



## ADVANCED CONTROL AND REMOTE ACCESS

All NV Series transmitters include Nautel's Advanced User Interface (AUI) with 17" touch screen monitor and web access. Whether you are on-site in front of your transmitter or at home on the web, 100% of the AUI is available to help you manage your transmitter.

Hundreds of parameters are available in real time at your fingertips. Imagine knowing in advance what parts and tools you'll need at the transmitter site. Having that much control remotely can help you avoid trips, save time and save money.

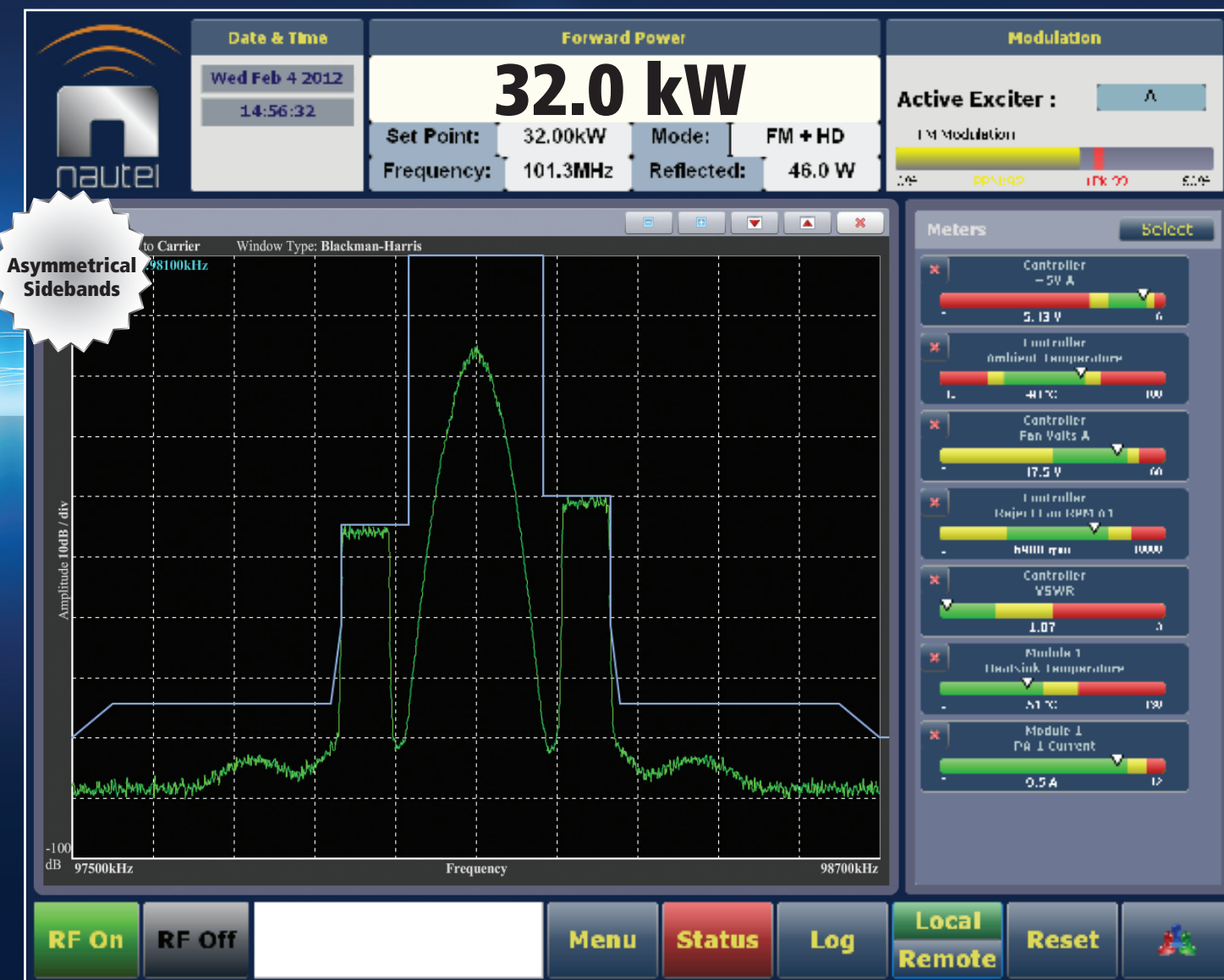
## CONTROL REDUNDANCY

The touch screen interface is implemented as a non-critical functional unit and may be completely removed from the system without affecting transmitter operation. A backup control interface provides control in case of front panel computer system failure. In addition to web based access the NX Series also supports traditional direct wired contact closure capability for local or remote control.

**SAVE TRIPS**  
**SAVE TIME**  
**SAVE MONEY**



# MORE CONTROL



## REAL TIME BUILT-IN INSTRUMENTATION

NV Series transmitters include built-in instrumentation that would cost tens of thousands of dollars if purchased separately.



## 100% REMOTE ACCESS

No matter where you are, you're only moments away from ensuring your NV Series transmitter is operating optimally. Open a web browser, enter your transmitter's IP address and password and you're connected. 100% of the local NV Series display functionality is available on any web-enabled device.

## SNMP SUPPORT

NV 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 NV Series transmitters.



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## Making Digital Radio Work.

Nautel has emerged as one of the world's largest manufacturers of radio broadcast transmitters with more than 11,000 deployments in 177 countries.

**"HD PowerBoost for up to 30% more HD power and 5% more efficiency"**



NAUTEL NV SERIES		NV3.5	NV5	NV7.5	NV10	NV15	NV20	NV30	NV40	NV60	NV80
