QXD 1RU Firmware Release Notes

v1.0.0.2

Added

Web audio control

- New top-level Audio section with Inputs, Mix Bus, Zones and Outputs tabs, each with channel overview cards and per-channel detail pages.
- Live control of input gain/trim and sensitivity, zone level and source, and output level, mute, polarity, delay, crossover, limiter and speaker preset.
- Editable numeric fields alongside every slider, with range validation.
- Delay entry in milliseconds or metres, with a unit toggle.
- User-assignable names (up to 23 characters) for analogue inputs, digital inputs, mix buses, zones and outputs.
- Speaker preset selector on each output channel, including selecting FLAT to bypass.

Parametric EQ

- Browser-based parametric EQ with an interactive frequency-response chart and draggable band handles.
- 5 bands per analogue input, 10 bands per output.
- Copy EQ from one output channel to another.
- Compact mobile layout with a dot band selector, inline enable/type controls and a logarithmic Q slider.
- EQ settings are persisted and restored on boot, and are included in configuration backups.

Mix buses and output routing

- Four mix buses, each with eight independent source levels (32 mix points), configured from the Mix Bus tab.
- New Output Routing settings page for selecting the source of each of the four expansion outputs from any analogue input, digital input, mix bus or zone.

Metering

- Real-time level meters on the Inputs, Zones and Outputs pages and on the Dashboard.
- New zone (area) meters, read directly from the DSP, shown in a 2×2 dashboard grid and bridge-aware on outputs.
- Meters referenced to 0 dBFS peak.
- Analogue-VU style bar ballistics with a separate peak-hold line.
- Meter data broadcast at 5 Hz (200 ms) carrying a 250 ms peak maximum.
- Meter bar colour now reflects peak level.

Front panel

- Front panel lock with a 4-digit PIN: Set PIN, Clear PIN, Lock Now, and an auto-lock timeout (off, 30 s, 1 min, 5 min, 15 min, 30 min, 1 hr) based on encoder inactivity.
- Alert reason codes so the panel shows a specific message for PIN mismatch, wrong PIN and ?no PIN set? instead of a generic alert.
- Output mute added to the front panel output menu.
- Reset Advanced menu option for inputs, zones and outputs ? flattens EQ and clears advanced settings ? plus an indicator showing when a channel has advanced settings applied.
- Chunked speaker-library transfer to the front panel, so large libraries transfer reliably.

Configuration backup and restore

- GET /api/v1/config/backup downloads the complete device configuration as userConfig.bin.

- POST /api/v1/config/restore accepts a configuration file, validates it, commits it atomically and restarts the device. Invalid or future-version files are rejected without touching the live config.
- Backup and restore are exposed in the web interface.

Control API
- REST GET endpoints: /audio/inputs, /audio/outputs, /audio/zones, /audio/mixes, /audio/inputs/eq, /audio/outputs/eq, /settings/outputRouting, /settings/generator.
- REST PATCH endpoints under /api/v1/audio/ for input channels, output channels, zones, mix buses, individual EQ bands (/eq/{band}), individual mix levels (/mixes/{m}/levels/{i}) and expansion outputs. Omitted fields are left unchanged; unknown fields cause the whole request to be rejected.
- WebSocket command protocol (t:"c") covering the same operations, with per-command success/error responses and targeted change broadcasts.
- Change broadcasts are scoped by topic (audio.inputs, audio.outputs.eq, audio.zones, audio.mixes, audio.expansion, audio.settings) and, for EQ, by channel ? a single EQ edit now sends roughly a quarter of the previous payload.
- New /api/v1/speaker-library/commit and /api/v1/speaker-library/cancel endpoints for two-phase library uploads.

Interface
- Light and dark themes with a toggle, and a redesigned visual style across the interface.
- Device name shown in the browser tab title.
- Signal generator controls (source, frequency, level, white noise) on the Inputs page.
- Fan curve selection on the Device > Setup page, backed by GET/POST /api/v1/settings/fan.
- Upload progress and processing feedback during speaker-library uploads.

Changed Behaviour
- Speaker-library metadata responses are now streamed, removing the previous size limit and keeping memory use constant regardless of library size.
- Speaker library format V3 stores FIR coefficients in natural order (h[0] first). V1 and V2 libraries are still supported and converted when loaded.
- Speaker-library uploads are now two-phase: presets are re-applied automatically once the new library is committed.
- Fan curve control moved from the WebSocket protocol to a REST endpoint.
- The expansion output endpoint moved to /settings/outputRouting.
- Slider commands are throttled to prevent flooding the device?s WebSocket connection.
- WebSocket keep-alive heartbeat behaviour reworked for more reliable connection detection.
- Input gain trim levels adjusted (28 dBu, 10 dBV, 12 dBu).
- Mute and standby timers are shown prominently with a monospace readout.
- esp-mdns updated to 1.11.1, esp-dns updated.
- Configuration format bumped from v6 to v8, adding advanced-active flags, channel names, expansion output sources, front-panel lock state and zone priority storage.

