**NTC7029**

**DVB-S/S2 IF Modulator Board**

**OEM Product**

**Description**

The NTC/7029 is a state-of-the-art professional IF satellite modulator board able to process data rates up to 200 Mbit/s in DVB-S and DVB-S2 modes with high-order modulation schemes up to 32APSK. Available to third party manufacturers under OEM agreement, the high performance NTC/7029 is the best solution for the modulation of DVB-S or DVB-S2 carriers in broadcast applications. Encoder manufacturers can now entirely take advantage of the high compactness of the NTC/7029 to combine an encoder and a versatile DVB-S/S2 modulator into one unit.

Several software configurations can be ordered starting from the QPSK modulation scheme in DVB-S mode. Upgrade to DVB-DSNG and DVB-S2 as well as to high-order modulation schemes such as 8PSK, 16QAM and 16/32 APSK can be performed by ordering of the corresponding soft-key code. The NTC/7029 is capable of modulating one MPEG transport stream. At the output, the signal is available on an IF interface ranging from 50 to 180 MHz. The NTC/7029 is equipped with a RF monitoring output delivered on a fixed L-band frequency.

The NTC7029 IF modulator can be controlled via an asynchronous serial link accepting high level commands.

In addition to the comprehensive range of monitoring and control functions, the DVB modulator board has a built-in PRBS pattern generator for link testing without any additional test equipment.

Clean Channel Technology™ is available on the modulator as from release R9. Clean Channel Technology™ further improves satellite efficiency by up to 15% compared to the current DVB-S2 standard. Newtec’s customers will be able to immediately benefit from Clean Channel Technology, as it is available as a software field upgrade for existing Newtec equipment.

**Key features**

- DVB-S2 compliant (EN 302307)
- DVB-S compliant (EN 300421)
- DVB-DSNG compliant (EN 301 210)
- QPSK, 8PSK, 16APSK and 32APSK modulation in DVB-S2 mode
- QPSK, 8PSK, 16QAM modulation in DVB-S/DSNG mode
- Output frequency range: 50 MHz - 180 MHz
- IF output: Selectable 50 or 75 ohms
- Symbol rate range: 0.05 – 45 Mbaud
- Data rates: 50 Kbit/s - 200 Mbit/s
- Transport Stream(TS): 188-byte packet
- L-band monitoring output
- Monitoring & Control using high level instruction on asynchronous serial link
- On-board 25 MHz reference
- External 10 MHz reference input
- Power consumption: < 10 W
- Programmable amplitude slope equalizer

**Main advantages**

- Reduce time to market
- Easy integration
- High compactness
- Low cost
- Guaranteed interoperability with DVB receivers
- High versatility and flexibility
- Clean Channel Technology™

**Applications**

- DSNG /Fly-Away
- Contribution

**Related Documents**

- NTC/7139 DVB-S2 L-band Modulator Board
- NTC/7044/BB DVB-S2 Demodulator Board
- NTC/7072/AB DVB-S2 Demodulator Board

[Image of the NTC7029 DVB-S/S2 IF Modulator Board]

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Specifications – NTC7029(R9)

Input band interface

Baseband SPI interface
- Connector: HE10–50 pin male
- Signals:
  - IFCLK
  - IFDATA
  - IFC
  - IPIN
- Level: LVTTL (3.3V)
- IFCLK frequency: DC to 30 MHz
- Data input: Single Transport Stream

10 MHz reference
- Connector: MCX (F), 50 Ohms
- Level: 0 to +7 dBm

Modulation

Supported modulation schemes and FEC
- **DVB-S/DSNG**
  - Outer/Inner FEC MODCODs: Reed Solomon /Viterbi
  - QPSK: 1/2, 2/3, 3/4, 5/6, 7/8, 16QAM: 3/4, 7/8
  - 8PSK: 3/4, 5/6, 6/7, 7/8, 9/10
  - 16APSK, 32APSK: 3/4, 4/5, 5/6, 6/7, 7/8, 8/9, 9/10

DVB-S compliant
- Roll-off factor: 0.2, 0.25, 0.35

DVB-S compliant
- Null-packet deletion
- CRC5 Encoding
- Base Band Signalling
- Base Band Scrambling
- Outer FEC coding (8CH)
- Bit Interleaving
- Physical Layer Framing
- Physical Layer Signalling
- Physical Layer Dummy Frame insertion
- Base Band Scrambling (roll-off factor 0.2, 0.25, 0.35)

Clean Channel Technology
- Roll-off factors 0.05, 0.10 and 0.15

Output interfaces

IF-band
- Level: -30/+5 dBm (± 3 dB) in 0.1 dB steps
- 1dB compression: +18 dBm
- Frequency: 50 - 180 MHz, in steps of 50 MHz
- Connector: MCX (F), 50 ohms
- Return loss: > 14 dB
- Stability: +/- 0.2 dB/°C

L-band monitoring output
- Level: -45 dBm
- Frequency: 1080 MHz (fixed frequency)
- Connector: MCX (F), 50 ohms
- Return loss (50): > 7 dB

Spurious performance
- Better than -65 dBc / 4KHz @ -10 dBm output level and > 200 Kbaud output rate

On-board 25 MHz Reference

Accuracy
- ± 5 ppm at 23°C ± 2°C

Stability
- ± 2 ppm 0°C to 70°C
- ± 1 ppm / year
- ± 5 ppm / 10 year

Phase noise
- @ 10Hz: < -50 dBc/Hz
- @ 100 Hz: < -70 dBc/Hz
- @ 1KHz: < -80 dBc/Hz
- @ 10 KHz: < -85 dBc/Hz
- @ 100 KHz: < 95 dBc/Hz

Generic

Monitor and control interfaces
- On same connector as Data inputs
- Async serial TTL link, even parity, 1 start, 1 stop bit, Baudrate 9600 (default) to 115.2 kbaud, RMCF v2 protocol

Control
- Physical layer pilot insertion
- FEC frame type (normal or short)
- Physical Layer scrambler signature
- Test generator
- Interface bit rate and symbol rate
- Modulation standard
- Transmit clock
- FEC rate and modulation
- Spectrum inversion
- Amplitude Slope equalizer
- Input data and clock selection
- Output frequency and level
- Transmit ON/OFF

Monitoring
- Occupied bandwidth
- Buffer size
- Output level
- Clock offset
- Delay setpoint
- Transmit status
- Estimated input bit rate
- Device temperature

Main Alarms
- General device
- DIL and PLL lock
- Buffer
- Input signal
- Synthesizer

Power supply

Voltage requirements
- +5V: 5.05V to 5.15V
- +12V: 11.25V to 12.75V

The peak to peak ripple and noise requirements (in 15 MHz bandwidth)
- +5V: 50mV
- +12V: 120mV

Power consumption
- +5V: < 1A
- +12V: < 300 mA

Physical

Mechanical
- Single PCB, 160x98 mm

Environmental
- Operational temperature: 0°C to 50°C
- Storage temperature: -40°C to +70°C
- Humidity: 5% to 85% non-condensing
- CE label

Ordering information

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<thead>
<tr>
<th>NTC7029 OEM IF Modulator Board</th>
<th>Order n°</th>
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<tbody>
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<td>DVB-S/DSNG</td>
<td>ACAA</td>
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<td>ACAB</td>
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<td>DVB-S                45 Mbaud</td>
<td>ACAD</td>
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<td>DVB-S                5/8 PSK 5 Mbaud</td>
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