

FXR90 F/W Version 3.0.16 Release Notes

This document summarizes the following firmware release:

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

FXR90 Release V3.0.16

Release Date: 1st Sep 2025

Zebra FXR90 reader is a Linux-based device driven by a powerful RFID (Radio Frequency Identification) ID engine that enables users to integrate RFID into their business logic and applications with great ease and high efficiency.

For a friendly user experience, it is recommended to use the 123RFID Desktop utility available from the Zebra support site.

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

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Note: The version 3.0.16 software update package includes the files required to update FXR90 RFID Readers.

Contents of the release package:

IMAGE TYPE	VERSION	FILE NAME	DATE
FXR90 Firmware	3.0.16	FXR90_3.0.16.tar.bz2	09/01/2025

SDK/Tools:

IMAGE TYPE	VERSION	FILE NAME	DATE
123RFID Desktop	3.0.0.45	123RFID_Desktop_3.0.0.45.zip	07/06/2025
Android RFID SDK	2.0.4.177	Zebra_RFIDAPI3_SDK_2.0.4.177.zip	11/20/2024
		API3_ZIOTCTransport-release-2.0.4.177.aar	11/20/2024
		API3_ZIOTC-release-2.0.4.177.aar	11/20/2024
		API3_INTERFACE-release-2.0.4.177.aar	11/20/2024
		API3_TRANSPORT-release-2.0.4.177.aar	11/20/2024

Installation Instructions

There are multiple supported ways to upgrade the FXR90 RFID readers.

Method 1 – USB Flash Drive:

Copy firmware image file (.tar.bz2) to a USB drive root folder. Connect USB drive to the FXR90 reader. Upgrade will automatically start in 7-10 seconds. Once the update is completed, the reader will reboot with new firmware version.

Note:

- The file system supported are FAT32, VFAT & ext4.
- 2.0.10 supports only FAT32 filesystem.

Method 2 – 123RFID Desktop:

Zebra 123RFID Desktop utility can be used to update the firmware on FXR90 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=PLrcZVTwQp0ldXdysFQHwqI9FyoBNuApfM&index=5&t=0s>

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

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 'Update'.

- ✓ The recommended browsers are Edge, Mozilla Firefox, and Chrome v68 or newer.

Method 4 – File 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. 'Update'.

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

HARDWARE REQUIREMENTS

- FXR90 (any SKU)
- M12X to RJ45 Ethernet Cable (Part Number: CBL-ENT00101-M1200, CBL-ENT00301-M1200, CBL-ENT00500-M1200, CBL-ENT01501-M1200)
- A USB type C drive if performing the update using Method #1
 - Need USB-C Host Cable (Part Number: CBL-USBCHST015-M12 or CBL-USBCHST035-M12)

Key Features

3.0.16 (ALL SKU)

- Support GS1 LLRP protocol 1.0.1
- Support GS1 RM protocol - RFID3 API utilizes a subset of RM commands internally; external use of these commands is not supported.
- Auto Connect LLRP or IOTC based on first come first serve basis (only one active connection at any point of time)
- Allow rfidadm user to control IOTC interface
- Support RFID3 Host SDKs for Windows
 - RFID3 .NET v1.0.7
 - RFID3 Java v1.8
- SPRs
 - Fix for "allow password starts with special character '\$'"
 - Fix for "Connectivity issues with WebSocket endpoint."
 - Fix for "802.1x Wi-Fi Connection with Certificate"
 - Fix for "Fix for no communication issue – Amber/Yellow power light on reader bootup"
- Security Enhancements
 - Prevent brute force login
 - Password Length extended to 32

Known Issues

- IoT Connector: Get Status API takes several seconds to return.
 - Frequent calling this API may result in timeout+
 - Resolution: This call must be made no less frequently than every 30 seconds.
- Debounce Time not supported for Radio GPI 3 & 4.
 - Radio does not support
 - Resolution: The default debounce time is set to 10ms in the Host GPIs 1-4.

ADDITIONAL NOTES

Summary of major issues and limitations are listed below.

