



DESCRIPTION

The DVB-S2/DSNG/S satellite demodulator NTC/2263/xU is a member of the field-proven modular Azimuth series and is designed to receive and demodulate DVB-S2/DSNG/S signals in both CCM and VCM mode before correcting and detecting transmission errors and restoring the output digital signal in IP, MPEG Transport Stream or G703 formats.

The NTC/2263/xU has been designed for the reception of high-speed data transported by IP/Telco backbones and trunking infrastructures, as well as for the reception of digital TV and HDTV signals.

This demodulator is equipped with a dual L-band input. The DC power and band selection signals compatible with most professional and commercial LNB's are provided via the selected L-band input. As an option, an IF input can be provided.

The FPGA based NTC/2263/xU version handles in DVB-S2 data rates from 0,256 Mbaud up to 45 Mbaud. In DVB-DSNG/S mode, data rates from 1Mbaud to 45 Mbaud in QPSK, 8PSK and 16 QAM are available. To lower the initial investment and support the growth of the traffic, the data rate can be upgraded via password.

The NTC/2263/xU demodulates in CCM (Constant Coding and Modulation) mode. In combination with the advanced Gigabit Ethernet interface card VCM (Variable Coding and Modulation) applications are possible. The signal to be demodulated can be an MPEG Transport Stream, Base Band frames or a generic data format.

Available output traffic interface boards are interchangeable (ASI, G703, Gigabit Ethernet)

All Control and Monitoring parameters are available locally on the front panel (LCD display & keyboard) and remotely through a web interface (HTTP) or through the RS-485/232 port or through the 10/100 Base-T Ethernet port. The last two use the RMCPv2 protocol. There is optionally an SNMP + MIB agent.

Also, a dual contact closure output is available for 2 types of summary alarms: one contact is operated in case of device alarms, while the other contact opens (or closes) in case of input or output interface alarms.

Inherent to its modular design, the demodulator can be SW-upgraded to a higher capability (data rate, functionalities, etc.) after ordering the corresponding password, which is simply keyed-in by the customer.

APPLICATIONS

Low to high data rate reception of satellite signals for applications such as broadcast video, contribution of Digital TV and HDTV, data content distribution, Turn-around, IP trunking, Digital Satellite News Gathering and professional applications. The NTC/2263/xU can also be used in VCM/ACM applications.

FEATURES

- DVB-S2 compliant (EN 302307), Short- and Normal Frames
- DVB-DSNG/S compliant (EN 301210 & EN 300421)
- IFL input : 950-2150 MHz
- Optional IF input: 50-180 MHz (replaces one L-band input)
- Data interfaces: serial LVDS, ASI (coax or optical), SPI, HSSI, G703, de-concentrated ASI or IP (see Versions & Options)
- Programmable external LO frequency
- Baud rate in DVB-S2:
 - * QPSK: 0,256 Mbaud to 45 Mbaud (*),
 - * 8PSK/ 16APSK: 0,256 Mbaud to 40 Mbaud (*),
 - * 32APSK: 1 Mbaud to 30 Mbaud (Normal Frames only)
- Baud rate in DVB-DSNG/S:
 - * QPSK/8PSK/16 QAM: 1-45 Mbaud
- 20% - 25% - 35% roll-off factor
- Interface rate : in range 80 kbit to 142 Mbit/s depending on the selected baud rate and modulation (DVB-S2)
- Reception of
 - MPEG Transport Stream framing (DVB-S2/DSNG/S)
 - raw Base Band frames and generic data formats (DVB-S2)
- (auto) CCM, VCM/ACM capable mode in combination with the GbE interface card, pilots on, contact Newtec for mixing Short- and Normal Frames
- Ovenized 10.0 MHz reference frequency (option) and external 10.0 MHz reference input/output (option)
- Local & remote M&C access to all menus through a
 - * web interface (HTTP protocol)
 - * RS-485/RS-232 (RMCP v2 protocol)
 - * 10/100 Base-T Ethernet port (RMCP v2 protocol)
- Support for SNMP alarm trap
- Adaptive Channel Equalizer compensates linear link distortions
- User-programmable menu structure
- Excellent performance in combination with the satellite modulators NTC/2277/xF (IF-band) and NTC/2280/xF (L-band)
- Action Keys (group of commands under single button)
- Real-time clock for alarm occurrence logging
- Internal test-generator and detector (PRBS counter)
- Very compact: 1Ru (height: 4.4 cm !), CE Label
- Dynamic build-up of alarm menu and diagnostics generator

(*) data rates below 1Mbaud require the use of pilots

• VERSIONS & OPTIONS

The modular Azimuth architecture opens various possibilities and application fields: The two slots on the back panel will accept a wide range of data interface boards, while firmware-packages will determine the usage and capabilities of the unit. Also, other module-s, such as frequency converters can be installed within the unit.