Analog Only	Max power (kW) <sup>1</sup>	4.1	5.5	8.3	11	16.5	22	33	44	66	88
	Rated Power (kW) <sup>1</sup>	3.5	5	7.5	10	15	20	30	40	60	80
	Typical Efficiency	61%	64%	61%	64%	61%	64%	61%	64%	64%	64%
Analog -20dBc HD Radio	Max power (kW) <sup>1</sup>	3.4	4.5	6.8	9.1	13	18	27	36	54	72
	Typical Efficiency	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
Analog -14dBc HD Radio	Max power (kW) <sup>1</sup>	2.8	3.7	5.5	7.4	11	15	22	30	44	59
	Typical Efficiency	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
	HD PowerBoost™ (kW) <sup>1,2</sup>	3.1	4.2	6.2	8.3	12	16	25	33	50	67
Analog -10dBc HD Radio	Max power (kW) <sup>1</sup>	1.9	2.5	3.8	5.2	7.7	10	15	21	31	41
	Typical Efficiency	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%
	HD PowerBoost™ (kW) <sup>1,2</sup>	2.5	3.3	5	6.6	10	13	20	26	40	53
AC Input 50/60 Hz		1 phase 180 - 264V or 3 phase 180 - 264V / 312 - 457V									
Power Modules		2		4		8		16		32	
Switching Power Supplies		4		8		16		32		64	
Power Factor (typical)		0.99 (unity power factor corrected)									
Height (in/cm)		72.5 (184.2)									90 (229)
Width (in/cm)		23 (58.4)				36 (91.4)			65 (165)		130 (330)
Depth (in/cm)		32 (81.3)									
Weight (lbs/kg)		300 (136)			415 (188)		850 (386)		1,600 (726)		3400 (1545)

Specifications subject to change. Please refer to individual product specification sheets for full product details.

1. Typical maximum analog power measured at midband in MP3 mode with better than 1.2 VSWR and a minimum of 3 dB of headroom below the NRSC RF mask. Power outputs vary with injection level, frequency, VSWR, MP operating mode, and symmetrical vs. asymmetrical sidebands. Please contact your Nautel representative to discuss your specific HD power requirement.  
2. Numbers shown are for transmitter configurations utilizing Nautel's optional HD PowerBoost which can provide up to 30% additional hybrid mode power and up to 5% increased efficiency. Please contact your Nautel representative to discuss your specific HD power requirement.

