

123RFID Desktop



ZEBRA

User Guide

2024/12/05

ZEBRA and the stylized Zebra head are trademarks of Zebra Technologies Corporation, registered in many jurisdictions worldwide. All other trademarks are the property of their respective owners. ©2024 Zebra Technologies Corporation and/or its affiliates. All rights reserved.

Information in this document is subject to change without notice. The software described in this document is furnished under a license agreement or nondisclosure agreement. The software may be used or copied only in accordance with the terms of those agreements.

For further information regarding legal and proprietary statements, please go to:

SOFTWARE: zebra.com/informationpolicy.

COPYRIGHTS: zebra.com/copyright.

PATENTS: ip.zebra.com.

WARRANTY: zebra.com/warranty.

END USER LICENSE AGREEMENT: zebra.com/eula.

Terms of Use

Proprietary Statement

This manual contains proprietary information of Zebra Technologies Corporation and its subsidiaries ("Zebra Technologies"). It is intended solely for the information and use of parties operating and maintaining the equipment described herein. Such proprietary information may not be used, reproduced, or disclosed to any other parties for any other purpose without the express, written permission of Zebra Technologies.

Product Improvements

Continuous improvement of products is a policy of Zebra Technologies. All specifications and designs are subject to change without notice.

Liability Disclaimer

Zebra Technologies takes steps to ensure that its published Engineering specifications and manuals are correct; however, errors do occur. Zebra Technologies reserves the right to correct any such errors and disclaims liability resulting therefrom.

Limitation of Liability

In no event shall Zebra Technologies or anyone else involved in the creation, production, or delivery of the accompanying product (including hardware and software) be liable for any damages whatsoever (including, without limitation, consequential damages including loss of business profits, business interruption, or loss of business information) arising out of the use of, the results of use of, or inability to use such product, even if Zebra Technologies has been advised of the possibility of such damages. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Contents

About This Guide.....	5
Icon Conventions.....	5
Notational Conventions.....	5
Service Information.....	6
 Application Features.....	 7
Connect.....	8
Connecting to the Multi-Slot Cradle.....	9
Read.....	12
Filtering Tags.....	14
Editing Tag Details.....	15
Online Reader Configuration.....	16
Operating Mode Configuration.....	16
General Settings.....	18
Region Configuration for Online Devices.....	20
Antenna Configuration.....	20
Trigger Configuration.....	25
GPO Programming.....	26
Configuring Pre-Filters.....	27
Configuring Advanced Reader Parameters.....	28
License Management.....	29
Communication Settings.....	30
Certificate Management.....	38
Configuring Reader Applications.....	40
Modifying Data.....	40

Scanning Configuration.....	42
Offline Reader Configuration.....	43
Reader Name.....	45
RFID Reader Configuration.....	45
Scanning Configuration.....	47
General Settings.....	48
Modifying Data.....	49
Wi-Fi Configuration.....	50
Certificate Management.....	51
End Point Configuration.....	52
Load and Print Configuration.....	53
Firmware Management.....	54
Troubleshooting.....	57

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, RFD90, and FXP20.

- **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.

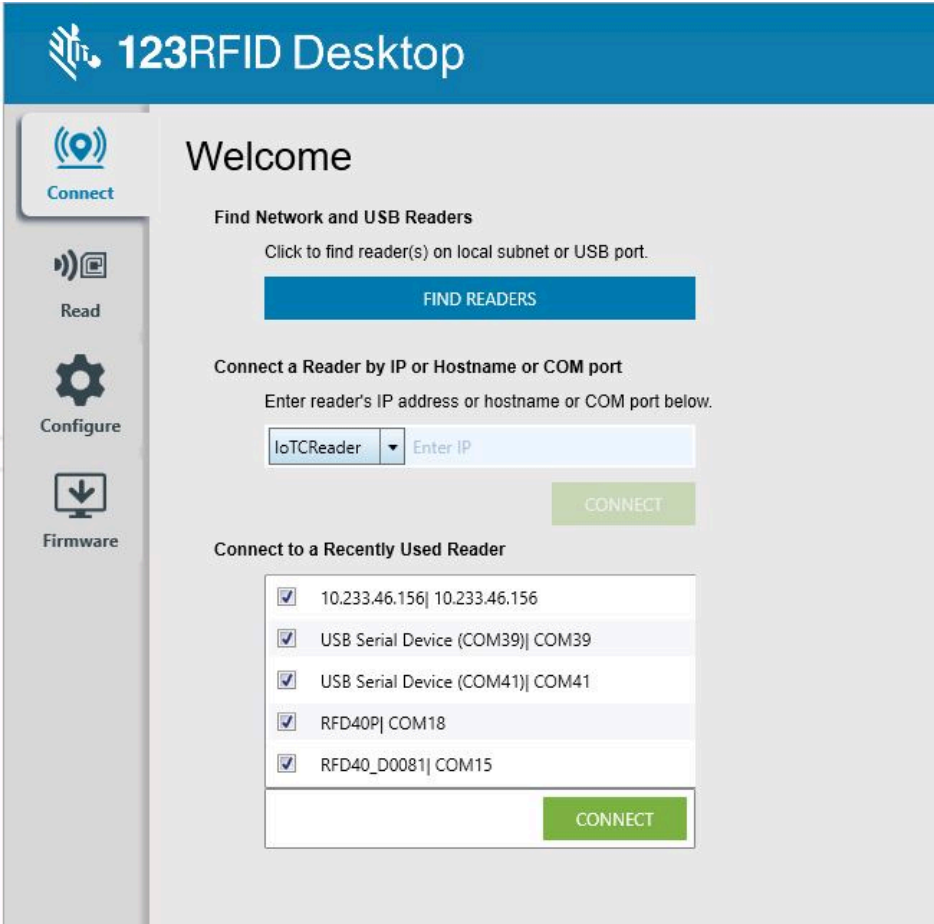


NOTE: The **Scan** tab is available only for connected sleds that have an imager.

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 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
<input type="checkbox"/>	DISCONNECT	IP 10.45.203.77:5086 RFD40-22055520100815.local.	RFD4031-G008700-US	10.45.203.77	212735201D0106	PAAFK300-004-R04	212735201D0108	30Sep21	●	USA
<input type="checkbox"/>	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	FX7500FF625 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	FX9600FCB67A	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
<input type="checkbox"/>	DISCONNECT	IP 10.45.203.77:5086 RFD40-22055520100815.local.	RFD4031-G008700-US	10.45.203.77	212735201D0106	RAAFKS00-004-R04	212735201D0108	30sep21	●	USA
<input type="checkbox"/>	DISCONNECT	IP 10.45.203.84:5086 RFD40-211555201D0064.local.	RFD4031-G108700-E8	10.45.203.84	211555201D0064	RAAFKS00-004-R04	211555201D0064	04Jun21	●	ETSI

Available Readers (14)

		Reader Name ^	Model	IP/COM Port	Firmware	Serial Number	Mfg. Date
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	FX7500FE7B3 FX7500 RFID Reader FX7500FE7B3	FX7500-4	10.45.203.94	3.21.21	17323010501565	2017-11-19
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	FX9600EFB28F FX9600 RFID Reader FX9600EFB28F	FX9600-8	10.45.203.72	3.21.23	17299010504038	2017-10-26
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	10.45.203.57 FX9600F9924F	FX9600-8	10.45.203.93	3.21.21	19094010506807	2019-04-04
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	ATR7000F30EFE ATR RFID Reader ATR7000F30EFE	ATR7000-480	10.45.203.241	2.16.29	19027010503649	2019-01-27
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	ATR7000F3F316 ATR RFID Reader ATR7000F3F316	ATR7000-480	10.45.203.242	3.21.24	-	-
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	FX9600FCB67A	FX9600-8	10.45.203.34	3.21.23	20269010554785	2020-09-25
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	FX7500B09EE5 FX7500 RFID Reader FX7500B09EE5	FX7500-4	10.45.203.62	3.21.21	17095010502847	2017-04-05
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	FX75007FF625 FX7500 RFID Reader FX75007FF625	FX7500-4	10.45.203.85	3.21.23	-	-
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	IP 10.45.203.41:5086 RFD40-212735201D0067.local.	RFD40-212735201D0067.local.	10.45.203.41			
<input type="button" value="PING"/>	<input type="button" value="CONNECT"/>	IP 10.45.203.44:5086 RFD90-212295201E0002.local.	RFD90-212295201E0002.local.	10.45.203.44			

Fixed readers

Enter IP or hostname

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

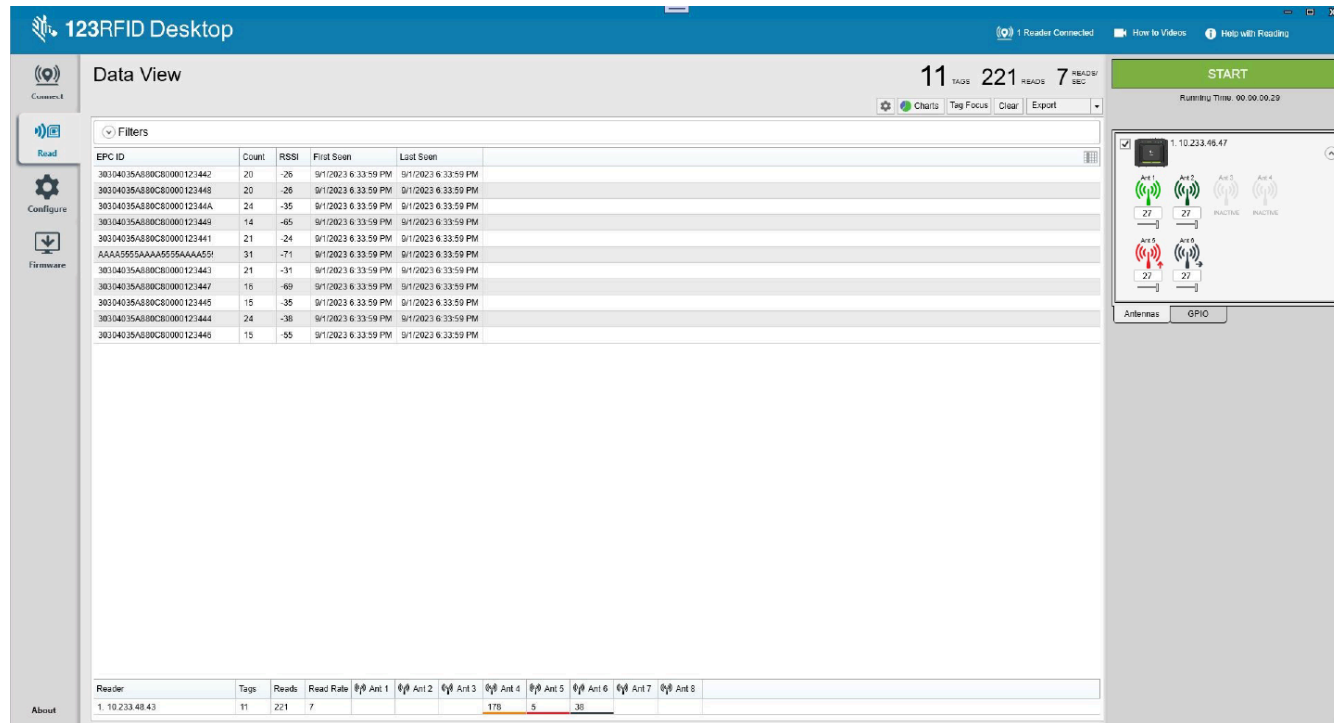


Table 1 Tag Read Options





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	<p>Click Tag Focus to enable the tracking of applicable tags such as Monza4, 5, and R6.</p> <p> 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.</p>

Table 1 Tag Read Options (Continued)

Feature	Description
Export Tag Data	<p>Click Export to download the inventory data for offline viewing.</p> <ul style="list-style-type: none"> • 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	<p>Click Charts  to view tag performance data. Use Pie Charts to visualize a distribution of tag reads across enabled devices.</p>

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]				

