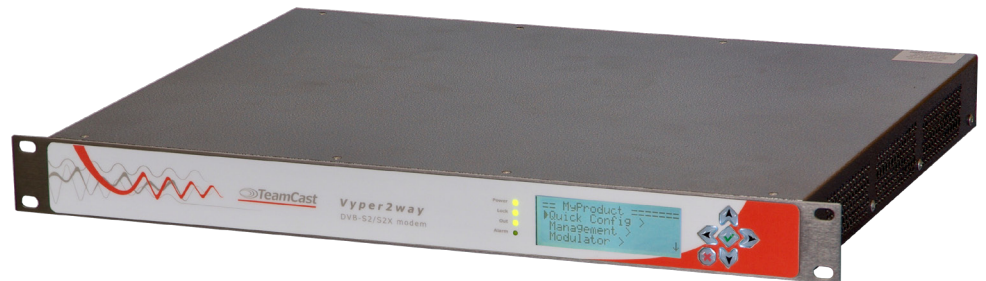


# Vyper2Way

## DVB-S2/S2X Satellite Modem



High bitrate satellite Modem for point to point links like:

- Internet/Intranet Access,
- LAN/WAN Connectivity,
- Private Networking,
- Backup Services,
- SNG applications,
- Cellular backhaul

### Description

TeamCast Vyper2Way is the first DVB-S2/S2X VLSNR Satellite modem on the market. With a symbol rate ranging from 0.05 up to 72 Mbaud and coding from BPSK to 64APSK in the forward & return channels (up to 200Mbps full duplex), it enables network operators to set-up almost any type and size of network on any available type of satellite. With DVB-S2X, the TeamCast Vyper2Way is able to boost spectral efficiency by 25-30% compared with DVB-S2 equipments. DVB-S2X also adds superior resilience to jamming, interference, phase-noise and weather fluctuations thanks to dedicated MODCOD added to an Adaptive Coding and Modulation (ACM) management: auto-adaptive MODCOD setup depending on fading conditions rain, dust, interference: the maximum possible throughput can be achieved at all times. For additional savings in operational costs, add optional Vyper2Way Echo Cancelling (V.E.C) to double the bandwidth available on a single carrier. The TeamCast Vyper2Way satellite modem proposes a bidirectional Modem for SCPC point to point configuration with the GSE-Lite encapsulation, with some bandwidth optimisation tools as ACM management (to follow the budget link variations and also keep the best C/N margin) and auto pre-distortion linear/non-linear adjustments. The Vyper2Way performs the Generic Stream Encapsulation (GSE-Lite), allowing the native carriage of IP datagram with a significant reduction in the overhead compared to the previous/current encapsulation.

### Key features :

- DVB-S2 - ETSI EN 302 307-1
- DVB-S2X - ETSI EN 302 307-2
- Carrier ID - ETSI TS 103 129
- Symbol Rate from 0.05 to 72 Msps
- Data rate up to 200 Mbit/s
- Low spurious output
- Operates as Layer 2 Bridge or Layer 3 Router
- Predistortion ready for automatic group delay and nonlinearity compensation
- Bandwidth optimisation with ACM controller
- Generic Stream Encapsulation (GSE)
- 1+1 redundancy solution

### Performance & Reliability

Vyper2Way 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 adaption are possible: Padding Insertion and Dummy PL Frame insertion resulting in Vyper2Way's unique automatic flexible rate adaptation. An internal random generator can be used to generate a RF spectrum without any valid signal input.

Vyper2Way integrates the core technology (FPGA based) required to perform high quality modulation based on TEAMCAST expertise. So it provides customers with a best in class performance, providing a high SNR value (> 40dB), excellent shoulder levels and lowest phase noise. Vyper2Way 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-S2/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 product, selection of modem and broadcast configuration, including signal input management, selection of 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).

