

PRORXD 1RU / 2RU Professional Receiver Decoder

Version 2.8.0
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Domo Tactical Communications (DTC) Ltd
Fusion 2, 1100 Parkway,
Solent Business Park, Whiteley,
Hampshire, PO15 7AB, England

T: +44 (0)1489 566 750
F: +44 (0)1489 880 538

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Change History

Version	Main Changes from Previous Version	Released By
1.40	Initial release.	SV
1.41	Bug Fix – UDP Streaming port validation	SV
1.42	Bug Fix – 2U touchscreen buttons re-sizing	SV
2.0.0	MPEG-4 ASP Support + Improvements	SV
2.1.0	D298/D299 tuner card support + Fixes	SV
2.1.1	Bug fixes	SV
2.2.0	Improved demod and decoder performance + other enhancements and fixes.	SV
2.3.0	Low delay H.264 support + production support fix	SV
2.3.1	Kernel patch to cope with newer SD cards	SV
2.4.0	Dual Pedestal / Packet Diversity / Remux	SV
2.4.1	DDR calibration fix	SV
2.5.0	Video Preview on 2U touchscreen + bug fixes	SV
2.5.1	Linear Audio, Improved RTSP support + bug fixes	SV
2.6.0	ProRXD-AEON Support + bug fixes	SV
2.7.0	Improved ProRXD-AEON support and various bug-fixes	SV
2.8.0	D335 support for ProRXD-AEON-MON product	SV

Introduction

This document describes to the reader the key features, improvements, known issues and bug fixes implemented in the software used to control some of the DTC Transmitter and Receiver products range.

The document will be up issued with every software release and as such gives a traceable history in a single document.

Software Releases

Version 1.40

File Names

- d330_os_v1.40.upg
- d330_prorxd_data_v1.40.upg
- d330_prorxd_2u_data_v1.40.upg

New features

- Production Release for PRORXD 1U and 2U products

Enhancements

- None.

Bug Fixes

- None.

Known Issues

- End-to-end video delay not currently as low as 15ms.
- No MPEG-4 ASP support – due soon.
- [[PRORX2-63](#)] - UDP Streaming Port validation
- [[PRORX2-64](#)] - WUI Globals Tab settings apply bug

Version 1.41

File Names

- d330_os_v1.41.upg
- d330_prorxd_data_v1.41.upg
- d330_prorxd_2u_data_v1.41.upg

New features

- Production Release for PRORXD 1U and 2U products

Enhancements

- None.

Bug Fixes

- [\[PRORX2-63\]](#) - UDP Streaming Port validation
- [\[PRORX2-64\]](#) - WUI Globals Tab settings apply bug

Known Issues

- End-to-end video delay not currently as low as 15ms.
- No MPEG-4 ASP support – due soon.

Version 1.42

File Names

- d330_os_v1.42.upg
- d330_prorxd_data_v1.42.upg
- d330_prorxd_2u_data_v1.42.upg

New features

- None.

Enhancements

- None.

Bug Fixes

- [[PRORX2-65](#)] - 2U touchscreen buttons enlarge on press.

Known Issues

- End-to-end video delay not currently as low as 15ms.
- No MPEG-4 ASP support – due soon.

Version 2.0.0

File Names

- d330_os_2.0.0.upg
- d330_prorxd_1u_data_2.0.0.upg
- d330_prorxd_2u_data_2.0.0.upg

New features

- [PRORX2-39] - MPEG-4 ASP support. Now compatible with all Transmitters.
- [PRORX2-68] - Password Protect the browser interface. (Global Settings->Set Password button at the bottom).

Enhancements

- MPEG Audio Layer 1 / 2 decode quality improvement
- Re-worked controls for the 1U front panel – Rotate control when navigating the menus is now more intuitive. The next item in a list is “rotate right”, previous is “rotate left”.
- OSD now within the “Title Safe” area for consumer monitors that overscan.
- When selecting preset Downconverter types the Manual LO now displays the LO frequency in use.
- IP decode more stable. Recommended configuration is to set the Genlock settings to “Internal” mode.
- If licensed for a single decoder the second output mirrors the first.

