



TV TRANSMITTER

ECUAPOWER 360U

The Ecuapower 360U with the power 360Wrms COFDM, 400Wrms ATSC and 600 W p.s. in 3RU solution composed by one driver and one amplifier. Transmitter, transposer, repeater, gap filler, multimode and multistandard.

The ECUAPOWER 360U is the light low power transmitter solution from Ecuapower family.

The overall efficiency of a single final stage is about 26% and the efficiency of the whole transmitter is about 22%

Key facts:

- Multimode platform – same hardware: System driver, low power transmitter, heterodyne transposer, regenerative transmitter, translator (integrated DVB-S2 receiver), gapfiller and Single Frequency Echo Canceller
- Multistandard Transmitter: All digital / All analog in the same hardware
- Light solution UP to 300Wrms / 500Wps
- 2x INPUT= SAT (S2 with CAMSlot), Ethernet, ASI= Hitless switch
- Single or multiple redundant power supply each HPA
- Regenerative and SFN Gapfiller functionality
- Freq. agile with static or adaptive pre-correction
- BUILT in GPS receiver
- Easy to use: web graphic interface GUI response

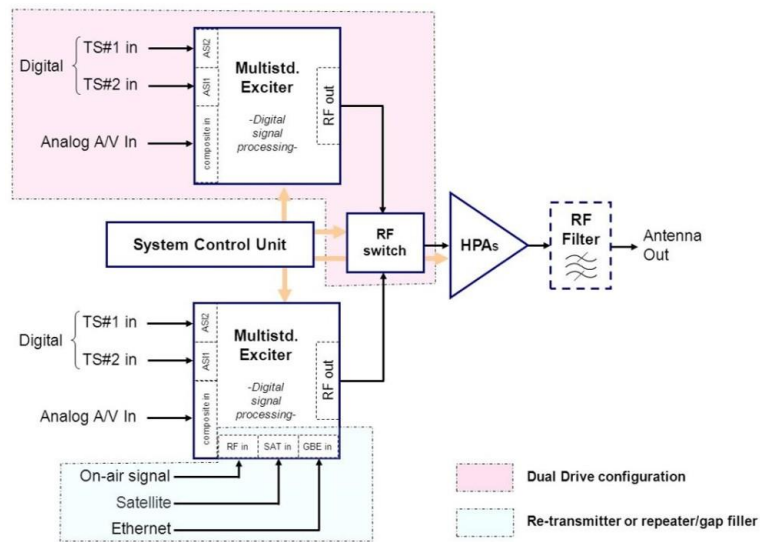


The Air Cooled transmitters line = Ecuapower offers air cooled TV transmitters, with one or more amplifier modules. The product lineup covers from low to high power levels, featuring excellent signal quality and small size. The Ecuapower models are available also as repeaters of the off-air signal, with a wide choice of operation settings, or as retransmitters, with satellite or Ethernet input.

Slim line represents the state of the art of the low-medium RF transmitter technology. Ecuapower always count on driver, the unique investment exciter thanks to its capability to modulate in all Digital standard, TV and Radio as the TV analog too.

Transmitter configurations are based on single or multiple identical amplifier units (PA), Ecuapower type. The equipment layout depends on the desired output power level and operational requirements. The PA(s) are directly fed by the exciter. The choice of redundancy configurations can include dual drive (exciter std-by), passive reserve (1+1 or n+1) and more others. The equipment parts are suitable to be assembled in a cabinet, 19" rack std., typically containing also the RF output filter. Single-PA - single-drive models are typically supplied as loose 19" modules. For redundancy configurations and/or multichannel transmission, important space savings are allowed by the "N-in-one" configurations, with N transmitters in a single cabinet.

