



Description

The Newtec MDM6100 Broadcast Satellite Modem is the next generation DVB compliant modem specifically designed for broadcast applications. The modem supports the updated DVB-S2 and DVB-S2X, next to the legacy DVB-S and DVB-DSNG standards, as well as Newtec S2 Extensions in order to achieve barrier-breaking efficiency. The unit can act as a modulator, demodulator or modem.

As a modulator, it is the best fit for broadcast direct-to-home, primary distribution to head-ends and contribution of television and radio content. As a modem or demodulator, it is typically installed in head-ends or at both sides of a contribution link. The MDM6100 can be used in conjunction with set-top boxes, professional IRD's or professional satellite demodulators.



DELIVERING THE HIGHEST UPTIME FOR VITAL LINKS

VITAL Uptime and reliability are essential in the design of the modem, taking a vital role in the satellite network. Input source redundancy and the shortest redundancy switch-over times of modems, operating both in 1+1 and N+1 topologies, are setting the standard in our industry.

Advanced capabilities are built in such as a MPEG Transport Stream analyser, support of SMPTE 2022 FEC at the GbE inputs (for distributed IP headends), and native support of Carrier ID according to the new DVB standard as well as in the transport stream NIT Table. Special care was taken to cope with jittery transport stream over IP inputs. The 6 ASI ports are programmable as inputs or outputs allowing for monitoring as well as operational ASI ports.



GET THE BEST PERFORMANCE AND LOWER YOUR COSTS

PERFORM The Broadcast Satellite Modem performs among the best, offering unmatched bandwidth efficiency optimization options, thereby lowering overall Total Cost of Ownership. The fully automated operation of Newtec's field-proven Equalink® 2.0 predistortion technology is now available for any satellite transmission application providing up to 10% bandwidth gains in single carrier per transponder constellations. Clean Channel Technology®, in combination with DVB-S2X or Newtec S2 Extensions, improve satellite efficiency by up to 15%, thereby enabling much smaller carrier spacing.

Maximum symbol rates up to 72 Mbaud and modulations up to 256APSK (DVB-S2X standard) combined with VCM (Variable Coding and Modulation) allow for maximum throughput in large contribution links.

The unit allows transmitting up to six transport stream(s) and simultaneously filtering out 6 transport streams at the receive side in full compliance with the DVB standards.

At the output of the Broadcast Satellite Modem, the signal is available in IF or extended L-band (950 MHz-2150 MHz), providing a compact and cost effective solution. A switchable 10 MHz reference signal and optional 24V or 48V DC for an outdoor BUC is multiplexed on the L-band interface. The input is dual L-band or as an option 70/140MHz and single L-band.

The Broadcast 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.



EVOLVE TOWARDS TOMORROW'S TECHNOLOGY

EVOLVE Built upon flexible and latest generation programmable technology, the MDM6100 Broadcast Satellite Modem is a future-proof building block that lets any satellite network evolve to the next level of capabilities. A scalable, pay-as-you-grow, licensing and software upgrade mechanism facilitates the launch of new services, or last minute network design changes, without rebuilding the entire network infrastructure. Migration from ASI to GbE and IF to L-band is facilitated by simple in-field installation of license keys.

Migration of standard distribution links towards the new DVB-S2X standard or Newtec S2 Extensions can be as simple as inserting a MDM6100 modem in the head-ends while keeping the installed base of IRDs.

The brand new DVB-CID carrier identifier is already available as a software option on the MDM6100 and DSNG profiles as defined by WBU-ISOG can be easily selected. These profiles define the basic parameters for the most common use cases including the new DVB-S2X standard.

Newtec's Next Generation Broadcast Satellite Modem is not just a modem. It's a platform that takes a vital role in your networks, performs the best on the market and helps you evolve your business through ongoing market and technology innovations.