1. Base band Data Interface Output Modules :

The interchangeable data interface modules provide a wide range of output interfaces via coaxial and/or sub-D connectors. Optical outputs are also available.

- NTC/3453.BA.Bx: DVB ASI/SPI/Serial-LVDS interface card
Hardware option: optical ASI in/out plug-in NTC/3453.x.x.A
- NTC/3458.Ax.x: TELCO HSSI+2x single rate G703 interface card
NTC/3458.AB.A: HSSI-G.703 output 2 to 52 Mbps
NTC/3458.AB.B: HSSI-G.703 output 2 to 110 Mbps
NTC/3343/AA: G.703 at 8.448 Mb/s (submodule used on NTC/3458)
NTC/3343/AB: G.703 at 6.312 Mb/s
NTC/3344/AA: G.703 at 16.896 Mb/s
NTC/3344/AB: G.703 at 34.368 Mb/s
NTC/3348/AA: G.703 at 44.736 Mb/s
NTC/3349/AA: G.703 at 2.048 Mb/s
- NTC/3454.AD.A: ASI Deconcentrator board with 4 coax outputs
- NTC/7015/xx: IP GbE & ASI in/out interface

2. NTC/7044 Demodulator Board (Max. Data rate) :

NTC/7044/BCxx: DVB-S2/DSNG/S, CCM mode/VCM/ACM capable mode

NTC/7044/BCBx: QPSK+8PSK in DVB-S2
QPSK+8PSK in DVB-DSNG/S

NTC/7044/BCCx: QPSK+8PSK+16APSK in DVB-S2
QPSK+8PSK+16 QAM in DVB-DSNG/S

NTC/7044/BCDx: QPSK+8PSK+16APSK+32APSK in DVB-S2
QPSK+8PSK+16 QAM in DVB-DSNG/S

NTC/7044/BCxA: max 5 Mbaud (DVB-S2/DSNG/S)

NTC/7044/BCxB: max 15 Mbaud (DVB-S2/DSNG/S)

NTC/7044/BCxC: max 30 Mbaud (DVB-S2)
45 Mbaud (DVB-DSNG/S)

NTC/7044/BCxD: max 45 Mbaud (DVB-S2/DSNG/S)

For example, if the demodulator has to work (DVB-S2, CCM/VCM mode) in QPSK + 8PSK at a max baud rate of 30 Mbaud, the NTC/7044/BCBC has to be ordered. This demodulator NTC/7044/BCBC will also work in DVB-DSNG/S mode in QPSK+8PSK at 45 Mbaud

3. NTC/3495 IF Input board

Optional L-band to IF converter: NTC/3495.AA.A

4. 10 MHz Reference Board :

One of the following 10 MHz ref. boards is always required when an external 10 MHz reference input and/or output is required.

- NTC/3462.AB.A: 10 MHz OCXO reference Oscillator (normal use)
temperature stability: 0,05 ppm

- NTC/3462.AA.A : 10 MHz OCXO High Stability Ref. Oscillator
(recommended only with carriers < 1Mbaud)
temperature stability: 0,002 ppm

5. SNMP agent and MIB library :

Needed whenever the unit needs to be controlled over Ethernet via proprietary Network Management System.