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

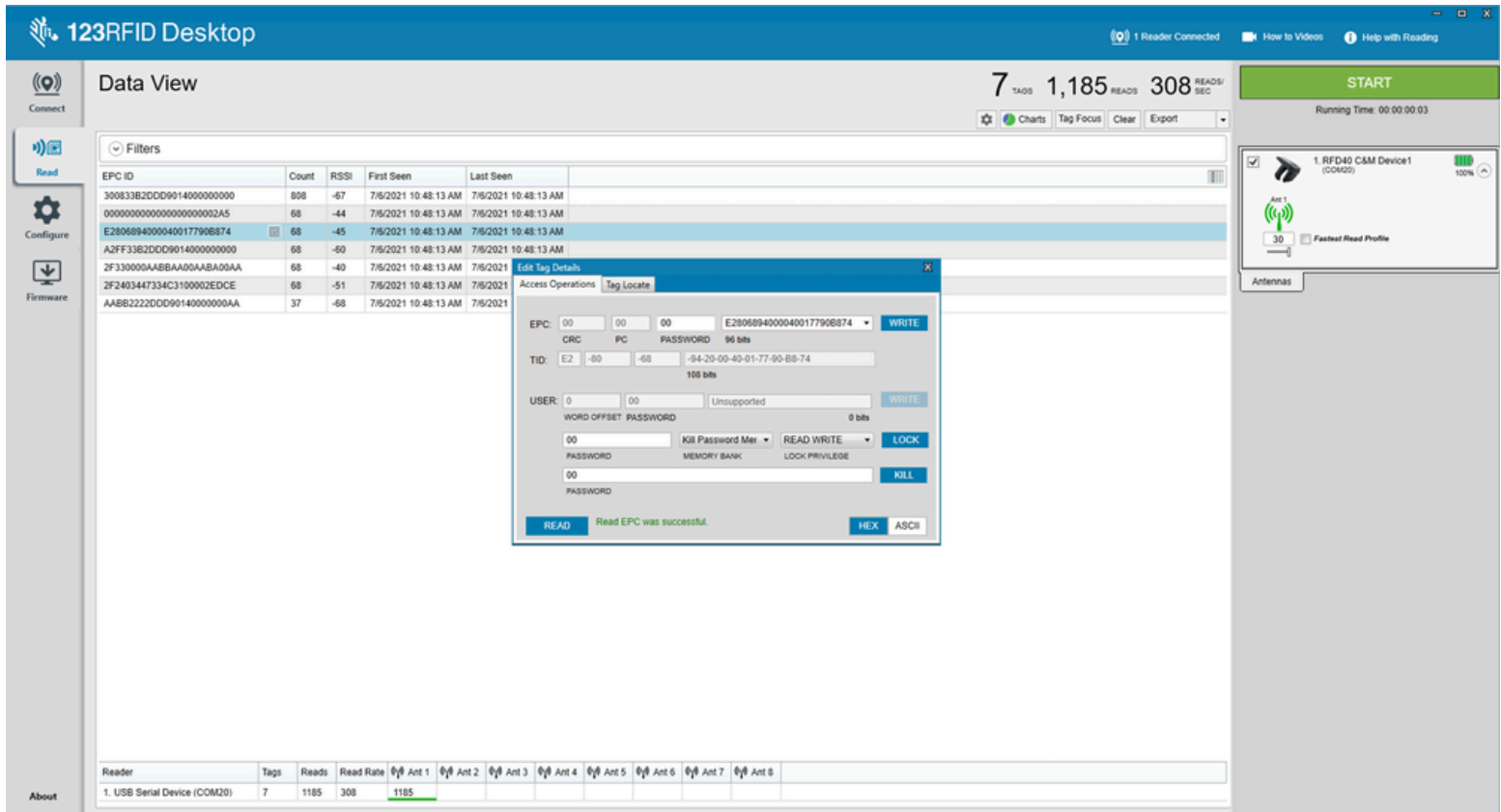
Antennas
 1. ATR7000F30F0B.008ASD.ZEBRA.LAN (RSSI: 36)
 2. FX7500F1122C.008ASD.ZEBRA.LAN (Ant 1: 30, Ant 2: 30, Ant 3: INACTIVE, Ant 4: INACTIVE)

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.

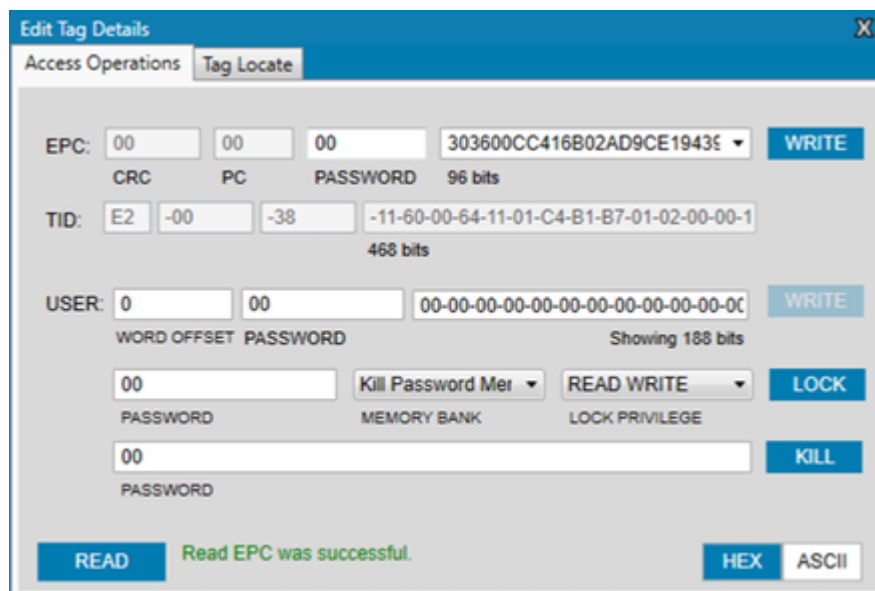
1. Select the row and click the Tag Details icon  to edit tag details.



The screenshot shows the 123RFID Desktop application interface. The top bar indicates '1 Reader Connected' and 'How to Videos' and 'Help with Reading' links. The main area is titled 'Data View' and shows a table of tag data. The table has columns for EPC ID, Count, RSSI, First Seen, and Last Seen. The row for EPC ID 'E280689400040017790B874' is selected. A 'Tag Details' dialog box is open, showing the 'Tag Locate' tab. The dialog contains fields for EPC, CRC, PC, PASSWORD, TID, USER, WORD OFFSET, and PASSWORD, along with buttons for WRITE, READ, LOCK, and KILL. The 'READ' button is highlighted, and a message 'Read EPC was successful.' is displayed.

EPC ID	Count	RSSI	First Seen	Last Seen
300833B2DD901400000000	898	-67	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM
0000000000000000000002A5	68	-44	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM
E280689400040017790B874	68	-45	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM
A2FF33B2DD9014000000000	68	-60	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM
2F330000AABAA00AABAA00AA	68	-40	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM
2F2403447334C3100002EDCE	68	-51	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM
AABE2222DD90140000000AA	37	-68	7/5/2021 10:48:13 AM	7/5/2021 10:48:13 AM

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



The screenshot shows the 'Edit Tag Details' dialog box with the 'Tag Locate' tab selected. The dialog contains the following fields and buttons:

- EPC:** 00 00 00 303600CC416B02AD9CE1943E (96 bits) [WRITE]
- TID:** E2 -00 -38 -11-60-00-64-11-01-C4-B1-B7-01-02-00-00-1 (468 bits)
- USER:** 0 00 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00 (188 bits) [WRITE]
- WORD OFFSET:** 00 [Kill Password Mer] [READ WRITE] [LOCK]
- PASSWORD:** 00 [KILL]
- Buttons:** READ, HEX, ASCII

A message 'Read EPC was successful.' is displayed at the bottom.

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.
- Edit the antenna settings, including beam, power, RF modes, and dwell time.
- Configure when triggering starts and stops on the reader.
- Create rules for GPO accessories on when to trigger inventory and output results.
- Configure pre-filters for handheld readers.
- Configure advanced reader settings such as antenna singulation and state aware.
- Manage licenses on fixed readers.
- Edit communication settings based on Ethernet, Bluetooth, Wi-Fi, and Serial Port requirements.
- Configure reader applications for fixed readers.
- Export or import certificates for handheld readers.
- Modify prefix or suffix data for handheld readers.
- Configure symbology settings for handheld readers.
- Save or 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 available for the FXR90 and fixed IoTTC readers only.

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 active, showing options for Mode, Environment, Tag ID Filter, Tag reporting, RSSI Filter, and Cellular band filter.

123RFID Desktop

What do you want to do?
Please select an action from below to continue.

Load a "Saved Config" File to Reader

Edit Reader Specific Configuration

IoT Connector Inventory Specific Settings
Select a inventory mode, environment, other appropriate settings and click next

Mode: ☐ Simple ☐ Conveyor ☐ Inventory ☐ Portal ☒ Custom

Environment: ☐ High Interference ☐ Low Interference ☐ Very High Interference (DRM) ☐ Auto Detect ☒ Demo

Tag ID Filter
Operation:
Match:
Value:

Tag reporting
Type:
Duration: Seconds

RSSI Filter
☐ RSSI threshold
-85dBm -28dBm

Cellular band filter
☒ Pre-selection

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.

General Settings

General settings include batch mode, host type, HID keyboard, tag reporting, charging through the terminal (RFID40 and RFID90 UHF RFID handheld readers only), and timeout.



NOTE: Configurable settings may differ depending on the type of handheld reader in use.

Figure 6 Handheld Reader General Settings

123RFID Desktop

← BACK

USB Serial Device (COM53)

Name

General

Region

Antenna

Trigger

Pre-Filter

Advanced

Communication

Certificate

Modify Data

Scanner Config

Save Config

General

Set Bluetooth and other general settings.

General Setting

RFID Beeper Volume ☒ High beep ☐ Medium beep ☐ Low beep ☐ Quite beep

Dynamic Power ☒ Enable ☐ Disable

Unique Tags ☐ Report Unique Tags

Off mode timeout x1s

USB Host Type SSI over CDC

Bluetooth Host Type SPP and Mfi Combo

Same Tag Reporting timeout In HID Mode x1s

Bluetooth Batch Mode AUTO

USB Batch mode DISABLE

eConnex Terminal Charge ENABLE

Key Remapping

Upper Trigger	Lower Trigger
RFID	Sled Scanner

iOS HID Virtual Keyboard DISABLE

NTP Server Setting

☐ Primary server name Secondary server name Server Clock

time.google.com time.apple.com 15.07.2024 09:00:56 PM

- **Dynamic Power** – enable or disable the optimization of RFID reader power consumption.
- **Unique Tag** – enable or disable reporting unique tags.
- **Off-Mode Timeout** – set the timeout duration.
- **USB Host Mode Switch** – switch the USB host modes between HID keyboard mode and SSI over CDC mode.
- **Bluetooth Host Mode Switch** – switch the Bluetooth Host Mode between HID Keyboard Mode and Mfi.
- **Same Tag Reporting Timeout in HID Mode** – set the same Tag Reporting timeout in HID mode.
- **Bluetooth Batch Mode** – set auto/enable/disable for Bluetooth Batch Mode.

- **USB Batch Mode** – set enable/disable for USB Batch Mode.
- **eConnex Terminal Charge** – set enable/disable for eConnex Terminal Charge.
- **Key Remapping** – remap the upper and lower triggers to RFID, Sled Scanner, Terminal Scanner, Scan Notification, or No Action. Select the desired functionality under the upper and lower triggers separately.
- **IOS HID Virtual Keyboard** – set enable/disable for IOS HID Virtual Keyboard.

Bluetooth settings include:

- **Bluetooth Discovery** – set enable/disable for Bluetooth discovery.
- **Discoverable Timeout** – enable Bluetooth discovery above to set the Discoverable timeout value.
- **Reconnect Attempts** – set Reconnect Attempts value.
- **Beep on Reconnect** – set enable/disable Beep on Reconnect.
- **Reconnect to the Bluetooth Host** - set the Bluetooth host to Never Attempt Reconnect, Attempt Reconnect on Data, and Attempt Reconnect Immediately.
- **NTP Server Setting** - set the primary and secondary NTP server name clock settings.

