



Connecting What's Next



PowerSmart<sup>®</sup> Plus 

---

**Maxiva™ ULXTE with PowerSmart® Plus**  
High-Efficiency UHF Liquid-Cooled TV Transmitter



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.

### Contact Information

Americas	+1 513 459 3400 Americas@gatesair.com
Europe, Middle East Asia and Africa	+33 1 47 92 44 20 EMEA-APAC@gatesair.com

For more information, please visit [gatesair.com](http://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™ ULXTE with PowerSmart® Plus

## We did it again.

GatesAir has once again shattered the expectations of what is possible with high-power, solid-state transmitters in terms of efficiency, power density, and performance.

High-efficiency Power Amplifiers, optimized for equal power levels with either ATSC 1.0, ATSC 3.0, DVB-T2, ISDB-T, and other OFDM modulations

Lighter power amplifier (PA) module - 1/3 of the weight of other products currently available

Simpler spares handling, easy one-person task

Separate, hot-swappable, compact power supply for each PA

Optimized higher performance Real-Time Adaptive Correction. Ensures maximum transmitter performance continuously, under varying operating conditions, without the need for manual adjustment

More services usually means higher expenses. Higher operating expenses challenge the bottom line. Maxiva ULXTE 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.





## Product Overview

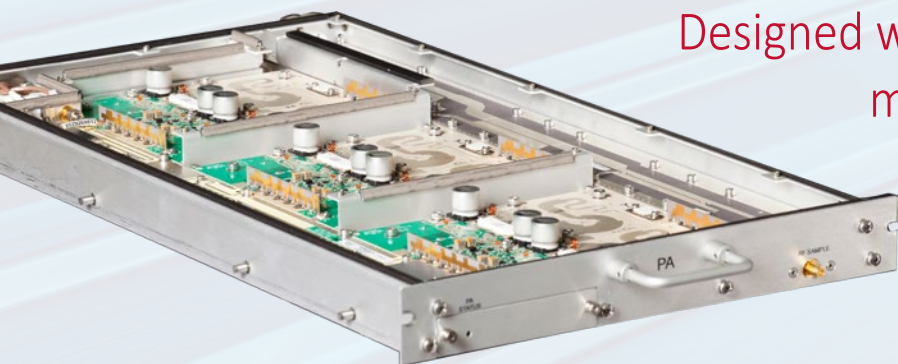
The Maxiva ULXTE is a liquid-cooled TV transmitter that powers over-the-air delivery across the UHF television spectrum. Built on GatesAir's groundbreaking PowerSmart® Plus architecture, Maxiva ULXTE offers today's digital broadcaster the most compact, energy-efficient solutions to reliably deliver rich, high-quality multi-format content to viewers at home, or on the move.

The new PowerSmart® Plus architecture used in Maxiva ULXTE assures low cost of ownership through reduced size, weight and energy use while improving performance.

The Maxiva ULXTE transmitter utilizes the latest 50-Volt LDMOS amplifier devices, new compact high-efficiency power supplies and the new Maxiva XTE exciter with advanced real-time adaptive correction (RTAC) for outstanding signal performance.

The Maxiva ULXTE power amplifiers have been optimized to provide the best possible performance and efficiency for 8-VSB and all OFDM modulations, including ATSC 3.0. The ULXTE transmitter is rate for identical average power levels for all modulations, assuring a simple and cost-effective upgrade path for future modulations, including ATSC 3.0.

Modular designs simplify installation and reduce ongoing maintenance, dramatically lowering total cost of ownership over the life of the transmitter.



