



Maxiva™ UAX Compact

Low- Power UHF Transmitter / Transposer / Gap Filler



The Maxiva™ UAX Compact family of UHF solid-state transmitters, transposers/translators and gap fillers builds on the proven foundation of GatesAir low-power systems and PowerSmart® technology. It provides today's digital broadcaster with a suite of compatible products to accommodate any coverage application, along with unmatched performance, reliability and quality. The Maxiva UAX Compact extends the capabilities of the Maxiva series, providing one family of transmitters capable of satisfying any coverage architecture. The Maxiva UAX Compact provides pre-filter power levels from 5 to 125W in a compact, space-saving 2RU package.

Designed for digital broadcasting, the Maxiva UAX Compact is a platform available in transmitter, transposer or SFN gap filler configurations for DVB-T/H, DVB-T2, ATSC, ATSC-MDTV, ISDB-Tb, CMMB and CTTB networks. The Maxiva Compact is ideal for extending market coverage and filling in coverage gaps in challenging situations, including busy urban areas that require greater building penetration.

The Maxiva Compact transmitters maintain the Maxiva M2X™ exciter platform, providing broadcasters the highest level of performance and allowing fast setup time with Real-Time Adaptive Correction (RTAC™). The shared modulation approach provides a common interface for Maxiva users, reducing training requirements.

The Compact transposers/translators provide efficient and reliable re-broadcast of the received signal in a small and robust package. The gap filler configuration adds a powerful echo cancellation algorithm to deliver on-channel broadcast. This combination of products enables broadcasters to address any network coverage need.

Product Features

Maxiva UAX Compact Platform

- Power levels from 5 to 125 W (prefilter)
- Broadband, frequency agile design - UHF 470 to 862 MHz
- Built-in GPS option for Single Frequency Network (SFN) support
- Compact, space-saving, 2RU design
- Full remote control capability including:
 - Web-based HTML GUI interface
 - SNMP
 - Parallel control/monitoring

Transmitter

- Dual transport stream inputs with manual/auto switching
- Real-Time Adaptive Correction (RTAC)
- DVB-T/H, DVB-T2, ATSC, ATSC-MDTV, ISDB-Tb, ISDB-Tb with remultiplexing/restamping option, CMMB and CTTB modulations available

Transposer/Translator

- Supports for all COFDM and ATSC standards
- Digital, tunable RF input filter

SFN Gap Filler

- Powerful adaptive echo cancellation with up to 15 dB gain margin for exposed stations and difficult situations
- Very low processing delay, ideal for short guard intervals in COFDM
- Digital IF filter for maximum adjacent channel suppression
- Digital, tunable RF input filter

Product Details

Investment Security Based on Unrivaled Digital Experience

Transitioning to digital and delivering needed coverage require more than a financial investment — broadcasters must meet a whole new technical challenge. As broadcasting's DTV and digital radio transmission leader, GatesAir has developed a solid core competency backed by years of experience in the technical areas essential for maximum digital transmission performance. We have applied this expertise and developed transmitters for all digital standards, making the Maxiva UAX Compact a confident investment.

Seamless Migration Path to New Digital Standards

The Maxiva UAX Compact has been specifically designed for the wide range of global digital standards. Transmitters can be upgraded from one standard to another (for example, from DVB-T to DVB-T2 or ATSC to ATSC-MDTV), providing a clear, cost-effective and seamless upgrade path for stations or networks wishing to adapt to the changing world of modulation standards.

Cost-Efficient, Precorrection Technology

The proprietary RTAC precorrection circuitry of the Maxiva UAX Compact family enables the transmitters to provide linear amplification with seamless content delivery at higher power levels. RTAC technology also increases efficiency for ongoing power savings, while comfortably exceeding the RF mask requirements to prevent signal interference.

The RTAC Advantage

All transmitters in the Maxiva UAX Compact series use the reliable and field-proven GatesAir Real-Time Adaptive Correction (RTAC) technology, enabling optimum utilization of the power amplifier, while maintaining spectral mask compliance of the digital signal. The only system with simultaneous, linear and nonlinear, adaptive precorrection, RTAC provides the highest level of system correction capability.

With RTAC, the Maxiva UAX Compact transmitter continuously monitors and corrects for linear distortions at the output of the mask filter, while automatically adapting for amplifier non-linearity, keeping your station well within compliance and maximizing your coverage.

