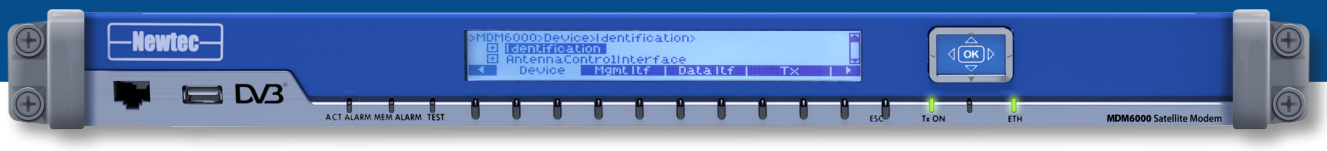
Newtec

MDM6000
SATELLITE MODEM
(R2.0)



Description

The MDM6000 Satellite Modem is the versatile next generation modem optimized for medium to high speed applications over satellite. The MDM6000 modem is typically installed at both ends of a point-to-point satellite link or at the remote sites of a star network. The unit can act as a modulator, demodulator or modem depending on the network configuration and integrates seamlessly with terrestrial networks and equipment. The modem is in full compliance with the updated DVB-S2 and DVB-S2X standards and still supports the Newtec S2Extensions, all in order to achieve barrier-breaking efficiency at maximum service availability.

Efficiency at the Core

The Newtec MDM6000 Satellite Modem 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 256APSK 3/4 in the DVB-S2X standard in combination with innovative technologies such as 72 Mbaud, Clean Channel Technology™, Automatic Uplink Power Control (AUPC), FlexACM®, QoS, and Automated Equalink® 2.0 are embedded in the modem 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.

Depending on the application, the Newtec MDM6000 modem can be used in conjunction with the Newtec HUB6000 Satellite Hub. In all cases end-to-end efficiency over satellite can be achieved. The performance can be increased even more by adding Newtec's bandwidth cancellation and/or network optimization technologies such as acceleration, compression, shaping and bandwidth management.

Optimal Availability

Newtec's auto-adaptive technology FlexACM® is incorporated in the MDM6000 modem and deals with fading conditions (rain, dust, interference) and inclined orbit satellites with varying throughput 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 Automatic Uplink Power Control mechanism can ensure maximum use of the linkbudget at all times.

The Newtec MDM6000 Satellite Modem is the versatile Next Generation modem that allows service providers and government operations to increase the amount of services or the customer base within the same bandwidth. At the same time it introduces ways to reduce OPEX costs and increase the profitability of your business at maximum efficiency and optimum availability.

Flexibility and Scalability Matching Market's Business Models

The MDM6000 modem provides a scalable and flexible platform which allows the customers to grow depending on their application and investment plan. The 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). 24V/48V DC BUC Power and 10 MHz reference can be multiplexed on the L-band modulator output via software settings. At the receive site the modem has a dual L-band input or optional IF+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.

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.

