

# Vyper

## DVB-S/DSNG/S2/S2X Modulator



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

- Satellite contribution
- DSNG applications
- Satellite distribution
- Direct To Home (DTH) applications

### Description

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 covers the full L-Band range (950/2150 MHz) and IF Band range (50/180 MHz) from 0.05 to 72 MBaud. It is also able to drive a Block Up Converter (BUC) thanks to its high stability 10Mhz reference available on the L-Band RF output signal and a DC (24VDC or 48VDC) component (see ordering information).

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.

Vyper proposes a very flexible input redundancy between 4 TSoASI and/or 4 TSoIP. The TSoIP redundancy is done between either the both physical Ethernet ports Data 1 & Data 2 and/or the 4 logical IP addresses. A double PSU redundancy is also available.

Vyper includes the **DVB-S2X** Broadcast and DSNG profiles (128/256APSK up to request). It means that Vyper supports all new MODCOD & the 64 APSK constellation. The new roll off (from 5% to 15% by step of 1%) are available with any satellite standards DVB-S included.

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

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 Vyper's unique automatic flexible rate adaptation. Vyper offers a flexible baudrate (from 0.05 MBaud to 72 MBaud) to fully feed a 72 MHz transponder. An internal PRBS generator can be used to generate a RF spectrum without any valid signal input. Vyper offers, without option, the possibility to receive the incoming MPEG-TS stream either over ASI (x4) or Ethernet inputs (x2). A local redundancy is available between the MPEG-TS over ASI and MPEG-TS over IP.

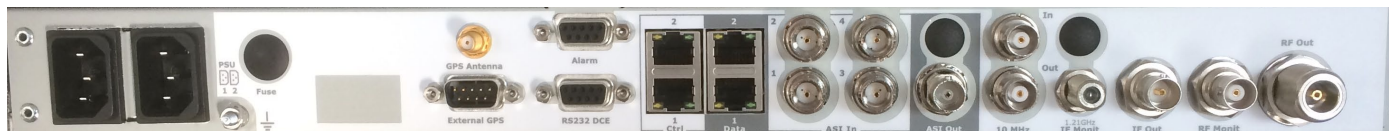
Vyper integrates the core technology required to perform high quality modulation based on TEAMCAST expertise. It provides customers with a best in class performance, providing a high SNR value, excellent shoulder levels and lowest phase noise. Vyper provides a high performance channel spectrum and in addition to the standard, roll off from **5 to 35% by 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 lower 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).

### Key features :

- DVB-S/DSNG/S2/S2X standards
- 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 with redundancy management
- Multistream (up to 4 MPTS), according to EN 302 307
- Up to 64 embedded profiles
- Remote control through Web Browser, SNMP with redundancy management
- Front panel and RS232
- 1+1 & N+1 redundancy system

# VYPER DVB-S, DVB-DSNG, DVB-S2 & DVB-S2X



## Specifications<sup>1</sup>

### ■ Standards

- o DVB-S: EN 300 421
- o DVB-S2X: EN 302 307 part II / DVB-S2: EN 302 307 part I
- 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

- o MPEG-TS (188/204 bytes) over ASI (x4) - BNC connectors, 75  $\Omega$
- o MPEG-TS (RTP/UDP - SMPTE-2022) over 2 dedicated RJ45 ports
- o Multistream up to 4 ISI selected between:
  - 4 MPTS over ASI and/or 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

- o L-Band output:
  - Connector N 50  $\Omega$
  - 950 MHz to 2150 MHz, 1 Hz steps
  - Power level: -35dBm to +7dBm, 0.1 dB steps
- o IF-Band:
  - Connector BNC 75  $\Omega$
  - 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 & 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

- o Internal 10 MHz Reference Frequency
  - High stability:  $\pm 5 \cdot 10^{-9}$  over 0 to 70° C
  - Ageing:  $\pm 0.5 \cdot 10^{-9}$ /day and  $\pm 7.5 \cdot 10^{-9}$ /year
- o External 10 MHz input for external clock synchronization

### ■ 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, VCM, ACM
  - 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

- o RS232 control port with SCPI protocol
- o 2 dedicated Ethernet ports for
  - SNMP (V2C) over Ethernet
  - HTTP over Ethernet (Embedded web client)
- o Front panel keyboard & display

### ■ Redundancy

- o 1+1 redundancy Ethernet ports (x2) for Control
- o 1+1 redundancy Ethernet ports (x2) for Data
- o 1+1 redundancy RF signal with Alarm relays:
  - connector 9-pin sub-D (F)
  - Dry contact management

### ■ Physical

- o Power supply: 90 to 240 VAC - 30W
- o Dimensions: 450 x 350 x 44 (LxIxH)
- o Weight: 4 kg - Temperature: 0° C to 50° C

## Ordering Information

### Hardware configuration:

XSSR-VYP0-3000	S/S2/S2X Satellite modulator - IF and RF output +-7/-35dBm - 4 Eth ports - 1U Rack
XSSR-VYP0-3001	S/S2/S2X Satellite modulator - 2 PSU - IF and RF output +-7/-35dBm - 4 Eth ports - 1U Rack
XSSR-VYP0-3010	S/S2/S2X Satellite modulator - BUC 24VDC - IF and RF output +-7/-35dBm - 4 Eth ports - 1U Rack
XSSR-VYP0-3020	S/S2/S2X Satellite modulator - BUC 48VDC - IF and RF output +-7/-35dBm - 4 Eth ports - 1U Rack

### Software options

XSSO-VYP0-S2XR	DVB-S2X standard - Broadcast & DSNG profiles - Software option
XSSO-VYP0-BISE	BISS-0/1/E Encryption license - Software option
XSSO-VYP0-ESPO	Enhanced Satellite Precorrection Linear & Non-linear - Software option

<sup>1</sup>Specifications are not contractual and are subject to revision without notice.