed only if the chosen region of operation supports this.
- **Selected Channels** - select a subset of channels to operate upon (from the list of supported channels). This option is displayed only if the chosen region of operation supports this.

After applying region configurations, click **Set** to save the changes to the reader, and then select the **I understand** checkbox to confirm

Antenna Configuration

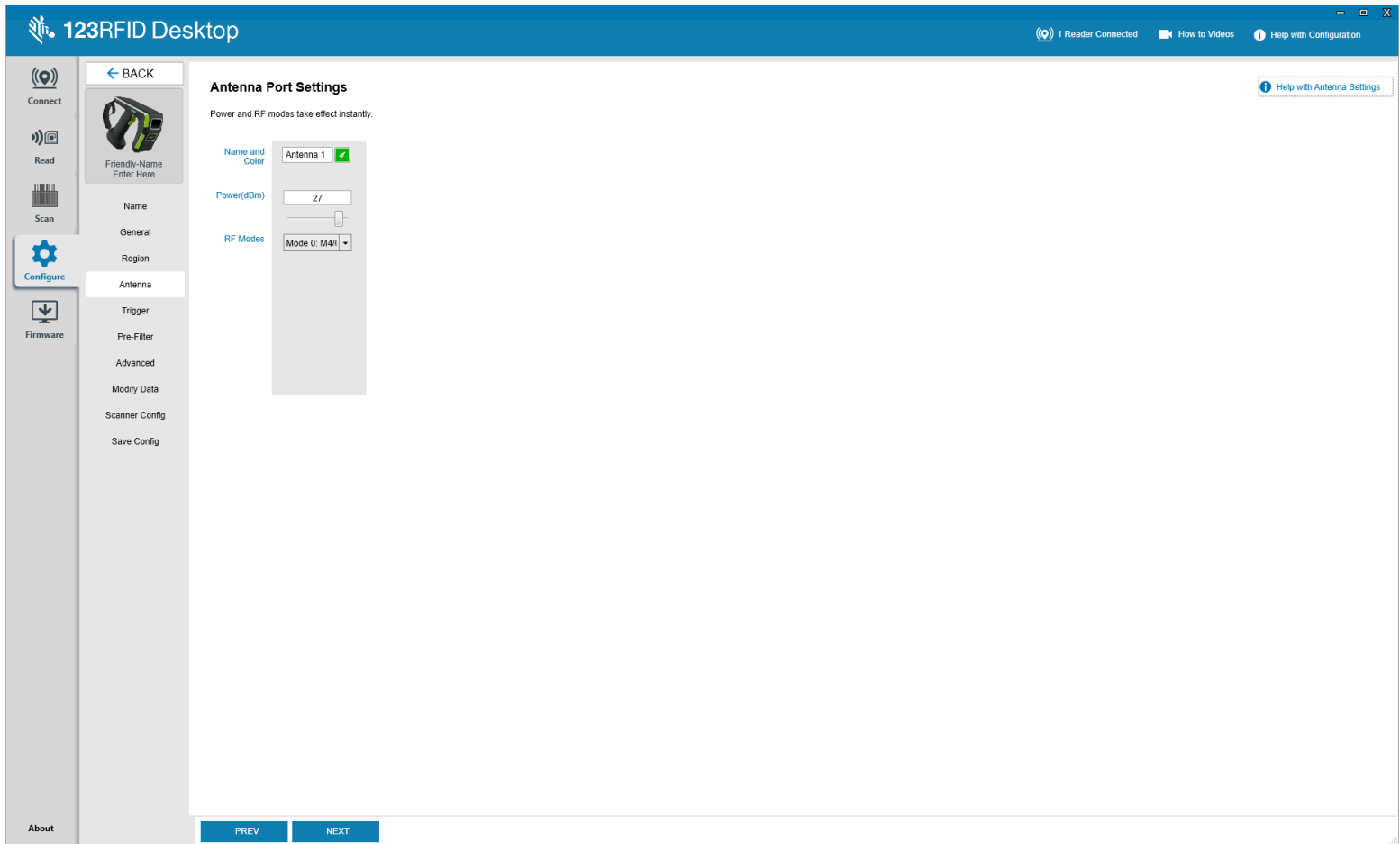
Configure Antenna Port settings for RFID sleds and fixed readers using 123RFID Desktop. The number of antennas is dependent upon reader type.

Configurable antenna settings for RFD40 and RFD90 RFID sleds include:

- Name and Color
- Power (dBm)

- RF Mode

Figure 6 RFD90 Antenna Settings



NOTE: Power and RF Mode changes are applied to the device instantly.

Configurable antenna settings for FX7500 fixed reader settings include:

- Name and Color
- Enable/Disable
- Power (dBm)
- RF Mode
- Dwell Time

Figure 7 FX75000 Antenna Settings

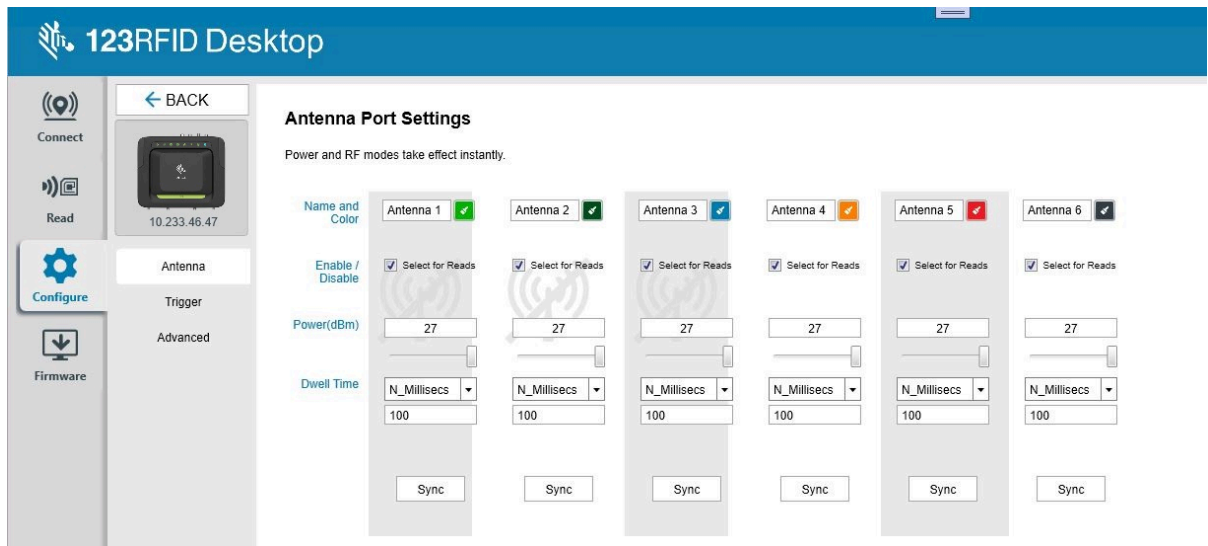
The screenshot shows the 123RFID Desktop application interface. The top bar includes the application name, a status indicator for '1 Reader Connected', and links for 'How to Videos' and 'Help with Configuration'. The left sidebar contains navigation options: Connect, Read, Configure (selected), Firmware, and About. The main area is titled 'Antenna Port Settings' and includes a 'BACK' button. Below the title, a note states 'Power and RF modes take effect instantly.' The settings are organized into four columns for Antenna 1, Antenna 2, Antenna 3, and Antenna 4. Each column has a 'Name and Color' section with a color indicator, an 'Enable / Disable' section with a 'Select for Reads' checkbox, a 'Power(dBm)' section with a value of 30 and a slider, an 'RF Modes' section with a 'Maximum Da' dropdown, and a 'Dwell Time' section with an 'N_Millisecs' dropdown and a value of 400. Each column also has a 'Sync' button. At the bottom, there are 'PREV' and 'NEXT' buttons. A 'Help with Antenna Port Settings' link is located in the top right corner of the main area.

Antenna 1	Antenna 2	Antenna 3	Antenna 4
Name and Color: Antenna 1 (Green)	Name and Color: Antenna 2 (Green)	Name and Color: Antenna 3 (Blue)	Name and Color: Antenna 4 (Orange)
Enable / Disable: ☒ Select for Reads	Enable / Disable: ☒ Select for Reads	Enable / Disable: ☒ Select for Reads	Enable / Disable: ☒ Select for Reads
Power(dBm): 30	Power(dBm): 30	Power(dBm): 30	Power(dBm): 30
RF Modes: Maximum Da	RF Modes: Maximum Da	RF Modes: Maximum Da	RF Modes: Maximum Da
Dwell Time: N_Millisecs (400)	Dwell Time: N_Millisecs (400)	Dwell Time: N_Millisecs (400)	Dwell Time: N_Millisecs (400)
Sync	Sync	Sync	Sync

Configurable antenna settings for FXR90 fixed reader settings include:

- Name and Color
- Enable/Disable
- Power (dBm)
- Dwell Time

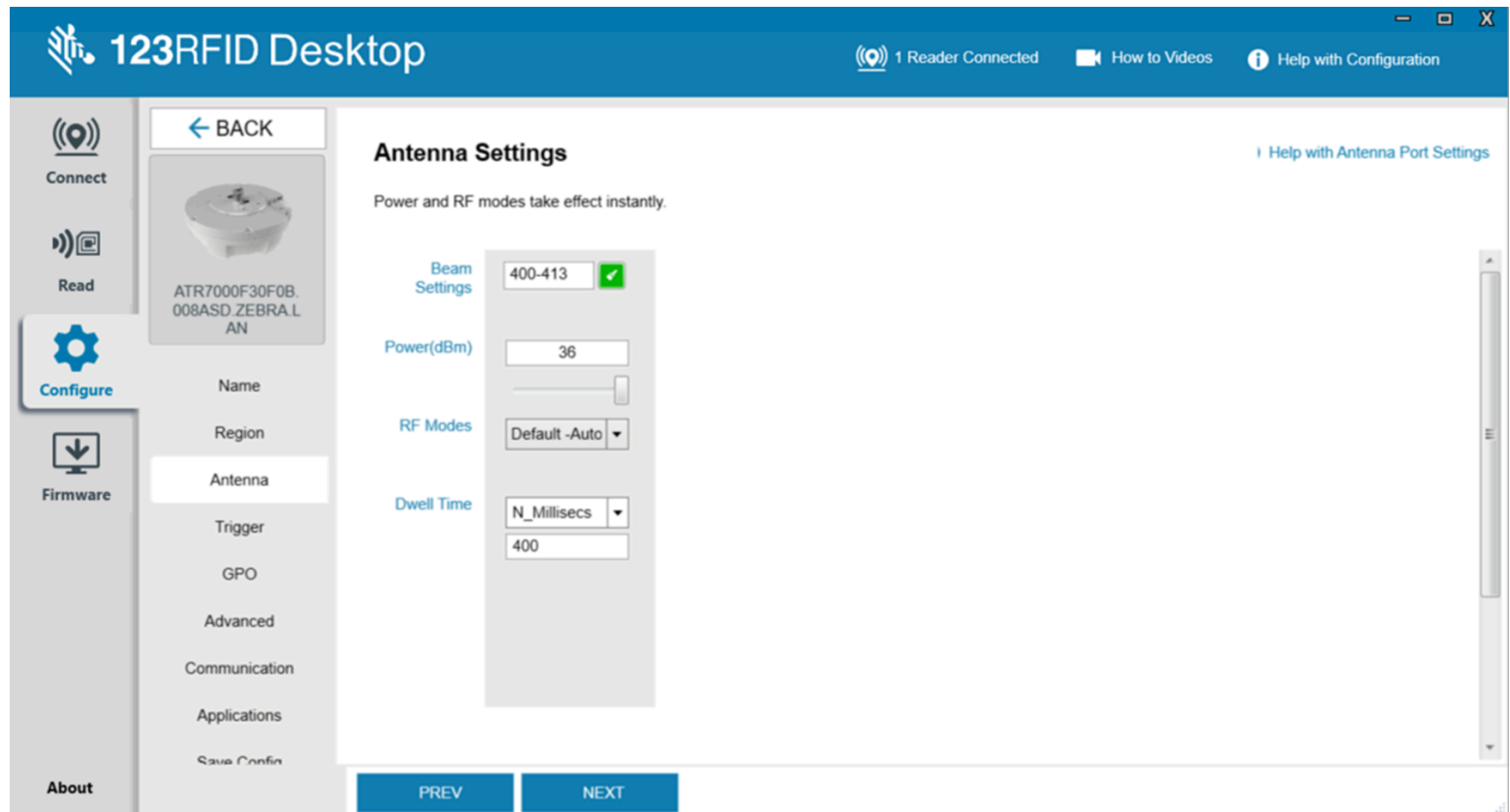
Figure 8 FXR90 Antenna Port Settings



Configurable ATR7000 advanced array reader settings include:

- Beam Settings
- Power (dBm)
- RF Modes
- Dwell Time

Figure 9 ATR7000 Antenna Settings



Saving an Online Configuration

Save or print reader configuration settings to a file, export IoT Connector configurations, or reset the sled to factory defaults.

Figure 10 RFD90 Reader Configuration

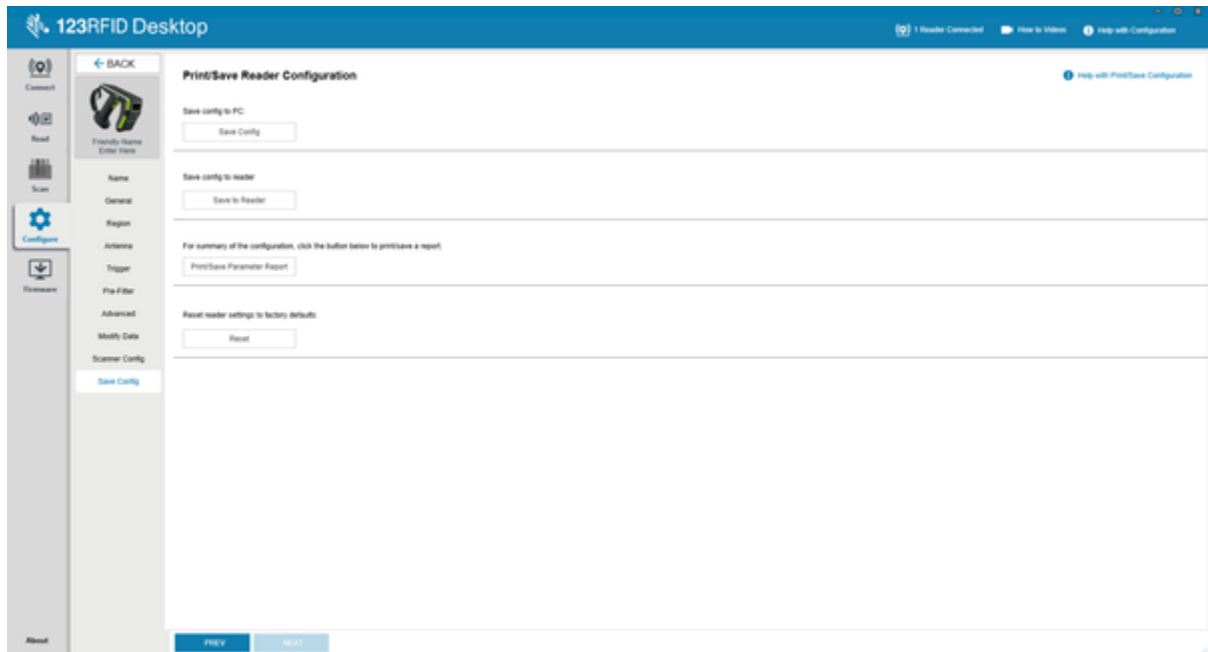
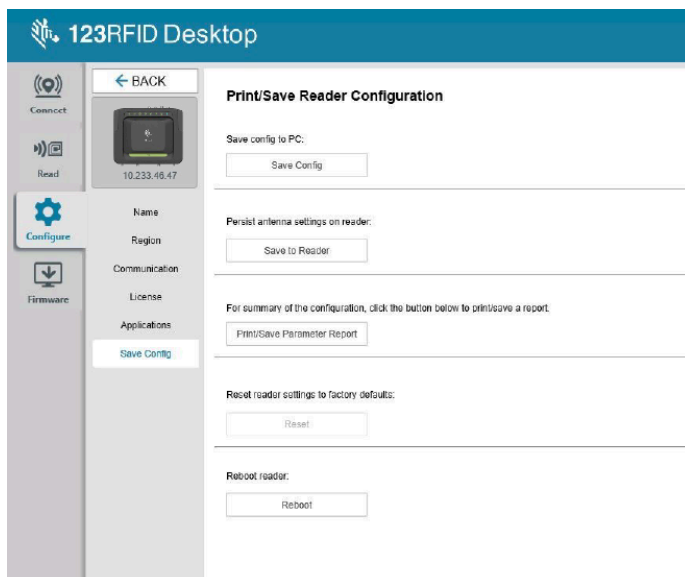


Figure 11 FXR90 Reader Configuration



- Click **Save Config** to save settings to a file on a PC.
- Click **Save to Reader** to push antenna settings onto the reader.
- Click **Export** to export IoT Connector configurations.

- Click **Print/Save Parameter Report** to print settings for a report.
- Click **Reset** to reset antenna settings to factory defaults.
- Click **Reboot** to reboot the reader.



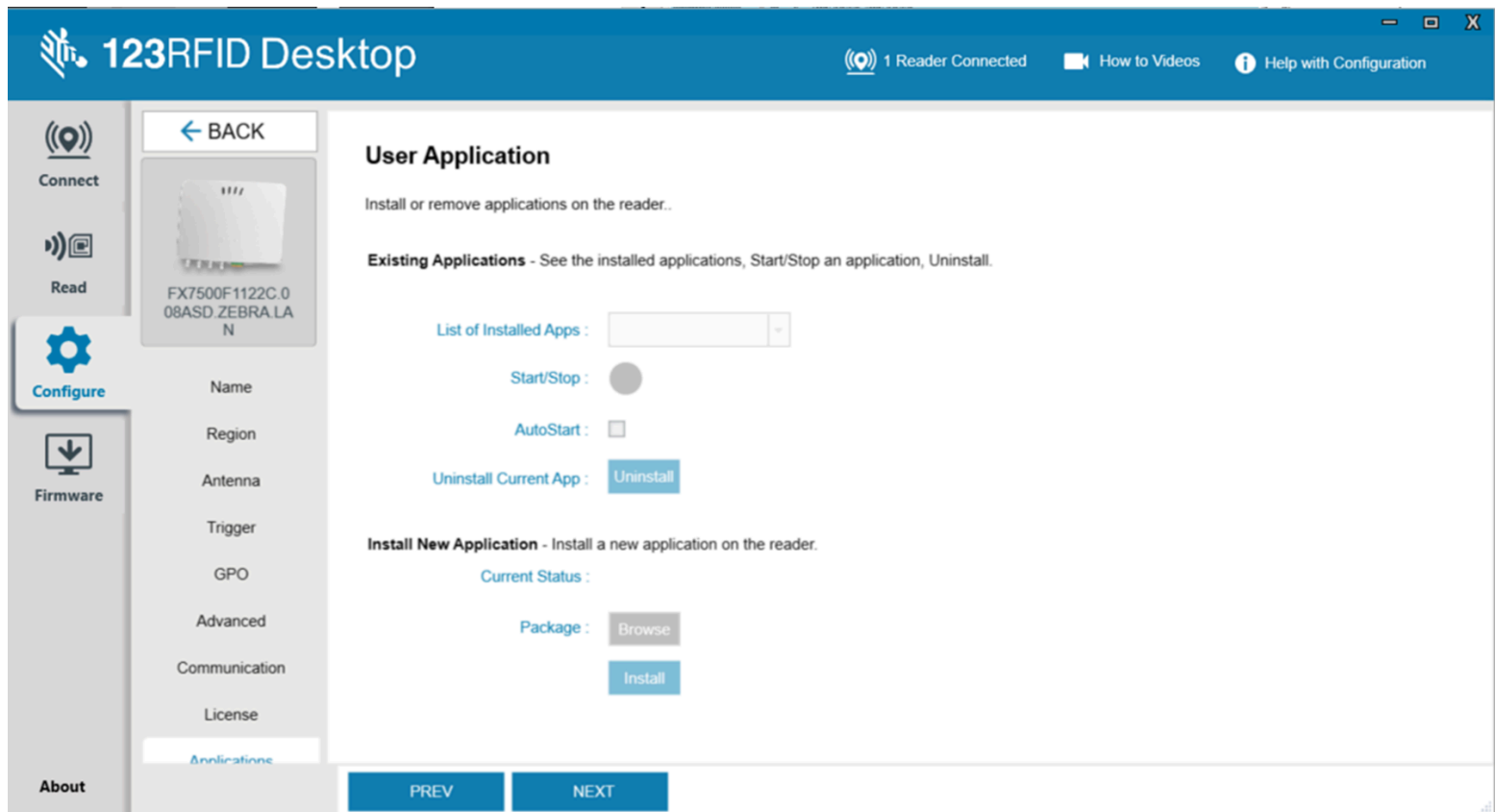
NOTE: Reset to factory default is available for connected readers under the **Save Config** tab.

