

TV TRANSMITTER

ECUAPOWER 1000U

The ECUAPOWER 1000U is the air cooled UHF TV Transmitter .
1,000 W rms COFDM, 1,300 W rms ATSC and 2,000 W p.s. for analog broadcasting.
6 Rack Unit solution composed by one driver and one amplifier.

Low Consumption, Compact and Easy to maintain and a clear and intuitive design, are the key facts around which Ecuaroma developed this next generation air cooled amplifiers, available in band I, III and IV-V. The Ecuapower family is designed to be the most efficient, robust and high performance amplifier in the DTV era.

Key facts:

- Multistandard Transmitter (ATSC 3.0 DIRECTLY ON BOARD or Software Upgradable)
- Inputs: 3x ASI with Hitless switch, 2x IP Ethernet, A/V for analog broadcasting
- The most advanced manual, automatic and adaptive linear and nonlinear pre-corrector.
- Freq. agile with static or adaptive pre-correction for OFDM and ATSC standards
- GPS receiver with extremely precise OCXO
- Linux - SNMP - XHTML WEB Based GUI
- Control Logic backup protection (The control logic unit can be removed while the system in operation)
- Amplifier equipped with 3 GE power supplies Hot Pluggable
- Up to 8 RF Pallets with independent carrier mount, no re-adjustment needed.
- Overall efficiency up to 43% with highest performances in terms of modulation, error rate and shoulders.
- Nr. 2 independent low-noise fans - Temperature controlled.
- Use of tools is reduced almost to zero including pallets replacement.





TRANSMITTER DATA

RF frequency range (output)		UHF Band IV & V <470MHz-860MHz)	
RF	Output power	1,000 W rms COFDM 1,300 Wrms ATSC	2,000 W p.s. (AB Class)
	Spurious / Harmonics	EN 302-296-2	
	MER	>35 dB	
	Shoulders	>50 dB	
Mains	Voltage	230 Vac *15% @ 47 to 63 Hz (single phase -	autorange p.s.)
		208/400 Vac *15% (§> 47 to 63 Hz (three phase -	autorange p.s.)
	Power consumption	3,100 W DTV	
	Electrical efficiency	36 – 38%	
Cooling system / Air Cooled / Air Flow rate m3/h		forced air / 800 m3/h	
Size	Width/Height/ Depth	482 mm / 264 mm / 500 mm	
Weight	50 kg		
Inputs	2xASI (BNC f, 75W) - seamless/hitless switching (SFN) / BTS / SMPTE / T2 MI / AA/W		
IP input	2x GBE (ProMPEG Cop3) - Electrical + 1XSFP GBE - OptVElec.*		
Operating temp, range	0° to 50°C*		
Max rel. air humidity	95% (§> 30°C, no condensation		
Max altitude	5,000 m a.s.l.		
Safety	EN 60215 (IEC 215)		
MODULATIONS			
ATSC 3.0			
Standard	ATSC 3.0: TG3/S32. Physical layer, STL		
Inputs	2xASI BNC (H). 75 ohm / 2xTSolP 10/100/1000 RJ45		
FFT Size	8K, 16K, 32K		
Code rate	2/15, 3/15, 4/15, 5/15, 6/15.7/15, 8/15, 9/15, 10/15, 11/15, 12/15, 13/15		
Guard interval	192, 384, 512, 768, 1024, 1536, 2048, 2432,3072, 3648, 4096 and 4864		
Constellation	QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM		
DVB-T/-H-T2			
ISDB-Tb			
Standard	EN300744, EN302304, EN302755, TS 102831, TS 102 773 (T2-MI)		
Inputs	2xASI BNC (H), 75 ohm / 2xTSolP 10/100/1000 RJ45		
FFT Size	1K(DVB-T2), 2K, 4K, 8K, 16K (DVB-T2), 32K(DVB-T2) (including extended carrier modes for DVB-T2)		
Code rate	1/2, 3/5 (DVB-T2), 2/3, 3/4, 4/5 (DVB-T2), 5/6, 7/8 (DVB-T) (plus 1/3, 2/5 for T2 Lite)		
Guard interval	1/4, 19/256, 1/8, 19/128, 1/16, 1/32, 1/128 1/8 (DVB T only)		
Constellation	QPSK, 16-QAM, 64-QAM, 256-QAM (DVB-T2). Rotated and no rotated (DVB-T2)		
ATSC 3.0			
Standard	ARIB STB-B31, TR-B14		
Inputs	2xASI BNC (H), 75 ohm / 2xTSolP 10/100/1000 RJ45		
FFT Size	2K, 4K, 8K		
Code rate	1/2, 2/3, 3/4, 5/6, 7/8		
Guard interval	1/4, 1/8, 1/16, 1/32		
Hierarchical Transmission	Up to 3 layers		
Constellation	QPSK, 16QAM, 64QAM		
DTMB			
Standard	ATSC A/53, A/54, A/64, A/153, A/110B, SMPTE-310M		
Inputs	2xASI BNC (H), 75 ohm / 2xTSolP 10/100/1000 RJ45		
Constellation	8VSB		
Symbol rate	10.76 Msimbolos/s		
Data rate	19.39 Mbits/s		
Trellis coding	2/3		
Reed-Solomon encoder	207 ,187		
DTMB (GB20200/2006)			
Standard	DTMB (GB20200/2006)		
Inputs	2xASI BNC (H), 75 ohm / 2xTSolP 10/100/1000 RJ45		
FFT Size	Single carrier / 3780		
Constellation	64 QAM, 32 QAM, 16QAM, 4QAM, 4QAM NR		



