



Broadcast Electronics

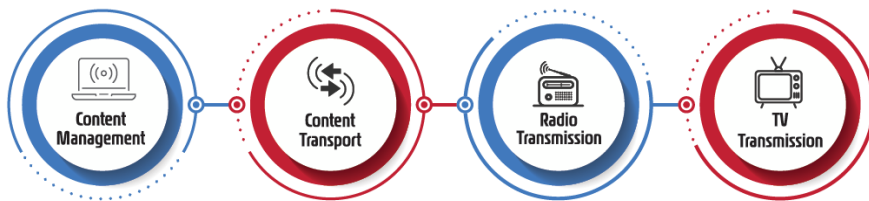


STX Series Modular High Efficiency FM Transmitters

Overview

Broadcast Electronics has an over 65-year legacy of providing innovative technology to enable radio and TV broadcasters to deliver compelling content to their audiences and create revenue-generating business opportunities. Supporting global innovation and next-generation content delivery, Broadcast Electronics embodies a customer-first approach to the market from the company's headquarters in Quincy, Illinois in the United States.

Customer-focused solutions from Broadcast Electronics are built on four technological areas:

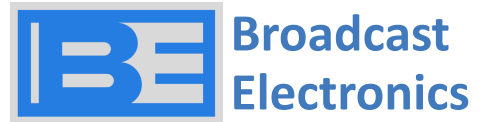


AudioVault is BE's award-winning suite of Content Management software enabling live and automated program creation and playout, news solutions, and digital logging as well as data management.

The Marti range enables content Transportation, powering audio contribution and distribution for point-to-point (STL) wireless connectivity.

Radio Transmission is the heart of Broadcast Electronics with multiple product lines to support AM and FM transmission. The BE STX line of HD Radio® ready FM transmitters provides superior sonic quality and low operating cost. The BE ETX analog FM transmitters deliver compact, efficiency in a redundancy-equipped package. The BE AM line of transmitters provides rugged, reliable, energy-efficient peace of mind for your AM radio station.

Broadcast Electronics' complete line of **low and high-power TV transmitters** are designed around a software defined core exciter that can cover all the global analog and digital TV standards. With solutions covering UHF and VHF frequency bands and air-cooling configurations, BE can craft the right solution to meet your technical, budgetary, and operating requirements.



Broadcast Electronics is a global technology company dedicated to driving innovation in broadcast technology providing market leading solutions for software-based content management, Radio & Television transmission, and scientific applications of radio frequency devices.

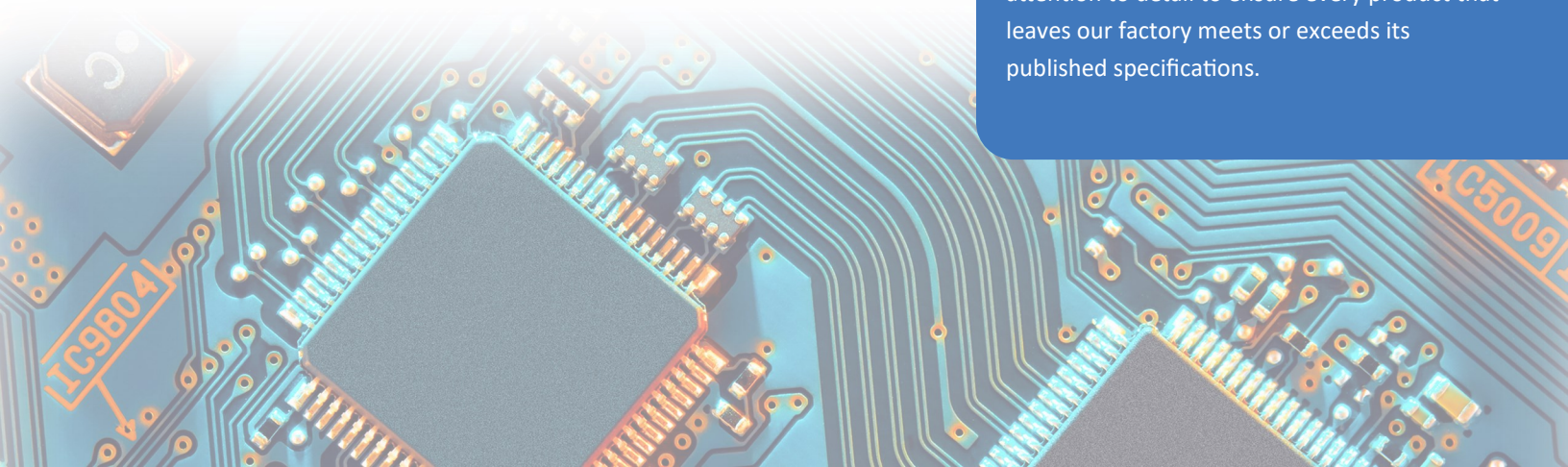
Broadcast Electronics, has been providing high-tech solutions for broadcasters for more than 65 years in over 170 countries. All of our products and services come from a heritage of creativity and innovation unmatched in the industry, focused on developing innovative solutions for customers problems.