Bug Fixes

DSP and audio
- FIR coefficients are now written to the DSP in the correct tap order. Previously they were written reversed. Existing

configurations and libraries are migrated on load.
- Low-pass and high-pass EQ bands are now unity gain, the notch filter is a correct RBJ notch, and an invalid coefficient set now falls back safely instead of producing undefined output.
- Fixed the 180° all-pass filter.
- Corrected the DSP chain order so input metering is taken from the correct point.
- Meters are now referenced to 0 dBFS peak (previously mis-scaled), and a double division by 100 in the meter path was removed.
- Fixed crossover settings not being applied when a preset was recalled.
- Crossover filter type list corrected to the 14 types supported by the DSP.
- Input sensitivity labels corrected to match the DSP values (+12 / +28 / +4 dBu, ?10 dBV).
- Output source now uses the correct DSP enum, fixing an unhandled routing case.
- Filter enable and delay maximum parameter bugs fixed.

Stability
- Fixed occasional crashes when multiple WebSocket clients were connected and EQ was being adjusted.
- Fixed a race condition when copying EQ between channels.
- Fixed speaker-library file upload failures and chunked transfer errors on large files.

Power, GPIO and front panel
- Eco standby now wakes on audio as intended.
- GPIO mute now only auto-unmutes when the mute was triggered by GPIO, respects a user-set mute after a speaker preset is applied, and clears a stale mute flag on power-on.
- Fan speed is reset to 0 on boot to clear stale front-panel MCU state.
- Fixed front-panel display resets and menu wipes caused by sending zeroed display state.
- Reset Advanced now executes at the correct menu level.
- Front-panel changes are broadcast to connected browsers whenever the configuration changes.

Interface
- Bridge availability is no longer lost when a WebSocket update arrives.
- Power mode labels corrected ? Trigger and Trigger (Eco) were swapped relative to the firmware.
- Speaker preset selector now allows FLAT (UUID 0) and shows the current selection.
- Levels display ?? dB instead of -Infinity; the input ?Gain? control is now labelled ?Trim?.
- Power sliders show their current value and no longer apply a conflicting colour override.
- Scrollbars removed on 1RU displays; EQ canvas overflow fixed; EQ gridlines are now visible in both light and dark themes.
- Factory reset now preserves the package version across the NVS erase.

Package Versions

Core - V1.0.0.1
Aux - V0.0.2.9
Panel - V0.0.4.15

QXD 1RU Firmware Release Notes

v0.1.5.1

Package Contains the Following Updated Versions:

Core - v0.1.5.1
- Standardised Error Messages for Incorrect File Types

Package Contains the Following Maintained Versions:
Front Panel - v0.0.3.2
- Support for tree style speaker libraries
- Display of Firmware Update

Aux - v0.0.2.6
- Fix to Temperature Sensing

Known Issues
- No feedback for update progress. The amplifier will reboot upon completion of update.
** After update to this firmware version the device will show update progress for subsequent updates **

Generated: 2026-10-08 09:35:53

QXD 1RU Firmware Release Notes

v0.1.1.1

Package Contains the Following Updated Versions:

Core - v0.1.2.10
- Allow removal of Wi-Fi client details.
- Fixes to updating status information

Panel - v0.0.2.0
- Add display refresh for Network Info

Package Contains the Following Maintained Versions:

Aux - v0.0.2.6
- Fix to Temperature Sensing

Known Issues
- No feedback for update progress. The amplifier will reboot upon completion of update.

Generated: 2026-10-08 09:35:53

QXD 1RU Firmware Release Notes

v0.1.0.5

Package Contains the Following Updated Versions:

Core - v0.1.1.5
- Updates to API for Ethernet Settings

Package Contains the Following Maintained Versions:

Aux - v0.0.2.6
- Fix to Temperature Sensing

Panel - v0.0.1.2
- Fix to handling library to allow for larger libraries.

Known Issues
- No feedback for update progress. The amplifier will reboot upon completion of update.

Generated: 2026-10-08 09:35:53

QXD 1RU Firmware Release Notes

v0.1.0.2

Package Contains the Following Updated Versions:

Core - v0.1.1.3
- Introduce Static IP Addressing to WiFi Client and Ethernet Interfaces
- Code Tidying

Package Contains the Following Maintained Versions:

Aux - v0.0.2.6
- Fix to Temperature Sensing

Panel - v0.0.1.2
- Fix to handling library to allow for larger libraries.

Known Issues
- No feedback for update progress. The amplifier will reboot upon completion of update.

Generated: 2026-10-08 09:35:53

QXD 1RU Firmware Release Notes

v0.0.1.28

Package Contains the Following Versions:

Core - v0.1.0.20
- Fixed issue with Channel 1 Input Sensitivity Selection
- Improvements to Library Handling
- Bug fixes to Reset Handling
- Fix to Fan Speed

Aux - v0.0.2.6
- Fix to Temperature Sensing

Panel - v0.0.1.2
- Fix to handling library to allow for larger libraries.

Known Issues
- No feedback for update progress. The amplifier will reboot upon completion of update.