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

# Savings You Can Count On!

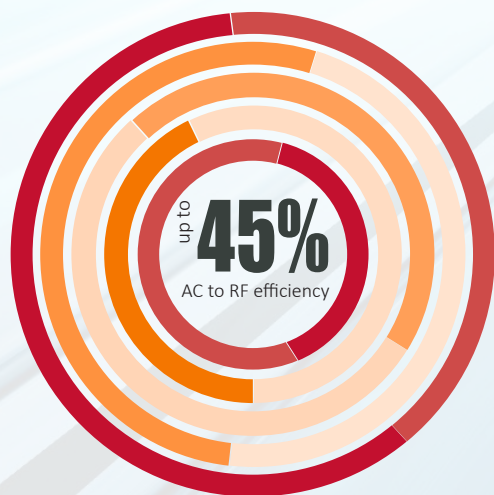
The Maxiva ULXTE with PowerSmart® Plus is the highest efficiency broadband UHF transmitter on the market.



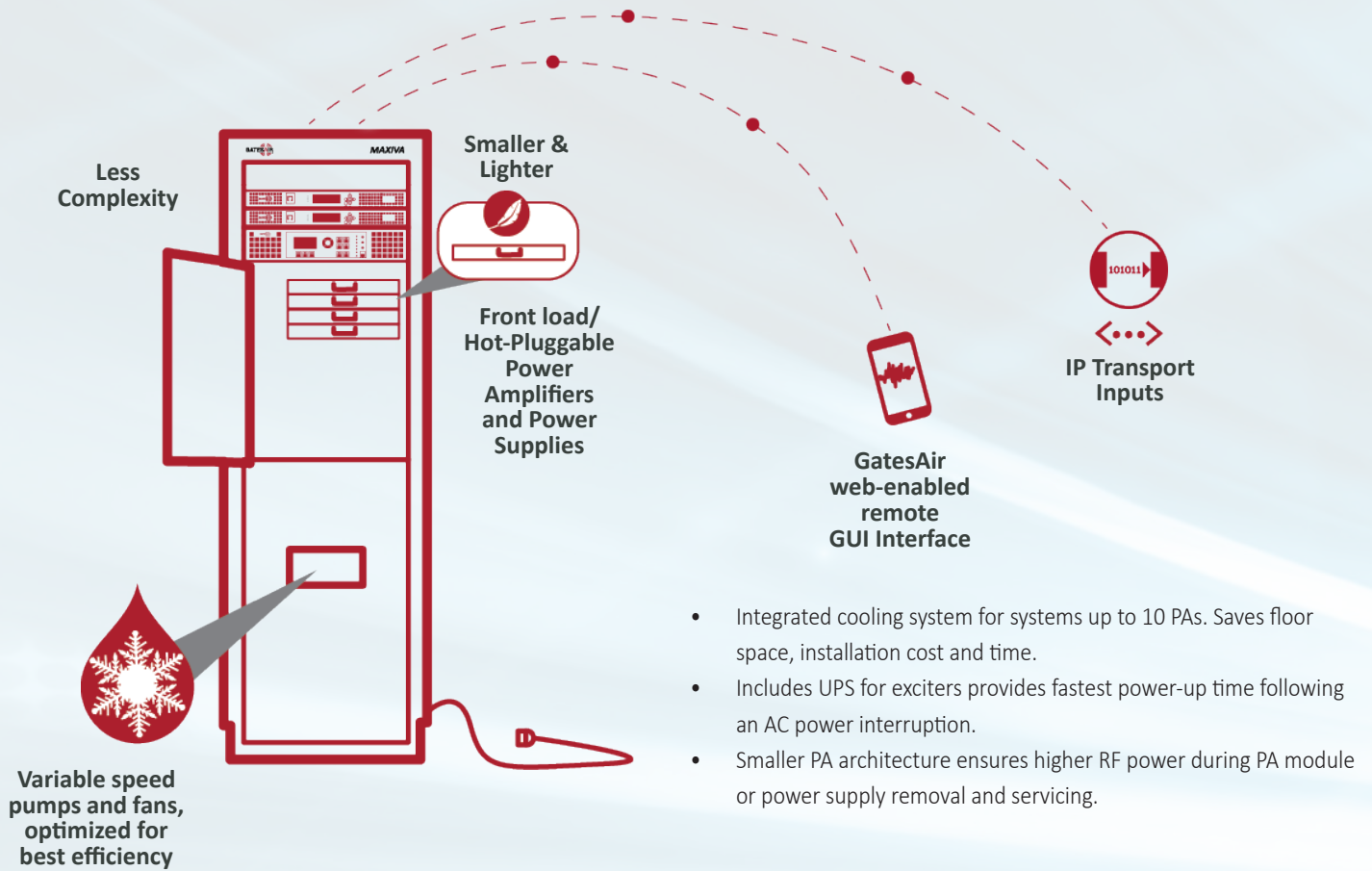
New PowerSmart® Plus amplifier technology for UHF provides a market-leading combination of efficiency, power density, and broadband operation

