NovelSat
NS300X IP Satellite Modem

NovelSat
Making Space in Space

Optimal Low-Data Rate IP Communication

For IP data transmission applications requiring satellite data rates below 30Mbps, the NovelSat NS300X IP Satellite Modem is the optimal solution. Designed for cost-effective low-data rate applications including cellular backhaul, IP trunking and other data services, the NS300X can simultaneously send and receive a total of 60Mbps per modem. Now, even at low data rates, satellite users can benefit from both cost effective prices as well as the high-performance experience of advanced NovelSat technology.

The NS300X is a member of the NovelSat Professional Satellite Modem series along with the NS3000 Professional High-Data Rate Satellite Modem (up to 850Mbps). Like the NS3000, DVB-S2 is the basic satellite transmission standard in the NS300X modem. The NS300X and all NovelSat equipment also support DVB-S, DVB-S2 with 5% Roll-off Factor (ROF), DVB-S2X and NovelSat NS4.

Cost-Effective for Low Data Rates

The NS300X modem includes built-in IP processing features to make data transmission more efficient and cost-effective. The NovelSat NS300X supports point-to-point and point-to-multipoint links and incorporates the NovelSat advanced high-efficiency NSPE2™ encapsulation scheme. The NS300X integrated IP processing unit supports a wide range of features such as advanced QoS, transparent bridging (Layer 2), VLAN switching (Layer 2), routing mode (Layer 3) and TCP header and payload acceleration.

Equipped for data transmission, the NS300X comes with up to 4 E1/T1 interfaces for cellular backhaul and Gigabit 1000Base-T. It also has built-in hardware support for LDPC advanced FEC, NovelSat NS4 waveform and NovelSat DUET CeC (carrier-echo-cancellation).

Scalable Performance

The NS300X platform offers a wide range of performance boosting options that include DVB-S2 with 5% ROF, NovelSat NS4 waveform and NovelSat DUET CeC (carrier-echo-cancellation). Additional features include ACM/VCM, AUPC (Automatic Uplink Power Control), Carrier ID (CID) compliance and DDC (Dynamic Distortion Compensation) for mitigating transponder saturation interference.

When you upgrade to NovelSat NS4 transmission technology, the NS300X boosts spectral efficiency by up to 45% compared with DVB-S2 equipment. NovelSat NS4 also adds superior resilience to jamming, adjacent satellite interference, phase noise and weather fluctuations. For additional savings in operational costs, add optional NovelSat DUET CeC to deliver the same traffic using half the bandwidth.

These and other unique technologies give the low-cost, high-performance NovelSat NS300X IP Satellite Modem the highest performance and most compelling ROI for businesses with low-data rate satellite IP transmission needs.

Key Features:

- Scalable from 100Kbps to 60Mbps (30Mbps x2)
- DVB-DSNG, DVB-S, DVB-S2 & DVB-S2X standard compliant
- Symbol rate 0.1-36Msps
- NovelSat NS4™ technology
- Modulation: BPSK, QPSK, 8APSK, 16APSK, 32APSK, 64APSK
- LDPC (Low Density Power Check)
- Roll-off Filter: 5%, 10%, 15%, 20%, 25%, 35% with DVB-S, DVB-S2 and NovelSat NS4
- NovelSat DUET™ CeC™ (carrier-echo-cancellation) technology – lowest implementation loss in the market
- Dual Band Support (IF-Band 50-180MHz & Extended L-Band 950-2150MHz)
- 10-15dB stronger jamming immunity
- Dynamic Distortion Compensation (DDC)
- Optimized ACM mode
- AUPC (Automatic Uplink Power Control)
- IP Processing Enhancements
  - VLAN switching (Layer 2)/ Router mode (Layer 3)
  - NSPE™ IP Encapsulation
  - Advanced QoS (Quality of Service)

- IP Transparent Bridging
- Jumbo frame support
- Header Compression
- Internal WAN Acceleration (TCP, Payload Acceleration)
- Gigabit Ethernet (GbE), Up to 4 E1/T1 Interfaces,
- SFP-(Additional GbE/Optical Interface)
- Dual Channel Mode (2 IP channels in a single carrier)

