

Pro-Rx/Pro-RxB Professional Receiver Release Notes

Version 2.3.0
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2 Change History

Version	Main Changes from Previous Version	Edited By
1.0	Initial Release	MZ
1.1	Major update. 8-way DVB-T demodulator, OSD improvements, Bug fixes, Auto spectrum polarity/guard interval, genlock support, SIF/QSIF, SDI/ASI jitter improvements. Extended audio modes support	MZ
1.2	New low delay DVB-T mode, fixed Narrowband 4-way performance issues.	MZ
1.3	Improved DVB-T demodulator, support for SD/HD H264 decoder (Pro-RxB only)	MZ
1.3.1	Fixes for H264 mode genlock and MPEG-2 decoder lock-up, selectable second audio output, second SDI output in HD mode.	MZ
1.4	H264 decoding in Narrowband mode, RTSP/RTP streaming, individual LOs.	MZ
1.5	8-way NB, DVB-T improvements, Re-muxer added, Second IP streamer added, HD Decoder improvements	MZ
1.5.1	Fix for SD/HD corrupted chroma/luma, improved SDI output stability	MZ
1.6	UMVL demod, LO presets, SDI video improvements, GPS and Metadata in OSD, Embedded audio fix.	MZ
2.0	Major release. D294 support, H.264 ULD, 4K DVB-T, HD-SD down-sampling, CCrypt, IP Decoding, various H.264 decoder fixes.	MZ
2.1	Add support for D295 tuners (narrowband and ultra narrow SAW filters)	SV
2.3.0	Bug fixes and feature improvements	SV

3 About this Manual

This document describes to the reader the key features, improvements, known issues and bug fixes implemented in software for the **Cobham** Professional Receiver (Pro-Rx) and its broadcast variant (Pro-RxB).

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

Certain features will only be active where the required hardware is present and/or the unit is licensed accordingly. These dependencies will be highlighted throughout.

It is possible to upgrade the **Cobham** Pro-Rx/Pro-RxB receiver with a single software file which will be named with the version number, unless otherwise specified. For example, new low level boot loader software may also be part of a release, in which case multiple files will be supplied with detailed upgrade instructions.

Upgrade procedures are covered in the Pro-Rx User Manual available on request from <mailto:TCS.Whiteley.Client-Services-Team@cobham.com>

4 Version 1.0

4.1 Filename

- d320_v1_0.upg – operating system, applications, FPGA build
- d320bl_v1_0.upg – boot loader

4.2 New features

- Initial Release

4.3 Bug Fixes

- None

4.4 Known Issues at Release Date

- 8-way diversity not supported yet;
- In DVBT, only 1x6, 1x4, 1x2 and 2x2 supported;
- In Narrowband, only 1x2, 1x4, 2x2 and 2x4 supported;
- In 2xn mode, both video services must be either MPEG2 or MPEG4;
- Re-multiplexing of services not supported yet;
- Spectrum display not supported on OSD or web browser;
- Front panel control has limited functionality;
- Only MPEG audio at 48kHz sampling rate is supported;

5 Version 1.1

5.1 Filename

- d320_v1_1.upg – operating system, applications, FPGA build

5.2 New features

- 8-way Diversity DVB-T demodulator;
- Auto detection of spectrum polarity and guard interval;
- SOLO 625 kHz bandwidth and BPSK mode;
- Genlock support;
- Spectrum Display and Frequency Scan on OSD and web browser;
- Additional front panel control;
- Extended audio modes (MPEG and Domo Nicam) at 8, 16, 32 and 48kHz;
- Support for low resolution video modes (SIF/QSIF);
- Defaults restore;
- Downconverter gain offset for level calibration;
- FCON (Field Controller) support;
- Option to select Pre or Post descrambling ASI/IP streamer output;

5.3 Bug Fixes

- Front panel key lock up;
- Unit lock up when streamer source is ASI and no signal applied;
- Default video line standard at power up;

5.4 Known Issues at Release Date

- In Narrowband, no support for 6 and 8-way diversity;
- Re-multiplexing of services not supported yet;
- Low frequency SDI/ASI jitter still present;
- No front panel control of second demodulator/decoder/OSD
- Front panel control has limited functionality;

- In Narrowband, demodulator performance in 1.25 MHz and 625 kHz modes may be compromised;



6 Version 1.2

6.1 Filename

- d320_v1_2.upg – operating system, applications, FPGA build

6.2 New features

- New DVB-T Low Delay Video mode (SOLO transmitter compatibility only)

