GATESAIR®

Connecting What's Next

PowerSmart® Plus

Maxiva™ VAXTE with PowerSmart® Plus

High-Efficiency VHF Low Band & High Band Air-Cooled TV Transmitters

GatesAir efficiently leverages broadcast spectrum to maximize performance for multichannel TV and radio services, offering the industry's broadest portfolio to help broadcasters wirelessly deliver and monetize content. With nearly 100 years in broadcasting, GatesAir's exclusive focus on the over-the-air market helps broadcasters optimize services today and prepare for future revenue-generating business opportunities. All research, development and innovation is driven from the company's facilities in Mason, Ohio and supported by the long-standing manufacturing center in Quincy, Illinois.

GatesAir's turnkey solutions are built on three pillars: Create, Transport and Transmit. The company is best known for powering over-the-air analog and digital radio/TV stations and networks worldwide with the industry's most operationally efficient transmitters. Groundbreaking innovations in low, medium and high-power transmitters reduce footprint, energy use and more to establish the industry's lowest total cost of ownership. Support for all digital standards and convergence with mobile networks ensure futureproof systems.

In television, GatesAir supplies proven, trusted wireless UHF and VHF solutions across all power requirements to support single-station over-the-air broadcasters on up to large national networks. The industry's most reliable software-definable exciters ensure broadcasters can optimize analog networks and quickly transition to digital TV in the field, with support for all major global DTV standards. GatesAir also supplies a wide array of over-the-air accessories to maximize transmitter control, network redundancy and signal compliance – along with installation, commissioning and ongoing support services – to deliver the industry's strongest turnkey approach for customers worldwide.

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For more information, please visit gatesair.com

Global Service Locations

Award Winning Service

From experienced installation and field service engineers to responsive factory experts, GatesAir provides the strongest service team in the broadcast transmission industry. Couple that team with reliable products, responsible service parts inventories and a demonstrated commitment to the industry, and you have a service offering that's perfectly matched to your equipment and your operations.

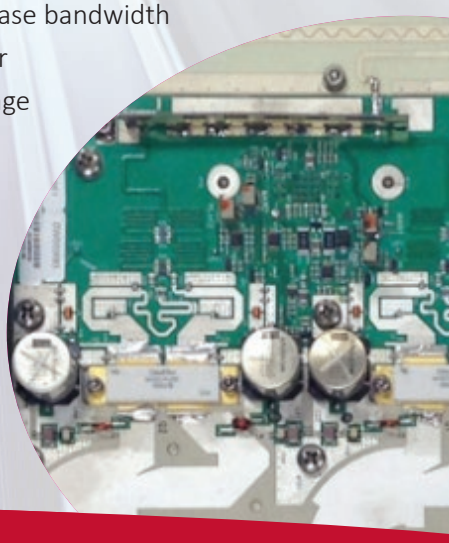
Maxiva™ VAXTE with PowerSmart®Plus

We did it again.

GatesAir has once again shattered the expectations of what is possible with air-cooled, solid-state transmitters from a cost versus performance ratio.

- High-efficiency Power Amplifiers optimized for equal power levels with either ATSC 1.0 or ATSC 3.0 modulation
- Modular architecture for ease of installation. Multiple transmitters in a single rack saves valuable floor space.
- Power levels up to 25.6kW (high band), 30kW (low band)
- Separate, hot-swappable, compact power supply for each PA. Redundancy options available.
- Separate, hot-swappable, high-efficiency power amplifiers
- Optimized Real-Time Adaptive Correction (RTAC™) provides the best performance all the time

More services usually means higher expenses. Higher operating expenses challenge the bottom line. Maxiva VAXTE transmitters with PowerSmart Plus technology drive down total cost of ownership while allowing broadcasters to get the most out of their spectrum. Optimized designs that increase bandwidth while simplifying maintenance. Superior power density that maximizes TV coverage while reducing transmitter size and weight. Unparalleled performance that enhances picture quality while lowering utility bills. GatesAir has once again shattered the expectations of what is possible with high-power, solid-state transmitters from a cost versus performance ratio.

