Description

The NTC/7044 board is a state-of-the-art, high-end professional DVB-S2 demodulator board able to process data rates up to 155 Mbit/s and operate in 16APSK and 32APSK high-order modulation schemes. Available to third party manufacturers under OEM agreement, the high performance NTC/7044 is the best solution for the demodulation of DVB-S/S2 carriers in IRDs, IP receivers, and Mobile or Digital Terrestrial TV transceivers.

In its default configuration the demodulator board is capable of demodulating an MPEG2 transport stream in DVB-S, DVB-DSNG and DVB-S2. The Multistream, VCM or ACM modes of DVB-S2 are also supported.

The NTC/7044 has a dual L-band input (950-2150 MHz). The active input is selectable and can provide DC power and frequency band selection signals compatible with most professional and commercial LNBs.

In DVB-S or DVB-DSNG, the demodulator board delivers an MPEG transport stream on a parallel output. In DVB-S2, the demodulator board can output the Base Band Frame signal, a transport stream or a generic stream. If the demodulated carrier is a Multistream signal, the NTC/7044 can filter and output one of the transport or generic streams, and the ISSY (Input Stream Synchroniser) mechanism defined in the DVB-S2 standard can be activated to recover the initial data rate.

To protect the satellite transmission in DVB-S2 mode, the AES decryption option can be activated. AES encryption allows the transmission of DVB-S2 streams with a high security level. The AES encryption mechanism can work in two different modes. In the first global protection mode all different DVB-S2 streams are encrypted with the same content key. The second mode for protection per stream encrypts up to four DVB-S2 streams with a different content key.

To compensate for linear distortion in the transmission channel, the NTC/7044 is equipped with an adaptive equalizer.

The demodulator board can be controlled via an asynchronous serial link with a comprehensive range of monitoring and control functions.

Clean Channel Technology® is available on the demodulator. Clean Channel Technology further improves satellite efficiency by up to 15% compared to the current DVB-S2 standard. Clean Channel Technology is available as a software upgrade.

Key features

- DVB-S2 and DVB-DSNG/S compliant
- QPSK, 8PSK, optional: 16APSK and 32APSK
- ISSY (Input Stream Synchronizer) mechanism
- Support of Multistream and/or VCM/ACM operation
- Data rates up to 155 Mbit/s
- Baud rate up to 45 MBaud
- Optional AES decryption
- Dual L-band input
- Automatic ModCod detection
- Adaptive equalizer
- LNB power and control
- Monitoring and control via RMCP
- Clean Channel Technology

Main advantages

- Reduce time to market
- Easy integration
- High compactness
- Low cost
- Guaranteed interoperability with DVB modulators
- High versatility and flexibility
- Secure satellite transmissions

Applications

- Contribution
- Primary distribution
- DSNG combined with IP services
- IP trunking
- Data broadcast

Related Documents

White paper and application note on “The Advantages of DVB-S2 Multistream”

www.newtec.eu

Rev 6 02/2015
**Input interface**

**Dual L-band input**
- Connector: 2 x F-type (F), 75 Ohm
- Baud rate: 25 to (-5 dB + 10log(f)) where f=baud rate in MBaud
- Frequency: 950 - 2150 MHz
- Return loss: >9 dB
- adjacent signal: < (C0 + 7 dBm) with C0 = signal level density

**LNB Power & Control**
- Current: max 450 mA (on selected L-band input)
- voltage: 11.5-14 V (vertical polarisation)
- 16-19 V (horizontal polarisation) & additional 22 KHz ± 4 KHz (band selection according to universal LNB for ASTRA satellites) & DiSEqC command transmission

**Demodulation**

**Supported modulation schemes and FEC**
- **DVB-S/DSNG:**
  - Outer/Inner FEC: Reed Solomon /Viterbi
  - MODCODs: QPSK:1/2, 2/3, 3/4, 5/6, 7/8, 8/9, 10/11, 11/12, 12/13, 13/14, 14/15, 15/16
  - 8APSK:4/5, 5/6, 6/7, 7/8
  - 16APSK:2/3, 3/4, 4/5, 5/6, 6/7, 7/8, 8/9, 9/10
- **DVB-S2:**
  - Outer/Inner FEC: BCH/ LDPC
  - MODCODs: QPSK:1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 6/7, 7/8, 8/9, 9/10, 10/11, 11/12, 12/13, 13/14, 14/15, 15/16
  - 16APSK:2/3, 3/4, 4/5, 5/6, 6/7, 7/8, 8/9, 9/10
- **Min-Max baudrates**
  - **DVB-S2**
    - QPSK/8PSK/16APSK 0.256 – 45 Mbaud
    - 32APSK 1 – 33 Mbaud
  - **DVB-S/DSNG**
    - QPSK/8PSK/16QAM 1 – 45 Mbaud

