



NovelSat **NS1000** Satellite Modulator A New Standard for Satellite Broadcast

The innovative NovelSat NS1000 is a state-of-the-art modulator designed for high demand satellite transmission. The NS1000 is the only system with NovelSat NS4™ satellite transmission technology, delivering more than 40% higher spectral efficiency compared with DVB-S2.

The NovelSat NS4 system has several marked advantages that set it apart from the field:

Lower Satellite Bandwidth: Satellite bandwidth savings of up to 45% (over available DVB-S2 equipment in the market)

Higher Data Rate: Increases transmitted data rate by over 100% (compared with DVB-S2 equipment)

Smaller Dish: Achieves the same data rate using a smaller dish.

The NS1000 supports high data rates of up to 425Mbps using 80Msps, which enables transmission of one carrier over an entire 84MHz transponder.

The NS1000 dual-channel option enables any two inputs to be combined simultaneously over one carrier, each with a different modulation scheme using Variable Coding Modulation (VCM), one for each channel. This enables transmission quality that is dependent upon the interface content and the different receivers' locations.

Dual-channel operation also enables the combination of Ethernet streaming and the ASI interface, easing migration to IP streaming while controlling the QoS of each stream.



Key Features:

- NovelSat NS4 technology - More than 40% efficiency gain over DVB-S2
- DVB-S, DSNG, DVB-S2 and DVB-S2X standard compliant
- Data rates of up to 425Mbps
- TSolP support
- Dual-channel mode
- L-Band output mode 950MHz-2150MHz (Extended L-Band)
- IF output mode 50MHz-180MHz (either L-Band or IF)
- Monitor output port
- 10MHz reference (In/Out)
- Dual ASI input interface
- Dual Ethernet 1Gb input interface
- CCM, VCM & ACM support
- CID (Carrier ID) compatible
- Non-Linear pre-distortion Technology (NLPD)

NovelSat NS1000 Satellite Modulator – Specifications

Output Interfaces

L-Band Output		IF-Band Output	
Connector	SMA (F) 50 ohm	Connector	BNC (F) 75 Ohm
Frequency range	950-2150MHz in 1Hz steps	Frequency range	70MHz±20MHz, 140MHz±40MHz in 1Hz steps
Power level	-30/0 dBm in 0.1dB steps	Power level	-30/0 dBm in 0.1dB steps
Power accuracy/ temp. stability	±0.5dB/±0.5dB	Power accuracy/ temp. stability	±0.5dB/±0.5dB
Return loss	>12 dB	Return loss	>15 dB
Spurious	<-55dBc in band and out of band at max. power	Spurious	<-55dBc in band and out of band at max. power
Phase noise	@100Hz -70dBc, @1KHz -80dBc, @10KHz -85dBc, @100KHz -95dBc, @1MHz -100dBc	Phase noise	Meets IESS-308
Monitoring Output		10MHz Reference Clock I/O (Optional)	
Connector	SMA (F) 50 Ohm	Connector	BNC (F) 50 Ohm
Frequency	Identical to L-Band/IF-Band frequencies	Ref. input power level	-3dBm up to +7dBm
Power level	-40 dBm	Ref. output power level	+7dBm Typical
Return loss	> 7dB	Waveform	Sine wave

Baseband

DVB-S/DSNG	DVB-S2/S2X	NovelSat NS3/NS4	
Inner code	Convolution	Outer code	BCH
QPSK	1/2, 2/3, 3/4, 5/6, 7/8	Inner code	LDPC
8PSK	2/3, 5/6, 8/9	Code rates and modulation:	
16QAM	3/4, 7/8	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
Outer Code	Reed Solomon (204, 188, T=8)	8PSK	5/9(L)*, 26/45(L)*
Interleaving	(I=12)	8PSK	3/5, 23/36*, 2/3, 25/36*, 13/18*, 3/4, 5/6, 8/9, 9/10
Frame length	204, 188	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)*
Baseband ROF	SRRC 25%, 35%	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	64800, 16200
		Baseband ROF	SRRC 20%, 25%, 35% (optional 5%, 10%, 15%)

*DVB-S2X only

Input Interfaces

ASI Input	ASI Output (Loopback)
2 ASI interfaces that can function in parallel	Loopback on each ASI input
Connector	Connector
BNC female with 75 Ohm coax	BNC female with 75 Ohm coax
Return loss (22-270 MHz)	Power level
18-20 dB	800 mVpp ±10%
Sensitivity	
230 mVpp	
Max. input	
950 mVpp	
10 MHz Clock	10 MHz Clock – High Stability (Optional)
Stability	Stability
±1.5 ppm over 0degC to 50degC	±10 ppb over 0degC to 70degC
Aging	Aging
±1.0 ppm/year	<± 0.5 ppb/day, <± 75 ppb/year

Additional Information

Monitor and Control Interfaces	Optional Interfaces	Physical	Environmental
SW interfaces	Dual Ethernet 10/100/1G	Weight	Prime power
Command line interface		3.5 Kg (7.7 pounds)	100-240 VAC, 50-60Hz, 30 Watts Max.
Web based graphic user interface		Size	Operating temp.
SNMP V3		19" W x 18" D x 1.75"	0 to 50°C
Front panel		48.3 x 45.7 x 4.45 cm	Operating humidity
Serial RS232 interface			Up to 85% Non-Condensing
Female 9-Pin D-Sub connector			Storage temp.
Ethernet 10/100			-40°C to 70°C
BaseT interface to monitor and control the modulator			Storage humidity
Alarm interface			Up to 95% Non-Condensing
Female 9-Pin D-Sub connector			