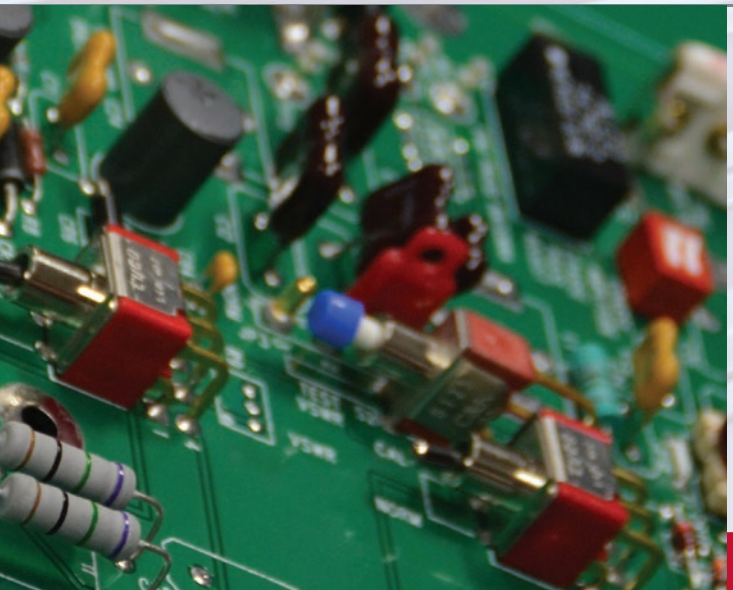


Product Overview

The Maxiva VAXTE is a compact air-cooled TV transmitter that provides over the air delivery in the VHF spectrum. Built on GatesAir's groundbreaking PowerSmart Plus architecture, the Maxiva VAXTE provides an energy-efficient, broadband solution to reliably deliver rich, high-quality multiformat content to viewers at home or on the move.

The core PowerSmart Plus technology of Maxiva VAXTE assures lowest cost of ownership through reduced size, weight and energy use, while providing the highest reliability and performance.

The Maxiva VAXTE utilizes the latest generation 50 volt LDMOS amplifier devices, new compact high-efficiency power supplies and the Maxiva Compact series exciter/driver along with real-time adaptive correction (RTAC) for outstanding signal performance. The Maxiva VAXTE power amplifiers have been optimized to provide the best possible performance and efficiency for both ATSC 1.0 and ATSC 3.0. The VAXTE transmitter is rate for identical average power levels for both modulations, assuring a simple and cost-effective upgrade path for future ATSC 3.0 operation. The modular design further simplifies installation and reduces maintenance costs, dramatically lowering the total cost of ownership over the transmitters life-cycle.



Designed with future broadcasting needs in mind, the VAXTE transmitter is capable of equal power levels for ATSC 1.0 and ATSC 3.0.

Savings You Can Count On!