GatesAir PowerSmart Technology Inside

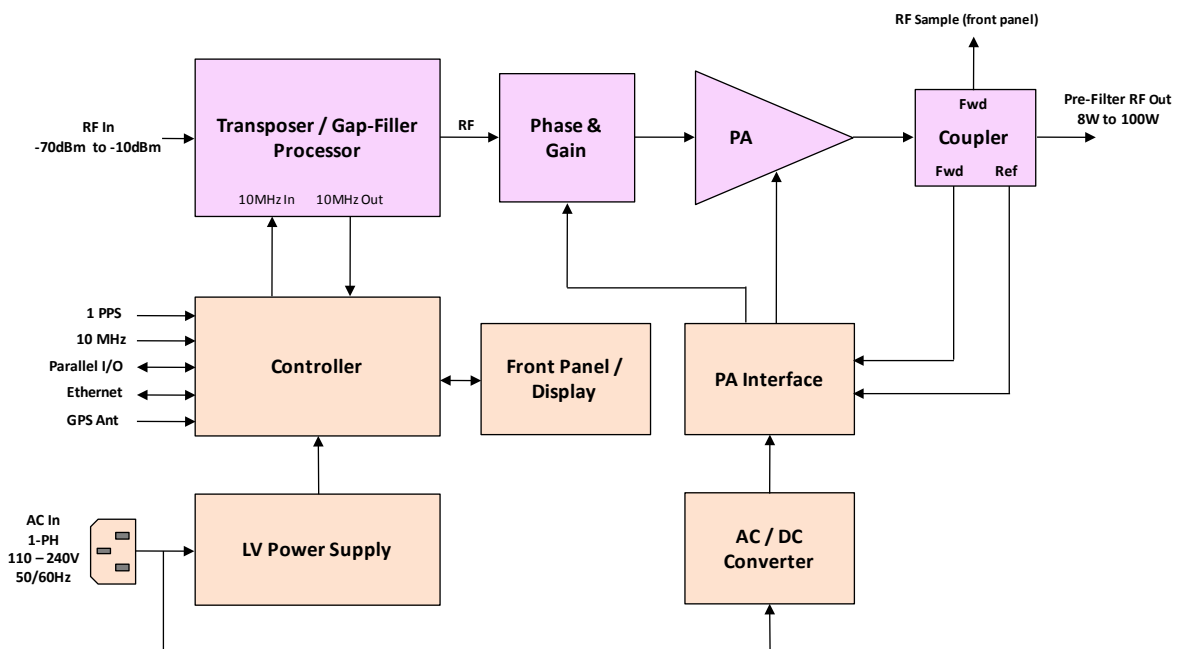
Featuring PowerSmart technology in its transmitter architecture, the Maxiva UAX line offers superior power and efficiency. New 50-volt LDMOS device technology delivers a dramatic increase in power density, lower operating costs and reduced cost of ownership over the life of the transmitter.

Built-In GUI Interface

The graphical user interface (GUI) in the Maxiva UAX Compact transmitter works with any Windows® PC running a web browser (supports IE8 and higher, Firefox 3.6.x and higher.) The interface enables in-depth monitoring and easy setup. All Compact products also support SNMP monitoring to deliver real-time status to your network management system.

Images/Diagrams

Functional Diagram - Gap Filler/Transposer



Front/Back Panel



1. **LCD Status Display** — LCD screen provides a quick view of transmitter status and power level.
2. **LCD Navigation Controls** — Tactile push-buttons provide navigation of LCD screens to access set-up screens, status and power metering.
3. **Front Panel Controls** — Fast-access front-panel push-buttons and status indicators for remote/local, power raise/lower and on/off.
4. **Sample Outputs** — Convenient front-panel connections for RF sample, and both 10 MHz and the 1 PPS signals, for quick connection to test equipment as needed.
5. **Front-Panel Ethernet** — Convenient front-panel Ethernet port permits quick system updates or setup using a local PC. All parameters are available via the intuitive standard GUI interface.
6. **RF Output** — RF output connector. Provides 5 W to 125 W of average digital power (model dependent).
7. **RTAC RF Sample Port** — RTAC monitors both the output of the transmitter and the output of any filters or multi-station combiners to optimize station performance for maximum clarity and coverage.
8. **Integrated GPS Receiver** — Optional high-quality integrated GPS receiver provides ultra-accurate reference for seamless SFN operation and reduces installation costs and space.
9. **External Reference Input** — Support for single frequency networks (SFN's) is included with every Maxiva UAX Compact system. Supports both 10 MHz and 1 PPS inputs.
10. **Dual-Switching Inputs** — Transmitters include dual DVB-ASI or T2-MI (with high and low priority) or dual SMPTE 310M inputs for seamless backup switching and an isolated transport stream output for confidence monitoring.
11. **RF Input** — Transposers and SFN gap fillers include an off-air signal input, with a wide signal input range.
12. **Parallel Remote Control** — Dedicated DB-type connectors provide standard interfacing for transmitter control system connections.
13. **Ethernet Connectivity** — RJ-45 connector provides system 10/100Base-T Ethernet connectivity to facilitate diagnostics, monitoring and system updates.
14. **Serial Connectivity** — Multiple communications ports provide standard connectivity including CAN and RS-232.

