EX04-000D

DVB-T/2xT/T2 MODULATOR

Key Features

- *Capable of transmitting one DVB-T2 or two independent DVB-T signals at the same time.*
- *In full compliance with the last version of EN300744 (DVB-T) and EN302755 (DVB-T2) standards.*
- *Optional IRD/Remux capable of demodulating any of DVB-T/T2/S/S2 signals with superior input sensitivity.*
- *BISS decryption capability.*
- *Remote control and monitoring via HTTP, SNMP and GSM network.*
- *Capable of true RMS output power measurement of transmitter.*
- *Up to +10dBm output power in order to directly drive a wide range of amplifiers.*
- *Utilization of advanced adaptive precorrector for eliminating linear and non-linear distortions of amplified signals.*
- *Measurement of key qualitative parameters of transmitter output signal including MER, Shoulder Distance, Frequency Response and etc.*

General information

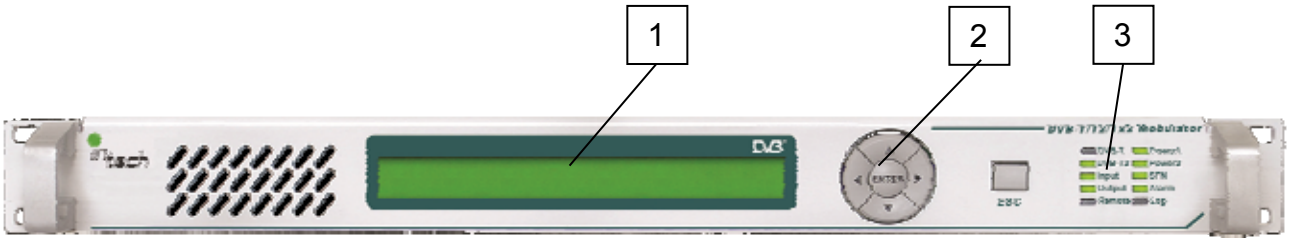
EX04-000D is a professional DVB-T/T2 modulator/exciter with the capability to broadcast DVB-T / T2 signal or simultaneously two DVB-T two signals at the same time.

The EX04-000D is in full compliance with EN300744 and EN302755 standards. By utilizing this modulator as the exciter of TV transmitters it is possible to transmit two independent transport streams on two different channels at the same time with only one transmitter. This astonishing feature can help broadcasters to realize very economic solutions.

Furthermore an internal self-contained IRD/Remux totally obviates any need for external sub-headends. Thanks to this optional feature it is possible to demodulate up to four transport streams from DVB-T/T2 or DVB-S/S2 signals. These four streams are processed by the embedded Remux to generate two customized transport streams which along with the external ASI inputs can be used for feeding the dual output modulator. Moreover it is possible to decrypt BISS encoded services from any input streams prior to multiplexing without any limitation in the number of encrypted components.

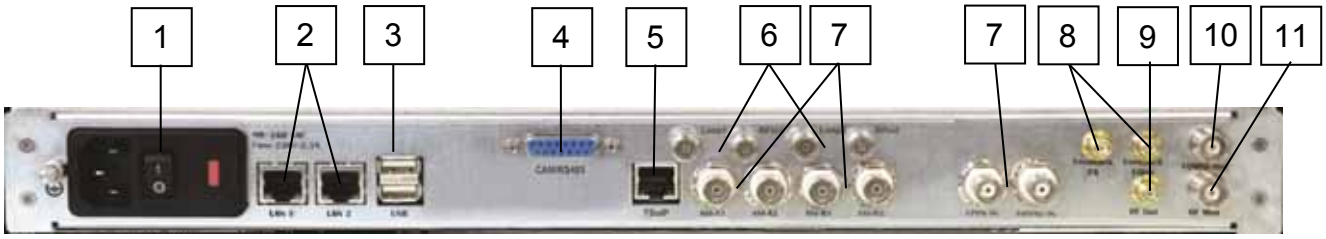
EX04-000D is equipped with a wide variety range of mechanisms which make it a competent selection as a DVB-T/T2 transmitter exciter. One of these mechanisms is the adaptive linear/nonlinear precorrector which is considered as a crucial feature. This capability makes it possible to drive any RF power amplifier with up to tens of kilowatts output and achieve the best possible signal quality.

Front Panel

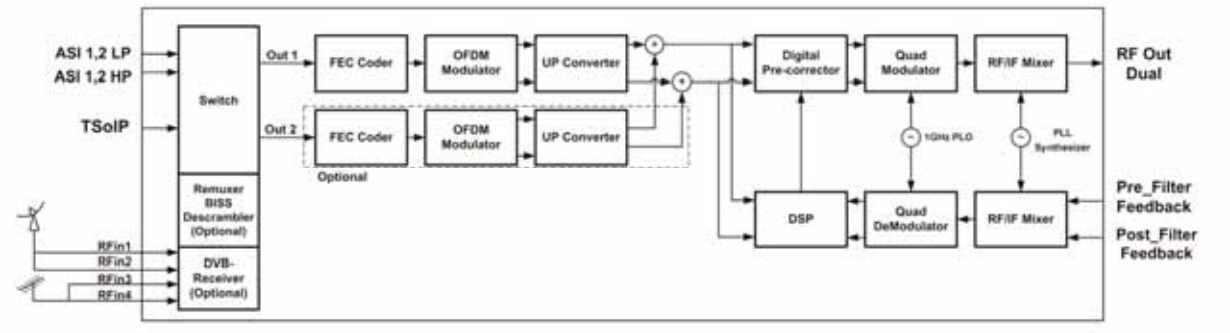


1 – LCD Display: Two-row LCD Display
2 – Control keys
3 – LED Indicators

Rear Panel



1 – AC Mains: Power supply input and on/off button with 2A fuse, input range 85-264 VAC
2 – LAN Connector: WEB Interface for LAN connection
3 – Dual USB port for PC and peripherals connection
4 – RS232 / Can Bus interface: serial port
5 – LAN Connector for IP DVB-T/T2 stream
6 – ASI input connectors: ASI-A1/A2, ASI-B1/B2.
7 – RF input connectors: RF-1, RF-2.
7 – 1PPS & 10MHz Input: BNC female connector.
8 – Feedback Input Connectors: PA , Filter.
9 – RF Output Connector.
10 – 10MHz Output: BNC female connector.
11 – RF Monitor: BNC female connector.