## Savings in The Details!

- Simple and cost-effective upgrade path from ATSC 1.0 to ATSC 3.0 or other modulations, at the same power level
- New high-efficiency DC power supplies
- Integrated high-efficiency pump system for certain power classes
- Hot-swappable light-weight PA modules
- Hot-swappable compact DC power supplies
- Incorporates the newest technology Maxiva XTE exciter for best-in-class adaptive precorrection and native IP transport inputs
- 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 can be identical and use the same PA's, minimizing spares requirements
- Lowest energy usage
- Minimum operating cost



# Savings You Can Count On!



## Key Features

Features	Included	Available
Equal power levels for ATSC 1.0 and all OFDM modulations, including 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	•	
Exciter internal UPS	•	
Internal dual redundant cooling pumps (for models ULXTE-2 to ULXTE-10)	•	
ASI/T2MI over IP / IP transport input (Ready for ATSC 3.0)	•	
Internal GPS/GLONASS receiver for SFN timing	•	
Dual exiters and switcher		•
N+1 systems and multi-transmitters per rack		•
Extended warranties and Service Level Agreements (SLA) to suit any requirement		•



## Maxiva™ XTE – The Heart of the Transmitter

The new GatesAir Maxiva™ XTE exciter provides broadcasters with a powerful, software-defined platform, enabling the ultimate in performance, stability and durability. Featuring unparalleled signal processing power, a smaller footprint and advanced native IP transport input capabilities, Maxiva XTE builds upon a strong legacy of groundbreaking technological advances, pioneered by several decades of GatesAir innovations. Dramatically increased processing power together with new, advanced Real Time Adaptive Correction techniques, provides optimum signal performance over a wide variety of modulations and RF amplifier topologies.

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 XTE 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. Real-time measurement of shoulder levels and SNR/MER are also provided.

### Advanced Global Monitoring and Control



In addition to local control, the Maxiva ULXTE 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:

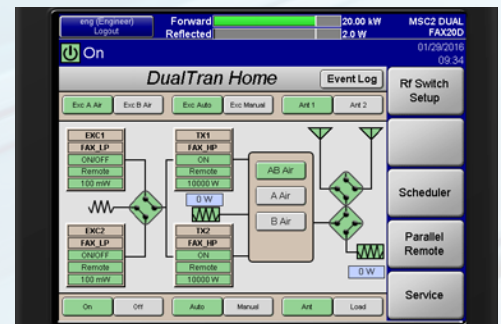
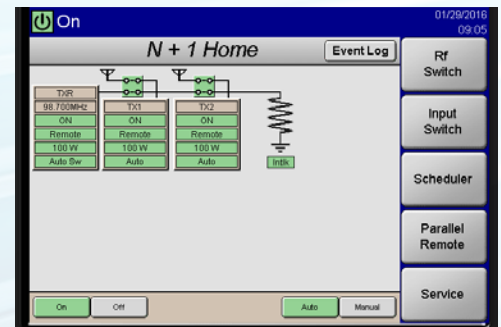
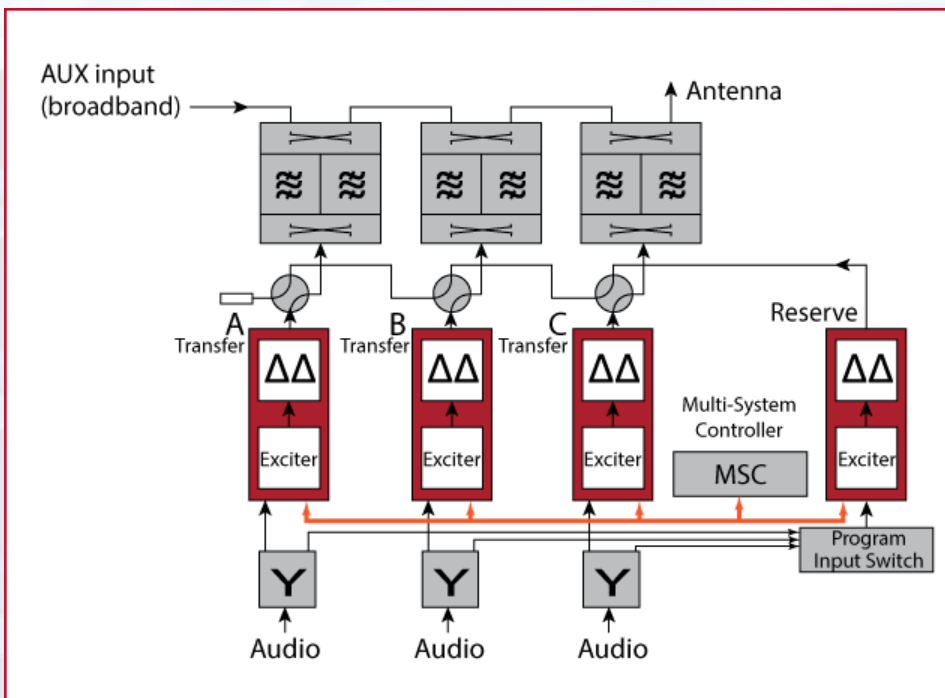
- Web GUI / Local GUI
- Ethernet network connection RJ-45 (10/100Base-T) with TCP/IP protocol



- 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.

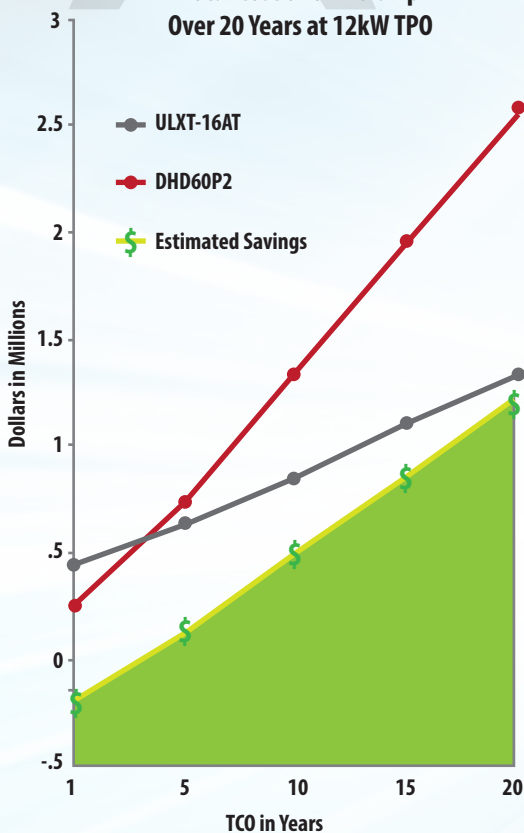
While power to the transmitter is the biggest item, other factors can also adversely affect the system efficiency. These include:

- 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 UHF transmitters now incorporate GatesAir PowerSmart®Plus technology to help broadcasters save money and reduce carbon footprints. PowerSmart®Plus technology delivers superior operational efficiency through broadband 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, and reduces 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.

