nautel



NX3/5/10

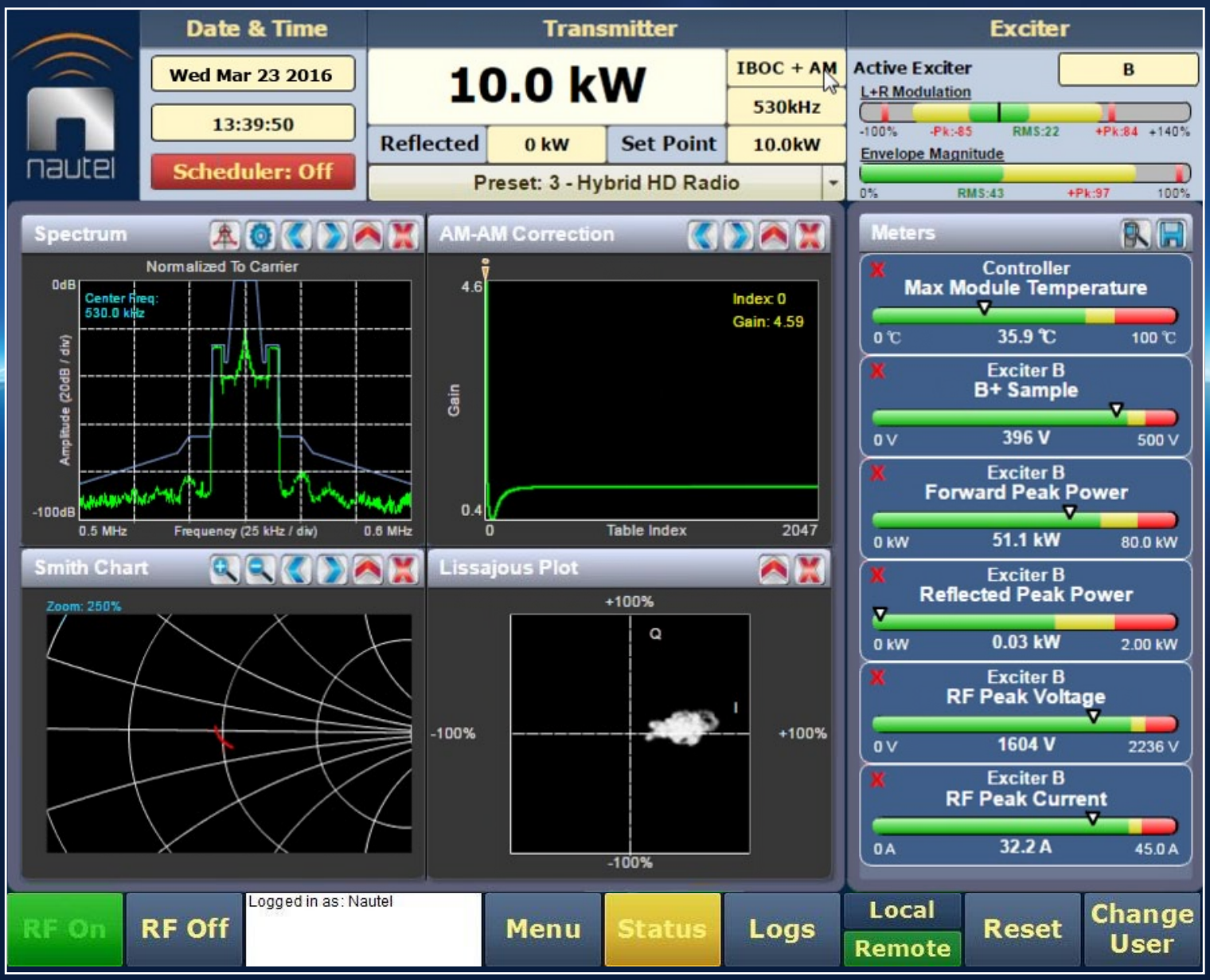
Digital/Analog AM

DRM

HD Radio
Pure Digital. Clear Radio.

