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Series

DTX - TX

DIGITAL & ANALOG SOLID STATE TERRESTRIAL TV TRANSMITTER LINE

The high quality, professional and cost-effective solution

FEATURES:

- A high performance digital & analog TV Transmitter Line featuring latest technology
- High reliability with choice of dual drive or passive stand-by systems
- Low power consumption
- Low cost of ownership, low capital cost, running expenses & maintenance.

DVB Digital Video Broadcasting

a t s c

ABE Elettronica is proud to present the “DTX” and “TX” Series of Transmitters for Digital & Analog terrestrial TV broadcasting.

Building on the “state-of-the-art” image established by ABE’s analog TV Transmitter range in around 30 years, the “DTX” and “TX” Series is designed to bring together the excellence of the Digital & Analog modulation systems with the highly efficient and reliable MOSFET broadband Power Amplifiers designed and produced by ABE.

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The DTX and TX is a fully solid-state digital and/or analog terrestrial TV broadcasting transmitter series.

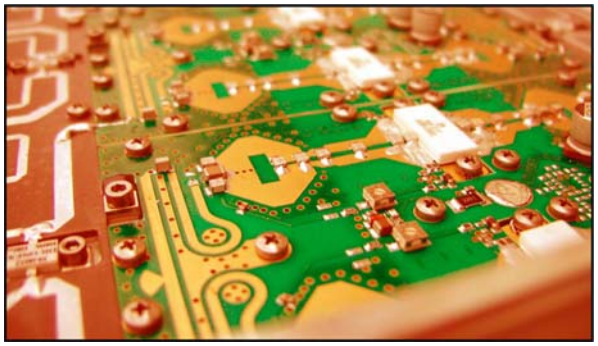
It incorporates a professional grade IF Modulator unit able to support all normally used modes and standards (please see specific documentation for detailed description).

Featuring modulator construction – with easily removable modules having RF internal isolation – the DTX and TX series exploits the advantages of **SMD technology** to achieve high reliability and comprehensive system flexibility – all at reduced size. Maintenance as well as channel changing operations are simple and easy to perform.

Careful product design brings high versatility, enhanced by the provision of specific options and giving **compliance with major world digital and analog terrestrial TV broadcasting standards**.

Equipment employ high performance, highly efficient power amplifiers (low power consumption in comparison with the output power), using **MOS** and/or **LD-MOS** semiconductors, AB class polarized, properly **precorrected** in order to obtain the necessary linearity. In the high power amplifiers, efficiency is further enhanced by the use of **switched-mode power supplies**, provided with **PFC-Power Factor (cos. φ) Corrector** in order to minimize reactive power consumption.

With digital signals, the power stages are "backed-off" (derated) to an output power which is typically 6 to 7 dB less their normal analogue combined TV signal rating.



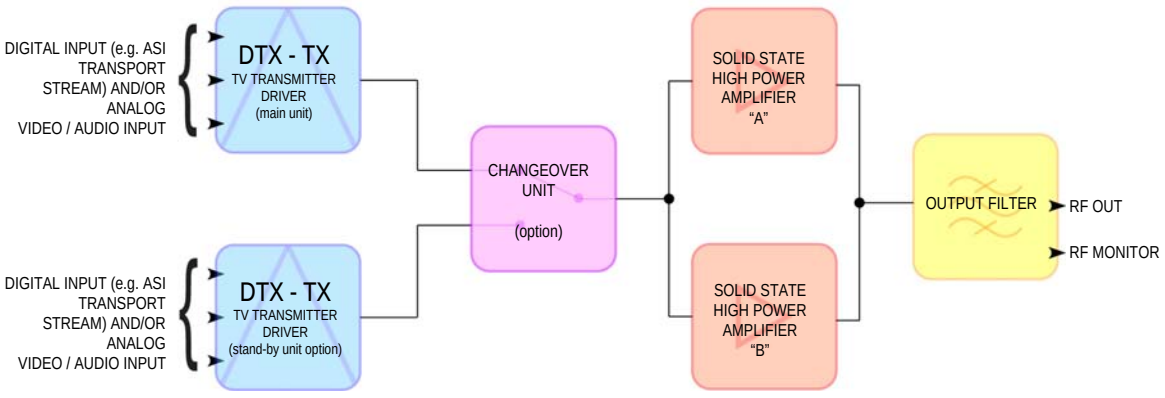
The solid-state high power output amplifiers normally comprise more independent power amplifiers chassis, each with its own power supplies.

