



NS3000 ULTRA-HIGH DATA RATE SATELLITE MODEM

PRODUCT SHEET

DESIGNED FOR HIGH-VOLUME, HIGH-VALUE SERVICES

NOVELSAT NS3000 is an ultra-high-performance modem designed for serving multiple telecom, broadcast, enterprise and government data-intensive applications. Exhibiting very high throughputs and efficiencies, the NS3000 satellite modem provides superior Point-to-Point and Point-to-Multi-Point connectivity for data and video services, under any condition, anywhere.

ULTIMATE TRANSMISSION EFFICIENCY

The ever-growing data consumption across users and locations drives demand for broadband connectivity and capacity. While satellite is the advantageous telecommunications solution for remote and hard-to-reach locations, as well as for mission-critical operations, satellite spectrum comes at cost. NOVELSAT satellite modems offer new levels of satellite transmission efficiency, driving higher volumes at lower bandwidth cost. NOVELSAT NS3000 modem incorporates multiple satellite transmission technologies, supporting the most bandwidth-efficient waveform, NOVELSAT NS4™, for providing very high-performance transmission and space segment efficiency, as well as supporting standard DVB-S, DVB-S2, and DVB-S2X. Exhibiting the world's highest spectral efficiency, the NS3000 modem exceeds 10 bit/Hz with NOVELSAT NS4™ waveform and NOVELSAT DUET™ CEC™ (carrier-echo-cancellation) band reuse technology.

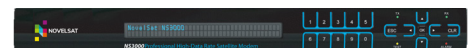
CARRIER CLASS PERFORMANCE AND CAPABILITIES

NOVELSAT NS3000 modem offers an expansive range of symbol rates and data rates, delivering up to 850Mbps on a single modem, using a single carrier over channel bandwidth of up to 84MHz.

The NS3000 offers a fully integrated IP solution incorporating routing capabilities, bandwidth management and advanced QoS mechanism. The NS3000 hierarchical QoS mechanisms and dynamic traffic shaping capabilities demonstrate smooth performance of real-time applications such as VoIP and video while insuring minimal jitter and low delay. 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 NS3000 can perform as IP router (Layer3) reducing the need for additional equipment. NOVELSAT NS3000 also offers powerful options including embedded TCP acceleration, compression, and optimization, as well as GTP acceleration for cellular networks.

HIGHLIGHTS

- High performance and efficiency with NOVELSAT NS4™ technology
- DVB-S2 and DVB-S2X standard compliant
- NOVELSAT DUET™ bandwidth reuse technology
- High data rates of up to 850Mbps (bidirectional 425Mbps) with DUET™
- NOVELSAT DDC™ - Dynamic Distortion Compensator for non-linear channels
- NSPE IP Encapsulation
- Embedded TCP acceleration, compression & optimization
- IP routing/switching/bridging capabilities
- Advanced QoS
- ACM operation
- TSolP support
- NOVELSAT AES-256 encryption / decryption
- 24V/48V integrated BUC feeder



BEST-IN-INDUSTRY BANDWIDTH REUSE TECHNOLOGY

NOVELSAT NS3000 incorporates optional NOVELSAT DUET™ CeC (carrier-echo-cancellation) band reuse technology. Simultaneously using the same frequency band for both uplink and downlink carriers, the NS3000 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.

EXTENSIVE SECURITY

Heightening content protection and security, NOVELSAT NS3000 modem utilizes extensive security algorithms and mechanisms to provide secured connectivity. Utilizing NOVELSAT AES-256 encryption, together with automatic and dynamic key generation with over-the-air distribution, the NS3000 implements multi-layer content encryption, securing service, transport, and traffic. For restricting system access and protect remote and on-prem management connectivity, extensive secured management sessions are also provided.