3 kW, 5 kW and 10 kW Digital/Analog
AM Broadcast Transmitters

MORE CONTROL



AWARD WINNING ADVANCED USER INTERFACE (AUI)

No matter where you are, you're only moments away from ensuring your NX Series transmitter is operating optimally. Open a web browser, enter your transmitter's IP address, and you're connected. 100% of the local NX Series display functionality is available on any web-interfaced PC or handheld device via the internal NX Series web server. Users can access status, controls, alarms, logs and reports via the internet.

SNMP SUPPORT

NX Series transmitters also support Simple Network Management Protocol (SNMP), a network protocol that allows network management systems or a network operations center (NOC) to monitor network attached NX Series transmitters.

REAL TIME BUILT-IN INSTRUMENTATION

NX Series transmitters are provided complete with built-in instrumentation that would cost tens of thousands of dollars if purchased separately.

Nautel's patented, real-time impedance measurement technology allows the antenna system load impedance to be optimized and monitored while the transmitter is operating normally. The transmitted voltage and current waveforms are compared to measure the load impedance over the operational frequency range.

Because this system can measure impedance without requiring artificial swept tones, the antenna system impedance locus can be measured without taking the station off-air. Impedance is measured at the combiner so no correction for harmonic filter phase is required.

NX transmitters also utilize a built-in directional coupler for spectrum measurement instead of a traditional voltage or current sensor. The directional coupler increases the accuracy of spectrum measurement into a real antenna load which is quite important when measuring adjacent channel emissions.

NXSeries

3 kW, 5 kW and 10 kW AM Broadcast Transmitters

"Over 20 Megawatts of NX Series transmitters deployed."

SETTING THE STANDARD IN AM TRANSMITTER DESIGN

With power outputs of 3 kW to 2000 kW, the NX Series sets a new standard for digital performance, rugged design and operational ease in MW transmitter design. Add AM digital precorrection, 86%* efficiency plus an intuitive web interface, and the result is the most advanced medium wave transmitter available today.



POWERFUL BUILDING BLOCKS

The building block of the NX Series is an integrated RF amplifier/modulator with a carrier power capability of 2,500 W. These power modules are hot pluggable from the front of the transmitter making service easy. The Class-D RF amplifier uses four transistors that can be replaced using only a screwdriver. Due to advances in amplifier technology, this amplifier is so efficient (98%) that it is capable of operating at over 10 kW continuously. This power capability results in very low transistor junction temperatures assuring robust operation even in the highest ambient temperatures.

ON-AIR SERVICEABILITY

NX Series transmitters are ruggedly engineered to provide easy on-air service and maintenance. At all power and modulation levels, all modules contribute equally to the final output. If an amplifier fails, no stress is imposed on the remaining modules and spectral integrity is not compromised. Repair or replacement can be performed whenever it is convenient. Ventilation is provided by redundant brushless DC-powered ball bearing fans mounted in hot pluggable trays below the power modules. Airflow is unaffected by AC supply variations, further ensuring cool operation and long term reliability.

REDUNDANT ARCHITECTURE

Redundancy features and protection systems make it easy to maintain continuous operation, thus reducing your operating costs even further. The NX Series offers:

- Optional Standby Exciter
- Redundant Modulators
- Modular Fans
- Failsafe remote control

PROVEN RELIABILITY AND EASE OF OWNERSHIP

Like every Nautel transmitter ever built, the NX Series incorporates solid state components in a rugged, highly redundant, hot swap architecture. Compact footprints, published parts lists and screw driver replaceable power FETS make living with your NX transmitter easy for years to come.

ROBUST PROVEN DESIGN

Nautel MW transmitters are field proven with installations in harsh environments all over the world. Tens of millions of hours of real-world operational experience have gone into the design and construction of the NX Series. The result is unparalleled performance and reliability.

FAST FREQUENCY CHANGE

All NX Series transmitters are designed for fast simple frequency changes. Typically a transmitter can be changed by a trained engineer within a few hours.