For information on extending the export to the IoT Connector operating configuration with additional settings, such as operation triggers and GPO, refer to zebradevs.github.io/rfid-ziotc-docs/.

Configuring Reader Applications

Install or remove applications on the reader.

Figure 12 Fixed Reader User Applications



License Management

Use license manager to acquire, release, and view available licenses for FX readers. Licenses are necessary for Ethernet IP, Profinet, and Modbus protocols.

1. Manage licenses on the reader by completing the following form fields:
 - License Operation
 - Device
 - Install Run Application
 - Server Type
 - Server URL
 - Activation ID
2. Click **Activate** to activate the license based on the credentials provided.
3. View **Available Licenses** on the reader with details including:
 - License Index
 - License Name
 - License Version
 - Expiration Date
 - License Count
 - Host ID

Figure 13 License Manager

License Manager

License Manager enables user to acquire, release and view the available licenses provided they are valid.

Manage License - Acquire and release licenses on the reader.

License Operation:

Device:

Install Run application: ☐

Server Type:

Server URL:

Activation ID:

Available License(s) - List the available and valid license(s) informations.

License Index	License Name	License Version	Expiry Date	License Count	Host ID

Serial Port Configuration



NOTE: Serial Port configuration is available for FX9600 fixed readers only.

Configurable Port Settings include:

- Free Port - when enabled, this setting frees the serial port from internal usage and opens the port to be used by any application to send or receive data over the serial port.

Free Port



- Debug Port (Default Configuration) - configures the RS232 port as the Debug port to obtain kernel and system debug messages.

Debug Port



Configure Debug Port

Baud Rate :

Parity :

Data Bits :

Flow Control :

Stop Bits :

- Push Data - enables serial port configuration, inventory operations, and data to push over the serial console.

Push Data

☒ **Configure Serial Port**

Baud Rate : Parity :

Data Bits : Flow Control :

Stop Bits :

Inventory Control

Auto Start : ☐ Periodic Reporting : Sec

Session :

Start Trigger :

Stop Trigger :

Tag Field Selection

EPC : ☐ RSSI : ☐

PC : ☐ Seen Count : ☐

Antenna ID : ☐ Time Stamp : ☐

Channel Index : ☐ Phase : ☐

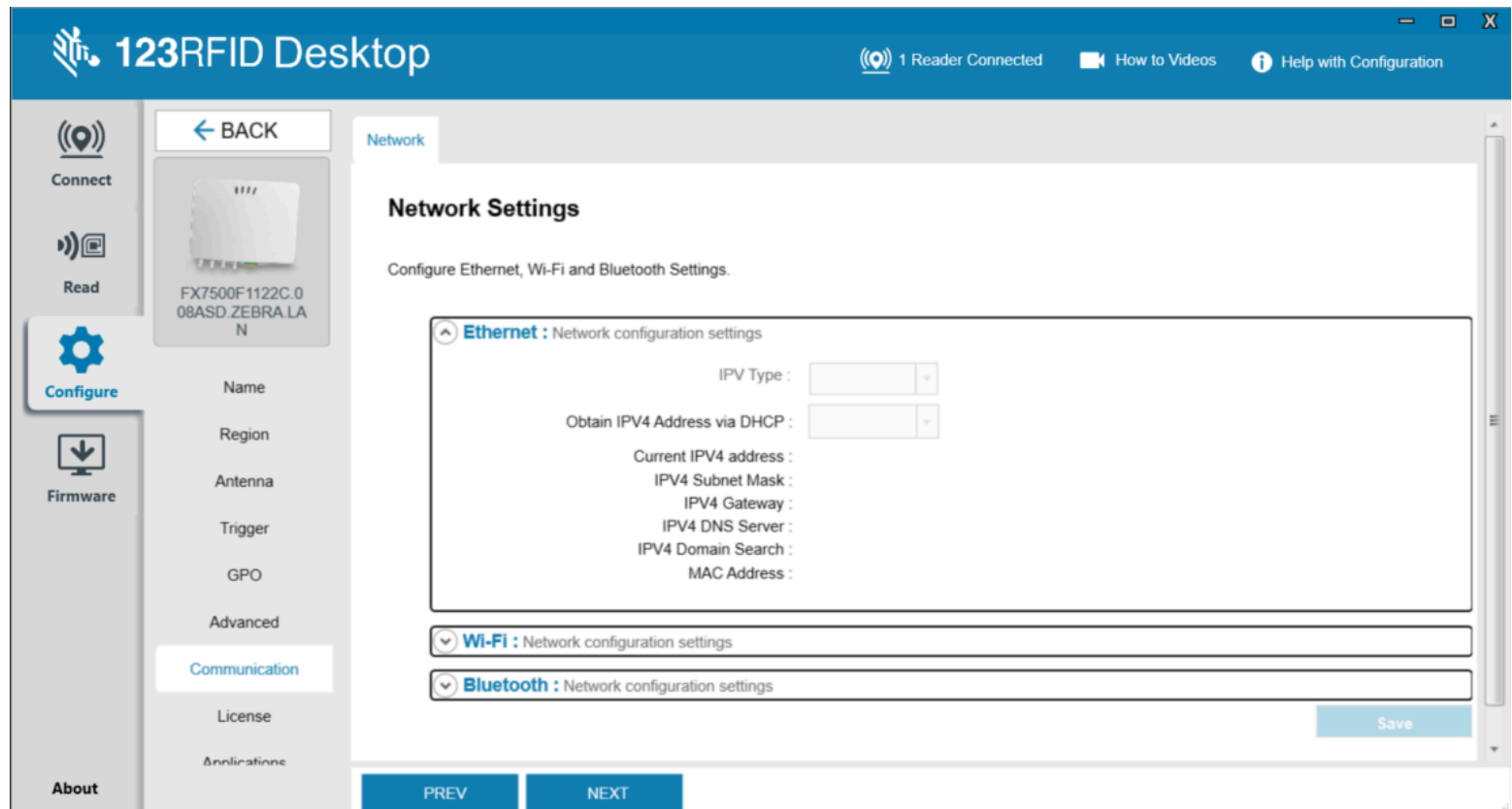
Communication Settings

Configure Ethernet, Wi-Fi, and Bluetooth Settings for connected FX readers.

Configurable Ethernet Settings include:

- IPV Type
- Obtain IPV4 Address via DHCP

Figure 14 Fixed Reader Network Settings



Configuring Advanced Reader Parameters

Set all the advanced reader parameters, including setting antenna cable compensation values.

Figure 15 FXR90 Advanced Settings

123RFID Desktop 1 Reader Connected How to Videos Help with Configuration

Advanced Settings
Parameter changes take effect instantly.
☒ Enable Editing of Advanced Settings

Name	Antenna 1	Antenna 2	Antenna 3	Antenna 4	Antenna 5	Antenna 6
Antenna Singulation	SESSION_0	SESSION_0	SESSION_0	SESSION_0	SESSION_0	SESSION_0
State Aware	☒ Active ☐ SL Asserted ☐ SL DeAsserted ☒ Both	☒ Active ☐ SL Asserted ☐ SL DeAsserted ☒ Both	☒ Active ☐ SL Asserted ☐ SL DeAsserted ☒ Both	☒ Active ☐ SL Asserted ☐ SL DeAsserted ☒ Both	☒ Active ☐ SL Asserted ☐ SL DeAsserted ☒ Both	☒ Active ☐ SL Asserted ☐ SL DeAsserted ☒ Both
Tag Population Estimate	60	60	100	100	60	60
Cable Compensation	Cable Loss (dB/100ft) click to access Cable Length (ft) click to access	Cable Loss (dB/100ft) click to access Cable Length (ft) click to access	Cable Loss (dB/100ft) click to access Cable Length (ft) click to access	Cable Loss (dB/100ft) click to access Cable Length (ft) click to access	Cable Loss (dB/100ft) click to access Cable Length (ft) click to access	Cable Loss (dB/100ft) click to access Cable Length (ft) click to access
	Sync	Sync	Sync	Sync	Sync	Sync

PREV NEXT

1. Select the **Enable Editing of Advanced Settings** checkbox to edit any parameter.
2. Select an **Antenna Singulation** setting to specify the reader session.
3. Select **State Aware** settings.
 - a. Select the **Active** checkbox to enable these settings.
4. Enter the expected **Tag Population** in the field of view of the antenna.
5. Set Antenna Cable Compensation values:
 - a. Specify the cable loss in terms of dB per 100 feet for the antenna cable used to connect the antenna port to the antenna.
 - b. Specify the cable length in feet of the cable used to connect this antenna port to the antenna.



