

Newtec MDM6000 Satellite Modem (R1.1)

The High Speed Solution



Description

The Newtec MDM6000 Satellite Modem is the next generation modem optimised for point-to-point very high speed IP applications over satellite. In combination with the NOP1760 Bandwidth Manager the modem achieves barrier-breaking speeds at the highest bandwidth efficiency and maximum service availability. The MDM6000 very high speed solution is in full compliance with the DVB-S2 standards and the upcoming S2 Extensions candidates.

Efficiency at the core

The Newtec MDM6000 Satellite Modem high speed solution combines a number of innovative elements to improve current market available efficiencies, thereby lowering the overall Total Cost of Ownership.

New modulation and Forward Error Correction (FEC) codes up to 64APSK (which can be seen as demonstrator of possible extensions in the DVB-S2 standard) in combination with innovative technologies such as 72 Mbaud wideband support, Clean Channel Technology™, FlexACM® and Automated Equalink® are embedded in the solution and bring the satellite link to full efficiency. By increasing the amount of data that can be transferred per transponder the MDM6000 modem effectively increases business opportunities for Service Providers. The performance can be increased even more by adding Newtec's bandwidth cancellation and/or network optimisation technologies.

Optimal availability

Newtec's auto-adaptive technology FlexACM® is incorporated in the MDM6000 Satellite Modem solution and deals with fading conditions (rain, dust, interference) and inclined orbit satellites with varying throughput patterns.

Thanks to FlexACM® these fading conditions will no longer interrupt the transmission between the hub and remote sites nor result in loss of data. The maximum possible throughput can be achieved at all times.

Additionally the optional Automatic Uplink Power Control mechanism can ensure maximum use of the linkbudget at all times.

Flexibility and scalability matching market's business models

The modem provides a scalable and flexible platform which allows the customers to grow depending on their application and investment plan. The MDM6000 platform can start as a modulator or demodulator unit and grow into a modem with different functionalities by simple license upgrades.

At the output of the MDM6000 Modem, the signal is available in IF or extended L-band (950 MHz-2150 MHz). SW controlled 24V/48V DC BUC Power and 10 MHz reference can be multiplexed on the L-band modulator output. At the receive side the modem has dual L-band or optional IF and L-band input. The active input is selected by the user and can provide DC power and frequency band selection signals compatible with most professional and commercial LNBS providing a compact and cost effective solution.

Newtec's Next Generation MDM6000 Satellite Modem solution is perfect for demanding applications requiring very high speeds at maximum efficiency and optimal availability.

The MDM6000 increases the customer base and amount of services within the same bandwidth. At the same time it introduces ways to reduce OPEX costs and increase the profitability of your business.

The Satellite Modem can be easily monitored and controlled via a comprehensive front panel menu, advanced web GUI as well as via SNMP protocol. This enables easy integration into any industry-standard EMS/NMS system.

Buy Now!



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Key features

- DVB-S2 compliant
- Candidate S2 Extensions and MODCODs
- QPSK/8PSK/16APSK/32APSK and 64APSK
- Baud rate range: 1 – 72 Mbaud
- Data rates up to 380 Mbps in each direction (depending on configuration)
- Optional FlexACM® for adaptive environments
- GSE encapsulation inside NOP1760 Bandwidth Manager
- Noise & Distortion Estimator tool (NoDE)
- RFI reduction using optional DVB RF Carrier ID (DVB-CID)
- IF (70 MHz/140 MHz) and Extended L-band (950 MHz - 2150 MHz) high power outputs
- L-band monitoring output
- Thin Margin Manager (ThiMM) provides accurate prediction of upcoming variation of the link condition
- Optional high stability internal clock reference
- Optional 10 MHz reference output
- Clean Channel Technology™
- Automated Equalink® Pre-distortion
- Secure front panel, SNMP, HTTP and CLI interfaces

Main advantages

- Highest speeds available in the market
- Lower operational costs thanks to the highest bandwidth efficiency
- Optimal availability
- Based on DVB-S2 standards and upcoming S2 Extension candidates for better efficiency (15-37% depending on link budget)
- Clean Channel Technology™ provides up to 15% bandwidth efficiency gains on top of the DVB-S2 standard
- Maximum efficiency in combination with bandwidth cancellation (up to 30%) and network optimisation technologies
- Easy integration with terrestrial IP networks and routers

Architecture

To obtain the very high speeds over satellite in point-to-point applications the MDM6000 Satellite Modem Bundle consists of a MDM6000 Satellite Modem and the NOP1760 Bandwidth Manager. To maximise efficiency the MDM6000 modem can be combined with the BW0900 Bandwidth Canceller.