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

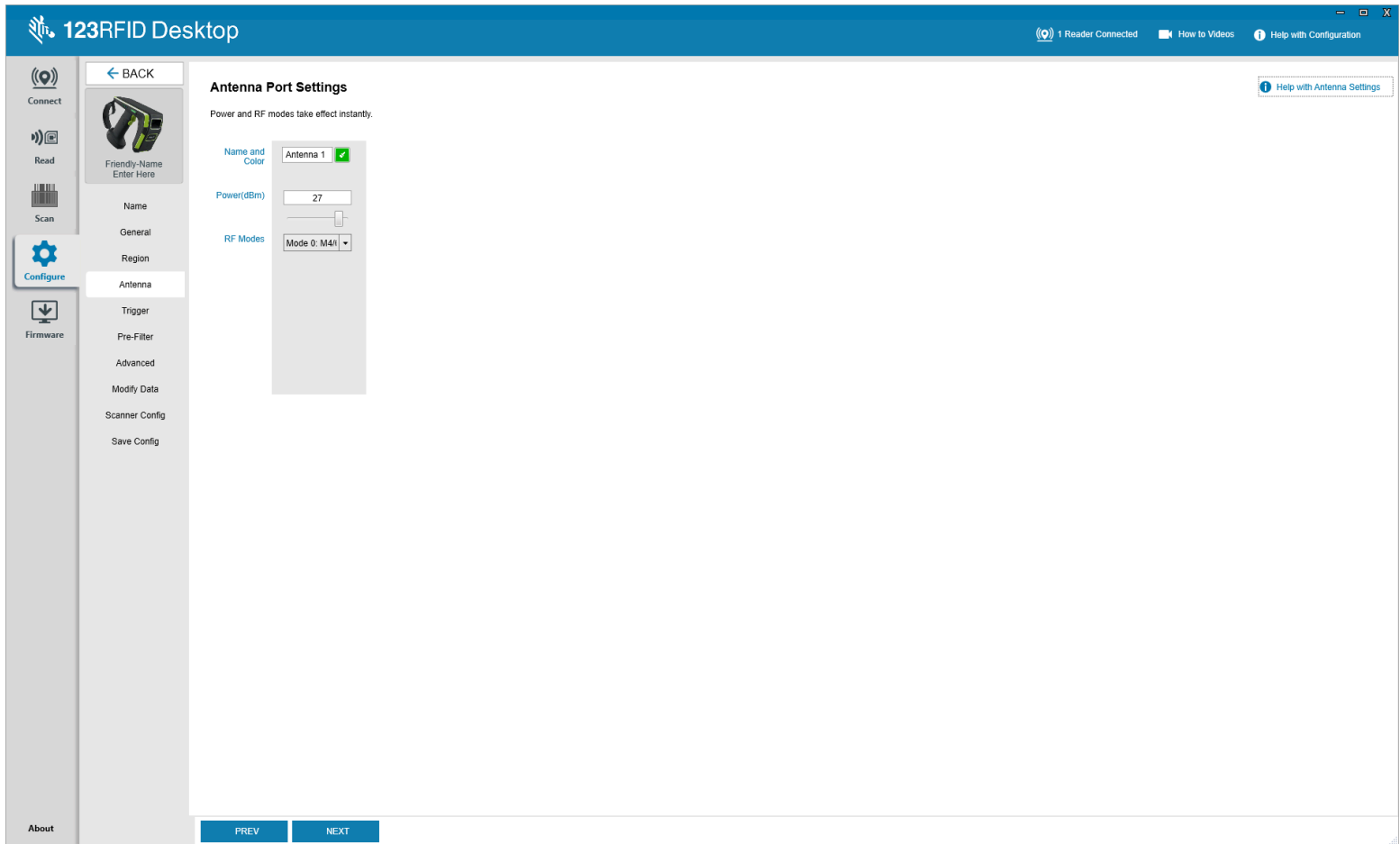
Configure Antenna Port settings for RFID sleds and fixed readers using 123RFID Desktop. The number of antennas is dependent upon reader type.

Configurable antenna settings for RFD40 and RFD90 RFID sleds include:

- Name and Color
- Power (dBm)

- RF Mode

Figure 7 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 8 FX75000 Antenna Settings

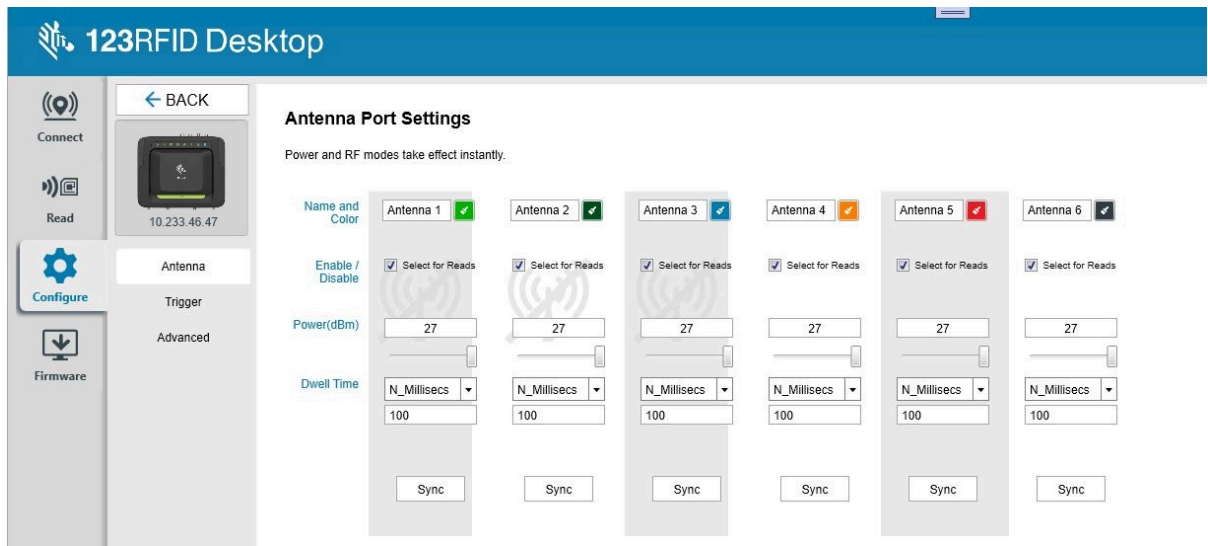
The screenshot shows the '123RFID Desktop' application interface. The top bar indicates '1 Reader Connected' and provides links for 'How to Videos' and 'Help with Configuration'. The left sidebar contains navigation options: Connect, Read, Configure (selected), Firmware, and About. The main panel is 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 slider set to 30, an 'RF Modes' section with a 'Maximum Da' dropdown, and a 'Dwell Time' section with an 'N_Millisecs' dropdown set to 400. Each column also has a 'Sync' button. At the bottom of the main panel are 'PREV' and 'NEXT' buttons. A sidebar on the left lists various configuration options: Name, Region, Antenna, Trigger, GPO, Advanced, Communication, License, and Applications.

Antenna	Name and Color	Enable / Disable	Power(dBm)	RF Modes	Dwell Time	Sync
Antenna 1	Green	<input checked="" type="checkbox"/> Select for Reads	30	Maximum Da	N_Millisecs 400	Sync
Antenna 2	Green	<input checked="" type="checkbox"/> Select for Reads	30	Maximum Da	N_Millisecs 400	Sync
Antenna 3	Blue	<input checked="" type="checkbox"/> Select for Reads	30	Maximum Da	N_Millisecs 400	Sync
Antenna 4	Orange	<input checked="" type="checkbox"/> Select for Reads	30	Maximum Da	N_Millisecs 400	Sync

Configurable antenna settings for FXR90 fixed reader settings include:

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

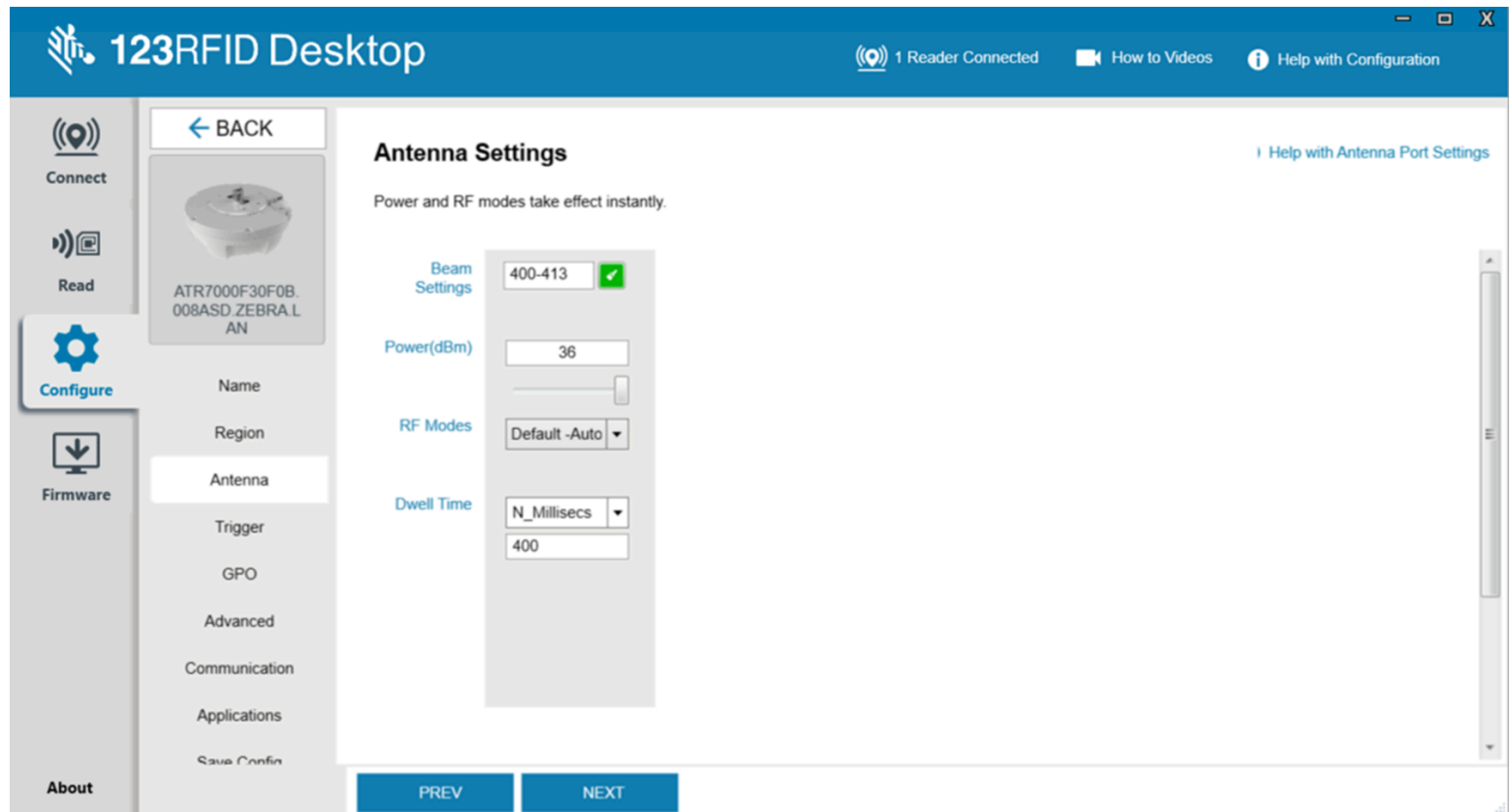
Figure 9 FXR90 Antenna Port Settings



Configurable ATR7000 advanced array reader settings include:

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

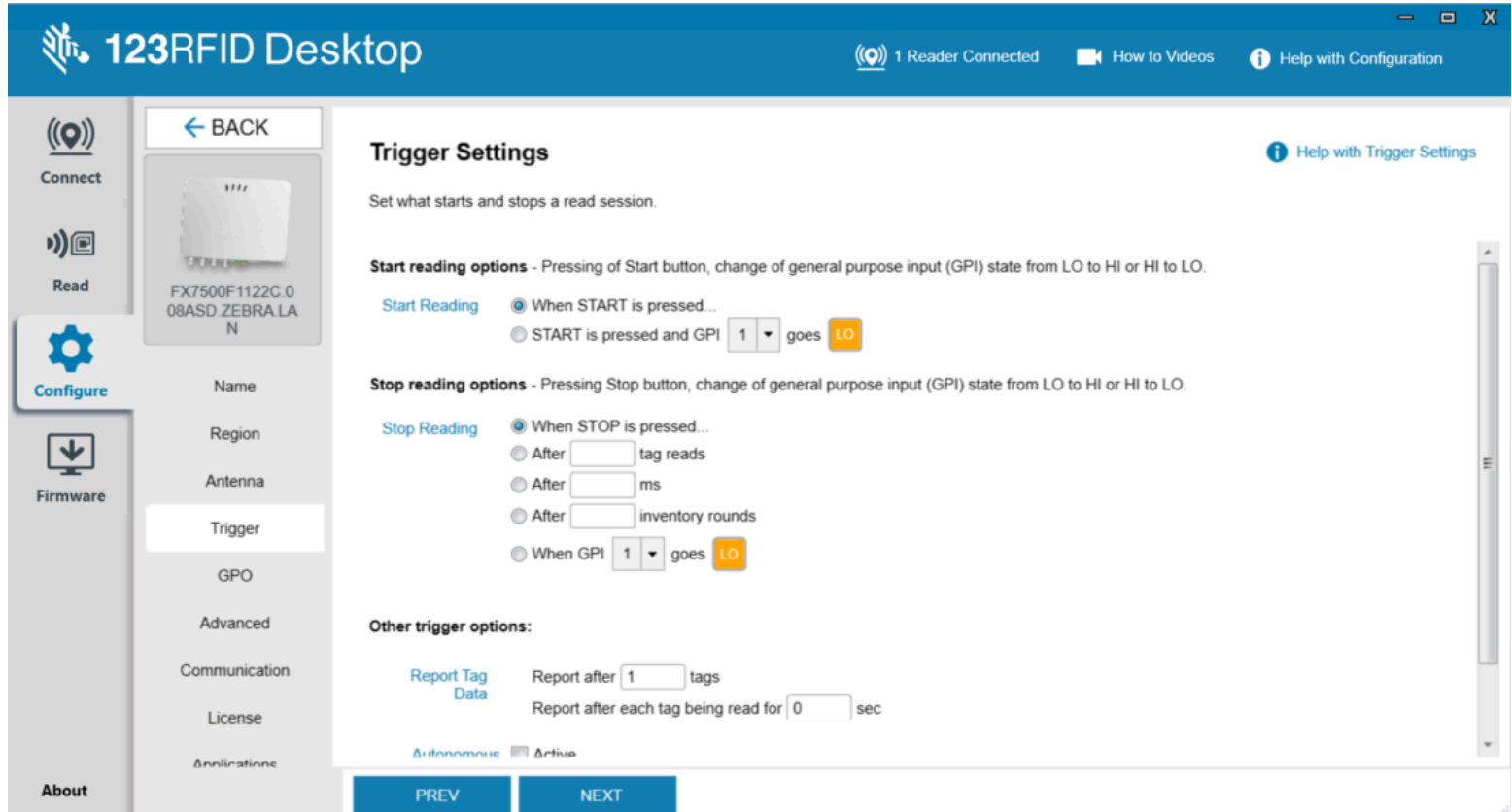
Figure 10 ATR7000 Antenna Settings



Trigger Configuration

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

Figure 11 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.

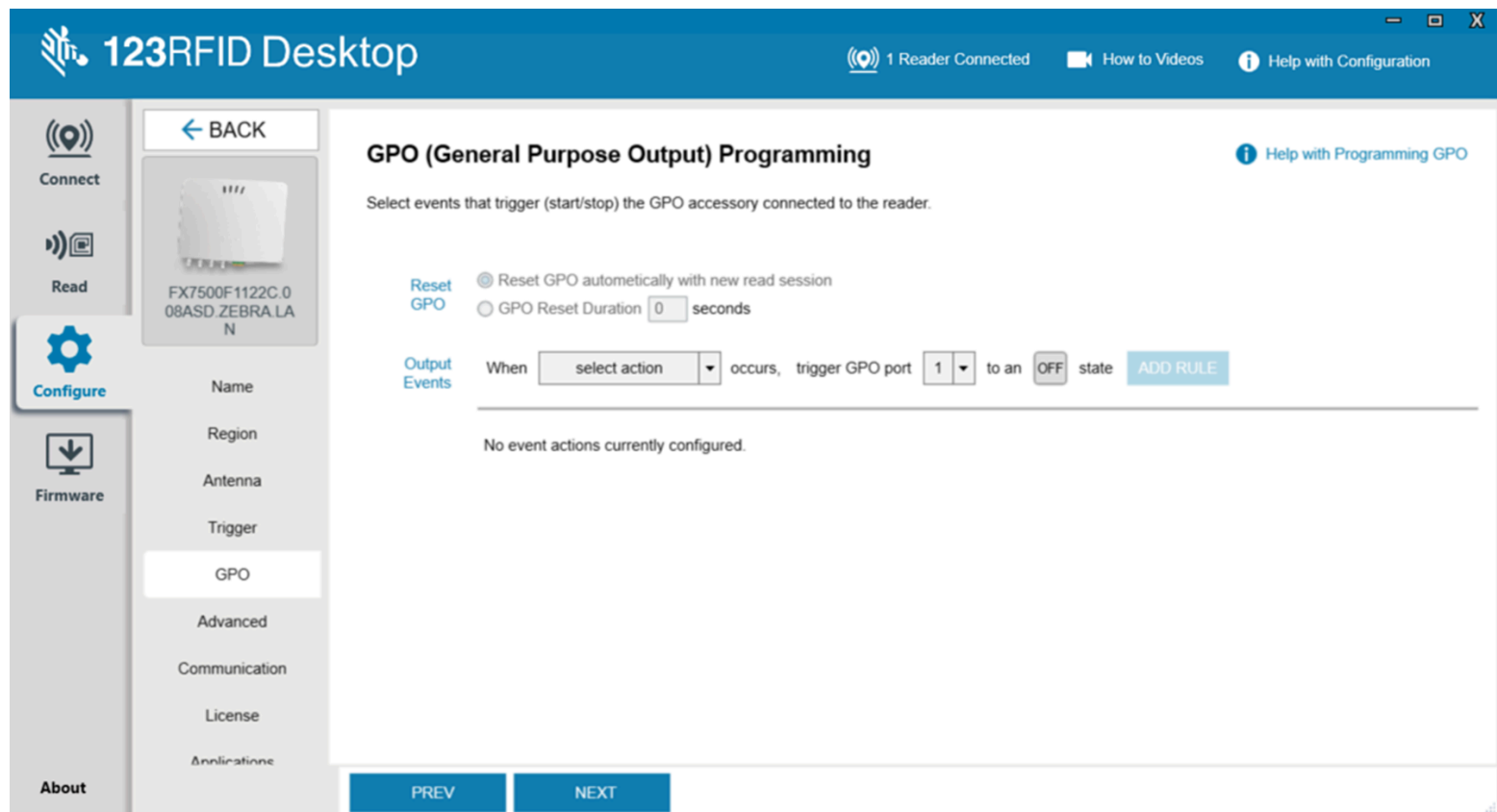
GPO Programming

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



NOTE: This feature is available for fixed readers only.

Figure 12 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.



NOTE: This feature is available for handheld readers only.

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.
- **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 shows the 123RFID Desktop software interface. The top bar is blue with the text "123RFID Desktop" and status indicators: "1 Reader Connected", "How to Videos", and "Help with Configuration". The left sidebar contains icons for "Connect", "Read", "Scan", "Configure" (selected), and "Firmware". The "Configure" menu is expanded, showing options: "Name", "General", "Region", "Antenna", "Trigger", "Pre-Filter" (selected), "Advanced", "Modify Data", "Scanner Config", "Save Config", and "About". The main area is titled "Pre-filters settings" with the 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 "Enable Filter" checkbox, a "Tag Pattern" text input, a "Target" dropdown menu (set to "SESSION_S0"), a "Memory Bank" dropdown menu (set to "EPC"), an "Action" dropdown menu (set to "INV_A_NOT_INV_I"), and an "Offset(words)" text input (set to "0"). A "Help with Pre-Filter Settings" link is visible in the top right. At the bottom, there are "PREV" and "NEXT" buttons.

Filter 1	Filter 2	Filter 3	Filter 4
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tag Pattern			
Target	SESSION_S0	SESSION_S0	SESSION_S0
Memory Bank	EPC	EPC	EPC
Action	INV_A_NOT_INV_I	INV_A_NOT_INV_I	INV_A_NOT_INV_I
Offset(words)	0	0	0

Configuring Advanced Reader Parameters

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

Figure 13 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	<input checked="" type="checkbox"/> Active <input type="checkbox"/> SL Asserted <input type="checkbox"/> SL DeAsserted <input checked="" type="radio"/> Both	<input checked="" type="checkbox"/> Active <input type="checkbox"/> SL Asserted <input type="checkbox"/> SL DeAsserted <input checked="" type="radio"/> Both	<input checked="" type="checkbox"/> Active <input type="checkbox"/> SL Asserted <input type="checkbox"/> SL DeAsserted <input checked="" type="radio"/> Both	<input checked="" type="checkbox"/> Active <input type="checkbox"/> SL Asserted <input type="checkbox"/> SL DeAsserted <input checked="" type="radio"/> Both	<input checked="" type="checkbox"/> Active <input type="checkbox"/> SL Asserted <input type="checkbox"/> SL DeAsserted <input checked="" type="radio"/> Both	<input checked="" type="checkbox"/> Active <input type="checkbox"/> SL Asserted <input type="checkbox"/> SL DeAsserted <input checked="" type="radio"/> 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.

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 14 License Manager

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

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

Communication Settings

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

Configurable Ethernet Settings include:

- IPV Type
- Obtain IPV4 Address via DHCP

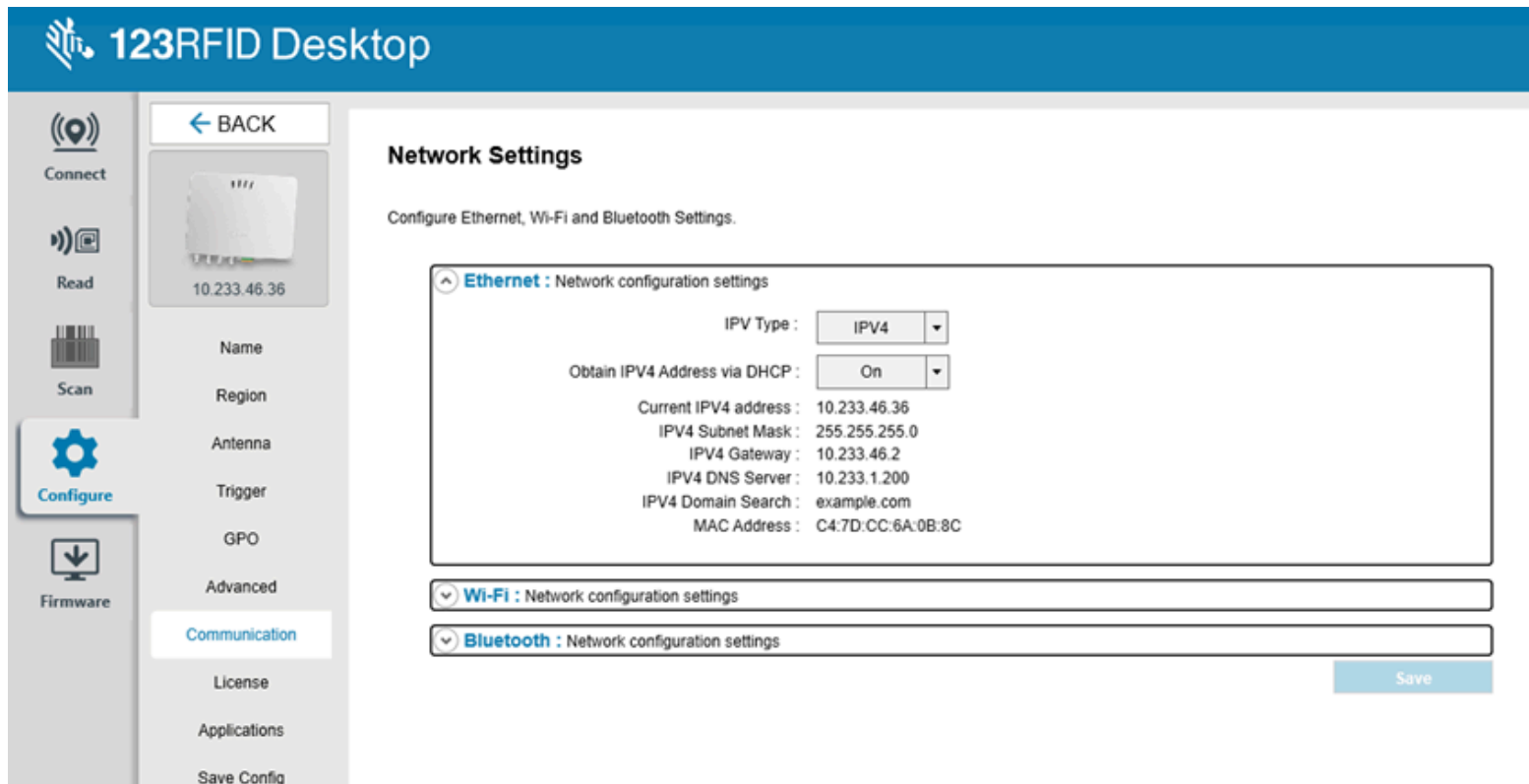
Ethernet

When DHCP is enabled the current values IP/IPV6 address, prefix length, subnet mask, default gateway, and DNS server settings are available. These settings are obtained from the DHCP server and cannot be changed manually.