**Frame length**
- **DVB-S2 short frames** 16200 bits
- **DVB-S2 normal frames** 64800 bits
- Mixing of normal frames & short frames not possible in Multistream
- **DVB-S/DSNG normal frame only**
- **DVB-S/DSNG 188 bytes**

**Roll-off factor**
- **DVB-S2**
  - 20% - 25% - 35%
- **DVB-S/DSNG**
  - 25% - 35%

**Clean Channel Technology**
- Roll-Off:
  - 5% - 10% - 15% - 20% - 25% - 35%
- **Optimum carrier spacing**
- **Advanced filter technology**

**Performance**

**Configurations**

<table>
<thead>
<tr>
<th>DVB-S2 Minimum bit rate</th>
<th>DVB-S/DSNG Minimum bit rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.256 MBaud</td>
<td>1.048 MBaud</td>
</tr>
<tr>
<td>3.75 MBaud</td>
<td>12.2 MBaud</td>
</tr>
<tr>
<td>9.56 MBaud</td>
<td>30.5 MBaud</td>
</tr>
<tr>
<td>27.5 MBaud</td>
<td>91.3 MBaud</td>
</tr>
<tr>
<td>80.0 MBaud</td>
<td>275.0 MBaud</td>
</tr>
</tbody>
</table>

**Output interface**

**Data output**
- Connector: HE10 50 pin
- AES 64 bit
  - Global mode
  - Per stream mode
- Up to four streams

**Physical**
- **Mechanical**
  - Single PCB, 160 x 100 mm
- **Power supply**
  - Main: +5V ± 5% at 2.5 A
  - Secondary: +10 V (0.18 A) to +15V (0.08 A) (no LNB current)
  - +10 V (1.2 A) to 15 V (0.7 A) (450 mA LNB current)
- **Temperature**
  - Operational: 0°C to 50°C
  - Storage: -40°C to +70°C

**Generic**

**Monitor and control interfaces**
- On same connector as Data outputs
  - I²C
  - Async serial TTL link, even parity, 1 start, 1 stop Baudrate 9.600 (default) to 115.2 kbaud, RMCPv2 protocol

**Control**
- Interface and symbol rate
- Roll-off factor
- Decoding & Demodulation Mode
- Spectrum Inversion On/Off/Auto
- Acquisition range
- LNB band and polarisation selection (13/18 V and 22 kHz)
- IFL input selection (A or B)
- Global reset
- Output selection (single stream or base-band frames)
- AES

**Monitoring**
- All control parameters
  - Input level, carrier & clock frequency offset
  - Uncorrectable base-band frames count (DVB-S2)
  - Es/No (DVB-S2)
  - Channel quality estimates (DVB-S2)
  - Eb/No (DVB-S/DSNG)
  - Uncorrectable TS packets count (DVB-S/DSNG)
  - Estimated BER after decoding (DVB-S/DSNG)
  - Sync status, alarms
  - Board + firmware version

**Ordering information**

**Default configuration**

<table>
<thead>
<tr>
<th>NTC7044/BB</th>
<th>Order no*</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVB-S/DSNG/S2 Demodulator Board Modulation &amp; Baud rate DVB-S/DSNG/S2 Q/16APSK 15 Mbaud</td>
<td>NTC7044/BB BOBB</td>
</tr>
</tbody>
</table>

**Configuration options**

**Modulation & Baud rate**

<table>
<thead>
<tr>
<th>Category</th>
<th>Max. 1 option per category</th>
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</thead>
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**Additional options**

<table>
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<tr>
<th>Security</th>
<th>Max. 1 option per category</th>
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(*) upgrade via license key