MDM5000 High Throughput Modem on the Newtec Dialog® Platform

The Newtec MDM5000 Satellite modem – as used on the Newtec Dialog® platform – is the first VSAT modem on the market that supports DVB-S2X. With a symbol rate ranging from 1 up to 133 Mbaud and coding from QPSK to 256APSK in the forward channel, it enables network operators to set-up almost any type and size of network on any available type of satellite – for example, traditional FSS, next generation High Performance Satellites, HTS.

The Newtec MDM5000 Satellite Modem supports a wide range of IP Services including internet/intranet access, Voice over IP (VoIP), backbones for mobile backhauling and trunking, contribution and multicasting services.

The high-speed capabilities and high efficiency in receive and transmit makes the MDM5000 a perfect fit for very bandwidth-intensive services in the enterprise, backhauling, offshore and maritime markets.

Return Link Technology Flexibility for Tailored Services

For the return channel, a choice can be made between three different return technologies depending on the type of application.

The modem supports S2 Extensions SCPC in the return, which allows for highly efficient, medium to high rate dedicated return bandwidth, ranging from 1 to 40 Mbaud for applications such as high speed IP backbones, cellular backhauling, trunking, maritime, mobility and file/video contribution. MF-TDMA mode enables low rate overbooked and bursty traffic profiles for inactive sites in business continuity networks or for always-on connectivity in occasional use networks. The third mode, Mx-DMA™, combines the best of both worlds and fills in the gap between MF-TDMA and SCPC.

With Newtec’s Mx-DMA, satellite bandwidth is allocated dynamically in real-time depending on traffic demand, Quality of Service (QoS) profiles and link conditions. Changes are seamless without any packet loss or additional jitter. This allows services with continuously changing rates (from a few kbps up to 60 Mbps) as with MF-TDMA, but at SCPC efficiency. Mx-DMA allows network operators to deploy anything between dedicated to low-to-medium

Having the choice between these three return technologies in a network within a single modem guarantees network operators a business model with maximum flexibility in supported applications, responsiveness to new market opportunities and Service Level Agreement (SLA) schemes that fit customers’ needs.

High Service Satisfaction

For a true broadband experience at minimal bandwidth consumption, the Newtec MDM5000 modem incorporates IP traffic enhancement software for TCP acceleration, pre-fetching, compression and encryption. Traffic can be classified in seven different QoS classes based on IP traffic characteristics (protocol types, source/destination address and more). This allows the network operator to provide a flexible hierarchical QoS model depending on any application's SLA.

Main Advantages

- High throughput upstream and downstream capabilities
- MF-TDMA, SCPC and Newtec patented Mx-DMA capabilities
- DVB-S2X forward and MF-TDMA, S2 Extensions SCPC and Newtec patented Mx-DMA return link capabilities
- The most optimal modulation and bandwidth allocation while guaranteeing the highest efficiency and availability
- Bolstered with Newtec’s technologies FlexACM®, Point&Play®, HRCTM
- Easy to use multilingual web GUI for installation, diagnostics and troubleshooting

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### Key Features
- High performance unicast service rates up to 120/40 Mbps
- Transmit multicast up to 60 Mbps
- Receive multicast support (IGMPv2/static configuration) up to 200 Mbps
- Embedded TCP acceleration and encryption
- Multilevel QoS with seven QoS Classes
- Low jitter for real-time applications
- DNS Cache/Relay and HTTP pre-fetching
- Versatile IP routing and addressing
- Support of IPv4 and IPv6
- Multiple virtual networks behind the modem
- DVB-S2x forward
- MF-TDMA 4CPM with Adaptive Return Link
- Mx-DMA HRC return with AUPC and ACM
- SCPC S2 Extensions return with ACM

### Markets
- Enterprise/SME
- Trunking
- Cellular backhaul
- Government and defense
- Broadcast
- Offshore and maritime

### Applications
- Internet/Intranet access
- VoIP telephony (SIP, H.323, …)
- 2G/3G/rural cellular backhauling
- Backbone connections, fiber restoration
- FNG/SNG live and file contribution

### SPECIFICATIONS

#### Satellite Interface
- **FORWARD CARRIER (RX)**
  - Standard DVB-S2/DVB-S2x
  - Modulation QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 256APSK
  - FEC 53 MODCODs (normal frames): QPSK: from 1/4 to 9/10
  - 1A6APSK: 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
  - 128APSK-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
  - Roll-off 5, 10, 15, 20, 25 and 35 %
  - Symbol rate 1 Mbaud to 133 Mbaud

- **NEWS**
  - Symbol rate 1 Mbaud to 133 Mbaud

#### FORWARD CARRIER (RX)
- **Applications**
  - **Markets**
    - **Enterprise/SME**
    - **Trunking**
    - **Cellular backhaul**
    - **Government and defense**
    - **Broadcast**
    - **Offshore and maritime**

