nautel

GV Series

Digital/Analog FM

3.5 kW – 88 kW
FM Transmitters

PUSHRADIO

BACKUP AUDIO AUTOMATION

PUSH RADIO

AUTOMATIC "FAIL-SAFE" SWITCHOVER OF AUDIO SOURCES

GV Series transmitters accept a broad variety of IP, digital and analog inputs and give you the opportunity to define automatic fail-over modes should an input be disrupted. As a final level of backup, a playlist can be configured to play from a connected USB device.

A new Audio Switchback feature automatically returns to the desired audio source once it recovers from fail-over mode.

LOCAL AND DISTRIBUTED AUTOMATION OPTIONS

PushRadio builds on the local audio storage capabilities of Nautel's GV transmitters and leverages the AUI control system. From anywhere in the world, you can set-up basic automation capabilities, send new content as audio files, and send updated playlists to the transmitter, which then plays the content locally. Small stations gain added programming flexibility while networked broadcasters can dramatically reduce program distribution costs, improve reliability and facilitate local content.

UP TO
72%
EFFICIENCY

orban

MORE EFFICIENCY

ORBAN™ INSIDE

VALUE FROM DAY ONE AND EVERY DAY AFTER

The GV Series transmitters achieve up to 72% overall efficiency. That is the best in the industry and it is calculated with the full featured exciter included. Over the life of your transmitter that can translate into thousands of dollars of power and air conditioning savings.

HIGHEST IBOC EFFICIENCY

The GV addresses the need for analog/digital hybrid efficiency as well. A new Spectrum/Efficiency Optimizer dynamically optimizes digital transmission parameters to achieve optimum spectral performance and efficiency.

OPTIONAL CARD FOR ORBAN™ AUDIO PROCESSING

Orban's premier audio processing can be integrated directly into a GV transmitter via an optional $1,200 plug-in DSP card. Nautel's Orban Inside offers features of the Optimod 5500 Series digital processor with 5 band processor and dual band window-gated AGC. Utilizing the Nautel AUI, users have full control over processing functions.

STREAMING INPUT

ADVANCED INPUT OPTIONS

SHOUTcast™ and IceCast streaming input provides even more audio source options. Consider that over 40,000 stations worldwide stream their audio to the Internet using SHOUTcast and IceCast. The GV Series gives you added flexibility by supporting these streaming services as a transmitter playout option. Streaming support opens up many new possibilities for broadcasters including the option to stay on-air by transmitting the stations SHOUTcast stream in the event of a failed STL.