Specifications

Specifications and designs are subject to change without notice

General	
RF Output Frequency Range	UHF Band IV/V, 470 to 862 MHz
Transmission Standards	ATSC; DVB-T; DVB-T2; ISDB-Tb; CTTB
RF Channel Bandwidth	6, 7, or 8 MHz (ATSC 6 MHz only)
Rated Output Power	Up to 125 Watts (before mask filter)
Output Power Reduction Range	0 to -10 dB

Inputs/Outputs	
RF Output Connector	1 x Type N Female, 50 ohms, rear access
RF Input Samples for Adaptive	1 x SMA, 50 ohms; dynamic range: -20 to +10 dBm, rear access
Transport Stream Inputs	<ul style="list-style-type: none"> • 2 x BNC, 75 ohms terminated (50 ohms connector per ASI rec.), configurable as SPMTE 310M, DVB-ASI, or DVB-T2MI • 2 x BNC, 75 ohms terminated (50 ohms connector per ASI rec.), additional for DVB-ASI hierarchical modulation
10 MHz Reference Input	1 x BNC, 50 ohms, rear access, -7 to +20 dBm, <20 dB return loss
1 PPS Reference Input	1 x BNC, 50 ohms, rear access
10 MHz Reference Output	1 x BNC, 50 ohms, front access
1 PPS Reference Output	1 x BNC, 50 ohms, front access
Ethernet	<ul style="list-style-type: none"> • 1 front, RJ-45, customer access • 1 rear, RJ-45, DHCP enabled network interface (SNMP)
Parallel Remote Control	1 rear user remote
GPS Antenna Input	1 x SMA, 50 ohms, rear access (optional)
RF Monitor Output	1 x SMA, 50 ohms, front access
AC Power	
AC Power Input	110 to 230 V AC, auto-ranging, ±15%, 47 to 63 Hz
Power Factor	>0.96 (typical 0.98)
Environmental	
Operational Temperature Range	0° to 45° C (32° to 113° F)
Storage Temperature Range	-40 to +70° C
Relative Humidity	0 to 95%
Altitude	Up to 4,000 m (13,100 ft) above sea level, derate 2° C (3.6° F) per 300 m (984 ft) of elevation
Cooling Method	Forced air-cooled, internal fans, airflow front to rear
Acoustic Noise	≤65 dBa (front 1 m)
Physical Dimensions (H x W x D)	2RU x 19 x 23 in. (44 x 483 x 584 mm)
Weight	24.7 lbs (11.2 kg)
Shipping Weight	30.0 lbs (13.6 kg)
Compliance	
<ul style="list-style-type: none"> • RoHS 2011/65/EU • Directive 2014/53/EU • Safety: EN 60215 • EMC: EN 301-489-1 • FCC Part 73, A/53, A/110 • DVB-T: ETSI EN 300 744 • DVB-T2: ETSI EN 302 755 • Rusia GOST • Brazil ANATEL • CE Marked 	

