

# MAXIVA™ ULX-OP / VLX-OP

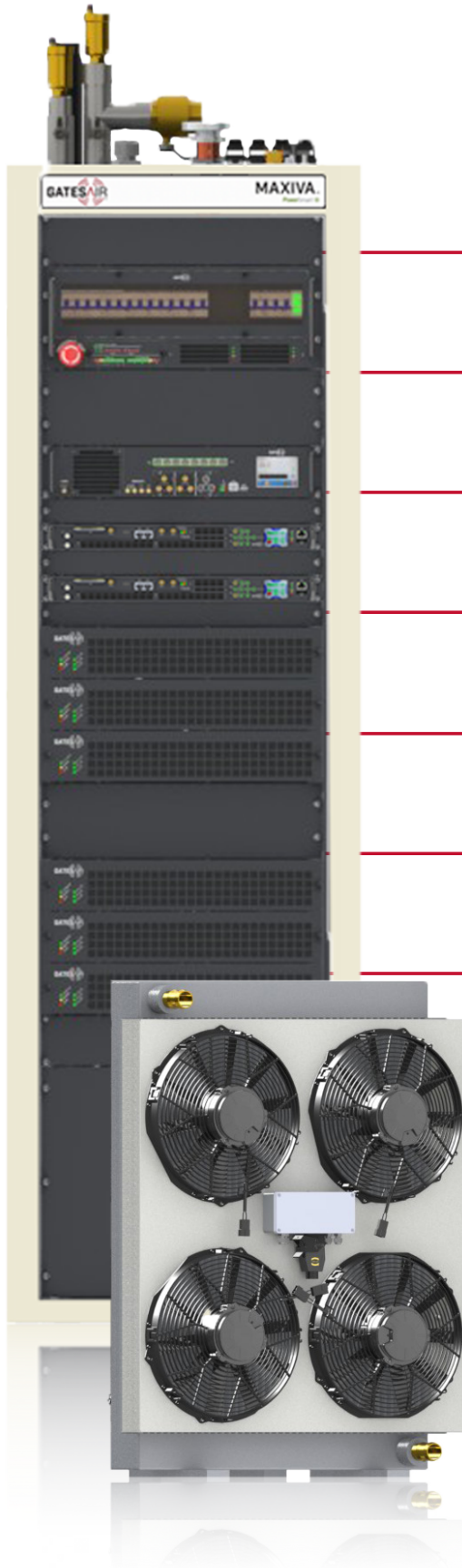
High-Efficiency UHF & VHF  
Liquid-Cooled Digital TV Transmitters



**GATESAIR** Connecting  
What's Next

# 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.



Power levels from up to 44kW UHF / 43kW VHF Band III / 36kW VHF Band I

High-efficiency broadband Doherty power amplifiers for all bands (VHF and UHF)

Software defined modulation for future upgradeability

Doherty amplification for highest efficiency and Maximum energy savings

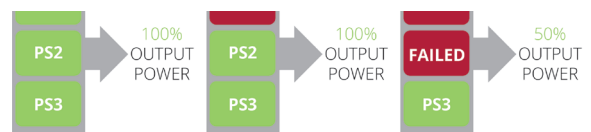
Hot-swappable power amplifiers

Separate hot-swappable compact power supplies, 3 per PA; for 2 of 3 full power redundancy\*\*

Optimized for best performance using Real Time Adaptive Correction

Innovative, High-efficiency liquid-cooling system

\*\*Power supply redundancy per PA module



## Main Features

- High power density, compact dimensions
- Power levels up to 44kW UHF / 43kW Band III, 36kW Band I (pre-filter power)
- High-efficiency broadband Doherty PA design
- Dual drive option
- Enhanced power supply redundancy
- Digital modulations: ATSC, DVB-T, DVB-T2, ISDB-T/Tb, DAB/DAB+
- S/W Upgradeable architecture
- Adaptive pre-correction included
- Analog models also available (see Maxiva OP-AN Series brochure)
- Optional high-stability GPS/GLONASS receiver
- Control system with GPIO and Web GUI
- Parallel, dual redundant pumps for each rack
- Multiple DC fans on heat exchanger – variable speed for efficiency optimization
- Automatic daily Heat Exchanger airflow reversal to eliminate debris
- Automatic coolant refill reservoir to reduce maintenance