Every major innovation that shaped modern radio originated in Quincy, and it is here that BE products are designed, supported, and manufactured today.

Our facility in Quincy employs the latest instruments for research, new product design, prototype fabrication and testing.

We take advantage of the best practices of automated production, adding human attention to detail to ensure every product that leaves our factory meets or exceeds its published specifications.



STX FM Transmitter Series

The STX continues the legacy of reliable, efficient, and performance-leading FM transmitters from Broadcast Electronics. STX has been designed for high efficiency to lower operating costs, world-class audio performance, maximum reliability and up-time, simplified and fast field repair, built-in redundancy, and the flexibility to support continued technological updates over time.

The Best Audio Quality—Ultimate Reliability

Broadcast Electronics STX line of transmitters are designed to deliver a high-performance, cost-effective solution with models from 60 W to 20 kW. Leveraging the highly efficient and compact RF technology of the latest ruggedized LDMOS RF devices the STX provides the efficiency, compactness, and reliability you have come to expect.

We didn't stop there, drawing from BE's decades of providing the best-sounding FM exciter on the market, we incorporated a digital direct-to-channel FM modulator and ultra-reliable highly efficient hot-pluggable power supplies to deliver the maintainability and robustness our customers have come to expect with the performance and reliability BE is known for.

STX's powerful control system provides extensive monitoring, logging, and control capabilities with fast-acting protection for maximum reliability. A front panel LCD screen, navigation buttons, and bright LED indicators allow easy review, setup, and diagnostics. The RJ-45 port allows you to connect to the intuitive and powerful GUI and SNMP from anywhere in the world. The standard parallel GPI/O interface provides connectivity to a traditional remote-control system.

Flexible options — software enabled

BE knows that in the fast-paced and evolving world of broadcast radio, the adage—the only constant is change—holds. You need to invest in cost-effective tools for today but maintain the flexibility to expand your system when things change tomorrow—all without ripping things out and starting over. The STX supports all analog and digital FM Radio standards such as Analog FM, HD Radio®, DRM+ and emerging technologies.

You bring the content; we will help you deliver it to your audience cost-effectively!



Put these powerful capabilities to work for you

- Models from 60 W to 22 kW
- Ultra compact size and low weight
- Direct-to-channel digital modulator
- HD Radio & DRM+ operation
- Outstanding Audio performance
- High efficiency delivers up to 75% AC to RF Efficiency
- Hot-Pluggable / Front Access Power Supplies
- Hot-Pluggable / Front Access RF modules
- Seamless operations over a wide range of voltages and power stability
- Run at maximum power up to 1.5:1 VSWR w/proportional foldback
- IP Connectivity with HTML5 GUI for anytime, anywhere access
- Flexible alerts, monitor and control with SMTP email, SNMP, and SMS
- Comprehensive event log stores 5000 events—simplifies troubleshooting
- Built in RDS Encoder and digital Stereo Generator
- Removable front panel grill and washable filter for clean operation
- RDS Generator built-in with Dynamic RDS
- Multiple Program Inputs with silence sensor and auto failover
- Single Frequency Network capable with built-in Audio delay
- N+1 Capable, Main/Alternate Capable
- SNMP Level 3 Security and Control

Digital Modulator—The Heart of the Transmitter

Building on BE's long legacy of superior-sounding FM excitors, STX continues the tradition with a state-of-the-art Digital Direct to Channel (DTC) modulator of unrivaled precision and sonic clarity inside every transmitter.