COFDM Transmitter Performance							
RF Power Stability	±0.5 dB						
RF Load Impedance	50 ohms						
Operating Load VSWR	Up to 1.4:1 at full power						
Maximum VSWR	<ul style="list-style-type: none"> Protected against open or short circuit, all phase angles Automatic VSWR foldback with user adjustable threshold Factory preset to 1.4:1 						
Shoulder Level	<-42 dB (typical <-50 dB)						
MER	>37 dB (typical >40 dB)						
END (per ETR 290)	≤0.5 dB						
Frequency Stability	±150 Hz/month without PFC/GPS (2.3 x 10 ⁻⁷)						
Internal GPS	Option						
GPS Back up Time	18.4 hours (maximum time drift 12.4 μS) 10° C variation day/night						
Transmitter Processing Delay	Programmable up to 1 second maximum delay						
Frequency Offsets	1 Hz increments						
Input Bit Rate	<ul style="list-style-type: none"> DVB-T: 4.976 to 31.668 Mbit/s DVB-T2: up to 50.28 Mbit/s ISDB-Tb: Per standard 						
Response Variation	0.2 dB, typical across channel						
Phase Noise	<table border="0"> <tr> <td>10 Hz <-55 dBc/Hz</td> <td>10 kHz <-95 dBc/Hz</td> </tr> <tr> <td>100 Hz <-85 dBc/Hz</td> <td>100 kHz <-112 dBc/Hz</td> </tr> <tr> <td>1 kHz <-90 dBc/Hz</td> <td>1 MHz <-130 dBc/Hz</td> </tr> </table>	10 Hz <-55 dBc/Hz	10 kHz <-95 dBc/Hz	100 Hz <-85 dBc/Hz	100 kHz <-112 dBc/Hz	1 kHz <-90 dBc/Hz	1 MHz <-130 dBc/Hz
10 Hz <-55 dBc/Hz	10 kHz <-95 dBc/Hz						
100 Hz <-85 dBc/Hz	100 kHz <-112 dBc/Hz						
1 kHz <-90 dBc/Hz	1 MHz <-130 dBc/Hz						
Spurious Output	<-60 dBc (after mask filter)						
Harmonics	<-60 dBc after mask filter, <-35 dB before mask filter						
Spectrum Mask	Per standard. Filters for critical and non-critical mask available						
Central Carrier Suppression	>75 dB relative to average power						
Intermediate Frequency (IF)	140 MHz						
ATSC Transmitter Performance							
RF Power Stability	±0.5 dB						
RF Load Impedance	50 ohms						
Operating Load VSWR	Up to 1.4:1 at full power						
Maximum VSWR	<ul style="list-style-type: none"> Protected against open or short circuit, all phase angles Automatic VSWR foldback with user adjustable threshold Factory pre-set to 1.4:1 						
Shoulder Level	<-42 dB (typical <-50 dB)						
EVM	<2%						
SNR	>34 dB (typical >37 dB)						
Frequency Stability	±150 Hz/month without PFC/GPS (2.3 x 10 ⁻⁷)						
Internal GPS	Option						
GPS Back up Time	18.4 hours (maximum time drift 12.4 μS) 10° C variation day/night						
Transmitter Processing Delay	Programmable up to 1 second maximum delay						
Frequency Offsets	1 Hz increments						
Input Bit Rate	19.39 Mbit/s						
Response Variation	0.2 dB, typical across channel						
Phase Noise	<-104 dBc/Hz @ 20 kHz offset (ATSC A/64)						
Spurious Output	Meets FCC 5th and 6th report and order						
Spectrum Mask	Per ATSC standard						
Intermediate Frequency (IF)	140 MHz						

Transposer and Gap Filler (COFDM & ATSC)	
Power Output Stability	±0.5 dB
RF Load Impedance	50 ohms
Operating Load VSWR	Up to 1.4:1 at full power
Maximum VSWR	<ul style="list-style-type: none"> Protected against open or short circuit, all phase angles Automatic VSWR foldback with user adjustable threshold Factory pre-set to 1.4:1
RF Input Frequency Range	Band III 168 to 242 MHz, or Band IV/V 470 to 862 MHz
RF Input	SMA-Female, 50 ohms, rear access
RF Input Level	-70 dBm to -10 dBm
Maximum Input Level	0 dBm
Adaptive Echo Cancellation	Standard (applies to Gap Filler only)
Gain Margin	<ul style="list-style-type: none"> COFDM: -12 dB minimum, -15 dB typical ATSC: 0 dB
Adjacent Channel Rejection	>35 dB
Internal Transit Time	<6 µS
Echo Window Size	5 µS
Echo Window Offset	1.5 to 448 µS
Static Delay	0 to 400 µS in steps of 100 µS
MER	Up to 34 dB, dependent on input
MER Degradation	<2 dB degradation referenced to input, at <34 dB input MER
Response Variation	0.2 dB, typical
Spurious Output	<-60 dBc (after mask filter)
Harmonics	<-60 dBc after mask filter, <-35 dB before mask filter

UAX Compact Power Levels

Digital Models (xx = modulation)	Power Before Filter (Watts)	Power After Filter (Watts)	RF Output Connector	Total Rack Space
UAX-5xx-C	8	5	"N" Female	2RU
UAX-10xx-C	15	10	"N" Female	2RU
UAX-25xx-C	33	25	"N" Female	2RU
UAX-50xx-C	65	50	"N" Female	2RU
UAX-80xx-C	100	80	"N" Female	2RU
UAX-100xx-C	125	100	"N" Female	2RU

Modulations

AN – Analog

AT – ATSC

DV – DVB-T

T2 – DVB-T2

IS – ISDB-Tb

IR-ISDB-Tb with remultiplexing/restamping option