

# **IQOYA X/LINK range**

## **firmware release notes**

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# IMPORTANT

Firmware for IQOYA codecs are delivered by Digigram technical support.

Access to new firmware versions depend on the signed "support & maintenance contract".

## Installation steps

If your IQOYA X/LINK unit runs a firmware v03.14d002 (or more recent), it can be updated directly to a more recent firmware version.

If IQOYA X/LINK runs a firmware from v03.02b003 to v03.14c001, proceed as follows:

- First, update X/LINK to firmware v03.14d002
- Then update X/LINK to a more recent firmware version

If IQOYA X/LINK runs a firmware from v03.01b007 to v03.02a009, proceed as follows:

- First, update X/LINK to firmware v03.02b003
- Then update X/LINK to a more recent firmware version

If IQOYA X/LINK runs a firmware older than v02.01f001, proceed as follows:

- First, update X/LINK to firmware v02.01f001
- Then update X/LINK to firmware v03.02b003
- And finally update X/LINK to a more recent firmware version

## Firmware v04.02c001- June 2026

**Minimum Version:** You must upgrade to version v03.14d002 or higher before installing these updates.

**Backup:** An audio configuration backup is strongly recommended before proceeding.

**Compatibility:** These updates are NOT available for the IQOYA X/LINK MPX platform.

### What's New

- RIST Support: A RIST tunnel is now available for both encoding and decoding tasks.
- MPEG-TS Decoding: The units now support full MPEG-TS decoding.
- Support of low-bitrate Opus 8kHz Mono (down to 6 kbits/s)
- Enhanced Security:
  - Fail2Ban: A new service that bans IP addresses after repeated failed login attempts via SSH or HTTP.
  - SSH Credentials: The root SSH password is now dynamically generated based on the unit's serial number (iqoya12345, where 12345 is the last 5 digits of the S/N).
- Advanced Audio Routing:
  - Output Duplication: Receiver programs can now play on multiple audio outputs and internal buses simultaneously.
  - Dynamic Channel Lists: A new command allows changing output channel lists dynamically without requiring a full receiver reconfiguration or causing audio glitches.
- System Monitoring:
  - Persistent Logs: Users can now enable persistent logging for both the audio engine and the Linux system to aid in long-term troubleshooting.
  - PTP Alarms: Added a configurable threshold for "PTP grand master lost" alarms.



- Web & Streaming:
  - HTTPS Support: Shoutcast and Icecast HTTPS streams are now supported.
  - HLS Tags: Added EXT-X-DISCONTINUITY tags in HLS playlists to improve stream transitions.

### Fixes

This section covers resolutions for defects in core functionality that existed prior to the v04.01 release cycle:

- Audio Engine Stability: Fixed a critical defect where stopping receiver 2 would cause a stream loss on receiver 1.
- Hardware Integration: Resolved an issue where the "SetLed" command failed during the audio engine start.
- Web Interface:
  - Fixed the inability to create a "receive-IP" service if the first service was an MPTS type.
  - Corrected an issue where AoIP metrics were not working or could not be reset.
  - Fixed a bug where the header error zone in the Web Interface would not refresh correctly.
- SNMP:
  - Fixed a crash of the SNMP daemon occurring during VLAN creation.
  - Resolved "field not writable" errors when trying to set device names or clock sources via SNMP.
- Connectivity & Services:
  - FTP: Fixed a corruption error that prevented the FTP service from starting.
  - NTP: Addressed "Local clock not synched" alarms by adding a configurable threshold for clock sync failures.
  - SIP: Resolved a bug in digest authentication that caused SIP accounts to deregister over time.
- HLS Performance: Fixed an "Audio engine crash" specifically related to HLS streams on simple HTTP servers.

