

TORNADO

DTMB Rack Modulator



DTMB
DVB-T2[®]
DVB-T[®]
PAL

Key features:

- Native Digital Adaptive Precorrection
- Green Adaptive Processing for best TX efficiency (Option)
- Full compliant DTMB (TDS-OFDM and Single Carrier signal waveforms)
- Software option for DVB-T2
- Redundant ASI and IP inputs switching
- MFN and SFN operating
- Onboard GPS
- Ready-to-use solution

Description

The TORNADO product is a state-of-the-art DTMB digital modulator bringing highest performances and maximum standard usage flexibility. It has been especially designed to meet Chinese Transmitter manufacturers' demand for using a high-end digital modulator with top class of RF signal performances thanks to the Digital Adaptive Pre-correction circuits, providing a high MER value, excellent shoulder levels and lowest phase noise (compliant with SARFT requirements).

Green Adaptive Processing (GAP)

Today, Broadcasters become more and more concerned about operating costs reduction, including energy usage cost saving.

In this context, Transmitter Manufacturers challenge consist in designing transmitters with efficiency as higher as possible. In such design, the modulator is playing a key role especially regarding the Digital Pre-correction mechanism.

TeamCast is offering new algorithms called Green Adaptive Processing (GAP) that permits to run transmitters very closed to their saturation limit, with unequalled RF signal performances and allowing significant gain in transmitter power efficiency.

World-wide leading and proven DVB-T2 technology

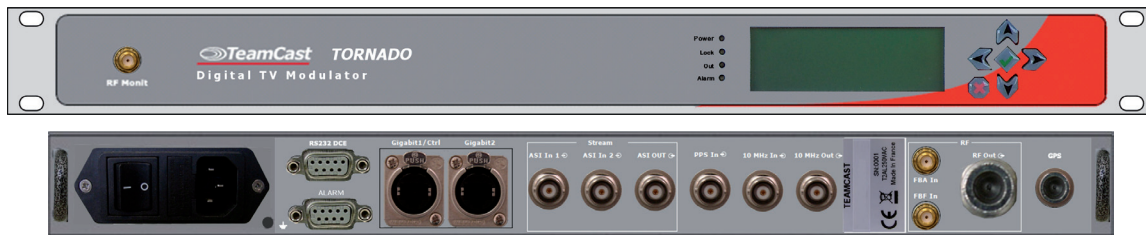
DVB-T2 transmission is supported as a software option on TORNADO. This would authorize DTMB transmitter manufacturers to rapidly launch their own product for DVB-T2 addressing a world-wide and a constantly growth market. TORNADO inherits from the world-wide leading DVB-T2 technology designed by TeamCast and already in use in main of the commercial DVB-T2 networks today in operation. In particular, this DVB-T2 modulation core bring unmatched standard compliant features such as System A and System B transmission schemes for both MFN and SFN operating modes, SISO/ MISO, Multi-PLP layered modulation and hybrid T2-Base & T2-Lite simultaneous transmission.

TORNADO

High-End DTMB Rack Modulator

Preliminary

Connectors



XTTR-TOR0-3032

Specifications¹

■ Standards

- o DTMB: GB20600-2006, GY/T 229.1-2008 (SIP)
- o DVB-T2: EN 302 755, TS 102 831, TS 102 773 (T2-MI)
- o T2-Lite: DVB-T2 specification, 1.3.1 Annex 1
- o DVB-T: EN 300 744, TS 101 191
- o PAL: ITU-R BT.470-7, ITU-R BT.1700, ITU-R BT.1701-1

■ ASI Stream Interfaces

- o 2 x ASI input BNC connectors - 75 Ω
- o 1 x ASI output BNC connector - 75 Ω
- o 188/204 Bytes- 80 Mbps maxi. Packet/burst mode

■ Gigabit Streaming Inputs (Option)

- o 2 x 10/100/1000 base-T - RJ45
- o Protocols: IP, RTP, UDP, IGMP (V2 & V3)
- o VLAN ID (1 to 4094) - IEEE 802.1q
- o TS encapsulation and FEC decoding: SMPTE-2022

■ RF Outputs

- o RF output from 470 MHz up to 862 MHz, 0 dBm
- N connector 50 Ω
- o High MER: 44dB (typical)
- o Low level (-20 dB) output available for monitoring
- SMA connector 50 Ω

■ Clock and Synchronization

- o High quality internal clock
- o 10 MHz & 1 PPS input/output
- o Clock and time source redundancy management
- o Onboard GPS

■ DTMB Stream Process and Modulation

- o Stream input redundancy management (primary & secondary streams)
- o Transmission modes: MFN and SFN
- o Modulation modes: TDS-OFDM and single carrier
- o Constellation: 4QAM-NR, 4QAM, 16QAM, 32QAM or 64QAM
- o FFT: 4k
- o Bandwidth: 8MHz
- o FEC: 1/9, 1/7, 1/4
- o LDPC code rate: 0.4, 0.6, 0.8
- o Time Interleaving: OFF, 48, 240, 720
- o Test modes: PRBS, Sinus, Spectrum-Gap and Null Symbol insertion

■ Digital Adaptive Precorrection

- o Linear DAP: Amplitude ± 3 dB, Delay 0 to 3 μ s
- o Non Linear DAP: Phase $\pm 180^\circ$
- o Monitoring: SNR, left & right shoulders and DAP status
- o Crest Factor Reduction (PAPR) and Protection clipping
- o 2 x RF feedback inputs for DAP: -15 dBm to -5 dBm
- SMA connector 50 Ω

■ Control & Monitoring

- o 1 x 10/100/1000 base-T Ethernet port
- o ControlCast software suite
- o LCD Front Panel

■ Physical

- o Dimensions: 376 x 483 x 44 mm
- o Weight: 6.5 Kg
- o Operating temperature range: 0°C to 50°C
- o Power supply: 90 to 240VAC - 50 Hz

Ordering Information

XTTR-TOR0-3032	DTMB rack modulator - DVB-T2 ready - with UHF output and DAP and onboard GPS
XTTR-TOR0-2012	DTMB rack modulator - DVB-T2 ready - with UHF/VHF output and onboard GPS
XTTR-TOR0-X2XX	Rack with PAL modulation
XTTO-TOR0-T2SW	DVB-T2 software licence for TORNADO
XTTO-TOR0-TSIP	TSolP input streaming licence for TORNADO
XTTO-TOR0-T2LI	T2-Lite software licence for TORNADO
XTTO-TOR0-EGAP	Green Adaptive Processing (GAP) software licence for TORNADO

¹ Specifications are not contractual and are subject to revision without notice.