Should a failure affect the output from one power amplifier chassis, the other one will continue to work normally at full power, transmission therefore continues at reduced power but, importantly, the station remains "on-air".

With the optional **"Dual-Drive"** configuration there is an **Automatic Changeover Unit** which, in the event of low RF power from the working Drive, immediately brings the stand-by optional Drive into operation and ensures that transmission will continue at full power.

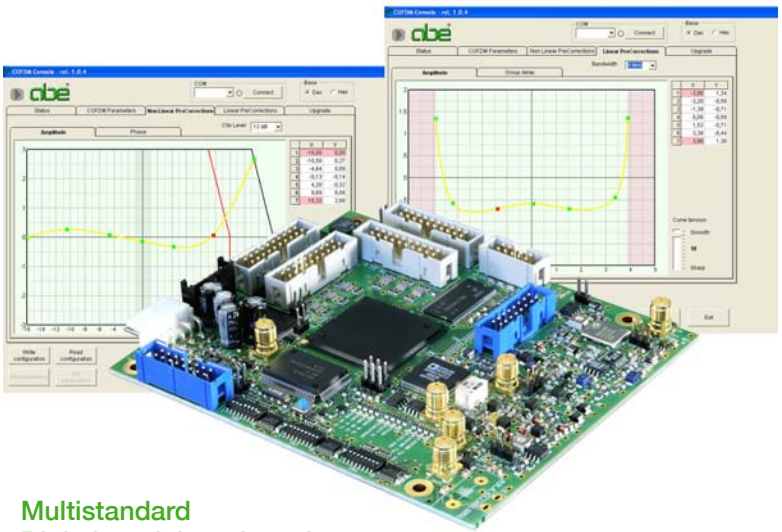
Alternatively it is possible to provide a complete **automatic passive stand-by system**. These features ensure a high degree of operational reliability. Essential maintenance is also facilitated.

Example of Transmitter configuration



General features and options:

- **AGC** features IF muting and RF output power amplifier switch off in absence of IF signal, absence of local oscillator locking or lack of video sync pulses;
- **"Soft start"** on appearance of IF input/sync pulses to avoid output power surges;
- **Automatic RF Level Control (ALC)** to stabilize the high power amplifiers RF output limited range;
- Comprehensive indication, control and protection circuits, including a High Power Amplifier **foldback** function to reduce output power before tripping off, in case of high VSWR, heatsink overtemperature or overdrive;
- **Low phase noise** synthesized Local Oscillator with microprocessor programming;
- **GPS** Locked reference oscillator option for better than 1Hz output frequency stability and for synchronisation in SFN Networks;
- **Frequency offset** possibility with 1 Hz steps;
- **Frequency-agile converter** option with output channel front panel selection;
- Analog (optional – at IF level) + Digital (optional – at modulation level) **linearity precorrection** to reduce in band and out of band intermodulation products and to improve MER (Modulation Error Ratio);
- **Output filters** to comply with the emission mask specification requested;
- Alarm circuit for output power lower than a pre-set threshold (normally 3dB/half power);
- **Dual-Drive** option include a stand-by Drive unit and the Automatic Changeover unit "SA" which, in the event of low RF power from the working Drive, immediately brings the stand-by Drive into operation;
- **Digital Demodulator** option incorporated in the Digital Modulator unit for Regenerative Transposer operation;
- **Analog modulator** option include:
  - **SAW IF** filters (specified with reference to the particular standard);
  - **Video Processor** to provide automatic video gain control, sync pulse shape restoration with amplitude stabilization, digital black level clamping.
  - Possibility for **Dual Channel** sound carrier + **stereo encoders**
- **Analog modulator** option (in addition to the digital one) to allow a double usage of the transmitter during transition periods from analog to digital broadcasting (Dualcast);
- **Telemetry** to provide remote monitoring and control, using either digital (options: RS485; Ethernet 10/100 Base-T; SNMP and WEB Server Support) or analogue interfaces.