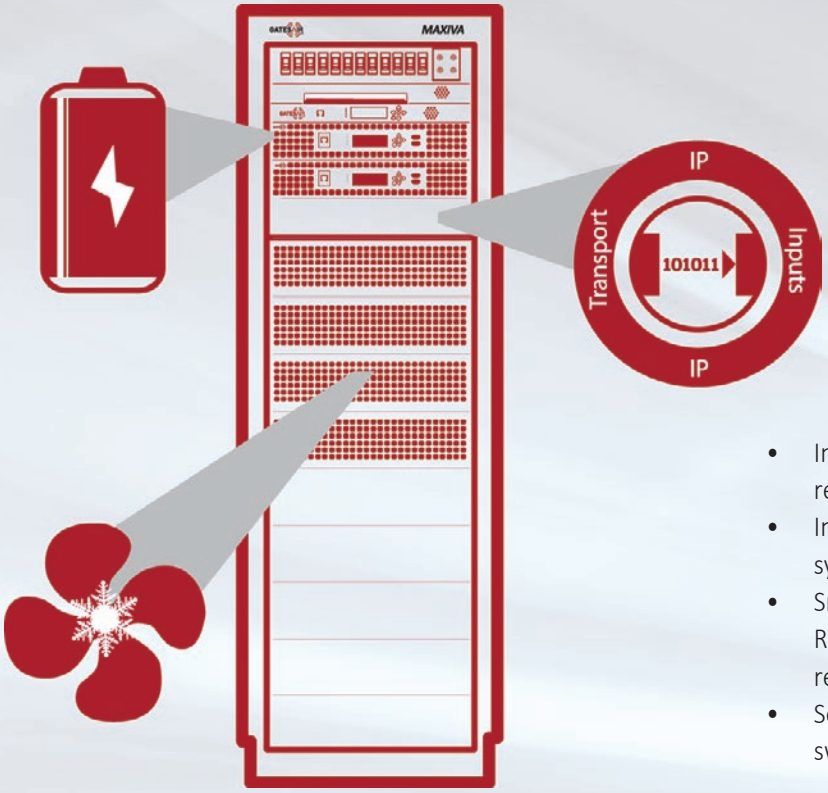
The Maxiva VAXTE with PowerSmart Plus is an efficiency-optimized VHF transmitter. This all-new design includes several energy saving features.

New PowerSmart® Plus amplifier technology for VHF provides a market-leading combination of efficiency and broadband operation

Savings in The Details!

- Simple and cost-effective upgrade path from ATSC 1.0 to ATSC 3.0 at the same power level
- Efficiency-optimized – for highest efficiency and lowest cost of ownership
- Variable speed fans to intelligently save energy
- Hot-swappable, compact, high-efficiency DC power supplies
- Hot-swappable, compact, high-efficiency power amplifiers
- Incorporates the XTE-based Maxiva Compact exciter/driver for best-in-class performance
- RoHS compliant / CE compliant
- Support for all worldwide digital modulation standards
- Modular & upgradeable architecture
- All-digital linear and nonlinear pre-correction: Real-Time Adaptive Correction (RTAC)
- Rugged, reliable design and construction
- Ideal for N+1 configurations since all transmitters are identical and use the same PA's, minimizing spares requirements
- Lowest energy usage
- Minimum operating cost

Savings You Can Count On!



- Intelligent cooling system with variable speed fans to reduce energy consumption.
- Included UPS for the exciter section provides fastest system power-up following an AC power interruption.
- Smaller and lighter PA architecture provides higher RF power during PA or power supply removal and replacement.
- Separate power supplies are easily accessible and hot-swappable from the front of each PA module.

Key Features

Features	Included	Available
Equal power levels for ATSC 1.0 and ATSC 3.0	•	
Fast-acting linear and non-linear Real-Time Adaptive Correction (RTAC) for optimum performance at all times	•	
Web remote with SNMP	•	
Parallel Remote Control	•	
Internal GPS/GLONASS receiver for SFN timing	•	
Exciter internal UPS option	•	
ASI/T2MI over IP / IP transport input (Ready for ATSC 3.0)	•	
Dual exiters and switcher		•
Redundant power supplies for each PA module		•
Local touch-screen GUI		•
N+1 systems and multi-transmitters per rack		•
Extended warranties and Service Level Agreements (SLA) to suit any requirement		•

Maxiva VAXTE Drive — The Heart of the Transmitter

The software-defined Maxiva VAXTE Drive takes digital and mobile TV to the next level. Offering the most advanced exciter technology available, the core Maxiva XTE platform used in the VAXTE Drive employs advanced Real Time Adaptive Precorrection techniques, Native dual TSoIP inputs and many other updates, providing a truly future-proof design.

Integrated within all Maxiva VAXTE air-cooled transmitters, the Maxiva VAXTE Drive delivers an RF signal with complete technical and regulatory compliance for all solid-state digital transmitters. The Maxiva XTE is the only exciter designed and manufactured in the USA that is 100% ready for ATSC 3.0.