**Total Cost of Ownership  
Over 20 Years at 12kW TPO**



# PowerSmart<sup>®</sup> Plus

## Optimized Amplification

The Maxiva ULXTE power amplifiers have been optimized to provide the best possible performance and efficiency for all TV modulations, including 8-VSB and OFDM. The ULXTE 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.

## Compact Footprint

As the most compact, liquid-cooled UHF transmitter, the Maxiva ULXTE is ideal for crowded, shared transmitter sites. The Maxiva ULXTE transmitter reduces facility space requirements, simplifies installation, lowers shipping costs and streamlines maintenance.

## Highest Power Density

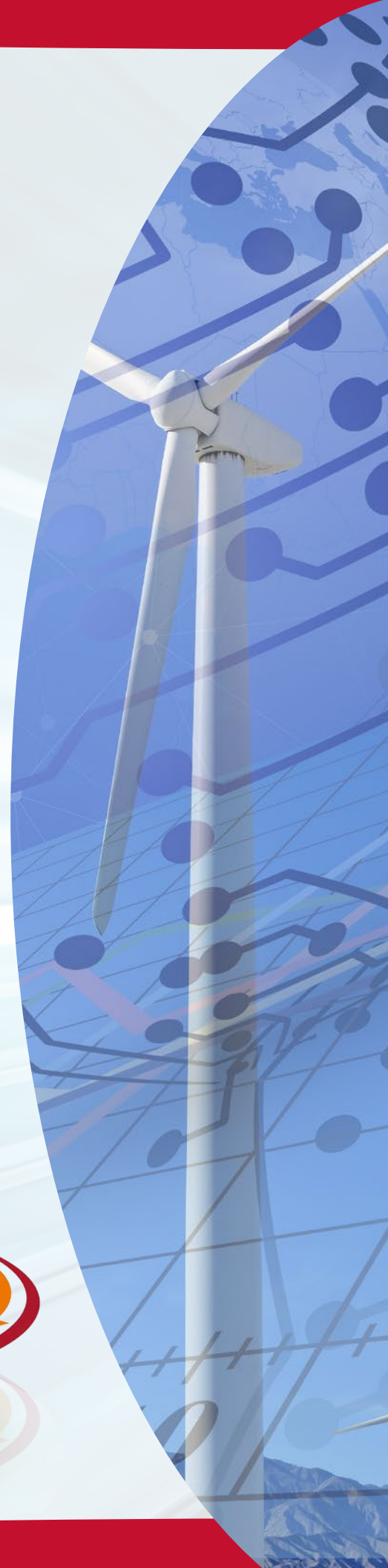
The Maxiva ULXTE provides the highest power density per rack in a UHF transmitter. Fewer amplifier racks are required for all power levels and modulations.

## Reduced Service Costs

Hot-pluggable, redundant power amplifier (PA) and universal power supply (PS) modules make on-air servicing easy and eliminate 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 ULXTE eliminates two-person lift requirements for routine maintenance and troubleshooting.

## Global Monitoring and Control

The Maxiva ULXTE 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.



## High-Efficiency Liquid-Cooling System

All Maxiva ULXTE systems feature a high-efficiency liquid-cooling system that has been carefully engineered for maximum efficiency over a wide range of ambient conditions and operating power levels.

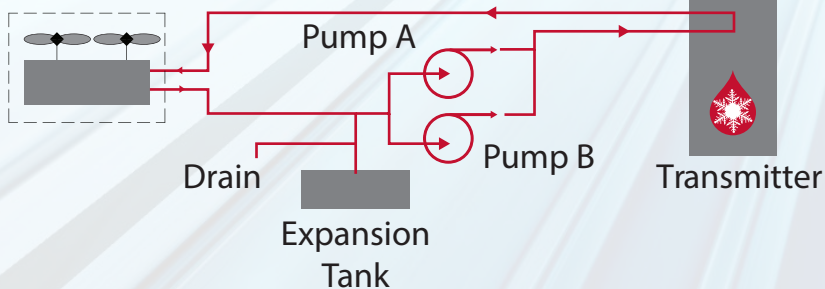
Integrated or external high-efficiency, low-noise pump modules are available for all single power block versions of Maxiva ULXTE. The integrated pump option minimizes the use of valuable floor space and simplifies installation requirements. Higher power level systems use a compact and efficient external pump module.