LEADING SPACE AND POWER EFFICIENCY



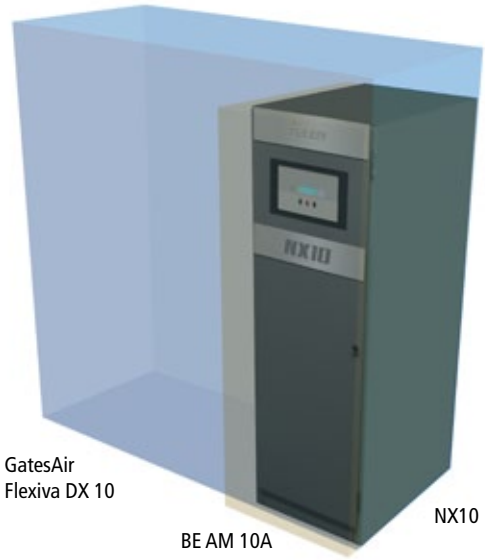
OUTSTANDING EFFICIENCY LOWERS OWNERSHIP COST

Exceptional efficiency and low maintenance overhead make this transmitter extremely cost effective to own and operate. Overall efficiency is typically 86%* or better.
The high efficiency means less energy is wasted as heat, which reduces cooling and ventilation costs. The resulting savings could amount to thousands of dollars per year.

CLASS LEADING SPACE EFFICIENCY

The NX5 and NX10 transmitters are one quarter to one third smaller than comparable medium wave transmitters. That makes planning your NX transmitter deployment that much easier and gives you flexibility too.

While NX Series transmitters may be compact they still offer easy and spacious access to all major serviceable components and modules ensuring easy maintenance.



POWER SAVING TECHNOLOGY

Nautel NX Series transmitters come standard with power saving technology commonly referred to as Carrier Control Algorithms or Modulation Dependent Carrier Level (MDCL). Power savings of up to 30% or more may be realized with minimal impact on the received signal quality and the coverage area.



*82% efficiency for NX3

Making Digital Radio Work.

INTEGRAL DIGITAL

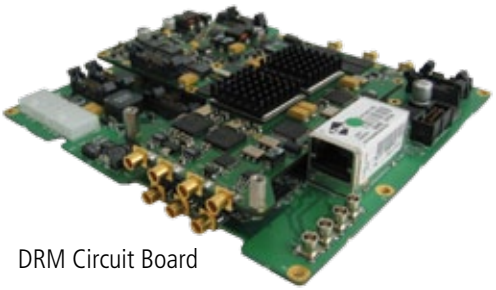
The NX Series transmitters are the first high power MW transmitters that assume digital transmission as a default requirement. That means digital is Integral to the overall NX Series design and isn't an add-on or an afterthought. Whether you initiate digital broadcasting immediately or start with analog transmission and move to digital at a later date, the NX Series will address all of your analog and digital transmission needs. In fact the NX Series transmitters support all current forms of AM broadcasting without the need for external exciters.

DESIGNING THE INDUSTRY'S BEST DIGITAL TRANSMITTER

Nautel invented the modern solid state broadcast transmitter more than 40 years ago. Everything our engineers have learned over those years and 5 generations of transmitter design has been applied to the NX Series. To design the industry's best digital transmitter our engineers applied two guiding principles. First they designed a transmitter so linear that no precorrection would be needed. Then they pushed the limits of transmitter design by adding the best precorrection available. The result is an ultra linear digital broadcast transmitter that is scalable from 5 kW to 2 MW.

NX Series transmitters configured for HD Radio transmission include an integral IBOC Exgine card and Nautel's Exporter Plus which provide an HD Radio signal to the transmitter's exciter. This solution is easy to configure, includes GPS synchronization and is compatible with Nautel's award winning Reliable HD Transport Suite for reliable studio to transmitter communications.

NX Series transmitters configured with Digital DRM support all current DRM modes and provides excellent program flexibility allowing broadcasters to offer both AM and DRM services on a time of day basis.