Real-Time Adaptive Correction

GatesAir's exclusive Real-Time Adaptive Correction (RTAC) technology, standard in Maxiva transmitters, keeps your station within compliance while maximizing coverage. Featuring simultaneous linear and nonlinear adaptive pre-correction, RTAC interoperates with the Maxiva Compact Drive exciter to continuously monitor transmitter output and performance while automatically adapting for system nonlinearities — delivering the optimal level of correction for your digital over-the-air signal.

Advanced Global Monitoring and Control

In addition to local control, the Maxiva VAXTE transmitter can be controlled from anywhere in the world with an intuitive, browser-based graphical user interface (GUI) over TCP/IP via a telecom or network connection with password protection. A rear RJ-45 jack is provided for LAN/WAN connection.

Full Simple Network Management Protocol (SNMP) facilities are provided for network management of the entire transmission system using industry-standard MIB protocols.

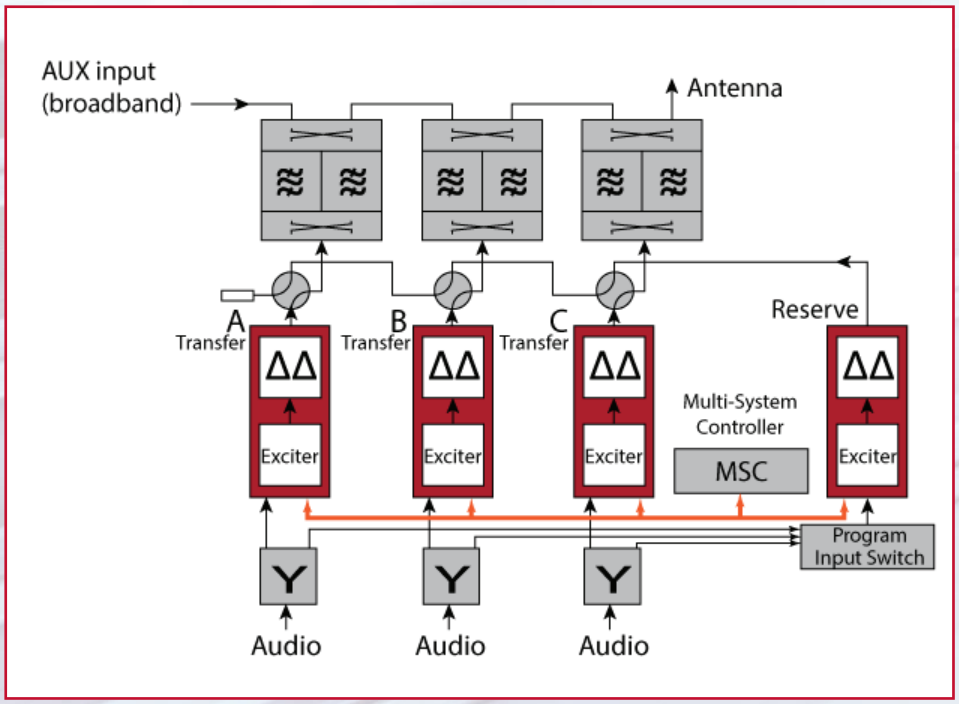
Remote Communication

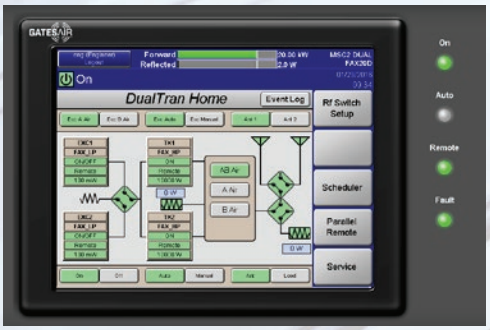
The following remote interfaces are available:

- GUI
- Ethernet network connection RJ-45 (10/100Base-T) with TCP/IP protocol
- Automated remote alarms in the event of a fault, which are sent via SNMP or e-mail with the connection to a network
- Simple, parallel interface to panels and legacy remote control systems