- LLRP backward compatibility – Features not supported
 - Reader Profiles
 - Operational Statistics
- RFID3 Host SDKs (.NET & Java) for Windows
 - The following Reader Management (RM) functions are not supported in FXR90:
 - Operational Statistics (Get / Clear)
 - Get/Set Read Point Status
 - Idle Mode
 - File based software update
 - User App install
 - The following functions are not applicable:
 - Profiles (GetList, importFromReader, ExportToReader)
 - License Management (Acquire online/offline, Return, Available Licenses)
 - Get/Set USB Operating Mode
 - Important Notes:
 - Only secure connection (HTTPS) supported.
 - GPI Debounce Time (Min debounce time: 5ms, Max: 1s)
 - Disconnect and connect require 5s of delays after region settings
- FIPS 140-3
 - MSCHAPv2 inner authentication not supported with PEAP & TTLS
 - WLAN: WPA2/3 Enterprise
 - Ethernet 802.1x
 - Recommended minimum of 14 characters password length (Any passwords/certificates)
 - Ciphers Supported
 - TLS13-AES128-GCM-SHA256:TLS13-AES256-GCM-SHA384:TLS13-AES128-CCM-SHA256:TLS13-AES128-CCM8-SHA256
 - ECDHE-ECDSA-AES128-CCM:ECDHE-ECDSA-AES128-CCM8:ECDHE-ECDSA-AES256-CCM8:DHE-RSA-AES128-GCM-SHA256:DHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES128-GCM-SHA256:ECDHE-RSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384
 - Minimum network tool client versions
 - WinSCP 6.35
 - Putty 0.8.3, ExtraPutty 0.30 (compiled with PuTTY 0.67)
 - scp 9.6
 - sftp 9.6
- eSIM
 - Supports up to five profiles depending on the carrier (size of the profile).
 - Ensure that Internet Connectivity available with SMDP+ server of Mobile Network Service Provider
 - If any eSIM operation is not responding for longer (>10min), reboot the reader and try again.
- Use either RNDIS or Ethernet loopback Interface to make direction connection to the reader. Connecting both interfaces at the same time will not work.
- Certificate Manager
 - CA Cert update requires reboot only for WebSocket endpoint connections.
 - PFX Certificate downloads supports from IP based servers (not host names/Fully Qualified Domain Name)
- Tag Memory Access

- Recommended to use **Low Interference** Environment setting if Access Write operation performance is low.
- Tap-to-Pair (BT PAN)
 - For Windows OS, it is recommended to disable passkey for consistent connectivity. For Windows 11, Click Windows->Bluetooth & devices > Devices and select **Advanced** in Device Settings->Bluetooth devices discovery.
 - For iOS devices, it is recommended to disable passkey. iOS devices allow only SSP and do not allow fixed PIN. PIN security feature is deprecated as per Bluetooth specifications.
- Debounce time setting not available GPI3 & GPI4.
- Reader Administrator Console – Web UI
 - For Demo purpose, the Reading Tags Demo is set to CUSTOM operating mode. The demo will not work if some other operating mode is set via REST/MQTT.
 - For 123RFID Desktop, one of the data endpoints must be set to WebSocket.
 - If this is changed, the demo apps (123RFID Desktop) will not work.

Previous Releases:

3.0.10 (ALL SKU)

- FIPS 140-3 support enabled out of the box
- SPR
 - Fix for the issue “GPS co-ordinates not reflecting the actual location along with tag data event”

2.0.18 (Ethernet, WLAN, WAN SKU)

- BSP
 - Latest Wi-Fi firmware from NXP (Hotspot)
- eSIM support (Verizon)
 - Fix for profile registration
 - Accept activation code with only SMDP+ URL
 - Status handling for LPA
- Wi-Fi Hot Spot (ETH, WAN)
 - Back end, Web UI
 - IOTC API support
 - 2.4 GHz (dedicated for Hotspot)
 - 5 active client connections
 - WPA2/WPA3 Personal
- Mobile Friendly Web UI
 - Android
 - iOS
 - Enterprise Tablet
 - Screens
 - Dashboard, Read Tags,
 - End point configuration, F/W update