BLOCK DIAGRAM



TECHNICAL FEATURES

RF PERFORMANCES ECUAPOWER 360U (2 Final stages)			
RF frequency range (output)		UHF Band IV & V (470MHz-860MHz)	
RF	Output power	360 W rms ISDB-Tb / 400 W rms ATSC	600 W p.s.
	Spurious / Harmonics	EN 302-296-2	
	MER	>35 dB	n.a.
	Shoulders	>40 dB	n.a.
	Frequency stability	± 1Hz	
	RF Final stage	N° 2 Pallets, 2 final transistor each (LDMOS latest technology) Graceful degradation: 1 fault transistor>>> 56% of max output power	
ELECTRICAL DATA			
Mains	Voltage	108 or 230 Vac (single phase) / 220 or 400 Vac (three phase) ±20% @ 47 to 63 Hz (autorange p.s.) PF>0.96	
	Power supplies	One power supply	
	Power consumption (LP version)	1550 W	1200 W
	Electrical efficiency	36 – 38%	
MECHANICAL DATA			



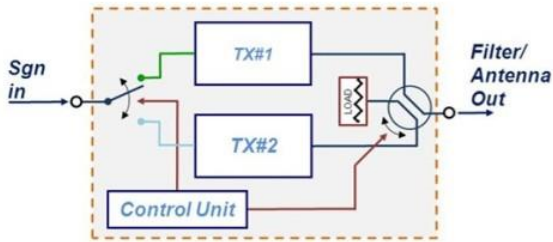
Cooling system /Air flow rate m3/h		forced air / 300 m3/h
Size	Width/Height/ Depth	482 mm / 132 mm / 500 mm
Weight		20.7 kg
Number of Tx / one rack 36U		Max 7
DIGITAL MODULATION		
DVB-T	ref. standards	ETS 300 744 / EN 50083-9 / TR 101 190 / TR 101 891
	RF channel width	6 MHz, 7 MHz, 8 MHz
	FEC	CC+RS
DVB-T2	ref. standards	EN 302 755 V1.3.1 , TS 102 831, T2-MI
	Streams	Single stream (System A) or up to 8-PLPs (System B)
	RF channel width	6 MHz, 7 MHz, 8 MHz
	FEC	LDPC+BCH
ISDB-T SBTV D	ref. standards	ABNT NBR 15601 - ARIB STD B31
	Multiple segment operation	total 13 segments, distributed over the existing layers (1seg supported)
	RF channel width	6 MHz
ATSC 8VSB	Standards	ATSC DOC.A/53
	Modulation mode	8-VSB
	Channel spacing	6 MHz
DTMB	Standard	DTMB (GB20200/2006)
	Symbol rate / Modulation	Symbol rate: 7.56MSPS / TDS-OFDM
	Channel bandwidth	8 MHz or 6 MHz
Test Mode		PRBS
Inputs		2xASI (BNC f, 75W) - seamless/hitless switching (SFN) / BTS / SMPTE / T2 MI / AA/VV
IP input		2xGBE (ProMPEG Cop3) - Electrical + 1XSFP GBE - Opt./Elec.*
NETWORK OPERATION		
Mode		MFN/SFN
Network delay (SFN mode)		Up to 1000 ms
Network synchronization (SFN Mode)		±4ms
PRECORRECTION		
Manual precorrection		Available
Automatic precorrection		Available : continuous/ scheduled / on call
Type		Linear/ non linear
PAPR		Provided
Protection Clipping		Provided
ANALOGUE MODULATION		
TV System		PAL std. B/G, H, K, I, I1, M, N – NTSC std. M – SECAM D/K
Ref. Standard		ITU-R BT.470-6
Audio system		MONO/ IRT
Video input	Level	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)
	Connector	1xBNC female, 75 W
Audio input	Level	6 dBm ± 6 dB (Df= 25 to 50 kHz)
	Ret. Loss	better than -30 dB (40 Hz to 15 kHz) (600 W, bal.)