NOTE: Ethernet configuration is available on fixed readers only.

Figure 15 FX Reader Ethernet Configuration



When DHCP is off, the following fields are configurable for IPV4:

- **IP Address** - provide the reader's assigned IP address.
- **Subnet Mask** - provide the Subnet Mask for the network the reader resides in.
- **Default Gateway** - provide the Default Gateway for the network the reader resides in.
- **DNS server** - provide the DNS Server appropriate for the network the reader resides in.
- **MAC Address** - specify the reader's MAC address.
- **Domain Search** - specify the search domain appropriate for the reader.



NOTE: When DHCP is enabled, changes take effect after setting the properties. When DHCP is disabled, the user must set the appropriate network parameters, and changes take effect after setting the properties.

When DHCP is off, the following fields are configurable for IPV6:

- **IPV6 Address** - provide the reader's assigned IP address.
- **Prefix Length** - provide the Prefix Length for the network the reader resides in.
- **Default Gateway** - provide the Default Gateway for the network the reader resides in.
- **DNS server** - provide the DNS Server appropriate for the network the reader resides in.
- **MAC Address** - specify the reader's MAC address.



NOTE: When DHCP is enabled, changes take effect after setting the properties. When DHCP is disabled, the user must set the appropriate network parameters for changes to take effect after setting the properties.

Bluetooth

The reader supports automatic IP configuration of the Bluetooth interface.

When a Bluetooth client is connected to the reader, the reader's IPV4 address, subnet mask, IPV6 address, and prefix length are viewable. These settings are automatically configured and cannot be changed manually.



NOTE: Bluetooth configuration is available on fixed readers only.

Figure 16 FX Reader Network Settings

123RFID Desktop

Network Settings

Configure Ethernet, Wi-Fi and Bluetooth Settings.

Ethernet : Network configuration settings

Wi-Fi : Network configuration settings

Bluetooth : Network configuration settings

IP Type: **IPv4**

Current IPv4 address :
 IPv4 Subnet Mask : 0.0.0.0
 MAC Address : 0.0.0.0

Discoverable :

Pairable :

Use PassKey : ☒

PassKey :

DHCP Start Address :

DHCP End Address :

Save

If a Bluetooth USB dongle is connected to the reader, the following Bluetooth properties are configurable:

- **Discoverable** - determine whether the reader is viewable by other Bluetooth-enabled devices in discovery mode.
- **Use Passkey** – enable the device to supply a predetermined passkey for authentication while pairing.
- **Passkey** – used for authentication.
- **DHCP Start Address** - the starting address of the DHCP IP range where an IP is assigned to the connecting device.

- **DHCP End Address** - the end address of the DHCP IP range out of where an IP is assigned to the connecting device.



NOTE: The DHCP IP range specified as the DHCP start address and DHCP end address determines the IP of the reader's Bluetooth interface.



NOTE: The first two octets of the reader Bluetooth interface's IP address are taken from the specified IP range, and the last two octets are formed using the reader BD address.

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)** - configure the RS232 port as the Debug port to obtain kernel and system debug messages.

Debug Port



Configure Debug Port

Baud Rate :	115200	▼	Parity :	none	▼
Data Bits :	8	▼	Flow Control :	hardware	▼
Stop Bits :	1	▼			

Save

- **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 : ☐

Wi-Fi Configuration

Edit an existing Wi-Fi configuration or create a new one.



NOTE: Wi-Fi configuration is available on handheld readers only.

1. In the existing connection, click **Get Details** for information on the SSID, Mac Address, IP Address, and the Connection Status of the connected network. Or click **Disconnect** to disconnect from the network.

Figure 17 RFD40/90 Wi-Fi Configuration

123RFID Desktop

Connect

Read

Configure

Firmware

USB Serial Device (COM11)

NAME

General

Region

Antenna

Trigger

Pre-Filter

Advanced

Communication

Certificate

Modify Data

Save Config

Wi-Fi

End Point

Wi-Fi Configuration

Existing Connection: - Get the details of connected network, disconnect from connected network.

SSID :

MAC Address :

Status : Disconnected

IP Address :

Get Details

Disconnect

Connect to Network: - Scan and Choose network or enter network ssid manually or select the existing profiles to connect to the network.

☐ Scan and Choose Network
 ☐ Enter SSID
 ☒ Choose existing profiles

SSID : asdasd





Protocol : No_Encryption

Hidden Profile : ☐

☒ Preferred WIFI

Delete

Connect

2. To add a Wi-Fi profile and connect to an existing profile, select **Scan and Choose Network, Enter SSID** or **Choose existing profiles** and enter the following information:
 - **SSID** - scan, select or enter the available networks. SSID shall be listed in the drop-down menu and can be refreshed on clicking .
 - **Protocol** - the suggested protocol will be set when you select the SSID and can be changed.
 - **Passkey** - enter the pre shared key for the WPA/WPA2 network.
 - **EAP** - select the extensible Authentication Protocol.
 - **CA Certificate** - click  to add the installed CA certificate to the network.
 - **Client Certificate** - click  to add the installed Client certificate to the network.
 - **Identify** - enter the identity/user name configured in the RADIUS server.
 - **Anonymous Identity** - enter the Anonymous Identity/Username configured in the RADIUS server.
 - **Password** - enter the password configured in the RADIUS server for the corresponding Identity/Username.
 - **Private Key** - click  to add the installed private/client key certificate to the network.
 - **Private Password** - enter the password to decrypt the private/client key.
 - **Hidden Profile** - this option allows the reader to connect to a Wi-Fi network even if it is not available during scanning.
 - **Preferred Wi-Fi** - select this option to make this Wi-Fi as the first choice to associate and connect.



NOTE: Only SSID fields are required for the **Choose existing profiles** option.

3. Click **Add** to add a network profile or click **Connect** to connect to a network.
4. Click **Delete** to delete the selected network profile.

End Point Configuration

Create, update, or delete an end point configuration for device management using SOTI and MDM.



NOTE: This feature is available for handheld readers only.

1. To add a new end point configuration, click **New**, enter the values and click **Add** to save the values.

2. Create a new end point by providing the following information:

Figure 18 RFD40 End Point Configuration

123RFID Desktop 1 Reader Connected

Connect Read Configure Firmware

USB Serial Device (COM11)

← BACK Wi-Fi End Point

End Point Configuration

End point configuration allows user to set endpoint configuration for SOTI and MDM.

Type: MDM Name: TestMDM Protocol: MQTT

Port: 1883 Tenant ID: TenantID Keep Alive: 40

Clean Session: ☐ URL: zebra.com Reconnect Delay: Min: 5 Max: 500 sec

Host Verify: Peer User Name: Password:

Command Topic: MDM/clients/cmdnd Response Topic: MDM/clients/resp Event Topic: MDM/clients/event

New Save Cancel

	Name	Type	Protocol	URL	Port	TenantID	User Name	Command Topic	Response Topic	Event Topic	Activate
<input type="checkbox"/>	TestMDM	mdm	MQTT	zebra.com	1883	TenantID		MDM/clients/cmdnd	MDM/clients/resp	MDM/clients/event	<input type="checkbox"/>

Delete Delete All

- **Type** - select the end point type.
- **Protocol** - select the protocol type.
- **URL** - provide the end point destination URL.
- **Port** - enter the port number of the connection.
- **Keep Alive** - enter the duration (s) to buffer messages when the connection is lost.
- **Tenant ID** - enter the tenant ID.
- **Clean Session** - enable or disable cleaning the session data of the connection.
- **Reconnect Delay** - enter the minimum and maximum seconds before attempting to reconnect.
- **Host Verify** - enable or disable verifying that the hostname in the certificate is valid for the host.
- **User name** - enter the Basic Authentication user name, if required.
- **Password** - enter the Basic Authentication password, if required
- **CA Certificate** - select and add the CA Certificate.
- **Client Certificate** - select and add the Client Certificate.
- **Private Key** - select and add the Private key.
- **Command Topic** - enter the basic Command topic.

- **Response Topic** - enter the basic Response topic.
- **Event Topic** - enter the basic Event topic.



NOTE: The **End point configurations list** shows all existing end point configurations. User can select an end point configuration to update.

3. Click **Save** to save the selected configuration, or **Cancel** to cancel the current operation.
4. Click **Delete** to delete the selected configuration, or **Delete All** to delete all existing configurations.



NOTE: The default end point configuration appears on the application if there is no existing end point configuration.

Certificate Management

Install or delete certificates on the reader by providing interface and certificate details.



NOTE: This feature is available for handheld readers only.

1. Select the required interface. If the user selects a custom interface, the user must provide a custom interface name.
2. Select the required certification type.
3. Click **Browse** and use the File Explorer to select the required certificate.

4. Click **Install** to install the new certificate.

Figure 19 Handeld Reader Certificate Management

123RFID Desktop

Certificate Management

Certificate Manage enables user to add new certificates and delete certificates .

Interface:

Certificate Type:

Select Certificate:

<input type="checkbox"/>	Certificate Name	Interface	Certificate Type
<input type="checkbox"/>	MDMCert_client_key		client_key

5. Click **Delete All** to delete all certificates, or click **Delete** to delete the selected certificates from the list.



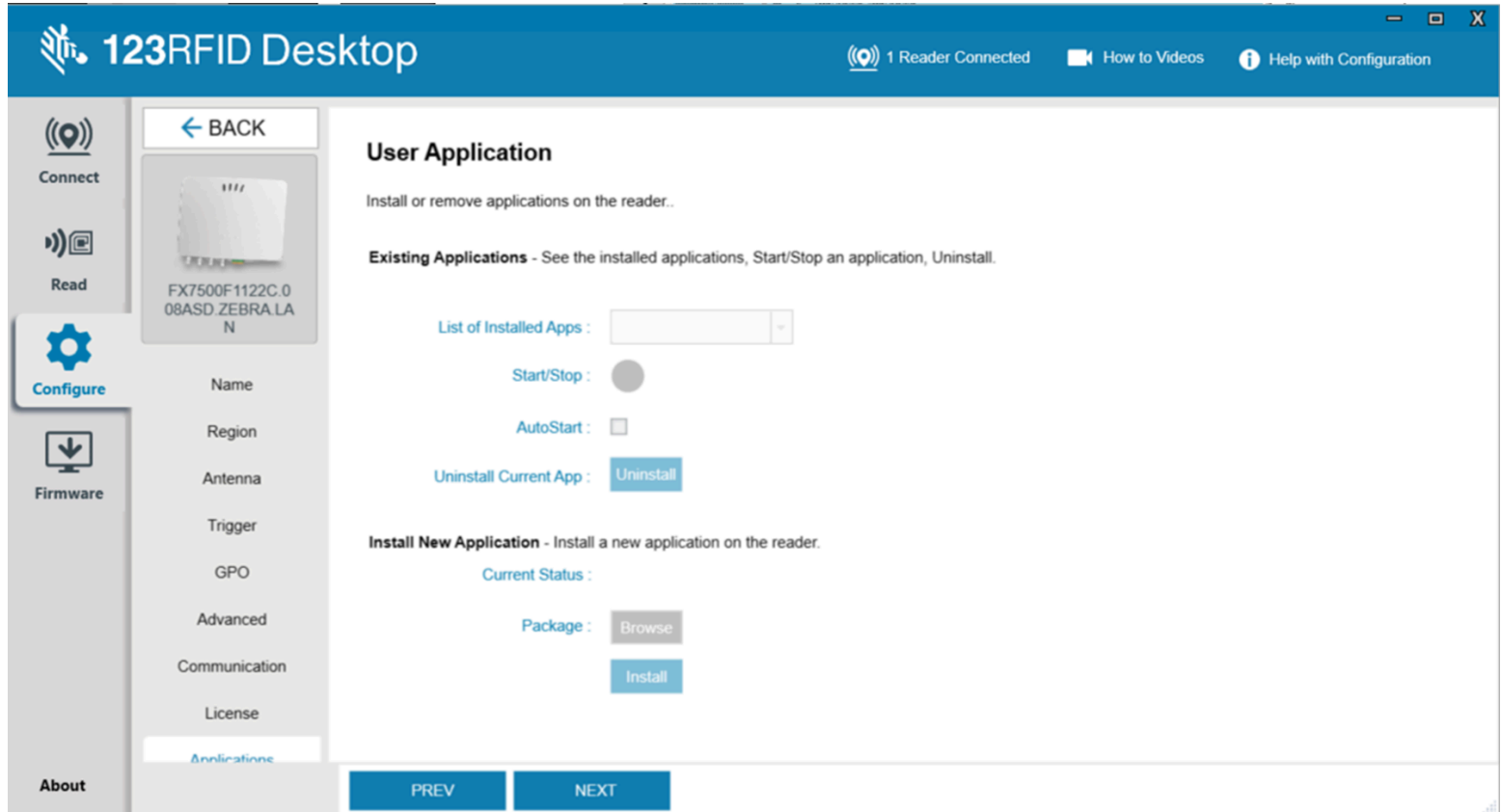
NOTE: A maximum of 10 certificates can be installed.