The closed-loop liquid-cooling system utilizes a pump module with 100% redundant cooling pumps and auto-changeover capability. The liquid-to-air outdoor heat exchanger also includes dual fans for maximum redundancy. The pump motor speed is controlled based on coolant requirements, and the heat exchanger fan motors are also speed controlled to provide the optimum cooling performance over a wide range of ambient weather conditions. These design features translate to maximum reliability at the lowest energy consumption in a small footprint.

The Maxiva ULXTE cooling system has been carefully engineered to allow for on-air servicing or replacement of pumps and fans, further maximizing on-air availability and minimizing revenue loss.

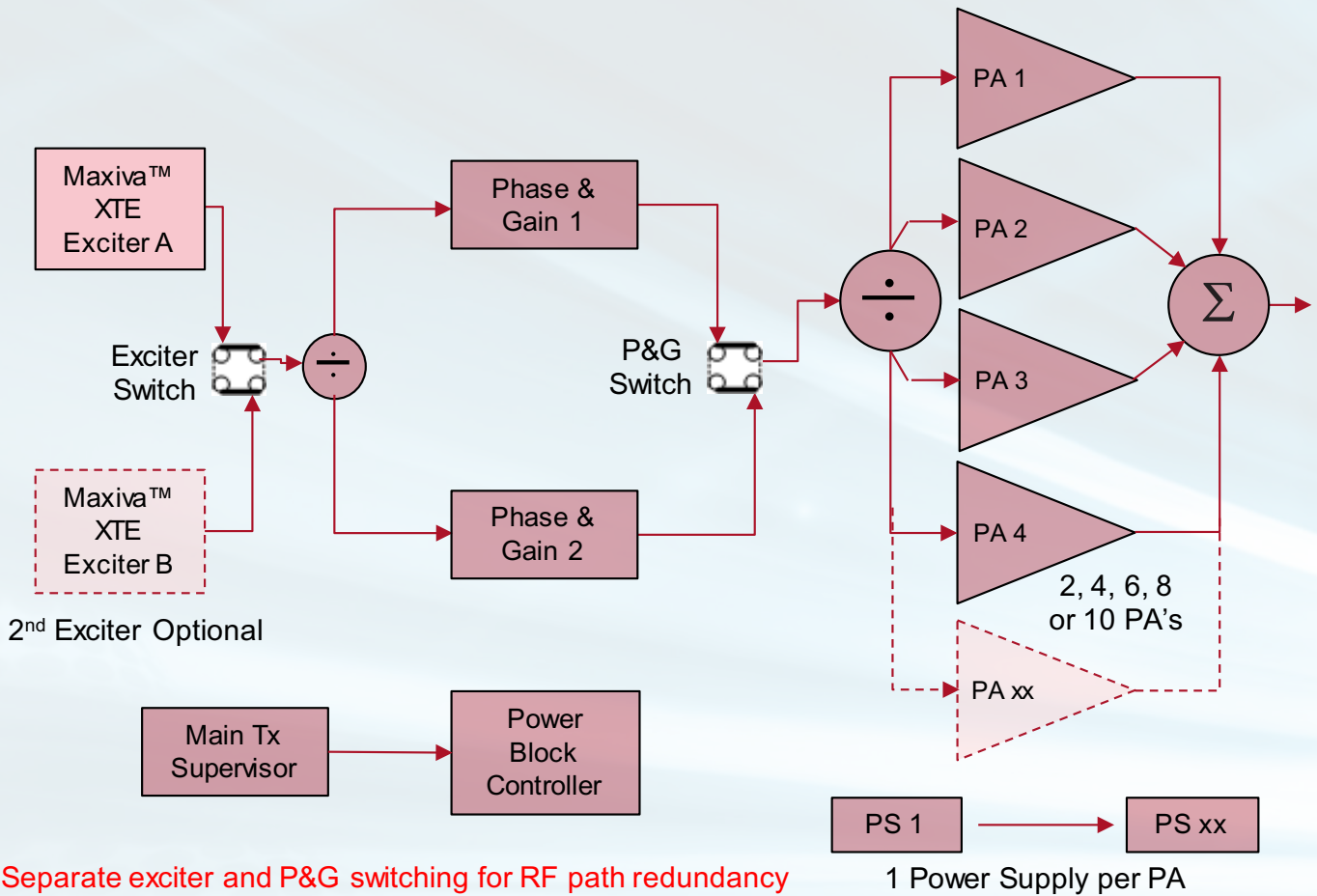


External  
Heat  
Exchanger  
with Dual  
Fans



# Maxiva ULXTE Block Diagram

2-10 PA system, Dual Drive System Shown






Separate exciter and P&G switching for RF path redundancy

1 Power Supply per PA

### Legend:

P&G: Phase and Gain  
 PA: Power Amplifier  
 PS: Power Supply

 : Drive Switch  
 : Power Divider  
 : Power Combiner

## Maxiva ULXTE Models and Power Levels

Maxiva ULXTE Model	Number of PAs	Number of Power Blocks	Total Number of Racks	Pre-Filter Average Power (Watts) Type E PAs	Pre-Filter Average Power (Watts) Type D (UWB) PAs 470 - 750MHz
