



# NS350 HIGH-SPEED SATELLITE MODEM

## For Premium and High-End Applications

## PRODUCT SHEET

### HIGH-SPEED SATELLITE MODEM

NOVELSAT NS350 High-Speed Satellite Modem is a powerful modem designed for the most demanding telecom and high-end applications. Delivering highly integrated carrier-grade satellite connectivity solution, the NS350 satellite modem is ideal for Point-to-Point applications as well as for Point-to-Multi-Point satellite networks, working with NOVELSAT's Xnet hub system. The NS350 utilizes NOVELSAT NS4™ for providing very high-performance transmission and space segment efficiency, as well as supports standard DVB-S2 and DVB-S2X.

### OPEN DESIGN FOR FLEXIBLE CUSTOMIZATION

The NS350 offers a secondary powerful computing module enables user-defined operating systems, data processing, as well as customized API and user interface. Allowing flexible customization of modem functionality as well as look & feel, the NS350 enables service providers to address different needs and markets.

### HIGH-EFFICIENCY SOLUTION FOR TELECOM APPLICATIONS

Leveraging performance enhancement protocols, hierarchical QoS mechanisms, and dynamic traffic shaping capabilities, the NS350 demonstrates smooth performance with minimal jitter and low delay for multiple telecom applications such as data trunking, cellular backhauling and air/sea/land connectivity. The NS350 satellite modem is equipped with 4 Gigabit Ethernet ports, making data transmission more efficient and cost-effective. With true transparent bridging (Layer 2) data remains fully intact from source to destination making it suitable for service providers and mobile network operators to provide full end to end services. In addition, the NS350 can perform as IP router (Layer3) reducing the need for additional equipment. The NS350 supports point-to-point and point-to-multipoint operations and incorporates advanced high-efficiency encapsulation scheme.

### SCALABLE PERFORMANCE

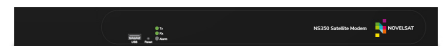
Providing very high performance transmission and space segment efficiency, the NS350 supports NOVELSAT NS4™ waveform as well as standard DVB-S2 and DVB-S2X. High performance receiver technology demonstrate superior resilience to phase noise, adjacent satellite interference, jamming and weather fluctuations, providing higher availability and better efficiency. Coupled with the DUET™ unique carrier echo cancellation technology, the NS350 can simultaneously use the same bandwidth for both uplink and downlink, doubling the traffic at the same satellite bandwidth.

### BEST-IN-INDUSTRY BANDWIDTH REUSE TECHNOLOGY

NOVELSAT NS350 incorporates optional NOVELSAT DUET™ CEC™ (Carrier-Echo-Cancellation) band reuse technology. Simultaneously using the same frequency band for both uplink and downlink carriers, the NS350 modem doubles traffic at the same satellite bandwidth. The all-digital, built-in echo canceller provides exceptional performance, delivering lossless uplink and downlink across all modulations and codes. Supporting very high SNR difference between uplink and downlink, NOVELSAT DUET™ offers expansive dynamic range for asymmetric connectivity as well as enhances transmission security by enabling carrier concealment through transmission below noise level.

### HIGHLIGHTS

- Supporting demanding telecom applications: data trunking, cellular backhauling and air / sea / land connectivity
- High performance and efficiency with NOVELSAT NS4™ technology
- High speed up to 1Gbps
- Embedded TCP and GTP acceleration
- Open AMIP for mobility applications
- Optional AES-256 encryption
- Integrated 4-port GbE LAN switch
- Leading bandwidth reuse - NOVELSAT DUET™ Carrier-Echo-Cancellation with Zero implementation loss
- Rich QoS and IP Suite
- Multiple topologies: Point-to-Point and Point-to-Multipoint



## NOVELSAT NS350 IP SATELLITE MODEM – SPECIFICATIONS

### BASEBAND

#### NS4™

**Inner Code:** BCH

**Outer Code:** LDPC

#### QPSK:

1/4, 1/3, 2/5, 13/30, 7/15, 1/2, 8/15, 17/30, 3/5, 19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10

#### 8PSK:

2/5, 13/30, 7/15, 1/2, 8/15, 17/30, 3/5, 19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10

#### 16APSK:

2/5, 13/30, 7/15, 1/2, 8/15, 17/30, 3/5, 19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10

#### 32APSK:

2/5, 13/30, 7/15, 1/2, 8/15, 17/30, 3/5, 19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10

