

### ECUAPOWER 5200LU

*Liquid cooled*

The ECUAPOWER 5200LU is the liquid power transmitter solution from Ecuaroma developed into 1 of. 44U rack module-19" The model ECUAPOWER 5200LU it's capable of digital power up to 5200W rms DVB-ISDBT / 5800W rms ATSC / 10000Wps Analog power.

#### 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
- UP to 12000Wrms / 20000Wps in one rack
- Power-optimized adaptive cooling - integrated coolant circulation system
- 2x INPUT= SAT (S2 with CAMSlot), Ethernet, ASI= Hitless switch
- 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.



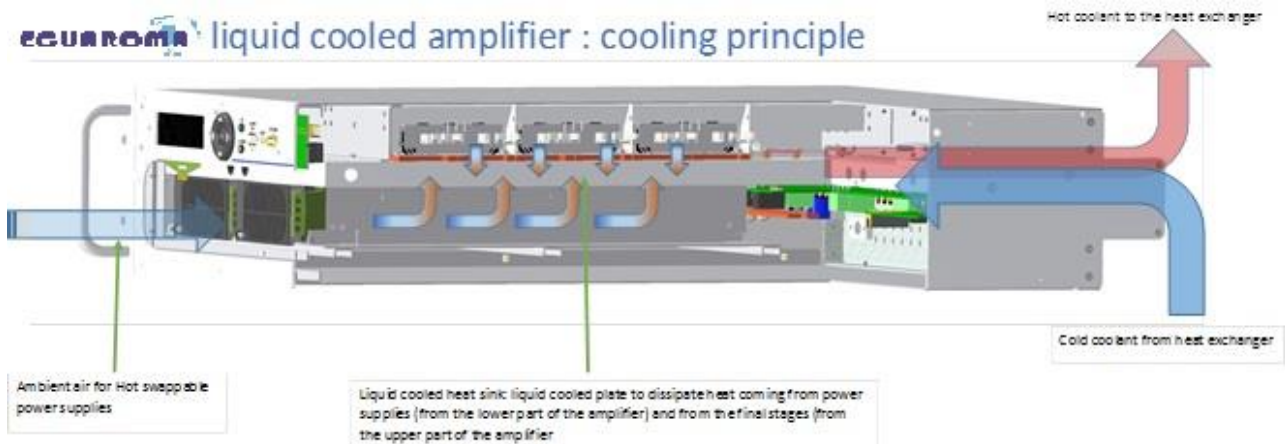


Top-level output power in compact size: up to 12kW rms per cabinet, with integrated cooling circulation system to simplify equipment installation and handling. Excellent performance matches with ease of operation and reliability, providing the ideal solution for high-power TV stations.

Transmitter configurations are based on a combination of high gain amplifiers, directly fed by the exciter. Each module includes redundancy in power supply (2+1). Concerning the whole transmitter, the choice of redundancy configurations includes dual drive (exciter std-by), passive reserve (1+1 or n+1) and active reserve.



The equipment parts are installed in 19" cabinets, featuring a remarkably short overall depth.