Code rate	0,4-0,6-0,8
Data rate	24,365 Mb/s
Frame header	420 Symbols/595 Symbols/ 945 Symbols
DIGITAL ADAPTIVE PRECORRECTION	
Operation mode	Single, N -step (up to 7), AUTO Continuous (triggering: MER)
Precorrection status	Running / Stopped
CLOCK AND SYNCHRONIZATION	
Internal clock	OCXO OVEN 10MHz
External 10 MHz reference	BNC (F). Impedance: 50 ohm . Level: -5 a +10 dBm
External 1pps reference	BNC (F). Impedance: 50 ohm / high (selectable)
Stability	time: max $\pm 10^{-7}$ /year - temperature: max $\pm 2.5 \cdot 10^{-8}$ (-20° to 70°C)
MONITORING	
LCD Display	Local operation through LCD display and keyboard located on the front panel
Front RJ-45	Local operation through a Web Server Graphical User Interface, Remote Network management (via GUI)
Rear RJ-45	Local operation through a Web Server Graphical User Interface, Remote Network management (via GUI)
GUI	Web Server Graphical User Interface XHTML based
ANALOGUE	
Standard	PAL std. B/G, H, K, I, I1, M, N - NTSC std. M - SECAM D/K
Ref. Standard	ITU-R BT.470-6
	1V pp (0.5 to 2 V) (DC component level in the range -5 to 5 V) - Ret. loss better than -30 dB (0 to 6 MHz) (75 W)
Audio input	6 dBm \pm 6 dB (Df= 25 to 50 kHz) - Ret. loss: better than -30 dB (40 Hz to 15 kHz) (600 W, bal.)
Video Connector	1xBNC female, 75 W
Audio Connector	DB9 with patch cable for 2xXLR female, 600 W (IRT config.: 2 inputs)
SATELLITE TRANSPOSER	
SatTV standard	DVB-S - DVB-S2 - EN300421
Frequency range	950 - 2150 MHz
Signal level	-65 to -25 dBm
Connector	SMA f - CAM slot (Cond. Access)
LNB control	available, through RF input. PS, polarity / band selection: by standard 13/18VDC and 22kHz signaling