## Firmware v03.15a001- May 2024

### Distribution Mode

#### What's new

- Added EXT-X-DISCONTINUITY-SEQUENCE and EXT-X-DISCONTINUITY tags in HLS playlists
- Added persistent logs (Preferences - system / logs settings)
  - Audio engine persistent logs : persistent logs for the audio engine
  - System persistent logs : persistent logs for the Linux distribution. These system traces should be enabled only for temporary investigation purposes.
- Added decoding of HTTPS Shoutcast/Icecast streams.
- Added "PTP grandmaster" lost alarm threshold parameter.
  - The value of the threshold parameter is the number of PTP sync messages lost before to raise the "PTP - grandmaster lost" warning. The allowed range is 3 to 10. The default value is 3.
- Added "Stop streaming on silence detection" function for MPEG-TS SPTS streams (Send).
- Added HE-AACv2 48000Hz Stereo 64 kb/s and HE-AACv2-ADTS 48000Hz Stereo 64kb/s audio formats
- Added AAC\_LC 48000Hz Stereo 384 kb/s and AAC\_LC\_ADTS 48000Hz Stereo 384 kb/s audio formats



- HLS streaming: change of chunk naming for CDN delivery  
Segments are named using the stream start <Date>T<Time> as prefix.  
Exemple : 20231106T145220\_p1s\_000000003.ts ==> stream started the 06 november 2023 at 14h52min20s.

### Fixes

- Logs stored on the SDCARD were not present in the logs archive. Fixed.
- Added a check in order to not allow this firmware and the following ones on the IQOYA X/LINK MPX which has its own firmware.
- SNMP daemon could crash when declaring a VLAN. Fixed.
- There were a lot of "Local clock not synched with server" and/or "Clock sync failed alarm is ON" messages in the logs. Fixed.  
New fields are available from the Preferences - Services - NTP page:
  - "Clock sync failed" alarm threshold : to set the clock sync alarm threshold
  - "Current NTP estimated error" : to display the current NTP estimated error (auto-refresh)
- It was not possible to update a MPEG-TS SPTS Send IP Service. Fixed.
- Tunneling parameters were missing in the MPEG-TS/Program Associated Data section. Fixed.
- In contribution mode, SIP accounts could unregister over the time. Fixed.
- AAC-LC\_ADTS 290kbps with PTS announcement period set to 2000ms was not decoded by other devices. Fixed.
- HLS streaming: Wrong value of the #EXT-X-PROGRAM-DATE-TIME HLS TAG. Fixed.  
#EXT-X-PROGRAM-DATE-TIME HLS TAG values are now generated by reading the system date/time at each beginning of the new segment. Dropped segment cases are handled in a better way.
- HLS: streaming to Akamai CDN. An audio glitch was occurring approximately every hour. The encoder was not pushing the program playlist when the server was challenging the authentication at the same time. Fixed.
- HLS streaming to Akamai CDN: the chunk buffer size was too small for an MPEG\_L3 320 kbps program. Fixed.
- SNMP: there was an error "field not writable" when setting parameters disDeviceName, disPreferencesAudioCoreSampleRate, disClockSyncRef, disClockSource and disCommandName. Fixed.

## Firmware v03.14d002- October 2023

### Distribution Mode

#### What's new

- DHCP option 12 : IQOYA X/LINK now provides its hostname in its DHCP request. If the DHCP server supports DHCP option 12, it will relay this hostname to the DNS (or WINS) service.
- 802.1x support :network security (ie DOT1x) is now supported on each network interface of IQOYA X/LINK.  
802.1x network security settings are available on each Preferences - Network - <network device name> page.  
Only EAP-TLS authentication mode is supported at this moment.

No check on identity and private key password fields (except empty field) is done for the moment.



File size check during security certificates upload. File size limit is 100 kB.

Auto delete of unused security certificates during the security settings change.

- Network settings : IPv4 address, Subnet mask, Default gateway, Primary DNS and Secondary DNS are automatically refreshed in DHCP mode.

No need to manually refresh the page.

### Fixes

- Broadcast traffic did not work for output UDP frames in tunneling mode. Fixed.
- It was no longer possible to change WEB access credential settings (login). Fixed.
- X/LINK-AES67: "Sender detects network problem" error with 4 AES67 IN+OUT and 4 PCM Send+Recv.  
The number of simultaneous full-duplex PCM stereo codecs with AES67 I/Os is now 6.  
The 8 full-duplex stereo codecs are possible when using compressed audio.
- The AoIP output configuration (AES67) was duplicated when the output name was changed, which led to issues. Fixed.