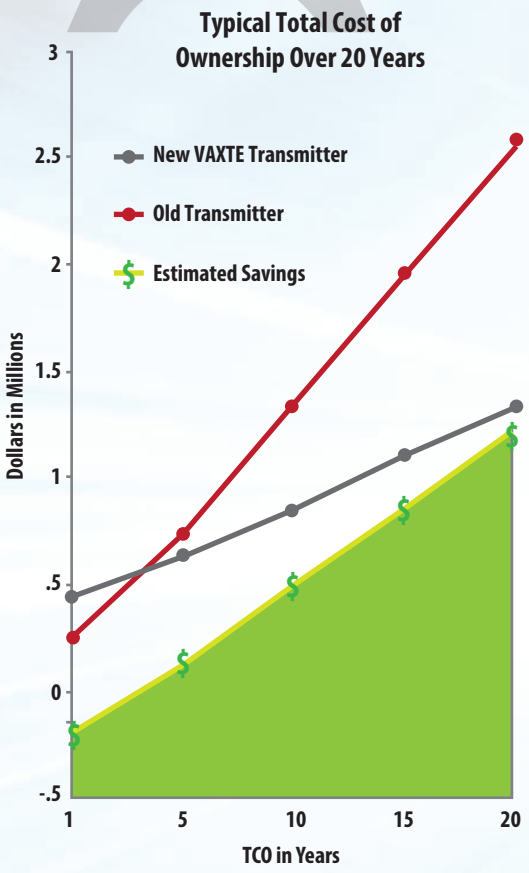
Multi-System Controller (MSC3)

To support greater redundancy, the Multi-System Controller (MSC3) supports a range of backup options, including 1+1, full N+1 and dual-transmitter installations. The MSC3 monitors and controls the transmitter systems and controls RF switching.





What is Total Cost of Ownership (TCO)?



TCO is the total cost to own and operate the transmitter system over time. This includes the initial equipment cost, installation/commissioning cost, routine and unscheduled maintenance costs, and ongoing repair and operational costs — and don't forget, rising energy costs. In fact, the lifetime operational expense of a transmitter is estimated at greater than five times the initial product cost.

While power to the transmitter is the biggest item, other factors can also adversely affect the system efficiency. These include:

- AC transformers and voltage regulators ahead of transmitter
- Heat load to the room (affects HVAC costs)
- RF system losses
- RF feeder loss to antenna
- Antenna gain and pattern

Maxiva VHF transmitters now incorporate GatesAir PowerSmart Plus technology to help broadcasters save money and reduce carbon footprints. PowerSmart Plus technology delivers superior operational efficiency through fully broadband, single-amplifier designs that simplify installation, improve performance, and streamline ongoing operation – including maintenance. This comes courtesy of a modular design that eliminates tuning, reduces weight, enhances redundancy through separate power supplies, and minimizes overall labor.

PowerSmart Plus technology also lowers monthly bills through sharp power efficiency increases (up to 45 percent), and slashes rack space requirements (exceeding 50 percent) through a dramatic increase in power density. These industry-leading strides in performance and physical size reduction combine to deliver the best possible total cost of ownership over the life of the transmitter – and return money to the pockets of our customers.

PowerSmart® Plus

Broadband Amplification

PowerSmart Plus incorporates groundbreaking broadband amplifier designs into Maxiva VAXTE transmitters. The Maxiva VAXTE power amplifiers have been optimized to provide the best possible performance and efficiency for both ATSC 1.0 and ATSC 3.0. The VAXTE transmitter is rate for identical average power levels for both modulations, assuring a simple and cost-effective upgrade path for future ATSC 3.0 operation. These designs also consolidate spare parts and eliminate tuning and adjustments to further simplify maintenance and ongoing operation.