ULXTE-2	2	1	1	1,440	1,200
ULXTE-4	4			2,880	2,400
ULXTE-6	6			4,320	3,600
ULXTE-8	8			5,520	4,600
ULXTE-10	10			6,600	5,500
ULXTE-12	12	2	1	8,500	7,000
ULXTE-16	16			10,900	9,000
ULXTE-20	20			12,900	10,900
ULXTE-24	24	3	1	16,100	13,400
ULXTE-30	30			19,200	16,100
ULXTE-40	40	4	2	25,300	21,400
ULXTE-50	50	5		31,700	26,500
ULXTE-60	60	6		38,000	31,800
ULXTE-72	72	9	3	47,200	39,900
ULXTE-80	80	8		50,100	42,300
ULXTE-90	90	9		56,400	47,500
ULXTE-120	120	12	4	75,100	62,800
ULXTE-150	150	15	5	92,800	78,400
ULXTED-20 <sup>1</sup>	20	2	2 + 1 Control	13,200	10,900
ULXTED-40 <sup>1</sup>	40	4	2 + 1 Control	25,800	21,600
ULXTED-60 <sup>1</sup>	60	3x2	2 + 1 Control	38,500	32,200
ULXTED-80 <sup>1</sup>	80	4x2	4 + 1 Control	50,700	42,800
ULXTED-100 <sup>1</sup>	100	5x2	4 + 1 Control	63,400	53,000
ULXTED-120 <sup>1</sup>	120	6x2	4 + 1 Control	76,100	63,600
ULXTED-144 <sup>1</sup>	144	9x2	6 + 1 Control	94,400	79,800
ULXTED-160 <sup>1</sup>	160	8x2	6 + 1 Control	100,300	84,600
ULXTED-180 <sup>1</sup>	180	9x2	6 + 1 Control	112,900	95,000
ULXTED-240 <sup>1</sup>	240	12x2	8 + 1 Control	150,200	125,600

<sup>1</sup> RF Power for Dualtran models do not include final combiner losses

# Specifications

Specifications and designs are subject to change without notice.