## Firmware v03.12- January 2023

### Distribution Mode

#### What's new

- Added "Maximum\_Bitrate\_Descriptor" in the PMT, and "ES\_Rate\_flag" in the PES for MPEG-TS MPTS and SPTS streams. By default they are enabled for the generated MPEG-TS streams, and they are disabled for HLS streams.  
It is possible to disable/enable them manually in the IQOYA configuration file (download the audio configuration, edit and modify the config file, and upload it). See user's manual.

## Firmware v03.11b001- December 2022

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, X/LINK-AES67.

**Please see section "Important installation steps" for the firmware update procedure**

### Distribution Mode

#### What's new

- Duplication of the analog output(s) to the digital AES3 output channel(s). This can be configured from the WEB page Receiver/Programs, for X/LINK-LE, -ST, and DUAL.

#### Fixes

- When using X/LINK-LE in mono, front panel vu-meters were not displaying the



- modulation of the appropriate channels. Fixed.
- VLANs were not displayed when editing an IP Service from the Receive section. Fixed.
- Adding a routing table to a configuration where an Eth interface is set to an IP address without gateway, adds this gateway to this Eth interface. Fixed.

## Contribution Mode

### Fixes

- SIP account status display : “disabled” status was not displayed. Fixed.

## Firmware v03.10a002- July 2022

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, X/LINK-AES67, and X/LINK-MPX.

**Please see section “Important installation steps” for the firmware update procedure**

## Distribution Mode

### What’s new

- New menu Preferences / Services / WEB API from the WEB GUI to configure the WEB service access mode : HTTPS or HTTP. HTTPS is the default mode.  
Login and password for HTTPS are those used to access the WEB GUI.  
Login as administrator is required to modify this parameter.

### Fix

- Silence detection alarms are present in the log file even if these alarms are disabled from the WEB page. Fixed.

## Firmware v03.09f001- June 2022

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, X/LINK-AES67, and X/LINK-MPX.

**Please see section “Important installation steps” for the firmware update procedure**

## Distribution Mode

### Improvements and fixes

- On the vumeters WEB page, the values for digital gains were not correctly refreshed with firmware version 3.09e. Fixed.
- Distribution mode:  
When using SNMP (for monitoring) and the WEB service API (for configuration changes for instance), it may happen that SNMP does not correctly report information about Send and Receive sections. This depends on the frequency of the requests made via the WEB service API. Fixed.
- Distribution mode  
Start/stop of an MPEG-TS IP Service via the WEB service API does not work. Fixed.



- Distribution mode  
No audio modulation displayed on Audiobus vu-meters. Fixed.
- On X/LINK-MPX, and with the previous firmware version , a reset to factory settings does not apply an appropriate default audio configuration. A proper default configuration file has to be uploaded from the WEB page. Fixed.
- Distribution mode  
Possible error "Sender data time-out" with some CDNs when IQOYA starts and several HLS streams start. Fixed.
- Distribution mode  
In a given configuration of MPEG mono encodings and decodings, a few cases of the audio engine being stuck after a receiver decoder underrun have been found. Fixed.

## Firmware v03.09e002- January 2022

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, X/LINK-AES67, and X/LINK-MPX.

**Please see section "Important installation steps" for the firmware update procedure**

### Distribution Mode

#### What's new

- HLS streaming: added support for Akamai MSL4 CDN (HTTP with and without authentication - Digest SHA-256 & MD5).
- For Icecast/Shoutcast decoding, added support of the permanent redirection error code (301).
- Supports X/LINK-MPX

#### Improvements and fixes

- Digital gain with 0.01 step for each decoding priority (Receive - Program)
- MPEG-TS: Private component with PID 0 is always present in the PMT table. Fixed
- ICECAST/SHOUTCAST - It was no longer possible to enter an authentication with password and without login. Fixed.
- MPEG-TS DATA INSERTION - No payload at all (no PES) inserted in the TS packet if there is no private data available. Fixed.
- The command SNMP SET disReceiveIpServiceStreamUrl restarts the audio engine. Fixed.
- Changing the payload value of an existing IP service (Receive) set to "Inband signaling" was not working. Fixed.  
Same problem for the program (Receive) when changing the audio format. Fixed.
- The WEB GUI does not respond after setting an audio I/O name that includes the characters " or /. Fixed.
- WEB service API: the Loss parameter is now a numerical value (like it is from the WEB page and via SNMP)
- VLAN were not up after a device powerup. Fixed.
- Attached VLANs are now restarted after a new DHCP request.
- OPUS with INBAND FEC was not correctly implemented (in-band FEC was not used). Fixed.

