



# NV Series

FM Digital/Analog



3.5kW - 44kW  
FM Transmitters

# NV Series

## 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 by building the exciter right into the transmitter and placing 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.

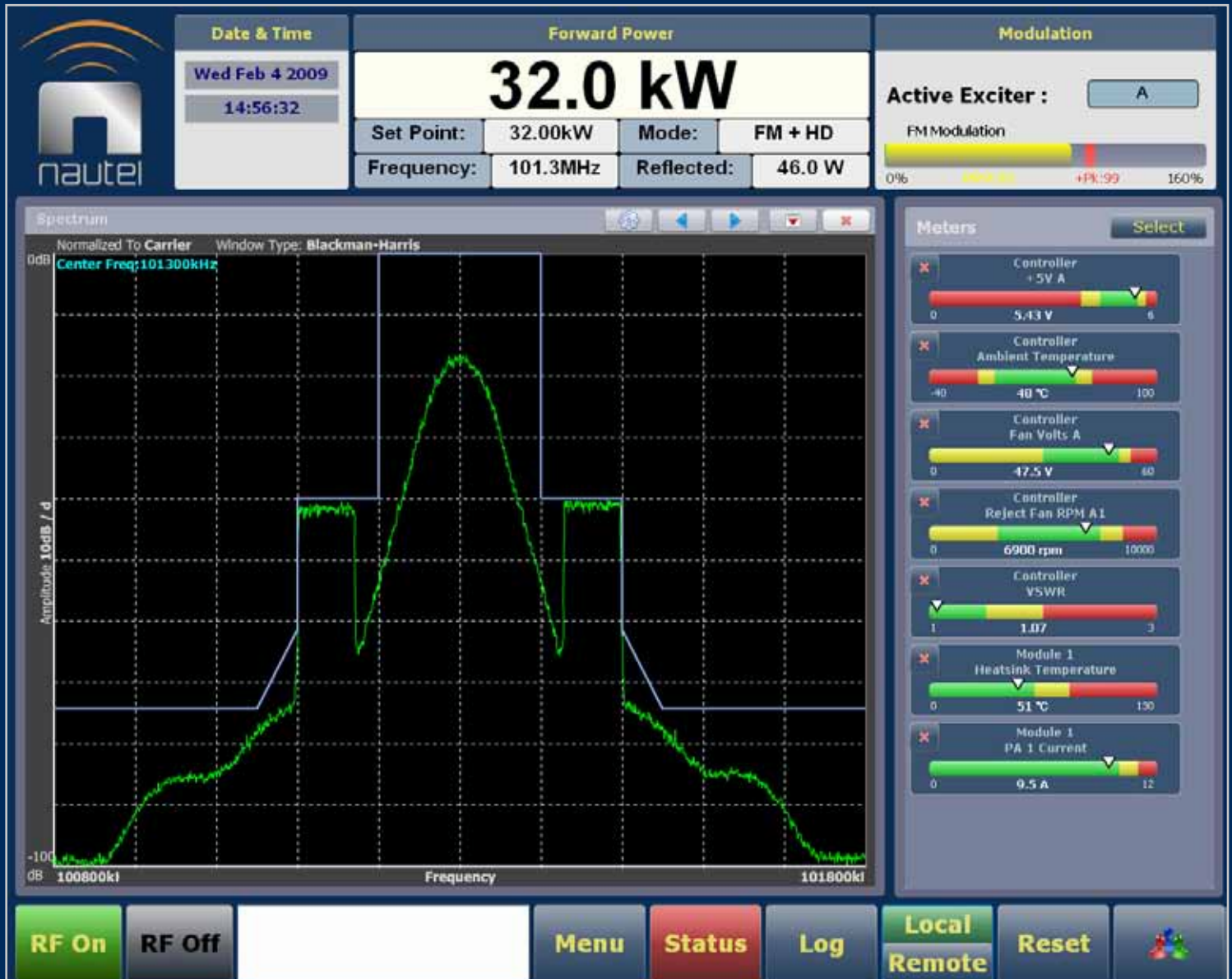
## NAUTEL INNOVATION

- Highest single cabinet FM power: 44kW
- Common family and common modules: 3.5kW - 44kW
- HD Power Boost option for more IBOC power
- Ultra 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

**"Only Nautel offers one complete family of single cabinet solid-state FM transmitters ranging from 3.5 kW all the way to 44kW"**



# MORE CONTROL



## NV Series ADVANCED USER INTERFACE (AUI)

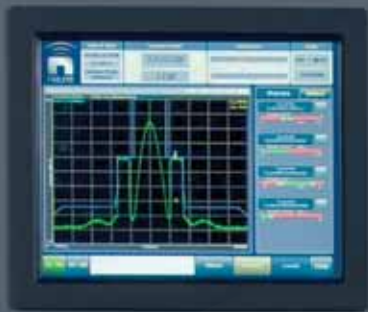
The NV Series features a 17 inch color LCD screen with a wide range of configurable displays. The AUI can be controlled by touch screen, or via a mouse and keyboard. Screens are easy to set up and read, and clearly display the parameters you need to see. Some of the features of the AUI include:

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

## 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.

# MORE ADVANCED



**3.5kW - 44kW**



## 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 44kW, the NV40 along with its NV30 and NV20 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 70kW. That means more power for digital and more power for 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.