6.3 Bug Fixes

- Resolved 4-way demodulator performance issues in Narrowband 1.25 MHz and 625 kHz modes;

6.4 Known Issues at Release Date

- In Narrowband, no support for 6 and 8-way diversity;
- Re-multiplexing of services not supported yet;
- Low frequency SDI/ASI jitter still present;
- Software can crash when DHCP is enabled and no network connection or no DHCP server connected;

7 Version 1.3

7.1 Filename

- d320_v1_3.upg – operating system, applications, FPGA build
- d732.3_v1.0rc7.mcs – D732 upgrade file
- d320_v1_3_h264.upg – Compressed D732 upgrade for web download

7.2 New features

- Improved DVB-T demodulator;
- Support for HD H264 SD/HD decoding (Pro-RxB in DVB-T mode only);

7.3 Bug Fixes

- Software crash when DHCP is enabled and no network connection or no DHCP server connected;
- 625kHz scanning;
- Full streaming multicast port range;

7.4 Known Issues at Release Date

- In Narrowband, no support for 6 and 8-way diversity;
- Re-multiplexing of services not supported yet;
- Low frequency SDI/ASI jitter still present;
- HDMI output not supported yet;
- No OSD available on HD-SDI output in HD mode;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes;
- H264 decoding only available in DVB-T mode;
- H264 decoding only available on decoder 1 output;
- USB interface not supported yet;

8 Version 1.3.1

8.1 Filename

- d320_v1_3_1.upg – operating system, applications, FPGA build
- d732.3_v1.0.1.mcs – D732 upgrade file
- d320_v1_3_1_h264.upg – Compressed D732 upgrade for web download

8.2 New features

- In HD mode replica of SDI output 1 on SDI output 2;
- Selectable Audio decoder output 2;
- Second Audio Embedded on Group 2 DID;

8.3 Bug Fixes

- Genlock switching in H264 mode;
- Decoder lock-up in MPEG-2 Compliant mode under error conditions;

8.4 Known Issues at Release Date

- In Narrowband, no support for 6 and 8-way diversity;
- Re-multiplexing of services not supported yet;
- Low frequency SDI/ASI jitter still present;
- HDMI output not supported yet;
- No OSD available on HD-SDI output in HD mode;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes;
- H264 decoding only available in DVB-T mode;
- H264 decoding only available on decoder 1 output;
- USB interface not supported yet;

9 Version 1.4

9.1 Filename

- d320_v1_4.upg – operating system, applications, FPGA build
- d732.3_v1.0.1.mcs – D732 upgrade file
- d320_v1_3_1_h264.upg – Compressed D732 upgrade for web download

9.2 New features

- H.264 Decoding in Narrowband mode;
- RTSP/RTP Multicast/Unicast streaming modes;
- Ability to set individual LO frequency, side and spectrum inversion for each RF input;

9.3 Bug Fixes

- Potential video decoder start-up fault in MPEG-4 video mode;
- Frequency scanner functionality improved;

9.4 Known Issues at Release Date

- In Narrowband, no support for 6 and 8-way diversity;
- Re-multiplexing of services not supported yet;
- Low frequency SDI/ASI jitter still present;
- HDMI output not supported yet;
- No OSD available on HD-SDI output in HD mode;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes;
- H264 decoding only available on decoder 1 output;
- USB interface not supported yet;

10 Version 1.5

10.1 Filename

- d320_v1_5.upg – operating system, applications, FPGA build, D732 upgrade;
- d732.3_v1.1.mcs – D732 upgrade file (Pro-RxB);
- d320_v1_5_h264.upg – Compressed D732 upgrade for web download (Pro-RxB);

10.2 New features


- 8-way demodulator support in Narrowband mode;
- Re-multiplexer added;
- Second IP streamer added;
- SD/HD Power up mode selection (Pro-RxB);

10.3 Bug Fixes / Improvements

- DVB-T demodulator improvements and data logging;
- H.264 decoder startup and random video sparkles fix (Pro-RxB);
- Improved H.264 decoder chroma up-sampling (Pro-RxB);
- Default service selection in H.264 fix (Pro-RxB);
- RTSP server crash bug fix on multiple connections;
- Frequency scanner saves parameters in active config;
- Fixed RS232 Data handling to cope with faster data bursts;
- Improved RF input level reporting in Narrowband mode;