EX04-000D Block Diagram

Technical Specifications:

Inputs

ASI Inputs	4xBNC, 75 Ω, DVB-ASI, 188/204 bytes
TSOIP Input	1xRJ45 TS over IP input based on SMPTE-2022
DVB-T/T2 RF Input (optional)	Up to 2 F connectors, RF frequency range: VHF/UHF, Level: -70dBm ÷ -25dBm
DVB-S/S2 RF Input (optional)	Up to 2 F connectors, RF Frequency Range: 950-2150MHz, Level: -92dBm ÷ -10dBm, LNB feed: 13V/14V, 18V/19V, 22kHz
10 MHz Reference Input	1xBNC, 50 Ω, 500mVpp ÷ 5Vpp
1 PPS Reference Input	1xBNC, 50 Ω, LVTTL
Pre-Filter Feedback Input	1xSMA, 50 Ω, -10 ÷ 10 dBm
Post-Filter feedback Input	1xSMA, 50 Ω, -10 ÷ 10 dBm

Output

RF Output	1xSMA, 50 Ω, Frequency Range: 470-862 MHz (Resolution: 1 Hz), Level: -15 to 0 dBm (Resolution: 0.1 dB), (-15 to +10 dBm available as an option)
RF Monitoring Connector	1xBNC, 50Ω, Coupling factor: 30dB
10MHz reference output	1xBNC, 50Ω, 3.3V CMOS

Qualitative Parameters

MER (rms)	> 40 dB, Typically 42dB	
Shoulder Attenuation	> 50dB, Typically 57dB	
Output PAPR	Adjustable in 7 to 12dB range	
In-band amplitude variation	<0.3dB	
In-band group delay variation	<10ns	
Out of band spurious emissions	<60 dBc	
LO Phase Noise	10 Hz	<-55 dBc/Hz
	100 Hz	<-85 dBc/Hz
	1 kHz	<-90 dBc/Hz
	10 kHz	<-95 dBc/Hz
	100 kHz	<-112 dBc/Hz

Modulation Standard (DVB-T)

Number of Modulation Cores:	Up to Two DVB-T Cores (EN 300 744 compliant)
Output Channel Spacing:	All channels within 24MHz Bandwidth
Transmission modes:	MFN, SFN
IFFT:	2K, 4K, 8K
Constellation:	QPSK, 16QAM, 64QAM
Guard interval:	1/4, 1/8, 1/16, 1/32
FEC:	1/2, 2/3, 3/4, 5/6, 7/8 (For Both LP & HP Stream)
Interleaving:	Native, In Depth
Hierarchical mode:	Supported, Mapping α=1,2,4
Maximum Throughput:	31.67 Mbps at each modulator
Bandwidth:	8 MHz, 7 MHz

Modulation Standard (DVB-T2)

Transmission modes:	MFN, SFN-SISO, SFN-MISO
Modulation modes:	Single PLP, Multi-PLP
IFFT:	1k, 2k, 4 k, 8k, 8k Extended, 16k, 16k Extended, 32k, 32k Extended
Constellation:	QPSK, 16 QAM, 64 QAM, 256 QAM (Normal and Rotated)
Guard Interval:	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4
FEC:	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
Interleaving:	Time, Frequency, Cell
Maximum Throughput:	50.34 Mbps

Bandwidth:	8 MHz

Digital Adaptive Pre-Correction

Pre-correction modes:	Single Output: Adaptive LC, Adaptive NLC Dual output: Fixed NLC
Correction Criterion:	MER, Right/Left Shoulder, Group delay, In-Band Flatness
Crest Factor Reduction (CFR):	Soft and Hard Clipping
NLC Performance:	Typically 10dB MER Improvement (Dependent on PA model)
LC Performance:	Up to ±5dB Amplitude and ±500ns Group Delay Correction

Control

Local User Interface	Character LCD and keypad
Remote Connection Port	2 x RJ45 (10/100 Base-T)
Remote User Interface	WEB, SNMP v1/v2/v3

Power Supply

Operating Voltage	90-260 VAC, 50-60Hz
Power Consumption	<30W

Physical

Dimensions (W x H x D)	48 cm x 4.4 cm x 50 cm (Width: 19 in, Height: 1RU)
Weight	6 kg

Environmental

Operating Temperature	0°C to +50°C
Storage Temperature	-25°C to +60°C
Relative Humidity	max.95%, non-condensing

How to Order :

EX04-000D *Base (Base System)*
EX04-000D-IRD/RMX *(Remux and BISS Descrambler)*
EX04-000D-TX CTRL *(Simple Transmitter Control)*
EX04-000D-EXT PWR *(Extended Output Power up to +10dBm)*
EX04-000D-GPS *(GPS Receiver)*
EX04-000D-GSM *(GSM Remote Control Module)*
EX04-000D-IRD *(DVB-T/T2 Receiver)*

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