The 123RFID desktop application allows the user to select only the .pem certificate file for installation.

Configuring Reader Applications

Install or remove applications on the reader.

Figure 20 Fixed Reader User Applications



Modifying Data

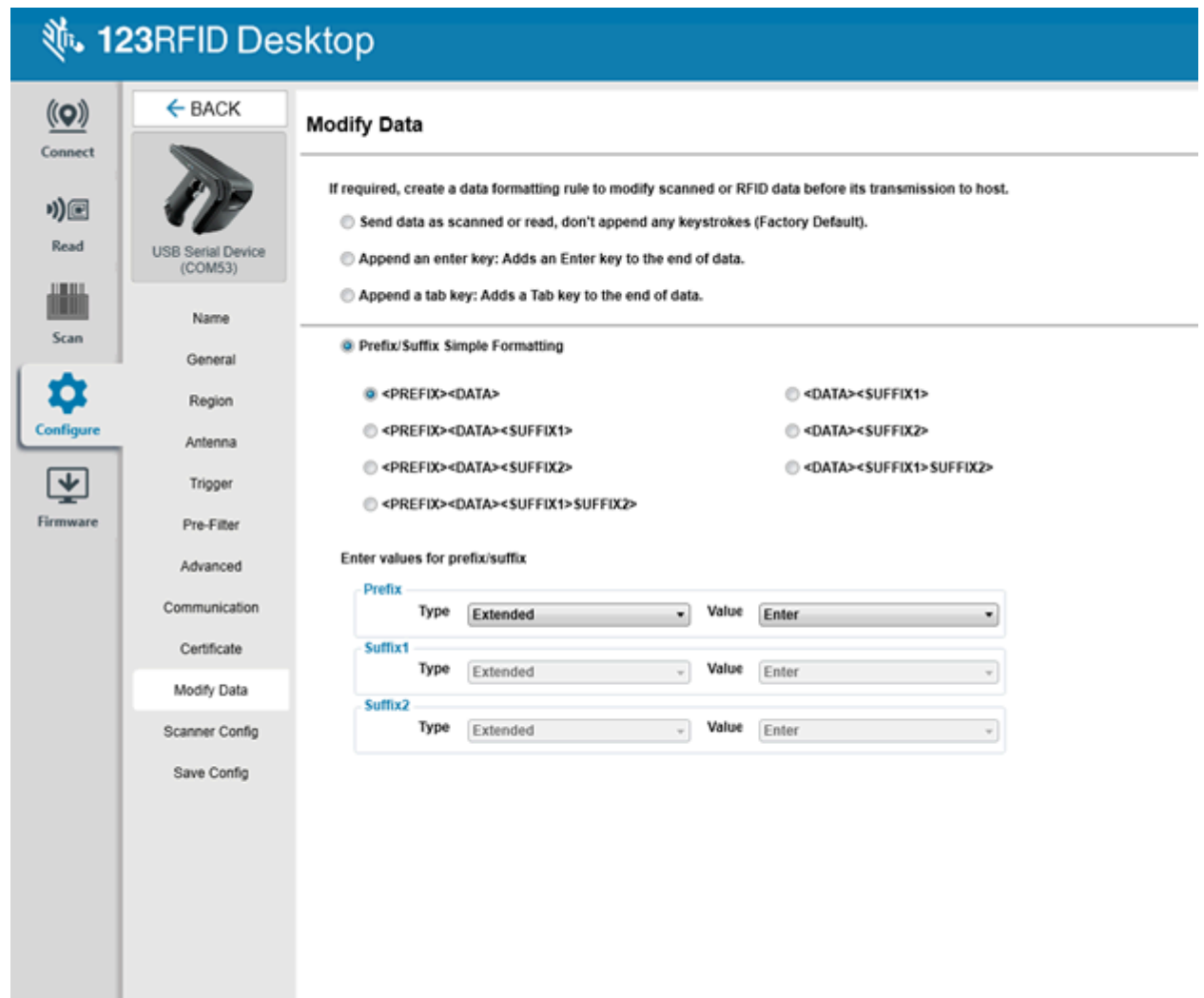
Create a data formatting rule to modify scanned and RFID data before its transmission to the host.



NOTE: This feature is available for handheld readers only.

1. Navigate to the **Modify Data** section to access data formatting.

Figure 21 Handheld Reader Modify Data



2. Select **Prefix/Suffix Simple Formatting**
3. Choose one of the following options to add a prefix or suffix to tag data.
 - <PREFIX><DATA>: Select to append a prefix to the data.
 - <PREFIX><DATA><SUFFIX1>: Select to append a prefix and suffix to the data.
 - <PREFIX><DATA><SUFFIX2>: Select to append a prefix and suffix to the data.
 - <PREFIX><DATA><SUFFIX1><SUFFIX2>: Select to append a prefix and two suffixes to the data.
 - <DATA><SUFFIX1>: Select to append a suffix to the data.
 - <DATA><SUFFIX2>: Select to append a suffix to the data.
 - <DATA><SUFFIX1><SUFFIX2>: Select to append two suffix to the data.

4. Enter the prefix/suffix values:

- Prefix: Select the suffix type and enter the value to append to the data as the prefix.
- Suffix1: Select the suffix type and enter the value to append to the data as a suffix.
- Suffix2: Select the suffix type and enter the value to append to the data as a suffix.



NOTE: Select a formatting setting to enter a value.



NOTE: Data formatting is available in HID mode and applies 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 simultaneously.

Scanning Configuration

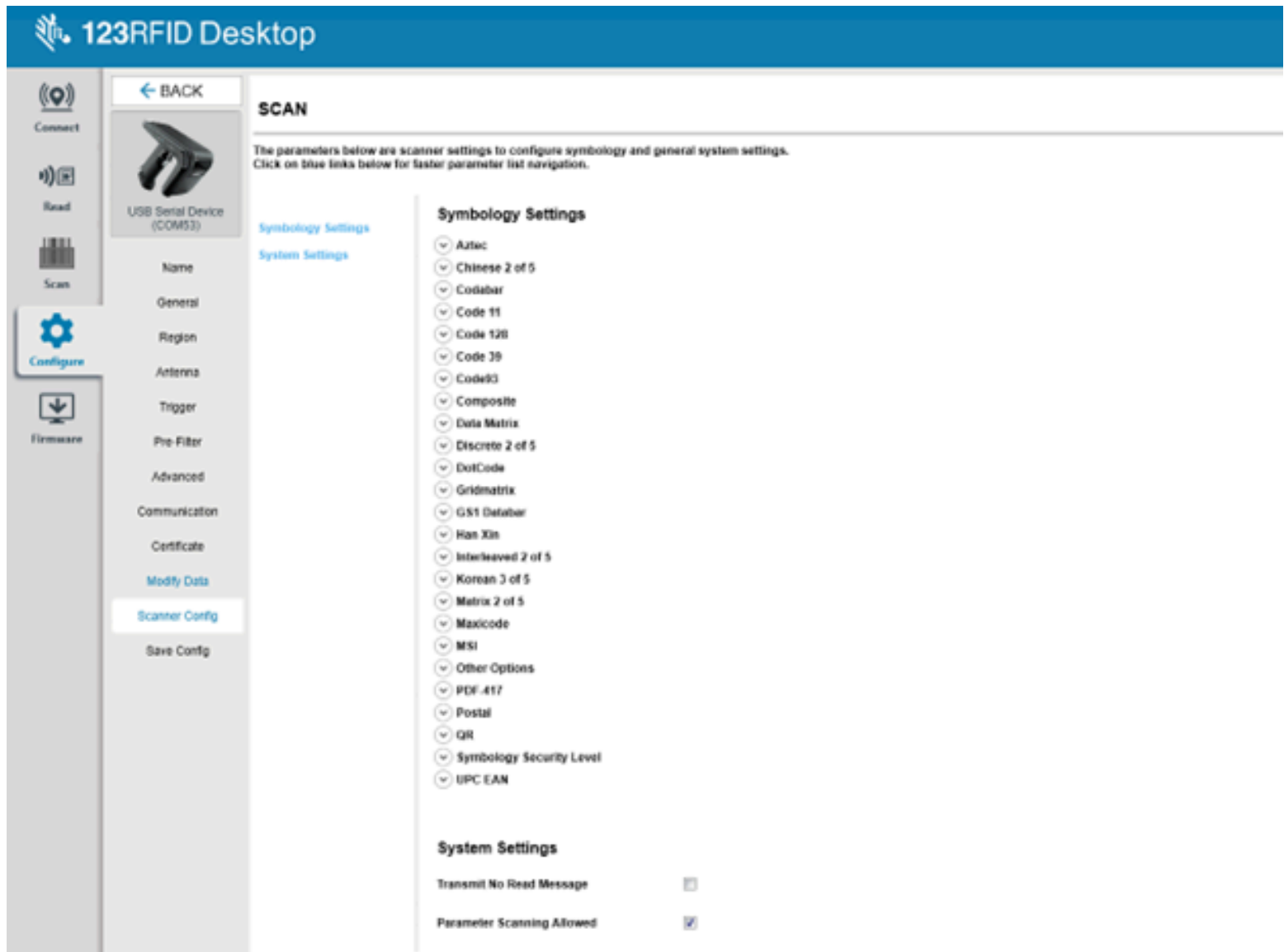
Configurable scanning settings include enabling or disabling specific symbologies and enabling/disabling specific settings at the system level, such as transmitting the no-read message or the device's trigger mode.



NOTE: This feature is available for handheld readers only.

