



DVB-T IF MODULATOR PT 5780

IF-MODULATOR_DVB-T_5780 (03-2003)



- ✧ Single and Multi Frequency Network
- ✧ Outstanding digital Precorrection
- ✧ High MER performance
- ✧ Near seamless switching between inputs
- ✧ Full hierarchical mode support

DVB-T Modulator PT 5780 is another winning product in the range offered by ABE - Advanced Broadcasting Electronics.

Designed to meet the exact needs of today's Digital Terrestrial Television Broadcast market, the DVB-T Modulator PT 5780 is ranked number one in its class.

A key factor in the product's success is the quality of the coding and modulation process.

The DVB-T Modulator PT 5780 has been designed to fulfil the most demanding requirements.

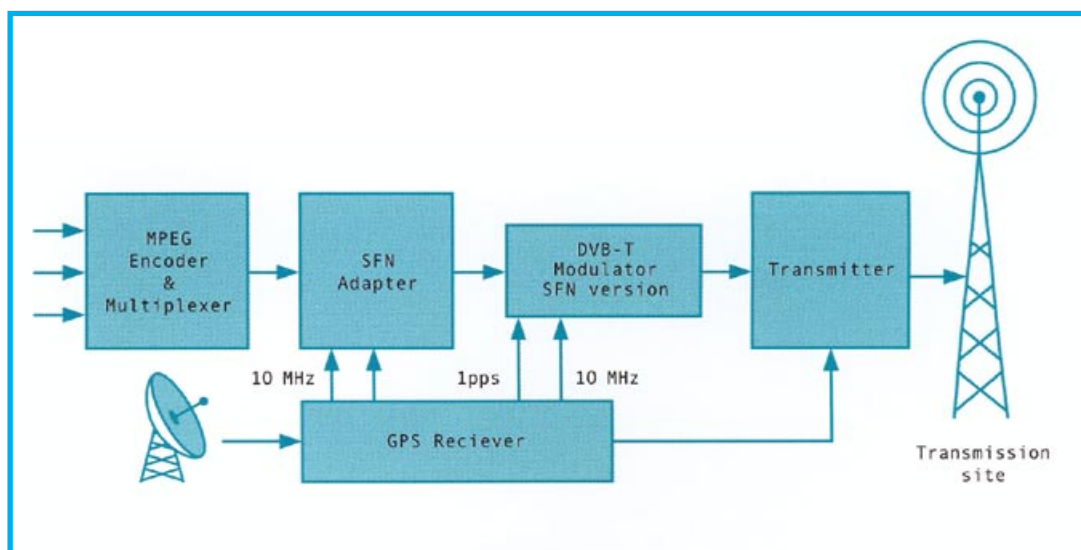


APPLICATION

SINGLE FREQUENCY NETWORK

DVB-T Modulator PT 5780 performs the functions of channel coding and modulation for Digital Terrestrial Television Broadcasting (DTTB).

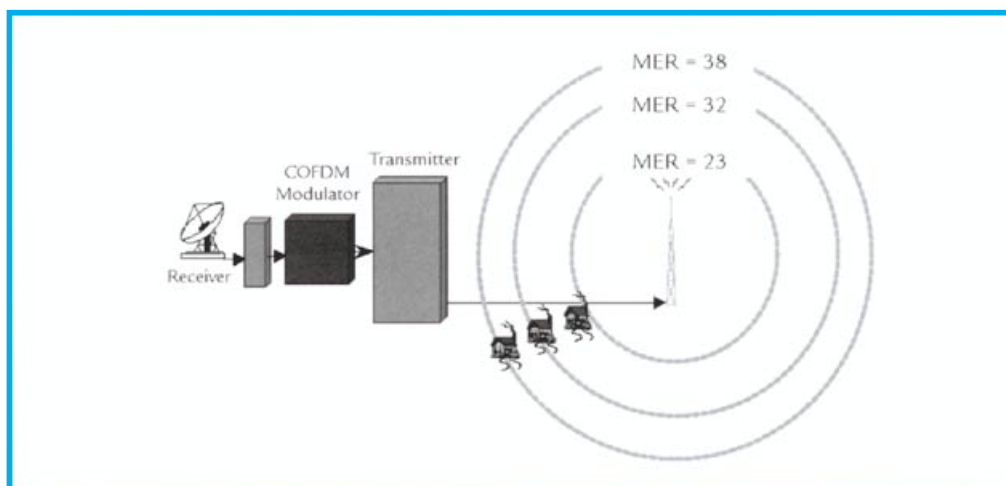
The modulator complies with the DVB-T standard, ETS 300.744 and provides the function of converting a compliant MPEG-2 transport stream into an COFDM modulated signal. The modulator supports both the 2K and 8K operating modes and allows for either multi or single frequency network operation.