NOTE: Setting a non-zero cable loss compensation value enables the reader to automatically increase the transmit power on this antenna port equivalent to the loss value

specified. Setting an inappropriate value of cable loss can break the regulatory setting and is illegal.

- c. Press Enter after entering the value in the textbox to set the cable loss compensation value.



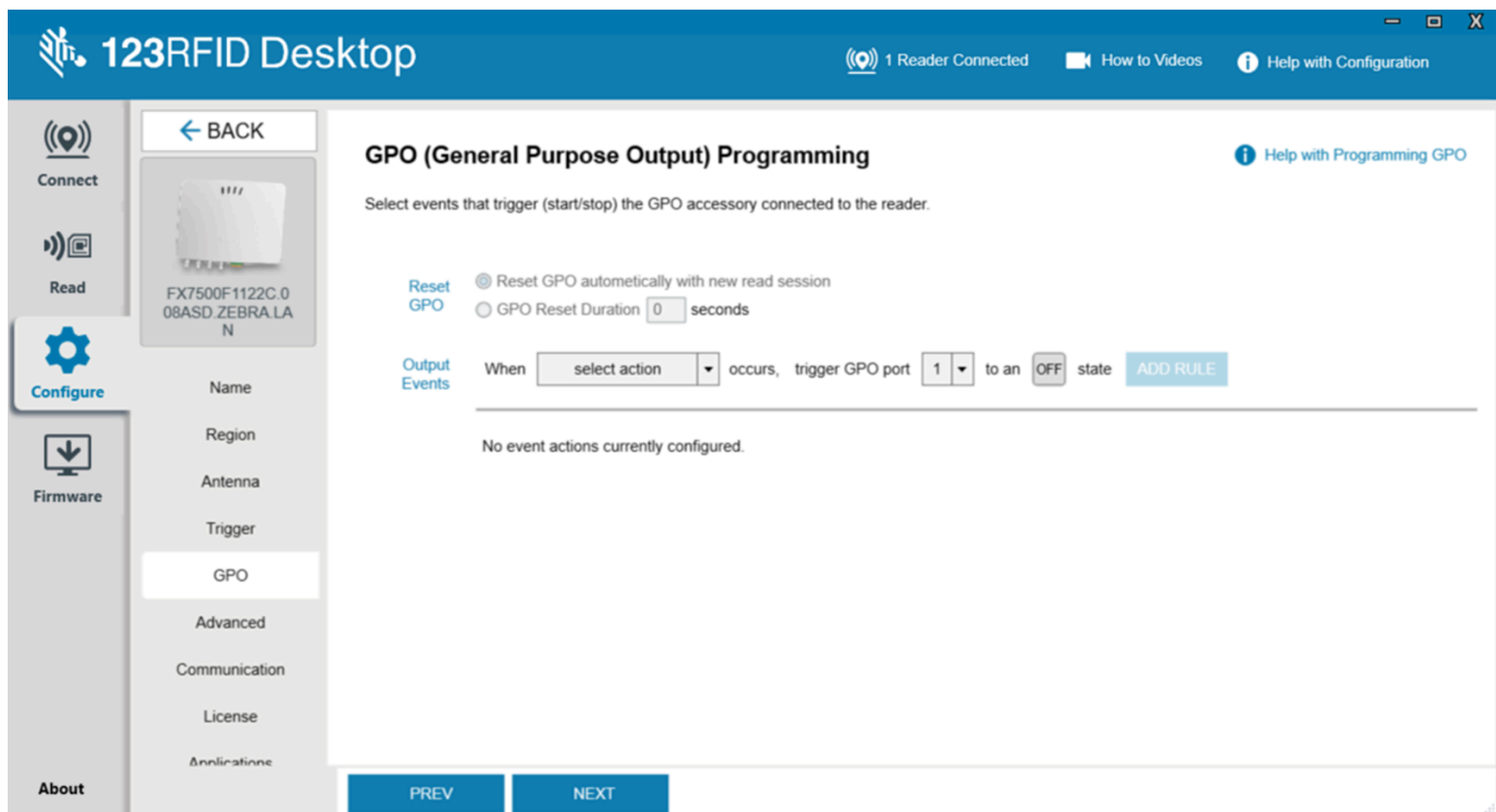
NOTE: Setting the cable loss compensation value requires restarting the reader server. The default antenna settings are applied after setting the cable loss compensation value. Accessing cable compensation values requires logging in to the reader.

6. For the RFD40 and RFD90, specify the maximum storage size to allocate for a tag EPC ID.

GPO Programming

Select events to start and stop triggering the GPO accessory connected to the reader.

Figure 16 Fixed Reader GPO Programming



Configuring Pre-Filters

Use pre-filters to identify tags to compare for tag filtering and determine where tag data is stored.

Pre-filtering options include:

- Enable Filter - enable or disable tag pattern pre-options based on standard RFID protocol.
- Tag Pattern - specify the hexadecimal character pattern to compare for tag filtering. Pattern matching is based on the Offset value with a maximum of 64-byte hexadecimal characters.

Application Features

- Target - indicate which flag shall be affected when pre-filter is applied from the following: SESSION S0, SESSION S1, SESSION S2, SESSION S3, SL FLAG.
- Memory Bank - specify the memory bank to apply the filter as EPC, TID, or User memory.
- Action - indicate whether matching tags assert or de-assert SL (Selected Flag) or set their inventoried flag to A or to B.

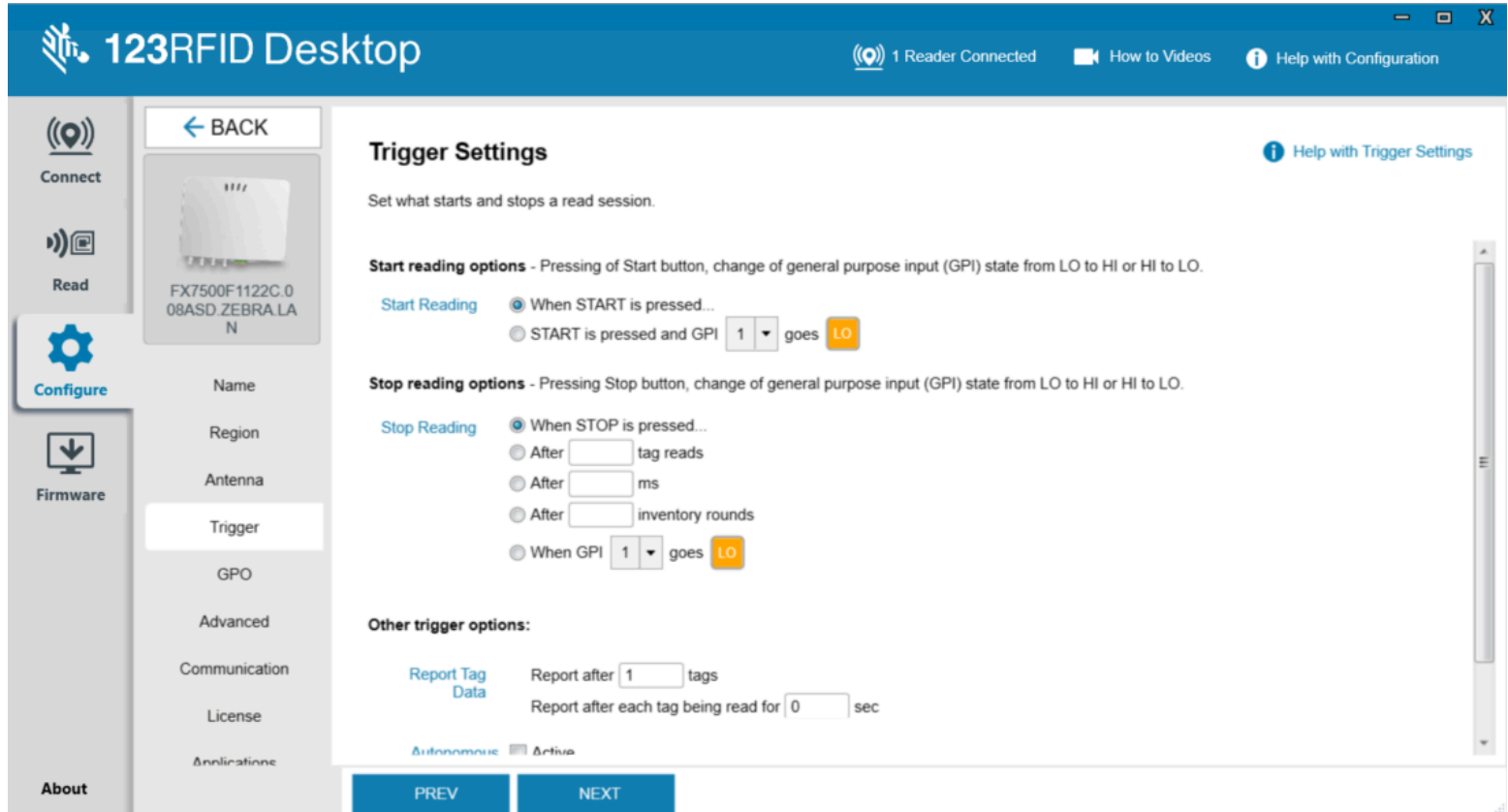
The screenshot displays the '123RFID Desktop' application interface. The top header bar is blue with the application name and status indicators: '1 Reader Connected', 'How to Videos', and 'Help with Configuration'. The left sidebar contains navigation icons for 'Connect', 'Read', 'Scan', 'Configure' (selected), and 'Firmware', along with an 'About' section at the bottom. The 'Configure' menu is expanded, showing options like 'Name', 'General', 'Region', 'Antenna', 'Trigger', 'Pre-Filter' (selected), 'Advanced', 'Modify Data', 'Scanner Config', and 'Save Config'. The main content area is titled 'Pre-filters settings' and includes a subtitle 'Configure pre-filter settings'. It features a table with four columns for 'Filter 1', 'Filter 2', 'Filter 3', and 'Filter 4'. Each column has a 'Tag Pattern' input field, a 'Target' dropdown menu (all set to 'SESSION_S0'), a 'Memory Bank' dropdown menu (all set to 'EPC'), an 'Action' dropdown menu (all set to 'INV_A_NOT_INV_J'), and an 'Offset(words)' input field (all set to '0'). The 'Enable Filter' checkbox for 'Filter 1' is checked, while the others are unchecked. At the bottom of the main area are 'PREV' and 'NEXT' buttons.

