

Dual Vyper

DVB-S/DSNG/S2/S2X Modulator



Description

Dual Vyper is a state-of-the-art satellite modulator designed for applications over satellite in full compliance with the DVB-S, DVB-DSNG, DVB-S2 and DVB-S2X standards. One single hardware platform to provide 2 independent modulators which covers the full L-Band range (950/2150 MHz) and IF Band range (50/180 MHz) from 0.05 to 72 MBaud. These both RF outputs are able to drive a Block Up Converter (BUC) thanks to its high stability 10MHz reference available on the L-Band RF output signal. Dual Vyper offers a data rate from 0.25 Mbps up to 200 Mbps and content aggregation of up to 4 MPEG-TS multiplex in one satellite carrier via the Multistream feature as defined in the DVB-S2/S2X standard. Our product is compliant with latest Carrier ID requirements defined in ETSI 103 129.

Dual Vyper offers some free of charge services as a Push Data Service (DualCast) based on MPE, an ACM Contribution (ContribACM) feature that adapts the modulator MODCOD without any video interruption to allow the video transmission to continue under deteriorating satellite link conditions.

Dual Vyper proposes a very flexible input redundancy between 4 TSoIP and/or 2 TSoASI. Dual Vyper includes the **DVB-S2X** Broadcast and DSNG profiles. It means that Dual Vyper supports all new MODCOD & the 64 APSK constellation.

The **Enhanced Satellite Precorrection** (E.S.P) is designed to compensate the possible imperfections of embedded filters and amplifiers of the satellite. Depending on the use case (MODCOD selected, satellite characteristics) E.S.P can increase the performance gains, as budget link margin, as coverage, on full transponder satellite links.

Performance & Reliability

Dual Vyper has been designed to meet all ETSI EN 302 307 requirements: part I for DVB-S2 and part II for DVB-S2X. All modes of bit rate adaptation are possible: PCR adaptation, Padding insertion and Dummy PL Frame insertion resulting in Dual Vyper's unique automatic flexible rate adaptation. Dual Vyper offers a flexible baudrate (from 0.05 MBaud to 72 MBaud), per modulator, to fully feed a 72 MHz transponder. An internal PRBS generator can be used to generate a RF spectrum without any valid signal input. Dual Vyper offers, without option, the possibility to receive the incoming MPEG-TS stream either over ASI or Ethernet inputs. A local redundancy is available between the MPEG-TS over ASI and MPEG-TS over IP.

Dual Vyper integrates the core technology required to perform high quality modulation based on TEAMCAST expertise. It provides customers with a best in class performance, providing a high SNR value, excellent shoulder levels and lowest phase noise. Dual Vyper provides a high performance channel spectrum and in addition to the standard, roll off from **5 to 35% / step of 1% for the all modulation: DVB-S/DVB-DSNG/DVB-S2 and of course for DVB-S2X**. This results gives an efficient transmission in 32APSK (DVB-S2/S2X) and 64APSK (DVB-S2X) with low power.

The user-friendly Embedded Web Browser ensures ease of use and enables full configuration of the modulator, including signal input management, selection of DVB-S, DVB-DSNG, DVB-S2 and DVB-S2X, modulation type (MODCOD) and control of the mute/unmute conditions for the RF output signal. The GUI also offers monitoring of the input stream (i.e. input format & useful bit rate).

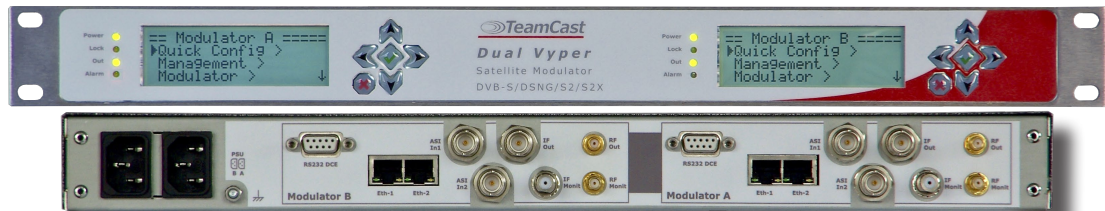
High performance and cost effective DVB-S/DSNG/S2/S2X modulator for:

- Satellite contribution
- DSNG applications
- Satellite distribution

Key features :

- DVB-S/DSNG/S2/S2X standards
- 2 independant satellite modulators in a single 1U Rack
- L-Band and IF Band outputs
- Symbol rate from 0.05 to 72 Mbauds (1 baud steps)
- Roll-off (5 to 35%, 1% steps) for DVB-S/DSNG/S2/S2X
- Carrier ID compliant
- Linear & Non Linear Precorrection (E.S.P)
- ASI/IP inputs
- Multistream (up to 4 MPTS), according to EN 302 307
- Up to 64 embedded profiles
- Remote control through Web Browser, SNMP, Front panel and RS232

