

MAXIVA™ ULX-OP / VLX-OP

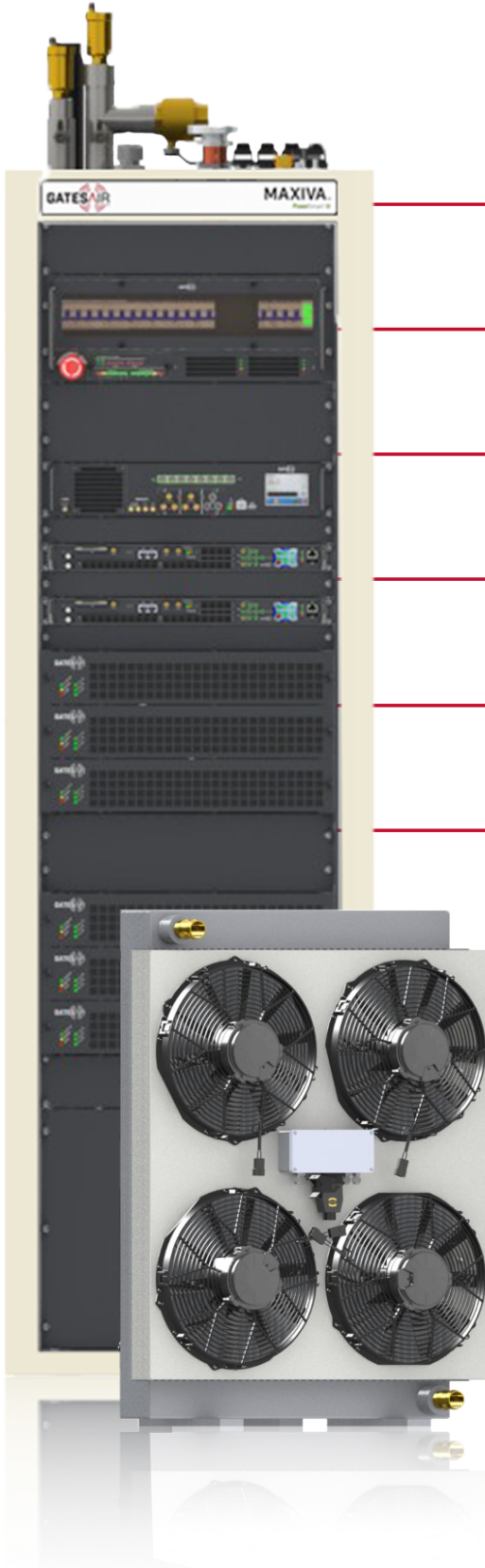
High-Efficiency UHF & VHF
Liquid-Cooled Digital TV Transmitters



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

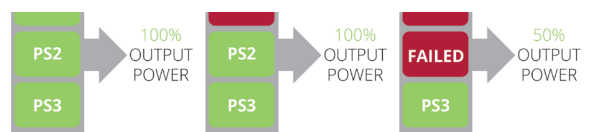
Hot-swappable power amplifiers

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, DTMB, 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
Liquid-Cooled 44kW DTV Transmitter System**

Maxiva™ ULX-OP / VLX-OP Specifications

| System | | Partial Reception | Supported |
|---------------------------------|--|------------------------------------|--|
| UHF digital output power | 1.4kW to 44kW rms @ MER 38dB typ. (DVB-T/T2, ISDB-T) | DAB/DAB+ | |
| 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) | ATSC | |
| 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 | Analogue | |
| Modulator | | Standard | B, G, D, K, M, N, I |
| DVT-T/DVB-T2 | | 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) | Satellite Receiver (Option) | |
| 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 |
| ISDB-Tb | | 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 | Depth | 36 RU Rack: 1000mm 42 RU Rack: 1200 mm Refer to Key Features table for details |
| 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) | Control | |
| GNSS (GPS/GLONASS) [Option] | | TFT touchscreen Web GUI SNMP GPIO | |
| Input Connector | N (f), 50 Ohm | Environmental | |
| Input/Monitor Output 10 MHz | BNC (f), 75 Ohm | Operating Temperature Range | 0°C to +45°C |
| Input/Monitor Output 1 PPS | BNC (f), 75 Ohm | Max. Relative Humidity | 90% non-condensing |
| Phase Noise | -140 dBc/Hz @ 10 KHz -150 dBc/Hz @ 100 kHz | Max. Operating Altitude | 2500 m. a.s.l. (>2500 m. optional) |
| Stability | 1e-12 / 24 hours with disciplined OCXO | Electrical | |
| Hold-over Stability | 5 us after 5 hours (optional 1 us after 24 hours) | 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 |
| Mechanical | | Efficiency | Up to 40% efficiency in digital |
| Rack | See table on next page (other configurations are available on request) | NOTES | |
| Width | 600 mm | 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. | |
| Rack Height | 36 RU rack models: 1,800 mm 42 RU rack models: 2,070 mm 44 RU rack models: 2,180 mm Refer to <i>Key Features</i> table on next page for models | Specifications are subject to change without notice. | |