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# NV Series

## FM Digital/Analog



## THE NAUTEL SOLID STATE MISSION

40 years ago Nautel set forth on a mission to give broadcasters superior solutions based on solid state technology. With the NV Series Nautel creates a whole new category of high power solid state transmitters that are truly affordable. Now Nautel reliability and modularity is available in a new power class at half the cost of traditional high power solid state solutions and with advanced capabilities at all power outputs.

## MORE POWER, MORE ADVANCED

Creating new options for high power solid state broadcast is only one part of the NV story. The frequency agile NV Series transmitters also change the way you'll think about traditional transmitter design. Nautel engineers integrated the exciter right into the transmitter and placed all advanced controls for both the exciter and transmitter right at your fingertips in one central interface. All NV Series transmitters include Nautel's Advanced User Interface (AUI) with 17" touch screen monitor and web access. Extensive architectural redundancy ensures outstanding reliability. Add hot-swap front access serviceability with rugged design and the result is the most advanced family of digital FM transmitters available today.

**"Only Nautel offers one complete family of solid-state FM transmitters ranging from 3.5 kW all the way to 88 kW"**

## NAUTEL INNOVATION

- Highest single cabinet FM power: 44 kW
- Common family and common modules: 3.5 kW - 88 kW
- HD PowerBoost™ option for more IBOC power
- Compact footprints
- 17" touch screen interface
- 100% of local interface via the web
- Advanced instrumentation and management
- Integral digital exciter with pre-correction
- Plug-in upgrade to HD Radio™ Engine
- Single points of failure eliminated

# NV Series

## FM Digital/Analog



3.5 kW – 88 kW  
FM Transmitters



# MORE ADVANCED



## The first high power, solid state FM transmitters with tube comparable affordability.

### High Power Solid State

With the highest single cabinet power output of any FM broadcast transmitter at 44 kW, the NV40 along with its family members create a whole new class of broadcast transmitters. Even higher power outputs can be achieved by combining NV Series transmitters for up to 88 kW. That means more power for analog, digital or increased IBOC injection levels.

### More Advanced

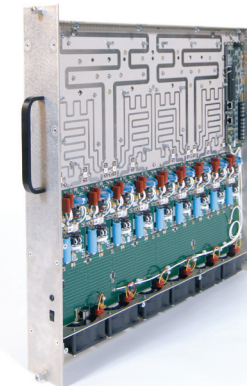
And power is only one small part of the NV story. All NV Series transmitters come complete with an advanced integral digital exciter, Nautel's Advanced User Interface, built-in instrumentation and all of the redundancy, hot-swap serviceability and reliable rugged design that you have come to expect from Nautel.



## INNOVATIVE COMPACT PLATFORMS

### Ultra-Compact Power Modules

In order to take solid state transmitter design to a new level of performance, Nautel engineers developed a building block that integrates the cooling systems, combiners and amplifiers into a compact, easy-to-handle, vertically oriented module. The NV Series power module has an integrated IPA stage and 8 amplifiers, each providing 375 Watts, for 2500 Watts nominal power and 3000 Watts maximum power per module. The module is slim, providing a single RF input, a single RF output, and allows for optimal cooling and air flow with 6 cooling fans and a heatsink all mounted in the same module.



### Common Components

All NV Series transmitters are manufactured using a common power module. Having one common building block across a broad range of transmitters simplifies spares planning and reduces costs. Modules can be swapped from one transmitter to another and engineers and technicians can leverage their training across the broad family of NV Series transmitters.

### Revolutionary Approach to UI and EXCITER

Traditional designs put features and display capabilities into a very expensive external exciter rather than the transmitter. If you want exciter redundancy you need to purchase two of these expensive devices and end up with two displays.

