Description

The WGS certified (pending) MDM9000 Satellite Modem is the versatile next generation modem optimized for a wide range of fixed and mobile government and defense applications over satellite. The MDM9000 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 DVB-S2 and the recently released DVB-S2X standards while being backward compatible with Newtec S2 Extensions mode, all in order to achieve barrier-breaking efficiency at maximum service availability. In receiver mode, the MDM9000 serves as demodulator with dedicated intelligence gathering features.

Efficiency at the Core

The Newtec MDM9000 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 in the DVB-S2X standard in combination with innovative technologies such as 133 Mbaud, Clean Channel Technology®, Bandwidth Cancellation (BWC), Automatic Uplink Power Control (AUPC), FlexACM®, QoS, and Equalink® 3 are embedded in the modem and bring the satellite link to full efficiency. The performance can be increased even more by adding Newtec’s network optimization technologies such as acceleration, compression, shaping and bandwidth management.

By increasing the amount of data that can be transferred per transponder the MDM9000 modem caters for data and video hungry applications such as ISR, MWR, data backhaul, strategical links and disaster recovery networks.

Optimal Availability

Newtec’s auto-adaptive technology FlexACM is incorporated in the MDM9000 modem by default 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. In case of link loss due to full shadowing effects, the quick reacquisition feature inside the MDM9000 modem will reactivate the transmission in milliseconds after the satellite link becomes available again.

Flexibility and Scalability for Successful Operations

An extensive set of encapsulation/decapsulation methods (MPE, XPE, GSE, ULE, Raw Base Band Frame, data piping) allows government and defense agencies to efficiently acquire satellite traffic and demodulate the signal for further processing. The MDM9000 also has a raw baseband data output that can be further processed by intelligent engines while some specific features for intelligence gathering were included in order to detect and capture hidden data in regular Satcom transmissions.

To facilitate ordering the modem comes with IF and L-band for both TX and RX by default.

The built-in bandwidth canceller completely operates in the digital domain providing unsurpassed performance with the lowest possible residual cancellation noise resulting in the highest spectral efficiency.

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.
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 MDM9000 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.

Related Products

- HUB6000 Satellite Hub
- MDM6100 Broadcast Satellite Modem
- BWC9000 Bandwidth Canceller
- NOP183x PEP Gateways
- NOP184x PEP Servers
- USS02x2 Redundancy Switch
- FRC07x0 Frequency Converters Portfolio
- NEWTEC DIALOG Newtec Dialog® platform

Related Bandwidth Efficiency Technologies

- Clean Channel Technology
- Equalink 3
- DVB-S2 and DVB-S2X
- FlexACM
- Bandwidth Cancellation

Key Features

- WGS certified
- Suitable for low, medium and high speed applications, baudrates up to 133 Mbaud to handle all common transponder sizes
- Clean Channel Technology for additional bandwidth efficiency gains by allowing optimal carrier spacing
- DVB-S2 and DVB-S2X (QPSK upto 256APSK)
- Newtec S2 Extensions (up to 64APSK) for closed network operation
- Optional Equalink 3 for linear and non-linear pre-distortion
- Reduce impact of RF Interferences (RFI) by enabling the optional DVB RF Carrier ID (DVB-CID)
- Default IF and L-band on TX and RX for ease of operation
- All MODCODs and baudrates default enabled for flexible and optimal operation of the network
- Newtec FlexACM and quick re-acquisition times for increased availability in mobility applications

- Intelligent Uplink Power Control
- NLPC (non-linear post compensation) for intermod removal
- 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)
- 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
- Fitted with dedicated intelligence gathering features
SUPPORTED MODULATION SCHEMES AND FEC

Modulation and Demodulation

• Auto switching 10/100/1000 Base-T Ethernet interfaces
• GSE Encap/Decap performance
• Imix (avg 340 byte)
• TX only: 300 Mbps
• RX only: 360 Mbps
• TX + RX: 523 Mbps
• Max PPS (64 byte)
• TX only: 120 kpps
• RX only: 150 kpps
• Maximum Data Rate
425 Mbps simplex, 850 Mbps duplex
• Layer 2 bridge function: Ethernet over satellite (IPv6/ VLANS/MPLS compatible)
• Layer 3 static router function: IPv4 packets over satellite
• Supports Jumbo frames (9216 bytes)
• Up to 100 routes
• Advanced QoS features
• Adaptive Traffic Shaping on bitrate or symbolrate according to PB/CIR
• Flexible traffic classification on VLANS/MPLS/IPv4/IPv6
• GSE, MPE, XPE or ULE Encapsulation

Decapsulation of IP/Ethernet frames in DVB-S2, DVB-S2X and Newtec’s S2 Extensions
• Data filtering (downlink):
Up to 64 receive filters

BAUD RATE RANGE
• SCPC use: 0.256 Mbaud - 133 Mbaud
• BWC use: 0.256 Mbaud - 72 Mbaud

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%

EQUALINK 3
• 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

BANDWIDTH CANCELLATION (BWC)
• Max symbolrate: 72 Mbaud
• Delay range > 500 ms
• Cancellation range: -10 to +10 dB local to remote carrier
• Cancellation ratio: > 30 dB
• Es/No degradation (dB) at 0 dB
  • QPSK - 0.03 dB
  • 8PSK - 0.05 dB
  • 16APSK - 0.10 dB
  • 32APSK - 0.20 dB
  • 64APSK - 0.44 dB
  • 128APSK - 0.80 dB
  • 256APSK - 1.10 dB
• Monitoring: delay, frequency offset, local/remote power, local/total power, phase noise
• Fractional license for redundant modem

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

IF-BAND INTERFACE
• Connector: BNC(F), -50 Ohm
• Return loss: > 15 dB
• Level: See L-band input level spec above +10dBm
• Frequency: 30 - 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)
• DiSEqC control

Internal 10 MHz Reference Frequency

STANDARD STABILITY
• Stability: +/- 2000 ppb over 0 to 70°C
• Aging: +/- 1000 ppb/year

VERY HIGH STABILITY (OPTIONAL)
• Stability: +/- 500 ppb/year
• Aging: +/- 500 ppb/year

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 TRU: width: 19", depth 51 cm, 5.8 kg
• Power supply: 90-130 & 180-260 Vac, 125 VA, 47-63 Hz or 36-76 VDC, 160 W
• Temperature: Operational: 0°C to +50°C, humidity: 5% to 85% non-condensing
• CE label and UL

MDM9000
SATELLITE MODEM (R3.2)

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### Newtec MDM9000 Satellite Modem Release 3.2

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<td>Efficiency Optimization Package</td>
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<td>PS-00, PS-01, PS-01, PS-10, PS-11</td>
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<td>Pre-distortion</td>
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<td>Encryption</td>
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