Bug Fixes

- [[PRORX2-59](#)] [[PRORX2-75](#)] - Improved streaming bit-rates. For a single streamer output we can cover all DVB-T bit-rates. When using two streamers the unit should not be used to stream more than about 40Mbps i.e. two streams of DVB-T 8MHz 64QAM ½.
- [[PRORX2-60](#)] - When loading an invalid license file the WUI pop up window still shows a successful message.
- [[PRORX2-66](#)] - 2U touchscreen lock on processing message if you apply numerically equivalent frequency.
- [[PRORX2-67](#)] [[PRORX2-76](#)] - In 2x4 mode the LO frequencies are incorrectly assigned to channels
- [[PRORX2-71](#)] - KetTextBox in the WUI may not allow all the characters that are legal in the ADL spec
- [[PRORX2-72](#)] - Entering ADL key for the decoder 2 fails
- [[PRORX2-73](#)] - Video stutter when in Genlock and using ultra-low delay on TX.

- [\[PRORX2-74\]](#) - ProRxD 2U Front panel name editing issue.
- [\[PRORX2-77\]](#) - ProRxD RF Input Numbering inconsistency.
- [\[PRORX2-78\]](#) - Removing 2nd Decoder license doesn't stop H.264 / MPEG-2 decode on 2nd channel, just removes WUI controls.
- [\[PRORX2-79\]](#) - Licensing for 2-way is not limiting the reception to the first two inputs.
- [\[PRORX2-80\]](#) - Video delay up to 5 seconds.

Known Issues

- End-to-end video delay not currently as low as 15ms.
- [\[PRORX2-81\]](#) - Changing BNC output results in RTSP stream being cut off.

Version 2.1.0

File Names

- d330_os_2.1.0.upg
- d330_prorxd_data_2.1.0.upg

New Features

- [PRORX2-82] - D298 / D299 support

Enhancements

- Improved 4:2:0->4:2:2 chroma up-sampling filters
- Single Data upgrade file that supports both 1U and 2U variants

Bug Fixes

- [PRORX2-83] - Spectrum inversion setting on the WUI doesn't change anything
- [PRORX2-84] - Narrowband Auto Bandwidth Detection does not work.
- [PRORX2-85] - Front panel IP Config change warning
- [PRORX2-86] - Cannot add Decimal place in IP config
- [PRORX2-90] - Slow response touch screen under higher bitrates
- [PRORX2-94] - RS232 command with leading zeros on integer values get interpreted as octal

Version 2.1.1

File Names

- d330_os_2.1.1.upg
- d330_prorxd_data_2.1.1.upg

New Features

- None

Enhancements

- None

Bug Fixes

- [[PRORX2-95](#)] - Vertical tear on video in genlock mode. This would present as a vertical split down the screen and the video on the right hand side would have chroma artefacts that looked like bad de-interlacing. This only occurred in external genlock mode and was due to a counter reset issue.
- [[PRORX2-101](#)] - Sparkly video on Front Panel composite output. This cause video on the front panel connector to have random dots over the video and some syncing issues. Timing on an SDI link found to be variable across compilations and needed to allow more setup and rise time. Clocking structure improved and circuit locked down with more robust timing on the link.

Version 2.2.0

File Names

- d330_all_2.2.0.upg (New single file upgrade – only applies if you have v2.2.0 or higher on the unit already)
- d330_os_2.2.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.2.0 loaded)
- d330_prorxd_data_2.2.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.2.0 loaded)

New Features

- Single file upgrade support: From this version onwards upgrades can be done with a single file as listed above. If the version of software on the unit is 2.1.1 or older then the two-part upgrade needs to be used.
- Downconverter selection by part number added to 2U touchscreen.

Enhancements

- Improved DVB-T performance in multipath environments with long echoes.
- Improved support for Vislink L1700 p50 and p60 video modes.
- When not decoding audio, signal level is returned to zero instead of a hold on the last sample value. Level bars on monitors, audio systems will return to zero.
- Improved audio support for BMS transmitters.
- When licensed for a single decoder the two video outputs are locked together to the same video, but genlock and OSD settings are independent for each output channel. Allows one SDI with OSD and one without with the same video on both.
- Rebranded Logo to reflect new company identity.
- SMPTE 352M Video Payload Identifiers added to SDI outputs in all video modes. P50 and P60 will now work into all monitors.
- Improved encryption interoperability with IMT and Janteq transmitters.
- Improved packet loss handling for web control.