# DVB-S2 & DVB-S2X SCPC Modem



## ■ Standards

- o DVB-S2: EN 302 307 part I
- o DVB-S2X: EN 302 307 part II
- o Carrier ID: ETSI 103 129
- o Generic Stream Encapsulation (GSE): ETSI TS 102606

## ■ Modem Interfaces

- o Modulator Interface :
  - L-Band with connector N 50  $\Omega$ 
    - -950 MHz to 2150 MHz, 1 Hz steps
  - Power level: -35dBm to +7dBm, 0.1 dB steps
  - Shoulders rejection
    - < -50dB @ 0dBm & f/fN=1.5 for roll off 20%
  - Spurious:
    - < -65 dBc @ 0 dBm for 50 to 180 or 950 to 2150 MHz
    - -60 dBc outside the useful band
    - Noise Power Spectral Density: <-120 dBm/Hz
  - BUC reference : Switchable 10MHz insertion:
    - @1Hz < -85 dBc/Hz
    - @10Hz < -115 dBc/Hz
    - @100Hz < -140 dBc/Hz
    - @1kHz < -145 dBc/Hz
    - @10kHz < -150 dBc/Hz
- o Demodulator Interface:
  - Connector F 75  $\Omega$
  - 950 MHz to 2150 MHz, 1 Hz steps
  - Search range +/- 5MHz
  - Power level: -65dBm to -25dBm
  - Performances monitoring:
    - RF Level, C/N, C/N Margin
    - BER before/after FEC
  - LNB power supply : 13/18VDC, 0.5A
  - LNB OL selection : 22KHz ON/OFF
- o Ethernet Interfaces
  - Control: 2xRJ45 10/100/1000 Base-T
  - Data: 2xRJ45 10/100/1000 Base-T

## ■ Modem Ethernet Traffic

- o IPv4/IPv6
  - Dual IPV4/IPV6 TCP/IP stack allowing use of both IPv4 and IPv6 addresses for bridging and routing of traffic
- o VLAN Support
- o Modes supported:
  - Jumbo Frame
  - Layer 2 Ethernet bridge,
  - Layer 3 bridge & router
- o SNMP (standard) v2c
- o Embedded Web Server
- o IP Diagnostic Graphs
  - Tx, Rx datarate, dropped, errored packet counts

## ■ Modem Performances

- o GSE-Lite Encapsulation/Desencapsulation
  - TX only: 200Mbps for IP at 1500Bytes
  - RX only: 200Mbps for IP at 1500Bytes
  - TX+RX: 200Mbps for IP at 1500Bytes
- o Performances Layer 2 or Layer 3
  - Max TX: 200Mbps
  - Max RX: 200Mbps
  - Maximum concurrent receive multicasts: 10
  - Maximum concurrent transmit multicasts: 10
- o Packets Per Second (PPS)
  - TX only: 60 000 PPS
  - RX only: 60 000 PPS
  - TX+RX: 60 000 PPS

## ■ Clock & Synchronization

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

## ■ Modem 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-S2 & DVB-S2X:
  - Outer encoding: BCH
  - Inner encoding: LDPC (all code rates of the standards)
  - BPSK, QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK
  - PL Scrambling codes
  - Operatif modes: CCM, VCM & ACM
  - Frame length: Short & Normal frames
  - Pilots insertion

## ■ Enhanced Satellite Precorrection (E.S.P)

- o Auto adaptive Linear / Non Linear precorrection

## ■ Vyper2Way Echo Cancelling (V.E.C)

- o Bandwidth compression

## ■ Control & Monitoring

- o RS232 control port with SCPI protocol
- o SNMP - Web browser over Ethernet
- o Front panel keyboard & display

## ■ Physical

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

## Ordering Information

### Default hardware configuration

XSSR-V2W0-2000	Vyper2way: S2/S2X Satellite Modem - L Band, QPSK/8PSK, 15 Mbaud, ACM - 1U Rack
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### Software options

XSSO-V2W0-16AM	16APSK constellations	XSSO-V2W0-36MB	Symbol Rate < 36 Mbauds
XSSO-V2W0-32AM	16/32APSK constellations	XSSO-V2W0-72MB	Symbol Rate < 72 Mbauds
XSSO-V2W0-64AM	16/32/64APSK constellations	XSSO-V2W0-ESPO	Enhanced Satellite Precorrection - Linear & Non-linear
XSSO-V2W0-128AM	16/32/64/128APSK constellations	XSSO-V2W0-LSNR	Very Low-SNR ModCodes
XSSO-V2W0-256AM	16/32/64/128/256APSK constellations	XSSO-V2W0-VECO	Vyper2way Echo Canceller

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