**Maxiva™ ULX-OP-44000-R42 Liqui-Cooled  
44kW DTV Transmitter System**

# Maxiva™ ULX-OP / VLX-OP Specifications

<b>System</b>		Partial Reception	Supported
UHF digital output power	1.4kW to 44kW rms @ MER 38dB typ. (DVB-T/T2, ISDB-T)	<b>DAB/DAB+</b>	
UHF analogue output power	Refer to Maxiva OP-AN Brochure	Standard	EN300401, ETS 300 799
VHF digital output power	1.8kW to 43.2 kW rms VHF-Band III 1.5kW to 36kW rms VHF-Band I	Inputs	4x ETI (NI[G703], NA5376[G704] or NA5592[G704]) BNC (f), 75 Ohm or 2x ETI BNC (f), 75 Ohm + 2x EDI (ETSI TS 102 693) RJ45 10/100/1000 Seamless switch between any input
VHF analogue output power	Refer to Maxiva OP-AN Brochure	Transmission Modes	Mode I, II, III, IV (Automatically detected from the ETI stream, or user selectable)
Configurations	Single or dual driver	Operation	MFN or SFN operations
RF output connector	7/8" (f) or 1 5/8" (f) or 3 1/8" (f) or 4 1/8" (f), EIA, 50 Ohm (according to output power and frequency band)	<b>ATSC</b>	
Frequency agility	UHF Band IV and V or VHF Band III/VHF Band I	Standard	A/53, A/110
Frequency resolution	1 Hz	Inputs	4x ASI/SMPTE-310M BNC (f), 75 Ohm or 2 ASI/SMPTE-310M BNC (f), 75 Ohm and 2x RJ45 TS oIP 10/100/1000 Seamless switch between any input
Precorrection	Real Time Adaptive Correction	Modulation	8-VSB
Exciter	UAXT/VAXT UC series exciter/driver	Input Bit Rate	19.39 Mbit/s
Integrated matrix circuits	ASI/BTS/Video (dual), audio and RF	Bandwidth	6 MHz
BTS/ASI/Video matrix connectors	BNC (f), 75 Ohm	Max Processing Delay	Up to 1 second (programmable)
Cooling	Liquid-cooling, with integrated dual pumps and external heat exchanger with multiple fans	<b>Analogue</b>	
<b>Modulator</b>		Standard	B, G, D, K, M, N, I
<b>DVT-T/DVB-T2</b>		Inputs	Video BNC (f), 75 Ohm, audio Tini-QG "Mini XLR", 6 Pin (m), 600 Ohm
Standard	EN300744, EN302304, EN302755 V1.3.1 (DVB-T2-Lite), TS101191, TS102773, (T3-MI), TS102034	Color System	PAL, NTSC
Inputs	4x ASI BNC (f), 75 Ohm or 2x ASI BNC (f), 75 Ohm and 2 x RJ45 TS oIP 10/100/1000 Seamless switch between any input Hierarchical and not hierarchical (DVB-T)	Integrated NICAM Encoder	Available
FFT	1K (DVB-T2), 2K, 4K, 8K, 8K ext. (DVB-T2), 16K & 16K ext. (DVB-T2), 32K & 32K ext. (DVB-T2)	<b>Satellite Receiver (Option)</b>	
Code rate	All modes available according to the standard Block Short or Normal (DVB-T2) DVB-T: Reed-Solomon (204, 188) DBT-T2: BCH, LDPC	Standard	ETSI EN 300 421 (QPSK) (DVB-S) ETSI EN 302 307 (QPSK, 8 PSK, 16APSK) (DVB-S2) ETSI EN 50083-9 (ASI) ETSI EN 50221 (Common Interface)
Guard Interval	1/32, 1/16, 1/8, 1/4, 19/256 (DVB-T2), 19/128 (DVB-T2), 1/128 (DVB-T2)	DVB-S2	VCM, CCM, Multi Stream and Single Stream, Normal and Short FEC frames
Constellation	QPSK, 16QAM, 64QAM, 256QAM (DVB-T2). Rotated and non-rotated (DVB-T2)	Symbol Rate	1 - 45 Msym/s (DVB-S) 2 - 45 Msym/s (DVB-S2)
MISO processing	Supported	Constellation	QPSK, 8PSK, 16APSK
<b>ISDB-Tb</b>		FEC	Automatic, all modalities available according to the standard Block short or Normal DVB-S: Reed-Solomon (204, 188) DVB-S2: BCH, LDPC
Standard	ABNT NBR 15601, ABNT NBR 15603	Roll-Off	0.2, 0.25, 0.35
Inputs	4x ASI TS/BTS BNC (f), 75 Ohm or 2x ASI TS/BTS BNS (f), 75 Ohm and 2x RJ45 TS/BTS oIP 10/100/1000 Seamless switch between any input	Input Connector	F(f), 75 Ohm
FFT	Mode 1 (2K), Mode (4K), Mode 3 (8K)	Frequency	L-band 930(divide symbol here)2250 MHz
Code Rate	1/2, 2/3, 3/4 5/6 7/8	LNB Control Voltage	Off, +13/18 Vdc, 22kHz, 0.25 A (overload protection)
Guard Interval	1/4, 1/8, 1/16, 1/32	RF Input Level	40 (divide symbol) 100 db/uV (with attenuator)
Hierarchical Modulations	Up to 3 layers	Output Connector	F(f), 75 Ohm
Constellation	QPSK, 16QAM, 64QAM	Modality	188 bytes
Time Interleaver	Fully Supported	Max Input Bit Rate	80 Mbps (CAM limit: 72 Mbps)
		CAM Interface	PCMCIA DVB-CI Common Interface