#### 64APSK:

19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10

**Frame Length:** 16200, 64800

#### ROF:

“SRRC Like” 2%, 5%, 10%, 15%, 20%, 25%, 35%

#### DVB-S2 / DVB-S2X

**Inner Code:** BCH

**Outer Code:** LDPC

#### QPSK:

1/4, 13/45\*, 1/3, 2/5, 9/20\*, 1/2, 11/20\*, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

**8APSK:** 8/9(L)\*, 26/45(L)\*

#### 8PSK:

3/5, 23/36\*, 2/3, 25/36\*, 13/18\*, 3/4, 5/6, 8/9, 9/10

#### 16APSK:

26/45\*, 3/5\*, 28/45\*, 23/36\*, 2/3, 25/36\*, 13/18\*, 3/4, 7/9\*, 4/5, 5/6, 7/9\*, 8/9, 9/10, 1/2(L)\*, 8/15(L)\*, 5/9(L)\*, 3/5(L)\*, 2/3(L)\*

#### 32APSK:

32/45\*, 11/15\*, 3/4, 7/9\*, 4/5, 5/6, 8/9, 9/10, 2/3(L)\*

**64APSK:** 11/15\*, 7/9\*, 4/5\*, 5/6\*, 32/45(L)\*

**128APSK\*\*:** 3/4\*, 7/9\*

#### 256APSK\*\*:

29/45-L\*, 2/3-L\*, 31/45-L, 32/45, 11/15-L\*, 3/4

**Frame Length:** 16200, 64800

#### ROF SRRC:

5%, 10%, 15%, 20%, 25%, 35%

\* DVB-S2X

\*\* Optional

### MODULATOR RF INTERFACE

#### L-Band

##### Connector:

N-type (F) 50 Ohm, 10MHz ref out, +24V/+48V/80W

##### Frequency Range:

950-2150MHz in 10Hz steps

**Power Level:** -30 to 0dBm

**Power setting resolution:** 0.1dB

**Monitor port:** SMA (F) 50 Ohm

##### 10MHz Reference:

Stability: ± 1.0 ppm over 0°C to 50°C

**Return Loss:** >12dB

##### Spurious:

-55dBc in band and out of band at max power

##### Phase noise:

100Hz: -70dBc, 1KHz: -80dBc, 10KHz:

-85dBc 100KHz: -95dBc, 1MHz: -100dBc

### DEMODULATOR RF INTERFACE

#### L-Band

##### Connector:

N-type (F) 50 Ohm

##### Frequency range:

950-2150MHz in 10Hz steps

**Signal level:** -106+10log(F) (F in MSPS)

Max: -20dBm

**Composite power:** <-20 dBm

**Return loss:** >12dB

**Max. input level (No damage):** 0dBm

##### LNB power control:

Voltage: 13V - 18V

Band select: 22KHz ±4KHz

Max. current: 350mA

### ADDITIONAL INFORMATION

#### Additional HW interfaces

##### Power:

Single / Dual power supply

100-240 VAC / 2.5A

± 48 VDC

##### Data Interface:

4xGbE 10/100/1000

**Management port:** Fast Ethernet

10/100 Mbps

**Front panel USB port:** USB A

#### SW interfaces

##### Enhancement Features:

NOVELSAT DUET™ CeC™ (Carrier Echo Cancellation) technology

ACM – Adaptive Coding & Modulation

AUPC – Automatic Uplink Power Control

AES-256 bit link encryption

Carrier ID (CID) compliant

##### Baud Rate and Data Rate:

50Ksps to 120Msps

Up to 1Gbps Aggregated

##### IP Features:

Transparent Bridge mode (Layer 2)

Router mode (Layer 3)

Embedded TCP and GTP acceleration

OpenAMIP support

IP Encapsulation (NSPE2)

DiffServ and priority-based queuing

Jumbo Frame Support (10,000 Bytes)

##### Management interfaces:

Command line interface - Telnet / SSH Web

GUI - HTTP / HTTPS

SNMP - V2/V3 (with Dual Mode option)

OTA – Over The Air: M&C, Software Upgrade

User define- OS and application

#### Environmental

**Operating temp.:** 0 to 50°C

**Storage temp.:** -40°C to 70°C

##### Operating humidity:

Up to 85% Non-Condensing

##### Storage humidity:

Up to 95% Non-Condensing

**Cooling:** Fan: Right to left cooling

#### Mechanical

**Size:** W 19" x D 9.6" X H 1RU (1.72")

**Weight :** 2.5Kg