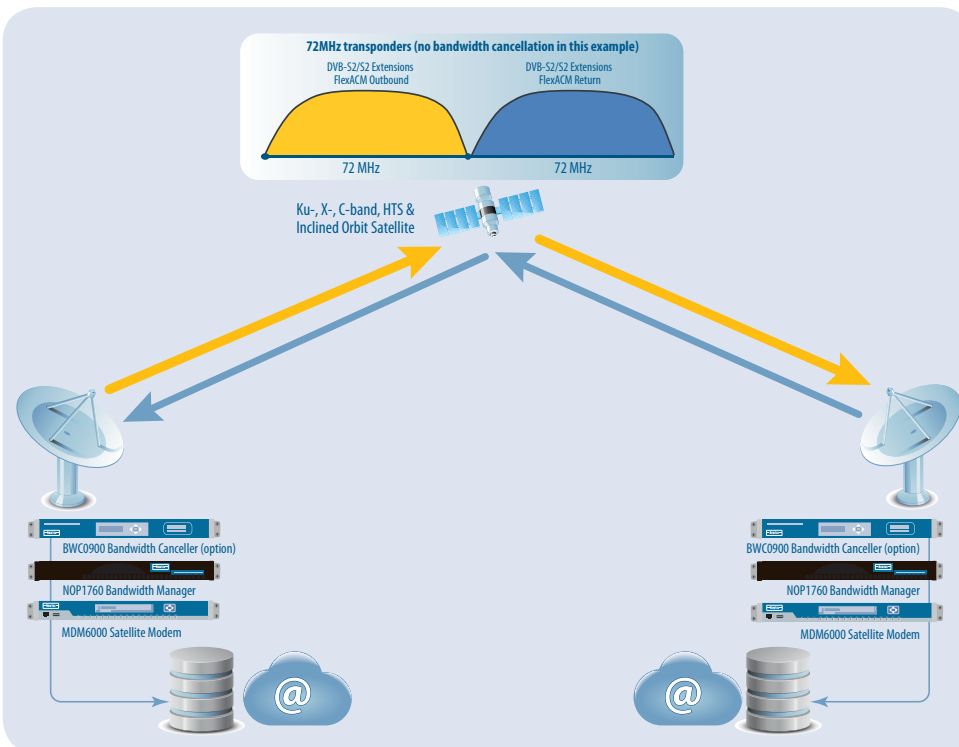


Figure: Point-to-Point Very High Speed Solution

Support services for your professional equipment

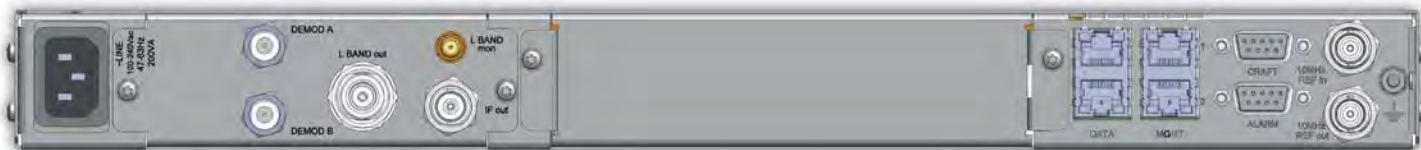
Care Pack Basic and Care Pack Enhanced are the Newtec service and support packages protecting your Newtec equipment over a three-year period.