# Maxiva™ ULX-OP / VLX-OP Specifications

CA Mode (Conditional Access)	Multicrypt, Simulcrypt
CAS Support	Mediaguard, Viaccess, Irdeto, Conax, BISS with professional multiprogram CAM (descrambling of up to 24 Elementary Streams) Betacrypt, Cryptoworks, Nagravision with standard consumer CAM (descrambling of up to 4 services)
<b>GNSS (GPS/GLONASS) [Option]</b>	
Input Connector	N (f), 50 Ohm
Input/Monitor Output 10 MHz	BNC (f), 75 Ohm
Input/Monitor Output 1 PPS	BNC (f), 75 Ohm
Phase Noise	-140 dBc/Hz @ 10 KHz -150 dBc/Hz @ 100 kHz
Stability	1e-12 / 24 hours with disciplined OCXO
Hold-over Stability	5 us after 5 hours (optional 1 us after 24 hours)
<b>Mechanical</b>	
Rack	See table on next page (other configurations are available on request)
Width	600 mm
Rack Height	36 RU rack models: 1800 mm 42 RU rack models: 2070 mm Refer to Key Features table on next page for models

Depth	36 RU Rack: 1000mm 42 RU Rack: 1200 mm Refer to Key Features table for details
<b>Control</b>	
TFT touchscreen Web GUI SNMP GPIO	
<b>Environmental</b>	
Operating Temperature Range	0°C to +45°C
Max. Relative Humidity	90% non-condensing
Max. Operating Altitude	2500 m. a.s.l. (>2500 m. optional)
<b>Electrical</b>	
Power Supply	Energy distribution system with different options: - Line 380-400 V3N~, 50/60Hz - Line 220 V3N~, 50/60 Hz - Line 220 - 240V~, 50/60 Hz
Efficiency	Up to 40% efficiency in digital
NOTES	
To comply with the applicable standards and limit values for the suppression of out-of-band emissions (and in the case of digital standards, also for maintaining the required shoulder distance), the transmitter may only be operated with suitable filters at the RF output.	
<b>Specifications are subject to change without notice.</b>	