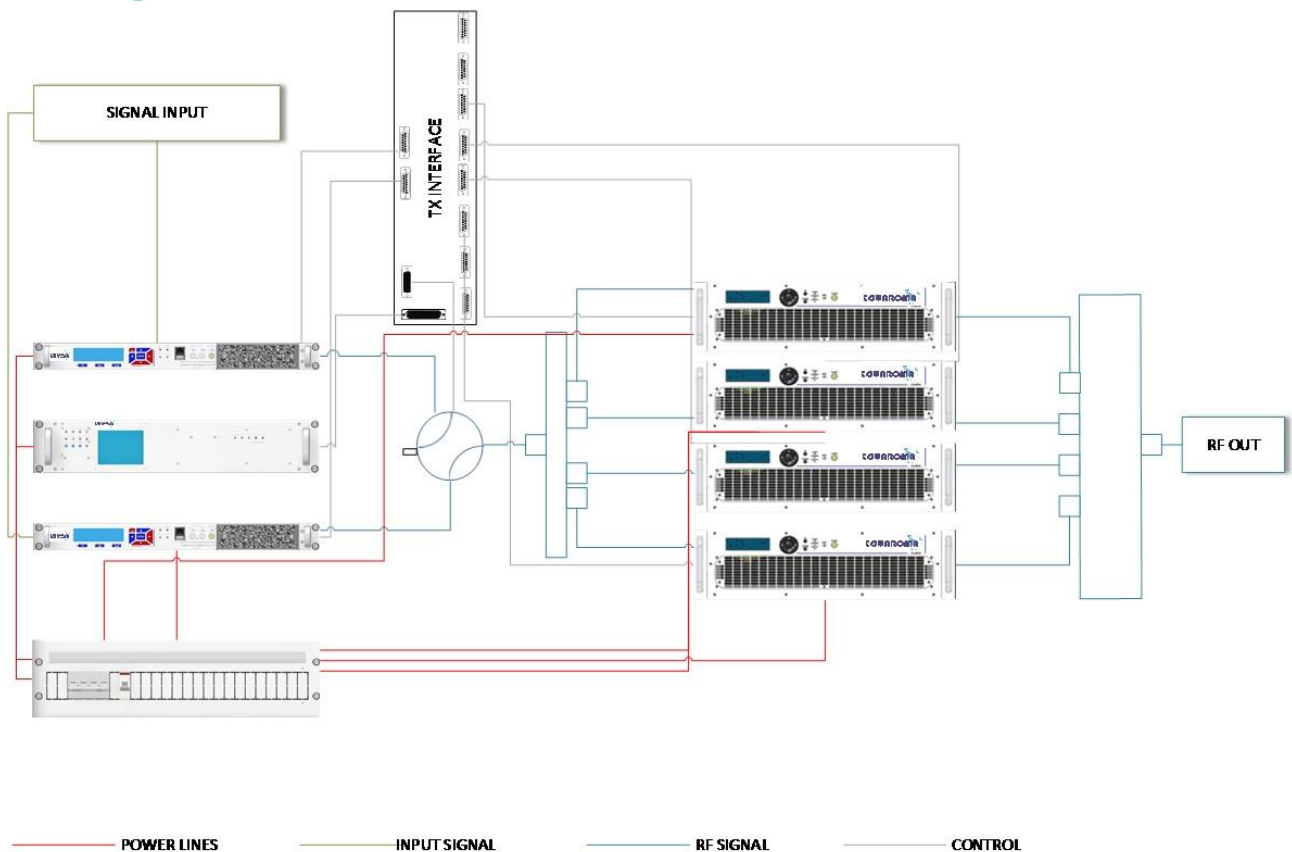
Coolant circulation is carried out by redundant pumps, typically integrated in the transmitter cabinet, connected to outdoor heat exchanger(s). Coolant flow, as well as fan speed of the heat exchanger, are adaptively controlled according to the actual cooling needs. The coolant type, non-toxic and easy to dispose of, also allows for long service intervals and optimally preserves the cooling circuit parts.

Equipment operation is supervised by the control unit. With a large touch screen display for an easy use.