Reduced Service Costs

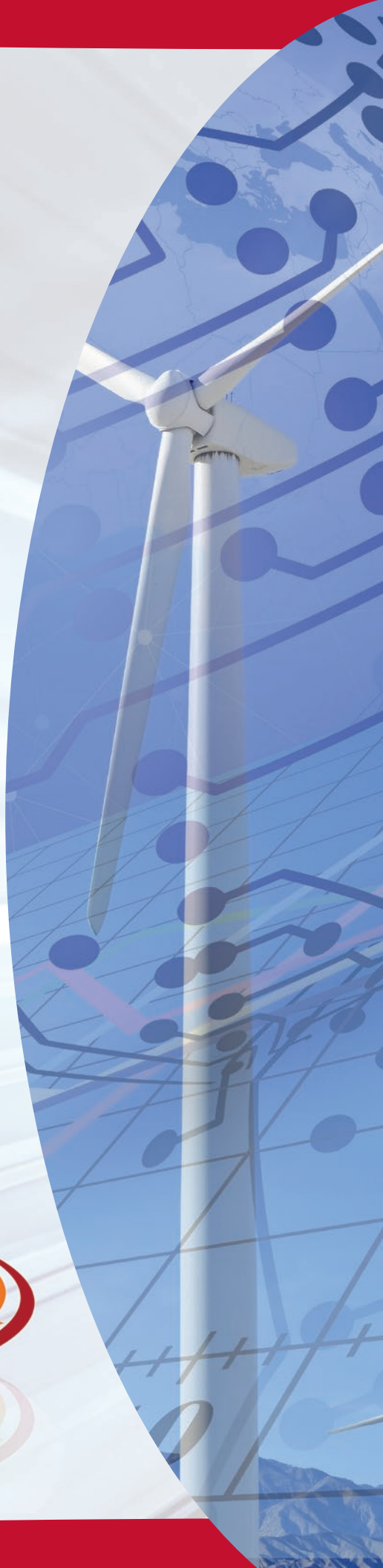
Easy access to hot-pluggable power amplifier modules and power supplies, makes on-air servicing easy and eliminates costly service interruptions. Light-weight universal PA pallets and modules facilitate overnight/same-day shipping for simple, cost-effective spares management. With lightweight subassemblies, the Maxiva VAXTE eliminates two-person lift requirements for routine maintenance and troubleshooting.

Compact Design

The reduced size of the VAXTE transmitter will minimize the use of valuable rack space in your transmitter facility. This provides space for other equipment, or multiple transmitters in a single rack, often eliminating the need for additional racks and the associated floor space needed.