Nautel challenged this design approach by consolidating all of the advanced control right inside the transmitter where it can provide the most benefit. Then we added a giant 17" touch screen and let you access the same advanced control anywhere on the web.

By eliminating outboard exciters you save money, get even more advanced features and gain centralized control over all transmitter functions including the exciter(s). In fact the exciters are so cost effective that many customers buy two.



### Integral Exciter for Outstanding FM Performance

Audio in and RF out. The NV Series makes it that simple by incorporating the most advanced FM exciter available today. Direct to-channel digital modulation at more than 600 MSPS eliminates microphonics and spurious outputs. Consider these additional class leading capabilities:

- Next-generation adaptive pre-correction
- Combiner equalization
- Spectrum analysis
- Redundant digital and analog audio inputs
- 100% digital setup: no potentiometers
- Flexible RDS/RBDS encoder and SCA encoders

The NV Series even has the ability to correct for group delay in a multi-station combiner system.

### Simple Integrated Design

With its exciter integrated fully within the NV Series design there are no pots or switches to worry about as all exciter adjustments are done easily using the Advanced User Interface. The RF output of the NV Series exciter is fed directly to the power modules by way of a 2, 4, 8 or 16 way-splitter. Each power module incorporates its own IPA thus eliminating the single point of failure associated with separate-stage single IPA designs or with the switchover circuitry in redundant IPA designs.

### Space Efficiency

Compact NV power modules allow Nautel to design transmitters with dramatically smaller footprints at all power levels. That makes for simpler installation logistics and frees up precious floor space for other purposes such as Digital Radio system components.

### Frequency Agile

The unit's broadband design allows the exciter to select the required presets for operating frequency and output power level, enabling the transmitter's use anywhere in the FM band. Thanks to the remote capability of the AUI, all settings including frequency presets can be managed anywhere there is internet access.

## DESIGNED FOR DIGITAL

### Built for HD Radio™ Broadcasting

The NV Series and Nautel's integrated digital solutions make your move to HD Radio broadcasting easy and economical. Innovative digital components provide a complete studio and transmitter site solution. Gain the full benefits of HD Radio technology including crystal clear programming, four channels on one frequency, song tagging, and the delivery of advanced Program Service Data. Whether you intend to broadcast digitally now or in the future your NV Series will be ready.

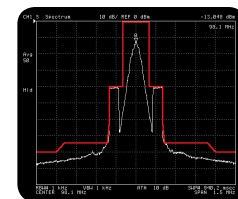


### Plug-in Engine

To get started with HD Radio broadcasting just insert Nautel's optional Engine card into the NV chassis and deploy an Exporter Plus at your studio site. In this configuration NV Series transmitters allow the simultaneous transmission of an analog program and a premium quality digital format. Additional digital channels can be added by deploying an optional Nautel Importer Plus and appropriate iBiquity Corporation licenses.

### Digital Adaptive Pre-correction

The NV integral exciter can monitor RF output and provide continuous correction signals to ensure the radio signal is within specified spectral limits. This can eliminate the need for expensive external bandpass filters. Improved linearity results in worry-free occupied spectrum and fewer digital errors ensuring the highest quality HD Radio signal.



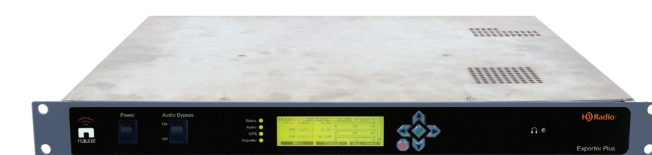
## HD PowerBoost™

### HD PowerBoost for Even More IBOC Power (Optional)

The NV Series transmitters support Nautel's HD PowerBoost, a unique patent-pending technique for optimizing IBOC peak to average power ratios. By using intelligent algorithms, peak power requirements are reduced allowing the NV Series to transmit up to 30% higher IBOC carrier power levels and at the same time achieve greater transmitter efficiency.