Nautel
PhoneHome

RDS GENERATOR

Powerful Presets

Scheduler

INSTRUMENTATION

Play lists

LD-MOS

MOD MONITOR

UPS Interface

Audio Spectrum Analyzer

SCA CODER

PROACTIVE STATUS MONITORING

EVEN MORE FEATURES

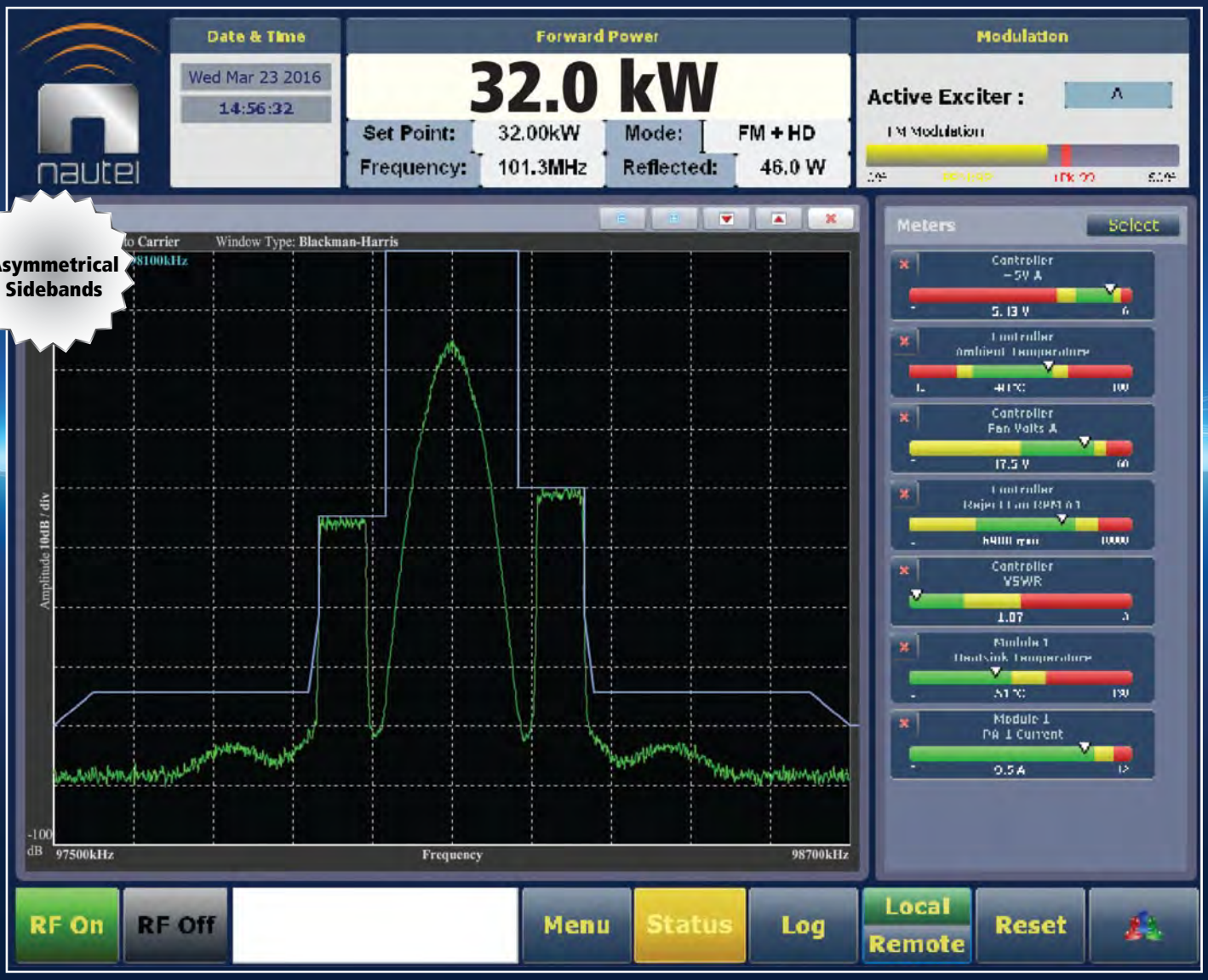
AWARD WINNING TOOLS HELP MAINTAIN YOUR TRANSMITTER

Phone Home is a system developed by Nautel that takes advantage of the vast amount of data collected by Nautel transmitters by proactively sending information to the cloud via the internet once a user enables Phone Home on their transmitter. This data includes logs, alarms and meter readings which are then stored in a database. When this data is used by Nautel customer support staff for diagnostics purposes it cuts down on repair time and gets you back on air faster.

MORE FEATURES GIVING YOU MORE OPTIONS

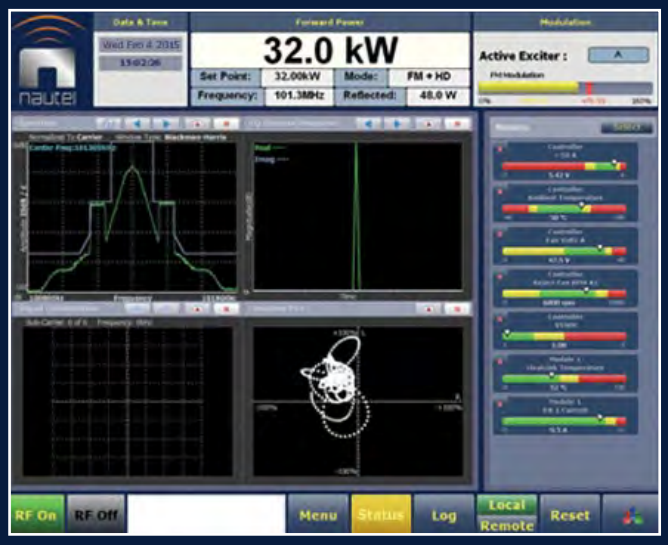
GV Series transmitters are unlike any other. There are more useful time saving capabilities than there is room in this brochure to describe. Please contact your representative for more information about the features highlighted above.

MORE CONTROL



REAL TIME BUILT-IN INSTRUMENTATION

GV 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 GV 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 GV Series display functionality is available on any web-enabled device.

SNMP SUPPORT

GV Series transmitters support Simple Network Management Protocol (SNMP), a network protocol that allows network management systems to monitor GV transmitters.

NEW OSCILLOSCOPE INSTRUMENTATION

The GV Series now includes Oscilloscope functionality which allows for comparison of the forward and reverse path signals and for monitoring the audio input waveform in the time domain.