10.4 Known Issues at Release Date

- Re-multiplexer does not include PID remapping – services must have unique PIDs;
- Low frequency SDI/ASI jitter still present;
- No OSD available on HD-SDI output in HD mode;

- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes;
 - In H264 mode video on second output is for monitoring only – SDI jitter is out of spec and single embedded audio channel (Pro-RxB);
 - In External Genlock mode, audio is not frame synched;
 - HDMI output not supported yet (Pro-RxB);
 - USB interface not supported yet;
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11 Version 1.5.1

11.1 Filename

- d320_v1_5_1.upg – operating system, applications, FPGA build, D732 upgrade;
- d732.3_v1.2.mcs – D732 upgrade file (Pro-RxB);
- d320_v1_5_1_h264.upg – Compressed D732 upgrade for web download (Pro-RxB);

11.2 New features

- None

11.3 Bug Fixes / Improvements

- Fix for SD/HD corrupted chroma/luma;
- Improved SDI output stability;
- SDI output 2 is copy of SDI output 1, with 2 stereo pairs (Pro-RxB);

11.4 Known Issues at Release Date

- Re-multiplexer does not include PID remapping – services must have unique PIDs;
- Low frequency SDI/ASI jitter still present;
- No OSD available on HD-SDI output in HD mode;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes;
- In H264 mode video on second output is for monitoring only – SDI jitter is out of spec (Pro-RxB);
- In External Genlock mode, audio is not frame synched;
- HDMI output not supported yet (Pro-RxB);
- USB interface not supported yet;

12 Version 1.6

12.1 Filename

AS OF V1.6, SEPARATE UPGRADE FILES EXIST FOR THE BLUE PRO-RX AND THE BLACK PRO-RXB

- d320_v1.6.upg – operating system, applications, FPGA build – **PRO-RX ONLY**
- d321_v1.6.upg – operating system, applications, FPGA build, H264 decoder upgrade – **PRO-RXB ONLY**
- d732.3_v1.2.2.mcs – D732 upgrade file (**PRO-RXB ONLY**);
- d321_v1.6_h264.upg – Compressed D732 upgrade for web download (**PRO-RXB ONLY**);

12.2 New features

- Added UMLV (Ultra Mobile Video Link) demodulation;
- Support for ASI burst mode;
- GPS and Tx Metadata extraction and support on OSD;
- Ability to set unit time and date;
- Downconverter LO frequency presets;
- Auto bandwidth detection in Narrowband mode;
- Added Type of Service (ToS) field for UDP multicast streams.

12.3 Bug Fixes / Improvements

- Improved fix for SD/HD corrupted chroma/luma;
- Support for H.264 video decoding at high bitrate transport streams;
- Second decoded audio pair now embedded in group 1, ch.3 and 4;
- Front Panel configuration menu structure improved;
- Improved Genlock performance;
- No ASI output packets under errored stream conditions.

12.4 Known Issues at Release Date

- Re-multiplexer does not include PID remapping – services must have unique PIDs;
- Low frequency SDI/ASI jitter still present;

- No OSD available on HD-SDI output in HD mode;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes (excluding units with Tri-level sync hardware modification);
- In H264 mode video on second output is for monitoring only – SDI jitter is out of spec (Pro-RxB);
- In External Genlock mode, audio is not frame synched;
- HDMI output not supported yet (Pro-RxB);
- USB interface not supported yet;
- High bitrate transport stream support limited when de-scrambling is enabled.



13 Version 2.0

13.1 Filename

- d320_v2.0.upg – operating system, applications, FPGA build – **PRO-RX ONLY**
- d321_v2.0.upg – operating system, applications, FPGA build, H264 decoder upgrade – **PRO-RXB ONLY**
- d732.3_v1.3.mcs – D732 upgrade file (**PRO-RXB ONLY**);
- d321_v2.0_h264.upg – Compressed D732 upgrade for web download (**PRO-RXB ONLY**);


13.2 New features

- Support for D294 tuner PCBs;
- H.264 Ultra Low delay decoding;
- DVB-T 4K (dual pedestal) demodulation;
- Down-sampling of HD to SD;
- CCrypt Descrambling;
- IP Decoding;
- Additional web browser access port (8080);
- Metadata status on web browser interface;
- Selection of ASI output mode in error conditions;

13.3 Bug Fixes / Improvements

- Fix for H.264 decoder video bus timing issues (ProRxB);
- Improved audio lip sync in H.264 mode (ProRxB);
- Error concealment and general H.264 decoding improvements (ProRxB);
- Additional front panel menu controls;
- Service selection options in web browser and front panel;
- Revised web browser interface status tabs;