### -14dB/-10dB Digital Power

Only Nautel builds single-cabinet, solid-state transmitters with power outputs of up to 33 kW in -14dB hybrid mode and up to 26 kW for -10dB.



### HD Radio Components Exporter Plus

A required component of all HD Radio systems, the Nautel Exporter Plus codes the main program audio stream for digital broadcast. If an optional Importer is deployed the Exporter also combines the digital version of the main audio stream with the secondary audio and data services from the Importer. Nautel's 1RU rack mount Exporter Plus is a 100% solid state device that provides outstanding reliability.

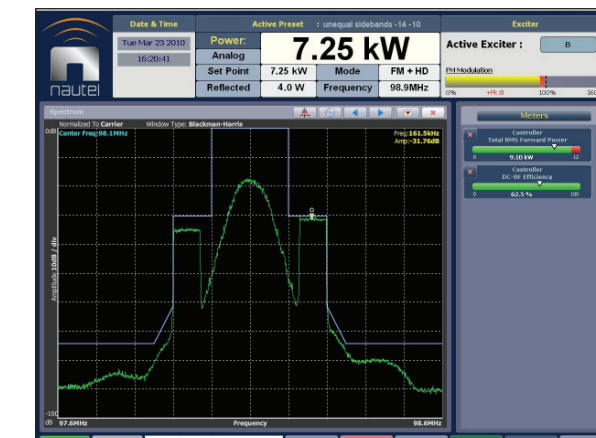


### Importer Plus for Multicasting

An optional component of HD Radio systems, the Nautel Importer Plus codes the secondary program and data services of an IBOC transmission including digital channels two to four. The Nautel Importer is a 1 RU solid state device. A convenient user interface permits the selection of IBOC service modes and partitioning of IBOC signal bandwidth for a variety of audio multicasting and data services.

### Asymmetrical Sidebands

For many stations, adjacent channel issues may prevent the use of increased IBOC injection levels on both sidebands. Broadcasters have the option to increase only one sideband while leaving the other at levels that do not cause interference with adjacent stations. This approach ensures maximum digital signal coverage.



Nautel includes its award-winning asymmetrical HD Radio transmission capability FREE with all new HD equipped NV Series transmitters.

### DRM Digital Broadcasting

In addition to HD Radio transmission, Nautel's NV Series transmitters also support the DRM+ international digital broadcasting standard.



## ROBUST AND RELIABLE

### Rugged and Robust with ON-AIR Serviceability

NV Series transmitters are ruggedly engineered to provide easy on-air service and maintenance. Power modules and their associated switching power supplies are hot-pluggable and form the basis of the NV's extremely redundant architecture. Two redundant switching power supplies are associated with each module. The power modules plug into the front of the transmitter, making service easy. Even the fan power supplies, 12 Volt supplies, low voltage supplies and IPA supplies all come standard as redundant.

### Ease of Installation

Every Nautel NV transmitter is shipped as a complete unit with all modules installed ready for plug and play installation. The compact lightweight designs make deployment even easier.

### Flexible Power Configuration

Select three phase AC inputs from 180 – 264 Vac or 312 - 457 Vac. Alternatively all NV Series transmitters can support single phase AC from 180 – 264 Vac. In fact if you sustain a loss of phase an NV can be reconfigured from 3 phase to single phase in a few minutes to help keep you on the air.

### Nautel Reliability

With forty years of worldwide transmitter experience and one of the industry's most recognized reliability track records, your Nautel NV Series transmitter can be counted on for years to come.