Enable Filter	Filter 1	Filter 2	Filter 3	Filter 4
Tag Pattern				
Target	SESSION_S0	SESSION_S0	SESSION_S0	SESSION_S0
Memory Bank	EPC	EPC	EPC	EPC
Action	INV_A_NOT_INV_J	INV_A_NOT_INV_J	INV_A_NOT_INV_J	INV_A_NOT_INV_J
Offset(words)	0	0	0	0

Trigger Configuration

Configure start and stopping conditions for reading tags and identify tag reporting parameters.

Figure 17 Fixed Reader Trigger Settings



Specify the start condition for a read:

- When **Start** is clicked from the **Read** panel.
- When **Start** is clicked, and then the GPI trigger of the device is pressed or released.
- When **Start** is clicked, and the input duration has passed.
- When the GPI trigger of the handheld device is pressed or released.

Specify a stopping condition for a read:

- When **Stop** is clicked from the **Read** panel.
- After a specified number of total tag reads.
- After a specified time (ms) has elapsed after tag reading was initiated.
- After a specified number of inventory rounds. An inventory round consists of reading a tag on each selected antenna port.
- After the GPI trigger of the device is released.

Configure Report Tag Data to occur after a specified number of tag reads or after each tag is read for a specified number of seconds.

When in Autonomous Mode, reports are sent only when a tag is seen for the first time. This setting is helpful in reducing the tag data network traffic by not reporting duplicated tag data. Configurable settings include:

- Never - reports no tag data.
- Immediate - reports data for a new tag immediately.
- Moderated - reports data for a new tag only after the specified moderation time (ms) and that tag was seen for the moderation duration.



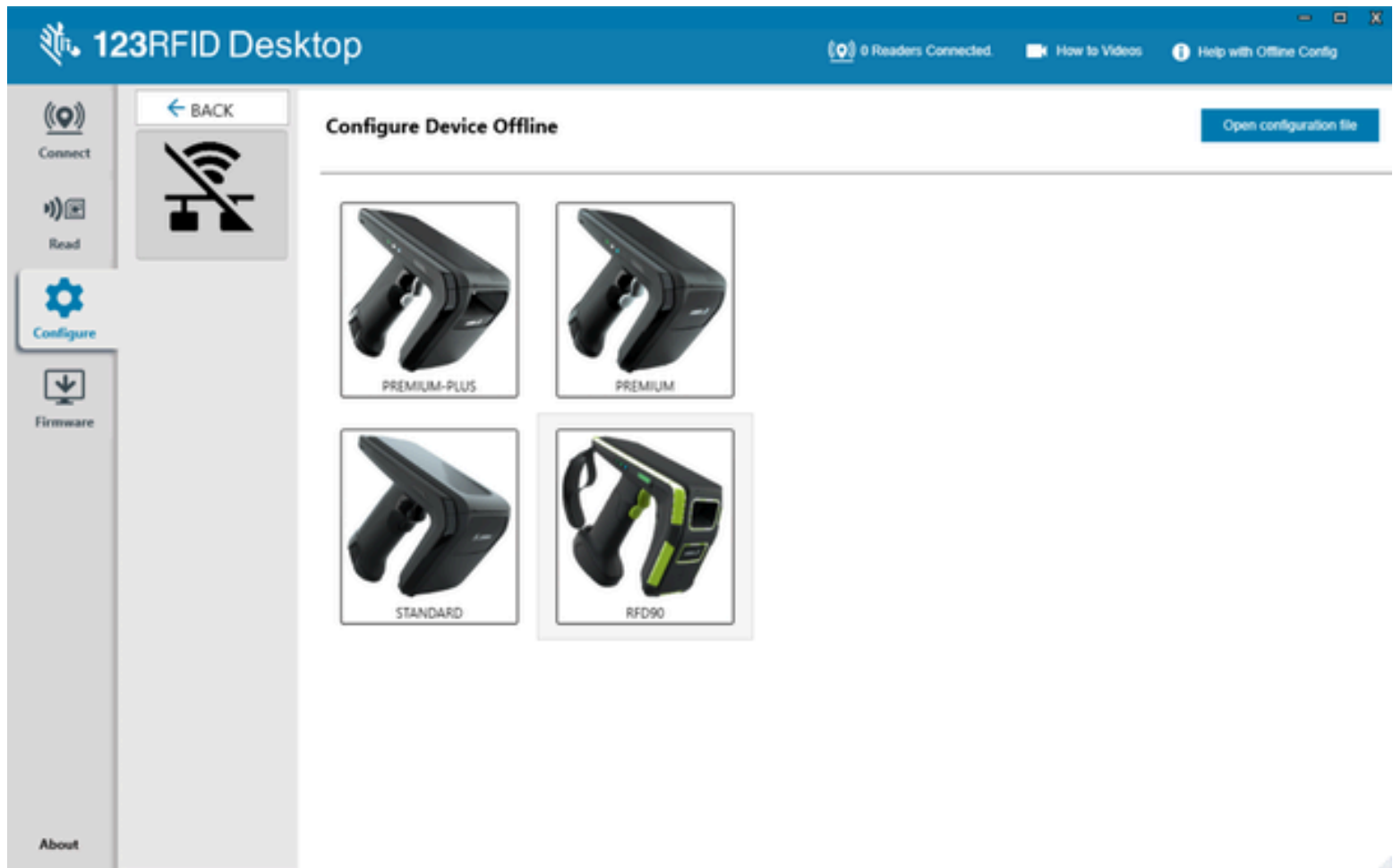
NOTE: Report tag data and Autonomous Mode are only available for FX7500 fixed readers.

Offline Reader Configuration

Use the reader configuration wizard to configure RFID, symbology, bluetooth, beeper, and data settings on RFD4030 Standard, RFD40 Premium, RFD40 Premium Plus, and RFD90 readers. Save the configuration to a file on the PC or print a report.

Click on the device icon to edit the offline reader's configuration or click **Open configuration file** to load a saved configuration file from the PC to a reader.

Figure 18 Configure Device Offline



- Assign names to the reader and the connected antennas.
- Set reader settings or reset them to factory defaults.
- Change the reader's region configuration.
- Create rules for your GPIO (General Purpose Input/Output) accessories on when to trigger inventory and output results.
- Save/print configurations to a file.
- Deploy the configuration file to a new device.



NOTE: Beeper volume, dynamic power, off mode timeout duration, and Bluetooth discovery settings are configurable for online readers only.

Reader Name

Add a description or name the reader by filling out the form fields on the name screen.

The screenshot shows the 123RFID Desktop application window. The title bar reads "123RFID Desktop" and includes status indicators for "0 Readers Connected", "How to Videos", and "Help with Offline Config". The left sidebar contains navigation options: "Connect", "Read", "Configure" (highlighted), "Firmware", and "About". The "Configure" section is expanded, showing sub-options: "NAME NOTES", "RFID", "SCAN", "GENERAL", "MODIFY DATA", and "LOAD AND PRINT". The main content area is titled "NAME AND NOTES" and contains a message: "Please be sure to give your settings a configuration name. You can also add notes." Below this, there is a "Configuration Name" field with the text "Factory Default" and a "16 character limit" warning. A "Notes" section with a large text area is also present.

RFID Reader Configuration

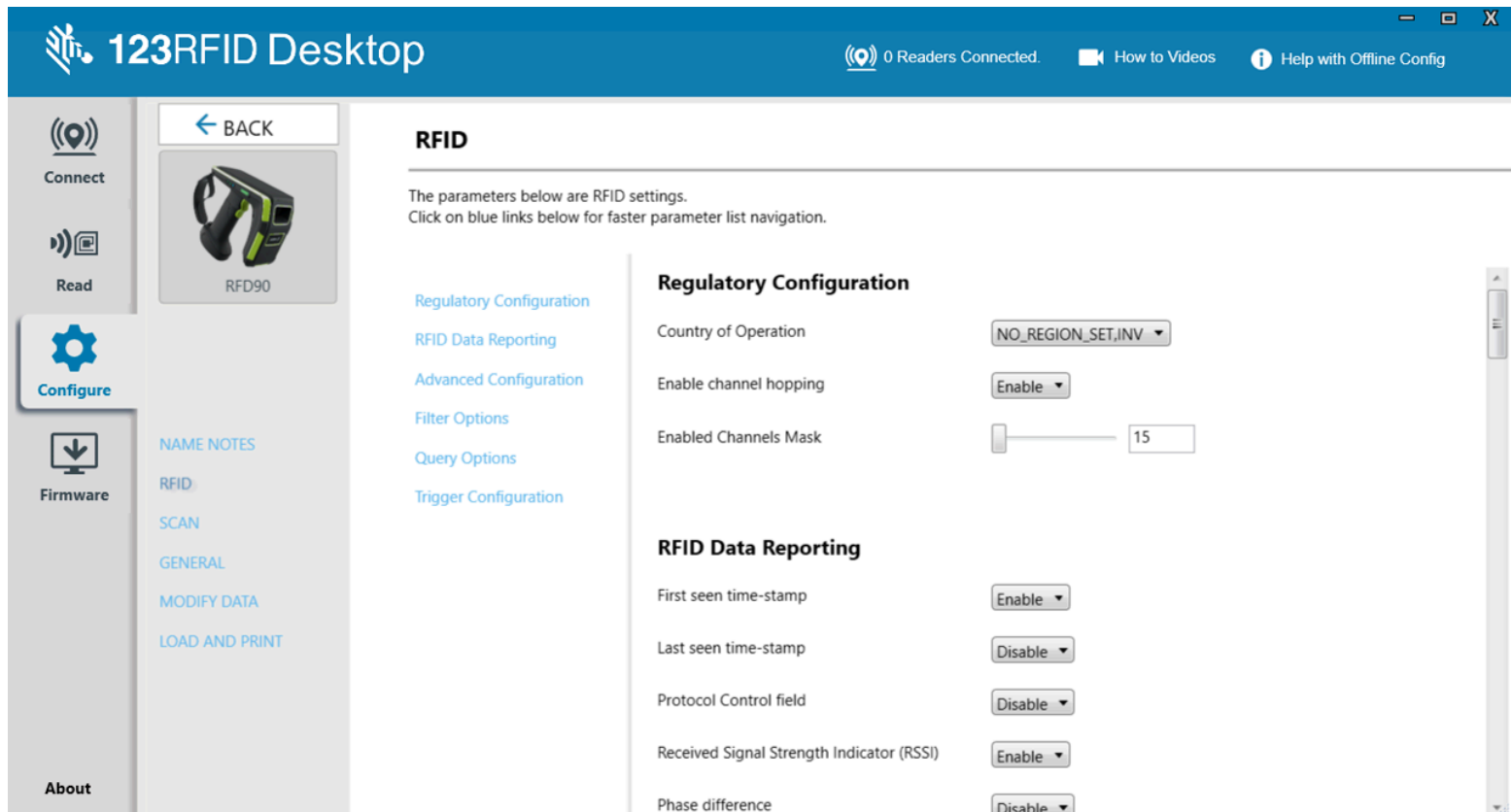
Configurable RFID options for offline readers include regulatory configuration, RFID data reporting, filter and querying options, trigger, and advanced options.