Bug Fixes

- If licensed for SD decoder only, the 2U touch panel disabled all the demod controls.
- In UMVL 2x4 mode the 2nd demod's controls on the WUI were disabled by mistake.

Version 2.3.0

File Names

- d330_all_2.3.0.upg (New single file upgrade – only applies if you have v2.2.0 or higher on the unit already)
- d330_os_2.3.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.2.0 loaded)
- d330_prorxd_data_2.3.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.2.0 loaded)

New Features

- Low delay H.264 support that matches the functionality of the ProRXB i.e. upto 1080p30/i60. This is enabled in the WUI on the Config tab under Decoder sections via the “Low delay” checkbox. In MPEG-2, MPEG-4 ASP this setting has no effect.

Enhancements

- None.

Bug Fixes

- New batches of processor were causing boot issues related to a component in the silicon. Workaround generated with equivalent functionality.

Version 2.3.1

File Names

- d330_all_2.3.1.upg (New single file upgrade – only applies if you have v2.2.0 or higher on the unit already)
- d330_os_2.3.1.upg (First part of two-part upgrade – applicable for units with software prior to 2.2.0 loaded)
- d330_prorxd_data_2.3.1.upg (Second part of two-part upgrade – applicable for units with software prior to 2.2.0 loaded)

New Features

- None.

Enhancements

- None.

Bug Fixes

- More recent SD cards are slower to initialise after power up. Patched kernel to cope with this to ensure reliable initialisation of the SD cards.

Version 2.4.0 – RECALLED – Use 2.4.1 instead

File Names

- d330_all_2.4.0.upg (Only for use if you are downgrading to this version from a later one. There is a problem in previous software versions where there was not enough memory allocated to store the entire file after new features had been added).
- d330_os_2.4.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxdata_2.4.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)

New Features

- **Dual Pedestal (4K) DVB-T support** - Used for doubling the bitrate of a regular DVB-T signal by using two adjacent channels to transmit the data, by splitting the stream between them. A single unit can operate in dual channel (2x2 / 2x4) mode to receive both channels and combine them on the same unit, or two units can be used in single channel mode (1x8 / 1x4) and utilise ASI to link the two together.
- **Packet Diversity** - Allows you to double the diversity of the system by linking a remote ProRXD in via ASI or IP and intelligently combining the streams together on a packet by packet basis to correct for errors.
- **Remux** - Multiple streams from RF, ASI and IP sources can be remultiplexed on the ProRXD to form a multi-program stream.
- Support for D331-OEM PCB product

Enhancements

- Embedded audio available on auxiliary HD-SDI connections (OEM only)

Bug Fixes

- 720p in 2/3 horizontal down-sampling mode was incorrectly displayed.
- Composite output displayed corrupt video when decoding 1080p50/59/60 video. Although the video cannot be downscaled to SD due to hardware constraints the output now goes to a static magenta colour when this happens to indicate this state.
- RS232 data packet loss when under high processor load. New implementation solves this.
- Incorrect reporting on IP input status has now been fixed.
- Demod status now reports the bitrate on the incoming RF channel to aid user awareness of the required bitrate to provision for streaming.

Version 2.4.1

File Names

- d330_all_2.4.1.upg (Only use if already on 2.4.0 or later).
- d330_os_2.4.1.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxd_data_2.4.1.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)

New Features

- None

Enhancements

- None

Bug Fixes

- DDR calibration fix. Some units when upgraded to 2.4.0 either would not complete their boot sequence or would have sparkles on the video outputs. This release fixes just this issue.

Version 2.5.0

File Names

- d330_all_2.5.0.upg (Only use if already on 2.4.0 or later).
- d330_os_2.5.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxd_data_2.5.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)

New Features

- **Video Preview on 2U**
On the 2U touchscreen controller it is now possible to see a low frame rate preview of the decoded video from each of the on board decoders. Simply touch the SNR/Input level panel when on the status screen and it will toggle to a video display view. Touch it again and it will cycle to the 2nd decoder and then back to the SNR levels display.

Enhancements

- In the unlikely event of a HTTP comms error on the network which the software on the ProRXD cannot recover from, the unit will reboot after 1 minute instead of locking up.