Dual VYPER DVB-S/S2 & DVB-S2X



Specifications¹

■ Standards

- o DVB-S: EN 300 421
- o DVB-DSNG: EN 301 210
- o DVB-S2: EN 302 307 part I
- o DVB-S2X: EN 302 307 part II
- o Carrier ID: ETSI 103 129
- o MPEG-TS: ISO/IEC 13818-1
- o DVB MPEG-TS over ASI: EN50083-9, ETSI TR 101 891
- o DVB MPEG-TS over IP: ETSI TR 102 034
- o MPEG-2 PSI Tables (PAT and PMT): EN 300 468

■ Inputs (for Modulator A & B)

- o MPEG-TS (188/204 bytes) over ASI (x2) - BNC connectors, 75 Ω
- o MPEG-TS (RTP/UDP - SMPTE-2022) over 2 Ethernet ports RJ45
- o Multistream up to 4 ISI selected between:
 - 2 MPTS over ASI,
 - 4 MPTS over Ethernet.
- o Flexible bitrate adaptation:
 - PCR adaptation,
 - Padding insertion,
 - Dummy PL frames.
- o BISS Encryption (single/multiple programs): mode 0,1, E

■ RF Outputs (for Modulator A & B)

- o L-Band output:
 - Connector N 50 Ω
 - 950 MHz to 2150 MHz, 1 Hz steps
 - Power level: -35dBm to +7dBm, 0.1 dB steps
- o IF-Band:
 - Connector BNC 75 Ω
 - 50 MHz to 180 MHz, 1 Hz steps
 - Power level: -35dBm to +5dBm, 0.1 dB steps
- o SNR > 40 dB @ 0 dBm -16 APSK - 30 Mbaud
- o Shoulders rejection < -50dB @ 0dBm & f/fN=1.5 for roll off 20%
- o Spurious:
 - < -65 dBc @ 0 dBm for 50 to 180 or 950 to 2150 MHz
 - -60 dBc outside the useful band
- o Noise Power Spectral Density: <-120 dBm/Hz
- o Switchable 10MHz insertion on L-Band RF output:
 - @1Hz < -85 dBc/Hz
 - @10Hz < -115 dBc/Hz
 - @100Hz < -140 dBc/Hz
 - @1kHz < -145 dBc/Hz
 - @10kHz < -150 dBc/Hz

■ Clock & Synchronization (for Modulator A & B)

- o Internal 10 MHz Reference Frequency
 - High stability: $\pm 5.10^{-9}$ over 0 to 70° C
 - Ageing: $\pm 0.5.10^{-9}$ /day and $\pm 7.5.10^{-8}$ /year

■ DualCast

- o Opportunistic Push Data Service Insertion.

■ Modulation

- o Symbol rate: 0.05 to 72 Mbaud (1 Baud steps)
- o Standard roll-off and custom roll-off from 5 to 35 % (1% steps)
- o DVB-S / DSNG:
 - Outer/Inner FEC: Reed Solomon/Viterbi
 - QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
 - 8PSK: 2/3, 5/6, 8/9
 - 16QAM: 3/4, 7/8
- o DVB-S2:
 - Outer/Inner FEC: BCH/LDPC
 - 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
 - PL Scrambling codes [0, 264143]
 - Operating modes:
 - » CCM: Constant Coding and Modulation,
 - » VCM: Variable Coding and Modulation,
 - » ACM: Adaptive Coding and Modulation.
 - Frame length: Short & Normal frames
 - Pilots insertion
- o DVB-S2X Broadcast & DSNG profiles
 - Same features as defined for DVB-S2
 - All new MODCODs for QPSK/8PSK/16APSK/32APSK
 - 5 MODCODs for new 64APSK constellation

■ Enhanced Satellite Precorrection (E.S.P)

- o Static Non Linear precorrection
- o Static Linear precorrection

■ Control & Monitoring (for Modulator A & B)

- o RS232 control port with SCPI protocol
- o SNMP (V2C) over Ethernet
- o HTTP over Ethernet (Embedded web client)
- o Front panel keyboard & display

■ Physical

- o An independant Power supply: 90 to 240 VAC - 30W
- o Dimensions: 450 x 350 x 44 (LxHxH)
- o Weight: 6 kg - Temperature: 0° C to 50° C

Ordering Information

XSSR-VYP0-2522	DVB-S/DSNG/S2 DUAL Satellite Modulator - 50/180 & 950/2150 MHz Out, +7/-35 dBm - 1U Rack-
XSSO-VYP2-S2XR	DVB-S2X standard - Broadcast & DSNG profiles - for DUAL modulator - Software option
XSSO-VYP2-BISE	BISS-0/1/E Encryption license - for DUAL modulator - Software option
XSSO-VYP2-ESPO	Enhanced Satellite Precorrection Linear & Non-linear - for DUAL modulator - Software option

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