

Maximizing Satellite Capacity

NS1000 Modulator

A New Standard for Broadcast Satellites.

NovelSat's innovative NS1000 is a state-of-the-art modulator designed for high demand satellite transmission. NS1000 is the only system in the market that has NS3™ enhancement, delivering significantly higher spectral efficiency compared to DVB-S2.



The NS3™ system has several marked advantages that set it apart from the competition:

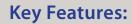
- Lower Satellite Bandwidth: Savings of 20% to 78% satellite bandwidth (over available DVB-S2 equipment in the market)
- Higher Data Rate: Increases transmitted data rate by over 100% (over available DVB-S2 equipment in the market)
- Smaller Dish: Reduction of dish size. Achieves the same data rate using a smaller dish

The NS1000 supports high data rates of up to 365Mbps using 70Msps, which enables transmission of one carrier over a 72MHz 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

 ${\sf NS3^{M}}$ achieves a remarkable data rate improvement of over 36% compared to DVB-S2, when working at high SNR links.



- Compatible with the innovative NS3™ protocol
- DVB-S, DSNG, DVB-S2 (EN300-421, EN301-210, EN302-307) compliant
- Data rates of up to 365Mbps
- Powerful pre-distortion algorithm for saturated channels
- Dual-channel mode
- L-Band output mode 950MHz-1750MHz (optional extended L-Band 950MHz-2150MHz)
- 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
- ACM support

NS1000 Modulator - SPECIFICATIONS



Output Interfaces

L-Band Output		IF-Band Output		
Connector	SMA (F) 50 ohm	Connector	BNC (F) 75 0hm	
Frequency range	950-1750MHz (optional up to 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. stab	ility ±0.5dB/±0.5dB	
Return loss	>12 dB	Return loss	>12 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			
Monitoring Output		10MHz Reference Clock I/O (Optional)		
Connector	SMA (F) 50 0hm	Connector	BNC (F) 50 0hm	
Frequency	Identical to L-Band/IF-Band output 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	5	DVB-S2		NS3™	
Inner code	ВСН	Inner code	ВСН	Inner code	ВСН
QPSK	1/2, 2/3, 3/4, 5/6, 7/8	Outer code	LDPC	Outer code	LDPC
8PSK	2/3, 5/6, 8/9	Code rates and mo	Code rates and modulation:		QPSK, 8PSK, 16APSK, 32APSK, 64APSK
16QAM	3/4, 7/8	QPSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10	Frame length	64800, 16200
Outer Code	Reed Solomon (203, 188, T=8)	8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10	Baseband ROF	"SRRC like" 5%, 10%, 15%, 20%,
Interleaving	(I=12)	16APSK	2/3, 3/4, 4/5, 5/6, 8/9, 9/10		25%, 35%
Scrambling		32APSK	3/4, 4/5, 5/6, 8/9, 9/10		
Frame length	204, 188	Frame length	64800, 16200		
		Baseband ROF	SRRC 20%, 25%, 35%		

Input Interfaces

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

Additional Information

Monitor and Control	Interfaces	Optional Interfaces	Physical		Environmenta	ıl
SW interfaces	Command line interface Web based graphic user interface	Dual Ethernet 10/100/1G	Weight Size	3.5 Kg (7.7 pounds) 19"W x 18"D x 1.75"	Prime power	100-240 VAC, 50-60Hz, 30 Watts Max.
	SNMP V3		5120	48.3 x 45.7 x 4.45 cm	Operating temp.	0 to 50°C
	Front panel				Operating humidity	Up to 85% Non-Condensing
Serial RS232/RS485 interface	Female 9-Pin D-Sub connector				Storage temp.	-40°C to 70°C
Ethernet 10/100	BaseT interface to monitor and control the modulator				Storage humidity	Up to 95% Non-Condensing
Alarm interface	Female 9-Pin D-Sub connector					