### Less Maintenance, Smaller Footprint, No Tuning, No Tubes

The NV Series solid state reliability and redundancy keeps you on-air. A small footprint lets you pack more power into an existing facility. Easy maintenance and 100% remote access to the user interface means less time at the transmitter site.



# 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 and combining 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. Modules can be swapped from one transmitter to another and engineers and technicians can leverage their NV Series training across the broad family of NV Series transmitters.

## 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 precorrection
- 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 and 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.

## 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.

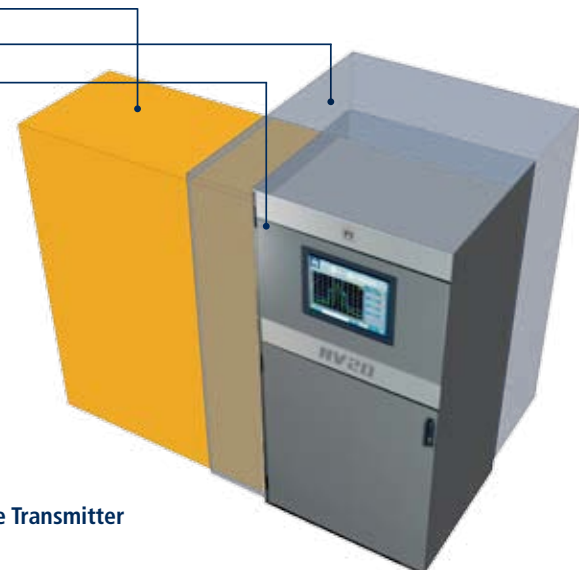
## Class Leading Space Efficiency

Compact NV power modules allow Nautel to design transmitters with dramatically smaller footprints at all power levels. In fact the NV Series transmitters are typically one third to one half smaller than traditional solid state designs and even smaller than most tube systems. That makes for simpler installation logistics and frees up precious floor space for other purposes such as HD Radio system components.

BE FM 20S

Harris ZD20CD

Nautel NV20



**20kW Solid-State Transmitter  
Size Comparison**

# 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 including crystal clear programming, three channels on one frequency, song tagging, and the delivery of advanced Program Associated Data. Whether you intend to broadcast digitally now or in the future your NV Series is ready.

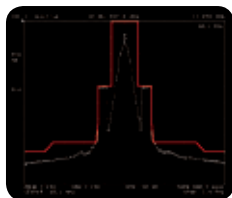


### Plug-in Engine

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. Two more digital channels can be added by deploying an optional Nautel Importer and appropriate iBiquity Corporation licenses.

### Digital Adaptive Precorrection

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 Power Boost for Even More IBOC Power (Optional)

The NV Series transmitters are designed to support Nautel's unique patent-pending technique for optimizing IBOC peak to average power ratios, HD Power Boost. By using intelligent algorithms, peak power requirements are reduced allowing the NV Series to transmit higher IBOC carrier power levels and at the same time achieve greater transmitter efficiency. This effect is even more pronounced at higher carrier injection levels and can produce significant power gains.

## Studio 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.



### IPR Importer for Multicasting

An optional component of HD Radio systems, the Nautel Importer codes the secondary program services of an IBOC transmission including digital channels two and three. The Nautel IPR Importer is a rack-mount Microsoft Windows™ based system. A convenient user interface permits the selection of IBOC service modes and partitioning of IBOC signal bandwidth for a variety of audio and data services including multicasting.



### Nautel Reliable HD Transport Suite

To ensure the integrity of your HD Radio studio to transmitter site communications, Nautel offers an enhanced protocol called the Nautel Reliable HD Transport Suite. It supports standard HD data transmission equipment and can improve IBOC on-air quality.



# ROBUST AND RELIABLE



## Rugged and Robust with ON-AIR Serviceability

NV Series transmitters are ruggedly engineered to provide easy on-air service and maintenance. The NV Series power modules and switching power supplies are all 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 and can be quickly swapped while on-air.