HIGH MER PERFORMANCE

The DVB-T Modulator PT 5780 is designed for reliability and quality, these properties being the primary requirements of a main broadcast site.

To ensure maximum coverage area, a high MER value (Modulation Error Ratio) measured at the transmitter output, is important. If MER is low then Transmitter power has to increase to provide coverage area. The new COFDM Modulator provides the best foundation to build on. The system starts with a high precision modulator giving a high initial MER value. Finally, a “state of the art” digital precorrector eliminating most of the non-linearities in the transmitter, is added. All to ensure the best performance of the transmitter site.



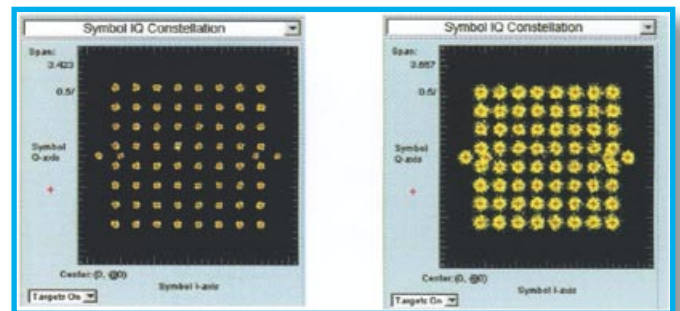


DIGITAL PRECORRECTION

The COFDM signal itself is very complex with respect to frequency and amplitude. Non-linearity will cause problems for reception as well as generating interference into adjacent channels.

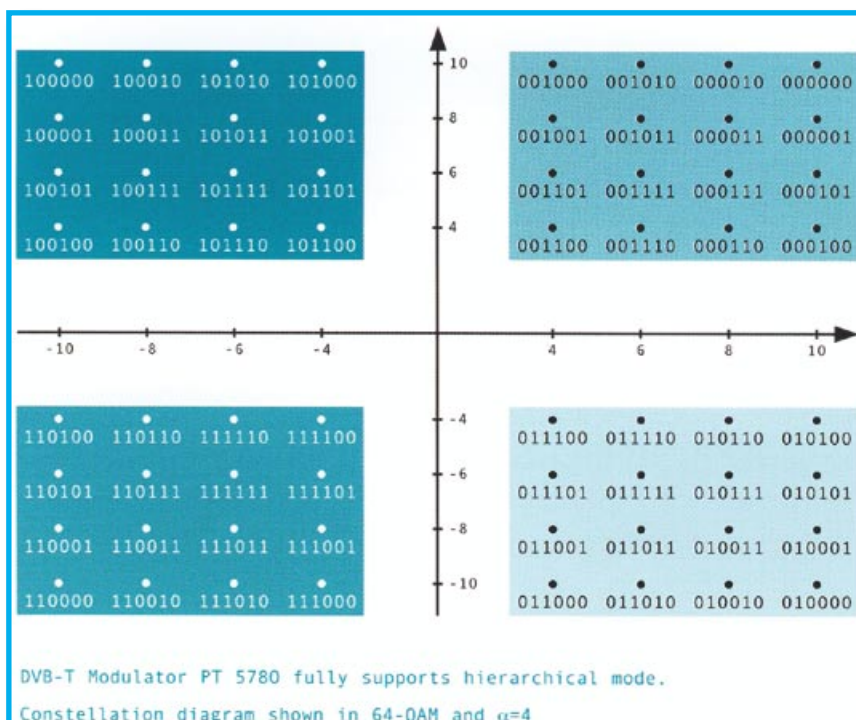
DVB-T Modulator PT 5780 incorporates a “state of the art” digital precorrector. The precorrector digitally optimises transmitter performance, increasing available output power and coverage area.

The precorrector offers a peak limiter in order to control peak to average power ratios (back off).



HIERARCHICAL MODE

PT 5780 fully supports hierarchical mode. In poor reception conditions it might be impossible to decode the signal. In hierarchical mode it is still possible to decode the high priority part of the signal.



SINGLE FREQUENCY NETWORK

Signal Processing

Supported modes:

- ◆ IFFT: 2k, 8k
- ◆ Guard intervals: 1/4, 1/8, 1/16, 1/32
- ◆ Code rates: 1/2, 2/3, 3/4, 5/6, 7/8
- ◆ Constellations: QPSK, 16-QAM, 64 QAM
- ◆ Mapping: Uniform $\alpha=1, \alpha=2, \alpha=4$
- ◆ Hierarchical mode: Full support
- ◆ Bandwidth: 6,7 and 8 MHz

Precorrection

Being designed using the latest "State of the Art" Technology, the new precorrector offers significant improvement in transmitter performance by pre-distorting the signal to compensate for distortion in the transmitter output stage.

