



Nautel Software Bulletin

June 19, 2013

Nautel NX Series V4.0.3 Release Notes

If you have been advised by our customer service department to upgrade or if you have experienced problems addressed in this software release please proceed with the download.

Once a transmitter has been upgraded with NX4.0.3, downgrading to an older release is not recommended under any circumstances. Please contact Nautel if you feel it is necessary to return to a release previous to NX4.0.3.

The most significant improvements with the latest version include:

Version 4.0.2 – Released February 28, 2013

General

- In this release, the mask shown on the spectrum analyzer in 'Analog AM' transmission mode has been updated to meet the NRSC-2-B specification
- In this release, it is no longer important which AES input is used for analog or digital transmissions. For this reason, the AES inputs have been renamed as follows:
 - 'Analog AES' becomes 'AES 1'
 - 'Digital AES' becomes 'AES 2'
- This release includes the ability to use SNMP traps. A trap is an unsolicited message sent by an SNMP agent when an alarm changes state (turns on or off). The message is an SNMP packet that can be interpreted and displayed by an SNMP client application.

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Nautel Software Bulletin

June 19, 2013

- This release resolves an issue with NX25s & NX50s where changing module positions or replacing a power module may affect the PDM spur level seen at the output of the transmitter. To mitigate this issue, NX SW 2.8.8 included the ability to run a routine that would adjust the PDM phases and find the settings that would minimize the level of the PDM spurs. In NX SW 4.0, an interface has been added to the AUI so that the routine can be run from the front panel of the transmitter. Note: This routine should only be activated if deemed necessary by looking at the PDM spurs at the output of the transmitter. Contact Nautel if your PDM spur levels are out of spec. See the updated operations section of the NX manual for more information.
- This release adds the ability to copy 'critical parameters' to the clipboard on a remote computer through the remote AUI. Critical parameters include meters, alarms, presets and general settings, and are only accessed through the remote AUI.
- This release addresses an issue where, if a max power lockout was enabled that was lower than the set point of the transmitter, when the transmitter was turned on, the output power would overshoot the max power lockout by more than 20%, and then gradually reduce to the lockout value. The transmitter will now obey the power lockout; measured overshoot is typically less than 1%.
- This release resolves an issue where the serial address of a power module reporting an alarm was incorrectly shown in the status screen of multi-rack transmitters (i.e. NX200 or NX300).

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- This release includes the addition of summary alarms, which can be used to drive individual remote outputs on the remote I/O interface. Summary alarms are used to capture multiple alarm conditions with a single remote output. For example, the 'High Reflected Power Summary' alarm will occur when one or more of the following alarms are preset: 'SWR Shutback', 'SWR Foldback', 'Cutback'.
- This release includes the addition of remote AUI connection timeout. If a connection to the remote AUI is not used for more than 30 minutes, that user will be disconnected, which will open up a slot for another user to log in. The maximum number of logged in users is 10.
- In this release, additional permissions functionality has been added to user accounts control. It is now possible to selectively choose if a user can activate/modify presets, adjust power levels, manage power lockouts, delete logs, and turn RF on/off.
- In this release, the 'Menu' in the AUI has been reorganized into the following groups: Presets, Factory Settings, System Settings, Pre-correction Settings, User Accounts, Changeover, User Settings, Remote I/O, Scheduler and Playlist. For more information on each option, see the updated operations section of the NX manual.
- This release includes the addition of two configurable low forward power thresholds. These thresholds are adjustable from 0 to 90% of the setpoint. When the output power is below a threshold, a corresponding alarm will be triggered.
- Dual GPS synchronization cards are no longer supported with this release.

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Nautel Software Bulletin

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- This release includes the ability to direct the transmitter to take action on audio loss, after a specified delay (similar to what is implemented in NV and VS).
- This release includes the addition of the ability to adjust the maximum compression (in dB) when running DCC. The maximum DCC compression defines the maximum reduction in carrier power that will be seen with a given algorithm, and the DCC curve is adjusted accordingly.
- This release resolves an issue where the transmitter would shutback on SWR events, but never enter the cutback routine. See NX manual for more information on cutback.
- This release resolves an issue where logs would be tagged one hour in advance of the actual time due to daylight savings settings.
- This release resolves some issues around user accounts including preventing a user from deleting the account they are logged into and allowing administrators to change their own passwords.
- This release resolves an issue where it was not possible to copy the logs to the clipboard.
- This release includes a major overhaul of the NX scheduler. Instead of being event driven, the scheduler is now rule driven. Each rule can be created with any start/end date/time, and allows each event to be repeated on a defined interval. The maximum number of rules that can be added to the scheduler is now 144. See the updated operations section of the NX manual for more information on using the scheduler.
- This release includes the addition of support for TLS secured SMTP servers. This allows the use of a web mail service as the outgoing email server for the transmitter .

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- This release includes major updates to the operating system and AUI code base, and has undergone extensive verification testing. It is expected that all software related AUI lockup issues are resolved. Please contact Nautel if any problems are experienced with this release.
- In this release, preset functionality has been completely overhauled to create consistency between product lines. New functionality is as follows:
 - The active preset is shown in the top banner. Presets are activated by choosing the desired preset from the drop-down menu in the top banner.
 - When the presets page is opened from the menu, the 'Current Settings' of the transmitter are displayed, which define the current operational state of the transmitter. 'Current Settings' can be adjusted and then immediately activated by pressing the 'Save' button.
 - To adjust a saved preset, that preset must be loaded from the Presets page. If the adjusted preset was active before it was changed, saving the preset will update the preset, but the 'Current Settings' will remain unchanged. In order to update the operation of the transmitter, the preset must be re-activated through the top banner.