Bug Fixes

- **[PRORX2-147]** Fix for genlock initialisation. Under certain circumstances the genlock would fail to initialise correctly depending on the order in which boot/connection of genlock reference and configuration occurred.
- **[PRORX2-153]** Video Decoder in H.264 standard mode would have a limited dynamic range, whereas an extended range of pixel values was expected. The clip range on the decoder has been adjusted and now outputs the extended range of values on the HD-SDI and HDMI ports.
- **[PRORX2-154]** SDI jitter when in Dual Pedestal mode. The combiner was not playing out the TS packets at an even rate and so when not in genlock mode the SDI had additional timing jitter that was not being smoothed out. The combiner has now been fixed and the jitter is now within acceptable limits set by the standards body.

Version 2.5.1

File Names

- d330_all_2.5.1.upg (Only use if already on 2.4.0 or later).
- d330_os_2.5.1.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxd_data_2.5.1.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)

New Features

- **[PRORX2-161] Linear Audio Support**
ProRXD now supports Linear Audio for compatibility with AEON Transmitters. 48kHz 16bit 2 channel mode is supported. Allows for audio decoding to Analogue or AES/EBU Digital formats.
- **[PRORX2-156] RTSP Streaming of second video service from each received source**
Allows support for receiving from two SOL8SDR each with two video services and being able to stream the elementary stream from both. URLs are video1_2.sdp and video2_2.sdp

Enhancements

- None

Bug Fixes

- **[PRORX2-156] RTSP elementary streaming not working into Milestone VMS**
Re-worked streaming application code to fully support RTSP into VLC / DVP / Milestone.
- **[PRORX2-157] Assigning IP2 Stream to Decoder 2 selects IP1**
Settings for IP input source options changed value by mistake and caused issues with MC3 compatibility.
- **[PRORX2-163] Genlock Issue**
Genlock would lose position synchronisation with input and not recover with intermittent contact or shifts due to RF reference moving.

Version 2.6.0

File Names

- d330_all_2.6.0.upg (Only use if already on 2.4.0 or later).
- d330_os_2.6.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxd_data_2.6.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- b110_update_v1.4.6.tar - Only required for ProRXD-AEON – Must be uploaded to unit through separate Eth2 ethernet port on rear panel via the B110 card's web interface. After uploading upgrade, user must wait for displayed time before repowering unit.

New Features

- **[PRORX2-178] D332 and B110 hardware support for ProRXD-AEON with 4K HEVC decode**
ProRXD-AEON is based on the same architecture as ProRXD but now includes the B110 for 4K HEVC decode. The D332 is a different build of D330 board that removes redundant hardware.

Enhancements

- **[PRORX2-172] Re-label 4K DVB-T as Dual Pedestal**
What we originally termed our 4K DVB-T mode (referring to the number of carriers) would have caused confusion with 4K video encoding. Renamed Dual-Pedestal which maintains consistency with TX products as well.

Bug Fixes

- **[PRORX2-166] Low delay H.264 decoder clipping issue**
Motion coming in to picture from the right hand side not being handled correctly. Motion vectors pointing to macroblocks on edge of picture caused out of picture information to be used and pixel replication wasn't being applied correctly.
- **[PRORX2-167] 2U Touchscreen – Downconverter settings not editable in 2x4 mode when a preset is selected.**
If a downconverter preset was enabled for Demod 2 the control on the touchscreen was disabled and couldn't be changed.
- **[PRORX2-168] Reported poor performance in Packet Diversity mode**
Issue with the IP streaming end of the link. At very high bitrates some packets were being lost. Cause was very high CPU load as even when UDP multicasting was used the routines for parsing stream and converting to elementary streams (ES) was still run. This process is now disabled when ES is not used and has reduced the CPU load considerably.

- **[PRORX2-173] Dragonfly TX not working into ProRXD decoder**
PTS-PCR relationship is highly variable in these transport streams. Prior to the low-delay decoder being available on the product, the unit would look measure this to see if delay needed to be added so that the then current decoder would function correctly. This is no longer needed. Have added a decoder delay setting for that decoder which defaults to 50ms to maintain current functionality in the field, but now allows us to edit this to get the lowest delay possible for these streams and get rid of the auto-check that was failing.
- **[PRORX2-183] IP input 2 table appearing in Web interface when not licensed.**

Version 2.7.0

File Names

- d330_all_2.7.0.upg (Only use if already on 2.4.0 or later).
- d330_os_2.7.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxd_data_2.7.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- b110_update_v1.6.tar - Only required for ProRXD-AEON

Must be uploaded to unit through separate Eth2 ethernet port on rear panel via the B110 card's web interface. After uploading upgrade, user must wait for displayed time before repowering unit.