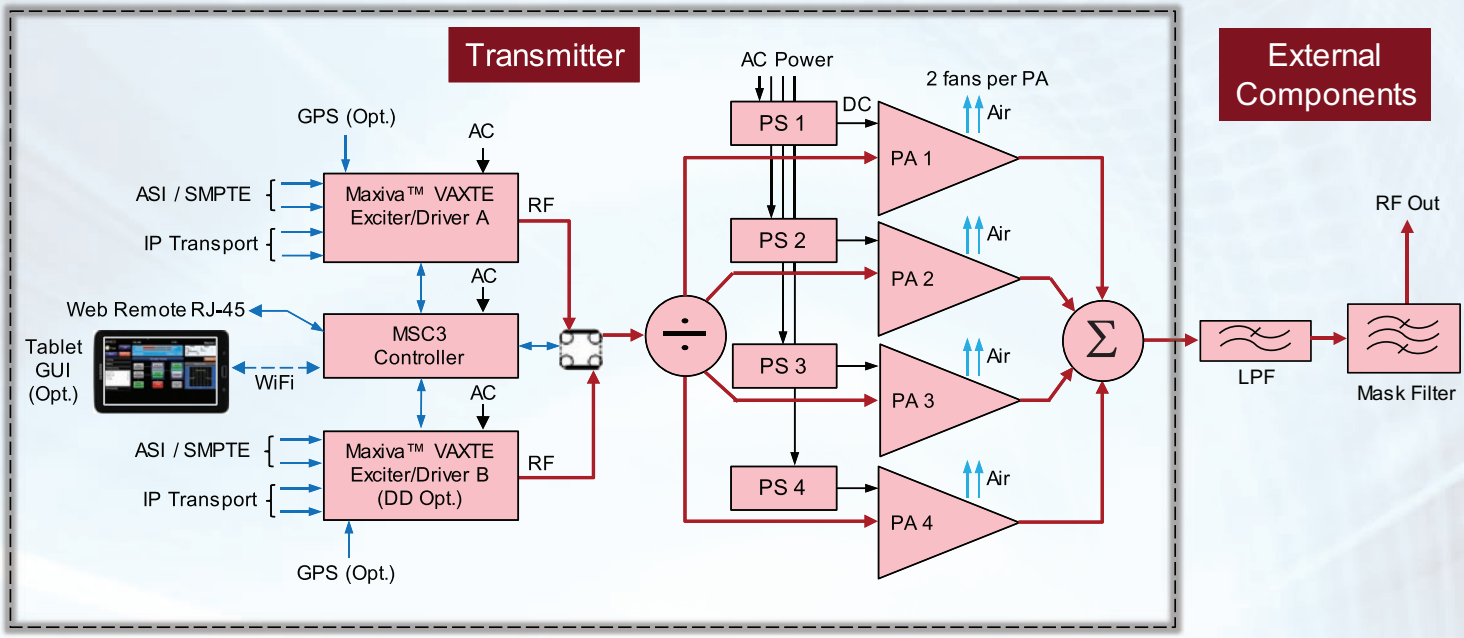
Global Monitoring and Control

The Maxiva VAXTE transmitter can be controlled from anywhere in the world with an intuitive, browser-based GUI or SNMP over TCP/IP via a telecom or network connection with password protection.



Maxiva VAXTE Block Diagram

4 PA system with dual drive option shown
(Models up to 32 PAs available)



Maxiva VAXTE High Band Models and Power Levels

Model	PA's	Rack Space	# Racks	Avg Power Pre-Filter (W)
VAXTE-100	0	2RU	0	100
VAXTE-1P-C	1 (1 pallet)	4RU	0	400
VAXTE-1-C	1 (2 pallets)	4RU	0	800
VAXTE-2	2	1 Rack (37RU)		1,600
VAXTE-3	3	1 Rack (37RU)		2,400
VAXTE-4	4	1 Rack (37RU)		3,200
VAXTE-6	6	1 Rack (37RU)		4,800
VAXTE-8	8	1 Rack (37RU)		6,400
VAXTE-12	12	2 Racks (37RU)		9,600
VAXTE-16	16	2 Racks (37RU)		12,800
VAXTE-24	24	3 Racks (37RU)		19,200
VAXTE-32	32	4 Racks (37RU)		25,600

Maxiva VAXTE Low Band Models and Power Levels

Model	PA's	Rack Space	# Racks	Avg Power Pre-Filter (W)
VAXTE-100L	0	2RU	0	100
VAXTE-1-4PL	1	1 Rack (37RU)		750
VAXTE-1L	1	1 Rack (37RU)		1,250
VAXTE-2L	2	1 Rack (37RU)		2,500
VAXTE-3L	3	1 Rack (37RU)		3,750
VAXTE-4L	4	1 Rack (37RU)		5,000
VAXTE-6L	6	1 Rack (37RU)		7,500
VAXTE-8L	8	2 Racks (37RU)		10,000
VAXTE-12L	12	2 Racks (37RU)		15,000
VAXTE-16L	16	3 Racks (37RU)		20,000
VAXTE-24L	24	4 Racks (37RU)		30,000

Specifications

Specifications and designs are subject to change without notice.