SPECIFICATIONS

Key Features

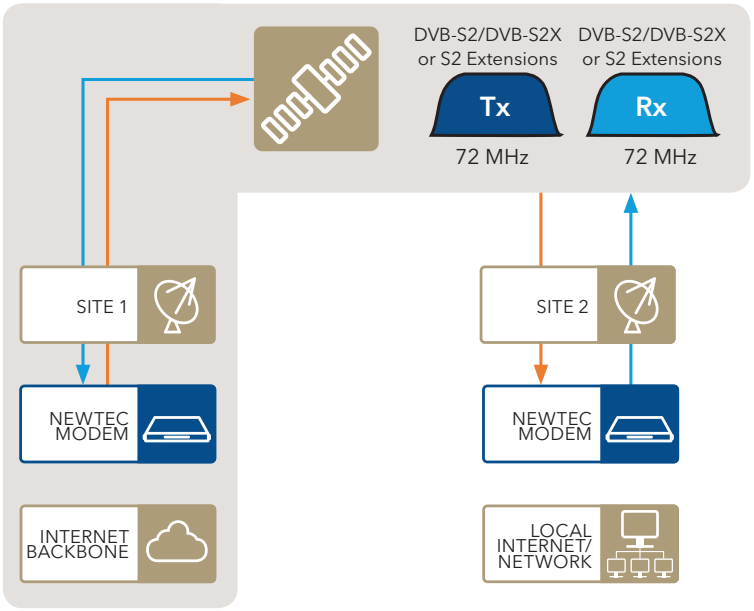
- Data rates up to 425Mbit/s bi-directional for handling new high-speed applications and lower TCO
- Baudrates upto 72Mbaud to handle all common transponder sizes
- Clean Channel Technology™ for additional bandwidth efficiency gains by allowing optimal carrier spacing
- DVB-S2 and optional DVB-S2X (QPSK upto 256APSK) for standard compliant optimal use of bandwidth
- Newtec S2 Extensions (up to 64APSK) for optimal closed network operation
- Optional Automated Equalink® 2.0 for optimal use of semi-saturated transponders
- Reduce impact of RF Interferences (RFI) by enabling the optional DVB RF Carrier ID (DVB-CID)
- All modcods and baudrates default enabled for flexible and optimal operation of the network
- Automatic Uplink Power Control for combating uplink fading
- Optional FlexACM® for adaptive environments like variable interferences from rain and dust or for inclined orbit operation
- Standard GSE encapsulation for minimal overhead
- Support for MPE, ULE and XPE for working with legacy equipment
- Adaptive traffic shaping and bandwidth management allowing maximal SLA adherence even in case of ACM
- Advanced Quality of Service (QoS) for better customer experience
- Easy integration with terrestrial data networks
- Easy operation through secure frontpanel, SNMP, HTTP and CLI interfaces
- Modified OpenAMIP support to interwork with stabilized antennas from different vendors

Support Services for your Professional Equipment

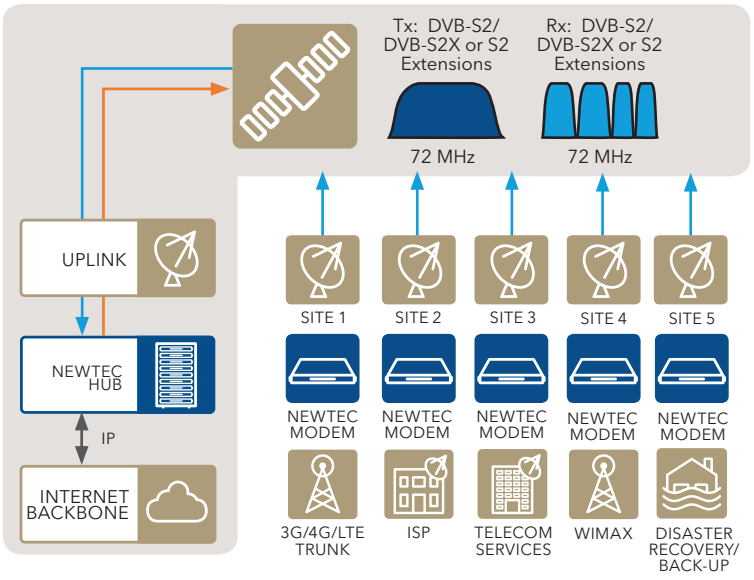
Care Pack Basic and Care Pack Enhanced are the Newtec service and support packages protecting your Newtec equipment over a three-year period.

Architecture

The MDM6000 Satellite Modem can be used at both ends of a point-to-point network or at the remote site of a star network. Depending on the configuration the unit can be used as modulator, demodulator or modem.



