Description

The Newtec M6100 Broadcast Satellite Modulator is the new generation DVB compliant modulator specifically designed for broadcast direct-to-home, primary distribution to headends and contribution of television and radio content. The modulator 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 M6100 can be used in conjunction with set-top boxes, professional IRD’s or professional satellite demodulators such as the MDM6100.

Uptime and reliability are essential in the design of the modulator, taking a vital role in the satellite network. Input source redundancy and the shortest redundancy switch-over times of modulators, 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 as monitoring outputs.

GET THE BEST PERFORMANCE AND LOWER YOUR COSTS

The Broadcast Satellite Modulator 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 pre-distortion technology is now available for any satellite transmission application providing up to 10% bandwidth gains for 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 of up to six transport streams in large contribution links.

At the output of the Broadcast Satellite Modulator, 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 Broadcast Satellite Modulator 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

Built upon flexible and latest generation programmable technology, the M6100 Broadcast Satellite Modulator 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 or upgrade to the new DVB-S2X standard or Newtec S2 Extensions is facilitated by simple in-field installation of license keys.

The brand new DVB-CID carrier identifier is already available as a software option on the M6100 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.
Applications

• Broadcast Direct-to-home (DTH)
• Broadcast Primary Distribution
• Broadcast Contribution
• Upgrade of Distribution networks towards Newtec S2 Extensions or DVB-S2X

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.

Key Features

• Baud rate range: 50 kbaud – 72 Mbaud
• Data rates up to 425 Mbit/s (in multi-stream mode)
• Data rates up to 216 Mbit/s (in single stream mode)
• IF (70/140) and L-Band (950-2150) high power outputs
• 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 (mechanical or optical) ASI or GbE interfaces in single stream mode
  - Redundant optional ASI interfaces for up to 3 TS input streams
  - Redundancy with main TS over ASI and back-up TS over IP input
  - Built-in TS Analyser with PCR jitter measurements
  - 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

Related Products

MDM6100 Broadcast Satellite Modem (works together with M6100 to perform automated Equalink®)
FRC07x0 Frequency converters portfolio
USS0212 1+1 Modulator Redundancy Switch
USS0202 Universal Switching System

Related Bandwidth Efficiency Technologies

Clean Channel Technology®
Fully Automated Equalink ®
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 (on R1.4 and later hardware only)
- 6 BNC(F) - 75 ohms (coax) connectors individually configurable as input or monitoring 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
- Single stream or Multi stream mode
- Multi stream mode on R1.4 and later hardware only

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- 6 BNC(F) - 75 ohms (coax) connectors individually configurable as input or monitoring 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
- Single stream or Multi stream mode
- Multi stream mode on R1.4 and later hardware only

Content Encryption and Protection

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

IP Encapsulation

- MPE Encapsulation of IP frames in 1 transport stream
- Max 40 Mbit/s

Modulation

SUPPORTED MODULATION SCHEMES AND FEC

- DBV-S
  - Outer/Inner FEC: Reed Solomon / Viterbi
  - MODCODs:
    - QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
    - 8PSK: from 3/5 to 9/10
    - 16APSK: from 7/15 to 8/9
    - 8PSK-L: 5/9, 2/3
    - 16APSK-L: 1/2 to 7/8
    - 8APSK-L: 5/9, 2/3
    - 16APSK-L: 1/2 to 7/8
    - Support of DVB-S2 VCM mode

- DBV-DSNG
  - Outer/Inner FEC: Reed Solomon / Viterbi
  - MODCODs:
    - QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
    - 8PSK: from 3/5 to 9/10
    - 16APSK: from 7/15 to 8/9
    - 8PSK-L: 5/9, 2/3
    - 16APSK-L: 1/2 to 7/8
    - Support of DVB-S2 VCM mode

FRAME LENGTH

- DVB-S: 188 bytes
- DVB-S2, DVB-S2X & Newtec S2 Extensions
  - 50kbaud - 72 Mbaud
- DVB-S2, DVB-S2X & Newtec S2 Extensions
  - 50kbaud - 72 Mbaud

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)
- 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: 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: BNC (F), 50 ohms
- Frequency: Same as L-Band output
- Input level: 3 dBm up to +7dBm
- Frequencies: 1,2,5,10,20 MHz

10 MHz REFERENCE OUTPUT (OPTIONAL)

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

BUC POWER (OPTIONAL)

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

Internal 10 MHz Reference Frequency

STANDARD STABILITY
- Stability: +/-2000 ppb per 0 to 70°C
- Ageing: +/-1000 ppb/year

VERY HIGH STABILITY (OPTIONAL)
- Stability: +/-2 ppb per 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°C to +70°C / -40°F to +158°F
- Humidity: 5% to 85% non-condensing
- CE label and UL
### Newtec M6100 Broadcast Satellite Modulator

#### Ordering Info

<table>
<thead>
<tr>
<th>Region</th>
<th>Phone</th>
<th>Fax</th>
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<tbody>
<tr>
<td>Europe</td>
<td>+32 3 780 65 00</td>
<td>+32 3 780 65 49</td>
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<tr>
<td>North-America</td>
<td>+1 203 323-0042</td>
<td>+1 203 323-8406</td>
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<td>South-America</td>
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<tr>
<td>Asia-Pacific</td>
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<tr>
<td>China</td>
<td>+86 10-823 18 730</td>
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<td>MENA</td>
<td>+971 4 390 18 78</td>
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### Newtec M6100 Broadcast Satellite Modulator

**Configuration Options**

<table>
<thead>
<tr>
<th>Category</th>
<th>Ordering n°</th>
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<tbody>
<tr>
<td>Hardware Platform</td>
<td>CH-01</td>
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<tr>
<td>Operating Software</td>
<td>MS-20</td>
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<tr>
<td>Mains Power Supply Unit</td>
<td>PS-00, PS-01</td>
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<tr>
<td>Video Package</td>
<td>VP-01</td>
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<tr>
<td>Modulator Output Interface</td>
<td>OU-00-OU-06</td>
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<tr>
<td>Modulation Standard and Coding (includes multistream support)</td>
<td>SC-01-SC-13</td>
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<td>Reference Clock Output</td>
<td>RO-01</td>
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<tr>
<td>Modulator Output Connector</td>
<td>OU-10</td>
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<td>Clean Channel Technology</td>
<td>AE-01</td>
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<td>DVB Carrier Identifier</td>
<td>ID-01</td>
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<td>MPE Insertion</td>
<td>VM-01</td>
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<td>Encryption</td>
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<tr>
<td>Support</td>
<td>GA-08, GA-09</td>
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</table>

(*) Selectable via license key  
(**) Dual PSU option PS-01 cannot be combined with OU-05 nor OU-06  
Contact your sales representative for details (sales@newtec.eu).