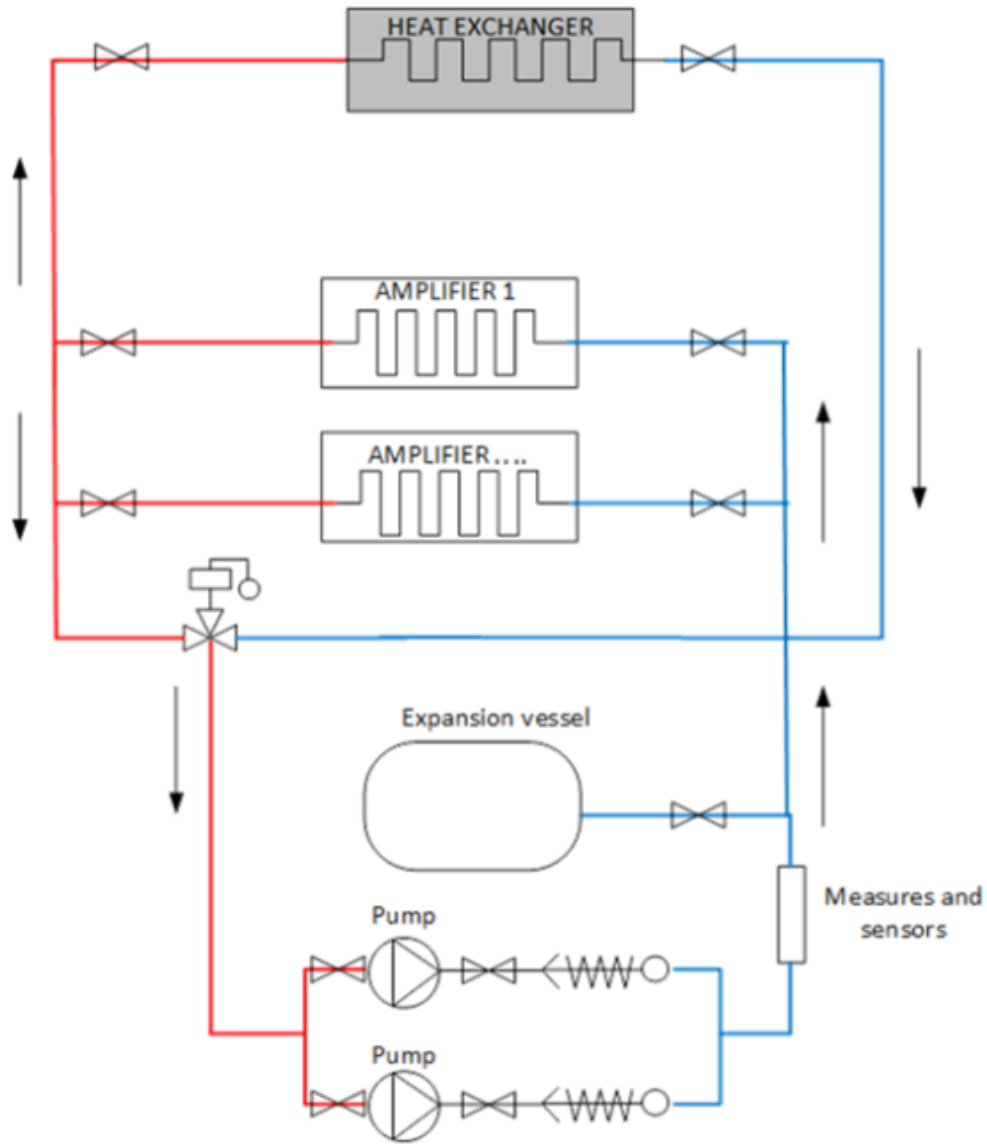
# ECUAROMA

The core of the transmitter is the multimode, multistandard driver.

This allows the transmitter to work both analogue and digital and with almost all existing Radio & TV standards worldwide. An additional ALC board (optional) provides the ability of amplifier to drive also third parties amplifiers.