Key Features

Liquid-Cooled Digital UHF/VHF OP Models

| Digital TV Transmitter Model | COFDM Broadband Power Before Filter (r.m.s. W) | COFDM Wideband (120MHz) Power Before Filter (r.m.s. W) | 8VSB Broadband Power Before Filter (r.m.s. W) | 8VSB Wideband (120MHz) Power Before Filter (r.m.s. W) | Total Number of PAs | Number of Tx Racks | Number of Pump Sets | Number of Heat Exchangers | Rack Style |
|-----------------------------------|--|--|---|---|---------------------|--------------------|---------------------|---------------------------|------------|
| UHF Band IV & V Models | | | | | | | | | |
| ULX-OP-1P8D-R36 | 1,400 | | 1,800 | | 1 | 1 | 1 | 1 | 36 RU |
| ULX-OP-2P6D-R36 | 2,200 | | 3,600 | | 2 | 1 | 1 | 1 | 36 RU |
| ULX-OP-2P8D-R36 | 2,600 | | 4,000 | | 2 | 1 | 1 | 1 | 36 RU |
| ULX-OP-3P6D-R36 | 3,300 | | 5,400 | | 3 | 1 | 1 | 1 | 36 RU |
| ULX-OP-3P8D-R36 | 3,900 | | 6,000 | | 3 | 1 | 1 | 1 | 36 RU |
| ULX-OP-4P8D-R36 | 5,200 | | 8,000 | | 4 | 1 | 1 | 1 | 36 RU |
| ULX-OP-5P8D-R42 | 6,500 | | 10,000 | | 5 | 1 | 1 | 1 | 42 RU |
| ULX-OP-6P8D-R42 | 7,800 | | 12,000 | | 6 | 1 | 1 | 1 | 42 RU |
| ULX-OP-8P8D-R42 | 10,400 | | 16,000 | | 8 | 1 | 1 | 1 | 42 RU |
| ULX-OP-10P8D-R42 | 13,000 | | 20,000 | | 10 | 2 | 1 | 1 | 42 RU |
| ULX-OP-1P8E-R36 | 1,800 | 2,000 | 2,000 | 2,000 | 1 | 1 | 1 | 1 | 36 RU |
| ULX-OP-2P6E-R36 | 2,600 | 3,000 | 4,000 | 4,000 | 2 | 1 | 1 | 1 | 36 RU |
| ULX-OP-2P8E-R36 | 3,500 | 4,000 | 4,000 | 4,000 | 2 | 1 | 1 | 1 | 36 RU |
| ULX-OP-3P6E-R36 | 3,900 | 4,500 | 6,000 | 6,000 | 3 | 1 | 1 | 1 | 36 RU |
| ULX-OP-3P8E-R36 | 5,200 | 6,000 | 6,000 | 6,000 | 3 | 1 | 1 | 1 | 36 RU |
| ULX-OP-4P8E-R36 | 7,000 | 8,000 | 8,000 | 8,000 | 4 | 1 | 1 | 1 | 36 RU |
| ULX-OP-5P8E-R42 | 8,500 | 10,000 | 10,000 | 10,000 | 5 | 1 | 1 | 1 | 42 RU |
| ULX-OP-6P8E-R42 | 10,000 | 11,500 | 12,000 | 12,000 | 6 | 1 | 1 | 1 | 42 RU |
| ULX-OP-8P8E-R42 | 13,000 | 15,000 | 16,000 | 16,000 | 8 | 1 | 1 | 2 | 42 RU |
| ULX-OP-10P8E-R42 | 15,000 | 18,000 | 20,000 | 20,000 | 10 | 2 | 1 | 2 | 42 RU |
| ULX-OP-12P8E-R42 | 19,000 | 22,000 | 23,000 | 23,000 | 12 | 2 | 1 | 2 | 42 RU |
| ULX-OP-16P8E-R42 | 24,000 | 28,000 | 32,000 | 32,000 | 16 | 2 | 2 | 4 | 42 RU |
| ULX-OP-20P8E-R42 | 30,000 | 35,000 | 40,000 | 40,000 | 20 | 4 | 2 | 4 | 42 RU |
| ULX-OP-24P8E-R42 | 36,000 | 44,000 | 48,000 | 48,000 | 24 | 4 | 4 | 4 | 42 RU |
| VHF Band III TV Models | | | | | | | | | |
| VLX-OP-1P8-R36 | 1800 | | 2300 | | 1 | 1 | 1 | 1 | 36 RU |
| VLX-OP-2P8-R36 | 3600 | | 4600 | | 2 | 1 | 1 | 1 | 36 RU |
| VLX-OP-3P8-R36 | 5400 | | 6900 | | 3 | 1 | 1 | 1 | 36 RU |
| VLX-OP-4P8-R36 | 7200 | | 9200 | | 4 | 1 | 1 | 1 | 36 RU |
| VLX-OP-6P8-R42 | 10800 | | 13800 | | 6 | 1 | 1 | 1 | 42 RU |
| VLX-OP-8P8-R42 | 14400 | | 18400 | | 8 | 1 | 1 | 1 | 42 RU |
| VLX-OP-12P8-R42 | 21600 | | 27600 | | 12 | 2 | 1 | 2 | 42 RU |
| VLX-OP-16P8-R42 | 28800 | | 36800 | | 16 | 2 | 1 | 2 | 42 RU |
| VLX-OP-24P8-R42 | 43200 | | 55200 | | 24 | 4 | 2 | 4 | 42 RU |

