Maxiva™ IMTX-70 Intra-Mast Transmitter

Low-Power UHF/VHF Transmitter / Transposer / Gap Filler

GatesAir's award-winning product, the new **Maxiva™ IMTX-70** Intra-Mast Transmitter, is a very compact modular multi-transmitter system. It has been scaled to allow installation within shared transmitting infrastructure 19" standard shelters. This structure itself provides complete protection from the outside environment, while allowing heat dissipation via convection, plus forced air cooling through the unit.

The diminutive dimensions of the Maxiva IMTX-70 chassis are key to this unique design. Measuring only 9.5RU height in a 19" standard rack cabinet. Cooling air is provided by vertical air convection within the mast structure, complemented by dedicated small fans for each transmitter slot, inside the chassis.

Although extremely compact in size, the Maxiva IMTX-70 boasts many features normally found in full-size systems, including the capability of housing up to eight separate transmitter modules, each with up to 70W of average DTV power. Each module can be configured as a transmitter, translator, or on-channel gap-filler with echo-cancellation, using optional input cards. A DVB-S/S2 satellite receiver option is also available as well as GbE (TS over IP), ASI, T2MI, SMPTE-310M, and ETI inputs. Digital modulations are supported include; ATSC, DVB-T, DVB-T2, and ISDB-T. For ISDB-T/Tb applications, an embedded Re-Multiplexer and Layer Combiner/TS to BTS, can be included.

The RF output stage is a high-efficiency Doherty broadband amplifier for energy savings and minimal waste heat. Maxiva IMTX provides a dedicated power supply for each transmitter slot, plus the option of PSU redundancy. Remote control includes SNMP and a Web interface.

Product Features

- Compact chassis: 9.5RU height, 19" standard rack, 330 mm depth
- Up to 8 separate transmitter modules
- Output power: Up to 70W rms per module
- Input interface options for each module:
  - ASI, BTS, T2MI, SMPTE-310M, ETI
  - Gbe port (TS over IP)
  - DVB-S/S2 Satellite Receiver input (including CAM interface)
  - RF receiver input for Transposer/Gap-Filler configuration (Direct Conversion – zero IF)
  - Regenerative receiver input option for Transposer
- Supports DVB-T/H, ISDB-T/Tb, DVB-T2, ATSC modulations
- Embedded Re-Multiplexer/Layer Combiner/TS to BTS (188 to 204 byte) converter for ISDB-Tb
- Adaptive pre-correction circuits
- High stability GPS / GLONASS receivers with battery
- Dedicated power supply for each module and optional hot swappable redundant power supply
- SNMP, Web Interface and Touch Screen display
- RF combiner option for multiple transmitter systems

Maxiva™ IMTX-70

Specifications

Specifications and designs are subject to change without notice

General	
RF Output Frequency Range	UHF: 470-700MHz
Transmission Standards	ATSC, DVB-T, DVB-T2, ISDB-Tb
RF Channel Bandwidth	6, 7 or 8MHz
Number of Transmitters per unit	1 to 8 individual transmitters, individually configurable
RF Power Output per Transmitter	Up to 70W rms
VSWR Protection	Included
Mechanical Dimensions	9.5 RU height x 19" standard rack widht x 330 mmdepth
Power Supply Configuration	Front access. One dedicated PS per slot. Redundant power supply option
Power Supply Voltage	AC: Single phase 100 to 240 V~ 50/60 Hz, IEC320 C14 plug
Remote Control	GPIO and Web Remote with SNMP
Pre-correction	Real Time Adaptive
Input Options (per tx module)	
RF Input	1 input - Type N (f) connector, 50 ohms
ASI/BTS/T2-MI//SMPTE-310M/ETI	1 input BNC (f), 75 ohms
GbE Port (TSoIP)	1 input RJ-45
DVB-S/S2 Satellite Receiver	1 input Type F, CAM slot included, with Multi-Stream capabilities
Environmental	
Operational Temperature Range	0° to +45°C
Relative Humidity	0 to 90% non-condensing
Altitude	Up to 2,500m AMSL. Derate max. temperature 2°C per 300m of elevation. >2,500m on request.
Cooling Method	Forced-air and convection cooled, inside suitable mast/tower/outdoor shelter structure. Contact GatesAir for details.
Acoustic Noise	< 65dBA
DVB-T/T2 Transmitter Performance	
Standard	EN300744, EN302304, EN302755, TS101191, TS102773 (T2-MI), TS102034
Power Output Stability	0.5dB
RF Load Impedance	50 Ohms
Operating Load VSWR	Up to 1.4:1
MER	Minimum 38 dB, 40 dB Typical
Shoulder Level	≤ -37dB
Spurious and Harmonics	-60dBc (After mask filter)
Channel Bandwidth	6-7-8 MHz
FFT	1K (DVB-T2), 2K, 4K, 8K, 8K ext. (DVB-T2), 16K & 16K ext. (DVB-T2), 32K & 32K ext. (DVB-T2)
Code Rate	All modes available according to the standard Block Short or Normal (DVB-T2) DVB-T: Reed-Solomon (204, 188) DVB-T2: BCH, LDPC
Guard Interval	1/32, 1/16, 1/8, 1/4, 19/256 (DVB-T2), 19/128 (DVB-T2), 1/128 (DVB-T2)
Constellation	QPSK, 16QAM, 64QAM, 256QAM (DVB-T2). Rotated and non-rotated (DVB-T2)
SFN	Complies to ETSI EN 101 191
ISDB-Tb Transmitter Performance	
Standard	ABNT NBR 15601, ABNT NBR 15603
Inputs	1x ASI TS/BTS BNC (f), 75 Ohm 1x RJ45 TS/BTS oIP
FFT	Mode 1 (2K), Mode 2 (4K), Mode 3 (8K)
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8

