

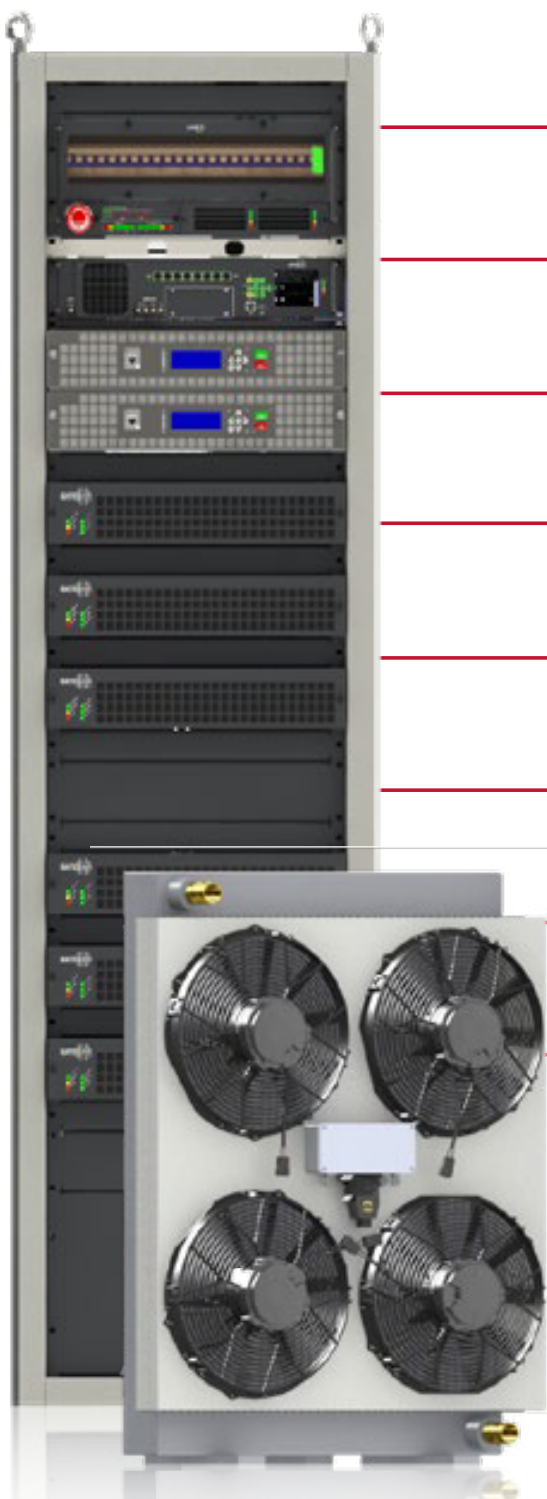
# MAXIVA™ TLVU

High-Efficiency Liquid-Cooled  
Digital DTV+ Transmitters

Preliminary version subject to change



GatesAir Provides an all new 250MHz to 322MHz high-power, solid-state transmitter in a high efficiency, high power density, high performance design.



Power levels from 3.6kW up to 29.0kW

High-efficiency broadband power amplifiers

Software-defined modulation for ATSC 3.0 & TV3.0/DTV+

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 Adaptive Pre - Correction

Innovative, High-efficiency liquid-cooling system

\*\*Power supply redundancy per PA module



## Main Features

- High power density, compact dimensions
- Power levels up to 3.6kW 29.0kW (pre-filter power)
- High-efficiency broadband PA design
- Dual drive option
- Enhanced power supply redundancy
- Digital modulations: ATSC 3.0, Brazil Standard, ISDB-T & TV3.0/DTV+
- Supports Multiple - in Multiple - out (MIMO), (Requires MIMO Kit)
- Adaptive pre-correction included
- High-stability GPS/GLONASS receiver included
- 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

TLVU-6P8-42 Liquid Cooled Digital TV Model



# Maxiva™ TLVU Specifications

General	
Frequency Range .....	VHF & UHF TV (250MHz to 322MHz)
Transmission Standards .....	ATSC 3.0, ISDB-T & TV3.0/DTV+
Channel Bandwidth .....	6MHz (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" EIA, & 4-1/2" (dependent upon power level)
Transmitter Dimensions .....	See chart on previous page
Transmitter Weight .....	See chart on previous page

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

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

ATSC 3.0, ISDB-T & TV3.0/DTV+	
Power Output (average) .....	Power levels available for all applications [see table]
Standards .....	ATSC 3.0: A/321:2016, A/322:2017, A/330:2016 ISDB-Tb: Brazil ANATEL standard TV3.0/DTV+
ASI Inputs .....	2 inputs BNC female; 75 ohms according to EN 50083-9 Supports seamless switching between ASI inputs
IP / STLTP Transport Inputs .....	2 inputs, 1000Base-T, RJ-45
Crest Factor .....	13 dB maximum
Shoulder Level .....	<-37 dB (before mask filter)
END .....	<0.5 dB
SFN Delay .....	Static and Dynamic, 0 to 1 second per ETSI TS 101 191 V1.4.1 (2004-06)
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
COFDM Modes .....	Supports multiple PLP's, MIMO, PAPR reduction, LDM, Multiple QAM

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

Compliance .....	RoHS 2011/65/EU Directive 2014/53/EU Safety: EN 60215 EMC: EN 301-489-1 ANATEL Certification Manufacturing: ISO 9001: 2008
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# Maxiva™ TLVU Specifications

Mechanical	
Rack	Refer to Key Features table below for models (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 for details
Depth	36 RU rack: 1000mm 42 RU rack: 1200 mm  Refer to Key Features table for details
Control	
Web GUI; SNMP; GPIO	
Environmental	
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)
Electrical	
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.	
Specifications are subject to change without notice.	

## Key Features

### Liquid-Cooled Digital TV Models

TLVU Digital TV Transmitter Model	COFDM Broadband 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
TLVU-2P8-36	3,600	2	1	1	1	36RU
TLVU-3P8-36	5,400	3	1	1	1	36 RU
TLVU-4P8-36	7,200	4	1	1	1	36 RU
TLVU-6P8-42	12,000	6	1	1	1	42 RU
TLVU-8P8-42	15,000	8	1	1	2	42 RU
TLVU-10P8-42	18,000	10	1	1	2	42 RU
TLVU-12P8-42	21,600	12	2	1	2	42 RU
TLVU-16P8-42	29,000	16	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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## Connecting What's Next

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