- Security Updates
 - OpenSSH – CVE-2024-6387
- Enhancement
 - Logs (migrated from syslog to rsyslog), clean-up unwanted logs
 - Manage Crash dumps
 - Japan LBT (channel selectable)
 - IOTC Doc updates
 - Dashboard to show the disabled network interfaces depends on power source.
- Recovery updates
- Network Dynamic Routing (IPv4, IPv6)
- Fixes
 - RFID Radio max power is limited to regulatory max power
- SPRs
 - WPA2/3 password to support single quote
 - FXR90 IoT TCP connection status behavior

2.0.10 (Ethernet, WLAN, WAN SKU)

- WAN Support
 - Cellular Data Connectivity
 - Support for either physical SIM & eSIM
 - Network type (Auto, 5G, 4G/LTE)
 - Allows to configure APN (depends on Mobile Network Operator)
 - Configure IPv4 or IPv6
 - eSIM (Profile Management)
 - Add
 - Enable/Disable
 - Delete
 - List
 - Support for Verizon Static SIM
 - Support GPS
- Web UI
 - Cellular Config for Physical SIM and eSIM
 - Live Cellular connectivity/eSIM status
 - Signal strength
 - Carrier/Mobile Network Operator (MNO)
 - Network type 4G, 5G
 - Roaming
 - Manage CA Cert
- Zebra IoT Connector Extensions
 - Change Password
 - Get GPS location.
 - GPS Co-ordinates as part of tag data event
 - WAN (Cellular) Config

- Physical SIM
- eSIM
 - Add
 - Enable/Disable
 - Delete
 - List
- NTP Configuration
- Operating Mode start/stop GPI trigger extended to support GPI 3 & 4
- Default Cable Loss compensation is changed to 8dB per 100ft from 10dB. (Enterprise Reset is required to reflect this)
- Support for file-based firmware update via Safari Browser

1.0.4 (Ethernet / WLAN SKU)

- Support 64-bit ARMv8-A, 2GB storage for user application
- Robust security
 - Secure Boot
 - Full Disk Encryption
 - FIPS 140-2
- Integrated Antenna support for 4+1 reader SKU.
- Pre-selection (Cellular Band filter)
- Zebra IoT Connector interface (same as FX Series)
 - API/Command: REST, MQTT
 - Events Streaming:
 - Tag Data: MQTT, WebSocket, HTTP, TCP/IP (secured/non-secured)
 - Management Events: MQTT, WebSocket, HTTP (secured/non-secured)
 - Batching and Retention (retain 150K tag events)
 - Cloud: AWS, Azure
 - DA (Data Analytics) App
 - Python 3.10
 - Node.js 16.1
 - IOTC Changes specific to FXR90.
 - New!
 - set_region for configuring the regulatory setting.
 - set_importCloudConfig to configure management, control, data, management events.
 - Radio Connect/Disconnect, set region status reported via registered management event channel.
 - get_networkInterface to list the available network interfaces.
 - get_availableWifiNetworks to get the available wireless networks.
 - get_preSelection/set_preSelection to configure Cellular Band Filter

- Changes
 - get_network/set_network API supports additional interfaces Wi-Fi, Bluetooth.
 - get_version does not return bootloader version, revert firmware version.
 - get_status does not report NTP Sync status & Flash details as it is not supported.
 - Management Events reports empty NTP Sync and flash details. Also, it does not report individual components under updateProgressDetails during firmware update.
 - get_ntpServer/set_ntpServer is not supported.
 - Reader is configured to work with WebSocket for data and management events.
- Modern UI - web Interface for reader administration. Swagger REST API documentation integrated to learn and try out the API.
- Reader Discovery (WS-Discover, ZeroConf)
- USB RNDIS
- Wi-Fi 6
 - Scan and connect to available networks.
 - Connect to Hidden Wi-Fi.
 - Connect to last known SSID.
 - Option to select internal or external antenna,
 - WPA 2/3 Personal
 - WPA 2/3 Enterprise
 - PEAP
 - MSCHAPv2
 - TLS
 - TTLS
 - MSCHAPv2
 - TLS
 - TLS
 - WPA3 Enhanced Open
- Bluetooth PAN
 - Option to select internal or external antenna.
 - NFC Tap-to-Pair
- LLDP Power Negotiation to acquire additional power for the reader power sourced with PoE+ switch.
- Intelligent power and thermal management