General	
Frequency Range .....	UHF TV Band
Transmission Standards .....	ATSC 1.0, ATSC 3.0, DVB-T/H, DVB-T2, DVB-T2 Lite, ISDB-Tb
Channel Bandwidth.....	6, 7 or 8 MHz (system dependent)
Rated Power Output .....	See chart on previous page
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 2.8% of nominal nameplate power (VSWR = 1.4:1)
RF Output Connector.....	1-5/8", 3-1/8" or 4-1/16" EIA (dependent upon power level)
Transmitter Dimensions.....	See chart on previous page
Transmitter Weight .....	See chart on previous page

AC Mains	
AC Line Voltage .....	3 phase: 380 to 415 V, or 208 to 240 V, 47-63Hz- 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 3,000 m (9,843 ft) elevation above mean sea level
Ambient Temperature.....	0° to 45° C (32° to 113° F) at sea level (upper limit derated 2° C (3.6°F) per 300 m (984 ft) elevation AMSL)
Storage Temperature .....	-10° to 65° C (14° to 149° F)
Humidity.....	95%, non-condensing
Cooling Method .....	Liquid-cooled, using 50/50 mix of ethylene or propylene glycol and water
Acoustic Noise.....	<65 dBA (measured 1 m (3.3 ft) in front of cabinet)
Frequency Stability .....	Without precision frequency control/GPS: ±150 Hz/month (2.3 x 10 <sup>-7</sup> ppm)

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
10MHz.....	BNC female

ATSC 1.0 Specification	
Power Output (average) .....	Power levels available for all applications [see table]
Standards .....	ATSC A-53, 8-VSB DTV standard, ATSC Mobile DTV
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, DVB-T/H, DVB-T2, DVB-T2 Lite, ISDB-Tb Specification	
Power Output (average) .....	Power levels available for all applications [see table]
Standards .....	ATSC 3.0: A/321:2016, A/322:2017, A/330:2016 DVB-T/H: standard EN 300 744 DVB-T2, DVB-T2 Lite: standards EN 302755 v1.4.1, TS 102 831 v1.2.1, TS 102 773 v1.3.1 ISDB-Tb: Brazil ANATEL standard
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: 1 main / 1 hierarchical)
IP Transport Inputs.....	2 inputs, 1000Base-T, RJ-45
Crest Factor.....	13 dB maximum
Shoulder Level.....	<-37 dB (before mask filter)
END .....	<0.5 dB
MER .....	≥34 dB (typically >36 dB)
Harmonics (before filter) .....	<-60dB, or FCC 5th and 6th report and order, measured after Low Pass filter
Central Carrier Suppression.....	>75 dB
Spurious Emissions .....	<-60dB, measured after Low Pass and Mask Filters
DVB-T2 Modes .....	Supports multiple PLP's, MISO, extended bandwidth mode, PAPP reduction, DVB-T2 Lite
SFN Delay .....	Static and Dynamic, 0 to 1 second per ETSI TS 101 191 V1.4.1 (2004-06)

Remote Control	
Parallel Remote .....	Sub-D connector
Ethernet/SNMP.....	RJ-45, twisted pair

Compliance.....	RoHS 2002/95/EC R&TTE 1999/5/EC Safety: EN 60215 EMC: EN 301-489-1 Manufacturing: ISO 9001: 2008
-----------------	--



## Award Winning Service -- Global Locations

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.



Americas

+1 513 459 3400  
Americas@gatesair.com

Europe, Middle East  
Asia and Africa

+33 1 47 92 44 20  
EMEA-APAC@gatesair.com

For more information, please visit [gatesair.com](http://gatesair.com)

GatesAir is a registered trademark of GatesAir, Inc.  
Trademarks and tradenames are the  
property of their respective companies.

### CONNECTING WHAT'S NEXT

5300 Kings Island Drive, Suite 101  
Mason, OH USA 45040  
Tel: +1 513 459 3400

[GatesAir.com](http://GatesAir.com)



©2017 GatesAir  
MAXIVA\_ULXTE\_MH\_KA\_091417