# NS3000 IP Satellite Modem

The NS3000D is the fastest satellite modem achieving data rates of up to 716Mbps. It is also the modem which presents the most compelling ROI in the market. The NS3000 incorporates innovative NS3™ state-of-the-art technology for satellite communication. It interfaces directly with IP infrastructure via a Gigabit Ethernet interface.

## ● Widest Support for Customer Needs

The NS3000 offers several hardware and software options to accommodate a wide range of customer needs. It supports point-to-point as well as point-to-multi point links while supporting ULE, GSE and Novelsat's high-efficiency NSPE™ encapsulation schemes.

## ● Best Performance

The NS3000 offers a dramatic performance upgrade over DVB-S2 and any other similar equipment available in the market. This high performance is achieved owing to the utilization of NS3™ technology coupled with the capability of transmitting a 72MHz single carrier. In addition, the NS3000 incorporates revolutionary NPEC (NovelSat Proprietary Echo Cancelation) technology and a built-in receiver equalizer that further improve performance over saturated channels.

## ● Highest Data Rate

Using the NS3000, customers achieve the highest data rates of up to 716Mbps while reducing dish and HPA sizes and/or required satellite leased bandwidth. The NS3000 offers a fully Integrated IP solution incorporating routing capability. Further utilization of allocated bandwidth can be accommodated using NovelSat optimized ACM mode.

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

## Key Features:

- Compatible with the innovative NS3™ protocol
- Data rate of up to 716Mbps (bidirectional 358Mbps) with build-in ECO Cancellation
- Up to 70Msymbols/sec
- Optimized ACM mode
- Non-Linear Processing mode for saturated signals
- IP routing
- TCP acceleration
- Traffic compression
- ULE/GSE/NSPE support
- DVB-S2 compliant
- QPSK, 8PSK, 16APSK, 32APSK, 64APSK
- Optional 10MHz reference (In/Out)
- Extended L-Band 950MHz-2150MHz
- L-Band monitoring output
- Redundant Gigabit Ethernet interface
- Redundant power supply

| RELATED PRODUCTS | ADDITIONAL INFORMATION |
|---|---|
| NovelSat's Modulator NS1000<br>NovelSat's Demodulator NS2000<br>NovelSat's Redundancy Switch NSR1000 | Web: www.novelsat.com<br>Email: sales@novelsat.com |

**NovelSat**
Maximizing Satellite Capacity

## Baseband

| DVB-S2 | | NS3™ | |
|---|---|---|---|
| **Inner code** | BCH | **Inner code** | BCH |
| **Outer code** | LDPC | **Outer code** | LDPC |
| **QPSK** | 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 | **QPSK** | 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 |
| **8PSK** | 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 | **8PSK** | 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** | 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 | **16APSK** | 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 |
| **32APSK** | 3/4, 4/5, 5/6, 8/9, 9/10 | **32APSK** | 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** | N/A | **64APSK** | 19/30, 2/3, 32/45, 3/4, 4/5, 5/6, 8/9, 9/10 |
| **Frame length** | 16200, 64800 | **Frame length** | 16200, 64800 |
| **ROF** | SRRC 20%, 25% ,35% | **ROF** | "SRRC Like" 5%, 10%, 15%, 20%, 25%, 35% |

### Input/output Interfaces

- Maximum rate: bidirectional 360 Mbit/s
- Bridge mode (Layer 2)
- Router mode (Layer 3)
- Supported encapsulation:
  - NovelSat Proprietary Encapsulation (NSPE), NovelSat's highly efficient encapsulation protocol
  - Ultra Lightweight Encapsulation (ULE)
  - Generic Stream Encapsulation (GSE)
- Routing and filtering capabilities:
  - Unlimited VLAN filters
  - Unlimited remotes per carrier
  - One NPA/MAC per remote
- Advanced encryption
- 2 Gigabit 10/100/1000 Base-T interfaces

## Modulator Outputs

### L-Band

| | |
|---|---|
| **Connector** | SMA (F) 50 ohm |
| **Freq. range** | 950-1750MHz (optional up to 2150MHz) in 1Hz steps |
| **Power level** | -30/0 dBm ±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** | 70MHz±20MHz, 140MHz±40MHz in 1Hz steps |
| **Power level** | -30/0 dBm ±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 Outputs

### L-Band

| | |
|---|---|
| **Connector** | F-Type (F) 75 ohm |
| **Freq. range** | 950-1750MHz (optional up to 2150MHz) in 1Hz steps |
| **Level** | -70+10log(F)/-20 dBm (F in MBAUD) |
| **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 |

### IF-Band

| | |
|---|---|
| **Connector** | BNC (F) 75 Ohm |
| **Freq. range** | 70MHz±20MHz, 140MHz±40MHz in 1Hz steps |
| **Power level** | -30/0 dBm ±0.1dB |
| **Power accuracy / temp. stability** | 0.5dB/±0.5dB |
| **Return loss** | > 10dB |

## Additional Information

| Monitor and Control Interfaces | | Physical | | Environmental | |
|---|---|---|---|---|---|
| **SW interfaces** | Command line interface | **Weight** | 4Kg (8.8 lbs) | **Prime power** | 100-240VAC,50-60Hz |
| | Web based graphic user interface | **Size** | 19"W x 18"D x 1.75"H | **Operating temp.** | 0 to 50℃ |
| | NMP V3 | | 48.3 x 45.7 x 4.45 cm | **Operating humidity** | Up to 85% Non-Condensing |
| | Front panel | **10MHz** | | **Storage temp.** | -40℃ to 70℃ |
| **Serial RS232/RS485** | Female 9-Pin D-Sub connector | **Stability** | ±1.0 ppm over 0degC to 50degC | **Storage humidity** | Up to 95% Non-Condensing |
| **Ethernet 10/100** | BaseT interface to monitor and control the modem | **Aging** | ±1.0 ppm/year | | |
| **Alarm interface** | Female 9-Pin D-Sub connector | | | | |