The STXe is a digital exciter that can produce the best AES audio but is also capable of broadcasting in HD or DRM+. The STXe series of excitors include as digital stereo generator and an RDS generator and multi-program inputs with a silence sensor.



Advanced Monitor and Control Capability

Every STX includes a powerful yet simple-to-use browser-based HTML-5 graphical user interface for control and monitoring of the transmitter anywhere in the world. Extensive TCP/IP network connectivity via integrated RJ-45 connection allows the transmitter to be securely connected to any IP network. Integrated multiuser multilevel password protection ensures only authorized operation on your network.

STX also supports a robust SNMP level 3 – (Simple Network Management Protocol) interface for easy connection with a wide array of powerful software network manager systems and popular transmitter remote controls. The entire transmission system can be controlled and monitored using the standard published MIB protocols.

STX provides a comprehensive event log that captures all transmitter-related activities, operations, and faults storing the 5000 most recent activities. This allows for detailed diagnostics and simplified routine maintenance.

Remote Monitor and Control interfaces supported include:

- Popular parallel interface to panels and legacy remote-control systems
- Automated Alarms and notifications via Email or SMS text

- SNMP connectivity for alerts, monitoring, and control
- Web GUI via ethernet network connection RJ-45 (10/100Base-T) with TCP/IP protocol

Amplifier Design Provides Robust and Efficient Operation

STX employs LDMOS-power amplifier device technology coupled with innovative amplifier design to provide robust & efficient analog and HD Radio operation. The STX controller constantly monitors the power supplies and RF amplifiers to automatically operate the system at the desired power, efficiency and reliability.

Redundant rugged amplifiers and low-loss combiners protect against lightning, antenna system shorts, and high VSWR to keep you on-air. These innovations reduce operating and maintenance costs, which provide a low total cost of ownership over the life of the transmitter - maximizing your investment.



STX Transmitters



STX Rock Solid Reliability and Great Sounding Audio Scalable to 20kW

The Broadcast Electronics STX family of FM transmitters has been intelligently designed to offer the perfect combination of audio quality, reliability, redundancy, serviceability, and efficiency in a compact design. Each transmitter is crafted with superior attention to detail and features the highest quality components.

STX Power amplifier modules and hot-pluggable power supplies are all easily accessible saving time on service and maintenance with every part and assembly.

STX transmitters represent the most advanced technology in terms of electrical efficiency, compactness, reduced weight, ease of use, and remote monitoring. They have been designed to guarantee maximum performance and operation while lowering operational costs through energy saving technology.

The Broadcast Electronics STX High Power transmitters achieve levels of overall electrical efficiency unseen in the market today, while also providing extremely high operational performance under extreme environmental conditions (high external temperatures, poorly adjusted antenna, fluctuations in the power source).



Broadcast Electronics' HD Radio® product line has been the choice for a many of the digital radio stations in the U.S. and a large number of broadcast facilities globally. Operating efficiency, easy configuration, and on-the-fly operability are just a few of the reasons why.