Liquid-Cooled Digital UHF/VHF OP Models (continued)

| Digital TV Transmitter Model | COFDM Broadband Power Before Filter (r.m.s. W) | COFDM Wideband (120MHz) Power Before Filter (r.m.s. W) | 8VSB Broadband Power Before Filter (r.m.s. W) | 8VSB Wideband (120MHz) Power Before Filter (r.m.s. W) | Total Number of PAs | Number of Tx Racks | Number of Pump Sets | Number of Heat Exchangers | Rack Style |
|------------------------------|--|--|---|---|---------------------|--------------------|---------------------|---------------------------|------------|
| VHF Band I Models | | | | | | | | | |
| VLX-OP-1P8L-R36 | 1500 | | 2000 | | 1 | 1 | 1 | 1 | 36 RU |
| VLX-OP-2P8L-R36 | 3000 | | 4000 | | 2 | 1 | 1 | 1 | 36 RU |
| VLX-OP-3P8L-R36 | 4500 | | 6000 | | 3 | 1 | 1 | 1 | 36 RU |
| VLX-OP-4P8L-R36 | 6000 | | 8000 | | 4 | 1 | 1 | 1 | 36 RU |
| VLX-OP-6P8L-R44 | 9000 | | 12000 | | 6 | 1 | 1 | 1 | 44 RU |
| VLX-OP-8P8L-R44 | 12000 | | 16000 | | 8 | 1 | 1 | 1 | 44 RU |
| VLX-OP-12P8L-R44 | 18000 | | 24000 | | 12 | 2 | 1 | 2 | 44 RU |
| VLX-OP-16P8L-R44 | 24000 | | 32000 | | 16 | 2 | 1 | 2 | 44 RU |
| VLX-OP-24P8L-R44 | 36000 | | 48000 | | 24 | 4 | 2 | 4 | 44 RU |

Liquid-Cooled DAB OP Models

| DAB Transmitter Model | Power Before Filter (p.s. W) | Total Number of PAs | Number of Tx Racks | Auxiliary Racks | Number of Pump Sets | Number of Heat Exchangers | Rack Style |
|----------------------------|------------------------------|---------------------|--------------------|-----------------|---------------------|---------------------------|------------|
| VHF Band III Models | | | | | | | |
| VLX-OP-1P8-DA | 1900 | 1 | 1 | | 1 | 1 | 36 RU |
| VLX-OP-2P8-DA | 3800 | 2 | 1 | | 1 | 1 | 36 RU |
| VLX-OP-3P8-DA | 5700 | 3 | 1 | | 1 | 1 | 36 RU |
| VLX-OP-4P8-DA | 7600 | 4 | 1 | | 1 | 1 | 36 RU |
| VLX-OP-6P8-DA | 11400 | 6 | 1 | | 1 | 1 | 42 RU |
| VLX-OP-8P8-DA | 15200 | 8 | 1 | | 1 | 2 | 42 RU |
| VLX-OP-12P8-DA | 22800 | 12 | 2 | 1 | 1 | 2 | 42 RU |
| VLX-OP-16P8-DA | 30400 | 16 | 2 | 1 | 2 | 4 | 42 RU |
| VLX-OP-24P8-DA | 45000 | 24 | 4 | 2 | 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



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Ordering Information

Our GatesAir experts will help you determine the most efficient solution to meet your requirements.

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Connecting What's Next

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