

Tomorrow's TV Today



BE-TV-MOD-EX II

Genesis Exciter Series



Broadcast Electronics transmitters and modulator / exciters are the most advanced and future **proof** solutions in the Broadcast market.

The BE-TV modulator / exciter provides maximum integration flexibility on new or existing transmitters and is fully ready for IP based networks and all international standards including ATSC3.0, DVB-T/ T2 and ISDB-T operation.

The BE-TV[™] GENESIS ELITE series of modulator/ exciter is specifically designed to meet the needs of the professional broadcast industry, providing the ideal platform to transition from ATSC to ATSC3.0 or analog PAL/NTSC to either ISDB-T or DVB-T/T2.

The BE-TV[™] MOD EX II employs the latest components and technology, the result is extremely reliable, easy to configure and maintain, transmitter/ transposer/translator/gap filler (OCDR).

Two different modulation standards can be loaded and switchable both locally and by remote allowing to reconfigure the unit according to the actual or future needs.

Output power options from +10dBm (all bands) up to 20W (band specific) is available.



The BE-TV[™] MOD EX II ATSC 1.0 / 3.0 modulator exciter is characterized by a high RF and MER performance and by its unique ability to optimize efficiency of any RF amplifier using its patented Optipower Technology.

One of the main applications of the BE-TV[™] MOD EX II ATSC/ATSC 3.0 exciter modulator is to provide a versatile, robust and unsurpassed performance to integrate into BE and other manufacturers Transmitters. Often taking average to poor quality signals to exceptional

The integration of the BE-TV[™] MOD EX II ATSC/ ATSC3.0 into any transmitter system, is an easy process. BE-TV will provide full support during this process which will only be necessary to do once, since BE hardware platforms are always backwards compatible with previous versions (including PTV products).

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

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The BE-TV ATSC/ATSC 3.0 modulator exciters have four Ethernet Gigabit ports with different MAC addresses.

The BE-TV ATSC/ATSC 3.0 modulators are fully ready for IP networks. The quad Ethernet Gigabit ports consist of 2 optimized port for IP data input and 2 port available for control and management.

The BE-TV modulator is designed according to the ATSC 3.0 standard and supports all the approved modes including Layer Division Multiplex (*LDM*). (*Option 3730*)

Key Features & Benefits

1-RU exciter that supports two modulation waveforms on the same hardware platform.

High performance digital adaptive linear and nonlinear precorrection for maximum transmitter performance

- and PAPR clipping technology for maximum optimization of transmitter power efficiency and/or transmitter MER performance.
- Designed to meet ATSC 3.0 early adopters' plan to commercially deploy

Idea for transmitter manufacturer's demand for integrating a *"ready-to-use"* and straight-forward

- high-end exciter within their new ATSC 3.0 transmitter designs
- Switching between ATSC 1.0 and ATSC 3.0 either by local or remote command
- VHF and UHF

(selectable frequency from 30MHz to 790 MHz in steps of 1Hz)

- Single exciter version: output power selectable from -10 dBm to +10dBm in steps of 0.1dB
- Dual exciter version with automatic switch-over and redundant power supply
- SW based Automatic Level Control
- Seamless switching (ATSC3.0 option)
- User friendly intuitive WEB GUI control for use with standard Web Browser
- SNMP client Get/Set/Trap

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Optipower

Optipower is an Elenos Group proprietary solution developed to provide an increase in quality (*MER/SNR*) and efficincy to BE-TV and older existing TV transmitters





Optipower consists of:

- Enhanced Nonlinear Precorrection algorithm with **DEEP MEMORY EFFECTS** based on the Volterra polynomial series
- Adaptive PAPR clipper

These two adaptive mechanisms, allow achieving the maximum MER value on any transmitter system (VHF, UHF, Class AB, Doherty, etc ...) compared with other precorrection solutions on the market.

This MER extra increase, can be used to **enhance the overall efficiency of the transmitter system**.

In addition, ProTelevision Optipower (*Option PT3756*) will previde **live measurements** on the WEB Graphical User Interface: Shoulders, MER, PAPR, MER vs Carrier and a Spectrum graphic on the channel transmitted (*see picture*).

Main specifications for *(Optipower)* precorrection and feedback signals: Connectors: SMA 50 ohm – Level: -10dBm to + 10dBm – Returh Loss > 20dB – Frequency: 30MHz to 860MHz.

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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		
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			
Connector	N female		
Impedance	50 Ohm		
Return Loss	> 16 dB		
Nominal output power	ATSC	ATSC3.0/DVB-T/ISDBT	ATV
	(W)	(W)	(W peak sync.)
	5	3	10
	10	5	20
	30	20	40
Adjustable to nominal level	-7 to +1 dB		
Stability at nominal level	+/- 0.25 dB		
PAPR reduction Spurious Emissions	< -60 dBc (< -70 dBc with filter)		
Harmonic Emissions	< -60 dBc (< -70 dBc with filter)		
Amplitude flatness	< +/- 0.25dB		
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

2 x BNC female, 7 50 Mbps

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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	LCD and keyboard, Web GUI, SNMP		
Ethernet	2x GbE		
AC POWER			
AC Input	90 – 264 VAC single phase		
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	Forced air-cooled		
Acoustic Noise	≤45 dBA (front 1 m)		
Dimensions (H x W x D)	1 RU x 19" rack (dimensions 483 x 43.5 x 565 [mm])		



Taking the next step is easy with Broadcast Electronics. Contact your sales representative today to discuss solutions that will work for you and your station(s).

To contact your BE sales representative, simply visit our website at bdcast.com or call 217.224.9600 and learn more about what BE has to offer.

BE manufactures complete RF systems for radio and TV. Our products encompass program generation, audio and data management, interfacility transport and analog and digital (*HD Radio and DRM transmission*).

They are used daily in more than 40,000 installations in nearly 100 countries. For over sixty years, BE pioneering developments have set industry standards for innovation and reliability, while providing broadcasters with new options for operational productivity and income generation. BE is headquartered in Quincy, Illinois, USA, and is represented worldwide by a network of local representatives.

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