NOTE: Ensure that the reader is configured for the correct region it is used in. Configuring the device for a different region is illegal.

- Regulatory Configuration options include setting the country of operation and enabling or disabling Channel Hooping and Channel Mask.
- RFID Data Reporting options include first and last-time-seen time stamps, RSSI, phase difference, unique tag reporting, and the total number of tags seen.
- Advanced Configuration options include enabling Link Profile, configuring the RFID Transmit Power Level, and enabling dynamic power optimization.
- Filter Options for up to four filters, including Filter enable, target, action, memory bank, truncate, length, start position, and mask.
- Query options include selecting which tags, session, and target the query is applied to.
- Trigger Configuration, such as defining RFID operations and the conditions in which they are initiated and stopped.

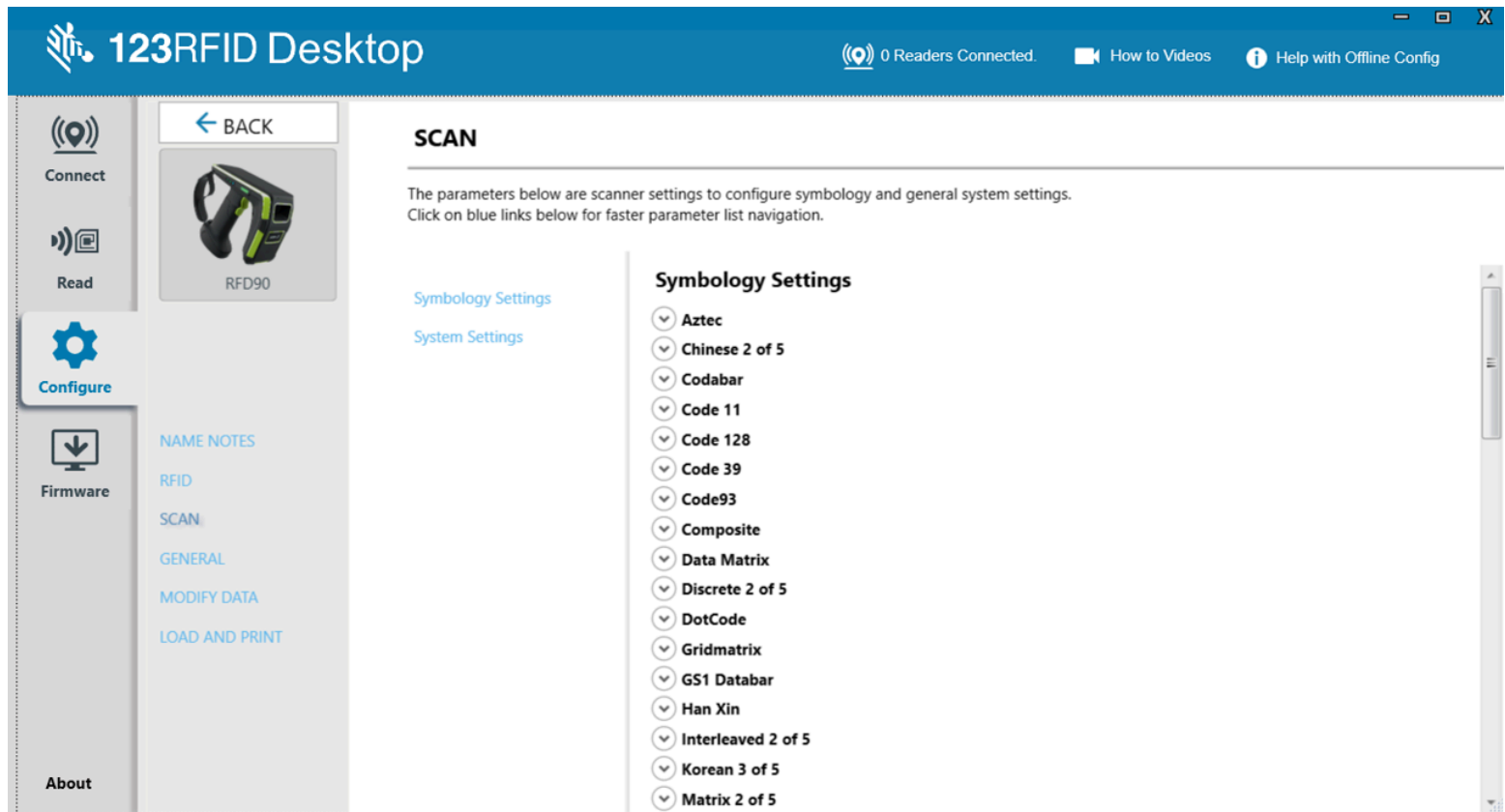
Figure 19 RFID Settings (Offline)



Scanning Configuration

Configurable scanning settings include enabling or disabling specific symbologies and enabling/disabling particular settings at the system level, such as transmitting the no-read message or the device's trigger mode.

- Symbology Settings – configure and enable/disable specific symbologies.
- System Settings – configure and enable/disable specific settings at the system level, such as transmitting the no-read message or the device's trigger mode.

Figure 20 Offline Scanning Configuration

General Settings

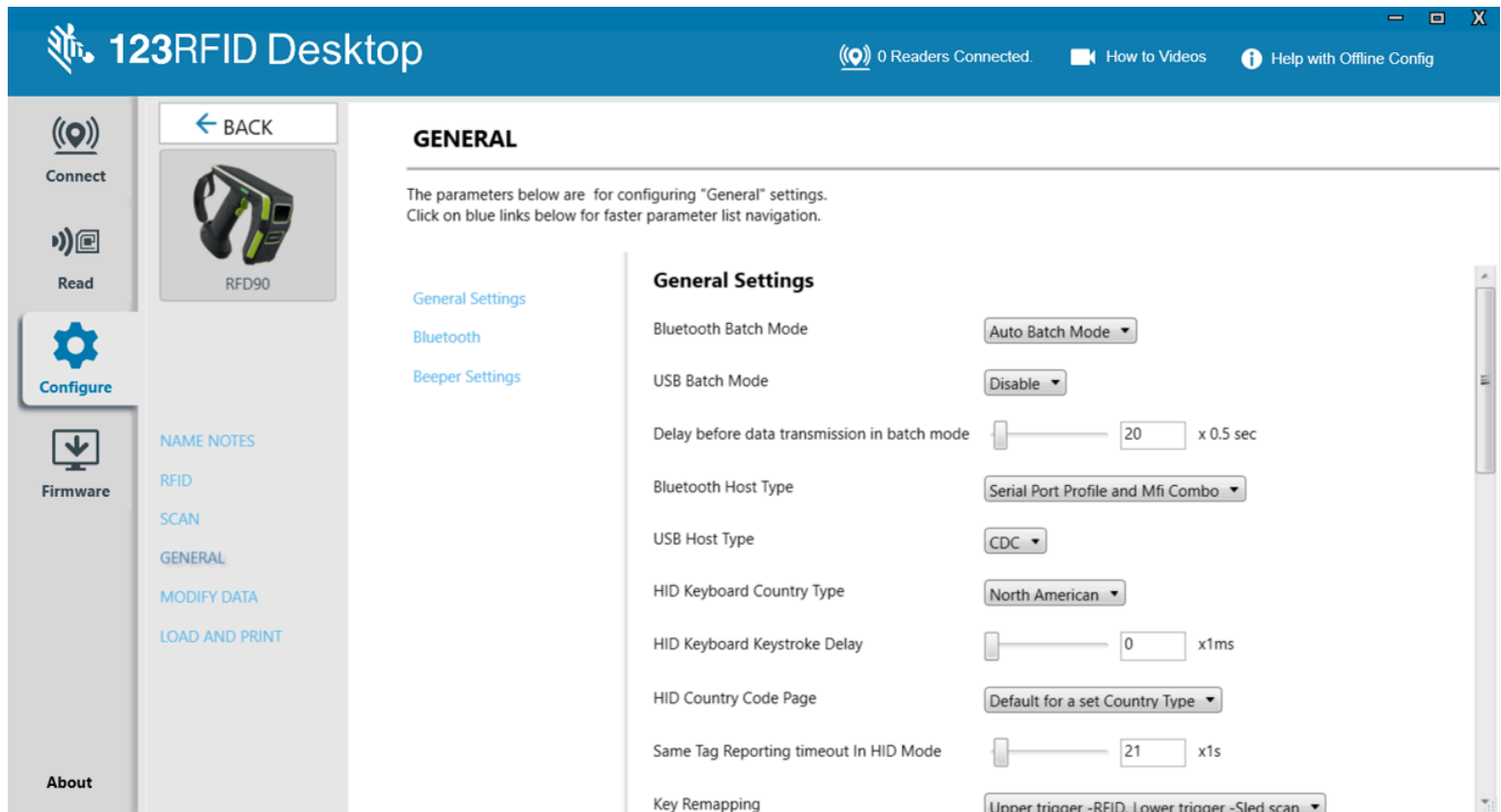
Configure general settings such as Bluetooth and beeper.