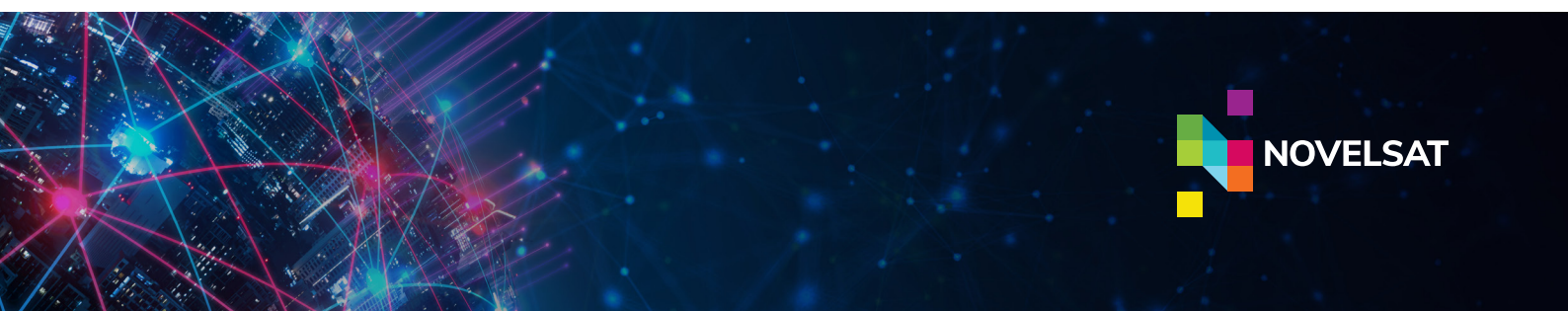
TOTAL CONNECTIVITY

Supporting a wide range of use cases and deployment scenarios, NS3000 presents multiple connectivity options through the capacity to provide a variety of data and video interfaces. For the satellite transmission, the NS3000 is equipped with IF and extended L-Band input and output interfaces and can power external BUC and LNB, offering a compact and cost-effective solution in a space-saving 1U package.

Designed to support multiple configurations and service options, NOVELSAT NS3000 modem also enables simultaneous operation of two channels. Any two services - data or video - can be combined over a single carrier, each with a different modulation scheme. Furthermore, the dual channel operation supports the combination of any two interfaces, easing migration of network technologies.

SUPERIOR RESILIENCY AND AVAILABILITY

Delivering near perfect availability and reliability, NOVELSAT NS3000 modem incorporates a comprehensive set of capabilities and features to effectively detect and mitigate various types of interferences and impairments and provide very high link performance and robustness. Featuring adaptive equalizers, error correction techniques, and pre-corrections algorithms, NOVELSAT NS3000 modem demonstrates superior resilience to phase noise, adjacent satellite interference, inclined orbit variations, low elevation scenarios, weather fluctuations, and any intentional or unintentional interferences and threats. NOVELSAT NS3000 also supports 1:1 and N:1 redundancy with automatic failover, ensuring very high system availability and service continuity.



NOVELSAT NS3000 PROFESSIONAL HIGH-DATA RATE SATELLITE MODEM – SPECIFICATIONS

BASEBAND

NS4™ / NS3™

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, 33/5, 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:

SRRC 2% (NS4™ only), 5%, 10%, 15%, 20%, 25%, 35%

DVB-S2/2X

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:

5/9(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, 77/90*, 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)*

Frame Length: 16200, 64800

ROF:

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

*DVB-S2X only

MODULATOR RF INFRASTRUCTURE

L-Band / IF Band

Connector:

L-Band: SMA (F) 50 Ohm or N-type (F) 50 Ohm, 10MHz ref out, +2V4/+48V/120W (opt)

IF Band: BNC (F) 75 Ohm

Freq. range / Set resolution:

L-Band: 950-2150MHz / 10Hz step

IF Band: 50-180MHz / 10Hz step

Power level / Set resolution:

-30 to 0dBm / 0.1dB

Power accuracy: ± 0.5dB @ 25degC

Power stability:

±0.5dB @ 25degC for 24 hours

±0.5dB over temperature

Monitor port tower: 40dBm ±5dB

Return loss: >14dB (optional 18dB)

Spurious / Tx On/Off:

55dBc/4KHz in band and out of band

Phase noise:

@100Hz-70dBc, @1KHz-80dBc,

@10KHz-85dBc, @100KHz-95dBc,

@1MHz-100dBc, RMS < 0.5deg

DEMODULATOR RF INFRASTRUCTURE

L-Band / IF Band

Connector:

L-Band: F-Type (F) 75 Ohm

IF Band: BNC (F) 75 Ohm

Freq. range / Set resolution:

L-Band: 950-2150MHz / 10Hz steps

IF Band: 50-180MHz / 10Hz step

Signal level: -70+10log(F) (F in Msps)

Max: -20dBm

Composite power: <-20 dBm

Return loss: L-Band: >12dB

IF Band: >10dB

Max. input level: 0dBm

LNB control (L-Band): Voltage:

11.5-14 V (Vert. Pol.), 16-19V (Horiz. Pol.)

Band select: 22KHz ±4KHz, 10MHz ref out

Max. current: 350mA

ADDITIONAL INFORMATION

Features

Maximum rate:

bidirectional 850Mbps (2x425Mbps)

Symbol rate: 0.1-110Msps

DVB-S, NS4™ DVB-S2, DVB-S/S2 with

5% ROF, DVB-S2X, DVB-DSNG & S2/S2X/

NS3™/NS4™ compliant

FEC: DVB-S: CC/RS, DVB-S2/NS3™/NS4™:

LDPC/BCH

NOVELSAT DUET™ CeC™ (Carrier-echo-Cancellation) technology

IP Enhancements:

Bridge mode (Layer 2)/ VLAN switching

(Layer 2)/ Router mode (Layer 3)

IP Encapsulation (NSPE)

QoS (Quality of Service)

Embedded WAN Acceleration (TCP

Acceleration, Compression & Optimization)

ACM – Adaptive Coding & Modulation, Up to

1dB/Sec / PtMP configuration

AUPC – Automatic Uplink Power Control

DDC – Dynamic Distortion Compensator

OTA – Over The Air: M&C, Software

Upgrade

TS over IP / Support for SMPTE 2022-1/2

standards

DVB-Carrier ID (CID) compliant

Clock Extension with E1 interface.

Configuration Retention: Non-volatile memory;

Returns upon power up

Layer-2 bridge: Ethernet over satellite

(compatible with IPv6/VLAN/MPLS)

Layer-3 router function: IPv4 over satellite

Software Interfaces

Command line interface

Web based GUI

SNMP V3

Management and Control Interfaces

Front panel

Serial RS232

Ethernet 10/100

Data Interfaces

GbE 10/100/1000

SFP

2 x ASI input & output

TSolP Support

1 to 4 x E1/T1, E3/T3 -G.703 OC-3/STM-1

10MHz Reference

10MHz Out:

Stability: ± 1.0 ppm over 0°C to 50°C (standard)

±0.03ppm over 0°C to 50°C (option)

Aging:

± 1.0 ppm/year (standard)

± 0.075 ppm/year (option)

Power: 5dBm ± 2dB

Connector: BNC (F) 50 Ohm

10MHz In:

Max Power: < 20dBm

Connector: BNC (F) 50 Ohm

Power

100-240 VAC, 50-60Hz, -48VDC (Option)

Mechanical

Weight: 4Kg

Size: 9" W x 18" D x 1.75" H

48.3cm x 45.7cm x 4.45 cm

Environmental

Operating temp.: 0 to 50°C

Operating humidity:

Up to 85% Non-Condensing

Storage humidity:

Up to 95% Non-Condensing

Certification

EMC:EN55022,EN55024,EN61000-3-2/3,

FCC CFR 47 -part 15

Safety: CB, CE,

IEC 60950-1: 2005 (2nd Ed)+Am 1:2009