NTC/2263.xx.xB

• DATA SUMMARY

IFL INPUT : dual input, selectable

frequency range : 950-2150 MHz

return loss : > 7 dB (75 Ohm-F(F))

Min input level : -65 dBm+10 log(f) f= Baud rate in Mbaud

Max input level : -25dBm

adjacent signal : < (C₀ + 7) dBm/Hz with C₀ = signal level density

Total composite power (950-2150MHz) < power signal + 30 dB with a maximum of -10dBm

IF INPUT (optional):

frequency range : 50-180 MHz (replacing one L-band input)

return loss : > 15 dB (75 Ohm) BNC(F)

signal level : -15 to -55 dBm

adjacent signal : < (C₀ + 7) dBm/Hz with C₀ = signal level density

DATA OUTPUTS :

- ASI (Asynchronous Serial Interface) :

- BNC (F) - 75 Ohm (coax) or ST (optical)
- rate limited by demod
- 188 byte mode

- SPI interface

- 25 pin sub-D connector
- rate limited by demod
- 188 byte mode
- see data sheet NTC/3453

- HSSI (High Speed Serial Interface) :

- 25 pin sub-D (F)

- G703 : BNC (F)

- ASI Deconcentrator: 4x BNC (F)

- IP GbE & ASI in/out interface (ASI under development): 2xRJ-45

MONITOR & CONTROL INTERFACES :

a) protocol : HTTP (via web browser)

connector : RJ-45

electrical : Ethernet 10 base-T

b) protocol : RMCP **version 2 only**

connector : 9 pin sub-D female

electrical : RS-485 / RS-232

c) protocol : RMCP **version 2 only** over TCP-IP or UDP, SNMP

connector : RJ-45

electrical : Ethernet 10 base-T

Main Control parameters :

Interface board control parameters

Decoding & Demodulation Mode, symbol rate

Spectrum Inversion On/Off/Auto

Acquisition range, Clock source selection (sat. or fallback) and buffer size, LNB band and polarization selection (13/18 V and 22 kHz), IFL input selection, LNB-LO frequency, L-band or satellite frequency.

Main Monitoring parameters:

All control parameters, Internal temp. Input level, Carrier & clock frequency offset, Channel quality, Sync status, Buffer status, Alarms, PRBS detector.

ALARM INTERFACE :

connector: 9 pin sub-D (F)
electrical: switch-over contact

MECHANICAL :

19" sub rack, 1 RU height (4.4 cm), 6 kg

POWER SUPPLY :

90-130/180-260V, 60 VA

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 $\pm$ 4 kHz (band selection according to universal LNB for ASTRA satellites & DiSEqC command transmission

TEMPERATURE :

operational: 0°/+40°C
storage : -40°/+70°C

● PERFORMANCE

DVB-S2:**User rates:**

- Sat. baud rate :
 - QPSK 0,256 to 45 Mbaud
 - 8PSK 0,256 to 40 Mbaud
 - 16APSK 0,256 to 40 Mbaud
 - 32APSK 1 to 30 Mbaud (Normal Frames only)
- Interf. rate limit (QPSK FEC1/3) : 0.08 Mbit/s (min)
(16APSK FEC 9/10) : 142 Mbit/s (max)

BER performance for QEF

Measured performance (*), 188 bytes PER 1E-5 (BER ~ 5E-8)

	EN302307 Simulations (**)	Short Frames 1 – 15 Mbaud	Normal 1-40 Mbaud	Frames >40 Mbaud
Config	Es/No	Es/No	Es/No	Es/No
QPSK- 1/3	-1.24	-0.6	-0.7	-0.5
QPSK- 2/5	-0.3	0.4	0.2	0.3
QPSK- 1/2	1.00	1	1.4	1.4
QPSK- 3/5	2.23	3.1	2.8	2.7
QPSK- 2/3	3.10	3.8	3.6	3.5
QPSK- 3/4	4.03	4.5	4.3	4.4
QPSK- 4/5	4.68	5.1	5.1	5.1
QPSK- 5/6	5.18	5.8	5.5	5.6
QPSK- 8/9	6.20	6.7	6.6	6.6
QPSK- 9/10	6.42	-	6.7	6.8
			1-35Mbaud	> 35 Mbaud
8PSK- 3/5	5.50	6.5	6.3	6.9
8PSK- 2/3	6.62	7.4	7.1	7.1
8PSK- 3/4	7.91	8.6	8.4	8.4
8PSK- 5/6	9.35	10.2	9.7	9.9
8PSK- 8/9	10.69	11.4	11.1	11.2
8PSK- 9/10	10.98	-	11.3	11.3
			1-35Mbaud	> 35 Mbaud
16APSK- 2/3	8.97	9.9	9.6	9.7
16APSK- 3/4	10.21	10.9	10.5	10.9
16APSK- 4/5	11.03	11.6	11.5	11.7
16APSK- 5/6	11.61	12.4	12.1	12.2
16APSK- 8/9	12.89	13.6	13.3	13.3
16APSK- 9/10	13.13	-	13.6	13.6
			1-25Mbaud	> 25 Mbaud
32APSK- 3/4	12.73	/	13.5	13.6
32APSK- 4/5	13.64	/	14.3	14.5
32APSK- 5/6	14.28	/	14.8	14.9
32APSK- 8/9	15.69	/	16.1	16.1