Bug Fixes

- **[PRORX2-174] - Unable to select service from the front panel**
New screen widget created and the service is now selectable.
- **[PRORX2-175] - Unable to adjust Genlock timing with negative amount only positive**
Genlock Lines and Pixel offsets can now be negative.
- **[PRORX2-187] - 1080psF25 being detected by monitors as 1080i50**
This applies when the SOL7 TX or SDR is not set to Auto input mode and explicitly to 1080psF25. SMPTE 352 Payload ID set accordingly in the HD-SDI stream.
- **[PRORX2-189] - In DVBT 2nd Demod Auto Bandwidth hunt isn't greyed out on the 2U Touchscreen**
Option no long available to edit when in DVB-T.
- **[PRORX2-190] - ProRXD-AEON Audio mode misreported for LPCM**
ProRXD now correctly reports the audio mode as either MPEG or LPCM. Layer 1 or 2 cannot be determined from the HEVC decoder board currently.
- **[PRORX2-199] - Setting Dual pedestal mode fails if Demod 2 frequency not valid for current Downconverter type**
Changed logic in software to ignore Demod 2 frequency when setting Dual-pedestal as the software will work out the correct setting after receiving the config.
- **[PRORX2-224] - In Dual Pedestal Mode 1 x 8 mode demod 1 defaults to lower pedestal on power up**
This has now been fixed and high side can be selected.

Tasks

- **[PRORX2-221] - Add latest B110 upgrade code release into our upgrade files**

B110 software version 1.6 added to release.

Improvements

- **[PRORX2-162] - Minimum audio delay much higher than D300**
If audio only service in use, the audio is presented as soon as possible.
- **[PRORX2-171] - Licensed features should be displayed on WUI Information page**
All licenses are now displayed on WUI Information page. Bold = Enabled
- **[PRORX2-194] - Add QuadSync enable control for B110 board as it now changes the format at the output to be transparent.**
New options to force 1080i output have been added to the controls.
- **[PRORX2-197] - Send DTC customer ID to B110**
Displays DTC branding on B110 web interface for upgrades and debug.
- **[PRORX2-200] - Display B110 upgrade status on WUI**
B110 version number on WUI Information page will display "Upgrade in progress" instead of the last known version number.
- **[PRORX2-201] - B110 Licenses should be displayed on the WUI Information page**
Licenses for B110 displayed in similar format to the rest of the ProRXD
- **[PRORX2-202] - Display Genlock input status of B110 for ProRXD-AEON**
Genlock input status is now set based on the B110's vgst command. Format is still unknown, but can verify there is a connection.
- **[PRORX2-211] - B110 has added different modes to the Quad option that need to be supported.**
Full support added for new settings.
- **[PRORX2-213] - Add USB and SD card tests to Engineering menu to avoid open lid testing**
USB and SD card storage size is read on power up and displayed on WUI information page.
- **[PRORX2-225] - Change licensing such that Dual-ped can be enabled without licensing for Dual decode**
Adding License code O will now enable the use of Dual-pedestal DVB-T 2x4 even when the dual-demod/decode license code F is not present.

Version 2.8.0

File Names

- d330_all_2.8.0.upg (Only use if already on 2.4.0 or later).
- d330_os_2.8.0.upg (First part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- d330_prorxd_data_2.8.0.upg (Second part of two-part upgrade – applicable for units with software prior to 2.4.0 loaded)
- b110_update_v1.6.tar - Only required for ProRXD-AEON

Must be uploaded to unit through separate Eth2 ethernet port on rear panel via the B110 card's web interface. After uploading upgrade, user must wait for displayed time before repowering unit.

New Features

- **[PRORX2-198] - D335 support for ProRXD-AEON-MON product**

ProRXD-AEON-MON has an extra SDI output representing the first of the 4 3G-SDI outputs from the AEON decoder with our standard OSD overlaid.

Improvements

- **[PRORX2-234] - 2x4 dual-ped mode should display all the RF input channel states and spectra on the OSD**

You can now see all related input spectra and demod status when in 2x4 Dual-Pedestal mode, up to 8 inputs.