SPECIFICATIONS

Key Features

- Baud rate range: 256 kbaud - 72 Mbaud
- Data rates up to 425 Mbit/s (in multi-stream mode)
- IF (70/140) and L-Band (950-2150) high power outputs
- Demodulator with dual L-Band or selectable IF-or L-Band (option) input
- Highest system reliability and service uptime through robust design and industry leading redundancy solutions
 - Exceptional jitter recovery on TS over IP inputs with SMPTE 2022 FEC
 - Redundant optional ASI or GbE interfaces in single stream mode
 - Redundancy with main TS over ASI and back-up TS over IP input
 - Redundant optional ASI interfaces for up to 3 TS input streams
 - Built-in TS Analyser with PCR jitter measurements
 - Accurate link margin monitoring through the use of NODE® Noise & Distortion Estimator tool
 - RFI reduction using optional DVB RF Carrier ID (DVB-CID) and NIT table CID (default)
 - Automatic TS rate adaptation
 - L-band monitoring output
 - Market leading RF purity and performance
 - Programmable amplitude slope equalizer
 - PRBS generator for link performance tests
 - Optional high stability internal clock reference
 - Optional dual AC power supply
- Low Total Cost of Ownership as a result of very high bandwidth efficiency technology options, and ease of monitoring and control
 - DVB-S2X, DVB-S2, DVB-DSNG and DVB-S compliant
 - Newtec S2 Extensions
 - QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK and 256 APSK
 - Clean Channel Technology® provides up to 15% bandwidth efficiency gains on top of the DVB-S2 standard
 - Optional automated Equalink® 2.0 Pre-distortion provides up to 10% bandwidth gains, higher QoS and geographic coverage
 - Multistream CCM or VCM mode with ISSY
 - Selection of DSNG profiles acc. WBU-ISOG including the new DVB-S2X standard
 - Secure front panel, SNMP, HTTP and CLI interfaces
- Future-proof design combining video and IP multi-service capabilities, supports transport of today's and tomorrow's services
 - Multistream reception and transmission
 - Up to 8 Transport Streams mux/demux on GbE (TSoverIP) or 6 on optional ASI interfaces
- Optional built-in support for opportunistic data insertion up to 40Mbps, interoperable with IRD's that support Multi Protocol Encapsulation (MPE)
- Optional MPE decapsulator up to 40 Mbps
- Supports SFN Networks using transparent TS pass-through
- Optional BISS Content protection
- Demodulator supports the automated Equalink® 2.0 calibration protocol
- External reference input
- Optional 10 MHz reference output
- Easy integration with industry leading management systems (EMS/NMS/OSS)
- Feature-based pricing and software upgrades
- Pay-as-you-grow flexible licensing scheme

Applications

- Broadcast Direct-to-home (DTH)
- Broadcast Primary Distribution
- Broadcast Fixed Contribution
- Upgrade of Distribution networks towards Newtec S2 Extensions or DVB-S2X
- Transmodulation of DVB-S/S2 to DVB-S2, DVB-S2X or Newtec S2 Extensions

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

- [M6100](#) Broadcast Satellite Modulator
- [FRC07x0](#) Frequency converters portfolio
- [USS0212](#) 1+1 Modulator Redundancy Switch
- [USS0201](#) Universal Switching System

Related Bandwidth Efficiency Technologies

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



Data Interfaces

ASI INTERFACE (OPTIONAL)

Single stream mode

- 2 selectable ASI inputs on BNC (F) - 75 ohms (coax) or optical SC connectors
- 2 x ASI output (loop through) on BNC (F) - 75 ohms (coax)
- 188 or 204 byte mode
- Rate adapter
- MPTS or SPTS according to ISO/IEC 13818

Multi stream mode

- 6 BNC(F) - 75 ohms (coax) connectors individually configurable as input or output or as 3 redundant TS inputs with auto switching
- 188 or 204 byte mode
- Rate adapter
- MPTS or SPTS according to ISO/IEC 13818

ETH INTERFACE

- Auto switching 10/100/1000 Base-T Ethernet interface
- Transport stream over IP interface (UDP/RTP)
- Forward Error Correction SMPTE 2022-1 and -2
- 188 or 204 byte mode
- Rate adapter
- MPTS or SPTS according to ISO/IEC 13818

Content Encryption and Protection

BISS ENCRYPTION (OPTIONAL)

- Support for BISS-0, BISS-1 and BISS-E
- On one single TS (SPTS or MPTS)

IP Encapsulation

- Optional MPE Encapsulation of IP packets in 1 Transport Stream
- Max 40 Mbit/s

IP Decapsulation

- MPE Decapsulation of IP packets received in 1 Transport Stream
- Max 40 Mbit/s

Modulation and Demodulation

SUPPORTED MODULATION SCHEMES AND FEC

- DVB-S
Outer/Inner FEC: Reed Solomon / Viterbi
MODCODs:
QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
- DVB-DSNG
Outer/Inner FEC: Reed Solomon / Viterbi
MODCODs:
8PSK: 2/3, 5/6, 8/9
16QAM 3/4, 7/8
- 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
- Support of DVB-S2 VCM mode (on demodulator and modulator)

