NovelSat

NS3000 Professional High-Data Rate Satellite Modem

Widest Support for Customer Needs

The NS3000 is a member of the NovelSat Professional Satellite Modem series along with the NS300X Professional Satellite Modem (up to 60Mbps). The NovelSat NS3000 satellite modem offers several hardware and software options to accommodate a wide range of customer needs. It supports point-to-point as well as point-to-multipoint links and incorporates the NovelSat high-efficiency NSPE™ encapsulation scheme.

Best Performance

The NS3000 can dramatically improve performance by more than 40% over basic DVB-S2 mode using NovelSat NS4™ satellite transmission technology coupled with the capacity to transmit using a single carrier over a 84MHz channel. In addition, the NS3000 supports optional NovelSat DUET CeC (carrier-echo-cancellation) technology and a built-in receiver equalizer that further improves performance over saturated channels.

Superior Scalability, Economics and Security

The NS3000 delivers 100Kbps to world record 850Mbps on a single modem while reducing dish and HPA sizes or required satellite bandwidth. The NS3000 offers a fully integrated IP solution incorporating routing capabilities, bandwidth management and an advanced QoS mechanism. Further utilization of allocated bandwidth can be accommodated using NovelSat optimized ACM mode. The NS3000 also offers powerful options including embedded TCP acceleration, compression and optimization, plus a Radio Frequency Interference (RFI) Mitigation software package.

The NS3000 comes with IF/extended L-Band input/output interfaces and can support BUC feeders and LNB, offering a compact and cost effective solution in a space-saving 1U package. The NS3000 is also CID compatible.

NovelSat DUET CeC transmits the uplink and downlink carriers on the same frequency by canceling the transmitter signal echo to enable the remote transmission to be received. This also enhances transmission security by making any other modem perceive the mixed signal as noise.

Key Features:

- NovelSat NS4 technology – up to 40% efficiency gain over DVB-S2
- Scalable from 100Kbps to 850Mbps (bidirectional 425Mbps) with built-in NovelSat DUET™ CeC™ (carrier-echo-cancellation)
- DVB-DSNG, DVB-S, DVB-S2 & DVB-S2X standard compliant
- Embedded TCP acceleration, compression & optimization
- Radio Frequency Interference (RFI) Mitigation software package
- 10-15dB stronger jamming immunity
- Up to 80Msymbols/sec
- Optimized ACM mode
- NovelSat DDC™ - Dynamic Distortion Compensator (non-linear processing mode for saturated signals)
- IP routing/switching/bridging capabilities
- Advanced QoS
- NSPE IP Encapsulation
- QPSK, 8PSK, 16APSK, 32APSK, 64APSK
- Extended L-Band 950MHz-2150MHz
- L-Band monitoring output
- Gigabit Ethernet, E1/T1, ASI interfaces
- OC-3/STM-1 , OC-3 interface
- 24V/48V integrated BUC feeder
- Supports N+1 redundancy
- Carrier ID (CID) compatible
- TSoIP Support

The NS3000 is the world's most scalable satellite modem, with bi-directional data rates from 100Kbps to 850Mbps. It also offers the most compelling ROI in the industry. The NS3000 incorporates state-of-the-art NovelSat NS4 satellite transmission technology and interfaces directly with IP infrastructure via a Gigabit Ethernet and E1/T1-G.703 interfaces for cellular backhaul applications.

NovelSat NS3000 Professional High-Data Rate Satellite Modem - Specifications

Specifications

Parameter	DVB-S2/2X	NovelSat NS3/NS4
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	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
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	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	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)*	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	32/45*, 11/15*, 3/4, 7/9*, 4/5, 5/6, 8/9, 9/10 , 2/3(L)*	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	11/15*, 7/9*, 4/5*, 5/6*, 32/45(L)*	19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10
Frame length	16200, 64800	16200, 64800
ROF	SRRC 5%, 10%, 15%, 20%,25%, 35%	SRRC 2% (NS4 only), 5%, 10%, 15%, 20%, 25%, 35%

*DVB-S2X only

Features

Maximum rate: bidirectional 850Mbps (2x425Mbps)
Symbol rate: 0.1-80Msps
DVB-S, DVB-S2, DVB-S/S2 with 5% ROF, DVB-S2X, DVB-DSNG & NovelSat NS3 compliant
FEC: DVB-S: CC/RS, DVB-S2/NS3: LDPC/BCH
NovelSat DUET™ CeC™ (Carrier-echo-Cancellation) technology / PtP & PtMP
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

Modulator L band / IF band Ports

Connector	L band: SMA (F) 50 Ohm or N-type (F) 50 Ohm, 10MHz ref out, +24/+48V/120W (opt) IF band: BNC (F) 750hm
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 Power	-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 Ports

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	-106+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

Interfaces

SW interfaces	Command line interface Web based GUI SNMP V3
M&C Interfaces	Front panel Serial RS232 Ethernet 10/100
Data Interfaces	GbE 10/100/1000 SFP 2 x ASI input & output TSoIP Support 1 to 4 x E1/T1,E3/T3 -G.703 OC-3/STM-1

10MHz port

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

Physical & Environmental

Prime power	100-240 VAC, 50-60Hz, -48VDC (Option)
Weight	4Kg (8.8 lbs)
Size	19" W x 18" D x 1.75" H 48.3 x 45.7 x 4.45 cm
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
Certifications	EMC:EN55022,EN55024,EN6100-3-2/3, FCC CFR 47-part 15 Safety: CB, TUV, CE, IEC 60950-1: 2005 (2nd Ed)+Am 1:2009

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