UBS
Unique Broadband Systems Ltd.

DVB-S2 Modulator
Model: DVU 5000

Product Features

- *DVB-S2 compliant with EN 302 307*
- *50 MHz to 180 MHz IF Output*
- *Supports QPSK, 8PSK, 16APSK and 32APSK constellations*
- *Superior MER performance*
- *WEB GUI, SNMP, Telnet remote control and software upgrade*

Optional Features

- *L-Band output from 950 MHz to 2150 MHz*
- *Internal Power Amplifier with 0 dBm to +10 dBm output*

Description and Application

Overview

The DVU 5000 DVB-S2 modulator utilizes the innovative UBS Universal Waveform engine, supporting all world standards for satellite, mobile and terrestrial digital broadcasts.

This open architecture design enables carriers to take advantage of a proven, robust platform, while designing networks to meet current and future broadcast standards.

This series incorporates all of UBS high performance signal processing stages including integrated linear and non-linear pre-correctors. Full remote management and control as well as remote firmware and waveform upgrades are provided.

Application

The core function of the DVU 5000 is to modulate a MPEG-2 transport stream (ASI input) onto a DVB-S2 compliant spectrum (output) in accordance with the rules for channel coding and modulation specified in the DVB-S2 standard EN 302 307.

RF Output

Using the latest technology, UBS has developed a direct conversion process that allows the modulator to provide an IF output from 50 MHz to 180 MHz, with superior shoulder and MER. Optionally, the modulator can be configured with an L-Band output from 950 MHz to 2150 MHz.

The output level is adjustable from −10 dBm to 0 dBm (optionally from 0 to +10 dBm) with a step size of 0.1 dB. The user can set the polarity of the spectrum to Inverted or Non-inverted as required.

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Fig.1 - Front Panel

Product Specifications

Signal Processing

Modes	CCM (Constant Coding and Modulation) VCM (Variable Coding and Modulation)
Constellations	QPSK, 8PSK, 16APSK, 32APSK
FEC	BCH (inner), LDPC (outer)
Short FEC Frames	16200
Normal FEC Frames	64800
Code Rates	QPSK - 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 8PSK - 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 16APSK - 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 32APSK - 3/4, 4/5, 5/6, 8/9, 9/10
Pilots	ON or OFF
Roll-off	35%, 25%, 20%
Symbol Rate	Up to 37.5 Mbaud, step 1 baud

Inputs

MPEG-2 Transport Stream	2 DVB-ASI inputs: BNC (F), 75 Ω
Clock Reference - 10 MHz	Connector: BNC (F) Frequency: 10 MHz Level: 100 mV - 3 Vpp Impedance: 50 Ω or High Impedance (user selectable)

Monitoring Outputs

DVB-ASI	**OUT-A, OUT-B**	2 DVB-ASI outputs: BNC (F) 75 Ω
RF Monitor		Connector: BNC (F) Impedance: 50 Ω Level: 30 dB below RF output
Reference Monitor		Connector: BNC (F) Frequency: 10 MHz Level: 2 Vpp Impedance: 50 Ω

IF/RF Output

Connector	N-type (F), 50 Ω
Frequency	50 MHz to 180 MHz, 1 Hz step (optional 950 MHz to 2150 MHz, 1 Hz step)
Frequency Stability	Internal reference 0.05ppm / or in accordance with external ref. accuracy
Spectrum Polarity	Inverted or non-inverted, selectable
Level	-10 dBm to 0 dBm in 0.1 dB step (optional 0 to 10 dBm)
Level Stability	± 0.3 dB
Return Loss	> 20 dB
Shoulder Level	< -55 dBc
Spurious Level Outside Channel	< -60 dBm
MER	≥ 45 dB
Amplitude Flatness	±0.5 dB
Group delay response	±10 ns
Phase Noise SSB (measured @ 474 MHz)	100 Hz: < -85 dBc/Hz 1 kHz: < -90 dBc/Hz 10 kHz: < -105 dBc/Hz 100 kHz: < -120 dBc/Hz 1 MHz: < -135 dBc/Hz

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Fig.2 - Rear Panel

Product Specifications

Control Interfaces

Front Panel Interface	LCD display and cursor/ execute keys
Ethernet Interface	Connector: 2x RJ45 Speed: 10/100/1000 Base-T
USB Interface	Connector: USB Type B
RS232 Interface	Connector: 9-pin SUB-D Male
RS485 Interface	Connector: 9-pin SUB-D Female
CLI (Command Line Interface)	Connector: USB (HyperTerminal) or Ethernet (HyperTerminal and Telnet)
Web Interface	Internet Explorer, FireFox, etc. Connector: Ethernet
SNMP Control Interface	Connector: Ethernet Note: MIBs can be provided
Alarm Relays	Connector: RS232 or RS485 2 Dry Contact Alarm relays triggered by any major alarm
RS485 Interface	Connector: 9-pin SUB-D Female

Power Supply

Voltage	100 - 240 VAC
Frequency	50 - 60 Hz
Power Consumption	max. 45 VA (70 VA with +10 dBm RF amplifier installed)
Harmonic Correction	EN61000-3-2

Environmental

Operating Temperature	0°C to +50°C (+32°F to +122°F)
Storage Temperature	-30°C to +70°C (-22°F to +158°F)
Relative Humidity (operating/storage)	max. 95%
Cooling	Internal fans to assist natural convection

Mechanical

Size	1 U of 19" wide cabinet
Dimension (W x H x D)	483mm x 44mm x 521mm (19" x 1.75" x 20.5")
Weight	6 kg (13 lbs)
Transport and Storage	Vibration acc. to IEC Publ.68

ETSI Compliance

Essential Requirement R&TTE Directive 1995/5/EC	Standard / Specification
Safety	EN 60950-1: 2001, A11: 2004 First Edition
Health	Not Applicable. No Antenna
EMC	EN 301 489-1 V1.8.1
Radio	EN 302 296 V1.1.1 (The technical requirement of Clause 4.3 was substituted for Clause 8.2 of EN 301 489-1 using the Class A limits specified in Table 4.)

CE Compliance

This equipment is CE Compliant.

CE 0678

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PART ORDERING MATRIX FOR 1 RU ADVANCED MODULATOR

DVU-5000-Z7- ▢ ▢ ▢

WAVEFORM

- **A.** DVB-T2
- **B.** DVB-T2 Light
- **C.** DTMB
- **D.** ISDBT
- **E.** ATSC
- **F.** DVB-S2

FREQUENCY

- **A.** IF
- **B.** UHF
- **C.** L-Band
- **D.** Other

POWER

- **A.** 0 dBm
- **B.** +10 dBm
- **C.** 2 Watt