Point-to-Point



Point-to-MultiPoint

Related Products

HUB6000	Satellite Hub
MDM6100	Broadcast Satellite Modem
BWC0900	Bandwidth Canceller
NOP183x	PEP Gateways
NOP184x	PEP Servers
USS02x2	Redundancy Switch
FRC07x0	Frequency Converters Portfolio

Related Bandwidth Efficiency Technologies

Clean Channel Technology™
Automated Equalink® 2.0
DVB-S2X and Newtec S2 Extensions
FlexACM®

Newtec

Input Interfaces

- Auto switching 10/100/1000 Base-T Ethernet interfaces
- Maximum rates: 425mbit/s bidirectional (200Mbit/s for imix traffic mix, 75kpps each direction)
- Layer 2 bridge function: ethernet over satellite (IPv6/VLAN/MPLS compatible)
- Layer 3 static router function: IPv4 packets over satellite
- Up to 100 routes
- Advanced QoS features
  Adaptive Traffic Shaping on bitrate or symbolrate according to PIR/CIR
  Flexible traffic classification on VLAN/MPLS/IPv4/IPv6
- GSE, MPE, XPE or ULE Encapsulation/Decapsulation of IP/Ethernet frames in DVB-S2, DVB-S2X and S2 Extensions
- Data filtering (downlink):
  Up to 64 receive filters

Modulation and Demodulation

SUPPORTED MODULATION SCHEMES AND FEC

- DVB-S2 (acc. ETSI EN 302 307 v1.2.1 for DVB-S2)
  Outer/Inner FEC: BCH/LDPC
  52 MODCODs (short & normal frames):
  QPSK: from 1/4 to 9/10
  8PSK: from 3/5 to 9/10
  16APSK: from 2/3 to 9/10
  32APSK: from 3/4 to 9/10
- Newtec S2 Extensions
  Outer/Inner FEC: BCH/LDPC
  54 MODCODs:
  QPSK: from 45/180 to 144/180
  8PSK: from 80/180 to 150/180
  16APSK: from 80/180 to 162/180
  32APSK: from 100/180 to 162/180
  64APSK: from 90/180 to 162/180
  29 Linear MODCODs:
  8PSK-L: from 80/180 to 120/180
  16APSK-L: from 80/180 to 162/180
  64APSK-L: from 90/180 to 162/180
- DVB-S2X standard
  Outer/Inner FEC: BCH/LDPC
  53 MODCODs (normal frames):
  QPSK: from 1/4 to 9/10
  8PSK: from 3/5 to 9/10
  16APSK: from 26/45 to 9/10
  32APSK: from 32/45 to 9/10
  64APSK: from 11/15 to 5/6
  128APSK: 3/4; 7/9
  256APSK: 32/45; 3/4
  13 Linear MODCODs (normal frames):
  8APSK-L: 5/9; 26/45
  16APSK-L: from 1/2 to 2/3
  32APSK-L: 2/3
  64APSK-L: 32/45
  256APSK-L: 29/45 to 11/15
  41 MODCODs (short frames):
  QPSK: from 11/45 to 8/9
  8PSK: from 7/15 to 8/9
  16APSK: from 7/15 to 8/9
  32APSK: from 2/3 to 8/9
- FlexACM® controller (optional)
- FlexACM® client embedded in MDM6000 modem (optional)
- Automatic Uplink Power Control

BAUD RATE RANGE

- Modulator: 256 kbaud - 72MBaud
- Class 1 Demodulator: 1 - 60Mbaud (depending on MODCOD)
- Class 2 Demodulator: 256kbaud - 72Mbaud

FRAME LENGTH

- Short frames of 16200 bits for DVB-S2 and DVB-S2X
- Normal frames of 64800 bits for DVB-S2, DVB-S2X and Newtec's S2 Extensions

CLEAN CHANNEL TECHNOLOGY™

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

AUTOMATED EQUALINK™ 2.0

- Linear pre-distortion
- Non-linear pre-distortion for all modcods

CARRIER INTERFERENCE REDUCTION

- DVB RF Carrier ID
  (CID according ETSI TS 103 129 v1.1.1)
- Spread Spectrum Modulator (BPSK)
- Supports User Data
- Compliant to DVB Standard

Modulation Interfaces

L-BAND

- Connector N(F), 50 ohms (optional SMA adapter)
- 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

- 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
- 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)

BUC POWER (OPTIONAL)

- Max. current: 3.8A
- Voltage: 24V, 48V (Software controlled)