## 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. 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.

## 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.



QUICK SPECS		NV3.5	NV5	NV7.5	NV10	NV15	NV20	NV30	NV40
Analog FM Only	Max power (kW)	4.1	5.5	8.3	11	16.5	22	33	44
	Rated Power (kW)	3.5	5	7.5	10	15	20	30	40
	Typical Efficiency	61%	64%	61%	64%	61%	64%	61%	64%
HD Hybrid Mode-20dB	Max power (kW)	3	4	6	8	12	16	24	32
	Typical Efficiency	55%	55%	55%	55%	55%	55%	55%	55%
HD Hybrid Mode-10dB	Max power (kW)	1.7	2.2	3.3	4.4	6.6	8.8	13.3	17.5
	Typical Efficiency	40%	40%	40%	40%	40%	40%	40%	40%
AC Input 50/60 Hz		1 phase 180 - 264V or 3 phase 180 - 264V / 312 - 457V							
Power Modules		2		4		8		16	
Switching Power Supplies		4		8		16		32	
Power Factor (typical)		0.99 (unity power factor corrected)							
Height (in/cm)		72.5 (184.5)							
Width (in/cm)		23 (58.4)				36 (91.4)		65 (165.1)	
Depth (in/cm)		32 (81.3)							
Weight (lbs/kg)		300 (136)		415 (188)		850 (386)		1,600 (726)	

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

For further information, please contact us at:

**Nautel Limited**

ISO9001 Registered

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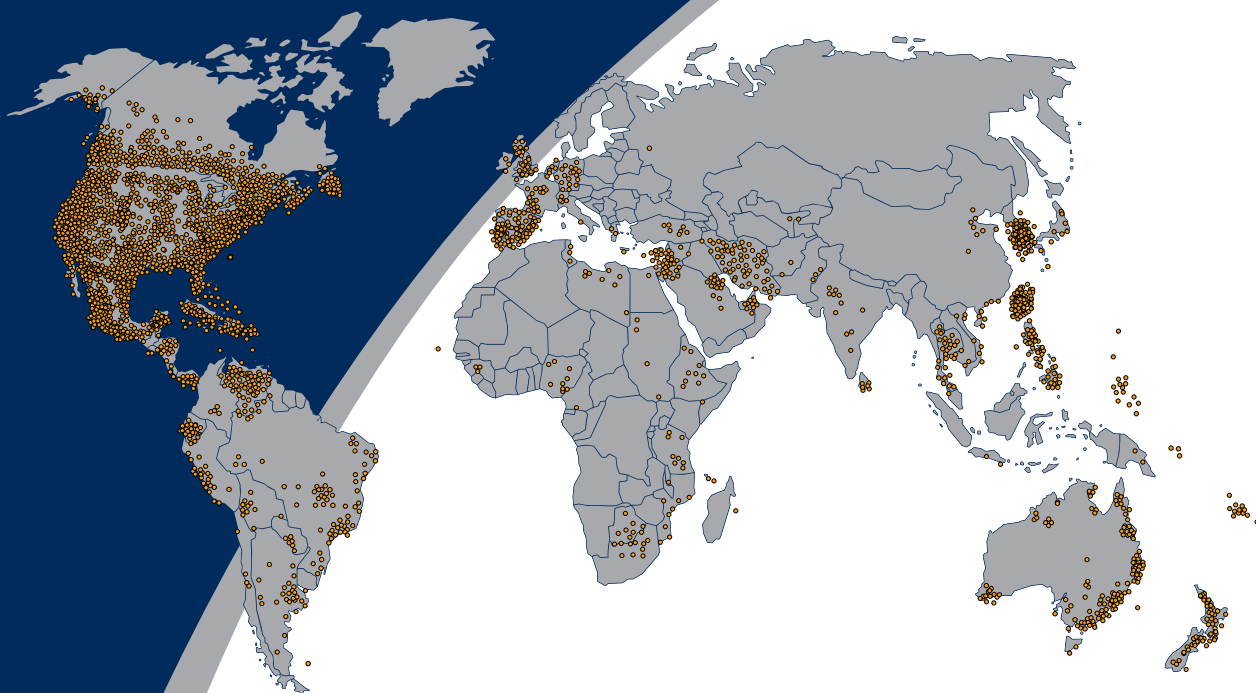
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## Nautel installed transmitters



### WHY CHOOSE NAUTEL?

Nautel designers and engineers have the experience to support our products, old or new. Our customer service staff available 24 hours a day, 7 days a week to answer your questions and provide experienced technical support. We provide extensive training and on-site support for all our products along with extended warranties and a ready supply of parts that can be shipped at a moment's notice from one of Nautel's three facilities.

Nautel products include extensive documentation, manuals and schematics to guide you through everything from installation to troubleshooting. We build value into every piece of equipment that leaves our facilities; in terms of technical features, innovation and cost effectiveness, Nautel is always one step ahead of the pack.

# Making Digital Radio Work.

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