32APSK- 9/10 16.05 / 16.5 16.5

Values for QPSK 1/3, 8PSK 3/5 2/3 and 16APSK 2/3 3/4 or values below 3Mbaud are measured with pilots on.

(*) Measured over Ku-band (with LNB type : SMW PLL) in linear channel

(**) REF PER=1E-7, normal frames. For short frames an additional degradation of 0,2 dB to 0,3 dB has to be taken into account.

Values for

PER =1E-5 are about 0,2 dB lower for short frames.

Synchronisation:

carrier acquisition range : <12 Mbaud $\pm$ 0.75 X baudrate max.
: >12 Mbaud $\pm$ 8.75 MHz max

clock acquisition range : $\pm$ 200 ppm max.

average acquisition time : < 3 sec, 90% probability at
10Mbaud, carrier freq. offset < $\pm$ 2.5
MHz ptp and PER< 1E-7

DVB-DSNG/S**User rates:**

sat. baud rate : 1 to 45 Mbaud

BER Performance (IF loopback) for BER 1E-7 after RS
Eb (188 bytes)/No (dB)

	EN 301 210 specifications before RS @ BER = 2E-4	after RS @ BER < 1E-7 <20 >20	<20 Mbaud	>20 Mbaud
CONFIG				
QPSK-1/2	4.5	3.9	3.9	
QPSK-2/3	5.0	4.4	4.5	
QPSK-3/4	5.5	4.9	5.1	
QPSK-5/6	6.0	5.4	5.8	
QPSK-7/8	6.4	5.8	6.4	
8PSK-2/3	6.9	6.3	6.5	
8PSK-5/6	8.9	8.3	8.8	
8PSK-8/9	9.4	8.8	9.8	
16QAM-3/4	9.0	8.4	8.6	
16QAM-7/8	10.7	10.1	11.1	

Synchronisation:

carrier acquisition range : $\pm$ 3MHz max.
clock acquisition range : $\pm$ 200ppm max.
average acquis.time : < 3 sec, 90% probability at
10 Mbaud, carrier freq. offset
< $\pm$ 2.5MHz ptp and PER< 1E-7

LNB PHASE NOISE REQUIREMENT:

- equiv. inp. Noise : -178 dBm/Hz
- LNB gain : 55 to 70 dB
- phase noise
 - type A : for all baud rates
 - type B : for baud rates > 5 Mbaud in QPSK and 8PSK

type A (PL-DRO)	type B (free running DRO)
< -70dBc/Hz at 100 Hz	< -35dBc/Hz at 10 Hz
< -75dBc/Hz at 1kHz	< -63dBc/Hz at 100 Hz
< -80dBc/Hz at 10 kHz	< -73dBc/Hz at 1kHz
< -85dBc/Hz at 100 kHz	< -85dBc/Hz at 10 kHz
	< -90dBc/Hz at 100 kHz
	< -96dBc/Hz at 1 MHz
	< -108dBc/Hz at >10 MHz