Related Products in PtP Network

NOP183x	PEP Gateways
NOP184x	PEP Server
MDM6000	Satellite Modem Rel.1.0
NOP1760	Bandwidth Manager and Shaper
BWC0900	Bandwidth Canceller
AZ212 1+1	Modulator Redundancy Switch
AZ7x0	Frequency Converters Portfolio

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Input interfaces

- Auto switching 10/100/1000 Base-T Ethernet interface
- Maximum rates: 380 Mbit/s in each direction
- Layer 3 bridge or router mode: IP packets over satellite
- Encapsulation: GSE Encapsulation/Decapsulation of IP frames in DVB-S2 & S2 Extensions Base-Band frames
- Filtering and routing capabilities (uplink)
 - Up to 100 IP routes/air-MAC addresses
 - Up to 100 DVB-S2/S2 Extensions Streams
- Data filtering (downlink):
 - Up to 64 ISI/AirMAC filters

Modulation and demodulation

Supported modulation schemes and FEC

- DVB-S2
 - Outer/Inner FEC: BCH/ LDPC
 - MODCODs:

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

- S2 Extensions:
 - Outer/Inner FEC: BCH/ LDPC
 - MODCODs:

QPSK:	45/180, 60/180, 72/180, 80/180, 90/180, 100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180, 160/180, 162/180
8PSK:	80/180, 90/180, 100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180
16APSK:	80/180, 90/180, 100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180, 160/180, 162/180
32APSK:	100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180, 160/180, 162/180
64APSK:	90/180, 100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180, 160/180, 162/180

Linear MODCODs:

8PSK-L:	80/180, 90/180, 100/180, 108/180, 114/180, 120/180
16APSK-L:	80/180, 190/180, 100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180, 160/180, 162/180
64APSK-L:	90/180, 100/180, 108/180, 114/180, 120/180, 126/180, 135/180, 144/180, 150/180, 160/180, 162/180

- FlexACM controller included in NOP1760 Bandwidth Manager(optional)
- Support of DVB-S2 VCM mode

Baud rate range

Modulator:	0,050 - 72MBaud
Grade 1 Demodulator:	1 - 60Mbaud (depending on MODCOD)
Grade 2 Demodulator:	1 - 72Mbaud

Frame length

- DVB-S2 Short Frames 16200 bits
- DVB-S2 Normal Frames 64800 bits
- S2 Extensions Normal Frames 64800 bits

Roll-off factor

- DVB-S2 20% - 25% - 35%
- S2 Extensions 5% - 10% - 15% - 20% - 25% - 35%

Clean Channel Technology™ (optional)

- Roll-off 5% - 10% - 15% - 20% - 25% - 35%
- Optimum carrier spacing
- Advanced filter technology

Modulation interfaces

L-band (configuration option)

- Connector N(F), 50 ohms
- Frequency 950 - 2150 MHz (10 Hz steps)
- Level -35/+7 dBm (+/- 2dB)
- Return loss > 14 dB
- Switchable 10MHz Reference
- Spurious performance
 - Better than -65 dBc/4kHz @ +5 dBm output level and > 256kBaud
 - Non-signal related: < -80 dBc @ +5 dBm output

IF-band (configuration option)

- Connector BNC (F) - 75 ohms (intermateable with 50 ohms)
- Frequency 50 - 180 MHz (10 Hz steps)
- Level -35/+10 dBm (± 2 dB)
- Return loss
 - 50 ohms : > 14 dB
 - 75 ohms : > 20 dB
- Spurious performance
 - Better than -65 dBc/4kHz @ +5 dBm output level and > 256kBaud
 - Non-signal related: < -80 dBc @ +5 dBm output

L-band monitoring

- Connector SMA (F), 50 ohms (optional SMA adapter)
- Frequency Same as L-Band output frequency or 1050 MHz in case of IF output option only
- Level -45 dBm
- Return loss > 10 dB

10 MHz reference output (optional)

- Connector BNC (F), 50 ohms
- Output level +3 dBm (+/- 2dB)

Demodulation interfaces

Dual L-band input (default)

- Connector 2 x F-type (F), 75 Ohms
- Return loss > 7 dB (75 Ohm - F(F))
- Level -65/-25dBm
- Frequency 950 - 2150 MHz
- Adjacent signal < (Co+7) dBm/Hz with Co = signal level density

IF-band input (optional, replaces one L-band input)