BAUD RATE RANGE

Modulator

- DVB-S2, DVB-S2X & Newtec S2 Extensions 256 kbaud - 72 Mbaud
- DVB-S & DVB-DSNG 1 - 45 Mbaud

Demodulator

- DVB-S2, DVB-S2X & Newtec S2 Extensions 256 kbaud - 72 Mbaud
- DVB-S & DVB-DSNG 1 - 45 Mbaud

FRAME LENGTH

- DVB-S & DVB-DSNG 188 bytes
- DVB-S2 & DVB-S2X Short Frames 16200 bits
- DVB-S2, DVB-S2X & Newtec S2 Extensions Normal Frames 64800 bits

CLEAN CHANNEL TECHNOLOGY®

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

AUTOMATED EQUALINK® 2.0

- Predistortion for all MODCODs

CARRIER INTERFERENCE REDUCTION

- DVB RF Carrier ID (DVB-CID)
 - Spread Spectrum Modulator (BPSK)
 - Supports User Data
 - Compliant to ETSI 103 129 v1.1.1 (2013-05)
- Carrier ID NIT Table

Modulation Interfaces

L-BAND (CONFIGURATION OPTION)

- 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 (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
- 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 INPUT

- Connector BNC (F), 50 ohms
- Input level -3 dBm up to +7 dBm
- Frequencies 1,2,5,10,20 MHz

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 (DEFAULT)

- 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 (OPTIONAL, REPLACES ONE L-BAND INPUT)

- Connector BNC (F) - 75 ohms
- Return loss > 15 dB
- Input power: add 10 dB to the L-band input spec above
- 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
- M&C connectivity via separate Ethernet links
- 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 1RU, width: 19", depth 51 cm, 5.8 kg
- Power supply: 90-130 & 180-260 Vac, 125 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