Signal Block diagram



Cooling Block diagram



REVIEW DATA			
<b>RF frequency range (output)</b>		UHF Band IV & V (470MHz-860MHz)	
<b>RF</b>	Output power	5200 Wrms ISDB-Tb / 5800 Wrms ATSC	10000W p.s.
	Spurious / Harmonics	EN 302-296-2	
	MER	>38 dB	n.a.
	Shoulders	>41 dB	
<b>Mains</b>	Voltage	400 Vac ±15% @ 47 to 63 Hz (three phase - autorange p.s.)	
	Power consumption	16500W (max)	20000W (max)
	Electrical efficiency	38 – 40%	
<b>Cooling system /Liquid flow rate l/min</b>		Liquid / 50 l/min	
<b>Size</b>	Width/Height/ Depth	600 mm / 2300 mm / 1100 mm	
<b>Weight</b>		500kg	
<b>Number of Tx / one rack 44U</b>		n.a.	
DIGITAL MODULATION			
<b>DVB-T</b>	ref. standards	ETS 300 744 / EN 50083-9 / TR 101 190 / TR 101 891	
	RF channel width	6 MHz, 7 MHz, 8 MHz	
<b>DVB-T2</b>	ref. standards	EN 302 755, 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	
<b>ISDB-T SBTVD</b>	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	
<b>ATSC 8VSB</b>	Standards	ATSC DOC.A/53	
	Modulation mode	8-VSB	
	Channel spacing	6 MHz	
<b>DTMB</b>	Standard	DTMB (GB20200/2006)	
	Symbol rate / Modulation	Symbol rate: 7.56MSPS / TDS-OFDM	
	Channel bandwidth	8 MHz or 6 MHz	
<b>Inputs</b>		2xASI (BNC f, 75Ω) - seamless/hitless switching (SFN) / BTS / SMPTE / T2 MI / AA/VV	
<b>IP input</b>		2xGBE (PromPEG Cop3) - Electrical + 1XSFP GBE - Opt./Elec.*	
ANALOGUE MODULATION			
<b>TV System</b>		PAL std. B/G, H, K, I, I1, M, N - NTSC std. M - SECAM D/K	
<b>Ref. Standard</b>		ITU-R BT.470-6	
<b>Audio system</b>		MONO/ IRT	
<b>Video input</b>	Level	1V <sub>pp</sub> ( 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 Ω)	
	Connector	1xBNC female, 75 Ω	
<b>Audio input</b>	Level	6 dBm ± 6 dB (Δf= 25 to 50 kHz )	
	Ret. loss	better than -30 dB (40 Hz to 15 kHz) (600 Ω, bal.)	
	Connector	DB9 with patch cable for 2xXLR female, 600 Ω (IRT config. : 2 inputs)	
<b>REPEATER</b>		<b>SFN gap-filler</b>	<b>MFN re-transmitter</b>
<b>RF input</b>	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	
<b>Echo Canceller</b>	residual echo suppression	up to more than 30 dB (30dB are obtained at 0dB input echo)	n.a.
<b>Noise figure</b>		max 10 dB	max 8 dB
<b>immunity to other chan</b>	N+1	OFDM/OFDM > 30 dB	
	others	OFDM/OFDM > 40 dB	
SATELLITE TRANSPOSER			
<b>SatTV standard</b>		DVB-S -- DVB-S2 - EN300421	
<b>Frequency range</b>		950 - 2150 MHz	
<b>Signal level</b>		-65 to -25 dBm	
<b>Connector - Cond. Access</b>		SMA f - CAM slot	
<b>LNB control</b>		available, through RF input PS, polarity / band selection: by standard 13/18VDC and 22kHz signaling	
MONITORING			
<b>RF Monitoring Connectors</b>		FWD/REF: SMA female , 50 W	
<b>Local Control</b>		front panel (keys/display/USB port) / standard web browser	
<b>Remote Control</b>	Netw. Mgmt.	web browser / SNMP agent - upgrade also through ASI TS (OTA)	
	Direct signalling	IEC 60864-1	



TIME & REFERENCE		
<b>Built-in ref.</b>	Frequency	10 MHz OCXO
	Stability	time: max $\pm 10^{-7}$ /year - temperature: max $\pm 2.5 \cdot 10^{-8}$ (-20° to 70°C)
<b>Ext. ref.</b>	Frequency	10 MHz - 1pps
	Level	1 V <sub>pp</sub> (0.7 to 1.4 V)
<b>VCO tuning step</b>		1 Hz
ENVIRONMENTAL		
<b>Operating temp. range</b>		0° to 50°C*
<b>Max rel. air humidity</b>		95% @ 30°C, no condensation
<b>Max altitude</b>		3500 m <i>a.s.l.</i>
<b>Immunity</b>	bursts	<4kV (AC) / <1kV (input) - IEC61000-4-4
	surges	<2kV (differential mode) - <4kV (common mode) - IEC61000-4-5
<b>Safety</b>		EN 60215 (IEC 215)