Multistandard
Digital modulator board

NOTE:

When a "DTX" transmitter is supplied equipped with the analog modulator only, is named "TX" nevertheless it remains "digital ready".

ABE product range also include a complete series of MPEG Encoders, Multiplexers, Digital and Analog Microwave Links (both STL and mobile), broadcasting antenna systems and accessories.

Please visit our web site at www.abe.it

DTX - TX Series Standard specification

Output frequency range:	VHF or UHF (according to the model)
Output impedance:	50Ω
Spurious, harmonics and out of channel + upper and lower adjacent channel IMD products:	≤ -60dB (with RF output filter)
Frequency stability (in the range -5 to +45°C):	≥ ±250Hz (option: GPS locked reference for better than 1Hz stability)
DIGITAL OPERATION SPECIFICATIONS	
Output power:	0.5W to 5KWavg (tol.+0/-1dB) according to the model (before output filter)
Transmission standard:	OFDM (DVB-T/H; DVB-T2; ISDB-T/Tb); 8VSB (ATSC); other on request for detailed specifications see modulator specific documentation
Intermodulation products (shoulders) just outside channel edges (before output filter):	According to the model and power output (typ. Spec. ≤38dB with reference to emission channel centre power density)
MER – Modulation Error Ratio:	According to the model and power output (typ. Spec. ≥35dB)
Input interface options:	ASI; GbE (available soon); DVB-S/S2 receiver; DVB-T receiver (for different input interfaces and specifications, see modulator specific documentation)
ANALOG OPERATION SPECIFICATIONS	
Output power:	1W to 20KW (tol.+0/-1dB) according to the model (including output filter loss)
Transmission standard:	B, G, D, I, K, K1, L, M or N
In band intermodulation products	≤ -60dB (typical; max. -56dB – Test: V.C. -8dB; S.C. -10dB; C.S. -16dB)
Video input:	1Vpp (75Ω BNC-f) – video processor with ALC, clamping, white limiter, sync restore, etc.
Transmitted Video quality parameters:	Differential gain: within ±2% (typical; max. ±5%); Differential phase: ±2° (typical; max. ±3°) 2T K rating: 1.2% (typical; max 2%); Random noise (weighted typical): ≥60dB; Group delay response (V.C. to C.S.): Within ±40nS (+ receiver group delay precorrection) Amplitude / frequency response: (V.C. to C.S.): Within ±0.5dB (typical; max. ±1dB)
Audio input:	0dBm (adjustable) 600 Ω bal. / unbal.
Audio options:	Stereo / dual sound IRT; NICAM 728; BTSC; other on request
Transmitted Audio quality parameters:	Amplitude / frequency response: ±0.5dB (typical; max. ±1dB); Harmonic distortion: ≤0.4%
GENERAL SPECIFICATIONS	
Power supply:	According to the model: 108 to 240 Vac single phase or 207 to 415 three phases 50/60Hz
Remote control interface options:	RS485; Ethernet 10/100 Base-T (SNMP and web server support) Remote firmware upgrade: supported
Housing:	Standard rack 19”
Operating temperature range:	-5 to +45°C
Maximum operative humidity:	90% non condensing

MAIN AVAILABLE OPTIONS:

- OUTPUT FILTERS to comply with specific emission masks (e.g.: critical or non critical DVB-T/H mask, ATSC A64 mask, etc.)
- GPS LOCKED HI STABILITY REFERENCE OSCILLATOR
- ANALOG MODULATOR, in addition to the digital one, to allow transmitter double operating mode during transition periods from analog to digital broadcasting

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All specifications contained in this document may be changed without prior notice.

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