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Nautel Software Bulletin

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- An asterisk next to the preset name in the top banner indicates the 'Current Settings' have changed from the last loaded preset. 'Current Settings' are not saved through a power cycle; when recovering from an AC power loss event, the transmitter will load the preset that was last activated.
- On the presets page, an asterisk next to the preset name in the header indicates there are unsaved changes to the preset.

See the updated NX transmitter operations manual for illustrated information on operating presets.

- This release includes the ability to indicate an 'Invalid Preset' condition with a digital output on the remote I/O. This condition indicates that an unsaved change has been made to a preset, changing the current settings of the transmitter. This is the same condition that adds an asterisk to the beginning of the active preset name in the top banner of the AUI.
- This release includes improvements to preset management, where presets cannot be deleted if they are currently active, used in the scheduler, used as an audio loss fallback preset or used in the remote I/O.
- In this release, the presets page in the AUI has been divided into four tabs: 'General', 'Analog Settings', 'Digital Settings' and 'Audio Loss'. The 'Analog Settings' and 'Digital Settings' tabs are populated according to the selected transmission mode. See the updated operations section of the NX manual for a detailed description of each tab.

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June 19, 2013

- This release includes the ability to copy pre-correction settings from one exciter to the other. The settings that can be copied include the AM-AM curves, AM-PM curves, equalization curves and configurations.
- This release includes the addition of the ability to link pre-correction settings to presets through a mechanism called 'Configurations'. A configuration is created in the Pre-correction Settings menu and includes settings for Mag-Phase delay, B+ setpoint, AM-AM curve, AM-PM curve and equalization curve. Created configurations can then be called up in a preset, and be used to adjust these settings depending on the transmission mode setting of the transmitter. These settings will normally be generated at the factory, based on the desired modes of operation, and do not require adjustment in the field. See NX transmitter operations manual for more information on configurations and presets.
- This release includes the addition of the ability to synchronize the transmitter's clock using Network Time Protocol (NTP) once directed to a NTP server.
- In this release, power modules, previously referred to as 'Cubes' in the AUI, are now referred to as 'Power Modules' or abbreviated as 'PM' when necessary.
- In this release, the maximum number of alarms that can trigger a notification has been increased from 128 to 65535
- This release adds the ability to save the list of visible meters on the main screen of the AUI. A default list can also be set, defining the meters that appear after an ac cycle. Saved meter lists are also linked to user accounts, so the default list on a given account will appear when that account is accessed.

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Nautel Software Bulletin

June 19, 2013

- This release includes improvements which provide feedback as to why actions cannot be performed. Indicated restrictions include local/remote mode, user permissions and setting ranges.
- In this release, 'DCC1' mode has been properly labeled in the Dynamic Carrier Control setting in presets.
- In this release, the pre-emphasis curve has been properly identified as being that defined in the NRSC-1 standard.
- This release resolves an issue where the transmitter output power would overshoot and cause power supply transients when switching between analog and DRM modes of transmission. In this release, the transmitter will shut down and ramp up to the desired power level when switching between these modes.
- In this release, set-point precision is now limited to a level that is reasonable for the transmitter type. NX25 & NX50 set-point precision is limited to 0.1 kW. NX100+ set-point precision is limited to 1kW
- This release includes the ability to add a name (i.e. a call-sign) to the top banner. This allows the transmitter to be uniquely identified when accessing multiple transmitters via remote AUI.
- This release includes the addition of an audio player that can be used as a backup audio source. Use of the audio player requires the purchase of a USB sound card available from Nautel. See the updated operations section of the NX manual for more information.
- In this release, when a preset is selected with a 0W setpoint, the behaviour of the transmitter has been changed to essentially be the same as if the interlock has been opened. PDM is immediately inhibited, and after 10 seconds the transmitter will shut down. Once a preset is selected with a setpoint greater than 0W, the transmitter will turn on with the normal procedure.

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- This release includes the ability to change the IP address port to which the transmitter is listening, which facilitates the use of port forwarding on the firewall/router at the transmitter site. This allows the transmitter to be set to listen to a specific port that is open in the firewall if it is different from the default. This also enables connections to multiple transmitters behind a single firewall. Note that the port number for external connections to the firewall and the port number the transmitter is mapped to MUST be the same.

IBOC Specific

- This release includes an update to the AM IBOC mask to meet the NRSC-5C specification, allowing for IBOC modes that turn off the tertiary carriers.
- This release includes the addition of the ability in IBOC mode to turn enhanced carriers on/off and change the PIDS power levels between high/low on the Engine through the AUI.
- This release resolves an issue where erroneous Engine alarms were being displayed.
- In this release, various Engine alarms will now be displayed in the AUI to provide more information on the status of the Engine. The added alarms include:
 - System Error - General fault summary alarm.
 - External 10MHZ Lost - The external 10 MHz signal is not detected by the Engine.
 - FIFO Underflow - The Engine waveform FIFO is overflowing, likely due to clock drift between the Exporter and Engine.

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- FIFO Overflow - The Engine waveform FIFO is underflowing, likely due to clock drift between the Exporter and Engine
 - Ethernet Link Down - The Engine is not able to communicate with the Exporter.
 - Network Misconfigured - The current network settings are incorrect.
 - DPLL Unlocked-The VCXO in the 10 MHz PLL is being pulled beyond its +/- 1ppm limit.
 - AM/FM Mode Mismatched - Exporter/Engine AM/FM mode misconfiguration.
-
- This release resolves an issue where the progress bar which was displayed when applying settings to the Engine would never update.
 - This release resolves an issue where if the transmission mode was switched from IBOC to Analog AM, the IBOC related I/Q alarm "Serial B Missing" would not clear.
 - This release includes the ability to view the constellation and take real-time MER measurements of individual sub-carrier groups in the signal seen at the output of the transmitter when running in IBOC mode.

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