General	
Frequency Range	VHF Low Band / High Band
Transmission Standards	ATSC 1.0, ATSC 3.0 (Contact GatesAir for other standards)
Channel Bandwidth	6, 7 or 8 MHz (system dependent)
Rated Power Output	Up to 30 kW all modulations before mask filter
Output Power Reduction Range	0 to -10 dB
RF Load Impedance	50 ohms
VSWR	Protected against open or short circuit, all phase angles. Capable of operation into infinite VSWR with user-adjustable fold back threshold. Factory pre-set to 4% of nominal nameplate power (VSWR = 1.5:1)
RF Output Connector	See power level table

AC Mains	
AC Line Voltage	3 phase: 380 to 415 V, or 208 to 240 V, 50/60 Hz, or single phase 208 to 240 V, 50/60 Hz - specify voltage when ordering
AC Line Variation	±15%, between 208 to 230 V or 380 to 400 V
Power Factor	>0.95

Environmental	
Altitude	Up to 8,200 ft (2,500 m) elevation above mean sea level
Ambient Temperature	32° to 113° F (0° to 45° C) at sea level (upper limit derated 3.6° F (2° C) per 984 ft (300 m) elevation AMSL) per 300 m (984 ft) elevation AMSL)
Humidity	95%, non-condensing
Cooling Method	Air-cooled with internal fans, air flow front to rear (external air using optional front air plenum)
Acoustic Noise	<65 dBA (measured 1 m in front of cabinet), with external input air plenum/door
Frequency Stability	Without precision frequency control/ GPS: ±150 Hz/month (2.3 x 10-7ppm)

External Inputs	
GPS Input	SMA female, 50 ohms, (+5 V DC @ 100 mA max output for active antenna)
1 PPS Input	BNC female, user selectable 50 ohms or high impedance termination
10 MHz Reference Frequency Input	BNC female, 50 ohms

Monitoring Outputs	
RF monitor (exciter)	SMA female
1 PPS	BNC female
10 Mhz	BNC female

ATSC 1.0 Specification	
Power Output (average)	Up to 30 kW models available, measured before mask filter [See power level table]
Standards	ATSC A-53, 8-VSB DTV standard
Data Input	19.39 Mb/s, configurable as SMPTE-310M or ASI (user selectable)
Impedance	75 ohms, unbalanced
Input Connector	2 inputs, BNC female
Signal to Noise (EVM)	>27 dB (EVM <4%), Typical >32 dB (EVM <2.5 %)
Phase Noise	<104 dBc/Hz @ 20 kHz offset (ATSC A/64)
Harmonic Radiation & Spurious	Meets mask requirements specified in FCC 5th and 6th report and order
Sideband Performance	Compliant with FCC radiation mask, when measured at the output of GatesAir-supplied output filter

ATSC 3.0 Specification	
Power Output (average)	Up to 30 kW models available, measured before mask filter (see chart below)
Standards	A/321:2016 System Discovery and Signaling A/322:2017 Physical Layer Protocol A/324: Scheduler / Studio to Transmitter Link
ASI/T2MI Inputs	2 inputs BNC female; 75 ohms according to EN 50083-9. Supports seamless switching between ASI/ T2MI inputs for DVB-T2 (for DVB-H: 2 main/2 hierarchical)
ASI/T2MI over IP / IP transport	2 inputs, 100/1000BASE-T
Crest Factor	13 dB maximum
Shoulder Level	<-37 dB (before mask filter)
END	<0.5 dB
MER	>34 dB (typical 36 dB)
Harmonics (before filter)	<-40 dB
Central Carrier Suppression	>75 dB
DVB-T2 Modes	Supports multiple PLP's, MISO, extended bandwidth mode, PAPR reduction
SFN Delay	Static and Dynamic, 0 to 1 second per ETSI TS 101 191 V1.4.1 (2004-06)

Remote Control	
Parallel Remote	25 conductor D-sub for single drive basic rack, 12 conductor terminal block (mini Wago) on deluxe rack
Ethernet/SNMP	RJ-45, twisted pair
Compliance	RoHS 2002/95/EC R&TTE 1999/5/EC Safety: EN 60215 EMC: EN 301-489-1 FCC Part 73 Manufacturing: ISO 9001: 2008

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