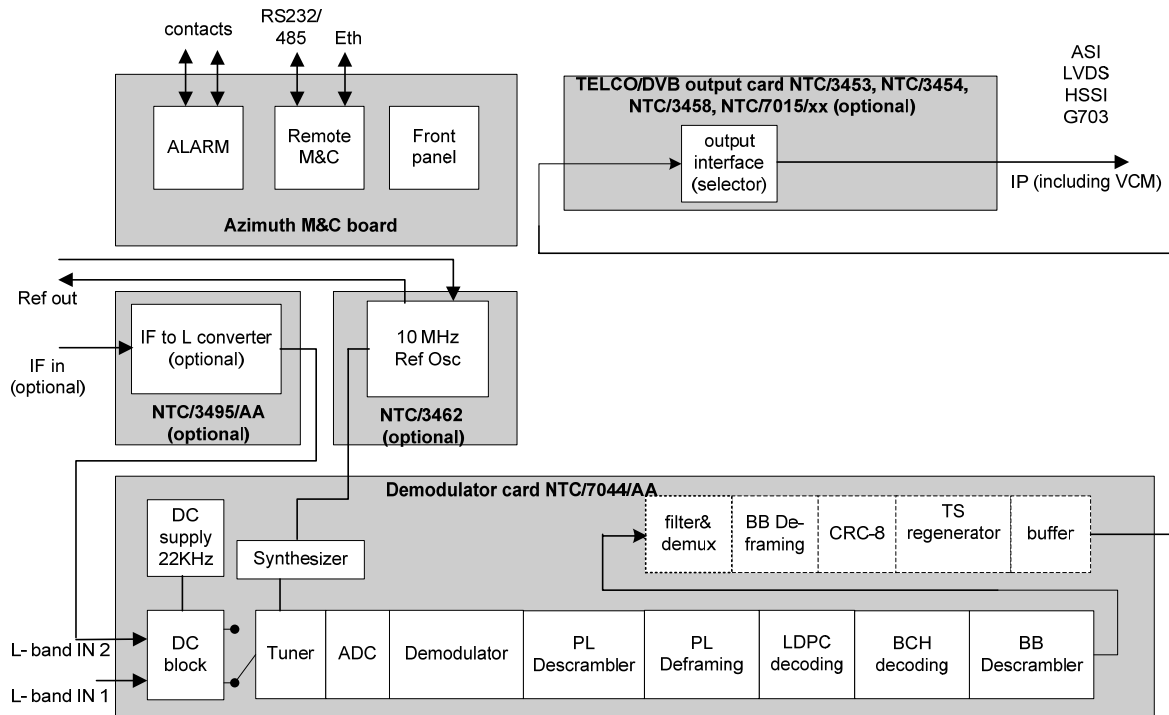
TYPICAL RF PARAMETER (LNB) REQUIREMENTS :

equiv. inp. Temp. : 100K (typ.)
equiv. inp. noise : -178 dBm/Hz
LNB gain : 55 to 70 dB

Phase noise SSB
 Type A: all rates
 Type B: Valid for all configurations and symbol rates
 (modcods) with pilots ON

LNB supply : 13/18 V/ 0.35 A
 cable loss (100m) : < 20 dB

• BLOCK DIAGRAM



• TECHNICAL LITERATURE & REFERENCES (ALSO AVAILABLE ON OUR WEBSITE)

Other related products

NTC/2137	Stand-alone ASI 4/8:1 Concentrator & 4/8:1 Deconcentrator
NTC/2277/xF	Variable rate IF-band DVB-S2 modulator
NTC/2280/xF	Variable rate L-band DVB-S2 modulator
NTC/2088/xx	Active L-band splitter & switching matrix
NTC/3453	DVB ASI/SPI/Serial-LVDS interface card
NTC/3454/AD	4-output ASI TS De-concentrator interface card
NTC/3458	TELCO HSSI + Single rate G703 w. external Data Clock input interface card
NTC/3750/Ax	L-band conditioner & active splitter module
NTC/7015/xx	IP GbE interface card
NTC/7044/AB	DVB-S2/DSNG/S variable rate L-band

Application notes

NTC/2263xU/APN01	Performance comparison between NTC DVB-S and DVB-S2 demodulators
NTC/2263xU/APN02	Satmaster inputs for DVB-S2

For further information please contact:
 sales@newtec.be (European & African customers, general enquiries)
 sales@newtecamerica.com (Newtec North America)
 sales@newtec.com.sg (Newtec Asia Pacific)
 sales@newtecchina.com.cn (Newtec China)
 sales@newtecmena.com (Newtec Middle East and North Africa)
 sales@newtec-southamerica.com (Newtec South America)

Main Office

Laarstraat 5, B-9100 Sint-Niklaas, Belgium
 Tel: +32 3 780 65 00
 Fax: +32 3 780 65 49

AB/PAV – 08/03/2007

Newtec Cy reserves the right to alter specifications of the equipment described in this brochure without prior notice.

Please consult our website for the latest technical and commercial updates and modifications.