FX Series Version 3.9.16 Release Notes

This document summarizes the following firmware release:

Firmware Release Number	Release Date	See page
V3.9.16	09-July-2021	Page 1

For support, please visit www.zebra.com/support

FX Series Release V3.9.16

Release Date: 09 July 2021

Zebra's Fixed reader series comprises of the following readers

1. FX7500 Fixed RFID Reader
2. FX9600 Fixed RFID Reader

Both readers are Linux-based devices driven by powerful RFID engine that enables users to integrate RFID into their business logic and applications with great ease and high efficiency.

Due to the introduction of a new firmware update process, downgrading to previous releases (V3.7.x) ARE NOT SUPPORTED once the reader is updated to V3.8.x or 3.9.x.

Please review IMPORTANT NOTES ABOUT FIRMWARE UPDATE on pages 4-5.

For a friendly user experience, it is recommended to use the 123RFID Desktop utility available from the Zebra support site or to configure the reader using FX Connect (available via license). For an evaluation license of FX Connect, please contact your Zebra sales representative.

Release Notes lists new features, any specific usage instructions, and any known issues.

The current build, FX Series 3.9.16, is applicable to both FX9600 and FX7500 readers.

The features and the issues mentioned in this document are applicable for all FX9600 and FX7500 SKUs

Note: The version 3.9.16 software update package includes the files required to update FX9600 and FX7500 RFID Readers.

Contents of the release package:

IMAGE TYPE	VERSION	FILE NAME	DATE
RM Server LLRP Server	3.9.16 3.9.16	platform_3.9.16.0.jffs2	06/21/2021
X-Loader	4.0.0	x-load_4.0.0.0.bin.ift	08/26/2018
U-Boot	3.0.15	u-boot_3.0.15.0.bin	10/02/2021
Operating System	3.7.7	uImage_3.7.7.0	10/02/2021
Root FS	3.8.7	rootfs_3.8.7.0.jffs2	10/02/2021
OsUpdate Utility	1.0.0	osupdate.elf	06/21/2021
FxUpdate Utility	1.0.0	fxupdate.elf	06/21/2021
Response	N/A	response.txt response_ext.txt	06/21/2021
Linux Kernel	4.9.182		
Radio Firmware	2.1.41 (FX9600) 1.4.88 (FX7500)		
Radio API	2.2.30.5		
EtherNet/IP	1.0.10	zebraethernetip_1.0.10.deb	10/02/2021
Profinet	1.0.1	ZebraProfinetApp_1.0.1.zip	10/02/2021
Modbus	1.0.1	ZebraModbusApp_1.0.1.zip	10/02/2021

Read To Cloud (r2C) Components Version Info:

IMAGE TYPE	VERSION	FILE NAME	DATE
R2C Debian Package	2.5.13	R2C_2.5.13.zip	06/21/2021
Cloud Agent	0.2.28.0	Cloud_agent.elf	06/21/2021
Radio Control	0.1.36.0	radio_control.elf	06/21/2021

Note – All the SDKs (Host & Embedded) are available in Zebra support site.

Host API release Version Info:

IMAGE TYPE	VERSION	FILE NAME	DATE
RFID3 C API DLL	5.5.6.3	RFIDAPI32PC.DLL	May 2021
RFID3 .NET DLL	1.5.6.2	Symbol.RFID3.*.dll	May 2021
RFID3 Java JNI DLL	1.4.0.49	RFIDAPI3_JNI_HOST.dll	May 2021
RFID3 Java API	1.4.0.49	Symbol.RFID.API3.jar	May 2021
123RFID Desktop	1.3.0.0	123RFID_Desktop_v1.3.0.0	Sep 2020

Native DLL's available for 64-bit. 32-bit RFID C Dll will be provided on request.

Host SDK:

DESCRIPTION	VERSION	FILE NAME	DATE
Zebra RFID FXSeries Host C SDK for Windows 7 and 10	V1.0.5	Zebra-RFID-FXSeries-Host-C-SDK_v1.0.5.msi	May 2021
Zebra RFID FXSeries Host .NET SDK for Windows 7 and 10	V1.0.5	Zebra-RFID-FXSeries-Host-DotNet-SDK_V1.0.5.msi	May 2021
Zebra RFID FXSeries Host Java SDK for Windows 7 and 10	V1.7	Zebra-RFID-FXSeries-Host-Java-SDK_V1.6.msi	May 2021
Zebra RFID C and Java SDK for 64 bit Host Linux (CentOS & Ubuntu)	V5.5.4.16 V1.4.0.48	Linux64_SDK_C_V5_5_4_19_JAVA_v1_4_0_49.tar.gz	10/02/2021

Embedded SDK:

DESCRIPTION	DOCUMENTATION	FILE NAME	DATE
Zebra Native Java SDK on Windows 7 Zebra Native Java SDK on Windows 10	Zebra-FXSeries-Embedded-Java-SDK-UserGuide_Windows.docx	Zebra-FXSeries-Embedded-SDK-Java-Windows_V1.0.1.zip	May 2020
Zebra Java SDK for Linux	Zebra-FXSeries-Embedded-Java-SDK-UserGuide_Linux.docx	Zebra-FXSeries-Embedded-SDK-Java_Linux_V1.0.1.tar.gz ZebraFXSeriesEmbeddedSDKJavaLinux_1.0.1.deb	May 2020
Zebra C / CPP SDK for Linux	Zebra-FXSeries-Embedded-C-CPP-SDK-UserGuide_Linux.docx	Zebra-FXSeries-Embedded-SDK-C-CPP_Linux_V1.0.1.tar.gz ZebraFXSeriesEmbeddedSDKCCPPLinux_1.0.1.deb	May 2020

Installation Instructions

There are multiple supported ways to upgrade the FX Series RFID readers.

Method 1 – USB Flash Drive:

This is the recommended method. Unzip images and copy to a USB drive. Connect USB drive to the FX Series reader. Upgrade will automatically start in 7-10 seconds.

Method 2 – 123RFID Desktop:

Zebra 123RFID Desktop utility can be used to update the firmware on FX Series readers using a simple and intuitive 3 step process.

The latest 123RFID Desktop can be downloaded from

https://www.zebra.com/us/en/support-downloads/software/utilities/123rfid.html

Refer to the video for help on updating the reader firmware using 123RFID Desktop

https://www.youtube.com/watch?v=NNDBPghjOg8&list=PLrcZVTwQp0ldXdysFQHwql9FyoBNuApfM&index=5&t=0s

Method 3 – Web Interface:

Copy images to the local drive of a local PC, log in to the reader, select 'File based upgrade' on reader upgrade webpage, Enter username and password of reader. Select image to upgrade from the local PC. Click 'Start upgrade'. If the reader firmware is older than version 2.7.19, please ensure to execute a two-step update. First update to version 2.7.19 and then to this new version.

Method 4 – FTP Server:

Copy images to an FTP server. Navigate to the reader upgrade webpage and select 'FTP upgrade' page. Enter username and password of the FTP server. 'Start upgrade'.

✓ FTP/SCP/FTPS server can be used to upgrade the readers.

✓ 123RFID can also be used to upgrade multiple readers with a single operation.

HARDWARE REQUIREMENTS

- FX9600 & FX7500 (all SKUs)

- A USB drive can also be used directly to initiate the upgrade process. The recommended browsers are Edge, IE11, Mozilla Firefox and Chrome V68

IMPORTANT NOTES ABOUT FIRMWARE UPDATE TO V3.9.16

- Due to the introduction of a new firmware update process, downgrades to previous releases are <u>not supported</u> once the reader is updated to V3.8.x or above.
- Readers will not allow revert-back to older firmware (older than V3.8.x) once the reader is updated to the current firmware. The revert-back feature will be available when the reader is updated a second time, the revert function will only revert to the lowest 3.8x version.
- Readers, when updated to V3.8.x using FTP-based update methods, will not enable revert-back until the next two firmware updates. This issue is not present in file-based or USB-based firmware updates.
- When using file-based update it is recommended to clear the cached pages and reload the pages of the web console to ensure that the reader upgrades properly.
- If the reader is upgraded/downgraded from/to any other version prior to V3.0.35, then some of the UI pages will not work properly due to cached pages from previous build. Hence it is required to clear the browser cache after any upgrade/downgrade.
- Both the FX7500 and FX9600 readers can be upgraded from V2.7.19 or above using the firmware update mechanisms mentioned in the Installation Instructions.
- When upgrading from older versions (prior to V2.7.19) using file-based methods, it is recommended to upgrade to V2.7.19 first and then upgrade to the current version.

ENHANCEMENTS / CHANGES in 3.9.16 over 3.8.22

- Enhancements to "Cloud Connect for RFID" as below
  - Extension to GET status API response to return the following status: temperature, radio status, power source, LLDP power negotiation status)
  - Support for Custom mode allowing more control of the radio configuration in Cloud Connect mode.
  - New Cloud APIs to retrieve logs and set log levels.
    - GET/PUT logs (configure logs).
    - GET/DEL logs/syslog (Export/Purge syslog).
    - GET/DEL logs/radioPacketLog (Export/Purge radio packet log).
- Cloud Connect mode configuration can be set via profile import
- Changes to support setting the GPO in cloud connect mode using the set config as per the user requirement.
- Enhanced the cloud page for enhanced reporting on cloud connection status.
- Changes to ensure that the reader always auto-connects to the cloud if it is enrolled to the cloud. Auto Connect option is no longer supported in the web console.
- Support to Get temperature in FX9600 when inventory is ongoing.
- Addition to indicate disconnect of the reader's MQTT connectivity by setting the Event LED to red. This will be turned off when connection is established back.
- Addition to support "RSSI Threshold" in FX9600