- ◆ The precorrector offers a very intuitive and easy to use interface.
- ◆ User selectable step sizes when in fine adjustment mode.
- ◆ Ability to save and recall curves to the PC
- ◆ Storage capacity up to 10 presets
- ◆ S 21, Vo/Vi or phase displays selectable.
- ◆ An amplitude correction range of 10dB's.
- ◆ A Phase correction range of 35 degrees.

Electrical Specifications

Inputs:

- ◆ Data Input A: Asynchronous Serial Interface (ASI). Connector BNC 75 Ohm
- ◆ Data Input B: Asynchronous Serial Interface (ASI). Connector BNC 75 Ohm
- ◆ Clock ref. Input (Reference for frequency conversion):
 - Connector: BNC 50 Ohm
 - Frequency: 10 MHz, ± 2 ppm
 - Amplitude: 100 mV -3 VPP
 - Impedance: 50 Ohm / >1 kOhm internally configurable, AC coupled
- ◆ Ref. Input, 1 PPS signal from GPS receiver for SFN network:
 - Connector: BNC
 - Amplitude: 0-5V, triggering on Positive transition.
 - Impedance: 50 Ohm / >1 kOhm internally configurable

Output:

- ◆ IF output connector: BNC 50 Ohm
- ◆ Output level IF: +6dBm adj. +2dB to -8dB
- ◆ Output level stability IF: $\pm 0,2$ dB
- ◆ IF output return loss: $\Rightarrow 26$ dB in 50 Ohm
- ◆ Output frequency IF: Adjustable in steps of 1 Hz, from 35 to 37 MHz. Factory default setting is 36.0 MHz.
- ◆ Spectrum polarity: Inverted and Non inverted selectable via front panel menu.
- ◆ Output frequency tolerance IF: Locked to external reference, otherwise ± 1 ppm
- ◆ Amplitude flatness relative to centre freq.: 0 - 3,8 MHz, $\pm 0,3$ dB
- ◆ Spectrum outside band: Frequencies are relative to centre frequency and are based upon the '8' MHz version (frequencies are scaled down by 7/8 and 6/8 for 7MHz and 6 MHz versions respectively). Levels are measured in 10 kHz bandwidth, where 0 dB is the level of the carriers at the edge of the spectrum.

- ◆ Harmonics and spurious are not included.

+/-3,8 MHz:	0 dB
+/-4,25MHz:	< -48 dB
> +/-5,25 MHz:	< -56 dB

- ◆ Harmonics and spurious: <-60 dB relative to the total output power
- ◆ MER designed to meet 45 dB

Power Supply:

90V - 250V, 47 - 63 Hz, Max. 25 VA

Test Modes

- ◆ Internal PRBS, selection between 3 types of different lengths and insertion points. One of the PRBS is the DVBT recommended 2_23 -1, CCITT rec. 0.151 for BER measurements.
- ◆ Removal of a single carrier (moveable "hole" for noise test.)
- ◆ Removal of carrier block (50 carriers) (test of IM & quantisation noise)
- ◆ A Single carrier on a centre frequency at the RMS value equivalent to nom. Signal level (applicable for converter alignment and level adjustment).

Control Interface

The PT 5780 DVB-T Modulator can be configured and operated from either the front panel, remote RS 232 / 485 control port or the web interface (Web Link) option.

- ◆ Remote interface: RS 232. RS 485 on request
 - Connector: 9 pole D-sub Male
 - Protocol: Approximated SCPJ
 - Alarms (The source for each alarm is configurable):
 - Two 2 pole relays and one LED on front panel.
 - Contacts: min. 60 V, 0.2 A, 5W load max,
 - Connector: 9 pole D-sub Female

Environmental specification

Temperature range operating: 0 °C - 50 °C

Temperature range within spec.: 5 °C - 45 °C

Temperature range storage: -30 °C - 70 °C, under 0°C and over 50 °C in max. 72 hours

Humidity operating: max. 90% RH

Humidity storage: max. 90% RH

EMC:

Compliant to EN50081 -1, EN 50082-1, EN 50081-2 and EN 50082-2

Safety

Compliant to IEC1010

Mechanical specification

Cabinet: 19" cabinet, height 1U

Width: 483 mm (19") Height: 44 mm (1.75") Dept: 483 mm (19")

Weight: 6 kg (16 lbs)

Cooling: Temperature controlled fan to assist natural convection

Transport and storage: Vibration acc. tol IEC -Publ.68



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