- 24V/48V integrated BUC feeder
- Supports N+1 redundancy
- Secured transmission
- Technology Agnostic Network Management System
- Over-the-Air (OTA): Management & Control and Software upgrades
- Compatible with all NovelSat satellite equipment (Modulators, demodulators, modems)

NovelSat NS300X IP Satellite Modem – Specifications

Specifications

Parameter	DVB-S2/2X	NovelSat NS3/NS4	Features
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	Maximum rate: bidirectional 60Mbps (2x30 Mbps) Symbol rate: 0.1-36Msps DVB-S, DVB-S2, DVB-S/S2 with 5% ROF, DVB-S2X, DVB-DSNG & NovelSat NS4 compliant
8APSK	5/9(L)*, 26/45(L)*		NovelSat DUET CeC (Carrier echo cancellation) technology – PtP & PtMP
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	IP Enhancements: - Bridge mode (Layer 2)/ VLAN switching (Layer 2)/ Router mode (Layer 3) - IP Encapsulation (NSPE)
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	- QoS (Quality of Service) - Embedded WAN Acceleration (TCP, Payload Acceleration) ACM – Adaptive Coding & Modulation, Up to 1dB/Sec / PtMP configuration
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	AUPC – Automatic Uplink Power Control OTA – Over The Air: M&C, Software Upgrade Data interfaces: GbE (1000Base-T), 4 E1/T1, SFP
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	Carrier ID (CID) compliant
Frame length	16200, 64800	16200, 64800	
ROF	SRRC 5%, 10%, 15%, 20%, 25%, 35%	"SRRC Like" 2%, 5%, 10%, 15%, 20%, 25%, 35%	
	*DVB-S2X only		

Modulator RF Ports

L-Band

Connector	SMA (F) 50 Ohm or N-type (F) 50 Ohm +24/+48V/120W (opt)
Freq. range	950-2150MHz in 10Hz steps
Power level	-30 to 0dBm
Power setting resolution	0.1dB
Power accuracy / temp. stability	± 0.5dB/±0.5dB
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

IF-Band

Connector	BNC (F) 75 Ohm
Freq. range	50MHz − 180MHz in 10Hz steps
Power level	-30 to 0dBm
Power setting resolution	0.1dB
Power accuracy / temp. stability	± 0.5dB/±0.5dB
Return loss	>12dB
Spurious	-55dBc in band and out of band at max power

Demodulator RF Ports

L-Band

Connector	F-Type (F) 75 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	0dBm
LNB power control:	
Voltage	11.5-14 V (Vert. Pol.), 16-19V (Horiz. Pol.)
Band select	22KHz ±4KHz
Max. current	350mA

IF-Band

Connector	BNC (F) 75 Ohm
Frequency range	50MHz − 180MHz in 10Hz steps
Signal level	-106+10log(F) (F in MSPS) Max: -20dBm
Composite power	<-20 dBm
Return loss	> 10dB
Max. input level	0dBm
LNB power control:	
Voltage	11.5-14 V (Vert. Pol.), 16-19V (Horiz. Pol.)
Band select	22KHz ±4KHz
Max. current	350mA

Additional Information

Monitor and Control Interfaces		Physical		Environmental	
SW interfaces	Command line interface Web based graphic user interface SNMP V3	Weight	4Kg (8.8 lbs)	Prime power	100-240 VAC, 50-60Hz, -48VDC (Option)
		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
M&C Interfaces	Front panel Serial RS232 GbE 10/100	10MHz Clock Stability	± 1.0 ppm over 0°C to 50°C (standard) ±0.03ppm over 0°C to 50°C (option)	Storage temp. Operating humidity	-40°C to 70°C Up to 85% Non-Condensing
Data Interfaces	GigaBit 10/100/1000Base-T Up to 4 x E1/T1 Interfaces SFP-(additional GbE/Optical Interface)	Aging	± 1.0 ppm/year (standard) ± 0.075 ppm/year (option)	Storage humidity	Up to 95% Non-Condensing

Related products: NovelSat NS3000 Professional High-Data Rate Satellite Modem, NovelSat NS2000 Satellite Demodulator, NovelSat NS1000 Satellite Modulator

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www.novelsat.com • info@novelsat.com
Hayetzira 3, Raanana 4366349 Israel

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