Guard Interval	1/4, 1/8, 1/16, 1/32
Hierarchical Modulation	Up to 3 layers
Constellation	QPSK, 16QAM, 64QAM
MER	Minimum 38 dB, 40 dB Typical
Time Interleaver	Supported
Partial Reception	Supported
ATSC Specifications	
Standard	A/53, A/110
Power Output Stability	0.5dB
RF Load Impedance	50 Ohms
Operating Load VSWR	Up to 1.4:1
MER	≥ 38dB
Shoulder Level	≤ -37dB
Spurious and Harmonics	-60dBc (After GA provided mask filter / combiner)
Modulation	8-VSB
Input Bit Rate	19.39 Mbit/s
Bandwidth	6 MHz
Max. Processing Delay	Up to 1 second (programmable)
Satellite Receiver (option)	
Standard	ETSI EN 300 421 (QPSK) (DVB-S), ETSI EN 302 307 (QPSK, 8PSK, 16APSK) (DVB-S2) ETSI EN 50083-9 (ASI), ETSI EN 50221 (Common Interface)
DVB-S2	VCM, CCM, Multi Stream and Single Stream, Normal & Short FEC frames
Symbol Rate	1 - 45 Msymb/s (DVB-S) 2 - 45 Msymb/s (DVB-S2)
Constellation	QPSK, 8PSK, 16APSK
FEC	Automatic, All modes available according to the standard., Block Short or Normal DVB-S: Reed-Solomon (204,188), DVB-S2: BCH, LDPC
Roll–Off	0.2, 0.25, 0.35
Input connector	F (f), 75 Ω
Frequency	L–band, 930–2250 MHz
LNB control voltage	Off, +13/18 Vdc, 22 KHz, 0.25 A (overload protection)
RF input level	40 - 100 dbµV (with attenuator)
ASI Output	Standard ASI–C MPEG–2 ISO / IEC 13818–1
Output connector	BNC (f), 75 Ohm
Modality	188 bytes
Max. input bitrate	80 Mbps (CAM limit: 72 Mbps)
CAM interface	PCMCIA DVB-CI Common Interface
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).

Transposer / Gap Filler Specifications	
RF input	
Signal Type	One DTV channel (DVB-T/H/T2, ISDB-T/Tb, ATSC)
Frequency Range	170 to 862 MHz (agile tuning)
Sensitivity	-75 to -15 dBm
Selectivity	> 60 dB ± 4.2 MHz
NF (Pi=-50 dBm)	< 6 dB
Conversion Type	Direct base band conversion (Zero IF)
Return Loss	> 15 dB
Connector	N (f), 50 Ohm
Echo Canceller	
Cancellation Level	40 dB, typical
Cancellation Window	20 µS
Doppler Cancellation	Yes
Maximum Echo Level	+15 dBc (over the main signal), typical
Total Delay	< 20 µS