

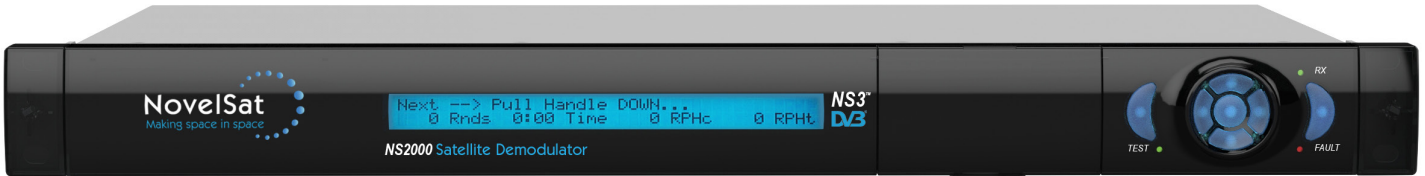


## Demodulator NS2000

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**NovelSat**  
Making space in space

# Demodulator NS2000



## Key Features

- Compatible with the innovative **NS3™** protocol
- DVB-S, DSNG, DVB-S2 (EN300-421, EN301-210, EN302-307) Compliant.
- Data rate up to 300Mbit/sec.
- Powerful pre distortion algorithm for saturated channels.
- Optional dual channel mode.
- L-Band input mode 950MHz-2150MHz
- IF input mode 50MHz-180MHz
- Optional 10MHz reference (In/Out).
- Dual ASI Output Interface.
- Optional Dual Ethernet 1Gb Output Interface

## Related Products

NovelSat's Modulator NS1000

## Additional information:

More information can be found at: [www.novelsat.com](http://www.novelsat.com)  
or contact [sales@novelsat.com](mailto:sales@novelsat.com)

## A New Standard for Broadcast Satellites

NovelSat's innovative NS2000 – a state-of-the-art Demodulator designed for high demand satellite reception. NS2000 is the only system in the market that has **NS3™** enhancement, delivering an average bandwidth saving of 20% when compared to the DVB-S2 standard (when used together with NovelSat's Modulator).

The **NS3™** system advantage can be utilized in several different ways:

### Lower Satellite Bandwidth:

Average saving of 20% satellite bandwidth (vs. systems that use DVB-S2).

### Higher Data Rate:

Increases transmitted data rate by an average of 20%.

### Smaller Dish:

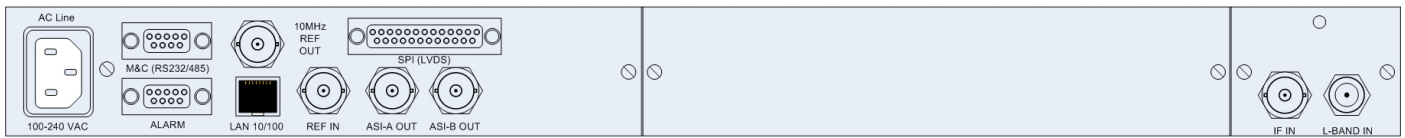
Reduction of dish size can “replace” the added bandwidth, achieving the same data rate using a smaller dish.

The NS2000 supports **very high data rates of up to 300Mbits/sec using 72Msym/sec** transmission. The use of high data rate is supported in both DVB-S2 and **NS3™** modes of operations and can be used to transmit one carrier over a 72MHz transponder.

The NS2000 **Dual Channel option** can divert a stream to one of the two interfaces on the board. These can be a combination of **any** two interfaces. This option enables transmission quality that is dependent upon the interface content.

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

The NS2000 has groundbreaking internal signal processing and error correction methods that enable the receiver to be more robust to impairments.



## Input Interfaces

### L-Band Input

Connector	F-Type (F) 75 ohm
Frequency range	950-2150MHz in 1Hz steps
Level	-70/-20 dBm
Composite Power	< -20 dBm
Return Loss	10 dB

### LNB Power Control

Voltage	11.5-14 V (Vertical Polarization) 16-19V (Horizontal Polarization)
Band Select	22KHz ±4KHz
Max Current	350 mA

### IF-Band Input

Connector	BNC (F) 75 Ohm
Frequency range	70MHz±20MHz, 140MHz±40MHz in 1Hz steps
Level	-70/-20 dBm
Composite Power	< -20dBm
Return Loss	10 dB

### 10MHz Reference Clock I/O (Optional)

Connector	BNC (F) 50 Ohm
Ref input power level	-3dBm up to +7dBm (Default)
Ref output power level	+7dBm
Waveform	Sine wave

## Baseband

### DVB-S/DSNG

Inner code	Viterbi with code rate and modulations:
QPSK	1/2, 2/3, 3/4, 5/6, 7/8
8PSK	2/3, 5/6, 8/9
16QAM	3/4, 7/8
Outer Code	Reed Solomon (204,188, T=8)
Interleaving	(I=12)
Scrambling	
Frame Length	204, 188

### DVB S2

Inner code	BCH
Outer Code	LDPC
Code rates and modulation:	
QPSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
16APSK	2/3, 3/4, 4/5, 5/6, 8/9, 9/10
32APSK	3/4, 4/5, 5/6, 8/9, 9/10
Frame Length	64800, 16200
Baseband ROF	SRRC 20%, 25%, 35%