#### Modem Interfaces
- **TX INTERFACE – TX1**
  - **Frequency**: 950 - 1850 MHz/1450 – 2450 MHz (hardware option)
  - **Connector**: F-Type - 75 Ohm/N-Type - 950 – 2150 MHz
  - **TX level**: 55 dBm to +5 dBm
  - **BUC power supply**: 24VDC, 4A/48V
  - **BUC reference**: 10 MHz/100 MHz
  - **BUC reference level**: +3 dBm (+/- 2 dB)

- **TX INTERFACE – TX2 (FUTURE USE)**
  - **Frequency**: 950 - 2150 MHz
  - **Connector**: F-Type - 75 Ohm/N-Type - 950 – 2150 MHz
  - **TX level**: -50 dBm to +25 dBm
  - **LNB power supply**: 13/18VDC, 500mA
  - **Polarization selection**: power supply voltage
  - **LNB LO selection**: 22kHz on/off
  - **LNB Reference**: 10MHz/100MHz (hardware option)

- **RX INTERFACE – RX 1**
  - **Frequency**: 950 - 2150 MHz
  - **Connector**: F-Type - 75 Ohm/N-Type - 950 – 2150 MHz
  - **RX level**: -50 dBm to +25 dBm
  - **LNB power supply**: 13/18VDC, 500mA
  - **Polarization selection**: power supply voltage
  - **LNB LO selection**: 22kHz on/off
  - **LNB Reference**: 10MHz/100MHz (hardware option)

- **RX INTERFACE – RX 2 (FUTURE USE)**
  - **Frequency**: 950 - 2150 MHz
  - **Connector**: F-Type - 75 Ohm/N-Type - 950 – 2150 MHz
  - **RX level**: -50 dBm to +25 dBm
  - **LNB power supply**: 13/18VDC, 500mA
  - **Polarization selection**: power supply voltage
  - **LNB LO selection**: 22kHz on/off
  - **LNB Reference**: 10MHz/100MHz (hardware option)

#### Management
- **MULTILINGUAL WEB GUI**
  - Web-based multilingual GUI: no installation of client software required
  - Supported web browsers: Internet Explorer, Mozilla Firefox, Google Chrome, Safari
  - Management web GUI accessible via configurable management IP address

- **ANTENNA CONTROL**
  - Industry standard ALCU protocol support

- **SNMP**
  - The modem supports SNMPv2 for modem performance management.

### Performance
- **LAYER 2 OR LAYER 3**
  - **Max Rx**: 200 Mbps
  - **Max Tx**: 60 Mbps
  - **Maximum concurrent receive multiscasts**: 10
  - **Maximum concurrent transmit multiscasts**: 4

- **LAYER 3 - UNICAST TRAFFIC**
  - **Concurrent (accelerated):** 100/25 Mbps
  - **Concurrent (non-accelerated):** 120/40 Mbps
  - **Number of TCP connections:** 16,000

- **LAYER 2 - NON ACCELERATED TRAFFIC**
  - **Concurrent receive/transfer:** 145/50 Mbps

- **PPS**
  - **RX**: 90 kPPS
  - **TX**: 45 kPPS
  - **RX + TX**: 60 kPPS

### Diagnostics & Configuration
- **Self-test on management GUI for end-user and operator troubleshooting including diagnostics for support case reporting.**
- **Software upgradeable via satellite**

### Mechanical & Environment
- **Housing Height**: 19", depth 44.5 cm
- **Weight**: 8 kg
- **Operational Temperature**: 0 to 50 °C
- **Humidity**: 5% - 95% non-condensing
- **Storage**: 10 to 60 °C

### Power Supply
- **Power supply**: AC, 50Hz220-260V and 60Hz100-130V
- **DC**: 36-76 V (hardware option)
- **Modem power consumption**: 30W maximum

### Standards and Protocols
- **STANDARDS**
  - Satellite Interface
    - EN 302307-1: DVB-S2
    - EN 302307-2: DVB-S2X
    - EN 301 428 V3.1.3 (2006-02)
    - EN 301 459 V1.4.1 (2006-02)
    - EN 301 443
  - Ka-band VSAT spectrum usage
  - Ka-band VSAT spectrum usage
  - C-band VSAT spectrum usage
  - ETSI EN 301 489-1 V1.6.1 (2005-09)
  - ETSI EN 301 489-12 V1.1.1 (2003-05)
  - FCC: title 47 of the CFR: 2008 part 15(b)
  - Certification
    - Safety: EN 60950-1 second edition
    - RohS: 2002/95/EG directive compliant
    - WEEE: 2002/96/EG directive compliant
    - CE: CE compliant and marked
    - UL: UL compliant

### Management Interfaces
- **LAN INTERFACE**
  - IEEE 802.3
  - 100TX Ethernet
  - 1000TX Ethernet
  - 10GTX Ethernet

### PROTOCOLS
- **Terminal Authentication, UDP, IP, IPv6, ICMP, TCP, ARP, FTP, DHCP, IP forwarding, Diffserv, DNS, IGMPv1/2**

### Website
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### Network Innovations
- Communicate. Anywhere.

### MDM5000 SATELLITE MODEM