Newtec MDM6100 Broadcast Satellite Modem (R2.1)		Ordering n°
Configuration Options Category		MDM6100
Select 1 option		
Hardware Platform	Chassis Type 02 (Mod + Demod)	CH-02
Select 1 option		
Operating Software	M6100/MDM6100 Major Software R2*	MS-20
Select 1 option		
Mains Power Supply Unit	PSU Single AC 110/240V	PS-00
	PSU Dual Redundant AC 110/240V***	PS-01
Select 1 option		
Video Package	Video TS, Carrier-ID(NIT), TS Analyser*	VP-01
Select 1 option		
Video Interface	GbE TSolP, SMPTE-2022 DEC (req. VP-01)*	VI-01
	GbE TSolP + ASI(6) (req. VP-01)	VI-02
	GbE TSolP + Optical ASI(2) (req. VP-01)	VI-03
	ASI (6 connectors) (req. VP-01)	AS-02
	ASI (2) + Optical ASI (2) (req. VP-01)	AO-01
For a modem or modulator, select 1 option		
Modulator Output Interface	L-band with switchable 10MHz output*	OU-00
	IF (50-180 MHz)*	OU-01
	IF+ L-band with switchable 10 MHz out*	OU-02
	L-band + 10MHz output + 24/48V BUC**+***	OU-05
	IF+L-band + 10MHz output + 24/48V BUC**+***	OU-06
For a modem or demodulator, select 1 option		
Demodulator Hardware	Class 2 (DVB-S/S2/S2X, Newtec S2 Ext, WB) (Req CH-02)	DH-02
For a modem or demodulator, select 1 option		
Demodulator Input Interface	Redundant L-band (Req. CH-02)	IU-00
	Selectable IF or L-band (Req. CH-02)**	IU-01
For a modem or modulator, select 1 option		
Modulation Standard and Coding (includes multistream support)	DVB-S Q/8PSK*	SC-01
	DVB-S/S2 QPSK*	SC-02
	DVB-S/S2 Q/8PSK*	SC-03
	DVB-S/S2 Q/8PSK 16QAM 16APSK*	SC-04
	DVB-S/S2 Q/8PSK 16QAM 16/32APSK*	SC-05
	DVB-S/S2/Ext Q/8PSK*	SC-06
	DVB-S/S2/Ext Q/8PSK 16QAM 16APSK*	SC-07
	DVB-S/S2/Ext Q/8PSK 16QAM 16/32APSK*	SC-08
	DVB-S/S2/Ext Q/8PSK 16QAM 16/32/64APSK*	SC-09
	DVB-S/S2/S2X Q/8PSK*	SC-10
	DVB-S/S2/S2X Q/8PSK 16QAM 16APSK*	SC-11
	DVB-S/S2/S2X Q/8PSK 16QAM 16/32APSK*	SC-12
	DVB-S/S2/S2X Q/8PSK 16QAM 16/32/64/128/256*	SC-13
For a modem or modulator, select 1 option		
Modulation Maximum Symbol Rates	Modulation Symbol Rate 5Mbaud*	SR-05
	Modulation Symbol Rate 15Mbaud*	SR-15
	Modulation Symbol Rate 36Mbaud*	SR-36
	Modulation Symbol Rate 54Mbaud*	SR-54
	Modulation Symbol Rate 72Mbaud*	SR-72
For a modem or demodulator, select 1 option		
Demodulation Standard and Coding (includes multistream support)	DVB-S/S2 Q/8PSK 16QAM 16/32APSK (Req. DH-02)*	DC-05
	DVB-S/S2/Ext Q/8PSK (Req. DH-02)*	DC-06
	DVB-S/S2/Ext Q/8PSK 16QAM 16APSK (Req. DH-02)*	DC-07
	DVB-S/S2/Ext Q/8PSK 16QAM 16/32APSK (Req. DH-02)*	DC-08
	DVB-S/S2/Ext up to 16/32/64 AP SK (Req. DH-02)*	DC-09
	DVB-S/S2/S2X Q/8PSK (Req. DH-02)*	DC-10
	DVB-S/S2/S2X Q/8PSK 16QAM 16APSK (Req. DH-02)*	DC-11
	DVB-S/S2/S2X Q/8PSK 16QAM 16/32APSK (Req. DH-02)*	DC-12
DVB-S/S2/S2X up to 16/32/64/256 (Req. DH-02)*	DC-13	
For a modem or demodulator, select 1 option		
Demodulation Maximum Symbol Rates	Demodulation Symbol Rate 36Mbaud (Req. CH-02)*	DR-36
	Demodulation Symbol Rate 54Mbaud (Req. DH-02)*	DR-54
	Demodulation Symbol Rate 72Mbaud (Req. DH-02)*	DR-72
Select 1 option		
Internal Reference Clock	Standard 10MHz	IR-00
	Very High Stability 10MHz	IR-02

Newtec MDM6100 Broadcast Satellite Modem (R2.1)		Ordering n°
Additional Options Category		
Max. 1 option per category		
Reference Clock Output	10 MHz Reference Output (BNC)	RO-01
Max. 1 option per category		
Modulator Output Connector	L-Band output N to SMA output adapter	OU-10
Max. 1 option per category		
Clean Channel Technology®	Clean Channel Technology for 5Mbaud*	CC-05
	Clean Channel Technology for 15Mbaud*	CC-15
	Clean Channel Technology for 36Mbaud*	CC-36
	Clean Channel Technology for 54Mbaud*	CC-54
	Clean Channel Technology for 72Mbaud*	CC-72
Max. 1 option per category		
Pre-Distortion	Automated Equalink®*	AE-01
Max. 1 option per category		
DVB Carrier Identifier	DVB RF Carrier Identifier*	ID-01
Max. 1 option per category		
MPE Insertion	MPE Data insertion in TS (req. VP-01)*	VM-01
Max. 1 option per category		
Encryption	BISS (0-1-E) Single TS (Req. VP-01)*	CA-01
Services Category		
Max. 1 option per category		
Support	Care Pack 3 Basic	GA-08
	Care Pack 3 Enhanced	GA-09

(*) Selectable via license key

(**) option IU-01 is mutually exclusive with options OU-05 and OU-06

(***) Dual PSU option PS-01 cannot be combined with OU-05 nor OU-06

Contact your sales representative for details (sales@newtec.eu).

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The details contained in this document, including product and feature specifications, are subject to change without notice and shall not bind Newtec in any way.

Newtec

SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

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