Demodulation Interfaces

DUAL L-BAND INPUT

- Connector 2 x F-type (F), 75 Ohms
- Return loss > 7 dB (75 Ohm – F(F))
- Maximum total input power: - 10 dBm
- Maximum input signal power: (-30 + 10log(f))dBm where f=baud rate in Mbaud
- Minimum input signal power: (-80+Es/No(thr)+10log(f))dBm where f=baud rate in Mbaud and Es/No(thr)= Es/No value in dB for QEF reception
- Frequency 950 - 2150 MHz
- Adjacent signal < (Co+7) dBm/Hz with Co = signal level density

IF-BAND INPUT (REPLACES ONE L-BAND INPUT)

- Connector BNC (F) - 75 ohms
- Return loss > 15 dB
- Level See L-band input level spec above + 10dBm
- 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

- M&C connectivity via separate Ethernet links
- Web server GUI (HTTP) via web browser
- Diagnostics report, alarm log (HTTP)
- SNMP v2c
- Modified OpenAMIP protocol to control stabilized antenna from modem

ALARM INTERFACE

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

Physical

- Height 1RU, width: 19", depth 51 cm, 5.8 kg
- Power supply:
  90-130 & 180-260 Vac, 125 VA, 47-63 Hz or 36-76VDC, 160W
- 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

Newtec MDM6000 Satellite Modem Release 2.0		Ordering n°
Configuration Options Category		**MDM6000**
		Select 1 option
Hardware Platform	Chassis Version 03 (Modem)	CH-03
		Select 1 option
Operating Software	MDM6000 Major Software version R1*	MS-11
		Select 1 option
Efficiency Optimization Package	DVB-S2, CCT, AUPC*	OP-02
	S2 Ext, DVB-S2, CCT, AUPC*	OP-03
	DVB-S2, DVB-S2X and S2 Ext, CCT and AUPC	OP-04
		For a modem or demodulator, select 1 option
Demodulator Hardware	Class 1 (DVB-S2 only)*	DH-01
	Class 2 (Wideband DVB-S2 & DVB-S2X, S2 Extensions)	DH-02
		For a modem or demodulator, select 1 option
Demodulator Input Interface	Redundant L-band	IU-00
	Selectable IF or L-band **	IU-01
		For a modem or modulator, select 1 option
Modulator Output Interface	L-band with switchable 10MHz output*	OU-00
	L-band + 10MHz output + 24/48V BUC**	OU-05
	IF (50-180 MHz)*	OU-01
	IF+ L-band with switchable 10 MHz out*	OU-02
	IF+L-band + 10MHz output + 24/48V BUC**	OU-06
		Select 1 option
Internal Reference Clock	Standard 10 MHz	IR-00
	Very High Stability 10 MHz	IR-02
		Select max 1 option
Reference Clock Output	10 MHz Reference Output (BNC)	RO-01
		Select 1 option
Mains Power Supply Unit	PSU Single AC 110/240V	PS-00
	PSU Dual Redundant AC 110/240V	PS-01
	PSU Single DC 48V**	PS-10
	PSU Dual DC 48V**	PS-11
		For a modem or modulator, select 1 option
Outbound Rates	Outbound Rate*	1 - 425 Mbit/s
		For a modem or demodulator, select 1 option
Inbound rates	Inbound Rate*	1 - 425 Mbit/s
Additional Options Category		
		Select max 1 option
Outbound ACM	Tx FlexACM® PointToPoint *	1-425 Mbit/s
		Select max 1 option
Inbound ACM	RX FlexACM® Client*	1-425 Mbit/s
		Select max 1 option
DVB Carrier Identifier	DVB RF carrier identifier*	ID-01
		Select max 1 option
Pre-Distortion	Automated Equalink® *	AE-01
		Select max 1 option
Modulator Output Connector	L-Band output N to SMA output adapter	OU-10
Services Category		
		Select max 1 option
Support	Care Pack 3 Basic	GA-08
	Care Pack 3 Enhanced	GA-09

(*) Selectable via license key
(**) Option IU-01,PS-10 and PS-11 are mutually exclusive with options OU-05 and OU-06
Contact your sales representative for details (sales@newtec.eu).

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