Specifications

	STXe 60	STXe 500	STX 1000	STXe 2
Range (Output Power)	6 W to 70 W	25 W to 550 W	250 W to 1100 W	250 W to 2200 W
Modulation Standards	Analog FM HD Radio DRM	Analog FM HD Radio DRM	Analog FM HD Radio DRM	Analog FM HD Radio DRM
# of Power Supplies	1	1	1	2
Efficiency	Up to 72% Typical > 70%	Up to 72% Typical > 70%	Up to 72% Typical > 70%	Up to 72% Typical > 70%
Output Connector	Type N female	Type N female	7-16 DIN female	7-16 DIN female
Analog Input	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)
AES	XLR female (Balanced impedance 600Ω/10KΩ selectable)	XLR female (Balanced impedance 600Ω/10KΩ selectable)	XLR female (Balanced impedance 600Ω/10KΩ selectable)	XLR female (Balanced impedance 600Ω/10KΩ selectable)
MPX/SCA/RDS input	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)
Operating Temperature	-10°C to +50°C 95% non -condensing	-10°C to +50°C 95% non-condensing	-10°C to +50°C 95% non-condensing	-10°C to +50°C 95% non-condensing
Maximum operating altitude (ft / m)	10000 / 3000	10000 / 3000	10000 / 3000	10000 / 3000
AC Input Voltage	90-264Vac, 47 to 63Hz single-phase	90-264Vac, 47 to 63Hz single-phase	200-264Vac, 47 to 63Hz single-phase	200-264Vac, 47 to 63Hz single -hase
Dimensions (W x H x D, inches / cm)	19 x 2 RU (3.5) x 22 inches 48 x 9 x 56 cm	19 x 2 RU (3.5) x 22 inches 48 x 9 x 56 cm	19 x 4 RU (7) x 28 inches 48 x 18 x 70 cm	19 x 4 RU (7) x 28 inches 48 x 18 x 70 cm
Weight (LBS / Kgs)	25 / 11	25 / 11	58 / 26	58 / 26

Specifications

	STXe 3	STXe 5	STX 10	STX 20
Range (Output Power)	500 W to 3300 W	1000W to 6200 W	2.5kW to 11 kW	9 kW to 22kW
Modulation Standards	Analog FM HD Radio DRM	Analog FM HD Radio DRM	Analog FM HD Radio DRM	Analog FM HD Radio DRM
# of Power Supplies	2	4	7 optional 8	14 optional 16
Efficiency	Up to 75% Typical > 73%	Up to 75% Typical > 73%	Up to 72% Typical > 70%	Up to 72% Typical > 70%
Output Connector	7-16 DIN female	1-5/8" EIA	3-1/8" EIA Unflanged, 1-5/8" EIA optional	3-1/8" EIA Unflanged
Analog Input	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)	2x XLR female (Balance impedance 600Ω/10KΩ selectable)	2x XLR female (Balanced impedance 600Ω/10KΩ selectable)
AES	XLR female (Balanced impedance 600Ω/10KΩ selectable)	XLR female (Balanced impedance 600Ω/10KΩ selectable)	XLR female (Balanced impedance 600Ω/10KΩ selectable)	XLR female (Balanced impedance 600Ω/10KΩ selectable)
MPX/SCA/RDS input	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)	2x BNC female (Unbalanced impedance 50Ω/10KΩ selectable)
Operating Temperature	-10°C to +50°C 95% non-condensing	-10°C to +50°C 95% non-condensing	-10°C to +50°C 95% non-condensing	-10°C to +50°C 95% non-condensing
Maximum operating altitude (ft / m)	10000 / 3000	10000 / 3000	10000 / 3000	10000 / 3000
AC Input Voltage	200-264Vac, 47 to 63Hz single-phase	90-264Vac, 47 to 63Hz single-phase	196-252 VAC, DELTA (or 340-435 VAC 4 WIRE WYE), 50/60Hz three-phase, single phase	196-252 VAC, DELTA (or 340-435 VAC 4 WIRE WYE), 50/60Hz three-phase, single phase
Dimensions (W x H x D, inches / cm)	19 x 4 RU (7) x 28 inches 48 x 18 x 70 cm	19 x 2 RU (3.5) x 22 inches 48 x 9 x 56 cm	19 x 20 RU (35) x 29 inches 48 x 88 x 73 cm	44 x 68 x 30 inches 114 x 173 x 76 cm
Weight (LBS / Kgs)	58 / 26	25 / 11	260 / 118	1050 / 476