- **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 22 Handheld Scanning Configuration

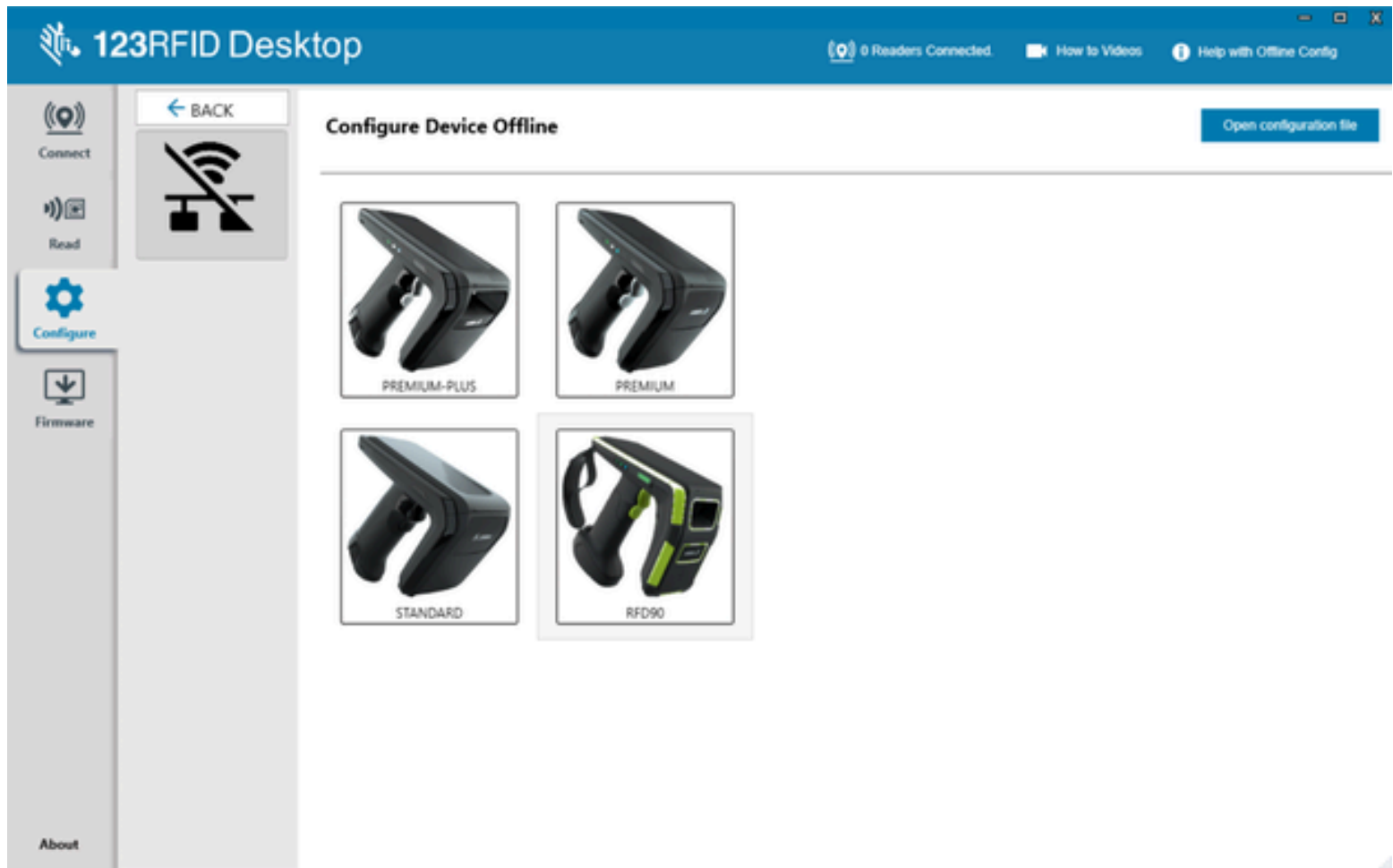


Offline Reader Configuration

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 23 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 interface. On the left is a sidebar with icons for 'Connect', 'Read', 'Configure' (highlighted), and 'Firmware'. Below these are menu items: 'NAME NOTES', 'RFID', 'SCAN', 'GENERAL', 'MODIFY DATA', 'WIFI', 'CERTIFICATES', 'END POINT', and 'LOAD AND PRINT'. The main area is titled 'NAME AND NOTES' and contains a 'BACK' button, a 'PREMIUM-PLUS' reader image, and instructions: 'Please be sure to give your settings a configuration name. You can also add notes.' There is a 'Configuration Name' field with 'Factory Default' and a '16 character limit' note. Below is a 'Notes' text area and a checkbox labeled 'Save only changed parameters from default' which is checked.

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 24 RFID Settings (Offline)

Connect

 Read

 Scan

 Configure

 Firmware

[NAME NOTES](#)

[RFID](#)

[SCAN](#)

[GENERAL](#)

[MODIFY DATA](#)

[WIFI](#)

[CERTIFICATES](#)

[END POINT](#)

[LOAD AND PRINT](#)

[← BACK](#)

RFID

The parameters below are RFID settings.
Click on blue links below for faster parameter list navigation.

[Regulatory Configuration](#)

[RFID Data Reporting](#)

[Advanced Configuration](#)

[Filter Options](#)

[Query Options](#)

[Trigger Configuration](#)

Regulatory Configuration

Country of Operation	NO REGION SET,INV ▾
Enable channel hopping	Enable ▾
Enabled Channels Mask	<input type="text" value="15"/>

RFID Data Reporting

First seen time-stamp	Enable ▾
Last seen time-stamp	Disable ▾
Protocol Control field	Disable ▾
Received Signal Strength Indicator (RSSI)	Enable ▾
Phase difference	Disable ▾
Channel index	Disable ▾
Unique tag reporting	Disable ▾
Tag seen count	Enable ▾

Advanced Configuration

Scanning Configuration

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

Figure 25 Scanning Configuration (Offline)

123RFID Desktop

SCAN

The parameters below are scanner settings to configure symbology and general system settings. Click on blue links below for faster parameter list navigation.

[Symbology Settings](#)
[System Settings](#)

Symbology Settings

- ☐ Aztec
- ☐ Chinese 2 of 5
- ☐ Codabar
- ☐ Code 11
- ☐ Code 128
- ☐ Code 39
- ☐ Code93
- ☐ Composite
- ☐ Data Matrix
- ☐ Discrete 2 of 5
- ☐ DotCode
- ☐ Gridmatrix
- ☐ GS1 Databar
- ☐ Han Xin
- ☐ Interleaved 2 of 5
- ☐ Korean 3 of 5
- ☐ Matrix 2 of 5
- ☐ Maxicode
- ☐ MSI
- ☐ Other Options
- ☐ PDF-417
- ☐ Postal
- ☐ QR
- ☐ Symbology Security Level
- ☐ UPC EAN

System Settings

Transmit No Read Message ☐

Parameter Scanning Allowed ☒

Timeout Between Same Symbols x100ms

Timeout Between Different Symbols x100ms

General Settings

General settings include batch mode, host type, HID keyboard, tag reporting, charging through the terminal (RFID40 and RFID90 UHF RFID handheld readers only), and timeout.

Figure 26 General Settings (Offline)

Connect
 Read
 Scan

Configure

Firmware

About

NAME NOTES
RFID
SCAN
GENERAL
MODIFY DATA
WIFI
CERTIFICATES
END POINT
LOAD AND PRINT

GENERAL

The parameters below are for configuring "General" settings. Click on blue links below for faster parameter list navigation.

[General Settings](#)
[Bluetooth](#)
[Beeper Settings](#)

General Settings

Bluetooth Batch Mode	Auto Batch Mode ▾
USB Batch Mode	Disable ▾
Delay before data transmission in batch mode	<input type="text" value="20"/> x 0.5 sec
Bluetooth Host Type	Serial Port Profile and Mfi Combo ▾
USB Host Type	CDC ▾
Convert Hex to ASCII	<input type="checkbox"/>
HID Keyboard Country Type	North American ▾
HID Keyboard Keystroke Delay	<input type="text" value="0"/> x1ms
HID Country Code Page	Default for a set Country Type ▾
Same Tag Reporting timeout In HID Mode	<input type="text" value="21"/> x1s
Key Remapping	Upper triqquer -RFID, Lower triqquer -Sled scan ▾
eConnex Terminal Charge	DISABLE ▾
iOS HID Virtual Keyboard	<input type="checkbox"/>
Off mode timeout	<input type="text" value="1800"/> x1s

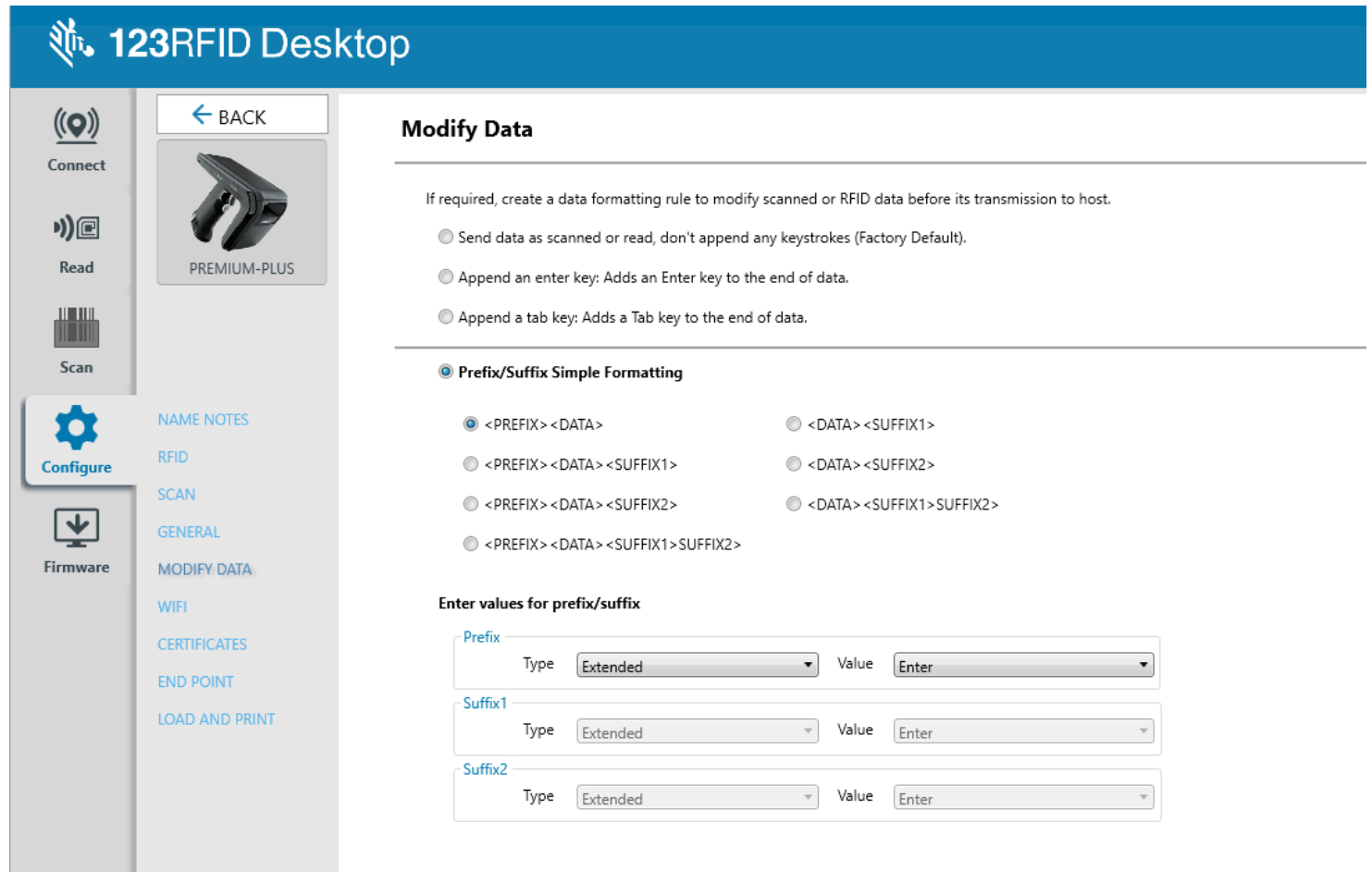
Bluetooth

Reconnect Attempts	<input type="text" value="6"/> attempts
Beep on Reconnect	Disable Beep ▾
BT Discovery	<input checked="" type="checkbox"/>

Modifying Data

You can create a data formatting rule to modify scanned and RFID data before its transmission to the host.

Figure 27 Modify Data (Offline)



Wi-Fi Configuration

Configure the Wi-Fi settings on the reader.

Figure 28 Wi-Fi Configuration (Offline)

123RFID Desktop

WIFI

Choose from the Wi-Fi options below

Wi-Fi Configuration
Wi-Fi Connection: - Set Wi-Fi network reader connection settings.
Profile has been added successfully.

SSID :

Protocol :

EAP :

CA Certificate :

Identity :

Anonymous Identity :

Password :

☐ Hidden SSID ☒ Preferred SSID

	SSID	Protocol	EAP	Identity
<input type="checkbox"/>	wi-fi123	WPA_Enterprise_TKIP	TTLS	test123

Certificate Management

You can install or delete certificates on the reader and provide details of the installed certificates.