13.4 Known Issues at Release Date

- Re-multiplexer does not include PID remapping – services must have unique PIDs;
 - Low frequency SDI/ASI jitter still present;
 - In HD mode, OSD over the HD-SDI output is only available if HD-SD down-conversion is enabled;
 - Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes (excluding units with Tri-level sync hardware modification);
 - In External Genlock mode, audio is not frame synced (MPEG-2/MPEG-4 ASP);
 - HDMI output supported with hardware upgrade modification (Pro-RxB);
 - USB interface not supported yet;
 - High bitrate transport stream support limited when de-scrambling is enabled;
 - IP Decoding requires further improvements to allow manual / auto buffering control and seamless support of variable video bitrate;
 - IP Decoding requires unit to run in internal synch / pseudo-genlock mode to cope with network jitter;
 - Down-converted SD composite output only valid if HD video is 25p/29.97p/50i/59.94i modes.
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14 Version 2.1

14.1 Filename

- d320_v2.1.upg – operating system, applications, FPGA build – **PRO-RX ONLY**
- d321_v2.1.upg – operating system, applications, FPGA build, H264 decoder upgrade – **PRO-RXB ONLY**
- d732.3_v1.3.mcs – D732 upgrade file (**PRO-RXB ONLY**);
- d321_v2.1_h264.upg – Compressed D732 upgrade for web download (**PRO-RXB ONLY**);

14.2 New features

- Support for D295 tuner PCBs (Narrowband 2.5MHz and 1.25MHz Saw filters);

14.3 Bug Fixes / Improvements

- None

14.4 Known Issues at Release Date

- Re-multiplexer does not include PID remapping – services must have unique PIDs;
- Low frequency SDI/ASI jitter still present;
- In HD mode, OSD over the HD-SDI output is only available if HD-SD down-conversion is enabled;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes (excluding units with Tri-level sync hardware modification);
- In External Genlock mode, audio is not frame synched (MPEG-2/MPEG-4 ASP);
- HDMI output supported with hardware upgrade modification (Pro-RxB);
- USB interface not supported yet;
- High bitrate transport stream support limited when de-scrambling is enabled;
- IP Decoding requires further improvements to allow manual / auto buffering control and seamless support of variable video bitrate;
- IP Decoding requires unit to run in internal synch / pseudo-genlock mode to cope with network jitter;
- Down-converted SD composite output only valid if HD video is 25p/29.97p/50i/59.94i modes.

15 Version 2.3.0

15.1 Filename

- d320_v2.3.0.upg – operating system, applications, FPGA build – **PRO-RX ONLY**
- d321_v2.3.0.upg – operating system, applications, FPGA build, H264 decoder upgrade – **PRO-RXB ONLY**
- d732.3_v1.3.mcs – D732 upgrade file (**PRO-RXB ONLY**);

15.2 New features

- Support for D295 tuner PCBs (Narrowband 2.5MHz and 1.25MHz Saw filters);
- WUI now write-protectable.
- SNMP monitoring support.
- Support for latest tuner cards D298/D299.
- Device Discovery Protocol support.
- RTSP elementary stream support for H.264 video streams.
- SDI OUT 2 can now be sourced from Decoder 1.

15.3 Bug Fixes / Improvements

- Improved IP decode performance.
- SDP packets now contain unique session IDs.

15.4 Known Issues at Release Date

- Re-multiplexer does not include PID remapping – services must have unique PIDs;
- Low frequency SDI/ASI jitter still present;
- In HD mode, OSD over the HD-SDI output is only available if HD-SD down-conversion is enabled;
- Genlock mode and correct video sync only valid in 50 Hz or 59.97 Hz SD/HD modes (excluding units with Tri-level sync hardware modification);
- In External Genlock mode, audio is not frame synced (MPEG-2/MPEG-4 ASP);
- HDMI output supported with hardware upgrade modification (Pro-RxB);

- USB interface not supported yet;
- High bitrate transport stream support limited when de-scrambling is enabled;
- IP Decoding requires further improvements to allow manual / auto buffering control and seamless support of variable video bitrate;
- IP Decoding requires unit to run in internal synch / pseudo-genlock mode to cope with network jitter;
- Down-converted SD composite output only valid if HD video is 25p/29.97p/50i/59.94i modes.