RF Specifications	
Transmitter Type	Solid State VHF FM transmitter for analog FM: 87.5 MHz to 108 MHz; 10 kHz increments
Output Power	6 W to ~ 22,000W 50 ohms
Efficiency	Up to 72% typical AC to RF
Modulation Type	Direct-to-channel digitally generated FM (no analog up-conversion)
Modulation Capabilities	Standard: ± 75 kHz peak deviation – Max: ± 300 kHz peak deviation
Spurious and Harmonic	Compliant with ETSI and FCC specification—85dB or better; low pass filter standard
Asynchronous AM S/N Ratio	Better than -65dB (-75dB Typical) referenced to average peak-to-peak carrier amplitude. 75uSec de-emphasis)
Synchronous AM S/N Ratio	Better than 60dB referenced to average peak-to-peak carrier amplitude. 75kHz deviation @400Hz
VSWR	Normal operation up to 1.5:1 Integrated Proportional Fold-back and Fast Protection
Regulatory	FCC; IC; CE; BETS-6; IEC 215 Safety
Audio Specifications	
Audio Inputs	AES, L&R analog, composite, SCA/ RBDS/RDS external generator input, SCA audio inputs (2)
Amplitude Response	Composite/ AES: +/-0.03dB, 30 Hz to 53 kHz; +/- -0.1dB, 53kHz to 100kHz Analog L&R: +/-0.25, 30Hz to 53kHz
Total Harmonic Distortion + Noise	Composite: 0.005% or less @400Hz, 10-22kHz bandwidth, 75uSec deemphasis. AES/ Analog L/R Stereo: -0.01 typical @ 400 Hz, 10-22kHz bandwidth 75uSec deemphasis
Composite Intermodulation Distortion	0.13% SMPTE (60/7000 Hz, 1:1 ratio), DIM-B: 0.008% (14kHz)
S/N Ratio	AES: 95dB typical below 100% modulation @ 400Hz-22kHz bandwidth, A-weighted filter 100dB typical below 100% modulation @ 400Hz, 10Hz-22kHz bandwidth, CCIR-468 filter Analog: 93dB typical below 100% modulation @ 400Hz, 10Hz-22kHz bandwidth, A-weighted filter 98dB typical below 100% modulation @ 400Hz, 10Hz-22kHz bandwidth, CCIR-468 filter Stereo: 80dB or better below 100% modulation @ 400Hz, unweighted
Stereo Separation	AES: -74dB below 100% modulation @400Hz. Analog L/R: -70dB, 30Hz to 15kHz
IMD Distortion	SMPTE: 0.01% or less (60/7000Hz; 1:1 ratio) DIM-B: 0.005% typical (14 Hz)

Service and Support

We know that having the right support behind a product is every bit as important as the features and capabilities it delivers. At Broadcast Electronics we are committed to provide you with not only great products and software, but a dedicated team of service experts to help you keep your station running smoothly for years to come.

Training

Broadcast Electronics has long provided training programs for our products to educate and prepare users to operate and maintain them in the most effective possible manner. Training is offered for all styles of transmitters and Audio Vault systems, featuring a mix of instruction with hands-on operation and troubleshooting. Training programs can be crafted to meet your local needs, offered in our facility, at your location, or online. Many of our programs can provide SBE ongoing educational credits.

Warranty

You can rest assured that Broadcast Electronics stands behind its products and services to provide complete satisfaction.

Our products offer a standard set of warranty services that exceed others in the industry.

Repair Service

As a leader in providing innovative products and solutions to broadcasters around the globe, Broadcast Electronics understands the need for long life and years of trouble-free service. You can feel secure that if disaster strikes and your products need service, we offer complete repair and refurbishment service to get you back on the air delivering your high-quality programming quickly.

On-Site Service and Installation

Whether you need assistance troubleshooting an existing transmitter or Audio Vault system or require a complete installation of a new one, the global service team at Broadcast Electronics is here to help you get everything up and running quickly. We also offer support for commissioning, on-site set-up and testing, or simply providing an extra pair of hands. Whatever your needs, we can assist you.





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