General settings include batch mode, host type, HID keyboard, tag reporting, charging through the terminal (RFID4031 Premium+ and RFID90 UHF RFID sleds only), and timeout.

Bluetooth settings include the number of reconnect attempts, enable or beep on reconnect, Bluetooth discovery, discoverable timeout (s), and reconnect to Bluetooth host behavior.

Beeper settings include volume, tone, enable or disable beep after a good decode, and enable or disable the suppression of power-up beeps.

Figure 21 General Settings (Offline)

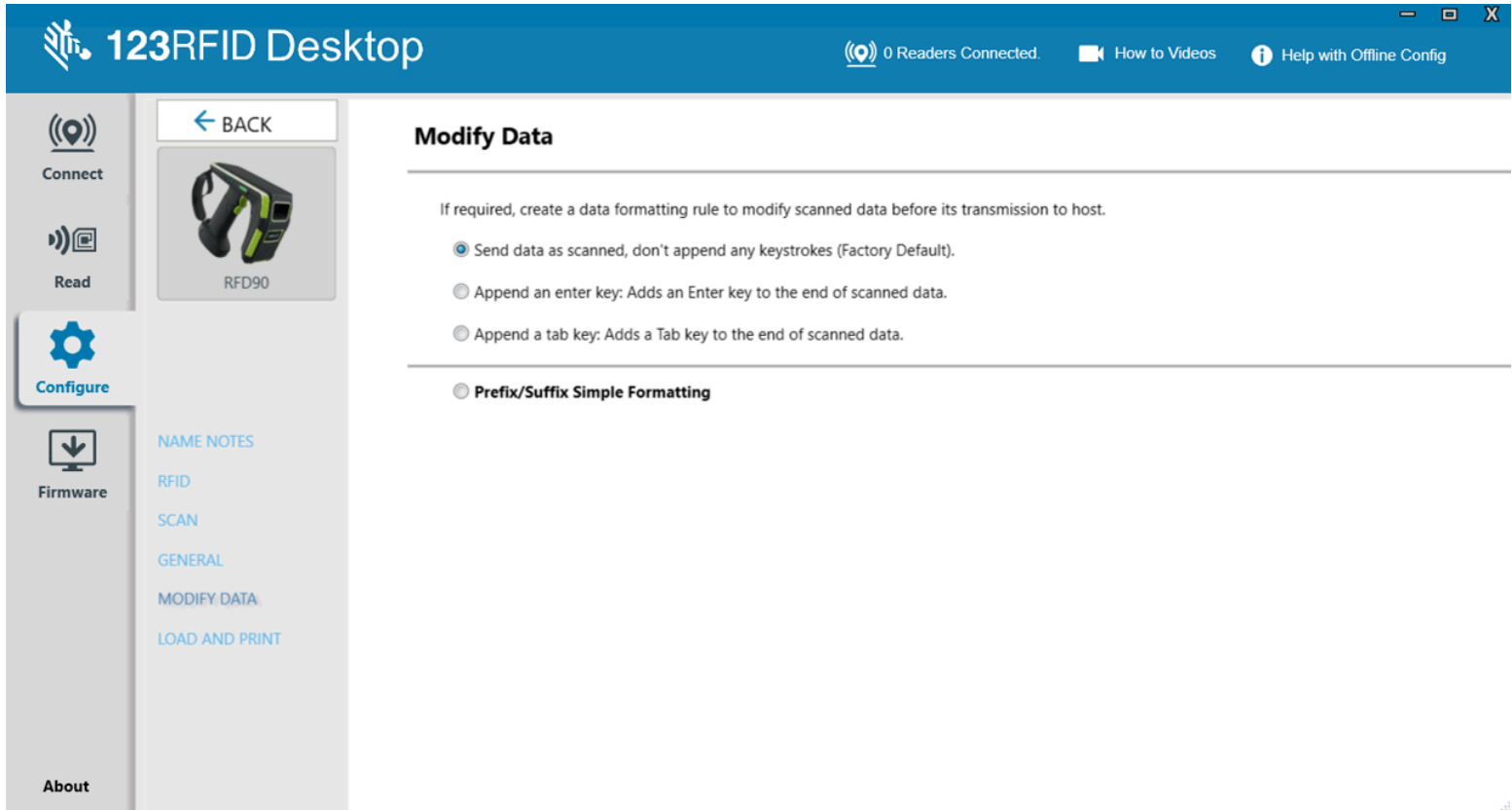


Modify Data

Use data formatting to add a prefix or suffix to tag data.

To access data formatting, navigate to the **Modify Data** section.

To add a prefix or suffix to tag data, click the **Prefix/Suffix Single Formatting** radio button.



Next, select a prefix or suffix type and value from the menu.

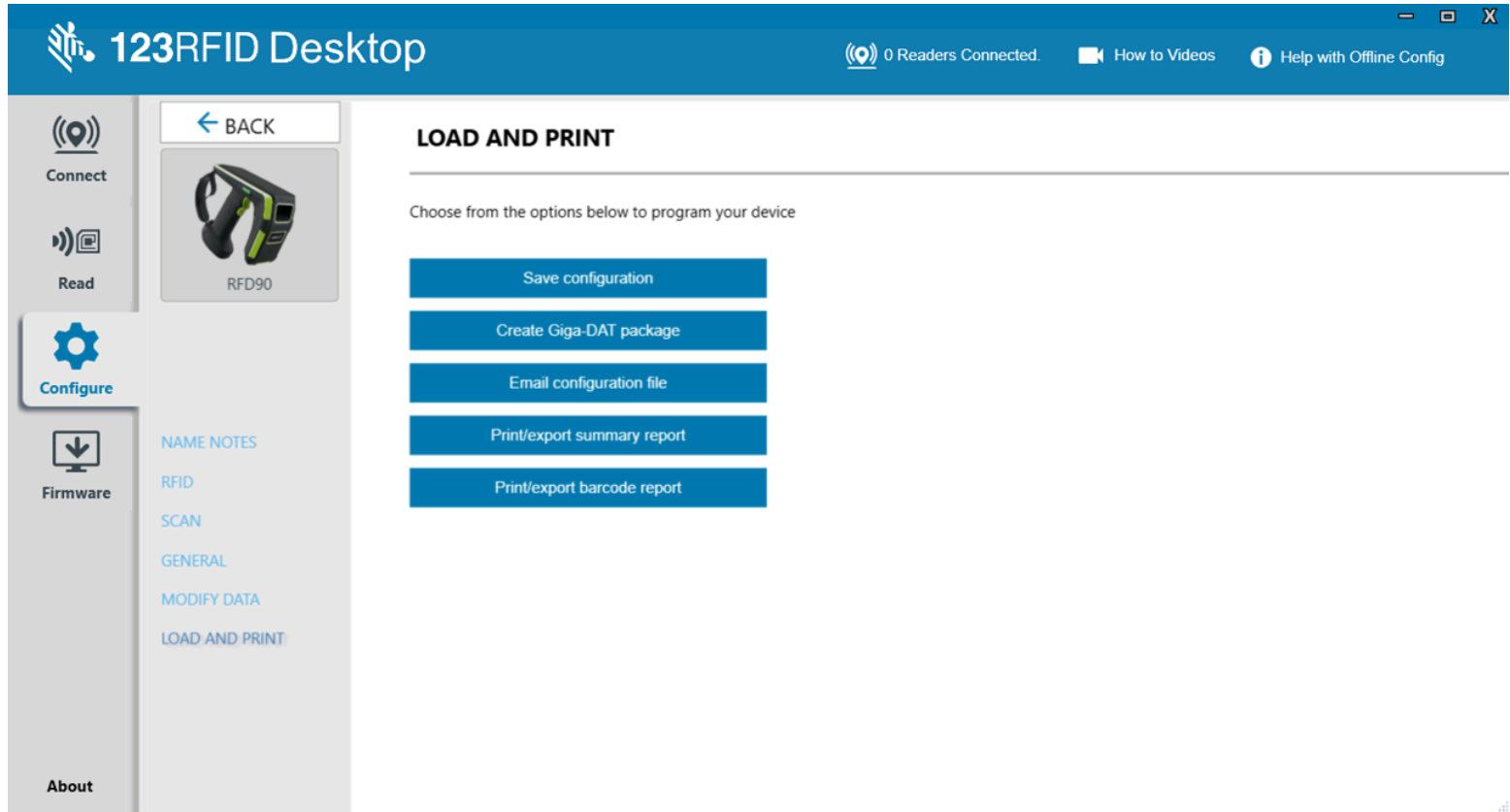
The screenshot shows the 123RFID Desktop application window. The title bar includes the application name and status: "0 Readers Connected.", "How to Videos", and "Help with Offline Config". The left sidebar contains navigation options: "Connect", "Read", "Configure" (selected), "Firmware", and "About". The "Configure" section is active, showing a "BACK" button and a list of configuration options: "NAME NOTES", "RFID", "SCAN", "GENERAL", "MODIFY DATA", and "LOAD AND PRINT". The main content area is titled "Prefix/Suffix Simple Formatting" and contains the following text: "If required, create a data formatting rule to modify scanned data before its transmission to host." Below this text are three radio button options: "Send data as scanned, don't append any keystrokes (Factory Default).", "Append an enter key: Adds an Enter key to the end of scanned data.", and "Append a tab key: Adds a Tab key to the end of scanned data." The "Prefix/Suffix Simple Formatting" option is selected. Below the radio buttons are three sections for configuring prefix and suffix values: "Prefix", "Suffix1", and "Suffix2". Each section has a "Type" dropdown menu (all set to "Extended") and a "Value" dropdown menu (Prefix set to "Enter", Suffix1 set to "Tab", and Suffix2 set to "Enter").