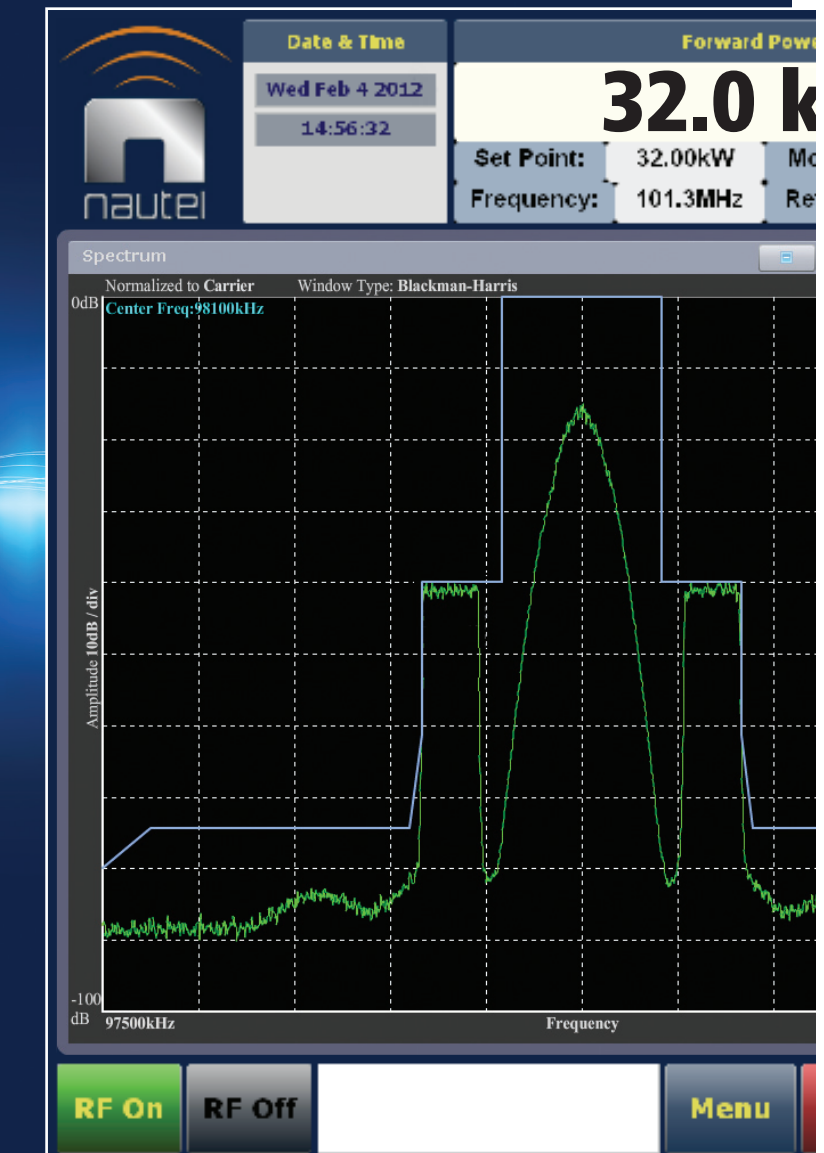
## N+1

### N+1: Cost Effective Automated Transmitter Backup

To help ensure that broadcasters stay "On Air" Nautel designs extreme reliability and redundancy into all Nautel transmitters. However, for facilities that broadcast multiple programs from a single site, N+1 capability can provide even higher levels of redundancy that is both automated and cost effective. Nautel N+1 configurations can support up to six identical main transmitters plus a backup transmitter serving outputs of 300 watts to 40 kilowatts of solid-state power.



# MORE CONTROL



### AWARD WINNING ADVANCED USER INTERFACE (AUI)

The NV Series features a 17 inch color LCD screen with a wide range of configurable displays. The AUI can be controlled by touch screen, or via a mouse and keyboard. Screens are easy to set up and read, and clearly display the parameters you need to see. Some of the features of the AUI include:

- RF and audio spectrum analyzers
- Comprehensive monitoring and control to the sub-module level
- Extensive logging of all events
- HD Radio constellation view
- Tolerance and alarm monitoring