GV Series

3.5 kW – 88 kW Digital/Analog FM

- Digital
- Efficient
- Intelligent
- Refined

"The most intelligent transmitters ever designed"

The Next Generation Transmitter

The new GV Series represents the culmination of years of Nautel transmission innovation. These new designs incorporate everything you have come to expect from a modern Nautel digital/analog transmitter. Engineered using Nautel's field-proven binary combined high-power architecture, they offer the industry's highest digital power outputs, commercial grade instrumentation, advanced intelligent features and award winning control via Nautel's AUI. All of this capability is packaged in thoughtful uncluttered designs that allow easy access for maintenance.

In the last 5 years broadcasters worldwide have installed almost 2,000 of these reliable systems that are based on Nautel's high power architecture and serve the globe's largest and most successful stations. The GV Series extends that legacy and charts new territory with even more digital power, new achievements in digital efficiency and significant new instrumentation and functionality.

INNOVATIVE EFFICIENT DESIGN

GV Series Innovation

- New Spectrum/Efficiency Optimizer
- New site control functionality via AUI
- Field proven architecture
- Award winning control
- Highest HD Power outputs
- Top IBOC efficiency
- Low mains operation down to 90V
- New oscilloscope instrumentation

Proven Architecture

A key element of the GV's proven architecture is the power module. The GV power module integrates the cooling systems, combiners and amplifiers into a compact vertically oriented module that is easy to handle and service. It consists of 4 amplifiers, each capable of providing 750 Watts, for 2500 Watts nominal power and 3000 Watts maximum power per module. The module provides a single RF input, a single RF output, and allows for optimal cooling and vertical air flow. The module is common among all GV family members for simple spares planning.

Integral Exciter for Outstanding FM Performance

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

Transmitter Centered Design

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.

In a Nautel high power design all control functionality is consolidated right inside the transmitter where it can provide the most benefit. A generous sized touch screen is provided locally and the same advanced control can be accessed anywhere on the web. GV Series transmitters also provide an additional LCD display on the control module for extra control redundancy.

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

DESIGNED FOR DIGITAL

Built for HD Radio™ Broadcasting

The GV Series and Nautel's integrated digital solutions make your move to HD Radio broadcasting easier and more economical than ever. 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 GV Series will be ready.

Rugged HD Radio Components

To get started with HD Radio broadcasting just insert Nautel's optional Exgine card into the GV chassis and deploy an Exporter Plus at your studio site. In this configuration GV Series transmitters allow the simultaneous transmission of an analog program and a premium quality digital format. The Nautel Exporter Plus codes the main program audio stream for digital broadcast.

Additional digital channels can be added by deploying an optional Nautel Importer Plus and appropriate iBiquity Corporation licenses. The Nautel Importer Plus codes the secondary program and data services of an IBOC transmission including digital channels two to four and passes its output to an Exporter. A convenient user interface permits the selection of IBOC service modes and partitioning of IBOC signal bandwidth for a variety of audio multicasting. Both the Importer Plus and Exporter Plus are 1U rack mount 100% solid state devices that provide outstanding reliability.

Exporter Plus (top) and Importer Plus (bottom)

Outstanding -14dB/-10dB performance

The GV Series transmitters utilize Nautel's HD PowerBoost™, a unique patented technique for optimizing IBOC peak to average power ratios. In a single cabinet Nautel GV transmitters can provide up to 37 kW of Analog power with a -14 dB injection level and up to 27 kW with -10 dB injection. Even more power is available with the new dual cabinet GV60 and GV80.

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 Digital Innovation:

- Advanced HD available TODAY
- Industry's highest digital TPO
- Class Leading IBOC efficiency
- HD PowerBoost crest reduction
- HD Spectrum/ Efficiency Optimizer
- MER instrumentation
- Asymmetrical sidebands
- Spectrum analyzer
- Constellation view
- HD Reliable transport

Highest IBOC efficiency

With the GV series Nautel has charted new ground for digital transmission efficiency. Traditionally, digital hybrid modes have displayed much lower efficiency compared to analog-only broadcasting. The GV addresses the need for analog/digital hybrid efficiency as well. A new Spectrum/Efficiency Optimizer dynamically optimizes digital transmission parameters to achieve optimum spectral performance and efficiency. Digital efficiencies have improved by up to 15%. High digital efficiency can result in tens of thousands of dollars savings over the life of your transmitter.

Highest Hybrid IBOC Efficiency

70%	60%	55%
at -20 dB	at -14 dB	at -10 dB

Unique MER instrumentation

Nautel now provides new instrumentation which allows real-time measurement of MER (Modulation error ratio). The measurements follow the new NRSC standards for measurement, and require no external equipment.

Real-time MER provides the ability to diagnose issues such as interference with the MP3 carriers near the analog signal due to FM analog signal over-modulation.

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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 14,000 deployments in 177 countries.