Issues Addressed in V3.9.16 over V3.8.22

- Added default root CA as part of the firmware for the Cloud Connect RFID feature. This was causing connection issues when the reader is deployed behind certain firewalls.
- Removed wpa_cli scan when polling for signal strength. This was causing timeout with few wireless dongles.
- Changes to address a high CPU utilization scenario when nameserver is not set correctly in static IP configuration:

  - Fix issue in RM wsgi script to wait with a sleep in case RM command/response socket recv() returns EAGAIN or EWOULDBLOCK
  - While retrieving ntp client statistics using ntpq, avoid reverse name lookup
- Fix the issue wherein GPI cannot be enabled after being disabled until all GPIs are disabled.

Known Issues

- SPR-40953 Access Slowness when reading memory bank data compared to V3.1.12
- Idle Mode time out is not used by Cloud Connect and should be set to 0 ensuring that the radio stays powered on before connecting to cloud. If the reader was configured with V3.1.12 Idle mode timeout defaults to "10" seconds. It is recommended to change this to 0 first to disable the Idle mode before Enrolling to Cloud.
- Rare occurrence of "Self-Signed Certificate error" is shown in the webpage when in http mode (it is a false alarm). There is no loss of functionality due to this issue and can be ignored.
- CPU Usage is higher than V3.6.28 when reading tags using the web console due to enablement of high-resolution timer.
- In Cloud Configuration, the AutoConnect option cannot be changed after Enrollment. This will be moved out of Enrollment in future release.
- Antenna status in web console is not updated with the antenna connect status when the reader is connected to cloud. The antenna status can be retrieved by the cloud app as part of get status API.
- RM Server does not indicate that the reader is dis-enrolled or dis-connected from Cloud if it is done outside the reader.

ADDITIONAL NOTES

Summary of major issues and limitations are listed below.

- Since the Reader will only accept zebra signed firmware, downgrades to previous releases are not supported.
- Reader will not allow revert back to older firmware (Older than V3.8.x) once the reader is updated to the current firmware.
- Reader when updated to V3.8.x using ftp based updated will not enable revert back until the next two firmware updates. This issue is not present in file based or usb based firmware updates.
- When updating the reader to 3.8.x it is necessary to clear the browser cache to use the pages that use Node JS. Some of the web pages that need this are ReadTags, Advanced Antenna Configuration, FXConnect, Serial configuration, Syslog.
- If reader is upgraded/downgraded from/to any other version prior to 3.0.35, then some UI pages will not work properly due to cached pages from previous build. Hence it is required to clear the browser cache after any upgrade/downgrade.
- User applications installed on older release (2.7.x, 2.6.x etc.) will not execute on 3.x build. Users will have to recompile their apps using the new tool chain.
- Applications that use RFID3 API to perform reader firmware update must use RFID3 API for C dll version 5.5.2.15. There is no need to recompile the app as the dll signature has not changed.
- For Keyboard Emulation under FX Connect feature, Data Suffix and Data Prefix will work for lower-case alphabets only other special characters may not work.
- Tag Data from Keyboard Emulation uses all lower-case alphabets.
- In Reader Wireless Settings Parameter web page, WIFi signal strength is always shown as 100%. To read the correct strength, refer to the ESSID field
- Number of rounds stop trigger when more than one antenna is enabled does not stop reads after N rounds
- LLRP in secure mode will prevent the Read Tags, Advanced Antenna Config, Serial port communication and Zebra FX Connect web pages from functioning properly. To use the above functionality, it is recommended to set LLRP to non-secure mode to use these features. There is no security risk as the non-secure connection is internal to the reader.
- Serial Port configuration (including BaudRate, StopBits, DataBits, Flowcontrol and Parity) and Mode of usage (Debug, Push Data or free Port) changes need reader reboot before these changes take effect. However, the Tag reporting and inventory settings in push data mode take effect immediately without reboot.
- After changing serial port configuration, banner message "reboot required" is not consistent. It is recommended to follow above note whenever serial port configuration is changed.
- Large file names are not supported when importing reader configuration in Reader Profiles web page
- It is not possible to disable GPI function as defined in the LLRP standard. It is simply recommended to just not use the GPI function if it is not needed for a use case.
- RFSurvery is not supported in FXSeries Readers even though the LLRP capability reports true for canDoRFSurvey.