## NS3™

Inner code	BCH
Outer Code	LDPC
Modulations	
QPSK, 8PSK, 16APSK, 32APSK, 64APSK	
Frame Length	64800, 16200
Baseband ROF	"SRRC like" 5%, 10%, 15%, 20%, 25%, 35%

## Output Interfaces

### ASI Output

2 ASI interfaces that can function in parallel	
Connector	BNC (F) with 75 Ohm coax

### SPI

Connector	25 pin-D (F)
Power Level	LVDS

### 10 MHz Clock

Stability	±1.0 ppm over 20°C to 70°C
Aging	±1.0 ppm/year

### 10 MHz Clock – High stability (Optional)

Stability	±10 ppb over 0°C to 70°C ±30 ppb over 20°C to 70°C
Aging	<± 0.5 ppb/day <± 75 ppb/year

## Monitor and Control Interfaces

### SW interfaces

- Command Line Interface
- Web Based Graphic User Interface
- SNMP V3
- Front Panel

### Serial RS232/RS485 Interface

Female 9-Pin D-Sub Connector

### Ethernet

10/100 BaseT Interface to monitor and control

### Alarm Interface

Female 9-Pin D-Sub Connector

## Optional Interfaces

- Dual 10/100/1000 Ethernet
- G703
- HSSI

## Physical

Weight	3.5 Kg (7.7 pounds)
Size	19" W x 18" D x 1.75" H 48.3 x 45.7 x 4.45 cm

## Environmental

Prime Power	100-240 VAC, 50-60Hz, 30 Watts Maximum
Operating Temp:	0 to 50°C
Operating Humidity:	Up to 85% Non-Condensing
Storage Temp:	-40°C to 70°C
Storage Humidity:	Up to 95% Non-Condensing

# Demodulator NS2000 Ordering Information

Category	Option	Order Name	Option	Order Name
Input Interface	L-band 950-2150MHz IF 50-180MHz	Default /IF1		
Output Interface	Dual ASI SPI Dual GbE G703 HSSI	Default Default /HW1 /HW2 /HW3		
Output Channel	1 Channel Option Dual Channel Option (VCM/ACM)	Default /CH1		
Modulation & Symbol Rate	DVB-S/DSNG QPSK/8PSK/16QAM 45Msps	Default	<b>NS3™</b> package	
	DVB-S/S2 QPSK/8PSK 5Msps	Default	DVB-S/S2/NS3 QPSK/8PSK 6Msps	/NS3-01
	DVB-S/S2 QPSK/8PSK 15Msps	/S2-02	DVB-S/S2/NS3 QPSK/8PSK 18Msps	/NS3-02
	DVB-S/S2 QPSK/8PSK 30Msps	/S2-03	DVB-S/S2/NS3 QPSK/8PSK 36Msps	/NS3-03
	DVB-S/S2 QPSK/8PSK 45Msps	/S2-04	DVB-S/S2/NS3 QPSK/8PSK 54Msps	/NS3-04
	DVB-S/S2 QPSK/8PSK 60Msps	/S2-05	DVB-S/S2/NS3 QPSK/8PSK 70Msps	/NS3-05
	DVB-S/S2 QPSK/8PSK/16APSK 5Msps	/S2-06	DVB-S/S2/NS3 QPSK/8PSK/16APSK 6Msps	/NS3-06
	DVB-S/S2 QPSK/8PSK/16APSK 15Msps	/S2-07	DVB-S/S2/NS3 QPSK/8PSK/16APSK 18Msps	/NS3-07
	DVB-S/S2 QPSK/8PSK/16APSK 30Msps	/S2-08	DVB-S/S2/NS3 QPSK/8PSK/16APSK 36Msps	/NS3-08
	DVB-S/S2 QPSK/8PSK/16APSK 45Msps	/S2-09	DVB-S/S2/NS3 QPSK/8PSK/16APSK 54Msps	/NS3-09
	DVB-S/S2 QPSK/8PSK/16APSK 60Msps	/S2-10	DVB-S/S2/NS3 QPSK/8PSK/16APSK 70Msps	/NS3-10
	DVB-S/S2 QPSK/8PSK/16APSK/32APSK 5Msps	/S2-11	DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK 6Msps	/NS3-11
	DVB-S/S2 QPSK/8PSK/16APSK/32APSK 15Msps	/S2-12	DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK 18Msps	/NS3-12
	DVB-S/S2 QPSK/8PSK/16APSK/32APSK 30Msps	/S2-13	DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK 36Msps	/NS3-13
	DVB-S/S2 QPSK/8PSK/16APSK/32APSK 45Msps	/S2-14	DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK 54Msps	/NS3-14
	DVB-S/S2 QPSK/8PSK/16APSK/32APSK 60Msps	/S2-15	DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK 70Msps	/NS3-15
			DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK/64APSK 6Msps	/NS3-16
			DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK/64APSK 18Msps	/NS3-17
			DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK/64APSK 36Msps	/NS3-18
			DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK/64APSK 54Msps	/NS3-19
		DVB-S/S2/NS3 QPSK/8PSK/16APSK/32APSK/64APSK 70Msps	/NS3-20	
Additional	10MHz High Stability	/HS		
	10MHz Reference Clock In/Out	/CL		
	None Linear Channel Support	/NL		
Assistance	Level 1	/SP1		
	Level 2	/SP2		