



BE-TV-L-U/VH-I

Genesis Aqua-I Series Transmitters



The GENESIS AQUA-I (GAI) line is the result of years long research in terms of **reliability** – **size reduction** – **structural simplicity** – **modularity and scalability** – **competitive price** (*one of the best priced transmitters in its category*).

The GAI Liquid Cooled transmitters, perfectly meet the needs of customers that require **Medium / High Power solutions**.

The line can deliver from 3kW up to 11kWrms in ATSC/ATSC3.0 standard (*up to 20kWps Analog*), implemented on a single rack (19").

Its qualities of **compactness, modularity and redundancy** have been applied to the design of the transmitter design as well as of the **cooling system**. The Internal cooling system includes dual pumps, expansion tank and extensive cooling system monitoring. The cabinet requires minimal floor space, but still offers ease of access for monitoring and maintenance.

The new line maintains the traditional safety features of BE transmitters and improves the **ease of intervention by the operators** thanks to the extremely simple design.

The wealth of technical support and design from the Elenos group allows the optimization of manufacturing processes and allows BE to offer, a **low capital investment, reduced operating costs, ease of maintenance and simple spare parts management**.

All transmitters can be equipped with a second exciter and the associated automatic switchover unit, the two units being integrated into the transmitter rack.

Made in Europe, Designed in Italy, supported from the USA



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Key Features & Benefits



- Extremely easy installation and maintenance
- Fully broadband on UHF or VHF bands
- Hot-pluggable amplifier modules
- High efficiency Doherty configuration on power amplifier *(option)*
- All digital and analog modulation standards
- GPS/GLONASS internal receiver *(hardware option)*
- High stability local oscillator *(hardware option)*
- Both SFN and MFN network mode
- Advanced modulator with automatic/adaptive pre-correction *(linear and nonlinear)*
- ATSC and ATSC 3.0 operation without hardware change
- Satellite receiver with or without CAM *(hardware option)*
- Liquid cooling with redundant pumps and redundant heat exchanger
- Latest LDMOS technology for RF stages
- Display & keyboard, web browser and SNMP for remote operation
- Seamless switching between ASI/SMPTE and/or IP *(with priority)* when in SFN network mode
- Remote software/firmware upgrade
- Band-pass filter inside transmitter rack *(option)*

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GENERAL	
Frequency Range	UHF band IV/V: 470 to 862 MHz; VHF band III: 170-254 MHz; 1Hz steps
Analog Modulation Standards	B/G/D/K/K1/M/N, color system PAL, NTSC, SECAM
Digital Modulation Standards	ATSC 1.0; ATSC 3.0; DVB-T/T2; ISDB-Tb; DAB, DAB+
Channel Bandwidth	TV: 6, 7, or 8 MHz; DAB/DAB+: 1.5MHz
VSWR	Protection against open or short circuit, all phase angles.
Local oscillator accuracy	+/-1x10 ⁻⁸ (0 to 70°C), +/-5x10 ⁻¹⁰ /day (after 30 days), +/-1x10 ⁻⁷ /year
Network mode	SFN and MFN; multiple PLP
RF INPUTS	
GPS antenna	SMA female, 50 Ohms, (+5 V DC @ 100 mA max output for active antenna)
1 pps pulse	BNC female, 50 Ohms
10 MHz reference frequency	BNC female, 50 Ohms
F female, 75 Ohms	F female, 75 Ohms
Satellite receiver (with CAM)	F female, 75 Ohms
RF OUTPUT	
RF Output connector	1 x Type N female, 50 Ohms
RF power setting	-7 to +0dB with reference to nominal power
RF Output power stability	< +/- 0.25dB
Amplitude flatness	< +/- 0.25dB
Harmonic Emission	< -60dBc
Spurious Emission	< -60dBc
10 MHz reference frequency	SMA female, 50 Ohms, 1Vpp +/-0.2Vpp, rise-time 3-10ns
DIGITAL MODULATION INPUTS	
TS over IP/EDI	2 x RJ45 10/100/1000BaseT
ASI/SMPTE-310/T2MI/ETI	2 x BNC female, 75 Ohms (DVB-H: 1 main/1 hierarchical), continuous and burst mode
Maximum bit rate	50 Mbps
ANALOG MODULATION INPUTS	
Video	2 x BNC fem., 75 Ohms, 1Vpp +/-6dB, AGC on ITS line, DC rest., sync rest., white limiter
Sound	2 x XLR31 mini, 600 Ohms or 5 kOhms, balanced or unbalanced, 0dBm -6/+21dB
Aux audio input	MPX (bw 120kHz): 1 x BNC female 50 Ohms or 5 kOhms; SCA: 1 x BNC female 50 Ohms
NICAM audio interface	2 x XLR 31 mini, 600 Ohms or 5 kOhms, balanced or unbalanced, 0dBm +/-10dB
NICAM data interface	1 x BNC female, TTL 728kb/s external data, 1 x BNC female, TTL 728kb/s external clock
USER INTERFACE/ REMOTE CONTROL	
Control/Monitoring	Color LCD touchscreen, Web GUI, SNMP
Ethernet	2x GbE