- Connector BNC (F) - 75 ohms
- Return loss > 15 dB
- Level -55 to -15 dBm
- Frequency 50 - 180 MHz
- Adjacent signal < (Co+7) dBm/Hz with Co = signal level density

LNB power and control

- max. current 350 mA (on selected IFL input)
- voltage 11,5 - 14 V (Vertical polarization)
- 16 - 19 V (Horizontal polarization) & additional 22 kHz +/- 4KHz (band selection according to universal LNB for Astra satellites & DiSEqC command transmission)

Internal 10 MHz Reference Frequency

Standard Stability

- Stability: +/- 2000 ppb over 0 to 70°C
- Ageing: +/- 1000 ppb/year

Very High Stability (Optional)

- Stability: +/- 2 ppb over 0 to 65°C
- Ageing: +/- 500 ppb/10year

Generic

Monitor and control interfaces

- Web server GUI (HTTP) via web browser
- Diagnostics report, alarm log (HTTP)
- SNMP v2c

Alarm interface

- Electrical dual contact closure alarm contacts
- Connector 9-pin sub-D (F)
- Logical interface and general device alarm

Physical

- Height 2RU, width: 19", depth 52 cm, and about 10kg
- Power supply: 90-130 & 180-260 Vac, 105 VA, 47-63 Hz
- Temperature
 - Operational: 0°C to +50°C / +32°F to +122°F
 - Storage: -40 to +70°C / -40°F to +158°F
- Humidity: 5% to 85% non-condensing
- CE label and UL (pending)

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Rev. 3/03.2013

Ordering Information

Newtec MDM6000 Satellite Modem Release 1.0.		Ordering n°
Configuration Options Category		MDM6000
		Select 1 option
MDM6000 Platform	MDM6000 Chassis Version 01	HW-01
		Select 1 option
MDM6000 Operating SW	MDM6000 Major Software version R1*	MS-10
		Select 1 option for modem or demodulator function
Demod HW Option	Grade 1 (S2)*	DH-01
	Grade 2 (S2+S2 Extensions+WideBand)	DH-02
		Select 1 option
Mod Output Interface	L-Band with switchable 10MHz output (950-2150MHz)*	OU-00
	L-Band + 10 MHz + 24/48Vdc for BUC	OU-05
	IF (50-180 MHz)*	OU-01
	IF + L-band with switchable 10MHz output*	OU-02
	IF + L-Band + 10 MHz + 24/48Vdc for BUC	OU-06
		Select 1 option
Internal Clock Reference	Standard 10 MHz	IR-00
	Very High Stability 10 MHz	IR-02
		Select 1 option
Reference Clock Output	10 MHz Reference Output (BNC)	RO-01
		Select 1 option
Demod Input Interface	IF+L-band*	IU-01
		Select 1 option
Dual PSU	Dual Main PSU	PS-01
		Select 1 option
Efficiency Optimization Package	Includes: DVB-S2 & S2 Extensions	OP-01
		Select data rate (modem or modulator function)
Outbound Rates	Rates in Mbps (CCM-VCM)*	20 Mbps - 380 Mbps
		Select data rate (modem or demodulator function)
Inbound rates	Rates in Mbps (CCM-VCM)*	20 Mbps - 380 Mbps
Additional Options Category		
		Select 1 Option
ACM	TX Adaptive Modulation & Coding PtP Controller*	Yes/No
	RX Adaptive Modulation & Coding Client*	Yes/No
		Select 1 Option
Clean Channel Technology™	CCT in Mbps*	Yes/No
		Select 1 Option
AUPC	Automatic Uplink Power Control	Yes/No
		Select 1 Option
Automated Equalink®	Linear & Non-linear predistortion*	Yes/No
		Select 1 Option
DVB Carrier Identifier	DVB RF Carrier Identifier*	Yes/No
Services Category		
		Select 1 Option
Support	Care Pack 3 Basic	GA-08
	Care Pack 3 Enhanced	GA-09



Digisat International Inc.
 4195 W. New Haven Ave., Suite 15
 Melbourne, FL 32904
 USA
 +1-321-676-5250
 Email: sales@digisat.org
<http://www.digisat.org>