

NEW FEATURES  
FOR 2009



Our latest generation high performance 70/140 MHz Satellite Modem, the OSM-300, is the industry's most sophisticated modem in its class. The OSM-300 is unmatched by any other modem for BER performance, fast acquisition, low latency and total power/bandwidth optimisation.

### OSM-300 Highlights

- New Flexible LDPC with Multiple Block Sizes
- 1.2 kbps to 29.5 Mbps, 1 bps steps
- BPSK/QPSK/OQPSK/8PSK/8QAM/16QAM
- Viterbi, TCM, Reed Solomon, Turbo Product Codes
- Most TPC Code Rates and Block Sizes Available
- Compatible with other Modem Manufacturers
- Ethernet IP Data Interface with Linux based SnIP provides Bridge or Router IP Modes
- Easy Feature Upgrades by Key Codes
- Lowest Latency, <15 ms at 64 kbps 3/4 QPSK
- Standard IBS Multiplexer, Async Overhead Channel, AUPC and Remote Modem Control
- Typical acquisition time of 315 ms at 9.6 kbps QPSK, 71 ms at 64 kbps QPSK
- Tx Output Power Range of 40 dB, +5 to -35 dBm
- Optional Ethernet Remote Control Interface
- Legacy OSM-200 Compatible
- Built-in 1:1 Redundancy

### FEC Options

FEC types include Viterbi, Trellis, Reed Solomon, Turbo Product Codes (both 4K & 16K block sizes) and the most Flexible LDPC on the market today. In addition, the OSM-300 has the largest selection of code rates and block sizes. Available LDPC block sizes include 256, 512, 1k, 2k, 4k, 8k & 16k.

### Performance

Sophisticated digital signal processing eliminates all on board physical adjustments and provides performance within 0.3 dB of theoretical. ONE-SAT's unique DSP design also delivers the world's fastest SCPC carrier acquisition.

### Backward Compatibility

ONE-SAT's OSM-300 implementation represents state of the art enhancements to the popular legacy OSM-200 series of modems, while being completely backward compatible.

### Key Enabled Upgrades

The OSM-300 can be upgraded via front panel key codes. Upgrades are simple to implement and are available in preconfigured feature versions, which offer a variety of options for modulation, FEC and data rates up to 29.5Mbps.

### Redundancy

OSM-300 series modems come with a built-in 1:1 redundancy feature that can be enabled through the front panel and requires only a few external cables and power splitters.

### Front Panel & Diagnostics

The modem front panel provides a backlit LCD display, full keypad and LED indicators for monitor and control of all modem parameters. The OSM-300 also has advanced monitor and BERT functions available to the user for quick field diagnostics.

### SPECIFICATIONS



#### OSM-300\*\* Series Value Configurations: \*\* (S = 70 MHz, N = 140 MHz Bands)

- **OSM-305 - BPSK/QPSK/OQPSK up to 5 Mbps (OSM-200 Compatible)**
- **OSM-311 - Adds 8PSK/8QAM to OSM-305 Series & Data Rates up to 10 Mbps**
- **OSM-323 - Adds 16QAM to OSM-311 Series & Data Rates up to 29.52 Mbps**

#### System Specifications:

Operating Modes:	Rx and Tx Continuous (SCPC), Optional Tx Burst
IF Tuning Range:	50 to 90 or 100 to 180 MHz, in 1 Hz Steps
Data Rate Selection:	1 bps steps
Data Rate Minimum:	1.2 kbps rate 1/2 BPSK
Data Rate Maximum:	29.52 Mbps rate 3/4 8PSK
Data Rate Accuracy:	Accurate to $2 \times 10^{-12}$ of relative clock reference
Symbol Rate Range:	2.4 ksp/s to 14.76 Msp/s in 1 bps step sizes
Available Modulation:	BPSK, QPSK, OQPSK, 8PSK, 8QAM, 16QAM
Available TPC Modes:	M5 Full, Short & Legacy, Comtech and Advanced
Concatenated RS:	Selectable N & K, IESS 308/309/310 and CT Comp
Reed Solomon Depth:	4, 8 or 16

#### FEC and Code Rates:

FEC	Code Rates
Viterbi	1/2, 3/4, 5/6, 7/8 (k = 7)
Trellis	2/3
TPC-4K	1/2, 3/4, 7/8, 0.95, 21/44
TPC-16K	1/2, 3/4, 7/8, 0.922, 0.453
LDPC	1/2, 2/3, 3/4, 14/17, 7/8, 10/11, 16/17