# Key Features

Transmitter Model	DTV Average Power Before Filter (W)	Total Number of PA's	Number of Tx Racks	Number of Pump Sets	Number of Heat Exchangers	Rack Style
<b>UHF Models</b>						
ULX-OP-1400-R36	1,400	1	1	1	1	36 RU
ULX-OP-2000-R36	2,000	1	1	1	1	36 RU
ULX-OP-2200-R36	2,200	2	1	1	1	36 RU
ULX-OP-2600-R36	2,600	2	1	1	1	36 RU
ULX-OP-3000-R36	3,000	2	1	1	1	36 RU
ULX-OP-3300-R36	3,300	3	1	1	1	36 RU
ULX-OP-3900-R36	3,900	3	1	1	1	36 RU
ULX-OP-4000-R36	4,000	2	1	1	1	36 RU
ULX-OP-4500-R36	4,500	3	1	1	1	36 RU
ULX-OP-5200-R36	5,200	4	1	1	1	36 RU
ULX-OP-6000-R36	6,000	3	1	1	1	36 RU
ULX-OP-6500-R42	6,500	5	1	1	1	42 RU
ULX-OP-7800-R42	7,800	6	1	1	1	42 RU
ULX-OP-8000-R36	8,000	4	1	1	1	36 RU
ULX-OP-10000-R42	10,000	5	1	1	1	42 RU
ULX-OP-10400-R42	10,400	8	1	1	1	42 RU
ULX-OP-11500-R42	11,500	6	1	1	1	42 RU
ULX-OP-13000-R42	13,000	10	2	1	2	42 RU
ULX-OP-15000-R42	15,000	8	1	1	1	42 RU
ULX-OP-18000-R42	18,000	10	2	1	2	42 RU
ULX-OP-22000-R42	22,000	12	2	1	2	42 RU
ULX-OP-28000-R42	28,000	16	2	1	2	42 RU
ULX-OP-35000-R42	35,000	20	4	2	4	42 RU
ULX-OP-44000-R42	44,000	24	4	2	4	42 RU
<b>VHF Band III TV Models</b>						
VLX-OP-1800-R36	1,800	1	1	1	1	36 RU
VLX-OP-3600-R36	3,600	2	1	1	1	36 RU
VLX-OP-5400-R36	5,400	3	1	1	1	36 RU
VLX-OP-7200-R36	7,200	4	1	1	1	36 RU
VLX-OP-9000-R42	9,000	5	1	1	1	42 RU
VLX-OP-10800-R42	10,800	6	1	1	1	42 RU
VLX-OP-14400-R42	14,400	8	1	1	1	42 RU
VLX-OP-18000-R42	18,000	10	2	1	1	42 RU
VLX-OP-21600-R42	21,600	12	2	1	2	42 RU
VLX-OP-28800-R42	28,800	16	2	1	2	42 RU
VLX-OP-36000-R42	36,000	20	4	2	4	42 RU
VLX-OP-43200-R42	43,200	24	4	2	4	42 RU

Transmitter Model	DTV Average Power Before Filter (W)	Total Number of PA's	Number of Tx Racks	Number of Pump Sets	Number of Heat Exchangers	Rack Style
<b>VHF Band III DAB Models <math>\geq 33</math>dB MER</b>						
VLX-OP-1900-R36	1,900	1	1	1	1	36 RU
VLX-OP-3800-R36	3,800	2	1	1	1	36 RU
VLX-OP-5700-R36	5,700	3	1	1	1	36 RU
VLX-OP-7200-R36	7,600	4	1	1	1	36 RU
VLX-OP-9500-R42	9,500	5	1	1	1	42 RU
VLX-OP-11400-R42	11,400	6	1	1	1	42 RU
VLX-OP-15200-R42	15,200	8	1	1	1	42 RU
VLX-OP-19000-R42	19,000	10	2	1	1	42 RU
VLX-OP-22800-R42	22,800	12	2	1	2	42 RU
VLX-OP-28800-R42	30,400	16	2	1	2	42 RU
VLX-OP-38000-R42	38,000	20	4	2	4	42 RU
VLX-OP-45600-R42	45,600	24	4	2	4	42 RU
<b>VHF Band I Models</b>						
VLX-OP-1500-R36	1,500	1	1	1	1	36 RU
VLX-OP-3000L36	3,000	2	1	1	1	36 RU
VLX-OP-4500L36	4,500	3	1	1	1	36 RU
VLX-OP-6000L36	6,000	4	1	1	1	36 RU
VLX-OP-9000L42	9,000	6	1	1	1	42 RU
VLX-OP-12000L42	12,000	8	1	1	1	42 RU
VLX-OP-18000L42	18,000	12	2	1	2	42 RU
VLX-OP-24000L42	24,000	16	2	1	2	42 RU
VLX-OP-36000L42	36,000	24	4	2	4	42 RU



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 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. Until 2019, research, development and innovation has been driven from the company's facilities in Mason, Ohio and supported by the long-standing manufacturing center in Quincy, Illinois. In May 2019, the company acquired an Italian company operating as GatesAir S.r.l. which provides an additional research, development and service location within the EU.

GatesAir's turnkey solutions are built on two pillars: 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.

## 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.

## Global Service Locations



## Contact Information

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## Connecting What's Next

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