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AC POWER

AC Input	380Vac three-phases four wires
Power Factor	> 0.95
Frequency	50 or 60 Hz

ENVIRONMENTAL

Operational Temperature Range	0° to 45°C (32° to 113°F)
Storage Temperature Range	-40 to +70°C
Relative Humidity	0% to 90%, non-condensing @ 45°C
Altitude	Up to 2,500 m (8,202 ft) above sea level
Cooling	Liquid cooling, redundant pumps, redundant heat exchanger
Acoustic Noise	≤45 dBA (front 1 m)
Dimensions (H x W x D)	42RU x 19" rack (dimensions: 2000 H x 600 W x 1100 D [mm])

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UHF BAND IV-V RF OUT POWER (before filter) [W]	Q.TY PA	OFDM MODULATION (DVB-T/T2, ATSC 3.0, ISDB-T)	8VSB MODULATION (ATSC 1.0)	VSB MODULATION (ATV) @ IMD TYP. -62DB
BE-TV-2-3k0-L-U	2	3000Wrms (MER=33dB)	3750Wrms (MER=35dB)	7500Wps
BE-TV-2-4k5-L-U	3	4500Wrms (MER=33dB)	5700Wrms (MER=35dB)	11200Wps
BE-TV-2-6k0-L-U	4	6000Wrms (MER=33dB)	7600Wrms (MER=35dB)	15000Wps
BE-TV-2-7k5-L-U	5	7600Wrms (MER=33dB)	9400Wrms (MER=35dB)	18500Wps
BE-TV-2-9k0-L-U	6	9000Wrms (MER=33dB)	11200Wrms (MER=35dB)	22500Wps
BE-TV-2-12k0-L-U	8	12000Wrms (MER=33dB)	15200Wrms (MER=35dB)	30000Wps

VHF BAND III RF OUT POWER (before filter) [W]	Q.TY PA	OFDM MODULATION (DVB-T/T2, ATSC 3.0, ISDB-T)	8VSB MODULATION (ATSC 1.0)	VSB MODULATION (ATV) @ IMD TYP. -62DB
BE-TV-2-2k0-L-VH	2	2000Wrms (MER=35dB)	2500Wrms (MER=35dB)	5000Wps
BE-TV-2-3k0-L-VH	3	3000Wrms (MER=35dB)	3750Wrms (MER=35dB)	7500Wps
BE-TV-2-4k0-L-VH	4	4000Wrms (MER=35dB)	5000Wrms (MER=35dB)	10000Wps
BE-TV-2-5k0-L-VH	5	5000Wrms (MER=35dB)	6200Wrms (MER=35dB)	12500Wps
BE-TV-2-6k0-L-VH	6	6000Wrms (MER=35dB)	7500Wrms (MER=35dB)	15000Wps
BE-TV-2-8k0-L-VH	8	8000Wrms (MER=35dB)	10000Wrms (MER=35dB)	20000Wps

VHF BAND III RF OUT POWER (before filter) [W]	Q.TY PA	OFDM MODULATION (DAB, DAB+)
BE-DA-2-2k5-L-VH	1	2500Wrms (MER=32dB)
BE-DA-2-4k0-L-VH	2	4000Wrms (MER=32dB)
BE-DA-2-5k4-L-VH	3	5400Wrms (MER=32dB)



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