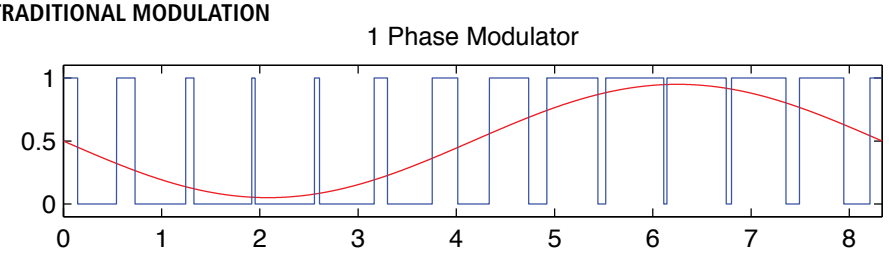


DRM Circuit Board

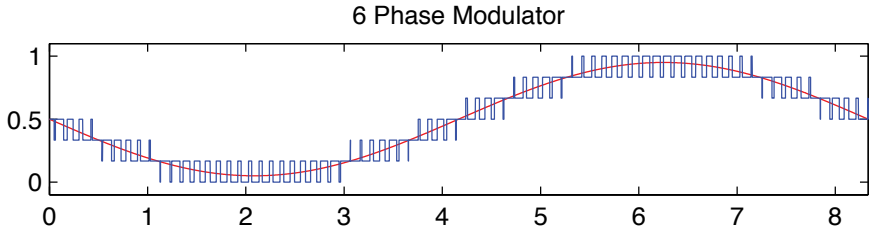
LINEAR-OPTIMIZED

The NX Series transmitters achieve their outstanding linearity by employing a unique six phase Direct Digital Modulation that is encoded at an unprecedented 1.8 mega-samples/second.

TRADITIONAL MODULATION



1.8 MEGA-SAMPLES/SECOND SIX PHASE DIRECT DIGITAL MODULATION



INDUSTRY FIRST DIGITAL PRE-CORRECTION

The NX Series of AM transmitters are the first high power AM transmitters to be offered with digital pre-correction which corrects for all primary forms of distortion that typically affect both analog and digital AM broadcasting. The result is dramatically increased linearity and an extremely clean spectrum. Specific precorrection techniques include:

- Envelope equalization
- AM-AM correction
- AM-PM correction

All precorrection filters can be monitored through the AUI.

nautel

info@nautel.com | www.nautel.com

+1.902.823.5131

Making Digital Radio Work.

Nautel has emerged as one of the world's largest manufacturers of radio broadcast transmitters with more than 14,000 deployments in 177 countries.

NX SERIES QUICK SPECS

86% efficiency at rated power typical for NX5 and NX10
82% efficiency at rated power typical for NX3
140% positive peak modulation at rated power
1.5:1 VSWR threshold at rated power, 100% modulation

Frequency
532 kHz – 1700 kHz

Transmission modes
Analog (Mono L, Mono L+R, Stereo), IBOC, DRM

Dimensions
184.2 cm H x 58.7 cm W x 86.4 cm D
(72.5" H x 23.1" W x 34" D)

RF output power (rated/max)
NX10 - 10 kW/11 kW
NX5 - 5 kW/5.5 kW
NX3 - 3 kW/3.3 kW

Voltage
208 Vac or 380 Vac nominal, 3-phase, 50/60 Hz

RF output connection
7/8" EIA or 1-5/8" EIA, at top of transmitter

RF power modules each with:
- Digital optimized linear design
- Integrated RF amplifier/modulator
- Microcontroller for protection and monitoring
- Short circuit protection
- Hot pluggable

Advanced exciters and modulation encoders:
- Digital precorrection
- MDCL/Dynamic carrier control algorithms
- Integrated AM stereo
- Audio filter with pre-emphasis and low pass
- Automatic changeover (with optional dual exciter configuration)

Control and monitoring
- Local LCD Display
- Web based remote access/control
- Contact closure remote interface
- Module level monitoring
- Power, current, voltage, RF spectrum, RF impedance, modulation, heat sink temperature, fan RPM

*please refer to the specifications for full details of individual NX Series transmitters



	NX3	NX5	NX10	NX15	NX25	NX50	NX100	NX200	NX300	NX400	Combined Systems
ANALOG	3 kW	5 kW	10 kW	15 kW	25 kW	50 kW	100 kW	200 kW	300 kW	400 kW	up to 2 MW
Modules	2	2	4	10	10	20	40	80	120	160	
Efficiency	82%	86%		84%	88%		90%				
AM Frequency	532 kHz – 1700 kHz			531 kHz – 1,620 kHz							
LW Frequency	Contact your Sales Rep.			120 kHz – 370 kHz							

Issue 1.1/April/2016

HD Radio is a trademark of iBiquity Digital Corp. All rights reserved.
The DRM logo is a trademark of The DRM Consortium. All rights reserved.