NOTE: Data formatting is available for use while in HID mode and is applied to HID mode data. HID mode must be enabled after basic data formatting occurs. When the mode is updated, readers on the **Connect** tab are updated.

Print Configuration

Load the configuration file to the PC, push the antenna settings to the reader, or reset the antenna settings to factory defaults at the end of the configuration workflow.



Firmware Management

Update reader firmware on up to 20 devices of the same type simultaneously.



NOTE: Go to zebra.com/support to download the latest device firmware.

Application Features

1. Select the checkbox of the device(s) and click **Update Firmware**.

123RFID Desktop 5 Readers Connected How to Videos Help with Firmware Update

Update Reader Firmware

0 devices selected for update [UPDATE FIRMWARE](#)

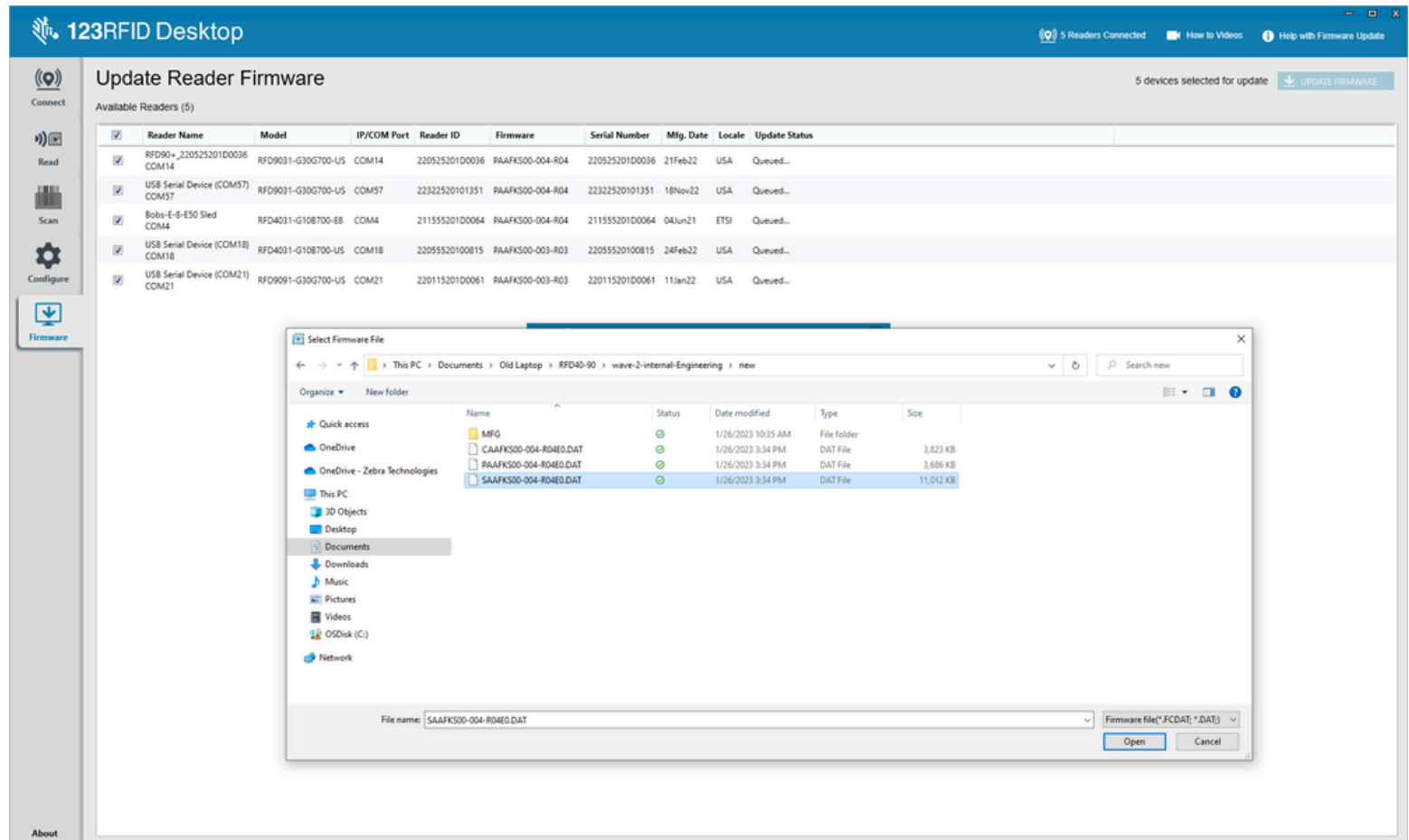
Available Readers (5)

	Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Locale	Update Status
☐	RFD90+_220525201D0036 COM14	RFD9031-G30G700-US	COM14	220525201D0036	RAAFKS00-004-R04	220525201D0036	21Feb22	USA	
☐	US8 Serial Device (COM57) COM57	RFD9031-G30G700-US	COM57	22322520101351	RAAFKS00-004-R04	22322520101351	18Nov22	USA	
☐	Bobs-E-8-ES0 Sled COM4	RFD4031-G10B700-E8	COM4	211555201D0064	RAAFKS00-004-R04	211555201D0064	04Jun21	ETSI	
☐	US8 Serial Device (COM18) COM18	RFD4031-G10B700-US	COM18	22055520100815	RAAFKS00-003-R03	22055520100815	24Feb22	USA	
☐	US8 Serial Device (COM21) COM21	RFD9091-G30G700-US	COM21	220115201D0061	RAAFKS00-003-R03	220115201D0061	11Jan22	USA	

Connect Read Scan Configure Firmware About

2. Click **Browse** to select the firmware version to enable on the device.

Figure 22 Update Reader Firmware



The progress bar next to the associated reader indicates the completion percentage of the firmware update.

Application Features

123RFID Desktop

1 Reader Connected

How to Videos

Help with Firmware Update

Connect

Read

Scan

Configure

Firmware

About

Update Reader Firmware

0/1 devices updated successfully

UPDATE FIRMWARE

Available Readers (1)

	Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Locale	Update Status
☒	BT-HID-Mode-United-States-COM17	RFD9031-G30G700-US	COM17	Z20525201D0036	PAAFKS00-003-R03	Z20525201D0036	21Feb22	USA	Updating (53%)

Troubleshooting

This section describes potential issues that could arise while using 123RFID Desktop with Zebra fixed and handheld readers and solutions that could correct the problem.

Table 2 Device Troubleshooting

Problem	Cause	Solution
The RFID sled does not read tags.	The RF region configuration is not set.	Use the 123RFID Desktop or 123RFID Mobile application to set the regulatory region or country operation per the application instructions.
The RFID sled is attached to a mobile device and is not responsive to an RFID application, even after the trigger is pressed.	The battery is too low and not able to power the RFID sled.	Press the trigger for a few seconds to power the RFID sled On. The RFID sled LED blinks amber when it is turned On. (By default, pressing the trigger turns On the RFID sled if it is in Off mode. However, the RFID sled can be disabled, in which case this step is unnecessary.) Place the RFID sled in the charging cradle. The RFID sled blinks amber LEDs, indicating charging commenced.
	The Zebra-supported mobile computer is not correctly inserted in the RFID sled.	Ensure the Zebra-supported mobile device is securely in the RFID sled, and the USB cable is correctly inserted.
	Damaged battery.	If the sled LED does not blink amber after sitting on the charging cradle, contact Zebra Service to request a battery replacement.
The sled is responsive but cannot read tags.	The battery is critically low.	Place the RFID sled in the charging cradle. The RFID Sled LED blinks amber. The RFID sled can be used when its LED turns on momentarily amber or green upon removal from the charging cradle.

Table 2 Device Troubleshooting (Continued)

Problem	Cause	Solution
The sled LED blinks fast and amber when in the cradle.	Charging error.	Restart charging by removing the RFID sled from the cradle and reinserting it. If the issue persists, contact Zebra Service to request a battery replacement.
The sled LED blinks red, or LED blinks red, alternating with green or amber while in use (not while charging).	Battery end-of-life indication.	Contact Zebra Service to request a battery replacement.
Zebra-supported mobile computer battery is not charging.	The charging cradle was unplugged from AC power.	Ensure the charging cradle is receiving power.
	The Zebra-supported mobile computer is not fully seated in the cradle.	Remove and reinsert the Zebra-supported mobile computer into the cradle, ensuring it is firmly seated in the charging cradle.
Data Communication		
During data communication with a host computer, no data transmitted or transmitted data is incomplete.	Sled removed from cradle during communication.	Replace the sled in the cradle and re-transmit.
	Incorrect cable configuration.	Consult the system administrator.
	Communication software was incorrectly installed or configured.	Perform setup.
During data communication over Bluetooth, no data transmitted or transmitted data was incomplete.	The Bluetooth radio is not on.	Turn on the Bluetooth radio.
	The sled moved out of range of another Bluetooth device.	Move within 10 meters (32.8 feet) of the other device.
Decode		
The sled does not decode with a reading barcode.	The scanning application is not loaded.	Load 123RFID Mobile on the device or 123RFID Desktop on the PC. See the system administrator.
	Unreadable barcode.	Ensure the symbol is not defaced.
	The distance between the exit window and the barcode is incorrect.	Place the device within the proper scanning range.
	The device is not programmed to generate a beep.	If the sled does not beep on a good decode, set the application to generate a beep on a good decode.
	The battery is low.	Check the battery level if the sled stops emitting a laser beam upon a trigger press. When the battery is low, the sled shuts off before the low battery condition notification.

Table 2 Device Troubleshooting (Continued)

Problem	Cause	Solution
Bluetooth		
The device cannot find any Bluetooth devices nearby.	Too far from other Bluetooth devices.	Move closer to the other Bluetooth device(s) within a range of 10 meters (32.8 feet).
	The Bluetooth device(s) nearby are not turned on.	Turn on the Bluetooth device(s).
	The Bluetooth device(s) are not in discoverable mode.	Set the Bluetooth device(s) to discoverable mode.