GV SERIES		Upgradeable GV3.5	GV5	Upgradeable GV7.5	GV10	Upgradeable GV15	GV20	GV30N	Upgradeable GV30	GV40	GV60	GV80
Analog Only	Max Power	4.1 kW	5.5 kW	8.2 kW	11 kW	16.5 kW	22 kW	33 kW	33 kW	44 kW	66 kW	88 kW
	Typical Efficiency	71%	72%	71%	72%	71%	72%	72%	71%	72%	72%	72%
FM + HD -20dB	Total Avg Power MP1[1]	3.9 kW	5.2 kW	7.8 kW	10.4 kW	15.5 kW	20.7 kW	31.1 kW	31.1 kW	41.4 kW	62.1 kW	82.8 kW
	Analog Power MP1[1]	3.8 kW	5.1 kW	7.7 kW	10.3 kW	15.4 kW	20.5 kW	30.8 kW	30.8 kW	41.0 kW	61.5 kW	82.0 kW
	Analog Power MP3[1]	3.8 kW	5.0 kW	7.5 kW	10.0 kW	15.0 kW	20.0 kW	30.0 kW	30.0 kW	40.0 kW	60.0 kW	80.0 kW
	Typical Efficiency	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
FM + HD -14dB	Total Avg Power MP1[1]	3.6 kW	4.8 kW	7.2 kW	9.6 kW	14.4 kW	19.2 kW	28.9 kW	28.9 kW	38.5 kW	57.7 kW	77.0 kW
	Analog Power MP1[1]	3.5 kW	4.6 kW	6.9 kW	9.3 kW	13.9 kW	18.5 kW	27.8 kW	27.8 kW	37.0 kW	55.5 kW	74.0 kW
	Analog Power MP3[1]	3.4 kW	4.5 kW	6.8 kW	9.0 kW	13.5 kW	18.0 kW	27.0 kW	27.0 kW	36.0 kW	54.0 kW	72.0 kW
	Typical Efficiency	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
FM + HD -10dB	Total Avg Power MP1[1]	2.8 kW	3.7 kW	5.6 kW	7.4 kW	11.1 kW	14.9 kW	22.3 kW	22.3 kW	29.7 kW	44.6 kW	59.4 kW
	Analog Power MP1[1]	2.5 kW	3.4 kW	5.1 kW	6.8 kW	10.1 kW	13.5 kW	20.3 kW	20.3 kW	27.0 kW	40.5 kW	54.0 kW
	Analog Power MP3[1]	2.5 kW	3.3 kW	5.0 kW	6.6 kW	10.0 kW	13.0 kW	20.0 kW	20.0 kW	26.0 kW	40.0 kW	52.0 kW
	Typical Efficiency	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
HD Only -20dB	Max Power MP3[1]	2.1 kW	2.8 kW	4.1 kW	5.5 kW	8.3 kW	11.0 kW	16.5 kW	16.5 kW	22.0 kW	33.0 kW	44.0 kW
	Typical Efficiency	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
HD Only -14dB	Max Power MP3[1]	1.7 kW	2.3 kW	3.4 kW	4.5 kW	6.8 kW	9.0 kW	13.5 kW	13.5 kW	18 kW	27.0 kW	36.0 kW
	Typical Efficiency	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
HD Only -10dB	Max Power MP3[1]	1.5 kW	2.0 kW	3.0 kW	4.0 kW	6.0 kW	8.0 kW	12.0 kW	12.0 kW	16.0 kW	24.0 kW	32.0 kW
	Typical Efficiency	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
AC Input		1-Ph 175-265 V or 3-Ph 175-265 V / 303-459 V (47-66 Hz)[2]										
Power Modules		2		4		8		12	16		24	32
Switching Power Supplies		4		8		16		24	32		48	64
Power Factor		0.98 (unity power factor corrected)										
Height (in/cm)		72.5 (184.2)									103.7 (263.4)[4]	
Width (in/cm)		23 (58.4)				36 (91.4)		51 (129.5)	66 (167.5)		102(259)	132(335)
Depth (in/cm)		33 (83.8)[3]										
Weight (in/cm)		333 (151)		421 (191)		830 (376)		1235 (560)	1,640 (744)		2600(1182)	3420(1555)

(1) Typical power measured with 1.1:1 VSWR

(2) Actual ac input voltage range is 90-265V/156-459V; transmitter limited to 1/3 rated power below 175/303 V.

(3) Depth can be reduced to 30" (76.2 cm) with the rear filter panel(s) and front door(s) removed.

(4) Please discuss your specific height and layout needs with Nautel sales representatives.

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

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.

Upgradeable GV Series Transmitters are future ready, providing an easy upgrade path to the next highest nameplate power level.