Figure 29 Certificate Management (Offline)

The screenshot displays the 123RFID Desktop application interface. On the left is a sidebar with navigation options: Connect, Read, Configure (highlighted), and Firmware. The Configure section includes links for NAME NOTES, RFID, SCAN, GENERAL, MODIFY DATA, WIFI, CERTIFICATES, END POINT, and LOAD AND PRINT. The main content area is titled 'Certificates' and includes a 'BACK' button. Below the title, it states 'Configure certificates from options below'. The 'Certificate Management' section explains that it enables users to add/delete certificates in offline configuration. It features input fields for 'Interface' (set to 'wifi'), 'Certificate Type' (set to 'client_key'), and 'Select Certificate' (with a file path and a 'Browse' button). An 'Add' button is positioned below these fields. A table lists the installed certificates, showing one entry: 'wifi_client_key' on the 'wifi' interface with a 'client_key' type. At the bottom right, there are 'Delete All' and 'Delete' buttons.

123RFID Desktop

Connect
Read
Configure
Firmware

NAME NOTES
RFID
SCAN
GENERAL
MODIFY DATA
WIFI
CERTIFICATES
END POINT
LOAD AND PRINT

Certificates

Configure certificates from options below

Certificate Management

Certificate Management enables users to add/delete certificates in offline configuration.

Interface: wifi
Certificate Type: client_key
Select Certificate: C:\Users\lpmdalwan\Desktop\wifi.pem

<input type="checkbox"/>	Certificate Name	Interface	Certificate Type
<input type="checkbox"/>	wifi_client_key	wifi	client_key

End Point Configuration

End Point Configuration, allows you to add, update or delete end point configurations for SOTI.

Figure 30 End Point Configuration (Offline)

123RFID Desktop

Connect

Read

Configure

Firmware

NAME NOTES
RFID
SCAN
GENERAL
MODIFY DATA
WIFI
CERTIFICATES
END POINT
LOAD AND PRINT

BACK

PREMIUM-PLUS

End Points

Configure end-points from options below

End Point Configuration

End point configuration allows user to set end point configuration for SOTI.
End point configurations saved successfully.

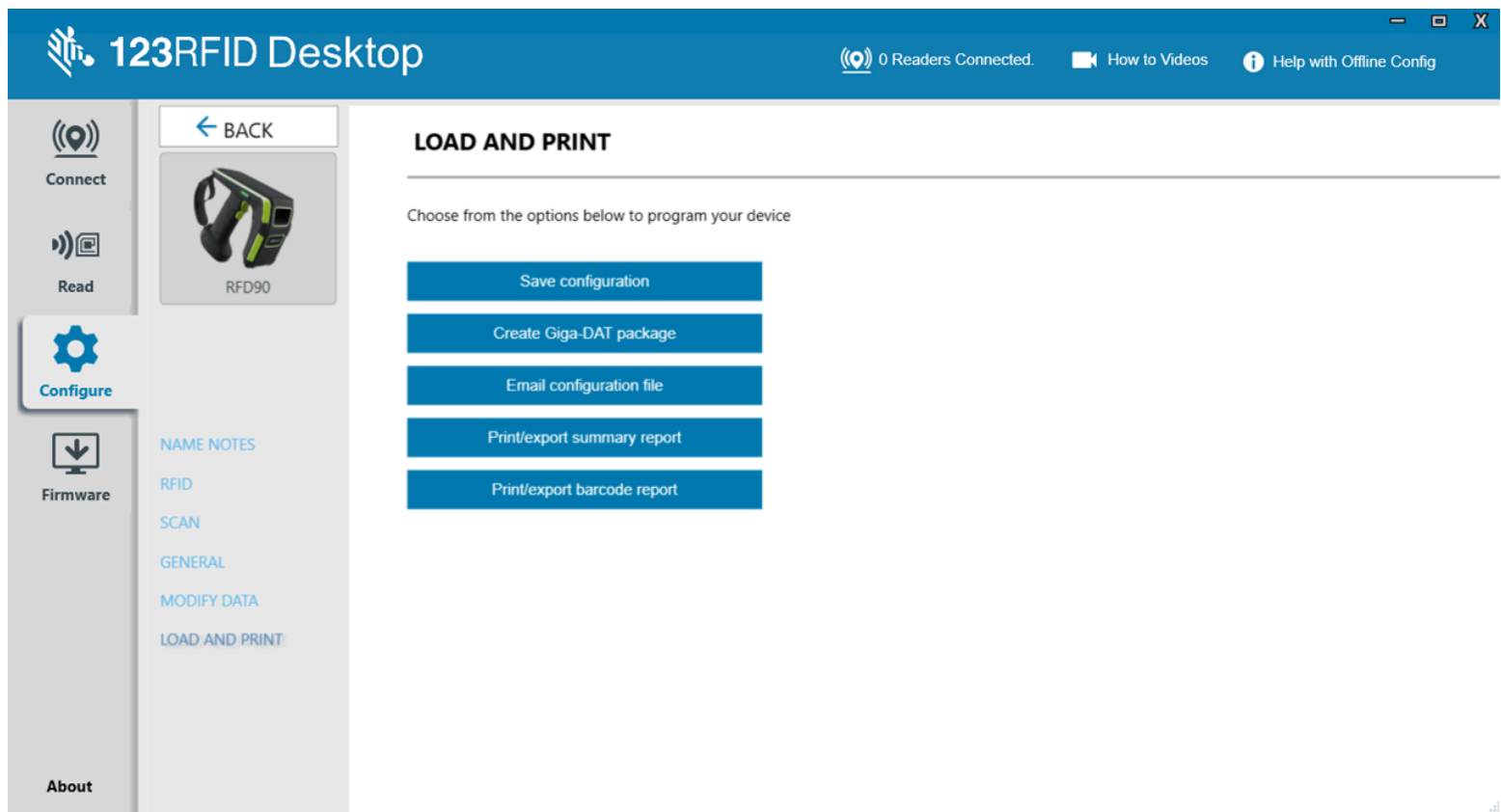
Type : MDM Name : TestMDM
URL : Port : 1883
Protocol : MQTT Keep Alive : 30 sec
Command Topic :
Response Topic :
Event Topic :
Host Verify : None Clean Session ☐
Reconnect Delay : Min : 5 sec Max : 500 sec
Client ID : Tenant ID :
User Name :
Password :

Operation	Name	Activate	Type	Protocol	URL	Port	Client ID	Tenant ID	User Name
<input type="checkbox"/> new	TestMDM	<input type="checkbox"/>	mdm	MQTT	testUrl	1883	123456	123456	

Add Update Delete All Delete

Load and Print Configuration

- **Save configuration** - Save the configuration in encrypted .rfdcfg format. The user must enter the password to encrypt the file.
- **Create Giga-DAT package** - Save the configuration to an encrypted Giga-DAT package (.EDAT). The user must enter the password to encrypt the Giga-DAT file.
- **Email configuration file** - This option allows the user to email a saved configuration file. The user must enter the password to encrypt the file.
- **Print or export summary report** - This option allows users to print or export summary reports of changed configurations.
- **Print or export barcode report** - This option allows users to print or export parameter barcode reports of changed configurations.



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.

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](#)

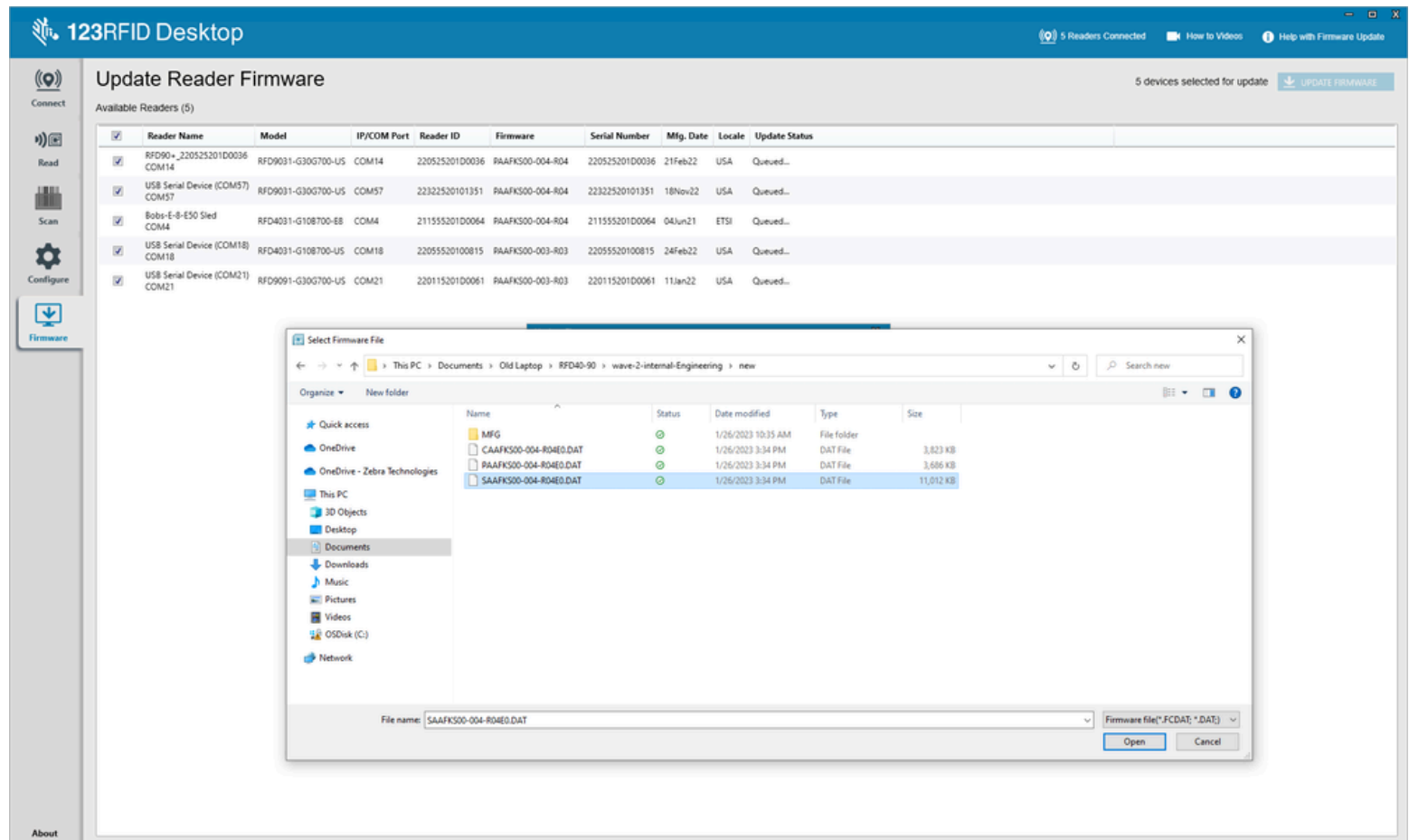
Available Readers (5)

<input type="checkbox"/>	Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Locale	Update Status
<input type="checkbox"/>	RFD90+ 220525201D0036 COM14	RFD9031-G30G700-US	COM14	220525201D0036	RAAFKS00-004-R04	220525201D0036	21Feb22	USA	
<input type="checkbox"/>	US8 Serial Device (COM57) COM57	RFD9031-G30G700-US	COM57	22322520101351	RAAFKS00-004-R04	22322520101351	18Nov22	USA	
<input type="checkbox"/>	Bobs-E-8-E50 Sled COM4	RFD4031-G108700-E8	COM4	211555201D0064	RAAFKS00-004-R04	211555201D0064	04Jun21	ETSI	
<input type="checkbox"/>	US8 Serial Device (COM18) COM18	RFD4031-G108700-US	COM18	22055520100815	RAAFKS00-003-R03	22055520100815	24Feb22	USA	
<input type="checkbox"/>	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 31 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

Update Reader Firmware

0/1 devices updated successfully [UPDATE FIRMWARE](#)

Available Readers (1)

<input checked="" type="checkbox"/>	Reader Name	Model	IP/COM Port	Reader ID	Firmware	Serial Number	Mfg. Date	Locale	Update Status
<input checked="" type="checkbox"/>	BT-HID-Mode-United-States-COM17	RFD9031-G30G700-US	COM17	Z20525201D0036	PAAFK500-003-R03	Z20525201D0036	21Feb22	USA	Updating (53%)

Connect
Read
Scan
Configure
Firmware
About



NOTE: The user must enter the password to update the firmware using an encrypted Giga-DAT file (.EDAT file). This applies to RFD40 and RFD90 devices.

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.