### Contribution Mode



### Fixed issues & improvements

- Opus: added "sprop-stereo" parameter in the SDP. This parameter is required for remotes from third party codecs (AETA).

## Firmware v03.07d001- April 2021

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, and X/LINK-AES67.

**Please see section "Important installation steps" for the firmware update procedure**

### Distribution Mode

#### What's new

- Insertion of data associated with audio programs in the MPEG-TS stream. Each program of the TS stream can contain an audio elementary stream and a data elementary stream. The data elementary stream can contain data coming from a serial port or UDP port (text, characters, commands), and/or triggers coming from physical or virtual GPI's. The insertion of data associated with a program is configurable from the WEB page Send-> IP service.

### Contribution Mode

#### What's new

- When a mono input is used as a source of a stereo IP audio stream, it is duplicated to the left and right channels transported by the stream. When an incoming mono stream is decoded to a stereo output, both the left and right output channels receive the decoded mono signal.
- When a stereo input is used as a source of a mono IP audio stream, left and right channels are mixed before mono encoding and streaming. When an incoming stereo stream is decoded to a mono output, the decoded left and right channels are mixed to the mono output. A -6dB gain is applied on the left and right channels before mixing them.

## Firmware v03.06b001- March 2021

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, and X/LINK-AES67.

**Please see the section "Important installation steps" for the firmware update procedure.**

### Distribution Mode

#### New features

- HLS multi-bitrate encoding (one compression format per manifest), push and pull modes. Supported compression formats are: MPEG Layer 2 & Layer 3, AAC-ADTS (LC, HEV1, HEV2, LD, ELD). Up to 6 bitrates of the same audio compression can be included in a manifest. Parameter presets for Akamai and AWS CDN's. Tested also with Streamguys CDN.



### Fixed issues & improvements

- The WEB site was trying to reload too early during a firmware update : the properties page was not well loaded. Fixed.
- FEC Stream section was displayed in UDP mode for MPEG-TS IP Services. Fixed. it is now displayed only in RTP mode.
- Audio bitrate value displayed in the WEB page "Receive - program" was not the value that was previously configured. Fixed
- When configuring an MPEG-TS IP service, the minimum bitrate value automatically calculated was not correct. Fixed.
- When configuring the DVB parameters of an MPEG-TS stream (DVB mode active), if no DVB parameter was set and settings were saved, an error message was displayed but not easily visible. Fixed.
- In the MPEG-TS FEC configuration, there was no check on the number of rows (which must be between 4 and 20). The IP service was not starting when this value was to a value lower than 4. Fixed. The validity of the value is now checked.

## Firmware v03.05e001- September 2020

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, and X/LINK-AES67.

**Please see section "Important installation steps" for the firmware update procedure.**

### Distribution Mode

#### New features

- Added DVB mode on MPEG-TS encapsulation (send only)

#### Fixed issues & improvements

- VLAN configuration was not included in the full device configuration archive
- Characters "space" and "." are now allowed in device name field (Properties web page)
- MPEG\_L2 32000Hz stereo 384kbps audio format added
- Firmware update through SNMP was not working
- For NTP based audio synchronization, "Synchro clock" and "Presentation delay" parameters were not always displayed
- Possible crash on the SNMP service on X/LINK-AES67
- SNMP - Audio config must be uploaded in /media/RAM (instead of /media/SDCARD) in order to be used with apply-config command
- SNMP: Apply-config (disCommand table) was not working. Check failed was always returned.
- SNMP: SET first-channel command was not always correctly managed .
- SNMP: sysDescr now gives a full device description (Manufacturer DeviceModel). Ex: DIGIGRAM IQOYA X/LINK-DUAL  
sysObjectID gives the root OID for the device (.1.3.6.1.4.1.23901.1.5)
- Error on save action for "Send - IP Service" with one multicast destination and one unicast additional destination

### Remote Broadcasting Mode



### New features

- IQOYA CONNECT support
- Adaptive jitter buffer

## Firmware v03.03b006- February 2020

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, and X/LINK-AES67.