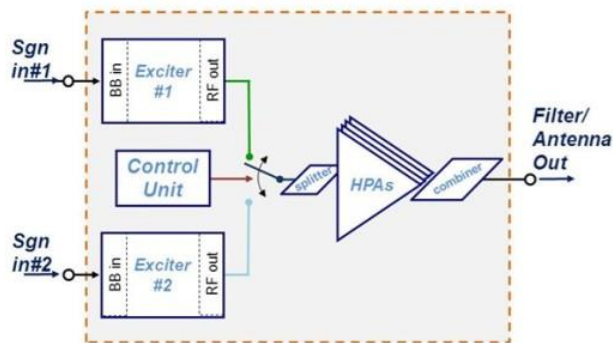
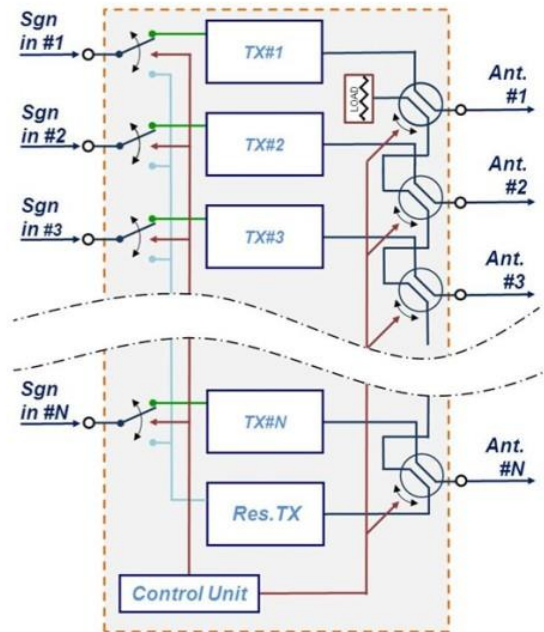
	Connector	DB9 with patch cable for 2xXLR female, 600 W (IRT config. : 2 inputs)	
REPEATER		SFN gap-filler	MFN re-transmitter
RF input	Rfin frequency range	146 to 861 MHz	
	Input level	-10dBm to -60dBm	-20dBm to -70dBm (QEF reception)
	Input ret. Loss	better than -16 dB	
	RF in connector	N female, 50 W	
Echo Canceller	residual echo suppression	up to more than 30 dB (30dB are obtained at 0dB input echo)	n.a.
Noise figure		max 10 dB	max 8 dB
immunity to other chan	N+1	OFDM/OFDM > 30 dB	
	others	OFDM/OFDM > 40 dB	
SATELLITE TRANSPOSER			
SatTV standard		DVB-S – DVB-S2 – EN300421	
Frequency range		950 – 2150 MHz	
Signal level		-65 to -25 dBm	
Connector – Cond. Access		SMA f – CAM slot	
LNB control		available, through RF input PS, polarity / band selection: by standard 13/18VDC and 22kHz signalling	
MONITORING			
RF Monitoring Connectors		FWD/REF: SMA female , 50 W	
Local Control		front panel (keys/display/USB port) / standard web browser	
Remote control port		Ethernet port (10/100/1000) RS 485	
Remote Control	Netw. Mgmt.	web browser / SNMP agent - upgrade also through ASI TS (OTA)	
	Direct signalling	IEC 60864-1	
TIME & REFERENCE			
Built-in ref.	Frequency	10 MHz OCXO	
	Stability	time: max $\pm 10^{-7}$ /year - temperature: max $\pm 2.5 \cdot 10^{-8}$ (-20° to 70°C)	
Ext. ref.	Frequency	10 MHz - 1pps	
	Level	1 V _{pp} (0.7 to 1.4 V)	
VCO tuning step		1 Hz	
ENVIRONMENTAL			
Operating temp. range		0° to 50°C*	
Max rel. air humidity		95% @ 30°C, no condensation	
Max altitude		4000 m <i>a.s.l.</i>	
Immunity	bursts	<4kV (AC) / <1kV (input) - IEC61000-4-4	
	surges	<2kV (differential mode) - <4kV (common mode) - IEC61000-4-5	
Safety		EN 60215 (IEC 215)	

Redundancy type

**1+1
passive reserve**



**N+1
passive reserve**



**Dual Drive
(exciter standby)**