#### OSM-300 Typical $1 \times 10^{-8}$ BER Performance @ EB/N0

Selected Code Rates	1/2	2/3	3/4	7/8	0.922
<b>Viterbi</b> QPSK	5.7		6.7	7.7	
<b>Viterbi + RS</b> QPSK	2.9		4.1	5.3	
<b>Trellis + RS</b> 8PSK		5.7			
<b>Turbo (TPC)</b> QPSK	2.3		2.8	4.0	4.9
8PSK	5.2		6.8	7.9	
8QAM	4.2		4.8	6.1	7.2
16QAM	5.1		6.0	7.5	8.5
<b>LDPC - 16k</b> QPSK	1.40	2.10	2.70	3.90	
8PSK			5.08	6.65	
8QAM	3.21	4.11	4.80	6.05	
16QAM	3.73	5.00	5.85	7.40	
<b>LDPC - 4k</b> QPSK	1.71	2.47	3.13	4.30	
8PSK		4.51	5.55	7.20	
8QAM	3.65	4.53	5.32	6.65	
16QAM	4.18	5.48	6.37	7.84	

#### \* Guaranteed BER Performance is within 0.2 db of Typical

#### Modulator:

Transmit Output Power:	+5 to -35 dBm in 0.1 dB steps (max +3 dBm @ 50Ω)
IF Tx Impedance:	75Ω or 50Ω selectable from Front Panel (BNC)
Return Loss:	20 dB minimum
Output Phase Noise:	Better than IESS-308/309 by 6 dB typical, 4 dB min
Level Stability:	±0.5 dB, 0 - 50° C
Level Accuracy:	±0.5 dB, 50 ~ 90 MHz or 100 ~ 140 MHz at 25°C
Output Spurious:	< -55 dBc/4 kHz, Typical < -65 dBc/4 kHz
Carrier on/ off Isolation:	> 60 dB

Scrambler Types:	IBS, V.35, IESS, TPC, RS, LDPC, EFD
Data Clock Sources:	Internal, Terminal Timing, External, Rx Recovered
Internal Stability:	$2 \times 10^{-6}$ TCXO (Standard)
External Reference:	1, 5, 9, or 10 MHz input on rear panel

#### Demodulator:

Rx Carrier Input Range:	-20 to -60 dBm, scales to -84 dBm at lower rates (minimum = $10 \log(\text{symbol rate}) - 120$ dBm)
IF Tx Impedance:	75Ω or 50Ω selectable from Front Panel (BNC)
Return Loss:	20 dB minimum
Max Composite Input:	+15 dBm or +40 dBc, whichever is lower power
Input Phase Noise:	Better than Intelsat by 6 dB typical, 4 dB min
Rx Acquisition Range:	Programmable from ± 100 Hz to ± 1.25 MHz

#### Fast Receive Lock Performance:

Example: FEC 1/2, EB/N0 = 6.0 dB, Acquisition Range of ± 30 kHz	<ul style="list-style-type: none"> <li>• 315 ms at 9.6 kbps QPSK</li> <li>• 175 ms at 9.6 kbps BPSK</li> <li>• 71 ms at 64 kbps QPSK</li> </ul>
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Descrambler Types: IBS, V.35, IESS, TPC, RS, LDPC, EFD

#### Plesiochronous or Doppler Buffer Store:

Receive Buffer Range:	4 bits to 524,280 bits, in 1 bit steps or in time
Receive Clock Options:	Internal, External, Mod Clock, Receive Clock

#### Terrestrial Interfaces:

Standard Synchronous: Serial RS232, RS422, V.35, EIA-530(A)

Optional:

HSSI  
Ethernet IP 10/100 Base-T, available in Bridge or Router modes with SnIP (Linux Operating Sys)

#### Multiplexer and Overhead Features:

IBS Multiplexer: Built-in IBS Overhead Channel with standard and enhanced variable rate RS232 and RS485. Supports Automatic Uplink Power Control (AUPC), Remote Modem Control Interface and 2 Form-C Backward Alarms

#### Monitor and Control:

Front Panel:	LCD and Keyboard for easy control and status
Terminal Mode:	Full screen interactive display of all parameters
Remote Packet Mode:	Packet driven RS232/RS485 control and status
Optional Web Browser:	Available through the Ethernet Interface SnIP

#### Diagnostics:

Loopback Modes:	IF, bi-directional terr and sat data loopbacks
BER Test Pattern:	2047 or $2^{23-1}$
BERT:	Built-in bi-directional bit error rate test set
Carrier:	Pure carrier and sideband
Form C Relays:	Assignable faults to Form C rear alarm connector

#### Environmental and Physical:

Prime Power Input:	90 to 264 VAC, 50/60 Hz, < 30 watts
Operating Conditions:	0 to 50°C, to 95% humidity, non-condensing
Storage Temperature:	- 20 to +70°C, 99% humidity, non condensing

Size:	Rack mount - 1 RU (19"W x 12"D x 1.75"H)
Weight:	Approximately 6.5 lbs fully configured

#### Certifications and Compliance:

CE Certified for:	EN55022 Class B (Emissions)
	EN50082-1 Part 1 (Immunity)
	EN60950 (Safety)

RoHS Compliant: Meets RoHS lead-free standards

\*Specifications subject to change

Open Networks Engineering Ltd reserves the right to change these specifications without notice