Since firmware version 3.02a007, X/LINK codecs can be run in distribution mode (like with all previous firmware versions), or in remote broadcasting mode (live full duplex communications through SIP - registered and unregistered modes, or without SIP - symmetric RTP).

**Please see section "Important installation steps" for the firmware update procedure**

### Distribution Mode

#### Fixed issues & improvements

- Restoring the X/LINK configuration from the SD card was not working properly with previous firmware version. Fixed.

### Remote Broadcasting Mode

#### Fixed issues

- Simultaneous start/stop of multiple codec instances was not working. Fixed.

## Firmware v03.02a007- January 2020

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, and X/LINK-AES67.

It allows running the codec in distribution mode (like with all previous firmware versions), or in remote broadcasting mode (live full duplex communications through SIP - registered and unregistered modes, or without SIP - symmetric RTP).

### Distribution Mode

#### Improvements

- With previous versions, it was not possible to change the name of an audio bus in use. It is now possible.
- With previous versions, changing the name of an input, an output or an audiobus was causing a short break in the audio operation. This is no longer the case.
- With previous versions, IGMPv3 settings were not available in UDP streaming mode (Receive / IP Service). IGMPv3 can now be configured for the UDP mode.
- With previous versions, changing the listening port of a received IP Service via SNMP (Receive / IP Service) was failing. Fixed.
- All the lines of the log file were not displayed on the WEB page. Fixed. The first 1000 lines are now displayed. When scrolling to the bottom, the next 1000 lines



- are loaded, etc...
- With previous versions, RTP domain names for destination IP addresses were not allowed (Send / IP Service). Fixed.
- With previous versions, RTP domain names for destination IP addresses were not allowed (Send / IP Service). Fixed.

### Fixed issues

- It was not possible to change the audio format of a program used in a MPEG-TS IP Service (SPTS or MPTS). Fixed.
- Error message "You have errors in your entry..." was displayed when changing the name of an audio bus.
- When enabling the GPIO's from the WEB GUI (GPIO activation - Enabled), the field "GPI transmission mode" was displayed empty once the configuration is validated. Fixed.
- In dual streaming mode, the FEC payload type was limited to values <99 instead of 128. Fixed.
- When allocating more than 9 UDP sockets for metadata insertion in IP Services, UDP ports from the 10th port were not allocated correctly. Fixed

## Remote Broadcasting Mode

### Fixed issues

- In symmetric RTP mode with FEC, there was an error on the UDP port number used to send back an FEC stream. Fixed.
- Hangup may not work when the codec is called with a phone through a SIP trunk

## Firmware v03.01b007- November 2019

This firmware applies to X/LINK-ST, X/LINK-LE, X/LINK-DUAL, and X/LINK-AES67



### **IMPORTANT**

**Upgrade to this firmware version is only possible if the device is running firmware version 02.01f001.**

**Once version 03.01b007 is installed on the unit, the rollback to a previous version is not possible.**

### New features

- Possibility to run the codec in distribution mode (only mode of previous firmware versions) or in remote broadcasting mode (point to point full duplex connection through SIP, unregistered SIP, or symmetric RTP). Selectable from the WEB GUI.

### Fixed issues for distribution mode

- SNMP service could not start (error cannot update snmpd\_conf)
- Redundant power supply SNMP alarm did not work



## Firmware v02.01f001- July 2019

### Fixed issues

- PTP domain value published in AES67 was in hexadecimal
- Invalid channel number message for AoIP
- AES67 / Ravenna / Livewire inputs could not be used as audio sources

## Firmware v02.01e001- June 2019

First released firmware version for X/LINK products